

STREAM-TEMPERATURE CHARACTERISTICS IN GEORGIA

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U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 96-4203

Prepared in cooperation with the

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Atlanta, Georgia
1997



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CONTENTS

| | Page |
|--|------|
| Abstract | 1 |
| Introduction | 1 |
| Purpose and scope | 2 |
| Previous investigations | 2 |
| Station-identification system | 3 |
| Stream-temperature data | 3 |
| Long-term stream-temperature characteristics | 6 |
| Natural stream-temperature characteristics | 7 |
| Regression analysis | 7 |
| Harmonic mean coefficient | 7 |
| Amplitude coefficient | 10 |
| Phase coefficient | 13 |
| Statewide harmonic equation | 13 |
| Examples of estimating natural stream-temperature characteristics | 15 |
| Panther Creek | 15 |
| West Armuchee Creek | 15 |
| Alcovy River | 18 |
| Altamaha River | 18 |
| Summary of stream-temperature characteristics by river basin | 19 |
| Savannah River basin | 19 |
| Ogeechee River basin | 25 |
| Altamaha River basin | 25 |
| Satilla-St Marys River basins | 26 |
| Suwannee-Ochlockonee River basins | 27 |
| Chattahoochee River basin | 27 |
| Flint River basin | 28 |
| Coosa River basin | 29 |
| Tennessee River basin | 31 |
| Selected references | 31 |
| Tabular data | 33 |
| Graphs showing harmonic stream-temperature curves of observed data and statewide harmonic equation for selected stations, figures 14-211 | 51 |

ILLUSTRATIONS

| | Page |
|---------|--|
| Figure | 1. Map showing locations of 198 periodic and 22 daily stream-temperature stations, major river basins, and physiographic provinces in Georgia 4 2. Map showing names of major streams and locations of 78 stream-temperature stations used to compute harmonic stream-temperature regression equations..... 5 3. Graph showing generalized harmonic stream-temperature curve showing harmonic equation coefficients 6 |
| Figures | 4-8. Maps showing: 4. Harmonic mean stream temperatures for 78 natural-condition stations 8 5. Residuals of harmonic mean stream temperatures for 78 natural-condition stations 9 6. Amplitude coefficients for 78 natural-condition stations 11 7. Residuals of amplitude coefficients for 78 natural-condition stations 12 8. Phase coefficients for 78 natural-condition stations 14 |
| Figures | 9-11. Graphs showing harmonic stream-temperature curves of observed data and statewide harmonic equation for stations: 9. Panther Creek near Toccoa, Georgia (station 02182000), September 1959 to June 1974 ... 16 10. West Armuchee Creek near Subligna, Georgia (station 02388000), May 1960 to April 1982..... 16 11. Alcovy River above Covington, Georgia (station 02208450), October 1972 to July 1975..... 17 |
| Figure | 12. Map showing locations of principal power-generating facilities and major reservoirs in Georgia 20 13. Map showing locations of cities in Georgia having populations greater than 10,000 24 |
| Figures | 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide harmonic equation for stations: 14. Chattooga River near Clayton, Georgia (station 02177000), September 1957 to December 1984..... 52 15. Tallulah River near Clayton, Georgia (station 02178400), July 1964 to August 1984 52 16. Panther Creek near Toccoa, Georgia (station 02182000), September 1959 to June 1974 53 17. Savannah River near Iva, South Carolina (station 02187500), May 1958 to November 1984..... 53 18. Beaverdam Creek at Dewy Rose, Georgia (station 02188500), February 1958 to July 1975..... 54 19. Savannah River near Calhoun Falls, South Carolina (station 02189000), eptember 1957 to July 1974 54 20. North Fork Broad River above Toccoa, Georgia (station 02189050), October 1958 to August 1968 55 21. Denmans Creek near Toccoa, Georgia (station 02189100), October 1958 to October 1969 55 22. North Fork Broad River near Toccoa, Georgia (station 02189500), October 1958 to August 1968 56 23. Bear Creek near Mize, Georgia (station 02189600), October 1958 to July 1968 56 24. North Fork Broad River near Lavonia, Georgia (station 02190000), July 1958 to August 1968 57 25. Toms Creek near Eastanollee, Georgia (station 02190100), July 1962 to August 1968 57 26. Toms Creek tributary near Avalon, Georgia (station 02190200), July 1962 to August 1968 58 |

ILLUSTRATIONS—Continued

| | | Page |
|---|--|------|
| <p>Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide harmonic equation for stations:—Continued</p> | | |
| Figure | 27. Toms Creek near Martin, Georgia (station 02190500), October 1962 to September 1968 | 58 |
| | 28. North Fork Broad River near Carnesville, Georgia (station 02191000), October 1962 to September 1970 | 59 |
| | 29. Hudson River at Homer, Georgia (station 02191200), August 1962 to July 1975 | 59 |
| | 30. Broad River near Bell, Georgia (station 02192000), October 1956 to October 1979 | 60 |
| | 31. Little River near Washington, Georgia (station 02193500), October 1954 to June 1974 | 60 |
| | 32. Butler Creek at Fort Gordon, Georgia (station 02196820), March 1968 to July 1976 | 61 |
| | 33. Savannah River at Augusta, Georgia (station 02197000), February 1958 to July 1973 | 61 |
| | 34. Savannah River at Burtons Ferry near Millhaven, Georgia (station 02197500), August 1957 to June 1979 | 62 |
| | 35. Brier Creek near Thomson, Georgia (station 02197520), November 1958 to July 1976 | 62 |
| | 36. Brushy Creek near Wrens, Georgia (station 02197600), May 1958 to July 1976 | 63 |
| | 37. Brier Creek near Waynesboro, Georgia (station 02197830), October 1954 to September 1983 | 63 |
| | 38. Brier Creek at Millhaven, Georgia (station 02198000), July 1954 to June 1979 | 64 |
| | 39. Savannah River near Clyn, Georgia (station 02198500), May 1938 to December 1984 | 64 |
| | 40. Ogeechee River at Scarboro, Georgia (station 02202000), October 1954 to June 1979 | 65 |
| | 41. Ogeechee River at Oliver, Georgia (station 02202190), August 1974 to December 1984 | 65 |
| | 42. Ogeechee River near Eden, Georgia (station 02202500), May 1937 to October 1984 | 66 |
| | 43. Canoochee River near Claxton, Georgia (station 02203000), September 1954 to December 1984 | 66 |
| | 44. Canoochee River at Fort Stewart, Georgia (station 02203519), February 1958 to December 1984 | 67 |
| | 45. Peacock Creek at McIntosh, Georgia (station 02203559), September 1966 to November 1977 | 67 |
| | 46. South River at Bouldercrest Road at Atlanta, Georgia (station 02203800), August 1970 to December 1984 | 68 |
| | 47. South River at State Highway 155 near Atlanta, Georgia (station 02203965), October 1970 to December 1984 | 68 |
| | 48. Pates Creek at Buster Lewis Road near Flippen, Georgia (station 02204285), February 1978 to August 1983 | 69 |
| | 49. South River near McDonough, Georgia (station 02204500), December 1957 to September 1982 | 69 |
| | 50. South River at State Highway 81 at Snapping Shoals, Georgia (station 02204520), August 1970 to December 1984 | 70 |
| | 51. Wildcat Creek near Lawrenceville, Georgia (station 02205000), October 1956 to September 1976 | 70 |
| | 52. Yellow River near Snellville, Georgia (station 02206500), August 1956 to November 1984 | 71 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide harmonic equation for stations:—Continued | |
| 53. Yellow River (Conyers Intake) at Conyers, Georgia (station 02207300), July 1974 to December 1984 | 71 |
| 54. Yellow River near Covington, Georgia (station 02207500), December 1957 to September 1982 | 72 |
| 55. Yellow River at Porterdale, Georgia (station 02207540), July 1974 to June 1979 | 72 |
| 56. Yellow River at State Highway 212 near Stewart, Georgia (station 02208005), July 1974 to December 1984 | 73 |
| 57. Alcovy River above Stewart, Georgia (station 02209260), May 1972 to December 1984 | 73 |
| 58. Ocmulgee River near Jackson, Georgia (station 02210500), December 1957 to December 1984 | 74 |
| 59. Towaliga River near Jackson, Georgia (station 02211300), June 1960 to December 1973 | 74 |
| 60. Falling Creek near Juliette, Georgia (station 02212600), July 1964 to January 1985 | 75 |
| 61. Ocmulgee River (Macon Intake) at Macon, Georgia (station 02212950), June 1974 to December 1984 | 75 |
| 62. Ocmulgee River at Macon, Georgia (station 02213000), May 1937 to December 1975 | 76 |
| 63. Walnut Creek near Gray, Georgia (station 02213050), August 1962 to July 1976 | 76 |
| 64. Tobesofkee Creek above Macon, Georgia (station 02213470), May 1967 to December 1973 | 77 |
| 65. Tobesofkee Creek near Macon, Georgia (station 02213500), October 1955 to October 1966 | 77 |
| 66. Tobesofkee Creek near Macon, Georgia (station 02213500), November 1966 to September 1974 | 78 |
| 67. Ocmulgee River near Warner Robins, Georgia (station 02213700), November 1970 to December 1984 | 78 |
| 68. Ocmulgee River near Bonaire, Georgia (station 02214265), August 1974 to December 1984 | 79 |
| 69. Big Indian Creek at Perry, Georgia (station 02214500), April 1954 to January 1974 | 79 |
| 70. Ocmulgee River at Abbeville, Georgia (station 02215260), February 1958 to June 1979 | 80 |
| 71. Ocmulgee River at Lumber City, Georgia (station 02215500), June 1954 to December 1984 | 80 |
| 72. Allen Creek at Talmo, Georgia (station 02217000), October 1956 to June 1974 | 81 |
| 73. Middle Oconee River near Athens, Georgia (station 02217500), August 1956 to October 1977 | 81 |
| 74. North Oconee River (Athens Intake) at Athens, Georgia (station 02217740), July 1974 to December 1984 | 82 |
| 75. Oconee River at Barnett Shoals near Watkinsville, Georgia (station 02218000), July 1974 to December 1984 | 82 |
| 76. Oconee River near Greensboro, Georgia (station 02218500), July 1956 to December 1984 | 83 |
| 77. Apalachee River near Buckhead, Georgia (station 02219500), July 1956 to July 1976 | 83 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations: | |
| 78. Whitten Creek near Sparta, Georgia (station 02220550), December 1960 to August 1976 | 84 |
| 79. Murder Creek near Monticello, Georgia (station 02221000), August 1956 to December 1973 | 84 |
| 80. Oconee River at Milledgeville, Georgia (station 02223000), May 1937 to December 1984 | 85 |
| 81. Oconee River near Hardwick, Georgia (station 02223040), July 1974 to December 1984 | 85 |
| 82. Oconee River at State Highway 57 near Toombsboro, Georgia (station 02223250), February 1979 to December 1984 | 86 |
| 83. Big Sandy Creek near Jeffersonville, Georgia (station 02223300), August 1958 to December 1973 | 86 |
| 84. Oconee River at Dublin, Georgia (station 02223500), November 1954 to November 1976 | 87 |
| 85. Oconee River at Interstate Highway 16 near Dublin, Georgia (station 02223600), October 1973 to December 1984 | 87 |
| 86. Rocky Creek near Dudley, Georgia (station 02224000), August 1954 to March 1984 | 88 |
| 87. Altamaha River near Baxley, Georgia (station 02225000), December 1957 to December 1984 | 88 |
| 88. Pendelton Creek at State Highway 86 below Ohoopee, Georgia (station 02225470), July 1979 to December 1984 | 89 |
| 89. Ohoopee River near Reidsville, Georgia (station 02225500), July 1954 to October 1982 | 89 |
| 90. Altamaha River near Jesup, Georgia (station 02225990), August 1974 to December 1984 | 90 |
| 91. Altamaha River at Doctortown, Georgia (station 02226000), May 1937 to October 1979 | 90 |
| 92. Altamaha River near Gardi, Georgia (station 02226010), November 1974 to December 1984 | 91 |
| 93. Penholoway Creek near Jesup, Georgia (station 02226100), December 1958 to July 1984 | 91 |
| 94. Altamaha River at Everett City, Georgia (station 02226160), December 1970 to December 1984 | 92 |
| 95. Satilla River at Waltertown, Georgia (station 02226475), August 1974 to December 1984 | 92 |
| 96. Satilla River near Waycross, Georgia (station 02226500), May 1937 to August 1974 | 93 |
| 97. Satilla River at State Highways 15 and 121 near Hoboken, Georgia (station 02226582), August 1974 to December 1984 | 93 |
| 98. Hurricane Creek near Alma, Georgia (station 02227000), January 1955 to June 1982 | 94 |
| 99. Little Satilla River near Offerman, Georgia (station 02227500), January 1955 to September 1983 | 94 |
| 100. Satilla River at Atkinson, Georgia (station 02228000), May 1954 to October 1984 | 95 |
| 101. Suwannee River at Fargo, Georgia (station 02314500), August 1957 to November 1984 | 95 |
| 102. Alapaha River near Alapaha, Georgia (station 02316000), March 1953 to July 1984 | 96 |

ILLUSTRATIONS—Continued

| | Page |
|---|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations—Continued | |
| 103. Alapaha River at Statenville, Georgia (station 02317500), January 1954 to August 1974 | 96 |
| 104. New River at U.S. Highway 82 near Tifton, Georgia (station 02317718), July 1979 to December 1984 | 97 |
| 105. Withlacoochee River near Valdosta, Georgia (station 02317749), November 1974 to December 1984 | 97 |
| 106. Withlacoochee River at State Highway 94 near Valdosta, Georgia (station 02317757), November 1974 to December 1984 | 98 |
| 107. Little River at U.S. Highway 82 near Tifton, Georgia (station 02317800), August 1977 to June 1982 | 98 |
| 108. Little River near Adel, Georgia (station 02318000), October 1955 to March 1961 | 99 |
| 109. Little River near Adel, Georgia (station 02318000), April 1961 to July 1974 | 99 |
| 110. Withlacoochee River near Quitman, Georgia (station 02318500), August 1957 to December 1984 | 100 |
| 111. Okapilco Creek at U.S. Highway 84 at Quitman, Georgia (station 02318725), November 1974 to December 1984 | 100 |
| 112. Withlacoochee River near Clyattville, Georgia (station 02318960), November 1974 to December 1984 | 101 |
| 113. Ochlockonee River near Moultrie, Georgia (station 02327205), July 1979 to December 1984 | 101 |
| 114. Ochlockonee River near Thomasville, Georgia (station 02327500), April 1954 to December 1984 | 102 |
| 115. Tired Creek near Cairo, Georgia (station 02328000), May 1954 to July 1974 | 102 |
| 116. Ochlockonee River near Calvary, Georgia (station 02328200), August 1974 to December 1984 | 103 |
| 117. Chattahoochee River near Leaf, Georgia (station 02331000), September 1957 to August 1976 | 103 |
| 118. Chattahoochee River near Cornelia, Georgia (station 02331600), February 1968 to November 1984 | 104 |
| 119. Chestatee River at State Highway 52 near Dahlonega, Georgia (station 02333500), October 1956 to September 1976 | 104 |
| 120. Chattahoochee River near Buford, Georgia (station 02334500), May 1957 to August 1977 | 105 |
| 121. Chattahoochee River near Norcross, Georgia (station 02335000), October 1957 to September 1976 | 105 |
| 122. Big Creek near Alpharetta, Georgia (station 02335700), May 1960 to September 1976 | 106 |
| 123. Chattahoochee River at Atlanta, Georgia (station 02336000), May 1937 to December 1938 | 106 |
| 124. Chattahoochee River at Atlanta, Georgia (station 02336000), November 1957 to September 1979 | 107 |
| 125. Peachtree Creek at Atlanta, Georgia (station 02336300), July 1959 to December 1984 | 107 |
| 126. Chattahoochee River at Interstate Highway 285 near Atlanta, Georgia (station 02336502), July 1975 to December 1984 | 108 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations:—Continued | |
| 127. Sweetwater Creek near Austell, Georgia (station 02337000), May 1957 to December 1984 | 108 |
| 128. North Fork Camp Creek at Atlanta, Georgia (station 02337100), October 1963 to July 1970 | 109 |
| 129. Chattahoochee River near Fairburn, Georgia (station 02337170), July 1965 to December 1984 | 109 |
| 130. Dog River at State Highway 166 near Fairplay, Georgia (station 02337438), July 1974 to May 1979 | 110 |
| 131. Snake Creek near Whitesburg, Georgia (station 02337500), October 1959 to July 1984 | 110 |
| 132. Chattahoochee River near Whitesburg, Georgia (station 02338000), February 1958 to December 1984 | 111 |
| 133. Chattahoochee River at U.S. Highway 27 at Franklin, Georgia (station 02338500), February 1958 to December 1984 | 111 |
| 134. Chattahoochee River (LaGrange Intake) near LaGrange, Georgia (station 02338720), July 1974 to December 1984 | 112 |
| 135. Yellowjacket Creek near LaGrange, Georgia (station 02339000), August 1956 to September 1970 | 112 |
| 136. Chattahoochee River at West Point, Georgia (station 02339500), September 1957 to September 1974 | 113 |
| 137. Chattahoochee River at West Point, Georgia (station 02339500), October 1974 to December 1984 | 113 |
| 138. Long Cane Creek near West Point, Georgia (station 02339720), July 1974 to December 1984 | 114 |
| 139. Mountain Oak Creek near Hamilton, Georgia (station 02340500), August 1956 to June 1974 | 114 |
| 140. Chattahoochee River at Columbus, Georgia (station 02341500), October 1940 to September 1974 | 115 |
| 141. Upatoi Creek near Columbus, Georgia (station 02341800), April 1965 to September 1983 | 115 |
| 142. Pataula Creek near Lumpkin, Georgia (station 02343200), August 1962 to November 1973 | 116 |
| 143. Chattahoochee River at Columbia, Alabama (station 02343500), November 1940 to April 1958 | 116 |
| 144. Chattahoochee River at Alaga, Alabama (station 02344000), January 1964 to July 1974 | 117 |
| 145. Chattahoochee River near Steam Mill, Georgia (station 02344040), October 1974 to December 1984 | 117 |
| 146. Flint River at State Highway 138 near Jonesboro, Georgia (station 02344180), May 1958 to December 1984 | 118 |
| 147. Flint River at State Highway 54 near Fayetteville, Georgia (station 02344190), July 1975 to December 1984 | 118 |
| 148. Camp Creek near Fayetteville, Georgia (station 02344300), July 1960 to September 1970 | 119 |
| 149. Flint River at Ackert Road near Inman, Georgia (station 02344380), July 1975 to December 1984 | 119 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations:—Continued | |
| 150. Flint River at State Highway 92 above Griffin, Georgia (station 02344400), July 1975 to December 1984 | 120 |
| 151. Flint River near Griffin, Georgia (station 02344500), August 1956 to July 1976 | 120 |
| 152. Line Creek near Senoia, Georgia (station 02344700), September 1964 to July 1976 | 121 |
| 153. Potato Creek near Thomaston, Georgia (station 02346500), July 1956 to June 1974 | 121 |
| 154. Flint River near Culloden, Georgia (station 02347500), April 1954 to June 1979 | 122 |
| 155. Whitewater Creek below Rambulette Creek near Butler, Georgia (station 02349000), April 1954 to November 1973. | 122 |
| 156. Flint River at Montezuma, Georgia (station 02349500), May 1954 to December 1984 | 123 |
| 157. Turkey Creek at Byromville, Georgia (station 02349900), July 1954 to June 1982 | 123 |
| 158. Flint River at State Highway 27 near Vienna, Georgia (station 02350001), July 1979 to December 1984 | 124 |
| 159. Kinchafoonee Creek at Preston, Georgia (station 02350600), May 1954 to July 1984 | 124 |
| 160. Flint River at Albany, Georgia (station 02352500), May 1954 to December 1984 | 125 |
| 161. Flint River (Putney Intake) near Putney, Georgia (station 02352790), August 1974 to December 1984 | 125 |
| 162. Flint River at Newton, Georgia (station 02353000), August 1956 to October 1984 | 126 |
| 163. Pachitla Creek near Edison, Georgia (station 02353400), October 1954 to November 1973. | 126 |
| 164. Ichawaynochaway Creek at Milford, Georgia (station 02353500), April 1954 to July 1984. | 127 |
| 165. Flint River at Bainbridge, Georgia (station 02356000), April 1954 to July 1973 | 127 |
| 166. Flint River below State Docks at Bainbridge, Georgia (station 02356015), July 1974 to December 1984 | 128 |
| 167. Spring Creek near Iron City, Georgia (station 02357000), August 1957 to July 1978 | 128 |
| 168. Cartecay River near Ellijay, Georgia (station 02379500), June 1957 to August 1975. | 129 |
| 169. Ellijay River at Ellijay, Georgia (station 02380000), June 1957 to July 1974. | 129 |
| 170. Coosawattee River near Ellijay, Georgia (station 02380500), May 1963 to August 1983 | 130 |
| 171. Scarecorn Creek at Hinton, Georgia (station 02382000), May 1959 to July 1974 | 130 |
| 172. Coosawattee River at Carters, Georgia (station 02382500), July 1965 to December 1972. | 131 |
| 173. Rock Creek near Fairmount, Georgia (station 02383000), July 1957 to September 1972 | 131 |
| 174. Coosawattee River near Pine Chapel, Georgia (station 02383500), June 1957 to December 1972. | 132 |
| 175. Coosawattee River near Calhoun, Georgia (station 02383540), August 1974 to December 1984. | 132 |
| 176. Conasauga River (Dalton Intake) near Dalton, Georgia (station 02384748), July 1974 to December 1984 | 133 |
| 177. Holly Creek near Chatsworth, Georgia (station 02385800), July 1960 to June 1983 | 133 |
| 178. Conasauga River at Tilton, Georgia (station 02387000), June 1957 to December 1984. | 134 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations:—Continued | |
| 179. Conasauga River near Resaca, Georgia (station 02387050), August 1974 to December 1984 | 134 |
| 180. Oostanaula River at Resaca, Georgia (station 02387500), September 1957 to December 1972 | 135 |
| 181. Oostanaula River at Interstate Highway 75 at Resaca, Georgia (station 02387502), August 1974 to December 1984 | 135 |
| 182. West Armuchee Creek near Subligna, Georgia (station 02388000), May 1960 to April 1982 | 136 |
| 183. Oostanaula River at Rome, Georgia (station 02388500), September 1957 to December 1973 | 136 |
| 184. Oostanaula River (Rome Intake) at Rome, Georgia (station 02388520), August 1974 to December 1984 | 137 |
| 185. Etowah River near Dawsonville, Georgia (station 02389000), September 1956 to August 1984 | 137 |
| 186. Shoal Creek near Dawsonville, Georgia (station 02389300), June 1958 to June 1974 | 138 |
| 187. Etowah River at Canton, Georgia (station 02392000), June 1957 to October 1984 | 138 |
| 188. Little River near Roswell, Georgia (station 02392500), August 1959 to September 1964 | 139 |
| 189. Little River near Roswell, Georgia (station 02392500), October 1964 to June 1975 | 139 |
| 190. Etowah River at Allatoona Dam above Cartersville, Georgia (station 02394000), October 1938 to September 1939 | 140 |
| 191. Etowah River at Allatoona Dam above Cartersville, Georgia (station 02394000), January 1958 to November 1984 | 140 |
| 192. Hills Creek near Taylorsville, Georgia (station 02394950), June 1959 to July 1974 | 141 |
| 193. Etowah River above Kingston, Georgia (station 02394980), August 1974 to December 1984 | 141 |
| 194. Etowah River near Kingston, Georgia (station 02395000), October 1969 to September 1984 | 142 |
| 195. Etowah River at Rome, Georgia (station 02396000), September 1957 to December 1984 | 142 |
| 196. Coosa River near Rome, Georgia (station 02397000), July 1957 to December 1984 | 143 |
| 197. Cedar Creek near Cedartown, Georgia (station 02397500), June 1957 to December 1984 | 143 |
| 198. Coosa River near Coosa, Georgia (station 02397530), August 1974 to December 1984 | 144 |
| 199. Chattooga River at Summerville, Georgia (station 02398000), July 1957 to December 1984 | 144 |
| 200. Chattooga River at Chattoogaville, Georgia (station 02398037), August 1974 to December 1984 | 145 |
| 201. Little River near Buchanan, Georgia (station 02411800), May 1959 to August 1975 | 145 |
| 202. Tallapoosa River below Tallapoosa, Georgia (station 02411930), July 1974 to November 1984 | 146 |

ILLUSTRATIONS—Continued

| | Page |
|--|------|
| Figures 14-211. Graphs showing harmonic stream-temperature curves of observed data and statewide regression equation for stations:—Continued | |
| 203. Little Tallapoosa River below Bowdon, Georgia (station 02413210), July 1974 to December 1984 | 146 |
| 204. Hiwassee River at Presley, Georgia (station 03545000), August 1951 to June 1982 | 147 |
| 205. Nottely River near Blairsville, Georgia (station 03550500), August 1951 to June 1982 | 147 |
| 206. Nottely River at Nottely Dam near Ivylog, Georgia (station 03553500), September 1951 to July 1974 | 148 |
| 207. Toccoa River near Dial, Georgia (station 03558000), January 1951 to June 1984 | 148 |
| 208. Toccoa River near Blue Ridge, Georgia (station 03559000), January 1951 to July 1974 | 149 |
| 209. Fightingtown Creek at McCaysville, Georgia (station 03560000), January 1951 to June 1974 | 149 |
| 210. South Chickamauga Creek at Graysville, Georgia (station 03566800), August 1974 to November 1984 | 150 |
| 211. West Chickamauga Creek near Lakeview, Georgia (station 03567340), August 1974 to December 1984 | 150 |

TABLES

| | Page |
|---|------|
| Table | |
| 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties | 34 |
| 2. Stream-temperature daily record stations, periods of analyses, selected station information, and harmonic properties | 44 |
| 3. Periodic stream-temperature stations used for regression analyses, periods of analyses, selected station information, and harmonic properties | 47 |
| 4. Estimates of harmonic coefficients for Altamaha River near Gardi using interpolation and observed data compared with estimates from the statewide harmonic equation. | 18 |
| 5. Power generating plants in Georgia | 21 |

VERTICAL DATUM

Sea Level: In this report, “sea level” refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called “Sea Level Datum of 1929.”

STREAM-TEMPERATURE CHARACTERISTICS IN GEORGIA

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ABSTRACT

Stream-temperature measurements for 198 periodic and 22 daily record stations were analyzed using a harmonic curve-fitting procedure. Statistics of data from 78 selected stations were used to compute a statewide stream-temperature harmonic equation, derived using latitude, drainage area, and altitude for natural streams having drainage areas greater than about 40 square miles. Based on the 1955-84 reference period, the equation may be used to compute long-term natural harmonic stream-temperature coefficients to within an on average of about 0.4 ° C.

Basin-by-basin summaries of observed long-term stream-temperature characteristics are included for selected stations and river reaches, particularly along Georgia's mainstem streams. Changes in the stream-temperature regimen caused by the effects of development, principally impoundments and thermal power plants, are shown by comparing harmonic curves and coefficients from the estimated natural values to the observed modified-condition values.

INTRODUCTION

Stream-temperature characteristics are used to assess, manage, and protect the water resources of Georgia. As body temperature is an indicator of human health, water temperature is an indicator of the ability of a stream to sustain aquatic life and assimilate wastes.

Stream-temperature data are important inputs for stream water-quality models. In 1974, the Georgia Department of Natural Resources, Environmental Protection Division (EPD), with assistance from the U.S. Geological Survey (USGS), designed and constructed a seasonal stream assimilative capacity (SAC) model as an aid to stream assessments in Georgia. The SAC model has been used to provide statistics for the design and operation of waste-treatment facilities to help ensure compliance with various water-quality standards and to quantify stream assimilative capacity.

Stream-temperature data along with curves determined by least-squares simple harmonic fitting of the data were presented for 146 stream-temperature stations in Georgia by Dyar and Stokes (1973). The stream-temperature information for these 146 stations is suitable for input to the SAC model or other such water-quality models. However, stream-temperature characteristics have not been estimated for many streams in Georgia for which no data or insufficient data exist. Thus, a simple, reliable method is needed to estimate stream-temperature characteristics for sites where little or no data exist.

This study was conducted by the USGS, in cooperation with the EPD. The stream-temperature data used in this study were collected in cooperation with EPD and other Federal, State, and local agencies.

Purpose and Scope

This report summarizes the water-temperature characteristics of selected stream stations in Georgia, and provides a harmonic equation suitable for estimating natural seasonal water-temperature characteristics of most Georgia streams. The harmonic equation described in this report is based on estimates of natural seasonal stream-temperature characteristics for non-tidal streams in Georgia having drainage basins greater than 40 square miles (mi²). Stream-temperature characteristics computed by the harmonic equation presented in this report may be compared to observed stream-temperature data to evaluate how seasonal stream-temperature characteristics of a particular stream may be deviating from estimated natural characteristics.

This report builds upon the Statewide summary report of stream-temperature data presented by Dyar and Stokes (1973). Seasonal stream-temperature characteristics are computed and analyzed from data collected by USGS at 198 periodic and 22 continuous record stream-temperature stations through 1984, including most of the 146 stations reported by Dyar and Stokes (1973).

The harmonic equations for computing natural seasonal stream-temperature characteristics presented in this report are based on analyses of 78 stream-temperature stations having records from about 1955-84. Analyses of records collected subsequent to 1984 could cause changes in these equations. However, based on comparisons of the analyses in this report and Dyar and Stokes (1973), changes likely will occur slowly.

Throughout this report, the term "natural" is intended to describe stream temperatures that are relatively unaffected by human activities, including such practices as waste-water return, reservoir operation, diversions, or proximity to urban areas. The term "natural" is subjective and rigorous evaluative procedures are not applied to prove the validity of its use. Similarly, the term "modified" connotes that observed stream temperatures likely are affected by human activities. The terms "stream temperature", "water temperature", and "temperature" are synonymous throughout this report. Finally, the terms "station" and "stream station" refers to locations where systematic stream-temperature data are available; whereas, the term "site" and "stream site" refers to locations where little or no data are available.

Previous Investigations

Numerous previous stream-temperature studies were referred to during the compilation and analysis of the information contained in this report. Statewide inventories of continuous or periodic records of stream temperatures collected primarily by the USGS were presented for California in a series of reports by Blodgett (1970-72) and for North Carolina by Woodard (1970). More descriptive, graphic summaries on regional-basin, statewide, or national scales have taken several forms. Maps depicting gross areal variability of selected stream-temperature characteristics have been prepared for Florida (Anderson, 1971), for Washington (Collings and Higgins, 1973), and for the Nation as a whole (Blakely, 1966; Steele and others; 1974, Hawkinson and others, 1977). Plots of annual stream-temperature variations have been reported for numerous stations in Montana (Aagaard, 1969), for selected sites in Georgia (Lamar, 1944), for the upper Delaware River basin in New York (Williams, 1971), and for the Delaware River at Trenton, N.J. (McCarthy and Keighton, 1964).

Annual seasonal temperature variations were distinguished from shorter-term daily variations in stream temperature in reports by Calandro (1969) and Williams (1971). Studies correlating air and water temperatures on an annual or seasonal basis include studies by Kothandaraman and Evans (1972), Anderson and Faust (1973), Williams (1971), and Steele (1974).

Based on seasonal cyclical patterns of stream-temperature records commonly observed at numerous measuring stations, a least-squares, harmonic-analysis regression fit of annual variability was proposed by Ward (1963). An evaluation of incremental benefits obtained by imposing higher-order harmonics in the analysis (Thomann, 1967; Kothandaraman, 1971) concluded that a single-harmonic analytical depiction of seasonal variations in stream temperatures explains 85-95 percent of the observed variability in annual records. A modification of the basic single-harmonic approach was reported by Tasker and Burns (1974) for specific application to regions where streams are affected by ice cover for prolonged periods.

In addition to the above reports on graphical or analytical representations of seasonal variations in stream temperature, several other investigations warrant mentioning. Detailed studies, generally on small streams, have described and evaluated various environmental factors affecting stream temperatures

(Pluhowski, 1970; Moore, 1967). Collings and Higgins (1973) related stream-temperature harmonic coefficients to selected characteristics of a basin using a multiple-regression approach and found the most frequently occurring, statistically significant variables were drainage area, channel slope, mean basin altitude, and mean annual streamflow. Gilroy and Steele (1972) evaluated the effects of reduced sampling frequencies of stream-temperature measurements as depicted by harmonic coefficients for selected long-term daily records.

Station-Identification System

The stream-temperature station numbers are based upon a numbering system which has been used for USGS surface-water stations since October 1, 1950. In this system, the station-identification number is assigned according to downstream order and gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete number of each station, such as 02331655, includes the two-digit part number "02" plus the downstream-order number "331655", which can be from 6 to 12 digits (Stokes and McFarlane, 1995). The tables and most figures in this report adhere to this system.

In figures 1 and 2 of this report, the USGS stream-station numbers are shortened by omitting the first two digits. Similarly, in the text of this report, all stream-temperature station names that are referenced to Georgia cities are shortened to omit the "Ga." part. For example, the complete station number and name for the abbreviated "392500, Little River near Roswell", is "02392500, Little River near Roswell, Ga." Other abbreviated station numbers can be completed similarly with the exception of stations having abbreviated numbers greater than 5000—these stations require a leading "03" rather than a leading "02". For example, the complete station number for station 545000 is 03545000. The number and name abbreviations are intended to improve the readability of the report. The tables and most figures in this report contain complete station numbers and names.

Stream-Temperature Data

Periodic and daily stream-temperature data for streams in Georgia stored in the USGS database through 1984 were compiled for evaluation and possible further analyses. The compilation yielded 333 periodic stations having 8 or more temperature measurements and 61 stations with daily temperature records. Of the 333 periodic stations, 198 had five or more years of well-distributed data suitable to determine long-term stream-temperature characteristics (table 1, in back of report). Similar criteria were used to screen the 61 daily record stations; 22 of these stations were selected as suitable for harmonic analyses (table 2, in back of report). All but four of the daily record stations (02208450, 02231000, 02338660, and 02382720, respectively) also are periodic stations. The 198 periodic stream-temperature stations selected for analysis are listed in table 1 with their locations shown in figure 1. The 22 selected daily stream-temperature record stations are listed in table 2 and shown in figure 1. The figure also shows major river basins and physiographic provinces discussed in this report.

Periodic stream temperatures for stations listed in table 1 were measured by holding a thermometer in flowing water and, in most instances, reading the thermometer while the bulb was immersed. Accuracies of periodic temperature measuring techniques used by the USGS are within about 0.8 ° C (Moore, 1967, p. 8-14; Rawson, 1970, p. 2-4; Blodgett, 1970, p. 2-3). Because most periodic-temperature measurements are made during daylight hours, observed stream temperatures generally are higher than daily mean stream temperatures.

Daily record stream temperatures were collected by automatic recording equipment or by local observers. A variety of automatic recorders have been used to collect data over the years. Generally, accuracies of water temperatures collected by automatic recording equipment are within ± 1 ° C (Moore, 1967, p. 8-14; Rawson, 1970, p. 2-4; Blodgett, 1970, p. 2-3). Data collected by local observers also are believed to be within ± 1 ° C.

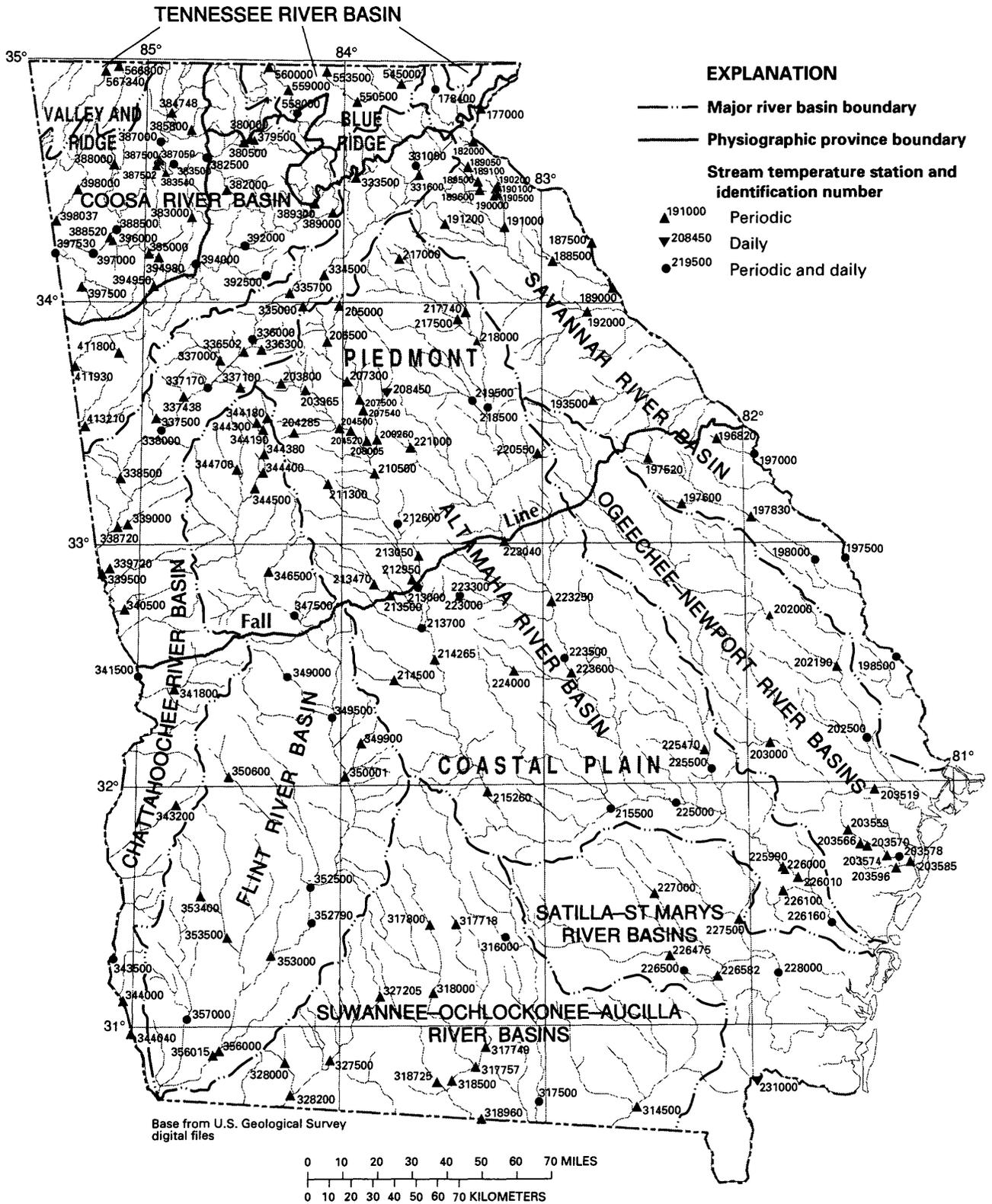


Figure 1. Locations of 198 periodic and 22 daily stream-temperature stations, major river basins, and physiographic provinces in Georgia.

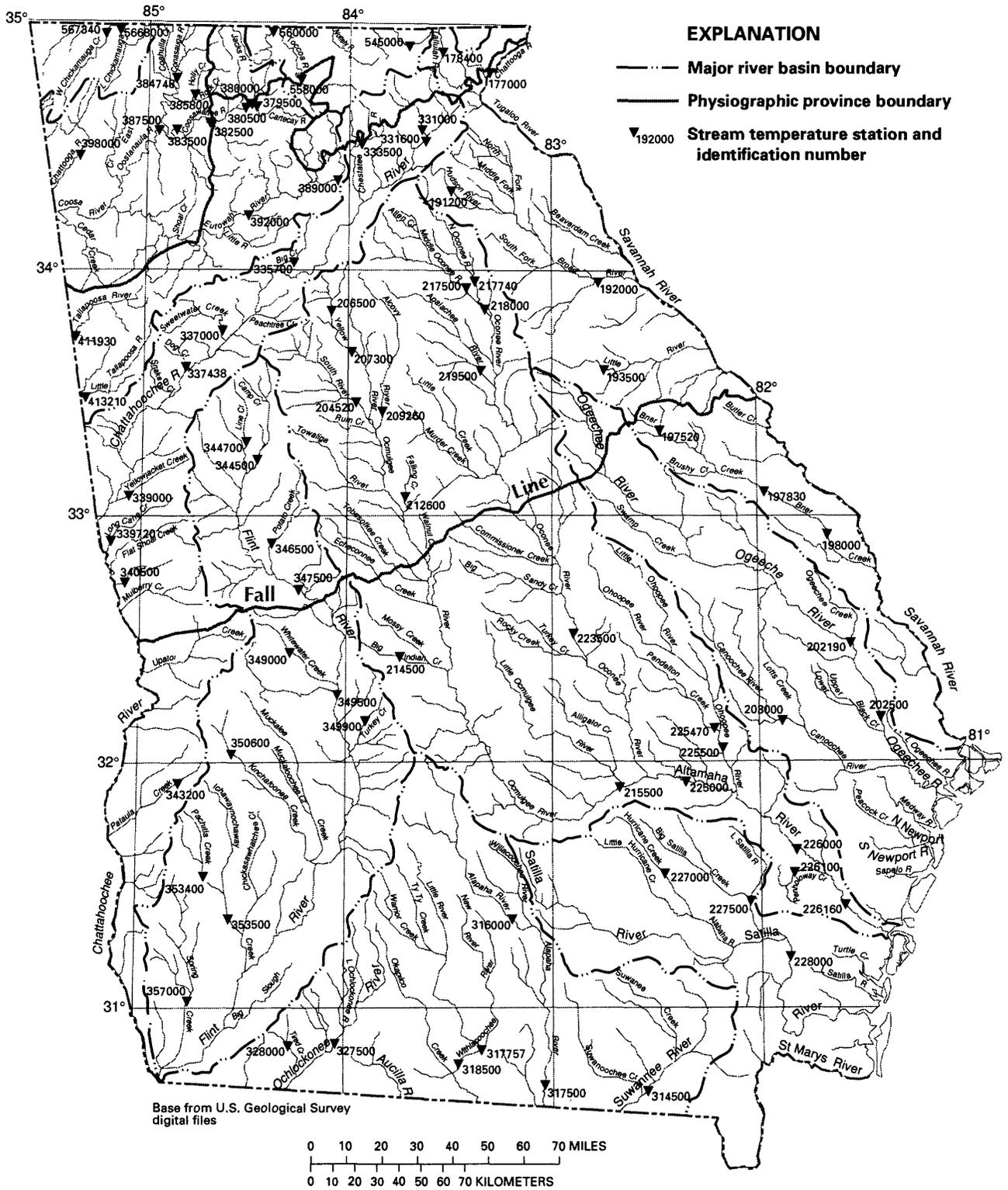


Figure 2. Names of major streams and locations of 78 stream-temperature stations used to compute harmonic stream-temperature regression equations.

LONG-TERM STREAM-TEMPERATURE CHARACTERISTICS

Dyar and Stokes (1973) demonstrated that annual seasonal or long-term stream-temperature characteristics may be represented by a harmonic (sinusoidal) function of the following form (Ward, 1963; Collings, 1969; and Steele and Gilroy, 1972):

$$T = M + A [\sin (b t + c)] \quad (1)$$

where

T is the harmonic-mean stream temperature on day "t";

M is the harmonic-mean coefficient or the long-term mean stream temperature for the period of record used in the analysis;

A is the amplitude coefficient or annual range in temperature of the harmonic function (or one-half the estimated annual variation in stream temperature for the period of record);

b is a constant to convert time of year "t" to degrees of arc;

t is the time of year expressed as a day number, where t = 1 for October 1; and

c is the phase coefficient of the harmonic function.

A generalized example of a harmonic temperature curve computed from equation (1) is shown in figure 3. Harmonic coefficients for equation (1) (M, A, and c) may be determined by plotting stream-temperature station data for the selected period of analysis on a single annual time segment, without regard to year, and computing the least-square harmonic fit from the data points. The selected annual time segment is a standard "water year" used by the USGS, which represents a period of October 1 to September 30 of the following calendar year.

Stream-temperature data for each station listed in tables 1 and 2 were plotted and harmonic-function coefficients were computed from a least-squares sinusoidal fit of the data. The computed coefficients, standard errors, and variances are listed in tables 1 and 2. Multiple analyses were performed for six periodic

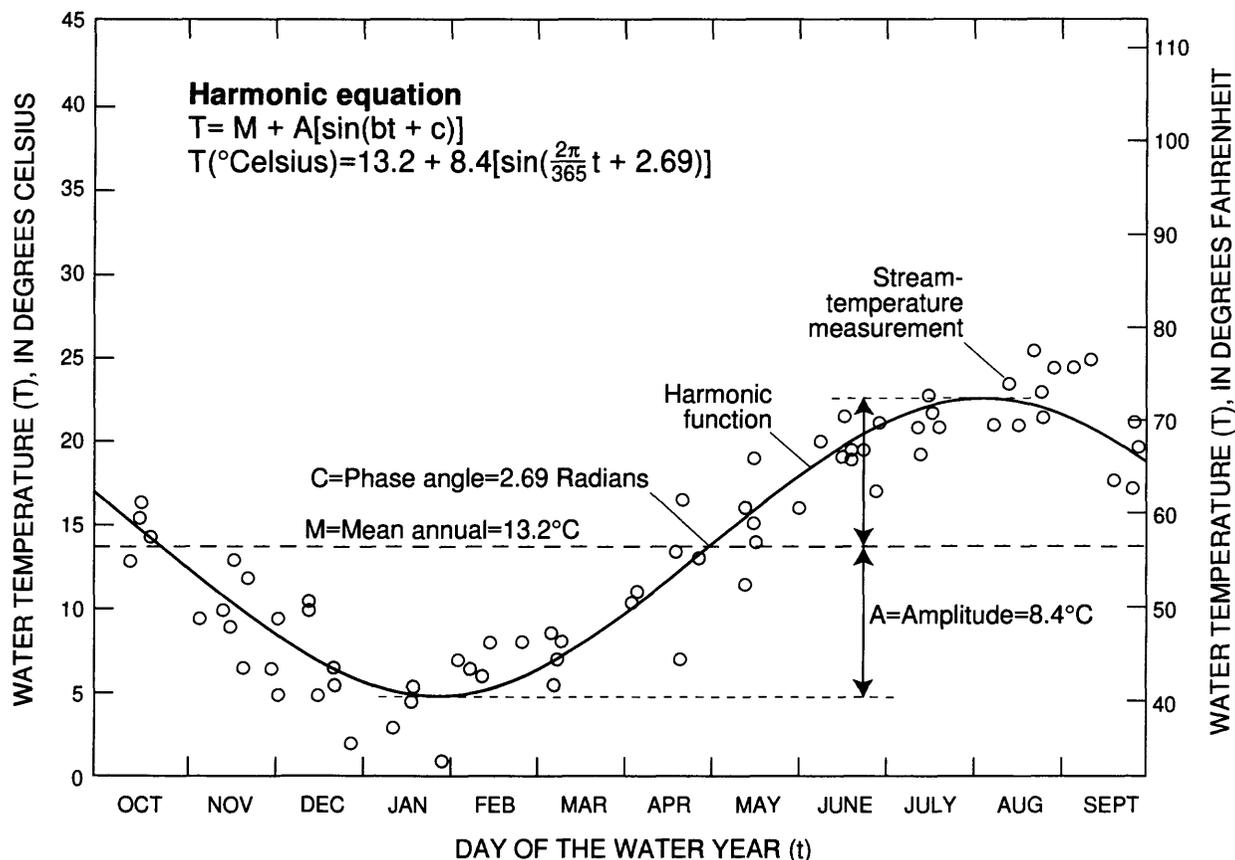


Figure 3. Generalized harmonic stream-temperature curve showing harmonic equation coefficients.

stations (02213500, 02318000, 02336000, 02339500, 02392500, and 02394000) because reservoirs constructed upstream from the stations during the period of record interrupted the homogeneity of the temperature data. Graphs of the annualized stream-temperature data and harmonic-function curves for selected periodic stations listed in table 1 are shown in back of this report.

Natural Stream-Temperature Characteristics

To estimate natural stream-temperature characteristics at ungaged locations, 78 of the 198 periodic stream-temperature stations were selected for regression analysis. No continuous-record stations were selected for analysis because most were located on modified streams or were already represented by periodic stations at the same locations. Stations with stream temperatures substantially affected by human activities and stations having drainage areas less than 40 square miles (mi²) were excluded from analysis. To help ensure statistical independence, most mainstem stations were excluded. However, 16 stations with drainage areas greater than 1,000 mi² were included to provide sufficient drainage area variability for the regional analysis. The 78 stations selected for analysis are listed in table 3 (in back of report) and their locations and stream names are shown in figure 2.

Several limitations of the data used to compute natural temperature characteristics should be noted. First, for the analysis to be rigorous, only stations having completely natural conditions upstream should be used. Because at least some modifications have occurred on most major streams, computation of completely natural temperature characteristics was not possible. However, natural stream-temperatures should predominate at each of the 78 stations used for analysis (table 3). Second, most periodic data collection occurs in daylight hours, causing a slight temperature bias. This bias typically is from about 0.5 to 1 °C or less; most bias occurs on smaller streams during the warmer seasons.

Regression Analysis

To develop regional relations, the harmonic mean (M), amplitude (A), and phase coefficients (c) listed in table 3 were each analyzed by regression analyses; the following multiple-regression function was defined:

$$y = b_0 + b_1 * x_1 + b_2 * x_2 + b_3 * x_3 + \dots + b_n * x_n \quad (2)$$

where

y is one of the harmonic-analysis coefficients (M, A, or c as defined in equation 1);

$b_0 \dots b_n$ are terms of regression coefficients; and

$x_1 \dots x_n$ are variables of selected basin characteristics considered in the regional analysis.

Independent variables used for the regression included the station latitude, drainage area, and altitude (table 1).

Harmonic Mean Coefficient

The empirical equation resulting from the regression analysis to estimate the natural long-term harmonic mean stream-temperature coefficient applicable throughout the State of Georgia is:

$$M = 42.68 - 0.833 * L + 0.743 * \log D - 0.00133 * E \quad (3)$$

where

- M is the long-term mean stream temperature or the harmonic mean temperature coefficient, in °C;
- L is the station or stream location latitude, in decimal degrees;
- D is the station or stream location drainage area, in square miles; and
- E is the station or stream location altitude, in feet above sea level.

Harmonic mean stream-temperature and independent variable data used in this regression equation are listed in table 3. The regression yields a standard error of about 0.4 °C for the harmonic mean stream-temperature coefficient. Equation (3) accounts for 95 percent of the variance, with the latitude component accounting for about 49 percent; altitude for about 27 percent; and drainage area for about 19 percent. Harmonic mean temperatures tend to increase southward and with lower basin altitude.

Residuals obtained by subtracting harmonic mean temperatures determined by regression equation (3) from the values calculated by harmonic analyses of station data are shown in figure 5. Negative values indicate harmonic mean temperatures computed from station data are less than those determined by equation (3). Clusters of both negative and positive residuals are apparent in figure 5; at least one of the larger departures shown in figure 5 is relatively easy to explain. West Chickamauga Creek near Lakeview (station 03567340) has a residual value of + 1.0 °C as would be expected for any stream in Georgia that flows opposite to the primary north-to-south direction. However, for the most part, the map of residuals (fig. 5) shows random and small numerical departures from equation (3).

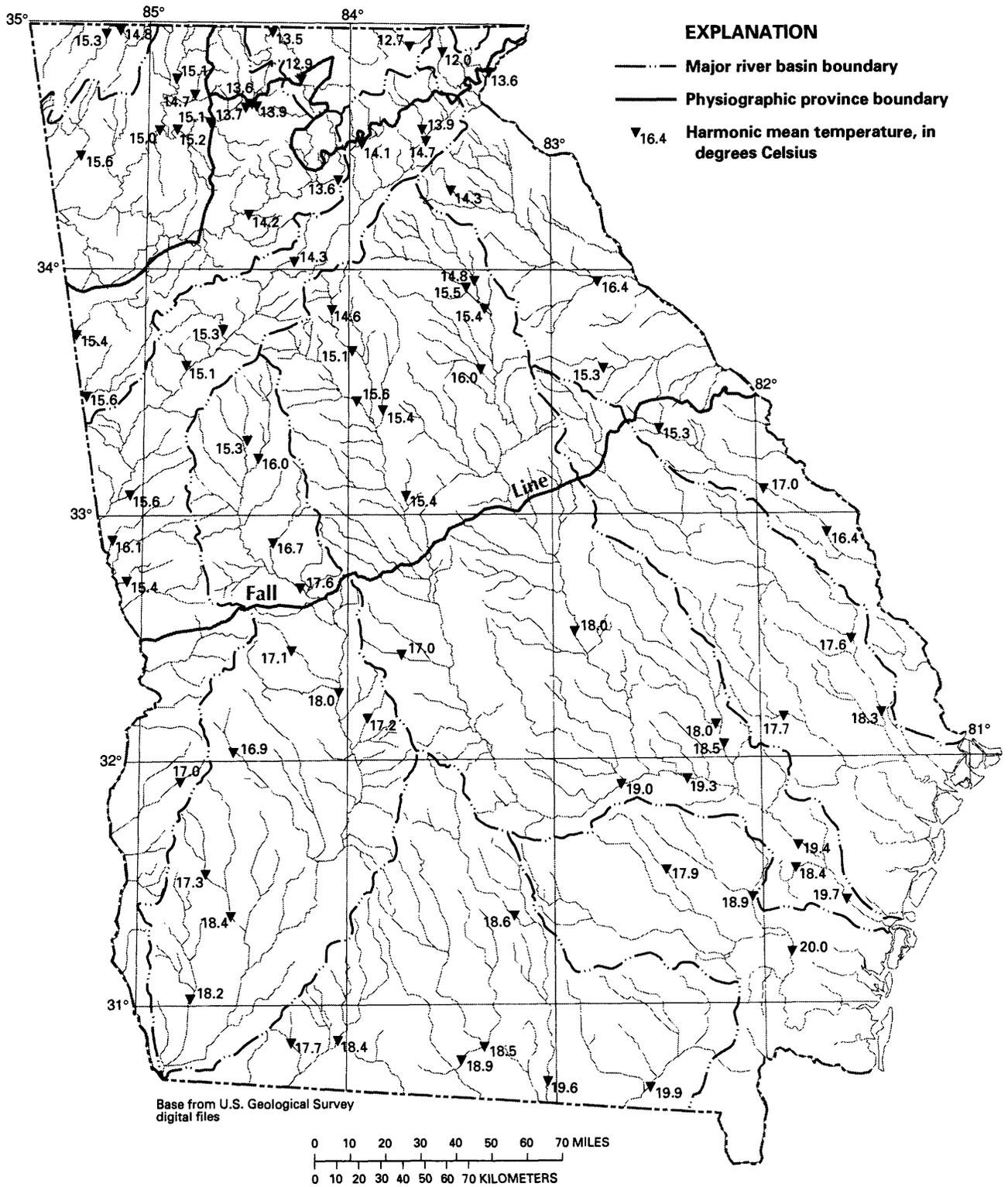


Figure 4. Harmonic mean stream temperatures for 78 natural-condition stations.

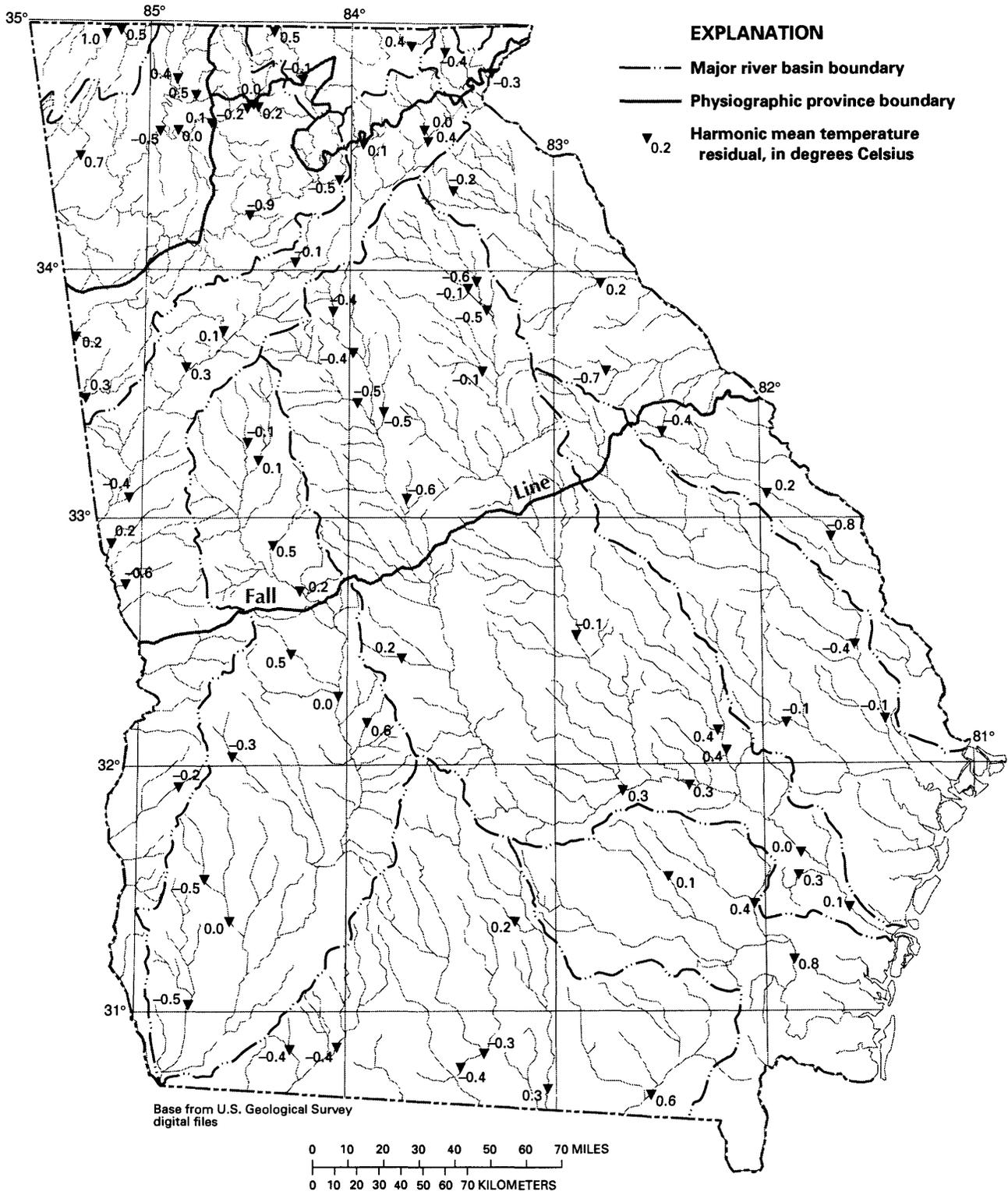


Figure 5. Residuals of harmonic mean stream temperatures for 78 natural-condition stations.

Natural long-term temperature anomalies can be expected in some locations in Georgia. For example, stream temperatures in and around Warm Springs, likely would be higher than values predicted by equation (3). Along the coast and in tidal streams (such as stations 02203559, 02203566, 02203570, 02203574, 02203578, 02203585, and 02203596), data are scarce. Because stations having sea affects are not included, equation (3) should not be applied to tidally affected stream sites. Stream locations having drainage areas smaller than about 40 mi² or having a very high proportion of streamflow derived from ground-water inflow upstream may show deviations of 1° C or more from values estimated by equation (3).

The empirical equation used to estimate natural long-term harmonic-mean temperatures in Georgia streams predict a maximum high value of about 20.5 ° C; such values occur at lower latitudes, lower altitudes, and in larger drainage basins. The minimum predicted low value is about 12.3 ° C; values in this range occur at higher latitudes, higher altitudes, and in smaller drainage basins. Generally, the harmonic mean temperatures computed from data for the 78 stations analyzed (table 3) agree well with those estimated by equation (3).

Amplitude Coefficient

The empirical equation resulting from the regression analysis to estimate the natural long-term amplitude stream-temperature coefficient applicable throughout the State of Georgia is:

$$A = -7.40 + 0.947 * \log D + 0.426 * L - 0.00075 * E \quad (4)$$

where

- A is the amplitude coefficient in ° C;
- D is the station or stream location drainage area, in square miles;
- L is the station or stream location latitude, in decimal degrees; and
- E is the station or stream location altitude, in feet.

Amplitude and independent variable data used in equation (4) are identified in table 3. An areal plot of the amplitude coefficients is shown in figure 6. The regression yields a standard error of about 0.7 ° C. Equation (4) accounts for about 48 percent of the variance, with the drainage area component accounting for about 18 percent; latitude for about 18 percent; and altitude for about 12 percent.

Residuals computed by subtracting amplitude coefficients computed by equation (4) from the values computed from station data are shown in figure 7. The residuals in figure 7 range from an average of about +0.6 ° C in the Piedmont Province to an average of about -0.3 ° C for much of the remaining provinces in the State; this indicates that equation (4) tends to underestimate the harmonic amplitude coefficient in much of the Piedmont, and to overestimate it throughout most of the remainder of the State. Much of the difference in the amplitude coefficients in the two areas may be attributable to natural causes. Many of the negative residuals occur on streams having large components of ground-water inflow. For example, a relatively large proportion of streamflow at Whitewater Creek near Butler (station 02349000), having one of the largest negative residuals of -1.8 ° C, comes from ground-water inflow. The large ground-water component also applies to the Chattooga River at Summerville (station 02398000).

Many streams immediately south of the Fall Line also have relatively large components of ground-water inflow, as do those in the southern parts of the Chattahoochee and Flint River basins in southwestern Georgia, and in some of the Valley and Ridge Province within the Coosa River basin. Conversely, the high positive residuals seen at stations in the southern Piedmont Province may be attributable to relatively small ground-water inflow to these streams. Also, the band of positive residuals within the Piedmont is coincident with high population densities and may be partially attributable to affects of human development.

Estimates of long-term natural harmonic amplitude coefficients from equation (4) can yield a range of amplitude from a high value of about 11.2 ° C to a low value of about 5.0 ° C for normal variations of the independent variables. High values typically occur with larger drainage areas, higher latitudes, and lower altitudes. Low values tend to occur with smaller drainage areas, lower latitudes, and higher altitudes. However, higher altitudes do not occur with lower latitudes in the State. From table 3, the maximum long-term natural harmonic-amplitude coefficient is about 10.2 ° C for the Flint River near Culloden (station 02347500). The minimum amplitude coefficient observed from the 78 stations analyzed is about 6.2 ° C for Whitewater Creek near Butler (station 02349000) (table 3).

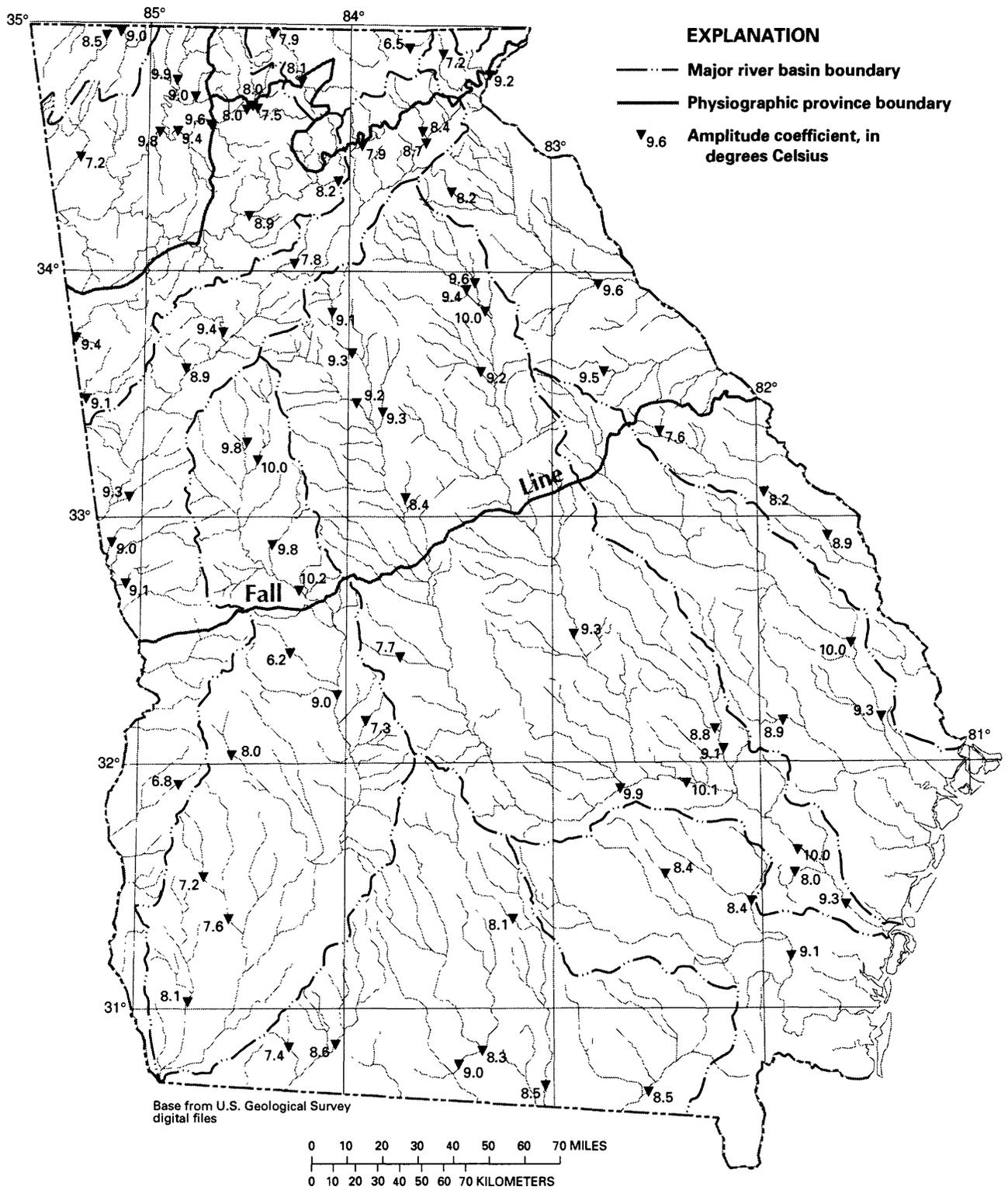


Figure 6. Amplitude coefficients for 78 natural-condition stations.

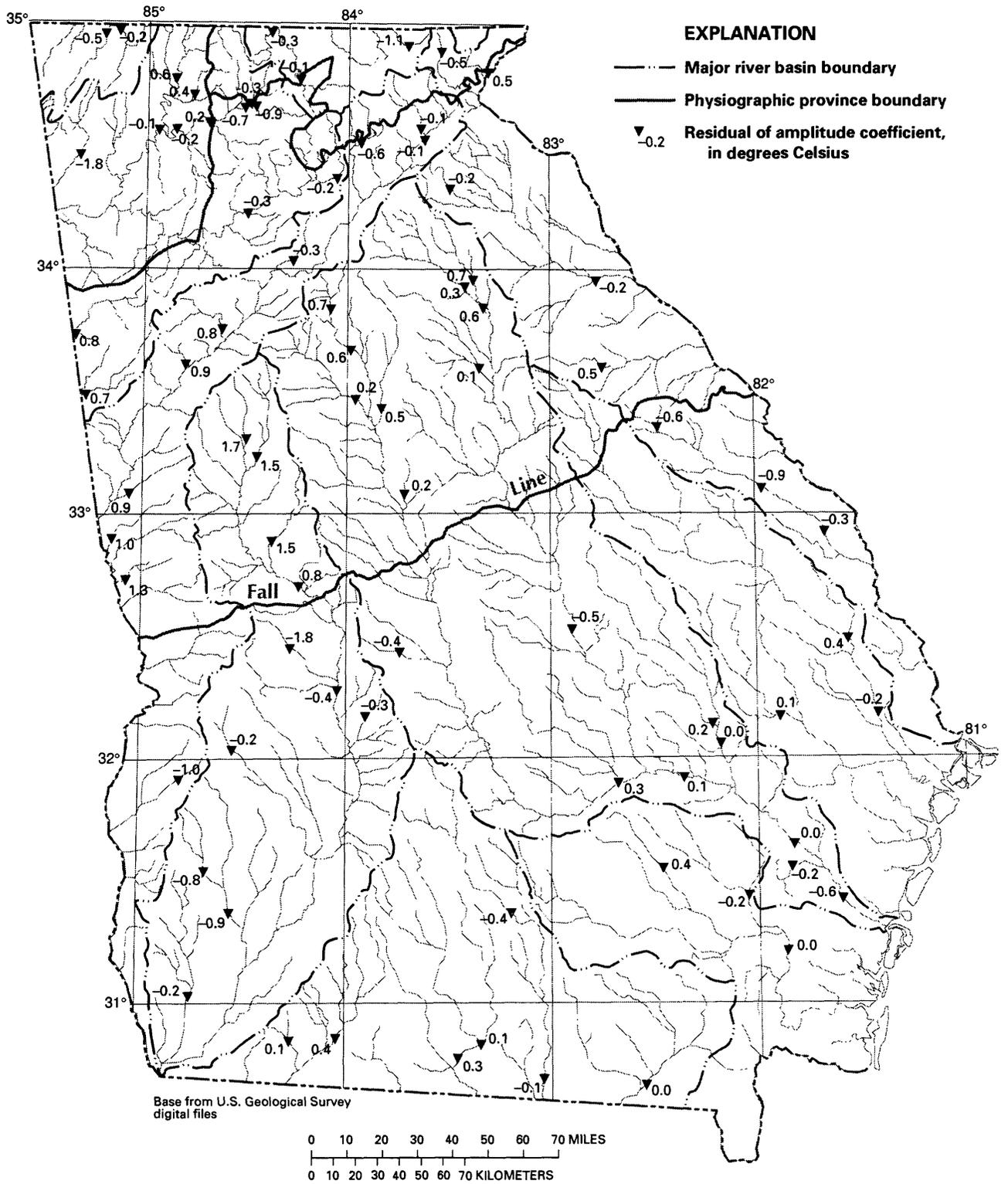


Figure 7. Residuals of amplitude coefficients for 78 natural-condition stations.

The amplitude coefficient of the harmonic function is useful to determine the high and low stream-temperature regimens, as illustrated by figure 3. Graphs and data included in this report show that the addition of the amplitude to the harmonic mean temperature provides estimates of average annual maximum stream temperatures. Similarly, subtraction of the amplitude from the harmonic mean yields estimates of average annual minimum temperatures.

Phase Coefficient

Regression analyses were applied to phase-coefficient data in table 3. No basin or hydrologic parameters were found to be helpful in determining the value of the phase coefficient. The natural long-term phase coefficient is a constant of about 2.81 radians. The standard error of the phase coefficient is about 0.04 radians, amounting to about two days. Long-term mean-temperature values are most likely to occur in natural streams in Georgia on about October 19 and April 20. Minimum and maximum long-term natural temperatures are likely to occur on about January 19 and July 20, respectively. Temperatures near the annual maximum and minimum are likely to persist for several weeks. For example, temperatures within 1 ° C of the maximum temperature are likely to occur from about the end of June through mid-August. Similarly, temperatures within 1 ° C of the minimum value are likely to occur from about the end of December through mid-February. The individual phase-coefficient values for each of the selected 78 stations are plotted on figure 8, indicating that the phase-coefficient data are adequately described by the constant of 2.81 radians.

Statewide Harmonic Equation

Long-term stream-temperature characteristics commonly are estimated for sites when stream-temperature data are not available or are not practical to obtain. The harmonic equation to estimate long-term natural stream-temperature characteristics in Georgia is derived by substituting equations (3) and (4) and the constant of 2.81 radians into equation (1). The resulting equation to estimate long-term natural stream-temperature characteristics is:

$$T = 42.68 - 0.833 * L + 0.743 * \log D - 0.00133 * E + (0.947 * \log D + 0.426 * L - 0.00075 * E - 7.40) * (\sin (2 * \pi * t/365 + 2.81)) \quad (5)$$

where

T is the estimated long-term mean-daily stream temperature in ° C for the selected day of the year;

- L is the station or stream location latitude, in decimal degrees—values ranging from about 30.5 degrees to 35 degrees;
- D is the station or stream location drainage area, in square miles—values ranging from about 40 to 14,000 mi²,
- E is the station or stream location altitude, in feet—values ranging from about 0 to 2,000 feet; and
- t is incremented day-by-day beginning with "1" for October 1 to "365" or "366" for September 30 of a given or leap year, respectively.

The insertion of latitude, drainage area, and altitude values into equation (5) while incrementing "t" day-by-day throughout a year generates a harmonic curve which tends to provide a good description of stream-temperature response to solar radiation, season by season, throughout the State.

The harmonic mean and amplitude coefficients that are generated by equation (5), hereinafter termed the "statewide harmonic equation," match the individual harmonic stream-temperature coefficients for the 78 natural-condition stations to within an average of about 0.4 ° C. When equation (5) is applied to the stream-temperature measurements of the 78 regression-analysis stations shown in table 3, the data mostly appear as normally distributed about each curve. The standard error or natural temperature scatter averages about 2.2 ° C (table 3) throughout the State. Likewise, the 95 percent probability averages about 1.2 ° C above or below the applied statewide harmonic curve. Because of the uniform scatter of data about the applied harmonic curve and the large number of data measurements used in the computation, upper and lower bounds in these ranges should give the data user an estimate of natural statistical temperature ranges.

The statewide harmonic equation was derived from 78 stations having drainage areas greater than about 40 mi², using temperature data collected from about 1955-84 (table 3). Derivations using other periods of analysis, subsequent data, or different stations could cause somewhat different results.

To evaluate the suitability of the statewide harmonic equation for drainage areas less than 40 mi², 13 stations having drainage areas ranging from 15 to 37 mi² and having mostly natural stream-temperature characteristics were selected from table 1. For the 13 selected stations, the statewide harmonic equation yielded average harmonic temperature coefficients

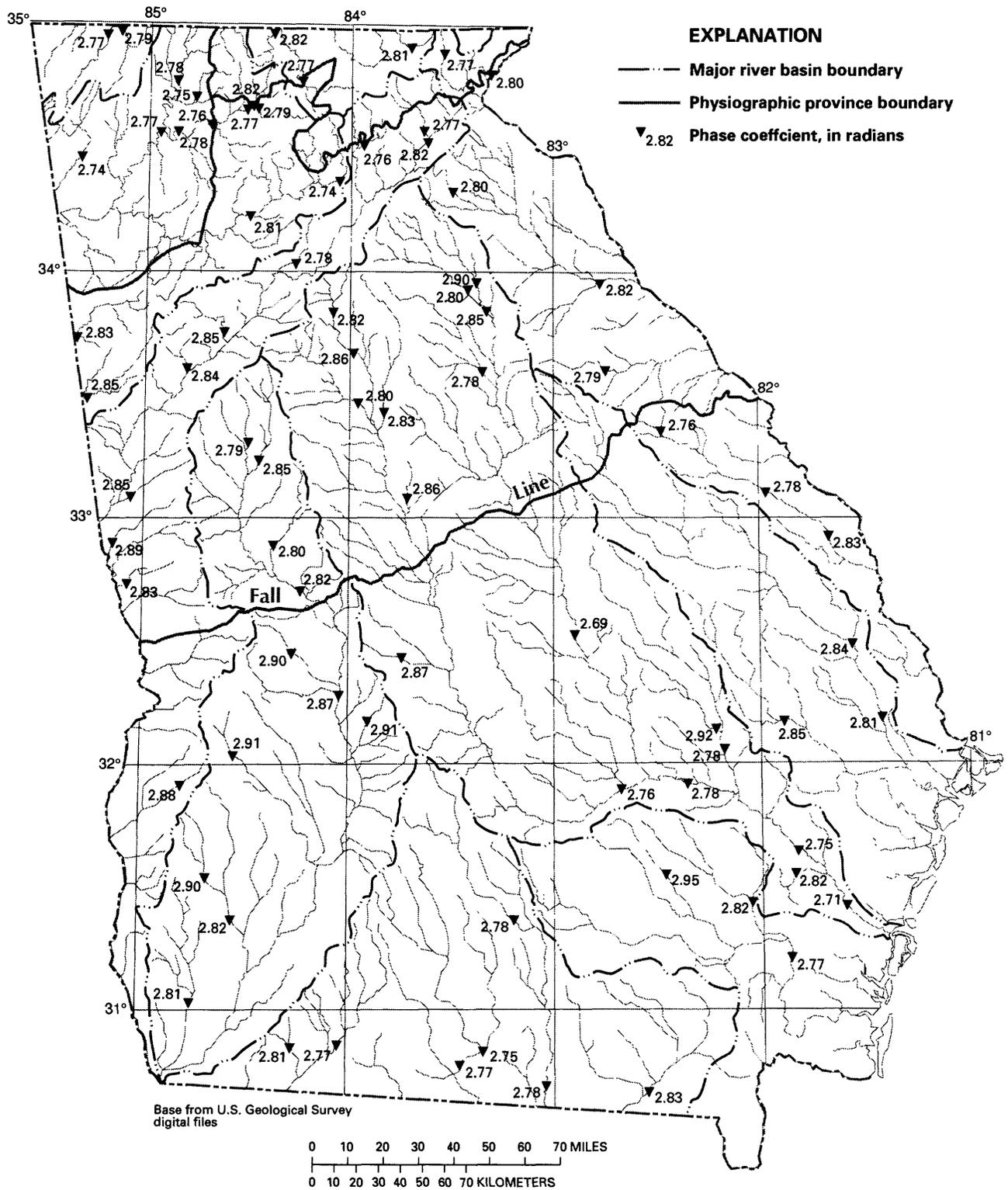


Figure 8. Phase coefficients for 78 natural-condition stations.

within about 0.7°C of the coefficients computed from observed data. This error of prediction for harmonic temperature coefficients is higher than the 0.4°C average error computed using the 78 larger drainage area stations from table 3. Though the statistical sample of 13 stations is small and confined to central and northern Georgia streams, the statewide harmonic equation is expected to generate progressively larger errors of prediction for drainage areas less than about 15 mi^2 . More discussion of applications and limitations of the statewide harmonic equation is presented in following sections of this report.

Harmonic statistics of the daily stream-temperature records (table 2) show that long-term harmonic curves of daily maximum and minimum stream temperatures, typically range from about 1.0 to 1.5°C above and below, respectively, the long-term harmonic mean curve for stations having drainage areas of about 100 mi^2 , and about 0.5°C above and below the long-term mean curve for stations having drainage areas of about $10,000\text{ mi}^2$. Addition (or subtraction) of these values to equation (5) and the analysis of maximum or minimum monthly observed values from nearby data can produce good estimates of expected maximum or minimum stream-temperature values for any month of the year.

There are some asymmetrical properties of annual stream-temperature characteristics which the sinusoidal fitting process tends to obscure, such as when minimum temperatures approach freezing. Stream temperatures that approach 0°C do not fit a sinusoidal distribution.

Perhaps a more important asymmetrical stream-temperature consideration at a station comes from heat flux proportional to streamflow. The annual heat-flux distribution is skewed because runoff typically increases, particularly in natural streams, during the colder December-April period. Examples of this phenomenon can be observed in stream reaches below some reservoirs. The reservoirs act as heat sinks that tend to moderate and lag downstream temperatures. When reservoir storage is large compared to average annual stream runoff, downstream stream-temperature characteristics may be markedly changed from natural temperature characteristics. For example, the annual mean harmonic-stream temperature downstream of Lake Sidney Lanier (Chattahoochee River near Buford, station 02334500) currently is about 9.2°C , which is about 6°C below the natural annual harmonic-mean temperature—calculated from equation (5) for the station—of about 15.3°C . Because near-bottom water is released from Lake Sidney Lanier, the Chattahoochee River downstream from the lake has temperature characteristics of the cool season throughout the year.

Examples of Estimating Natural Stream-Temperature Characteristics

Four examples illustrating uses of stream-temperature data and regression equations presented in this report are described below. The stations selected for discussion range widely in size and geographic location and include (1) Panther Creek, a small stream in the upper reaches of the Savannah River basin in the Blue Ridge Province; (2) West Armuchee Creek in the Coosa River basin in the Valley and Ridge Province; (3) Alcovy River in the Altamaha River basin in the Piedmont Province; and (4) Altamaha River about 60 miles upstream from its mouth and in the Coastal Plain Province. Each example depicts how a user might choose to analyze and estimate natural stream-temperature characteristics at the site of interest. Although each example of estimating natural long-term stream-temperature characteristics described below was selected for a stream having available stream-temperature data, similar procedures could be used to estimate temperature characteristics at un-gaged sites. Also, it is important to note that each example relies on historical data through no later than 1984 that may or may not accurately reflect current or future stream-temperature conditions.

Panther Creek

The first example illustrates how a user can compare station data with the statewide harmonic equation. Panther Creek near Toccoa (station 02182000) has 75 temperature measurements made between 1959-74 (table 1). Harmonic coefficients and curves computed from station data and from equations (3), (4), and (5) appear in figure 9. The drainage area of this station is 33 mi^2 , somewhat less than the 40 mi^2 regression equation criteria. Nonetheless, coefficients derived from observed data are very similar to coefficients computed from the statewide harmonic equation (fig. 9). The two curves in figure 9 show that natural temperatures for 1959-74 averaged about 1 to 2°C lower than temperatures computed by the statewide harmonic equation.

West Armuchee Creek

This example illustrates the use of nearby data to improve temperature-characteristic estimates. West Armuchee Creek near Subigna (station 02388000) appears in table 1 with harmonic coefficients and a drainage area of about 36 mi^2 . The comparison of the harmonic coefficients from actual data and the statewide harmonic equation is shown in figure 10. The harmonic stream-temperature characteristics curves are about the same, except for the period October through March

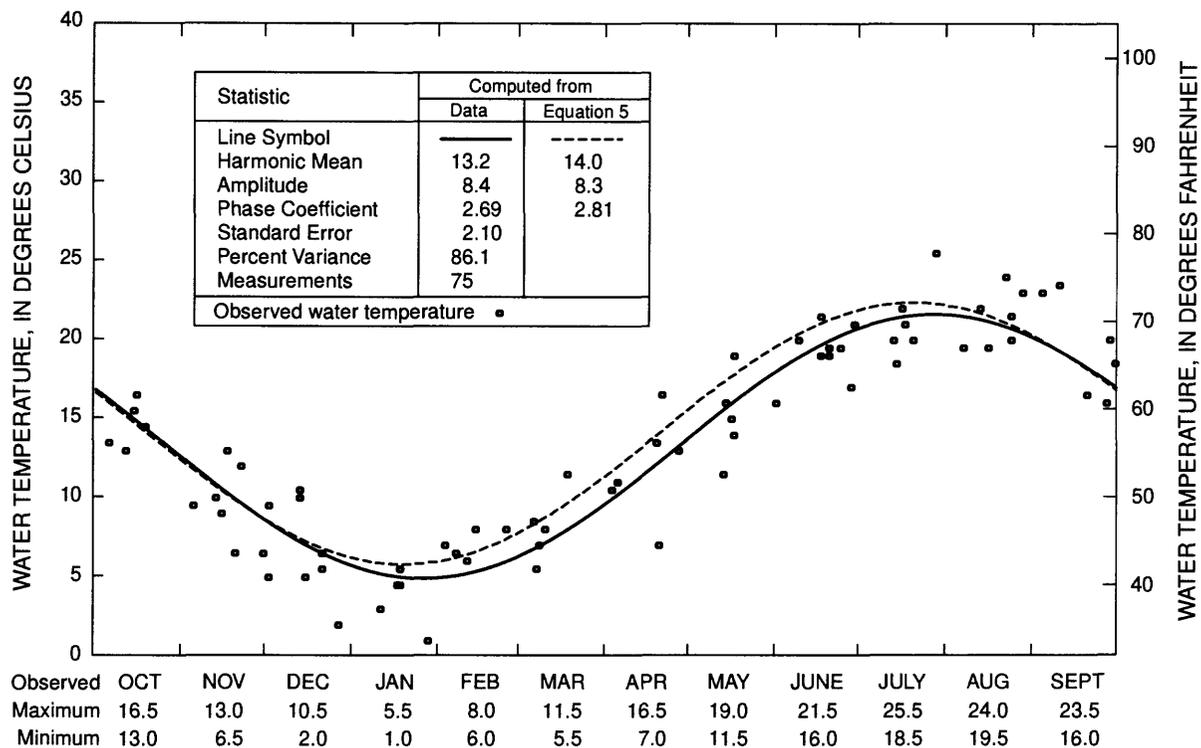


Figure 9. Harmonic stream-temperature curves of observed data and statewide harmonic equation for Panther Creek near Toccoa, Georgia (station 02182000), September 1959 to June 1974.

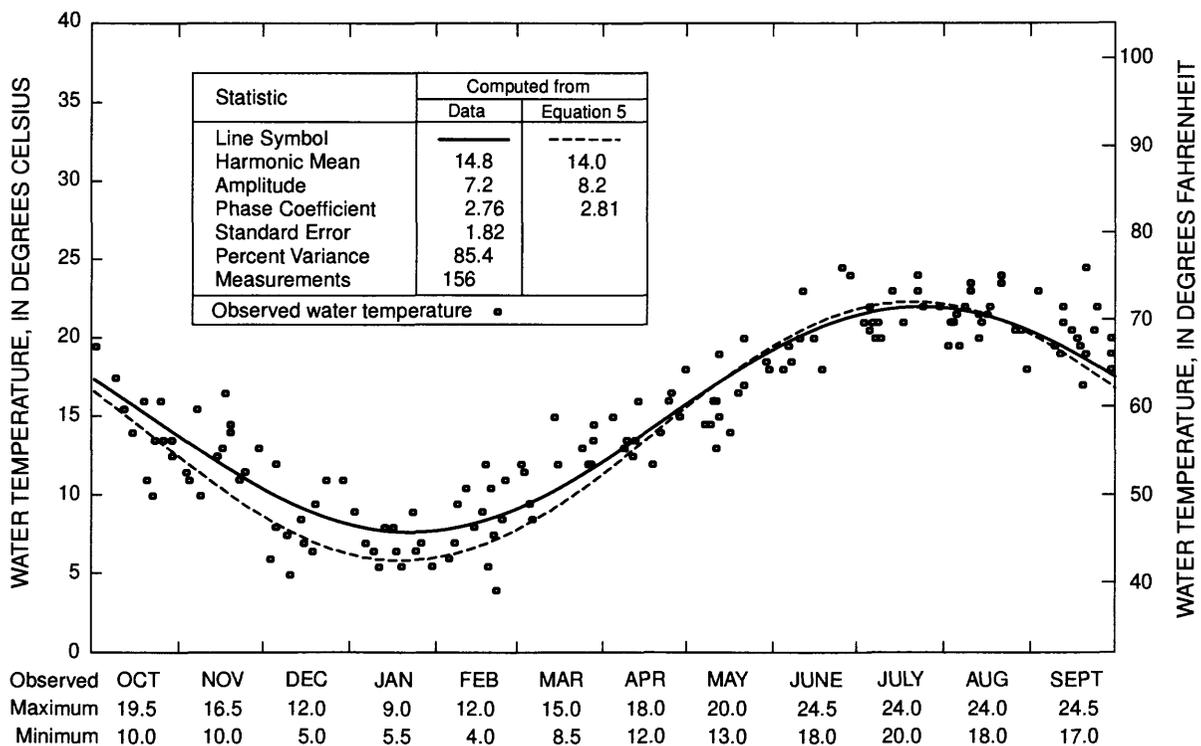


Figure 10. Harmonic stream-temperature curves of observed data and statewide harmonic equation for West Armuchee Creek near Subigna, Georgia (station 02388000), May 1960 to April 1982.

when the statewide harmonic equation yields about 1 to 2 ° C lower values. Because of differences of several degrees in the two characteristic curves during the cold weather months, it is helpful to examine temperature characteristics at other nearby stations. Stations 02397500, 02398000, 03566800, and 03567340 are nearby stations within the same Valley and Ridge Province (figs. 197, 199, 210, and 211), and all show a similar deviation from the statewide harmonic equation during the cooler months. Therefore, the data user may consider this characteristic to be a local anomaly for stations in nearby streams in the Valley and Ridge Province. Better estimation of stream-temperature characteristics may require adjusting the coefficients from the statewide harmonic equation to more closely reflect local conditions.

In general, when using data from nearby stations to improve estimates of natural stream-temperature characteristics, streams having similar flow characteristics should be selected. For example, within the Coosa River basin, stations from the Valley and Ridge Province in the western part of the basin show differing low-flow characteristics than stations typically representative of the Piedmont Province to the east. Therefore, some local variations in long-term stream-temperature characteristics within the Coosa River basin can be expected.

Alcovy River

This example determines the long-term natural stream-temperature characteristics for a site in the Piedmont Province—Alcovy River above Covington (station 02208450). A search of the USGS database yielded 27 stream-temperature measurements for Alcovy River above Covington from 1972-75. However, because of the short period of record, harmonic computations are not shown in table 1. (A daily record station was maintained here for about 7 years; the information is summarized in table 2.) For this station, the input variables for the statewide harmonic equation are as follows—latitude of about 33.64 degrees (decimal notation); drainage area of about 185 mi²; and altitude of about 650 ft. Figure 11 shows the 27 temperature measurements observed from 1972-75, plotted on the annual cycle with the statewide harmonic equation superimposed. The data fit the equation well; and therefore, the data user may be reasonably confident that the data from the short period of record—about four years—is indicative of long-term natural stream-temperature characteristics at the station.

Altamaha River

The Altamaha River near Gardi (station 02226010) in the Coastal Plain Province also was selected as an example to estimate long-term natural stream-temperature characteristics. Following the procedures outlined above, the data user will recognize that the site has 113 recorded temperature measurements (table 1). To independently estimate the long-term natural stream-temperature characteristics at this station, an interpolation of harmonic characteristics from a nearby upstream station, Altamaha River at Doctortown (station 02226000) and a nearby downstream station, Altamaha River at Everett City (station 02226160) is performed and shown in table 4.

The reach of the Altamaha River from Doctortown to Everett City does not have substantial tributary inflow or modifications that would significantly alter long-term thermal characteristics during the period selected for analysis. Interpolated and observed values compare well with the harmonic mean coefficient, showing the largest difference of 0.3 ° C between interpolated data (19.6 ° C) and computed from observed data (19.9 ° C) (table 4). The 1970-84 temperature data at the downstream station, Altamaha River at Everett City (station 02226160), generates a slightly higher harmonic mean temperature than either the statewide harmonic equation for the Gardi station or the observed record at Doctortown. The interpolated harmonic mean coefficients (table 4) were averaged from the upstream and downstream stations, rather than to more heavily weight the coefficients from the closer upstream station.

Using the coefficients computed from observed data as a basis, it appears that the interpolated example furnishes better estimates than those obtained from the statewide harmonic equation. Comments concerning tributary inflow, analysis of the stream reach, and weighing effects of modification were included in the example because each can be important to stream-temperature estimation within a stream reach.

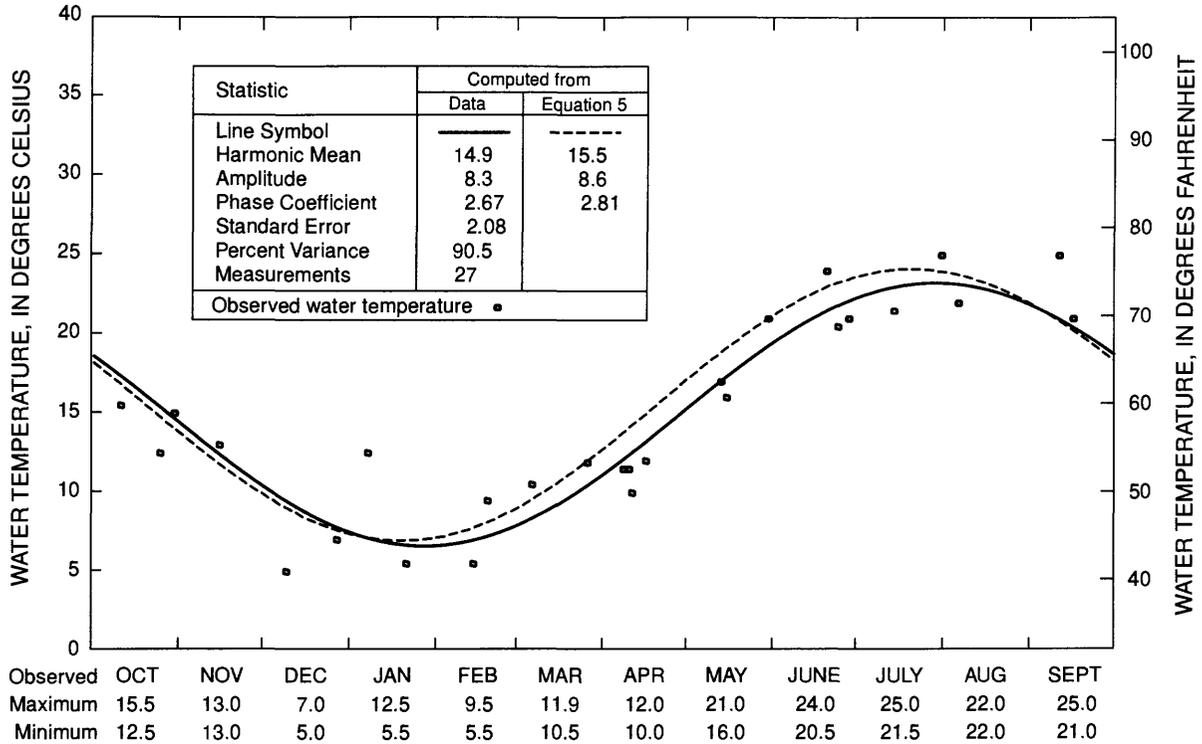


Figure 11. Harmonic stream-temperature curves of observed data and statewide harmonic equation for Alcovy River above Covington, Georgia (station 02208450), October 1972 to July 1975.

Table 4. Estimates of harmonic coefficients for Altamaha River near Gardi using interpolation and observed data compared with estimates from the statewide harmonic equation

[mi², square miles; ° C, degrees Celsius]

| Station number | Station name | Period of record | Drainage area (mi ²) | Type of data analysis | Harmonic mean (° C) | Amplitude (° C) | Phase coefficient (radians) |
|----------------|--------------------------------|------------------|----------------------------------|-----------------------------|---------------------|-----------------|-----------------------------|
| 02226000 | Altamaha River at Doctortown | 1937-79 | 13,600 | observed | 19.4 | 10.0 | 2.75 |
| 02226010 | Altamaha River near Gardi | 1974-84 | 13,600 | observed | 19.9 | 9.6 | 2.74 |
| | | | | interpolated | 19.6 | 9.6 | 2.73 |
| | | | | statewide harmonic equation | 19.4 | 10.0 | 2.81 |
| 02226160 | Altamaha River at Everett City | 1970-84 | 14,000 | observed | 19.7 | 9.3 | 2.71 |

SUMMARY OF STREAM-TEMPERATURE CHARACTERISTICS BY RIVER BASIN

Many Georgia streams have reaches where stream-temperature characteristics are modified by human activities. For example, streams immediately downstream from reservoirs or outflows from power-generating facilities typically exhibit modified stream-temperature characteristics. Principal hydro-power and thermoelectric-generating facilities in Georgia are shown in figure 12 and listed in table 5. Similarly, stream reaches often are affected by urban runoff, waste water, and other discharges from large municipalities and industries. Cities and towns having populations greater than 10,000 population according to the 1980 census (U.S. Department of Commerce, Bureau of Census, 1982) are shown in figure 13. Stream reaches receiving such discharges or runoff will exhibit modified stream-temperature characteristics, depending upon the distance downstream and relative amount of discharge to the flow of the receiving stream.

Selected stations in Georgia having natural and modified stream-temperature characteristics are summarized by river basin and discussed in the following sections. Graphical illustrations of harmonic-temperature characteristics computed from the statewide harmonic equation for stations listed in table 1 are shown in figures 14 through 211. Stream-temperature characteristics in modified streams are more difficult to estimate than natural streams because streamflow, chemical, and thermal characteristics are undergoing changes from human-induced activities. The following sections describing streams by river basin are intended as an aid in estimating stream-temperature characteristics in natural and modified reaches, emphasizing modified larger stream reaches.

Savannah River Basin

The Savannah River and its tributaries, the Tugaloo and Chattooga Rivers, form the northeastern boundaries of the State of Georgia (fig. 1). The basin drains about 10,580 mi² of Georgia, South Carolina, and North Carolina. Headwaters are in the mountainous Blue Ridge Province and the principal flow is southeastward through the Piedmont and Coastal Plain Provinces.

Stream-temperature characteristics computed from observed data and from the statewide harmonic equation for estimating natural characteristics for 26 stream-temperature stations within the basin are shown in figures 14-39. Stream-temperature characteristics for five mainstem Savannah River stations are listed in table 2 and individual annual harmonic graphs are included in figures 17, 19, 33, 34, and 39.

Hartwell Lake accounts for most of the modified stream-temperature characteristics observed at Savannah River near Iva, S.C. (station 02187500) (fig. 17). Compared to natural stream-temperature characteristics computed from the statewide harmonic equation, the harmonic mean temperature is lowered by about 2.8 °C, the amplitude by about 4.9 °C, the harmonic maximum temperature by about 7.7 °C, the phase coefficient by about 0.64 radians (resulting in a stream-temperature season lag of about one month), and the harmonic minimum temperature raised by about 2.1 °C. The downstream Savannah River station near Calhoun Falls, S.C. (station 02189000) (fig. 19), shows some recovery toward natural characteristics. Stream-temperature records of both mainstem stations—Savannah River at Iva, S.C. (station 02187500) and Savannah River near Calhoun Falls, S.C. (station 02189000)—have historic value since both now are inundated by Lake Richard B. Russell Reservoir.

The next mainstem station downstream from Calhoun Falls is Savannah River at Augusta (station 02197000). The Savannah River at Augusta station is about 50.3 river miles downstream of Thurmond Lake and its record (1958-73) is indicative of the pre-Richard B. Russell Reservoir period through 1984. After completion of Richard B. Russell Reservoir in 1983, some changes in downstream temperature characteristics are expected.

Several other stations in the Savannah River basin show modified long-term stream-temperature characteristics. Six upper Broad River tributary stations and three mainstream Broad River stations—North Fork Broad River above Toccoa (station 02189050); Denmans Creek near Toccoa (station 02189100); North Fork Broad River near Toccoa (station 02189500); Bear Creek near Mize (station 02189600); North Fork Broad River near Lavonia (station 02190000) Toms Creek near Eastonollee (station 02190100); Toms Creek near Avalon (station 02190200); Toms Creek near Martin (station 02190500); and North Fork Broad River near Carnesville (station 02191000) show characteristics

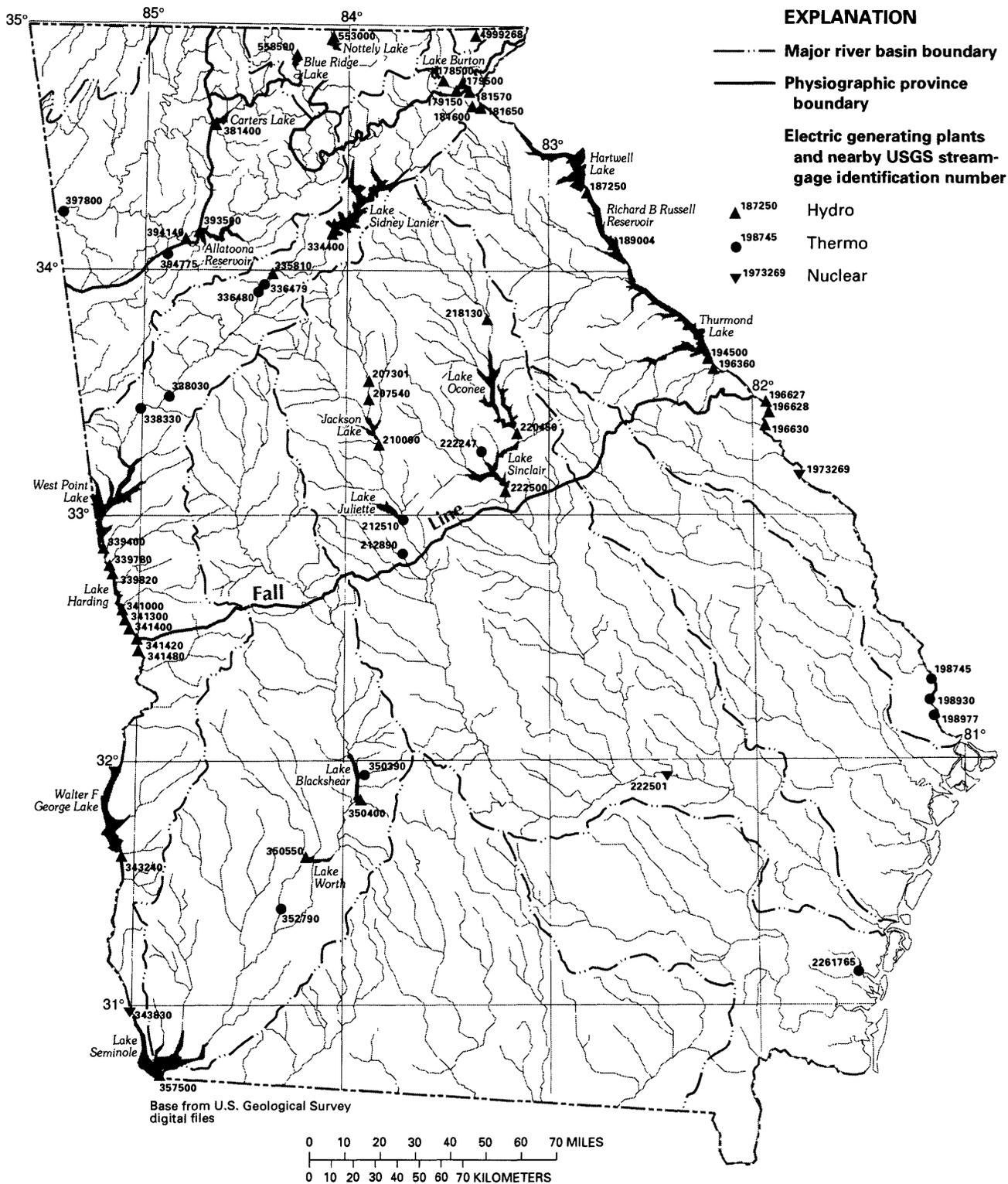


Figure 12. Locations of principal power-generating facilities and major reservoirs in Georgia.

Table 5. Power-generating plants in Georgia
 [Modified from Fanning and others, 1991]

| Station number | Plant name Owner | Type/ Fuel source | Water source/ Reservoir | Year in service | Capacity (kilowatts) |
|-----------------------------|--|--------------------------------|---|--------------------|-------------------------|
| SAVANNAH RIVER BASIN | | | | | |
| 02178500 | Burton Georgia Power Company | Hydroelectric/ storage | Tallulah River/ Lake Burton | 1927 | 6,120 |
| 02179150 | Nacoochee Georgia Power Company | Hydroelectric/ storage | Tallulah River/ Lake Seed | 1926 | 4,800 |
| 02179500 | Terrora Georgia Power Company | Hydroelectric/ storage | Tallulah River/ Mathis Reservoir | 1925 | 16,000 |
| 02181570 | Tallulah Georgia Power Company | Hydroelectric/ storage | Tallulah River/ Tallulah Falls Lake | 1913 | 72,000 |
| 02181600 | Tugalo Georgia Power Company | Hydroelectric/ storage | Tugalo River/ Tugalo Lake | 1923 | 45,000 |
| 02181650 | Yonah Georgia Power Company | Hydroelectric/ storage | Tugalo River/ Lake Yonah | 1925 | 22,500 |
| 02187250 | Hartwell U.S. Army Corps of Engineers | Hydroelectric/ storage | Savannah River/ Hartwell Lake | 1962 | 344,000 |
| 02189004 | Russell U.S. Army Corps of Engineers | Hydroelectric/ storage | Savannah River/ Richard B. Russell Reservoir | 1984 | 300,000 |
| 02194500 | Thurmond U.S. Army Corps of Engineers | Hydroelectric/ storage | Savannah River/ Thurmond Lake (formerly Clarks Hill Lake) | 1953 | 280,000 |
| 02196360 | Stevens Creek South Carolina Electric and Gas Company | Hydroelectric/ run-of-river | Savannah River/ power pool | 1914 | 18,900 |
| 02196627 | Sibley Graniteville Company | Hydroelectric/ run-of-river | Savannah River by Augusta Canal/none | 1920 | 2,100 |
| 02196628 | King Mills Division of Spartan Mills | Hydroelectric/ run-of-river | Savannah River by Augusta Canal/none | 1943 | 2,250 |
| 02196630 | Enterprise Graniteville Company | Hydroelectric/ run-of-river | Savannah River by Augusta Canal/none | 1920 | 1,200 |
| 021973269 | Vogtle Georgia Power Company | Thermoelectric/ nuclear | Savannah River/ none | 1987 | 2,320,000 |
| 02198745 | McIntosh Savannah Electric and Power Company | Thermoelectric/ fossil fuel | Savannah River/ none | 1979 | 178,000 |
| 02198930 | Port Wentworth Savannah Electric and Power Company | Thermoelectric/ fossil fuel | Savannah River/ none | 1958 | 334,000 |
| 02198977 | Riverside Savannah Electric and Power Company | Thermoelectric/ fossil fuel | Savannah River/ none | 1949 | 80,000 |
| ALTAMAHA RIVER BASIN | | | | | |
| 02207301 | Milstead McRay Energy Inc. | Hydroelectric/ run-of-river | Yellow River/ power pool | 1924 | 800 |
| 02207540 | Porterdale Porterdale Associates | Hydroelectric/ run-of-river | Yellow River/ power pool | 1927 | 1,600 |
| 02210000 | Lloyd Shoals Georgia Power Company | Hydroelectric/ storage | Ocmulgee River/ Lloyd Shoals Reservoir | 1911 | 14,400 |

Table 5. Power-generating plants in Georgia—Continued
 [Modified from Fanning and others, 1991]

| Station number | Plant name Owner | Type/ Fuel source | Water source/ Reservoir | Year in service | Capacity (kilowatts) |
|---------------------------------------|--|--------------------------------|---|--------------------|-------------------------|
| ALTAMAHA RIVER BASIN—Continued | | | | | |
| 02212510 | Scherer Georgia Power Company | Thermoelectric/ fossil fuel | Ocmulgee River and Rum Creek Lake Juliette | 1982 | 3,270,000 |
| 02212890 | Arkwright Georgia Power Company | Thermoelectric/ fossil fuel | Ocmulgee River/ none | 1941 | 160,000 |
| 02218130 | Barnett Shoals Georgia Power Company | Hydroelectric/ run-of-river | Oconee River/ power pool | 1910 | 2,800 |
| 02220450 | Wallace Georgia Power Company | Hydroelectric/ storage | Oconee River/ Lake Oconee | 1980 | 321,000 |
| 02222247 | Harlee Branch Georgia Power Company | Thermoelectric/ fossil fuel | Oconee River/ Sinclair Reservoir | 1965 | 1,540,000 |
| 02222500 | Sinclair Georgia Power Company | Hydroelectric/ storage | Oconee River/ Sinclair Reservoir | 1953 | 45,000 |
| 02225001 | Edwin I. Hatch Georgia Power Company | Thermoelectric/ nuclear | Altamaha River/ none | 1975 | 1,163,000 |
| SATILLA-ST MARYS RIVER BASINS | | | | | |
| 022261765 | McManus Georgia Power Company | Thermoelectric/ fossil fuel | Turtle Creek/ none | 1952 | 115,000 |
| CHATTAHOCHEE RIVER BASIN | | | | | |
| 02334400 | Buford U.S. Army Corps of Engineers | Hydroelectric/ storage | Chattahoochee River/ Lake Sidney Lanier | 1957 | 86,000 |
| 02335810 | Morgan Falls Georgia Power Company | Hydroelectric/ storage | Chattahoochee River/ Blue Sluice Lake | 1904 | 16,800 |
| 02336479 | Atkinson Georgia Power Company | Thermoelectric/ fossil fuel | Chattahoochee River/ none | 1930 | 240,000 |
| 02336480 | McDonough Georgia Power Company | Thermoelectric/ fossil fuel | Chattahoochee River/ none | 1963 | 490,000 |
| 02338030 | Yates Georgia Power Company | Thermoelectric/ fossil fuel | Chattahoochee River/ none | 1950 | 1,250,000 |
| 02338330 | Wansley Georgia Power Company | Thermoelectric/ fossil fuel | Chattahoochee River and Yellow Dirt Creek/none | 1976 | 1,730,000 |
| 02339400 | West Point U.S. Army Corps of Engineers | Hydroelectric/ storage | Chattahoochee River/ West Point Lake | 1975 | 73,400 |
| 02339780 | Langdale Georgia Power Company | Hydroelectric/ run-of-river | Chattahoochee River/ power pool | 1924 | 1,040 |
| 02339820 | Riverview Georgia Power Company | Hydroelectric/ run-of-river | Chattahoochee River/ power pool | 1918 | 480 |
| 02341000 | Bartletts Ferry Georgia Power Company | Hydroelectric/ storage | Chattahoochee River/ Lake Harding | 1926 | 173,000 |
| 02341300 | Goat Rock Georgia Power Company | Hydroelectric/ run-of-river | Chattahoochee River/ power pool | 1912 | 26,000 |
| 02341400 | Oliver Georgia Power Company | Hydroelectric/ storage | Chattahoochee River/ Lake Oliver | 1959 | 60,000 |

Table 5. Power-generating plants in Georgia—Continued
 [Modified from Fanning and others, 1991]

| Station number | Plant name Owner | Type/ Fuel source | Water source/ Reservoir | Year in service | Capacity (kilowatts) |
|--|--|--------------------------------|---|--------------------|-------------------------|
| CHATTAHOOCHEE RIVER BASIN—Continued | | | | | |
| 02341420 | North Highlands Georgia Power Company | Hydroelectric/ run-of-river | Chattahoochee River/ power pool | 1963 | 29,600 |
| 02341480 | Eagle and Phenix #1 and #2 Cannon Inc. | Hydroelectric/ run-of-river | Chattahoochee River/ power pool | 1915 | 31,800 |
| 02343240 | Walter F. George U.S. Army Corps of Engineers | Hydroelectric/ storage | Chattahoochee River/ Walter F. George Lake | 1963 | 130,000 |
| 02343830 | Joseph M. Farley Alabama Power Company | Thermoelectric/ nuclear | Chattahoochee River/ none | 1977 | 1,720,000 |
| FLINT RIVER BASIN | | | | | |
| 02350390 | Crisp Crisp County Power Commission | Thermoelectric/ fossil fuel | Flint River/ Lake Blackshear | 1958 | 12,500 |
| 02350400 | Warwick Crisp County Power Commission | Hydroelectric/ storage | Flint River/ Lake Blackshear | 1930 | 16,400 |
| 02350550 | Flint River Georgia Power Company | Hydroelectric/ storage | Flint River/ Lake Worth | 1921 | 5,400 |
| 02352790 | Mitchell Georgia Power Company | Thermoelectric/ fossil fuel | Flint River/ none | 1948 | 170,000 |
| 02357500 | Jim Woodruff U.S. Army Corps of Engineers | Hydroelectric/ storage | Apalachicola River/ Lake Seminole | 1957 | 49,800 |
| COOSA RIVER BASIN | | | | | |
| 02381400 | Carters U.S. Army Corps of Engineers | Hydroelectric/ storage | Coosawattee River/ Carters Lake | 1976 | 500,000 |
| 02393500 | Allatoona U.S. Army Corps of Engineers | Hydroelectric/ storage | Etowah River/ Allatoona Reservoir | 1950 | 74,000 |
| 02394140 | Cartersville ECC American International | Hydroelectric/ run-of-river | Etowah River/ power pool | 1927 | 625 |
| 02394775 | Bowen Georgia Power Company | Thermoelectric/ fossil fuel | Etowah River/ none | 1971 | 3,160,000 |
| 02397800 | Hammond Georgia Power Company | Thermoelectric/ fossil fuel | Coosa River/ none | 1954 | 800,000 |
| TENNESSEE RIVER BASIN | | | | | |
| 034999268 | Estatoah Georgia Power Company | Hydroelectric/ run-of-river | Mud Creek/ power pool | 1928 | 240 |
| 03553000 | Nottely Tennessee Valley Authority | Hydroelectric/ storage | Nottely River/ Nottely Lake | 1956 | 15,000 |
| 03558500 | Blue Ridge Tennessee Valley Authority | Hydroelectric/ storage | Toccoa River/ Blue Ridge Lake | 1931 | 20,000 |

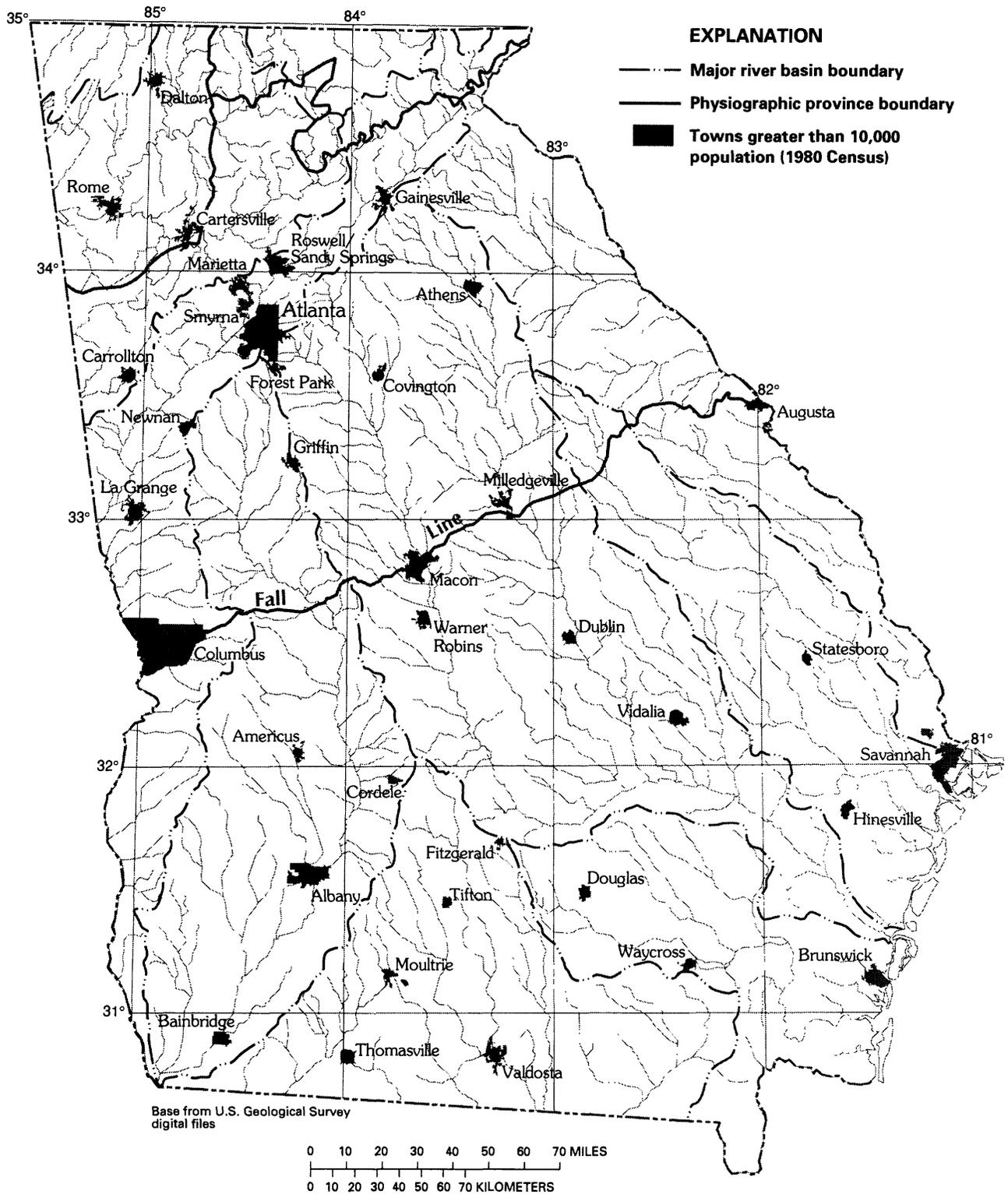


Figure 13. Locations of cities in Georgia having populations greater than 10,000 (data from U.S. Department of Commerce, U.S. Bureau of Census, 1982).

typical of stations below small dams or systems of small dams. For each station, the data tend to show higher stream temperatures, particularly in the warmer months, than would be expected from the statewide harmonic equation (figs. 20-28). This primarily is caused by the discharge of warm water from the surface of small impoundments. Similar effects on long-term stream-temperature characteristics may result from farm ponds or small recreational lakes. The magnitude of the effects will depend primarily on storage, stream discharge, nature of the system of impoundments, thermal stratification, location of impoundment discharge, and the distance of the site below the dam or dams.

Ogeechee River Basin

The Ogeechee River basin has a drainage area of about 4,690 mi² and lies mostly within the Coastal Plain Province, with relatively small headwaters in the Piedmont Province (fig. 1). The Ogeechee River basin lies south of the Savannah River basin and does not contain either large reservoirs or urban areas.

The first station for which stream-temperature characteristics are illustrated is the Ogeechee River at Scarboro (station 02202000). This station is about mid-basin without nearby stations to compare observed stream-temperature data. Figure 40 shows that observed stream temperatures of Ogeechee River at Scarboro plot about 1 to 2 ° C lower than those estimated by the statewide harmonic equation.

Annual long-term stream-temperature characteristics for Ogeechee River at Oliver (station 02202190) are shown in figure 41. Harmonic stream-temperature characteristics generated from observed data agree with values from the statewide harmonic equation, except for the period October through March, where values are about 0.5 to 1.0 ° C lower.

Stream-temperature characteristics for the next downstream mainstem station, Ogeechee River near Eden (station 02202500), are shown in figure 42. Stream-temperature characteristics generated by the observed data agree with values from the statewide harmonic equation.

The Canoochee River is a major tributary to the Ogeechee River and drains about 1,400 mi². Natural stream-temperature characteristics computed from the statewide harmonic equation and characteristics computed from observed data for Canoochee River near Claxton (station 02203000) and Canoochee River at Fort Stewart (station 02203519) are shown in figures 43 and 44).

South of the Ogeechee River basin, near the Georgia coast and downstream of several small inland streams, lies the Newport River tidal estuaries. Long-term observed stream-temperature characteristics for Peacock Creek at McIntosh (station 02203559) are shown in figure 45. This station and six other nearby tidal stations—(02203566, 02203570, 02203574, 02203578, 02203585, and 02203596), not shown in illustrations of this report—have substantially warmer stream temperatures year round than temperatures computed from the statewide harmonic equation. Observed harmonic-mean temperatures range from about 1.6 ° C warmer than computed data at Peacock Creek at McIntosh (station 02203559) to about 2.5 ° C warmer seaward at North Newport River at Halfmoon Landing (station 02203578). In the tidal reaches of nearby estuaries, stream-temperature characteristics, as depicted by the observed data, show an amplitude about 1.1 to 1.9 ° C higher than values generated by the statewide harmonic equation. The statewide harmonic equation was derived from inland stream-temperature data and should not be used to estimate temperature characteristics of tidal waters.

Altamaha River Basin

Rapidly developing basins, such as those around the Atlanta Metropolitan area, are likely to have long-term stream-temperature characteristics that vary from those estimated by the statewide harmonic equation. Within such a basin, the data user may need to consider effects of basin modifications to better estimate current, or future, stream-temperature characteristics.

The Altamaha River originates in the Piedmont Province of northern Georgia (fig. 1). The Oconee and Ocmulgee Rivers account for about 5,250 and 6,080 mi², respectively, of the Altamaha River's total 14,480 mi² drainage area. The Ocmulgee River headwaters include the Atlanta Metropolitan area and less densely populated areas to the east. Stream-temperature-characteristic curves for the upper Ocmulgee River basin, including the South River basin, are shown in figures 46 through 51. Stream temperatures of the upper reaches of the South River are higher than predicted by the statewide harmonic equation, probably because of discharge from nearby Atlanta and DeKalb County, Ga., waste-water treatment facilities and other municipal and industrial basin modifications that usually accompany development. The 1985 completion of the city of Atlanta's "Three Rivers Project" rerouted waste water from the Chattahoochee River basin away from the upper reaches of the South River, and back into the Chattahoochee River. Therefore, stream-temperature characteristics subsequent to 1985 likely will change.

The Yellow and Alcovy River basins, in the eastern part of the upper Ocmulgee River basin are experiencing more rapid development as the Atlanta Metropolitan area continues to grow. Pre-1985 annual observed temperatures match the statewide harmonic equation values well for the Yellow River near Snellville (station 02206500), Yellow River at Conyers (station 02207300), Yellow River near Covington (station 02207500), Yellow River at Porterdale (station 02207540), Yellow River near Stewart (station 02208005), and Alcovy River at Newton Factory Bridge Road near Stewart (station 02209260) (figs. 52-57) except during cooler months from about November through February, when plots show about 1° C lower temperatures.

The confluence of the South and Yellow Rivers form the Ocmulgee River that is joined by the Alcovy River in the upper part of Lloyd Shoals Reservoir (Jackson Lake). The stream-temperature characteristics of the Ocmulgee River near Jackson (station 02210500), about 1 mile downstream from Lake Jackson, are shown in figure 58. Annual harmonic characteristics are shown for the Towaliga River near Jackson (station 02211300) (fig. 59), where stream temperatures are about 3 ° C lower than estimates from the statewide harmonic equation throughout the winter months. Downstream, the Ocmulgee River in the vicinity of Macon (stations 02212950 and 02213000) (figs. 61 and 62) reflects the usual municipal and industrial modifications associated with a developed area. Upstream fossil-fuel plants likely also contribute to the modified temperature characteristics of these two Ocmulgee River stations. Observed data for the Ocmulgee River at Lumber City (02215500) (fig. 71) agrees with the estimated long-term natural stream-temperature characteristics derived by the statewide harmonic equation.

Stream-temperature characteristics for four stations in the upper Oconee River basin—Allen Creek at Talmo (station 02217000); Middle Oconee River near Athens (station 02217500); North Oconee River at Athens (station 02217740); and Oconee River at Barnett Shoals near Watkinsville (station 02218000)—are shown in figures 72, 73, 74, and 75, respectively. Observed data from all of these stations agree reasonably well with long-term natural stream-temperature characteristics estimated by the statewide harmonic equation.

Stream-temperature data shown for Oconee River near Greensboro (station 02218500) primarily have historic utility because the stream reach now lies within

Lake Oconee, where storage began in 1979 (fig. 76). Sinclair Reservoir is downstream from Lake Oconee. Oconee River at Milledgeville (station 02223000) (fig. 80) depicts annual temperature characteristics about 3.8 river miles downstream of Sinclair Dam. The effects of the newer Lake Oconee upon the stream-temperature characteristics of this station and the downstream stations, Oconee River near Hardwick (station 02223040) (fig. 81); Oconee River near Toombsboro (station 02223250) (fig. 82); Oconee River at Dublin (station 02223500) (fig. 84); and Oconee River near Dublin (station 02223600) (fig. 85) are unknown. However, the latter two stations in the vicinity of Dublin show little effect because of the distance downstream and the increased streamflow from the larger drainage area.

Stream-temperature characteristics of the mainstem Altamaha River are regarded mostly as natural. The records for the Altamaha River stations at Baxley (station 02225000) (fig. 87), Jesup (station 02225990) (fig. 90), Doctortown (station 02226000) (fig. 91), Gardi (station 02226010) (fig. 92), and Everett City (station 02226160) (fig. 94) show that temperatures for June through September have maximums in the 29 to 32 ° C range. Seasonal natural maximum temperatures in these temperature ranges are corroborated by the statewide harmonic equation.

Satilla River–St Marys River Basins

The Satilla and St Marys River basins (fig. 1) lie in the Coastal Plain Province and drain about 4,380 mi² in southern Georgia and about 1,150 mi² in northeastern Florida. The Satilla River basin covers most of the area, encompassing about 3,530 mi². Both basins have very low relief, with headwater altitudes for the Satilla River at about 350 feet and St Marys River at about 120 feet. The Satilla River basin, like the nearby Altamaha River basin, is characterized by high summer temperatures having observed maximum temperatures in the 29 ° to 34 ° C range.

Long-term stream-temperature characteristics of six stations in the Satilla River basin are shown in figures 95-100. Two of the six stations, Satilla River near Waycross (station 02226500) (fig. 96) and Satilla River at Atkinson (station 02228000) (fig. 100), show deviation of observed data from the statewide harmonic equation. The estimated natural harmonic-mean temperatures for both stations are about 0.9 ° C lower than the harmonic mean indicated by observed data.

Suwannee-Ochlockonee River Basins

Principal streams in the Suwannee River and Ochlockonee River basins in Georgia are the Withlacoochee, Alapaha, Suwanee and Ochlockonee Rivers (fig. 1). The Suwannee and Ochlockonee River basins cover south-central Georgia and north-central Florida and are about equally divided between the two States. The Okefenokee Swamp is in the headwaters of the Suwannee River and covers about 1,100 mi² of the eastern end of the basin at an altitude of about 120 feet. The Suwannee River flows southward and then westward into the Gulf of Mexico. The headwaters of both the Withlacoochee and Alapaha Rivers are in the northern end of the basin with altitudes at about 450 ft.

Long-term harmonic characteristics are shown for 12 stations in the Suwannee River basin (figs. 101-112). The harmonic-mean stream temperature computed from observed data for Suwannee River at Fargo (station 02314500) (fig. 101) is about 0.6 °C higher than the value computed from the statewide harmonic equation. This station includes the drainage of much of the Okefenokee Swamp which may account for the slightly higher stream-temperature characteristics. As in the adjacent Satilla River basin, summer temperatures are high, with observed temperatures as high as 31 °C, and winter temperatures vary widely from 4 to 21 °C.

Four Ochlockonee River basin stations—Ochlockonee River near Moultrie (station 02327205); Ochlockonee River near Thomasville (station 02327500); Tired Creek near Cairo (station 02328000); and Ochlockonee River near Calvary (station 02328200)—are shown in figures 113-116. The harmonic stream-temperature coefficients computed from observed data closely match those from the statewide harmonic equation except for Ochlockonee River near Calvary (station 02328200) (fig. 116), which plots about 1.4 °C lower than the curve formed by the statewide equation. However, the Ochlockonee River near Calvary station data spans only the 1974-84 period. Values computed from the statewide harmonic equation agree well with those values computed from observations for Ochlockonee River near Thomasville (station 02327500) (fig. 114) with data spanning the years 1954-84. A reexamination of harmonic coefficients for the Ochlockonee River near Thomasville station for the 1974-84 period (as was used for the Ochlockonee River near Calvary station) indicates that the harmonic mean for the Thomasville station also was about 0.9 °C below the values computed by the statewide harmonic equation. Therefore, observed temperature data for the 1974-84

period plotted below the statewide harmonic equation in both instances.

Chattahoochee River Basin

The Chattahoochee River basin extends from the Blue Ridge Province in northern Georgia to the southwestern tip of the State at the confluence with the Flint River (fig. 1). The basin drains about 8,770 mi², mostly in Georgia. The maximum width of the basin is about 55 miles.

The Chattahoochee River system is the principal water supply for about one half of Georgia's population (Marella and others, 1993). In addition, the river system serves industry; provides recreation and fishing; generates power; assimilates wastes; and in the southern reaches of the river, supports shipping. Population projections for the upper Chattahoochee River basin, within the Piedmont Province, predict continuing growth (Brown, 1981).

Long-term observed stream-temperature characteristics for stations within the Chattahoochee River basin are shown in figures 117-145. Figures 117 through 119 show temperature-characteristic curves for three stations—Chattahoochee River near Leaf (station 02331000); Chattahoochee River near Cornelia (station 02331600); and Chestatee River at State Highway 52 near Dahlonga (station 02333500)—in the upper part of the basin. Each of these three stations compare well with curves computed from the statewide harmonic equation and shows mostly natural stream-temperature characteristics.

Stream-temperature characteristics for Chattahoochee River near Buford (station 02334500), about 2.3 miles downstream from Lake Sidney Lanier are shown in figure 120. A harmonic-mean observed stream temperature of about 9.2 °C is 6.1 °C lower than the mean estimated by the statewide harmonic equation. In this reach of the Chattahoochee River, observed year-round temperatures are about the same as minimum winter temperatures estimated by the statewide harmonic equation. These lower temperatures occur because of the dominant impact of storage of large volumes of winter-season water in the large reservoir, Lake Sidney Lanier near Gainesville, Ga., formed by Buford Dam. Water from Lake Sidney Lanier is discharged from depth, unlike surface-outlet structures characteristic of smaller ponds mentioned earlier. A phase coefficient lag of 0.64 radians effectively shifts the stream-temperature season by about 37 days. Cooler than natural stream temperatures also were observed at Chattahoochee River near Norcross (station 02335000) (fig. 121), about 18 miles

downstream from Lake Sidney Lanier. Thirty-five stream-temperature measurements during May 1937 to December 1938 for the Chattahoochee River at Atlanta (station 02336000) prior to the construction of Lake Sidney Lanier are shown in figure 123. Long-term stream-temperature characteristic curves for Chattahoochee River at Atlanta (station 02336000) for the period after Lake Sidney Lanier (1957-79) are shown in figure 124. At Chattahoochee River at Atlanta, summer temperatures average about 6.0 °C lower than computed natural values. The station is located about 9.5 river miles downstream from Morgan Falls Dam, a small 16.8 kilowatt power-generation and river-regulation facility.

Harmonic stream-temperature characteristic curves for Peachtree Creek at Atlanta (station 02336300), are shown in figure 125. The Peachtree Creek basin is totally within the Atlanta Metropolitan area. Stream-temperature measurements at this station show summer maximum temperatures in the 28 to 31 °C range. The harmonic maximum for the observed temperature data is about 26 °C—about 3 °C higher than statewide harmonic equation values. Harmonic maximum stream temperatures of this magnitude would normally be expected to occur much farther south, indicating the effects of urban development.

Stream-temperature characteristics at Chattahoochee River at Interstate Highway 285 near Atlanta (station 02336502) are shown in figure 126. Temperatures show a marked increase over values from Chattahoochee River at Atlanta (station 02336000) which is about 5.3 river miles upstream. The harmonic-mean temperature increase of about 2.6 °C is caused, in part, by the return of cooling water from electric-generating plants and from wastewater returns. Summer temperatures show more variability than natural, with some measured values near 30.0 °C, which is more typical of a south Georgia stream. Also, as mentioned earlier, differing analysis periods (1957-79 for Chattahoochee River at Atlanta) also could account for some of the differences between the two stations.

Long-term stream temperatures for four tributary streams—Sweetwater Creek near Austell (station 02337000); North Fork Camp Creek at Atlanta (station 02337100); Dog River near Fairplay (station 02337438); and Snake Creek near Whitesburg (station 02337500)—are shown in figures 127, 128, 130, and 131. Amplitude coefficients determined by observed data for Sweetwater Creek near Austell (02337000) (fig. 127) and Dog River near Fairplay (02337438) (fig. 130)

are about 0.8 °C above values predicted by the statewide harmonic equation. Stream-temperature characteristics from observed data for North Fork Camp Creek at Atlanta (02337100) (fig. 128) show substantial departure from values calculated by the statewide harmonic equation. However, the drainage area of North Fork Camp Creek at Atlanta is only 5.3 mi²; well below the 20 mi² minimum drainage area recommended for use with the statewide harmonic equation.

Stream-temperature characteristics for Chattahoochee River mainstem stations, Chattahoochee River near Fairburn (station 02337170), Chattahoochee near Whitesburg (station 02338000), and Chattahoochee River at U.S. Highway 27 at Franklin (station 02338500) are shown in figures 129, 132, and 133, respectively. Stream-temperature characteristics for Chattahoochee River at West Point (station 02339500) are shown in figures 136 and 137. The station is about 3 miles downstream from West Point Lake. Figure 136 depicts pre-West Point Lake conditions and figure 137 represents post-West Point Lake conditions. Stream-temperature characteristics show only a slight damping of post-Lake harmonic natural amplitude from 9.2 to about 9.1 °C. The most apparent post-Lake difference is in the phase coefficient which changed from about 2.8 to about 2.6 radians or a seasonal lag of about 12 days.

Flint River Basin

The headwaters of the Flint River are located in the Piedmont Province of Georgia in the highly developed area south of Atlanta (fig. 1). The basin has a drainage area of about 8,460 mi² and an average width of about 40 miles.

Long-term annual harmonic stream-temperature characteristics for stations in the Flint River basin are shown in figures 146-167. Harmonic mean and amplitude coefficients from the upper reaches of the basin typically are about 1 to 2 °C above values computed from the statewide harmonic equation. This may be attributable to natural causes and effects of development near the stations. Long-term stream-temperature characteristics for Flint River near Culloden (station 02347500) are shown in figure 154. At this station, the computed harmonic mean coefficient is about 0.2 °C higher and the amplitude coefficient is about 0.8 °C higher than values computed from the statewide harmonic equation. Flint River near Culloden was among stations selected as mostly natural and it was used to compute the statewide harmonic equation.

Downstream, Whitewater Creek below Rambulette Creek near Butler (station 02349000) (fig. 155) was selected as a natural stream-temperature characteristics site. However, characteristics for this station generated by the statewide harmonic equation differ substantially from values shown by the more damped actual-data curve. This damping primarily is due to the large ground-water discharge to streams within the Whitewater Creek basin. For example, during extended low-flow periods, streamflows of Whitewater Creek below Rambulette Creek near Butler (drainage area of 94 mi²) approach streamflows of the much larger drainage area of the Flint River near Culloden (1,850 mi²). The data-derived harmonic-mean coefficient of 17.1 °C is greater than the regionally computed harmonic mean of 16.6 °C. A similar affect, but not as pronounced, of ground-water discharge to streams also is seen in figure 157 for Turkey Creek at Byromville (station 02349900).

Long-term annual harmonic stream-temperature characteristics for the lower Flint River basin tributary stations are shown in figures 159, 163, 164, and 167. Data-derived harmonic curves agree well with the statewide harmonic equation curves, except for Pachitla Creek near Edison (station 02353400) (fig. 163) and Ichawaynochaway Creek at Milford (station 02353500) (fig. 164), where amplitude coefficients are damped by about 0.9 °C, possibly because of ground-water inflow.

Figures 162, 165, and 166 show annual harmonic characteristics of three lower mainstem Flint River stations: Flint River at Newton (station 02353000), Flint River at Bainbridge (station 02356000), and Flint River below State Docks at Bainbridge (station 02336015). The temperature characteristics of the latter two of these stations may be somewhat affected by backwaters of Lake Seminole.

Coosa River Basin

The Coosa River basin covers about 4,360 mi² of Valley and Ridge, Blue Ridge, and Piedmont Provinces in northwest Georgia (including a small part of southern Tennessee) (fig. 1). The Coosa River is formed by the confluence of the Oostanaula and Etowah Rivers (fig. 2). Streams in this basin serve many small towns; several hydropower and steam-power facilities; large industrial centers, such as the carpet industry at Dalton; and several medium-size towns, such as Rome.

Long-term annual stream-temperature characteristics of headwater streams are shown in figures 168-170. For these stations, the statewide harmonic equation yields amplitudes from about 0.3 to 0.9 °C greater than those derived from data. Further downstream, the records for the period 1965-72 for

Coosawattee River at Carters (station 02382500) (fig. 172) and 1957-72 for Coosawattee River near Pine Chapel (station 02383500) (fig. 174) are prior to the impoundment of Carters Lake; and therefore, primarily have historic utility. Modified stream-temperature characteristics for Coosawattee River near Calhoun (station 02383540) for the post-Carters Lake period of 1974-84 are shown in figure 175. Carters Lake and its re-regulation dam cause a shift in the natural phase coefficient that amounts to a seasonal lag of about 15 days. Also, the observed-data amplitude value of 8.8 °C is lower than the estimated natural value of about 9.6 °C.

Stream-temperature characteristics for two small Coosa River basin tributary streams—Scarecorn Creek at Hinton (station 02382000) and Rock Creek near Fairmont (station 02383000)—are shown in figures 171 and 173, respectively. The harmonic-characteristic curves for both stations average 1.0 to 1.5 °C above the statewide harmonic equation.

Annual temperature-characteristic curves for Conasauga River near Dalton (station 02384748) and Holly Creek near Chatsworth (station 02385800) are shown in figures 176 and 177. Both stations are considered representative of mostly natural conditions and are included in the stations used for the statewide regression analyses (table 3). The harmonic mean and amplitude coefficients are about 0.5 °C higher than values computed from the statewide harmonic equation.

Annual stream-temperature characteristic curves for Conasauga River at Tilton (station 02387000) and Conasauga River near Resaca (station 02387050) are shown in figures 178 and 179. Temperatures recorded at the Tilton station likely are affected by industrial and land-use activities in the Dalton area. Natural temperatures for stations having similar basin characteristics as the Tilton station typically occur further south. Downstream, at Conasauga River near Resaca (station 02387050) (fig. 179), harmonic-mean and amplitude coefficients from observed data are about 0.6 and 0.8 °C higher than respective values generated by the statewide harmonic equation.

In the vicinity of Resaca, Ga., the Conasauga and Coosawattee Rivers combine to form the Oostanaula River. The first Oostanaula River temperature station downstream of this confluence is the Oostanaula River at Resaca (station 02387500). The data and characteristic curves for this station are shown in figure 180. The period of observed temperature data analysis (1957-72) preceded the construction of Carters Lake and was included as one of the 78 statewide harmonic analysis stations (table 3).

Harmonic curves for Oostanaula River at I-75 at Resaca (station 02387502) for the post-Carters Lake period of 1974-84 are shown in figure 181. This station is only a few miles downstream from the confluence of the Conasauga and Coosawattee Rivers. Stream temperatures at Oostanaula River at I-75 at Resaca more closely resemble the post-Carters Lake temperatures of the higher yielding Coosawattee River near Calhoun (fig. 175), with damped harmonic mean and amplitude, than those of the Conasauga River near Resaca (fig. 179).

Harmonic temperature curves computed from observed data and the statewide harmonic equation for West Armuchee Creek near Subligna (station 02388000) are shown in figure 182. West Armuchee Creek near Subligna has a small 36 mi² drainage area. During winter months, the observed-data curve is several degrees higher than the statewide harmonic equation curve. This difference likely is attributable to substantial ground-water discharge, characteristic of many small streams within the Valley and Ridge Province.

Figure 183 shows pre-Carters Lake data (1957-73) for Oostanaula River at Rome (station 02388500). Harmonic curves from the statewide harmonic equation and from the observed data are in close agreement with harmonic mean, amplitude, and phase coefficients, differing only by 0.3 ° C, 0.4 ° C, and 0.07 radians, respectively. The harmonic curve from the post-Carters Lake period is shown for Oostanaula River (Rome Intake) at Rome (station 02388520) in figure 184. The only harmonic coefficient that shows a noticeable difference from the statewide harmonic equation for the period 1974-84 is the phase coefficient, with a lag of about 0.13 radians or about eight days.

Annual harmonic stream-temperature characteristics for Etowah River near Dawsonville (station 02389000) are shown in figure 185. The harmonic curve from the statewide harmonic equation plots about 1 ° C above the curve derived from observed data for January through July. This is consistent with Etowah River near Canton (station 02392000) shown in figure 187. For the Canton station, the 1 ° C cooler temperature is evident year round. Both the Dawsonville and Canton stations are among those selected to compute the statewide harmonic equation. Figure 186 shows stream-temperature data and characteristics for Shoal Creek near Dawsonville (station 02389300). The observed data for the Shoal Creek station shows a harmonic amplitude coefficient about 0.8 ° C lower than the

amplitude from the statewide harmonic equation. Figures 188 and 189 show the temperature characteristics at Little River near Roswell (station 02392500) for periods 1959-64 and 1964-75, respectively. The harmonic mean and amplitude coefficients computed from the 1964-75 data are about 1.5 ° C above respective values from 1959-64 and from the statewide harmonic equation. These differences likely are due to urban development, stream channelization, and pond construction within the Little River basin.

Computed annual stream-temperature characteristics for Etowah River at Allatoona Dam above Cartersville (station 02394000) for a short pre-Allatoona Reservoir period are shown in figure 190. Allatoona Reservoir was completed in 1949 and is located about 0.8 miles upstream from station 02394000. Because the pre-Allatoona Reservoir record, shown in figure 190, continued only about one year (1938-39), no harmonic curve is shown for the data. Annual stream-temperature characteristics for the post-Allatoona Reservoir period (1958-84) are shown in figure 191. The more current record shows harmonic mean and amplitude coefficients both about 0.4 ° C lower and the phase coefficient about 0.42 radians lower than respective values of the statewide harmonic equation. The shift in phase coefficient amounts to a seasonal lag of about 24 days.

Harmonic characteristics for Etowah River above Kingston (station 02394980), Etowah River near Kingston (station 02395000), and Etowah River at Rome (station 02396000) are shown in figures 193, 194, and 195. Harmonic characteristics computed from measurements for these reaches of the Etowah River reflect the effects of reservoir, industrial, municipal, and fossil-fuel power-generation activities.

The Coosa River is formed by the confluence of the Oostanaula and Etowah Rivers in Rome, Ga. Figure 196 shows stream-temperature characteristics for Coosa River near Rome (station 02397000) for the period 1957-84. Harmonic coefficients computed from the periodic stream-temperature measurements show about a 0.6 ° C compression and a 0.16 radian (about 10 days) lag for the amplitude and phase coefficients, respectively, when compared with coefficients from the statewide harmonic equation. Allatoona Dam on the Etowah River may be the principal cause of most of these differences.

Harmonic coefficients for tributary Cedar Creek near Cedartown (station 02397500), Chattooga River at Summerville (station 02398000), and Chattooga River

at Chattoogaville (02398037) are shown in figures 197, 199, and 200, respectively. The Cedartown, Summerville, and Chattoogaville stations all show higher harmonic mean and lower amplitude coefficients than values estimated from the statewide harmonic equation. This may be caused by larger ground-water discharge to these streams.

Annual harmonic stream-temperature characteristics for Coosa River (at the Georgia–Alabama State line) near Coosa (station 02397530) for the period 1974–84 are shown in figure 198. The harmonic curve, generated by the measured data, plots about 2 to 3 °C higher than the curve derived from the statewide harmonic equation throughout most of the year. Observed summer stream-temperature maximum and average values (harmonic mean values) at Coosa River near Coosa are typical of streams much farther south. Elevated stream temperatures may be attributable to return flow from power generation at Plant Hammond and other industrial and municipal activities in the vicinity of Rome, Ga.

Tennessee River Basin

The Tennessee River basin (fig. 1) covers only a few square miles in northern Georgia. In general, the Tennessee River basin streams in Georgia flow northward to Tennessee; whereas, most other streams in the State flow southward. Harmonic coefficients computed from periodic stream-temperature measurements from the Tennessee River basin (fig. 1) are shown in figures 204–211. Tennessee River basin stations used to compute the statewide harmonic equation include Hiawassee River at Presley (station 03545000) (fig. 204); Toccoa River near Dial (station 03558000) (fig. 207); Fightingtown Creek at McCaysville (station 0356000) (fig. 209); South Chickamauga Creek at Graysville (station 03566800) (fig. 210); and West Chickamauga Creek near Lakeview (station 03567340) (fig. 211). Each of these curves except Toccoa River near Dial have harmonic mean temperatures about 0.1 to 1.0 °C higher and amplitudes about 0.1 to 1.1 °C lower than those computed by the statewide harmonic equation.

Nottely River at Nottely Dam near Ivylog (station 03553500) (fig. 206) and Toccoa River near Blue Ridge (03559000) (fig. 208) are immediately downstream from impoundments and stream-temperature data indicate modified characteristics. Both stations have annual harmonic mean and amplitude coefficients about 1 °C lower than values computed from the statewide harmonic equation. Phase coefficients for both stations are about 2.1 radians, lagging the natural season by about 41 days.

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TABULAR DATA

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | Harmonic properties computed from observed data | | | | |
|-----------------------------|--|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| SAVANNAH RIVER BASIN | | | | | | | | | | | | | | |
| 02177000 | Chattooga River near Clayton, Ga. | 34°48'50" | 83°18'22" | 207 | 1,166 | 09/57-12/84 | 260 | 1.0 | 29.0 | 13.6 | 9.2 | 2.80 | 2.22 | 88.1 |
| 02178400 | Tallah River near Clayton, Ga. | 34°53'25" | 83°31'50" | 57 | 1,869 | 07/64-08/84 | 174 | 2.0 | 24.0 | 12.0 | 7.2 | 2.77 | 2.00 | 84.5 |
| 02182000 | Panther Creek near Toccoa, Ga. | 34°40'40" | 83°20'43" | 33 | 674 | 09/59-06/74 | 75 | 1.0 | 25.5 | 13.2 | 8.4 | 2.69 | 2.10 | 86.1 |
| 02187500 | Savannah River near Iva, S.C. | 34°15'20" | 82°44'42" | 2,231 | 432 | 05/58-11/84 | 93 | 4.0 | 24.0 | 13.3 | 5.1 | 2.17 | 2.12 | 64.0 |
| 02188500 | Beaverdam Creek at Dewy Rose, Ga. | 34°10'52" | 82°56'38" | 38 | 581 | 02/58-07/75 | 101 | 3.0 | 27.0 | 15.5 | 8.9 | 2.82 | 2.26 | 89.1 |
| 02189000 | Savannah River near Calhoun Falls, S.C. | 34°04'15" | 82°38'30" | 2,876 | 364 | 09/57-07/74 | 34 | 6.0 | 25.0 | 16.6 | 6.7 | 2.56 | 2.20 | 75.3 |
| 02189050 | North Fork Broad River (SWS no. 1) above Toccoa, Ga. | 34°34'25" | 83°22'00" | 3.7 | 894 | 10/58-08/68 | 53 | 1.5 | 27.0 | 14.7 | 9.4 | 2.71 | 1.82 | 85.1 |
| 02189100 | Denmans Creek (SWS no. 2) near Toccoa, Ga. | 34°34'22" | 83°22'00" | 0.7 | 870 | 10/58-10/69 | 53 | 3.0 | 29.5 | 15.5 | 11.3 | 2.79 | 1.93 | 89.4 |
| 02189500 | North Fork Broad River near Toccoa, Ga. | 34°30'49" | 83°19'19" | 19 | 750 | 10/58-08/68 | 52 | 4.0 | 25.0 | 14.4 | 7.9 | 2.66 | 1.78 | 93.3 |
| 02189600 | Bear Creek (SWS no. 6) near Mize, Ga. | 34°29'07" | 83°18'38" | 4.0 | 743 | 10/58-07/68 | 50 | 4.5 | 31.5 | 17.0 | 11.6 | 2.82 | 2.04 | 90.3 |
| 02190000 | North Fork Broad River near Lavonia, Ga. | 34°27'10" | 83°14'23" | 42 | 680 | 07/58-08/68 | 60 | 1.5 | 26.0 | 15.0 | 9.2 | 2.68 | 1.97 | 93.3 |
| 02190100 | Toms Creek (SWS no. 11) near Eastanollee, Ga. | 34°29'01" | 83°14'02" | 3.8 | 731 | 07/62-08/68 | 46 | 4.5 | 29.0 | 16.5 | 10.9 | 2.79 | 1.99 | 89.4 |
| 02190200 | Toms Creek Tributary (SWS no. 14) near Avalon, Ga. | 34°29'35" | 83°13'23" | 1.2 | 735 | 07/62-08/68 | 51 | 4.0 | 29.0 | 16.0 | 10.5 | 2.87 | 1.87 | 84.9 |
| 02190500 | Toms Creek near Martin, Ga. | 34°27'47" | 83°13'19" | 10.3 | 682 | 10/62-09/68 | 61 | 4.0 | 25.5 | 15.7 | 9.0 | 2.85 | 1.88 | 99.9 |
| 02191000 | North Fork Broad River near Camesville, Ga. | 34°19'25" | 83°11'10" | 119 | 600 | 10/62-09/70 | 56 | 4.5 | 28.5 | 15.4 | 9.7 | 2.78 | 2.30 | 99.7 |
| 02191200 | Hudson River at Horner, Ga. | 34°20'15" | 83°29'17" | 61 | 695 | 08/62-07/75 | 100 | 2.0 | 25.0 | 14.3 | 8.2 | 2.80 | 2.00 | 85.9 |
| 02192000 | Broad River near Bell, Ga. | 33°58'27" | 82°46'12" | 1,430 | 357 | 10/56-10/79 | 147 | 1.5 | 27.0 | 16.4 | 9.6 | 2.82 | 2.43 | 90.2 |
| 02193500 | Little River near Washington, Ga./ | 33°36'46 | 82°44'33" | 291 | 354 | 10/54-06/74 | 83 | 1.0 | 26.5 | 15.3 | 9.5 | 2.79 | 2.43 | 82.2 |
| 02196820 | Butler Creek at Fort. Gordon, Ga. | 33°26'36 | 82°07'45" | 7.5 | 271 | 03/68-07/76 | 56 | 4.0 | 26.5 | 16.9 | 8.9 | 2.71 | 2.88 | 78.1 |
| 02197000 | Savannah River at Augusta, Ga. | 33°22'25 | 81°56'35" | 7,508 | 97 | 02/58-07/73 | 53 | 6.0 | 26.0 | 16.6 | 6.9 | 2.42 | 1.98 | 82.9 |
| 02197500 | Savannah River at Burton's Ferry near Millhaven, Ga. | 32°56'20" | 81°30'10" | 8,650 | 52 | 08/57-06/79 | 81 | 4.0 | 27.0 | 16.8 | 8.2 | 2.64 | 1.82 | 87.4 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|--|--|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| SAVANNAH RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02197520 | Brier Creek near Thomson, Ga. | 33°22'06" | 82°28'06" | 55 | 330 | 11/58-07/76 | 68 | 4.0 | 24.0 | 15.3 | 7.6 | 2.76 | 2.35 | 75.1 |
| 02197600 | Brushy Creek near Wrens, Ga. | 33°10'37" | 82°18'21" | 28 | 283 | 05/58-07/76 | 146 | 5.0 | 25.0 | 16.5 | 6.8 | 2.79 | 1.88 | 88.8 |
| 02197830 | Brier Creek near Waynesboro, Ga. | 33°07'05" | 81°57'50" | 473 | 174 | 10/54-09/83 | 80 | 2.0 | 28.5 | 17.0 | 8.2 | 2.78 | 2.54 | 81.2 |
| 02198000 | Brier Creek at Millhaven, Ga. | 32°56'00" | 81°39'05" | 646 | 96 | 07/54-06/79 | 155 | 0.0 | 28.5 | 16.4 | 8.9 | 2.83 | 2.62 | 84.1 |
| 02198500 | Savannah River near Clio, Ga. | 32°31'30" | 81°15'45" | 9,850 | 13 | 05/38-12/84 | 331 | 4.5 | 30.0 | 18.0 | 8.7 | 2.70 | 1.82 | 88.8 |
| OGEECHEE-NEWPORT RIVER BASINS | | | | | | | | | | | | | | |
| 02202000 | Ogeechee River at Scarborough, Ga. | 32°42'38" | 81°52'46" | 1,940 | 112 | 10/54-06/79 | 107 | 2.0 | 30.0 | 16.6 | 10.0 | 2.77 | 2.42 | 93.8 |
| 02202190 | Ogeechee River at Oliver, Ga. | 32°29'40" | 81°33'21" | 2,370 | 60 | 08/74-12/84 | 121 | 2.5 | 30.0 | 17.6 | 10.0 | 2.84 | 2.29 | 89.0 |
| 02202500 | Ogeechee River near Eden, Ga. | 32°11'29" | 81°24'58" | 2,650 | 20 | 05/37-10/84 | 293 | 3.0 | 31.5 | 18.3 | 9.3 | 2.81 | 2.23 | 86.0 |
| 02203000 | Canochee River near Claxton, Ga. | 32°11'05" | 81°53'20" | 555 | 80 | 09/54-12/84 | 255 | 3.0 | 30.0 | 17.7 | 8.9 | 2.85 | 2.23 | 86.7 |
| 02203519 | Canochee River at Fort Stewart, Ga. | 31°58'59" | 81°23'07" | 970 | 60 | 02/58-12/84 | 78 | 3.0 | 31.0 | 18.5 | 9.4 | 2.83 | 2.28 | 87.6 |
| 02203559 | Peacock Creek at McIntosh, Ga. | 31°48'49" | 81°31'13" | 33 | 0.4 | 09/66-11/77 | 101 | 5.5 | 31.0 | 18.9 | 7.7 | 2.85 | 2.39 | 82.1 |
| 02203566 | Riceboro Creek near Riceboro, Ga. | 31°45'16" | 81°27'38" | 29.2 | 0.1 | 09/66-11/77 | 93 | 5.0 | 29.0 | 18.9 | 8.2 | 2.86 | 2.51 | 84.2 |
| 02203570 | Riceboro Creek at Riceboro, Ga. | 31°44'43" | 81°25'37" | 31.7 | 0.1 | 09/66-11/77 | 98 | 8.0 | 29.6 | 19.9 | 8.6 | 2.82 | 2.02 | 92.6 |
| 02203574 | North Newport River near Seabrook, Ga. | 31°42'10" | 81°19'54" | 144 | 0.1 | 10/66-11/77 | 95 | 8.0 | 30.0 | 20.4 | 9.0 | 2.75 | 1.74 | 98.0 |
| 02203578 | North Newport River at Halfmoon Landing, Ga. | 31°41'43" | 81°16'18" | 157 | 0.1 | 10/66-12/84 | 221 | 6.0 | 30.5 | 20.5 | 9.3 | 2.73 | 1.86 | 96.2 |
| 02203585 | Timmons River near Yellow Bluff, Ga. | 31°40'37" | 81°13'09" | 161 | 0.1 | 10/66-07/70 | 61 | 8.0 | 29.8 | 19.8 | 9.5 | 2.68 | 1.84 | 93.1 |
| 02203596 | South Newport River near Harris Neck, Ga. | 31°39'05" | 81°17'21" | 126 | 0.1 | 09/66-07/70 | 52 | 8.0 | 30.5 | 20.0 | 9.5 | 2.73 | 1.62 | 97.6 |
| ALTAMAHA RIVER BASIN | | | | | | | | | | | | | | |
| 02203800 | South River at Bouldercrest Road at Atlanta, Ga. | 33°40'46" | 84°18'30" | 41.5 | 759 | 08/70-12/84 | 119 | 3.5 | 28.5 | 17.1 | 7.8 | 2.71 | 1.97 | 86.6 |
| 02203965 | South River at State Highway 155 near Atlanta, Ga. | 33°39'14" | 84°11'12" | 147 | 660 | 10/70-12/84 | 111 | 2.0 | 26.0 | 16.2 | 8.3 | 2.75 | 1.83 | 90.2 |
| 02204285 | Pates Creek at Buster Lewis Road near Flippen, Ga. | 33°29'34" | 84°14'44" | 11.9 | 720 | 02/78-08/83 | 32 | 4.0 | 24.0 | 15.7 | 8.3 | 2.95 | 1.96 | 93.9 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|--|---|-----------|-----------|----------------------------------|---------------|----------------------------|------------------------|-----------------------------|---------------|--------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| ALTAHAMA RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02204500 | South River near McDonough, Ga. | 33°29'48" | 84°00'53" | 456 | 565 | 12/57-09/82 | 32 | 4.0 | 26.0 | 16.1 | 9.2 | 2.89 | 2.10 | 95.3 |
| 02204520 | South River at State Highway 81 at Snapping Shoals, Ga. | 33°29'04" | 83°57'29" | 465 | 540 | 08/70-12/84 | 123 | 3.0 | 27.5 | 15.6 | 9.2 | 2.80 | 2.24 | 84.5 |
| 02205000 | Wildcat Creek near Lawrenceville, Ga. | 34°00'08" | 84°00'18" | 1.6 | 968 | 10/56-09/76 | 152 | 2.0 | 24.0 | 14.4 | 6.9 | 2.80 | 2.18 | 78.2 |
| 02206500 | Yellow River near Snellville, Ga. | 33°51'11" | 84°04'45" | 134 | 806 | 08/56-11/84 | 183 | 1.5 | 28.5 | 14.6 | 9.1 | 2.82 | 2.18 | 87.7 |
| 02207300 | Yellow River (Conyers Intake) at Conyers, Ga. | 33°41'23" | 83°58'43" | 236 | 660 | 07/74-12/84 | 119 | 0.5 | 26.0 | 15.1 | 9.3 | 2.86 | 2.24 | 86.6 |
| 02207500 | Yellow River near Covington, Ga. | 33°36'52" | 83°54'54" | 378 | 617 | 12/57-09/82 | 30 | 2.5 | 27.0 | 16.0 | 9.5 | 2.80 | 2.48 | 86.5 |
| 02207540 | Yellow River at Porterdale, Ga. | 33°34'12" | 83°53'51" | 401 | 600 | 07/74-06/79 | 56 | 2.0 | 27.0 | 14.8 | 9.4 | 2.86 | 2.18 | 86.7 |
| 02208005 | Yellow River at State Highway 212 near Stewart, Ga. | 33°26'26" | 83°52'43" | 440 | 560 | 07/74-12/84 | 121 | 2.5 | 26.5 | 15.4 | 9.4 | 2.84 | 2.14 | 86.6 |
| 02209260 | Alcovy River Newton Factory Bridge Road near Stewart, Ga. | 33°26'58" | 83°49'42" | 291 | 560 | 05/72-12/84 | 122 | 2.0 | 27.5 | 15.4 | 9.3 | 2.83 | 2.25 | 85.9 |
| 02210500 | Ocmulgee River near Jackson, Ga. | 33°18'28" | 83°50'18" | 1,420 | 419 | 12/57-12/84 | 127 | 2.0 | 27.5 | 17.2 | 9.3 | 2.64 | 1.93 | 89.9 |
| 02211300 | Towaliga River near Jackson, Ga. | 33°15'50" | 84°04'17" | 105 | 596 | 06/60-12/73 | 97 | 0.5 | 26.0 | 14.7 | 9.5 | 2.77 | 2.08 | 94.0 |
| 02212600 | Falling Creek near Juliette, Ga. | 33°05'59" | 83°43'25" | 72 | 368 | 07/64-01/85 | 278 | 1.5 | 28.0 | 15.4 | 8.4 | 2.86 | 2.22 | 86.5 |
| 02212950 | Ocmulgee River (Macon Intake) at Macon, Ga. | 32°52'11" | 83°39'15" | 2,230 | 270 | 07/74-12/84 | 113 | 3.2 | 34.0 | 18.4 | 10.4 | 2.69 | 2.23 | 91.3 |
| 02213000 | Ocmulgee River at Macon, Ga. | 32°50'19" | 83°37'14" | 2,240 | 270 | 05/37-12/75 | 202 | 5.0 | 33.0 | 18.4 | 9.8 | 2.72 | 2.10 | 89.5 |
| 02213050 | Walnut Creek near Gray, Ga. | 32°58'20" | 83°37'08" | 29 | 380 | 08/62-07/76 | 119 | 4.0 | 28.5 | 16.8 | 8.1 | 2.92 | 2.50 | 79.9 |
| 02213470 | Tobesofkee Creek above Macon, Ga. | 32°52'02" | 83°50'24" | 156 | 365 | 05/67-12/73 | 31 | 7.0 | 26.5 | 16.7 | 8.6 | 2.63 | 1.27 | 89.3 |
| 02213500 | Tobesofkee Creek near Macon, Ga. | 32°48'32" | 83°45'30" | 182 | 310 | 10/55-10/66 11/66-09/74 | 67 76 | 4.0 6.0 | 27.0 27.0 | 16.8 17.0 | 9.0 8.4 | 2.86 2.63 | 2.28 1.05 | 83.7 87.7 |
| 02213700 | Ocmulgee River near Warner Robins, Ga. | 32°40'17" | 83°36'11" | 2,690 | 250 | 11/70-12/84 | 133 | 3.5 | 32.5 | 18.9 | 10.3 | 2.72 | 2.13 | 92.8 |
| 02214265 | Ocmulgee River near Bonaire, Ga. | 32°32'33" | 83°32'13" | 3,350 | 200 | 08/74-12/84 | 115 | 3.0 | 29.0 | 17.7 | 10.2 | 2.82 | 2.35 | 87.8 |
| 02214500 | Big Indian Creek at Perry, Ga. | 32°27'20" | 83°44'21" | 108 | 279 | 04/54-01/74 | 134 | 4.5 | 28.5 | 17.0 | 7.7 | 2.87 | 1.93 | 87.5 |
| 02215260 | Ocmulgee River at Abbeville, Ga. | 31°59'47" | 83°16'43" | 4,460 | 162 | 02/58-06/79 | 42 | 3.5 | 28.0 | 17.1 | 9.9 | 2.76 | 2.43 | 83.2 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | Harmonic properties computed from observed data | | | | |
|--|--|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| ALTAHAMA RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02215500 | Ocmulgee River at Lumber City, Ga. | 31°55'06" | 82°40'26" | 5,180 | 87 | 06/54-12/84 | 250 | 3.0 | 31.0 | 19.0 | 9.9 | 2.76 | 2.01 | 88.5 |
| 02217000 | Allen Creek at Talmo, Ga. | 34°11'34" | 83°43'11" | 18.2 | 784 | 10/56-06/74 | 112 | 3.0 | 24.0 | 13.9 | 8.0 | 2.71 | 2.10 | 89.4 |
| 02217500 | Middle Oconee River near Athens, Ga. | 33°56'48" | 83°25'22" | 398 | 556 | 08/56-10/77 | 158 | 3.0 | 27.0 | 15.5 | 9.4 | 2.80 | 2.38 | 87.7 |
| 02217740 | North Oconee River (Athens Intake) at Athens, Ga. | 33°58'28" | 83°22'56" | 270 | 580 | 07/74-12/84 | 116 | 1.0 | 26.0 | 14.8 | 9.6 | 2.90 | 2.19 | 90.5 |
| 02218000 | Oconee River at Barnett Shoals near Watkinsville, Ga. | 33°51'21" | 83°19'36" | 783 | 530 | 07/74-12/84 | 120 | 1.0 | 29.5 | 15.4 | 10.0 | 2.85 | 2.26 | 88.8 |
| 02218500 | Oconee River near Greensboro, Ga. | 33°34'52" | 83°16'22" | 1,090 | 410 | 07/56-12/84 | 219 | 2.5 | 30.0 | 16.5 | 9.8 | 2.79 | 2.28 | 89.5 |
| 02219500 | Apalachee River near Buckhead, Ga. | 33°36'31" | 83°20'58" | 436 | 424 | 07/56-07/76 | 149 | 0.5 | 26.5 | 16.0 | 9.2 | 2.78 | 2.20 | 85.6 |
| 02220550 | Whitten Creek near Sparta, Ga. | 33°23'12" | 83°01'34" | 16.6 | 395 | 12/60-08/76 | 143 | 3.5 | 25.0 | 15.2 | 7.2 | 2.83 | 2.51 | 75.3 |
| 02221000 | Murder Creek near Monticello, Ga. | 33°24'56" | 83°39'43" | 24 | 498 | 08/56-12/73 | 117 | 3.0 | 23.5 | 14.6 | 7.5 | 2.87 | 2.14 | 83.8 |
| 02223000 | Oconee River at Milledgeville, Ga. | 33°04'58" | 83°12'51" | 2,950 | 231 | 05/37-12/84 | 273 | 3.0 | 30.0 | 17.8 | 8.9 | 2.62 | 1.95 | 89.0 |
| 02223040 | Oconee River near Hardwick, Ga. | 33°01'45" | 83°11'24" | 3,200 | 200 | 07/74-12/84 | 117 | 3.0 | 29.5 | 18.1 | 9.4 | 2.58 | 1.9 | 91.5 |
| 02223250 | Oconee River at State Highway 57 near Toombsboro, Ga. | 32°46'54" | 82°57'30" | 3,770 | 170 | 02/79-12/84 | 69 | 5.0 | 31.0 | 18.5 | 9.8 | 2.72 | 1.97 | 87.3 |
| 02223300 | Big Sandy Creek near Jeffersonville, Ga. | 32°48'15" | 83°25'04" | 31 | 324 | 08/58-12/73 | 82 | 5.0 | 27.0 | 16.7 | 8.2 | 2.92 | 1.92 | 86.2 |
| 02223500 | Oconee River at Dublin, Ga. | 32°32'40" | 82°53'41" | 4,400 | 149 | 11/54-11/76 | 126 | 5.5 | 29.0 | 18.0 | 9.3 | 2.69 | 2.16 | 92.1 |
| 02223600 | Oconee River at Interstate Highway 16 near Dublin, Ga. | 32°29'05" | 82°51'45" | 4,440 | 148 | 10/73-12/84 | 102 | 3.0 | 31.0 | 18.2 | 10.4 | 2.72 | 1.98 | 92.0 |
| 02224000 | Rocky Creek near Dudley, Ga. | 32°29'38" | 83°08'49" | 62.9 | 262 | 08/54-03/84 | 152 | 4.5 | 28.0 | 17.2 | 7.5 | 2.85 | 2.27 | 80.4 |
| 02225000 | Altamaha River near Baxley, Ga. | 31°56'20" | 82°21'13" | 11,600 | 62 | 12/57-12/84 | 146 | 4.0 | 31.0 | 19.3 | 10.1 | 2.78 | 2.18 | 87.5 |
| 02225470 | Pendleton Creek at State Highway 86 below Ochopee, Ga. | 32°09'36" | 82°12'43" | 300 | 90 | 07/79-12/84 | 64 | 5.0 | 28.0 | 18.0 | 8.8 | 2.92 | 2.15 | 89.1 |
| 02225500 | Ochopee River near Reidsville, Ga. | 32°04'42" | 82°10'39" | 1,110 | 74 | 07/54-10/82 | 212 | 3.0 | 31.0 | 18.5 | 9.1 | 2.78 | 2.53 | 84.0 |
| 02225990 | Altamaha River near Jesup, Ga. | 31°39'59" | 81°50'19" | 13,600 | 40 | 08/74-12/84 | 117 | 5.0 | 32.0 | 19.7 | 9.5 | 2.76 | 1.24 | 93.5 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | Harmonic properties computed from observed data | | | | |
|--|--|-----------|-----------|----------------------------------|---------------|----------------------------|------------------------|-----------------------------|---------------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| ALTAHAMA RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02226000 | Altamaha River at Doctortown, Ga. | 31°39'16" | 81°49'41" | 13,600 | 25 | 05/37-10/79 | 215 | 3.3 | 31.0 | 19.4 | 10.0 | 2.75 | 2.09 | 92.7 |
| 02226010 | Altamaha River near Gardi, Ga. | 31°37'24" | 81°45'55" | 13,600 | 40 | 11/74-12/84 | 113 | 5.0 | 32.0 | 19.9 | 9.6 | 2.74 | 1.94 | 93.9 |
| 02226100 | Penholoway Creek near Jesup, Ga. | 31°34'00" | 81°50'18" | 210 | 19 | 12/58-07/84 | 182 | 6.0 | 29.5 | 18.4 | 8.0 | 2.82 | 2.10 | 85.9 |
| 02226160 | Altamaha River at Everett City, Ga. | 31°25'37" | 81°36'20" | 14,000 | 5.0 | 12/70-12/84 | 166 | 5.0 | 31.5 | 19.7 | 9.3 | 2.71 | 1.86 | 91.2 |
| SATILLA-ST MARY'S RIVER BASINS | | | | | | | | | | | | | | |
| 02226475 | Satilla River at Walertertown, Ga. | 31°18'17" | 82°23'33" | 1,160 | 70 | 08/74-12/84 | 116 | 4.0 | 31.0 | 18.6 | 9.5 | 2.87 | 2.43 | 86.8 |
| 02226500 | Satilla River near Waycross, Ga. | 31°14'17" | 82°19'29" | 1,200 | 66 | 05/37-08/74 | 188 | 5.0 | 31.0 | 19.8 | 8.9 | 2.86 | 2.41 | 84.3 |
| 02226582 | Satilla River at State Highways 15 and 121 near Hoboken, Ga. | 31°13'00" | 82°09'45" | 1,350 | 52 | 08/74-12/84 | 120 | 4.0 | 31.5 | 18.9 | 9.5 | 2.86 | 2.44 | 86.9 |
| 02227000 | Hurricane Creek near Alma, Ga. | 31°34'00" | 82°27'50" | 139 | 136 | 01/55-06/82 | 103 | 4.5 | 30.5 | 17.9 | 8.4 | 2.95 | 2.33 | 81.9 |
| 02227500 | Little Satilla River near Offerman, Ga. | 31°27'04" | 82°03'17" | 646 | 58 | 01/55-09/83 | 163 | 6.0 | 32.0 | 18.9 | 8.4 | 2.82 | 2.23 | 88.2 |
| 02228000 | Satilla River at Atkinson, Ga. | 31°13'16" | 81°52'03" | 2,790 | 15 | 05/54-10/84 | 258 | 5.0 | 34.0 | 20.0 | 9.1 | 2.77 | 2.36 | 90.3 |
| SUWANNEE--OCHLOCKONEE--AUCILLA RIVER BASINS | | | | | | | | | | | | | | |
| 02314500 | Suwannee River at Fargo, Ga. | 30°40'50" | 82°33'38" | 1,260 | 92 | 08/57-11/84 | 258 | 4.0 | 31.0 | 19.9 | 8.5 | 2.83 | 2.27 | 88.2 |
| 02316000 | Alapaha River near Alapaha, Ga. | 31°23'03" | 83°11'33" | 663 | 208 | 03/53-07/84 | 171 | 5.5 | 29.5 | 18.6 | 8.1 | 2.78 | 2.22 | 87.7 |
| 02317500 | Alapaha River at Statenville, Ga. | 30°42'14" | 83°02'00" | 1,400 | 77 | 01/54-08/74 | 164 | 4.0 | 31.5 | 19.6 | 8.5 | 2.78 | 2.33 | 84.2 |
| 02317718 | New River at U.S. Highway 82 near Tifton, Ga. | 31°26'33" | 83°28'33" | 10 | 200 | 07/79-12/84 | 65 | 4.0 | 29.0 | 19.4 | 7.8 | 2.69 | 2.34 | 81.6 |
| 02317749 | Withlacoochee River near Valdosta, Ga. | 30°55'57" | 83°17'22" | 520 | 190 | 11/74-12/84 | 121 | 4.0 | 29.5 | 18.1 | 8.7 | 2.77 | 2.27 | 86.4 |
| 02317757 | Withlacoochee River at State Highway 94 near Valdosta, Ga. | 30°51'00" | 83°20'23" | 552 | 170 | 11/74-12/84 | 115 | 4.5 | 29.0 | 18.5 | 8.3 | 2.75 | 2.24 | 84.7 |
| 02317800 | Little River at U.S. Highway 82 near Tifton, Ga. | 31°26'21" | 83°33'38" | 145 | 252 | 08/77-06/82 | 34 | 2.0 | 28.0 | 17.7 | 8.3 | 2.75 | 2.59 | 79.5 |
| 02318000 | Little River near Adel, Ga. | 31°09'18" | 83°32'38" | 577 | 171 | 10/55-03/61 04/61-07/74 | 25 95 | 8.0 6.0 | 29.0 31.0 | 18.8 19.4 | 8.7 8.9 | 2.76 2.81 | 1.90 2.37 | 99.9 88.9 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|---|---|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| SUWANNEE-OCHLOCKONEE-AUCILLA RIVER BASINS--Continued | | | | | | | | | | | | | | |
| 02318500 | Withlacoochee River near Quitman, Ga. | 30°47'33" | 83°27'06" | 1,480 | 84 | 08/57-12/84 | 93 | 4.0 | 29.0 | 18.9 | 9.0 | 2.77 | 2.01 | 89.2 |
| 02318725 | Okapilco Creek at U.S. Highway 84 at Quitman, Ga. | 30°47'10" | 83°31'33" | 278 | 94 | 11/74-12/84 | 115 | 4.5 | 29.5 | 18.1 | 8.6 | 2.76 | 2.24 | 86.1 |
| 02318960 | Withlacoochee River near Clyattsville, Ga. | 30°38'07" | 83°18'41" | 1,490 | 50 | 11/74-12/84 | 118 | 3.0 | 29.0 | 18.5 | 8.1 | 2.74 | 2.26 | 83.2 |
| 02327205 | Ochlockonee River near Moultrie, Ga. | 31°08'31" | 83°48'13" | 104 | 150 | 07/79-12/84 | 65 | 3.0 | 29.5 | 17.6 | 8.2 | 2.74 | 2.48 | 79.3 |
| 02327500 | Ochlockonee River near Thomasville, Ga. | 30°52'32" | 84°02'44" | 550 | 134 | 04/54-12/84 | 231 | 2.5 | 30.5 | 18.4 | 8.6 | 2.77 | 2.31 | 89.4 |
| 02328000 | Tired Creek near Cairo, Ga. | 30°51'54" | 84°15'46" | 60 | 159 | 05/54-07/74 | 110 | 3.0 | 27.0 | 17.7 | 7.4 | 2.81 | 2.00 | 81.4 |
| 02328200 | Ochlockonee River near Calvary, Ga. | 30°43'53" | 84°14'12" | 930 | 100 | 08/74-12/84 | 115 | 2.0 | 29.0 | 17.8 | 8.5 | 2.81 | 2.20 | 85.8 |
| CHATTAHOOCHEE RIVER BASIN | | | | | | | | | | | | | | |
| 02331000 | Chattahoochee River near Leaf, Ga. | 34°34'37" | 83°38'09" | 150 | 1,220 | 09/57-08/76 | 123 | 2.0 | 25.0 | 13.9 | 8.4 | 2.77 | 1.93 | 99.7 |
| 02331600 | Chattahoochee River near Cornelia, Ga. | 34°32'27" | 83°37'14" | 315 | 1,129 | 02/68-11/84 | 139 | 0.5 | 26.0 | 14.7 | 8.7 | 2.82 | 2.18 | 86.3 |
| 02333500 | Chestatee River at State Highway 52 near Dahlonega, Ga. | 34°31'41" | 83°56'23" | 153 | 1,129 | 10/56-9/76 | 167 | 1.0 | 25.0 | 14.1 | 7.9 | 2.76 | 2.33 | 84.5 |
| 02334500 | Chattahoochee River near Buford, Ga. | 34°07'34" | 84°05'37" | 1,060 | 905 | 05/57-08/77 | 123 | 5.0 | 14.5 | 9.2 | 1.8 | 2.17 | 0.95 | 41.9 |
| 02335000 | Chattahoochee River near Norcross, Ga. | 33°59'50" | 84°12'07" | 1,170 | 878 | 10/57-09/76 | 86 | 2.0 | 18.0 | 11.6 | 3.6 | 2.53 | 1.31 | 58.1 |
| 02335700 | Big Creek near Alpharetta, Ga. | 34°03'02" | 84°16'10" | 72 | 961 | 05/60-09/76 | 150 | 1.0 | 24.0 | 14.3 | 7.8 | 2.78 | 2.23 | 82.3 |
| 02336000 | Chattahoochee River at Atlanta, Ga. | 33°51'33" | 84°27'16" | 1,450 | 750 | 11/57-09/79 | 360 | 2.0 | 28.5 | 13.1 | 6.1 | 2.69 | 1.81 | 79.3 |
| 02336300 | Peachtree Creek at Atlanta, Ga. | 33°49'10" | 84°24'28" | 86.8 | 764 | 07/59-12/84 | 306 | 0.0 | 31.0 | 16.0 | 9.7 | 2.80 | 2.44 | 89.0 |
| 02336502 | Chattahoochee River at Interstate Highway 285 near Atlanta, Ga. | 33°48'32" | 84°29'43" | 1,600 | 745 | 07/75-12/84 | 123 | 5.0 | 30.2 | 15.7 | 6.6 | 2.69 | 2.62 | 68.3 |
| 02337000 | Sweetwater Creek near Austell, Ga. | 33°46'22" | 84°36'53" | 246 | 857 | 05/57-12/84 | 339 | 0.5 | 27.0 | 15.3 | 9.4 | 2.85 | 2.17 | 92.1 |
| 02337100 | North Fork Camp Creek at Atlanta, Ga. | 33°39'40" | 84°30'40" | 5.3 | 812 | 10/63-07/70 | 64 | 3.5 | 30.0 | 16.4 | 9.4 | 2.72 | 2.41 | 83.4 |
| 02337170 | Chattahoochee River near Fairburn, Ga. | 33°39'24" | 84°40'25" | 2,060 | 719 | 07/65-12/84 | 380 | 4.0 | 28.0 | 16.4 | 7.6 | 2.69 | 2.10 | 86.2 |
| 02337438 | Dog River at State Highway 166 near Fairplay, Ga. | 33°37'20" | 84°47'35" | 70 | 940 | 07/74-05/79 | 55 | 0.5 | 27.0 | 15.1 | 8.9 | 2.84 | 2.80 | 79.4 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
[mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|---|--|-----------|-----------|----------------------------------|---------------|----------------------------|------------------------|-----------------------------|---------------|--------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| CHATTahoochee RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02337500 | Snake Creek near Whitesburg, Ga. | 33°31'46" | 84°55'42" | 36 | 833 | 10/59-07/84 | 184 | 3.5 | 26.0 | 15.1 | 7.9 | 2.78 | 1.60 | 92.7 |
| 02338000 | Chattahoochee River near Whitesburg, Ga. | 33°28'37" | 84°54'04" | 2,430 | 682 | 02/58-12/84 | 311 | 1.5 | 30.0 | 16.9 | 7.9 | 2.73 | 2.18 | 89.5 |
| 02338500 | Chattahoochee River at U.S. Highway 27 at Franklin, Ga. | 33°16'45" | 85°06'00" | 2,680 | 624 | 02/58-12/84 | 170 | 2.0 | 28.9 | 17.8 | 8.8 | 2.72 | 2.34 | 87.7 |
| 02338720 | Chattahoochee River (LaGrange Intake) near LaGrange, Ga. | 33°04'42" | 85°06'39" | 2,700 | 600 | 07/74-12/84 | 273 | 2.5 | 33.0 | 18.7 | 10.4 | 2.75 | 2.11 | 92.6 |
| 02339000 | Yellowjacket Creek near LaGrange, Ga. | 33°05'27" | 85°03'40" | 182 | 601 | 08/56-09/70 | 104 | 1.0 | 27.0 | 15.6 | 9.3 | 2.85 | 2.31 | 88.6 |
| 02339500 | Chattahoochee River at West Point, Ga. | 32°53'10" | 85°10'56" | 3,550 | 552 | 09/57-09/74 10/74-12/84 | 163 166 | 4.0 1.0 | 31.0 28.0 | 17.2 17.2 | 9.2 9.1 | 2.81 2.62 | 2.37 1.70 | 88.5 98.6 |
| 02339720 | Long Cane Creek near West Point, Ga. | 32°54'37" | 85°08'43" | 75 | 580 | 07/74-12/84 | 117 | 0.0 | 27.5 | 16.1 | 9.0 | 2.89 | 2.31 | 86.4 |
| 02340500 | Mountain Oak Creek near Hamilton, Ga. | 32°44'28" | 85°04'08" | 62 | 550 | 08/56-06/74 | 103 | 2.0 | 26.5 | 15.4 | 9.1 | 2.83 | 1.96 | 92.3 |
| 02341500 | Chattahoochee River at Columbus, Ga. | 32°27'45" | 84°59'52" | 4,670 | 183 | 10/40-09/74 | 173 | 6.0 | 30.0 | 18.5 | 9.5 | 2.68 | 1.64 | 96.0 |
| 02341800 | Upatoi Creek near Columbus, Ga. | 32°24'48" | 84°49'12" | 342 | 230 | 04/65-09/83 | 127 | 0.0 | 30.5 | 18.2 | 8.3 | 2.82 | 2.23 | 92.9 |
| 02343200 | Pataula Creek near Lumpkin, Ga. | 31°56'03" | 84°48'12" | 70 | 224 | 08/62-11/73 | 69 | 8.0 | 25.0 | 17.0 | 6.8 | 2.88 | 2.04 | 85.1 |
| 02343500 | Chattahoochee River at Columbia, Ala. | 31°17'02" | 85°05'59" | 8,040 | 72 | 11/40-04/58 | 38 | 7.8 | 29.0 | 18.9 | 10.3 | 2.80 | 1.31 | 88.6 |
| 02344000 | Chattahoochee River at Alaga Ala. | 31°06'59" | 85°02'50" | 8,340 | 63 | 01/64-07/74 | 48 | 8.0 | 30.0 | 18.9 | 9.0 | 2.66 | 2.40 | 78.4 |
| 02344040 | Chattahoochee River near Steam Mill, Ga. | 30°58'39" | 85°00'19" | 8,510 | 60 | 10/74-12/84 | 120 | 5.5 | 31.5 | 19.5 | 10.0 | 2.67 | 1.82 | 90.7 |
| FLINT RIVER BASIN | | | | | | | | | | | | | | |
| 02344180 | Flint River at State Highway 138 near Jonesboro, Ga. | 33°32'14" | 84°22'35" | 39.3 | 780 | 05/58-12/84 | 113 | 1.5 | 27.0 | 15.9 | 9.3 | 2.84 | 2.23 | 88.0 |
| 02344190 | Flint River at State Highway 54 near Fayetteville, Ga. | 33°29'13" | 84°23'44" | 60 | 760 | 07/75-12/84 | 111 | 0.5 | 27.0 | 15.8 | 9.2 | 2.80 | 2.08 | 88.2 |
| 02344300 | Camp Creek near Fayetteville, Ga. | 33°31'00" | 84°25'39" | 17 | 800 | 07/60-09/70 | 93 | 3.0 | 25.0 | 14.2 | 9.0 | 2.82 | 2.00 | 89.8 |
| 02344380 | Flint River at Ackert Road near Inman, Ga. | 33°23'08" | 84°23'24" | 100 | 740 | 07/75-12/84 | 111 | 1.0 | 27.5 | 15.7 | 9.5 | 2.86 | 2.15 | 88.8 |
| 02344400 | Flint River at State Highway 92 above Griffin, Ga. | 33°18'33" | 84°23'36" | 194 | 720 | 07/75-12/84 | 111 | 1.0 | 27.0 | 15.8 | 9.5 | 2.87 | 2.12 | 91.1 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|-------------------------------------|---|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| FLINT RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02344500 | Flint River near Griffin, Ga. | 33°14'39" | 84°25'45" | 272 | 711 | 08/56-07/76 | 157 | 1.5 | 28.0 | 16.0 | 10.0 | 2.85 | 2.06 | 91.8 |
| 02344700 | Line Creek near Senoia, Ga. | 33°19'10" | 84°31'25" | 101 | 729 | 09/64-07/76 | 98 | 2.0 | 26.5 | 15.3 | 9.8 | 2.79 | 2.25 | 87.2 |
| 02346500 | Potato Creek near Thomaston, Ga. | 32°54'15" | 84°21'45" | 186 | 605 | 07/56-06/74 | 103 | 3.0 | 28.5 | 16.7 | 9.8 | 2.80 | 2.20 | 89.4 |
| 02347500 | Flint River near Culloden, Ga. | 32°43'17" | 84°13'57" | 1,850 | 335 | 04/54-06/79 | 189 | 3.0 | 30.0 | 17.6 | 10.2 | 2.82 | 2.48 | 87.8 |
| 02349000 | Whitewater Creek below Rambulette Creek near Butler, Ga. | 32°28'00" | 84°15'58" | 93 | 366 | 04/54-11/73 | 103 | 8.0 | 25.0 | 17.1 | 6.2 | 2.90 | 1.65 | 87.2 |
| 02349500 | Flint River at Montezuma, Ga. | 32°17'53" | 84°02'38" | 2,900 | 256 | 05/54-12/84 | 245 | 4.0 | 30.0 | 18.0 | 9.0 | 2.87 | 2.16 | 87.5 |
| 02349900 | Turkey Creek at Byromville, Ga. | 32°11'44" | 83°54'03" | 45 | 286 | 07/54-06/82 | 124 | 3.5 | 28.0 | 17.2 | 7.3 | 2.91 | 2.17 | 83.8 |
| 02350001 | Flint River at State Highway 27 near Vienna, Ga. | 32°03'31" | 83°58'39" | 3,390 | 220 | 07/79-12/84 | 55 | 3.0 | 28.5 | 18.1 | 9.9 | 2.90 | 2.15 | 87.3 |
| 02350600 | Kinchafoonee Creek at Preston, Ga. | 32°03'09" | 84°32'53" | 197 | 338 | 05/54-07/84 | 169 | 3.0 | 27.0 | 16.9 | 8.0 | 2.91 | 2.52 | 81.2 |
| 02352500 | Flint River at Albany, Ga. | 31°35'39" | 84°08'39" | 5,310 | 150 | 05/54-12/84 | 171 | 5.5 | 31.5 | 19.4 | 9.3 | 2.77 | 2.18 | 92.4 |
| 02352790 | Flint River (Putney Intake) near Putney, Ga. | 31°26'39" | 84°08'16" | 5,340 | 140 | 08/74-12/84 | 120 | 5.0 | 31.0 | 19.6 | 9.8 | 2.72 | 1.82 | 89.9 |
| 02353000 | Flint River at Newton, Ga. | 31°18'34" | 84°20'06" | 5,740 | 110 | 08/56-10/84 | 205 | 6.0 | 29.0 | 19.3 | 8.9 | 2.71 | 1.83 | 94.5 |
| 02353400 | Pachita Creek near Edison, Ga. | 31°33'17" | 84°40'43" | 188 | 213 | 10/54-11/73 | 68 | 6.5 | 26.0 | 17.3 | 7.2 | 2.90 | 1.96 | 83.0 |
| 02353500 | Ichawaynochaway Ceeckr at Milford, Ga. | 31°22'58" | 84°32'52" | 620 | 150 | 04/54-07/84 | 152 | 4.0 | 28.5 | 18.4 | 7.6 | 2.82 | 2.22 | 86.9 |
| 02356000 | Flint River at Bainbridge, Ga. | 30°54'41" | 84°34'48" | 7,570 | 58 | 04/54-07/73 | 95 | 6.0 | 30.0 | 19.9 | 8.7 | 2.74 | 2.02 | 91.7 |
| 02356015 | Flint River 0.8 mile below State Docks at Bainbridge, Ga. | 30°53'34" | 84°36'38" | 7,570 | 57 | 07/74-12/84 | 120 | 5.5 | 30.0 | 19.5 | 8.9 | 2.73 | 1.98 | 86.8 |
| 02357000 | Spring Creek near Iron City, Ga. | 31°02'23" | 84°44'18" | 485 | 86 | 08/57-07/78 | 128 | 6.0 | 28.0 | 18.2 | 8.1 | 2.81 | 2.07 | 93.7 |
| COOSA RIVER BASIN | | | | | | | | | | | | | | |
| 02379500 | Carteay River near Ellijay, Ga. | 34°40'53" | 84°27'20" | 134 | 1,255 | 06/57-08/75 | 154 | 0.0 | 24.0 | 13.9 | 7.5 | 2.79 | 1.90 | 92.5 |
| 02380000 | Ellijay River at Ellijay, Ga. | 34°41'06" | 84°28'40" | 88 | 1,242 | 06/57-07/74 | 121 | 2.0 | 24.0 | 13.6 | 8.0 | 2.82 | 2.04 | 89.1 |
| 02380500 | Coosawatee River near Ellijay, Ga. | 34°40'18" | 84°30'31" | 236 | 1,216 | 05/63-08/83 | 175 | 0.5 | 25.0 | 13.7 | 8.0 | 2.77 | 1.88 | 88.4 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | | Harmonic properties computed from observed data | | | |
|------------------------------------|--|-----------|-----------|----------------------------------|---------------|----------------------------|------------------------|-----------------------------|---------------|---------------|---|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| COOSA RIVER BASIN—Continued | | | | | | | | | | | | | | |
| 02382000 | Searecorn Creek at Hinton, Ga. | 34°28'04" | 84°35'30" | 21 | 1,051 | 05/59-07/74 | 132 | 1.5 | 25.5 | 14.5 | 7.9 | 2.82 | 2.09 | 85.4 |
| 02382500 | Coosawattee River at Carters, Ga. | 34°36'13" | 84°41'44" | 521 | 651 | 07/65-12/72 | 32 | 5.0 | 26.5 | 15.1 | 9.6 | 2.76 | 1.48 | 93.7 |
| 02383000 | Rock Creek near Fairmount, Ga. | 34°21'32" | 84°46'46" | 6.2 | 759 | 07/57-09/72 | 109 | 3.0 | 24.5 | 15.0 | 7.9 | 2.82 | 2.22 | 81.5 |
| 02383500 | Coosawattee River near Pine Chapel, Ga. | 34°34'35" | 84°51'37" | 831 | 616 | 06/57-12/72 | 92 | 1.5 | 27.0 | 15.2 | 9.4 | 2.78 | 2.30 | 85.9 |
| 02383540 | Coosawattee River near Calhoun, Ga. | 34°32'28" | 84°54'03" | 861 | 610 | 08/74-12/84 | 114 | 2.5 | 29.5 | 14.9 | 8.8 | 2.56 | 1.78 | 94.4 |
| 02384748 | Conasauga River (Dalton Intake) near Dalton, Ga. | 34°47'20" | 84°52'30" | 308 | 650 | 07/74-12/84 | 119 | 1.5 | 27.0 | 15.1 | 9.9 | 2.78 | 1.96 | 92.5 |
| 02385800 | Holly Creek near Chatsworth, Ga. | 34°43'00" | 84°46'12" | 64 | 689 | 07/60-06/83 | 202 | 1.5 | 26.0 | 14.7 | 9.0 | 2.75 | 2.27 | 84.4 |
| 02387000 | Conasauga River at Tilton, Ga. | 34°40'00" | 84°55'42" | 687 | 622 | 06/57-12/84 | 279 | 0.5 | 30.5 | 16.1 | 9.9 | 2.82 | 2.30 | 90.2 |
| 02387050 | Conasauga River near Resaca, Ga. | 34°35'36" | 84°56'02" | 706 | 610 | 08/74-12/84 | 117 | 1.0 | 28.0 | 15.8 | 10.4 | 2.76 | 2.00 | 95.1 |
| 02387500 | Oostanaula River at Resaca, Ga. | 34°34'42" | 84°56'29" | 1,602 | 604 | 09/57-12/72 | 111 | 2.0 | 27.0 | 15.0 | 9.8 | 2.77 | 2.12 | 89.1 |
| 02387502 | Oostanaula River at Interstate Highway 75 at Resaca, Ga. | 34°34'17" | 84°56'49" | 1,620 | 602 | 08/74-12/84 | 113 | 2.5 | 27.0 | 15.3 | 9.3 | 2.66 | 1.89 | 92.6 |
| 02388000 | West Armuchee Creek near Subigna, Ga. | 34°34'04" | 85°09'16" | 36 | 710 | 05/60-04/82 | 156 | 4.0 | 24.5 | 14.8 | 7.2 | 2.76 | 1.82 | 85.4 |
| 02388500 | Oostanaula River at Rome, Ga. | 34°18'02" | 85°08'30" | 2,115 | 562 | 09/57-12/73 | 128 | 2.0 | 30.0 | 16.1 | 10.3 | 2.74 | 2.01 | 97.3 |
| 02388520 | Oostanaula River (Rome Intake) at Rome, Ga. | 34°16'13" | 85°10'24" | 2,145 | 562 | 08/74-12/84 | 119 | 2.0 | 28.5 | 16.0 | 10.0 | 2.68 | 2.06 | 96.0 |
| 02389000 | Etowah River near Dawsonville, Ga. | 34°22'57" | 84°03'21" | 107 | 1,050 | 09/56-08/84 | 163 | 1.5 | 24.5 | 13.6 | 8.2 | 2.74 | 1.90 | 90.2 |
| 02389300 | Shoal Creek near Dawsonville, Ga. | 34°25'13" | 84°08'47" | 22 | 1,150 | 06/58-06/74 | 90 | 3.5 | 22.0 | 13.3 | 6.8 | 2.75 | 1.85 | 84.3 |
| 02392000 | Etowah River at Canton, Ga. | 34°14'23" | 84°29'47" | 605 | 845 | 06/57-10/84 | 212 | 1.5 | 27.0 | 14.2 | 8.9 | 2.81 | 1.97 | 92.1 |
| 02392500 | Little River near Roswell, Ga. | 34°07'09" | 84°23'18" | 60 | 898 | 08/59-09/64 08/56-06/75 | 46, 91 | 4.0, 1.5 | 25.0, 28.5 | 14.4, 15.9 | 8.3, 9.7 | 2.79, 2.78 | 2.35, 2.54 | 92.9, 89.0 |
| 02394000 | Etowah River at Allatoona Dam above Cartersville, Ga. | 34°09'47" | 84°44'28" | 1,119 | 687 | 01/58-11/84 | 120 | 3.0 | 26.0 | 15.1 | 9.1 | 2.39 | 1.57 | 94.2 |
| 02394950 | Hills Creek near Taylorsville, Ga. | 34°04'27" | 84°57'02" | 25 | 690 | 06/59-07/74 | 118 | 0.0 | 25.0 | 14.2 | 8.6 | 2.78 | 2.13 | 87.3 |
| 02394980 | Etowah River above Kingston, Ga. | 34°11'28" | 84°55'44" | 1,612 | 650 | 08/74-12/84 | 117 | 3.0 | 26.5 | 15.7 | 8.7 | 2.54 | 1.57 | 95.1 |

Table 1. Periodic stream-temperature stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Number of observations | Observed stream temperature | | Harmonic properties computed from observed data | | | | |
|-------------------------------------|---|-----------|-----------|----------------------------------|---------------|---------------------------|------------------------|-----------------------------|---------------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | Minimum (° C) | Maximum (° C) | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| COOSA RIVER BASIN--Continued | | | | | | | | | | | | | | |
| 02395000 | Etowah River near Kingston, Ga. | 34°12'24" | 84°58'44" | 1,634 | 610 | 10/69-09/84 | 51 | 4.0 | 26.0 | 16.7 | 8.4 | 2.68 | 2.00 | 88.3 |
| 02396000 | Etowah River at Rome, Ga. | 34°15'26" | 85°09'30" | 1,819 | 562 | 09/57-12/84 | 236 | 3.0 | 28.0 | 15.9 | 8.9 | 2.61 | 1.81 | 91.0 |
| 02397000 | Coosa River near Rome, Ga. | 34°12'01" | 85°15'24" | 4,040 | 553 | 07/57-12/84 | 267 | 2.5 | 28.0 | 16.2 | 9.6 | 2.65 | 1.73 | 93.5 |
| 02397500 | Cedar Creek near Cedartown, Ga. | 34°03'38" | 85°18'41" | 115 | 725 | 06/57-12/84 | 278 | 3.5 | 25.5 | 15.9 | 7.0 | 2.79 | 1.45 | 88.0 |
| 02397530 | Coosa River at State Line, Ala.-Ga. | 34°11'54" | 85°26'46" | 4,362 | 550 | 08/74-12/84 | 116 | 5.0 | 31.0 | 18.3 | 10.4 | 2.65 | 1.74 | 95.2 |
| 02398000 | Chattooga River at Summerville, Ga. | 34°28'03" | 85°20'19" | 192 | 613 | 07/57-12/84 | 290 | 1.5 | 26.0 | 15.6 | 7.2 | 2.74 | 1.83 | 85.2 |
| 02398037 | Chattooga River at Chattoogaville, Ga. | 34°20'08" | 85°26'43" | 281 | 605 | 08/74-12/84 | 119 | 2.0 | 26.5 | 15.7 | 8.3 | 2.79 | 2.01 | 89.0 |
| 02411800 | Little River near Buchanan, Ga. | 33°47'51" | 85°07'03" | 20 | 1,110 | 05/59-08/75 | 138 | 2.0 | 25.0 | 14.5 | 8.5 | 2.80 | 1.97 | 88.6 |
| 02411930 | Tallapoosa River below Tallapoosa, Ga. | 33°44'27" | 85°20'11" | 272 | 920 | 07/74-11/84 | 80 | 0.0 | 29.0 | 15.4 | 9.4 | 2.83 | 2.33 | 88.3 |
| 02413210 | Little Tallapoosa River below Bowdon, Ga. | 33°29'34" | 85°16'45" | 245 | 919 | 07/74-12/84 | 117 | 1.0 | 26.5 | 15.6 | 9.1 | 2.85 | 2.09 | 89.9 |
| TENNESSEE RIVER BASIN | | | | | | | | | | | | | | |
| 03545000 | Hiwassee River at Presley, Ga. | 34°54'17" | 83°43'01" | 46 | 1,933 | 08/51-06/82 | 270 | 0.0 | 24.0 | 12.7 | 6.5 | 2.81 | 2.13 | 79.0 |
| 03550500 | Nottely River near Blairsville, Ga. | 34°50'28" | 83°56'10" | 75 | 1,812 | 08/51-06/82 | 244 | 0.0 | 24.0 | 13.2 | 7.3 | 2.81 | 2.09 | 83.8 |
| 03553500 | Nottely River at Nottely Dam near Ivylog, Ga. | 34°57'55" | 84°05'25" | 215 | 1,599 | 09/51-07/74 | 158 | 3.5 | 25.0 | 12.4 | 6.7 | 2.12 | 2.44 | 73.2 |
| 03558000 | Toccoa River near Dial, Ga. | 34°47'24" | 84°14'24" | 177 | 1,782 | 01/51-06/84 | 297 | 0.5 | 25.0 | 12.9 | 8.1 | 2.77 | 2.04 | 89.6 |
| 03559000 | Toccoa River near Blue Ridge, Ga. | 34°53'14" | 84°17'07" | 233 | 1,539 | 01/51-07/74 | 125 | 3.5 | 23.0 | 12.4 | 5.6 | 2.12 | 2.37 | 64.0 |
| 03560000 | Fightingtown Creek at McCaysville, Ga. | 34°58'53" | 84°23'12" | 71 | 1,450 | 01/51-06/74 | 218 | 0.5 | 26.0 | 13.5 | 7.9 | 2.82 | 2.21 | 85.5 |
| 03566800 | South Chickamauga Creek at Graysville, Ga. | 34°58'39" | 85°08'42" | 198 | 680 | 08/74-11/84 | 80 | 1.0 | 26.0 | 14.8 | 9.0 | 2.79 | 2.03 | 90.0 |
| 03567340 | West Chickamauga Creek near Lakeview, Ga. | 34°57'26" | 85°12'20" | 148 | 679 | 08/74-12/84 | 119 | 1.0 | 26.0 | 15.3 | 8.5 | 2.77 | 1.76 | 92.6 |

Table 2. Stream-temperature daily record stations, periods of analyses, selected station information, and harmonic properties
 [mi², square miles; ° C, degrees Celsius; ft, feet; —, no data]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Statistic | Days | Harmonic properties computed from observed data | | | | |
|----------------|---|-----------|-----------|----------------------------------|---------------|-------------------------------|----------------------------|-------------------------|---|----------------------|-----------------------------|----------------------|----------------------|
| | | | | | | | | | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| 02178400 | Tallulah River near Clayton, Ga. | 34°53'25" | 83°31'50" | 56.5 | 1,869 | 1964-79 1964-79 | maximum minimum | 5,167 5,164 | 13.9 11.0 | 8.2 7.3 | 2.80 2.72 | .62 .67 | 98.1 97.9 |
| 02197000 | Savannah River at Augusta, Ga. | 33°22'25" | 81°56'35" | 7,508 | 97 | 1973-80 1973-80 1973-80 | maximum minimum mean | 2,335 2,332 2,324 | 17.1 16.0 16.6 | 7.3 7.0 7.1 | 2.43 2.37 2.40 | .64 .75 .70 | 97.0 96.4 96.7 |
| 02197500 | Savannah River at Burtons Ferry near Millhaven, Ga. | 32°56'20" | 81°30'10" | 8,650 | 54 | 1960-74 1960-74 | maximum minimum | 4,073 4,083 | 17.8 17.4 | 7.9 7.9 | 2.6 2.6 | .58 .63 | 98.2 98.0 |
| 02202500 | Ogeechee River near Eden, Ga. | 32°11'29" | 81°24'58" | 2,650 | 20 | 1972-81 1972-81 1975-81 | maximum minimum mean | 3,154 3,154 2,06 | 18.2 17.4 18.5 | 8.9 8.7 10.1 | 2.75 2.75 2.80 | .68 .69 1.03 | 97.3 97.4 96.7 |
| 02203578 | North Newport River at Halfmoon Landing, Ga. | 31°41'43" | 81°16'18" | 157 | 0.1 | 1970-76 1970-76 1970-76 | maximum minimum mean | 1,965 1,965 1,964 | 22.2 21.0 21.6 | 8.7 8.8 8.7 | 2.74 2.72 2.73 | .56 .61 .59 | 96.9 97.2 97.1 |
| 02208450 | Alcoy River above Covington, Ga. | 33°38'24" | 83°46'45" | 185 | 646 | 1972-78 1972-78 1972-79 | maximum minimum mean | 2,110 2,099 2,099 | 16.5 14.3 15.4 | 8.4 8.6 8.6 | 2.89 2.83 2.86 | 1.11 1.09 1.08 | 94.7 95.8 95.5 |
| 02212600 | Falling Creek near Juliette, Ga. | 33°05'59" | 83°43'25" | 72.2 | 368 | 1965-79 1965-79 | maximum minimum | 4,599 4,598 | 17.0 15.0 | 8.6 8.5 | 2.85 2.83 | .82 .73 | 96.7 97.4 |
| 02213700 | Ocmulgee River near Warner Robins, Ga. | 32°40'17" | 83°36'11" | 2,690 | 250 | 1970-85 1970-85 1970-85 | maximum minimum mean | 4,969 4,963 4,961 | 19.7 18.5 19.1 | 10.5 10.4 10.5 | 2.71 2.71 2.71 | .45 .53 .48 | 98.6 98.6 98.6 |
| 02225000 | Altamaha River near Baxley, Ga. | 31°56'20" | 82°21'13" | 11,600 | 62 | 1970-76 1970-76 1970-76 | maximum minimum mean | 1,802 1,801 1,799 | 20.9 19.6 20.2 | 9.0 8.9 9.0 | 2.72 2.73 2.72 | .74 .78 .75 | 96.9 96.9 96.9 |
| 02226160 | Altamaha River at Everett City, Ga. | 31°25'37" | 81°36'20" | 14,000 | 0.1 | 1969-85 1969-85 1969-85 | maximum minimum mean | 4,993 4,980 4,975 | 20.7 19.6 20.1 | 9.5 9.4 9.4 | 2.73 2.73 2.73 | .54 .61 .56 | 97.9 98.0 98.0 |

Table 2. Stream-temperature daily record stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ° C, degrees Celsius; ft, feet; —, no data]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Statistic | Days | Harmonic properties computed from observed data | | | | |
|----------------|--|-----------|-----------|----------------------------------|---------------|---------------------------|-----------|-------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| 02228000 | Satilla River at Atkinson, Ga. | 31°13'16" | 81°52'03" | 2,790 | 15 | 1974-81 | maximum | 2,426 | 20.7 | 9.4 | 2.83 | .61 | 97.5 |
| | | | | | | 1974-81 | minimum | 2,426 | 19.6 | 9.2 | 2.82 | .71 | 97.3 |
| | | | | | | 1974-81 | mean | 2,425 | 20.1 | 9.3 | 2.83 | .67 | 97.4 |
| 02231000 | St Marys River near MacClenny, Fla. | 30°21'13" | 80°04'54" | 700 | 40 | 1965-77 | random | 3,016 | 20.1 | 6.5 | 2.65 | .85 | 94.2 |
| 02337170 | Chattahoochee River near Fairburn, Ga. | 33°39'24" | 84°40'25" | 2,060 | 719 | 1975-85 | maximum | 3,249 | 17.4 | 7.5 | 2.67 | .64 | 97.1 |
| | | | | | | 1975-85 | minimum | 3,248 | 15.3 | 6.7 | 2.68 | .74 | 96.2 |
| | | | | | | 1975-85 | mean | 3,248 | 16.3 | 7.1 | 2.68 | .67 | 96.8 |
| 02338000 | Chattahoochee River near Whitesburg, Ga. | 33°28'37" | 84°54'04" | 2,430 | 682 | 1975-84 | maximum | 2,073 | 17.0 | 8.0 | 2.71 | .73 | 97.2 |
| | | | | | | 1975-84 | minimum | 2,071 | 15.6 | 7.5 | 2.70 | .80 | 96.6 |
| | | | | | | 1975-84 | mean | 2,071 | 16.2 | 7.7 | 2.70 | .75 | 97.0 |
| 02338660 | New River near Corinth, Ga. | 33°14'07" | 84°59'16" | 127 | 635 | 1978-84 | maximum | 1,895 | 17.5 | 9.8 | 2.82 | 1.16 | 96.2 |
| | | | | | | 1978-84 | minimum | 1,892 | 14.9 | 9.1 | 2.85 | 0.97 | 96.8 |
| | | | | | | 1978-84 | mean | 1,894 | 16.1 | 9.3 | 2.84 | 1.01 | 96.7 |
| 02382720 | Coosawatee River near Nickelsville, Ga. | 34°36'03" | 84°46'42" | 556 | 630 | 1974-81 | maximum | 2,428 | 15.5 | 8.0 | 2.55 | .77 | 97.2 |
| | | | | | | 1974-81 | minimum | 2,428 | 13.7 | 7.6 | 2.50 | .96 | 96.1 |
| | | | | | | 1974-81 | mean | 2,428 | 14.6 | 7.8 | 2.52 | .86 | 96.7 |
| 02383500 | Coosawatee River near Pine Chapel, Ga. | 34°34'35" | 84°51'37" | 831 | 616 | 1974-81 | maximum | 2,351 | 15.4 | 7.9 | 2.58 | .91 | 96.3 |
| | | | | | | 1974-81 | minimum | 2,351 | 14.3 | 7.8 | 2.56 | .98 | 96.1 |
| | | | | | | 1974-81 | mean | 2,351 | 14.8 | 7.9 | 2.56 | .94 | 96.2 |
| 02387000 | Conasauga River at Tilton, Ga. | 34°40'00" | 84°55'42" | 687 | 622 | 1975-85 | maximum | 2,843 | 17.3 | 10.5 | 2.77 | .86 | 97.7 |
| | | | | | | 1975-85 | minimum | 2,835 | 15.7 | 10.3 | 2.77 | .88 | 97.7 |
| | | | | | | 1975-85 | mean | 2,834 | 16.5 | 10.4 | 2.77 | .84 | 97.8 |
| 02387500 | Oostanaula River at Resaca, Ga. | 34°34'42" | 84°56'29" | 1,602 | 604 | 1967-84 | maximum | 5,439 | 16.1 | 8.8 | 2.70 | .61 | 98.0 |
| | | | | | | 1967-84 | minimum | 5,439 | 15.2 | 8.7 | 2.70 | .68 | 97.9 |
| | | | | | | 1967-84 | mean | 2,371 | 15.7 | 9.5 | 2.66 | .83 | 97.8 |
| 02392000 | Etowah River at Canton, Ga. | 34°14'23" | 84°29'47" | 613 | 845 | 1971-76 | maximum | 1,751 | 15.7 | 7.5 | 2.76 | 1.07 | 94.6 |
| | | | | | | 1971-76 | minimum | 1,751 | 14.6 | 7.5 | 2.77 | 1.12 | 94.6 |
| | | | | | | 1971-76 | mean | 1,751 | 15.1 | 7.5 | 2.76 | 1.08 | 94.6 |

Table 2. Stream-temperature daily record stations, periods of analyses, selected station information, and harmonic properties--Continued
 [mi², square miles; ° C, degrees Celsius; ft, feet; —, no data]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record analyzed | Statistic | Days | Harmonic properties computed from observed data | | | | |
|----------------|-------------------------------------|-----------|-----------|----------------------------------|---------------|---------------------------|-----------|-------|---|-----------------|-----------------------------|----------------------|--------------------|
| | | | | | | | | | Mean (° C) | Amplitude (° C) | Phase coefficient (radians) | Standard error (° C) | Variance (percent) |
| 02392500 | Little River near Roswell, Ga. | 34°07'09" | 84°23'18" | 60 | 898 | 1971-76 | maximum | 1,910 | 17.9 | 9.1 | 2.81 | .89 | 96.6 |
| | | | | | | 1971-76 | minimum | 1,925 | 13.8 | 7.9 | 2.76 | .92 | 96.5 |
| 02397530 | Coosa River at State Line, Ala.-Ga. | 34°11'54" | 85°26'46" | 4,362 | 550 | 1975-85 | maximum | 2,906 | 19.5 | 10.7 | 2.60 | .80 | 98.3 |
| | | | | | | 1975-85 | minimum | 2,905 | 17.7 | 10.6 | 2.61 | .75 | 98.5 |
| | | | | | | 1975-85 | mean | 2,906 | 18.5 | 10.6 | 2.61 | .75 | 98.5 |

Table 3. Periodic stream-temperature stations used for regression analyses, periods of analysis, selected station information, and harmonic properties [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record | Number of observations | Harmonic properties computed from observed data | | | | |
|-----------------------------|---|-----------|-----------|----------------------------------|---------------|------------------|------------------------|---|-----------------|-----------------|----------------------|--------------------|
| | | | | | | | | Mean (° C) | Amplitude (° C) | Phase (radians) | Standard error (° C) | Variance (percent) |
| SAVANNAH RIVER BASIN | | | | | | | | | | | | |
| 02177000 | Chattooga River near Clayton, Ga. | 34°48'50" | 83°18'22" | 207 | 1,166 | 09/57-12/84 | 260 | 13.6 | 9.2 | 2.80 | 2.22 | 88.1 |
| 02178400 | Tallulah River near Clayton, Ga. | 34°53'25" | 83°31'50" | 57 | 1,869 | 07/64-08/84 | 174 | 12.0 | 7.2 | 2.77 | 2.0 | 84.5 |
| 02191200 | Hudson River at Homer, Ga. | 34°30'15" | 83°29'17" | 61 | 695 | 08/62-07/75 | 100 | 14.3 | 8.2 | 2.80 | 2.0 | 85.9 |
| 02192000 | Broad River near Bell, Ga. | 33°58'27" | 82°46'12" | 1,430 | 357 | 10/56-10/79 | 147 | 16.4 | 9.6 | 2.82 | 2.43 | 90.2 |
| 02193500 | Little River near Washington, Ga. | 33°36'46" | 82°44'33" | 291 | 354 | 10/54-06/74 | 83 | 15.3 | 9.5 | 2.79 | 2.43 | 82.2 |
| 02197520 | Brier Creek near Thomson, Ga. | 33°22'06" | 82°28'06" | 55 | 330 | 11/58-07/76 | 68 | 15.3 | 7.6 | 2.76 | 2.35 | 75.1 |
| 02197830 | Brier Creek near Waynesboro, Ga. | 33°07'05" | 81°57'50" | 473 | 174 | 10/54-09/83 | 80 | 17.0 | 8.2 | 2.78 | 2.54 | 81.2 |
| 02198000 | Brier Creek at Millhaven, Ga. | 32°56'00" | 81°39'05" | 646 | 96 | 07/54-06/79 | 156 | 16.5 | 8.6 | 2.83 | 2.82 | 79.5 |
| 02202190 | Ogeechee River at Oliver, Ga. | 32°29'40" | 81°33'21" | 2,370 | 60 | 08/74-12/84 | 121 | 17.6 | 10.0 | 2.84 | 2.29 | 89.0 |
| 02202500 | Ogeechee River near Eden, Ga. | 32°11'29" | 81°24'58" | 2,650 | 20 | 05/37-10/84 | 293 | 18.3 | 9.3 | 2.81 | 2.23 | 86.0 |
| 02203000 | Canochee River near Claxton, Ga. | 32°11'05" | 81°53'20" | 555 | 80 | 09/54-12/84 | 255 | 17.7 | 8.9 | 2.85 | 2.23 | 86.7 |
| ALTAMAHA RIVER BASIN | | | | | | | | | | | | |
| 02204520 | South River at State Route 81 at Snapping Shoals, Ga. | 33°29'04" | 83°57'29" | 465 | 540 | 08/70-12/84 | 123 | 15.6 | 9.2 | 2.80 | 2.24 | 84.5 |
| 02206500 | Yellow River near Snellville, Ga. | 33°51'11" | 84°04'45" | 134 | 806 | 08/56-11/84 | 183 | 14.6 | 9.1 | 2.82 | 2.18 | 87.7 |
| 02207300 | Yellow River (Conyers Intake) at Conyers, Ga. | 33°41'23" | 83°58'43" | 236 | 660 | 07/74-12/84 | 119 | 15.1 | 9.3 | 2.86 | 2.24 | 86.6 |
| 02209260 | Alcovy River Newton Factory Bridge Road near Stewart, Ga. | 33°26'58" | 83°49'42" | 291 | 560 | 05/72-12/84 | 122 | 15.4 | 9.3 | 2.83 | 2.25 | 85.9 |
| 02212600 | Falling Creek near Juliette, Ga. | 33°05'59" | 83°43'25" | 72 | 368 | 07/64-01/85 | 278 | 15.4 | 8.4 | 2.86 | 2.22 | 86.5 |
| 02214500 | Big Indian Creek at Perry, Ga. | 32°27'20" | 83°44'21" | 108 | 279 | 04/54-01/74 | 134 | 17.0 | 7.7 | 2.87 | 1.93 | 87.5 |
| 02215500 | Ocmulgee River at Lumber City, Ga. | 31°55'06" | 82°40'26" | 5,180 | 87 | 06/54-12/84 | 250 | 19.0 | 9.9 | 2.76 | 2.01 | 88.5 |
| 02217500 | Middle Oconee River near Athens, Ga. | 33°56'48" | 83°25'22" | 398 | 556 | 08/56-10/77 | 158 | 15.5 | 9.4 | 2.80 | 2.38 | 87.7 |
| 02217740 | North Oconee River (Athens Intake) at Athens, Ga. | 33°58'28" | 83°22'56" | 270 | 580 | 07/74-12/84 | 116 | 14.8 | 9.6 | 2.90 | 2.19 | 90.5 |
| 02218000 | Oconee River at Barnett Shoals near Watkinsville, Ga. | 33°51'21" | 83°19'36" | 783 | 530 | 07/74-12/84 | 120 | 15.4 | 10.0 | 2.85 | 2.26 | 88.8 |

Table 3. Periodic stream-temperature stations used for regression analyses, periods of analysis, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record | Number of observations | Harmonic properties computed from observed data | | | | |
|--|--|-----------|-----------|----------------------------------|---------------|------------------|------------------------|---|-----------------|-----------------|----------------------|--------------------|
| | | | | | | | | Mean (° C) | Amplitude (° C) | Phase (radians) | Standard error (° C) | Variance (percent) |
| ALTAMAHA RIVER BASIN--Continued | | | | | | | | | | | | |
| 02219500 | Apalachee River near Buckhead, Ga. | 33°36'31" | 83°20'58" | 436 | 424 | 07/56-07/76 | 149 | 16.0 | 9.2 | 2.78 | 2.20 | 85.6 |
| 02223500 | Oconee River at Dublin, Ga. | 32°32'40" | 82°53'41" | 4,400 | 149 | 11/54-11/76 | 126 | 18.0 | 9.3 | 2.69 | 2.16 | 92.1 |
| 02225000 | Altamaha River near Baxley, Ga. | 31°56'20" | 82°21'13" | 11,600 | 62 | 12/57-12/84 | 146 | 19.3 | 10.1 | 2.78 | 2.18 | 87.5 |
| 02225470 | Pendleton Creek at State Route 86 below Ohoopce, Ga. | 32°09'36" | 82°12'43" | 300 | 90 | 07/79-12/84 | 64 | 18.0 | 8.8 | 2.92 | 2.15 | 89.1 |
| 02225500 | Ohoopce River near Reidsville, Ga. | 32°04'42" | 82°10'39" | 1,110 | 74 | 07/54-10/82 | 212 | 18.5 | 9.1 | 2.78 | 2.53 | 84.0 |
| 02226000 | Altamaha River at Doctortown, Ga. | 31°39'16" | 81°49'41" | 13,600 | 25 | 05/37-10/79 | 215 | 19.4 | 10.0 | 2.75 | 2.09 | 92.7 |
| 02226100 | Penholoway Creek near Jesup, Ga. | 31°34'00" | 81°50'18" | 210 | 19 | 12/58-07/84 | 182 | 18.4 | 8.0 | 2.82 | 2.10 | 85.9 |
| 02226160 | Altamaha River at Everett City, Ga. | 31°25'37" | 81°36'20" | 14,000 | 0.1 | 12/70-12/84 | 166 | 19.7 | 9.3 | 2.71 | 1.86 | 91.2 |
| SATILLA-ST. MARY'S RIVER BASINS | | | | | | | | | | | | |
| 02227000 | Hurricane Creek near Alma, Ga. | 31°34'00" | 82°27'50" | 139 | 136 | 01/55-06/82 | 103 | 17.9 | 8.4 | 2.95 | 2.33 | 81.9 |
| 02227500 | Little Satilla River near Offerman, Ga. | 31°27'04" | 82°03'17" | 646 | 58 | 01/55-09/83 | 163 | 18.9 | 8.4 | 2.82 | 2.23 | 88.2 |
| 02228000 | Satilla River at Atkinson, Ga. | 31°13'16" | 81°52'03" | 2,790 | 15 | 05/54-10/84 | 258 | 20.0 | 9.1 | 2.77 | 2.36 | 90.3 |
| SUWANNEE-OCHLOCKONEE RIVER BASINS | | | | | | | | | | | | |
| 02314500 | Suwannee River at Fargo, Ga. | 82°40'50" | 82°33'38" | 1,260 | 92 | 08/57-11/84 | 258 | 19.9 | 8.5 | 2.83 | 2.27 | 88.2 |
| 02316000 | Alapaha River near Alapaha, Ga. | 31°23'03" | 83°11'33" | 663 | 208 | 03/53-07/84 | 171 | 18.6 | 8.1 | 2.78 | 2.22 | 87.7 |
| 02317500 | Alapaha River at Statenville, Ga. | 30°42'14" | 83°02'00" | 1,400 | 77 | 01/54-08/74 | 164 | 19.6 | 8.5 | 2.78 | 2.33 | 84.2 |
| 02317757 | Withlacoochee River at State Route 94 near Valdosta, Ga. | 30°51'00" | 83°20'23" | 552 | 170 | 11/74-12/84 | 115 | 18.5 | 8.3 | 2.75 | 2.24 | 84.7 |
| 02318500 | Withlacoochee River near Quitman, Ga. | 30°47'22" | 83°27'06" | 1,480 | 84 | 08/57-12/84 | 93 | 18.9 | 9.0 | 2.77 | 2.01 | 89.2 |
| 02327500 | Ochlockonee River near Thomasville, Ga. | 30°52'32" | 84°02'44" | 550 | 134 | 04/54-12/84 | 231 | 18.4 | 8.6 | 2.77 | 2.31 | 89.4 |
| 02328000 | Tired Creek near Cairo, Ga. | 30°51'54" | 84°15'46" | 60 | 159 | 05/54-07/74 | 110 | 17.7 | 7.4 | 2.81 | 2.00 | 81.4 |
| CHATTAHOOCHEE RIVER BASIN | | | | | | | | | | | | |
| 02331000 | Chattahoochee River near Leaf, Ga. | 34°34'37" | 83°38'09" | 150 | 1,220 | 09/57-08/76 | 123 | 13.9 | 8.4 | 2.77 | 1.93 | 99.7 |

Table 3. Periodic stream-temperature stations used for regression analyses, periods of analysis, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record | Number of observations | Harmonic properties computed from observed data | | | | |
|---|--|-----------|-----------|----------------------------------|---------------|------------------|------------------------|---|-----------------|-----------------|----------------------|--------------------|
| | | | | | | | | Mean (° C) | Amplitude (° C) | Phase (radians) | Standard error (° C) | Variance (percent) |
| CHATTAHOOCHEE RIVER BASIN--Continued | | | | | | | | | | | | |
| 02331600 | Chattahoochee River near Cornelia, Ga. | 34°32'27" | 83°37'14" | 315 | 1,129 | 02/68-11/84 | 139 | 14.7 | 8.7 | 2.82 | 2.18 | 86.3 |
| 02333500 | Chestatee River at State Route 52 near Dahlonega, Ga. | 34°31'41" | 83°56'23" | 153 | 1,129 | 10/56-09/76 | 167 | 14.1 | 7.9 | 2.76 | 2.33 | 84.5 |
| 02335700 | Big Creek near Alpharetta, Ga. | 34°03'02" | 84°16'10" | 72 | 961 | 05/60-09/76 | 150 | 14.3 | 7.8 | 2.78 | 2.23 | 82.3 |
| 02337000 | Sweetwater Creek near Austell, Ga. | 33°46'22" | 84°36'53" | 246 | 857 | 05/57-12/84 | 339 | 15.3 | 9.4 | 2.85 | 2.17 | 92.1 |
| 02337438 | Dog River at State Route 166 near Fairplay, Ga. | 33°37'20" | 84°47'35" | 70 | 940 | 07/74-05/79 | 55 | 15.1 | 8.9 | 2.84 | 2.80 | 79.4 |
| 02339000 | Yellowjacket Creek near LaGrange, Ga. | 33°05'27" | 85°03'40" | 182 | 601 | 08/56-09/70 | 104 | 15.6 | 9.3 | 2.85 | 2.31 | 88.6 |
| 02339720 | Long Cane Creek near West Point, Ga. | 32°54'37" | 85°08'43" | 75 | 580 | 07/74-12/84 | 117 | 16.1 | 9.0 | 2.89 | 2.31 | 86.4 |
| 02340500 | Mountain Oak Creek near Hamilton, Ga. | 32°44'28" | 85°04'08" | 62 | 550 | 08/56-06/74 | 103 | 15.4 | 9.1 | 2.83 | 1.96 | 92.3 |
| FLINT RIVER BASIN | | | | | | | | | | | | |
| 02343200 | Pataula Creek near Lumpkin, Ga. | 31°56'03" | 84°48'12" | 70 | 286 | 08/62-11/73 | 69 | 17.0 | 6.8 | 2.88 | 2.04 | 85.1 |
| 02344500 | Flint River near Griffin, Ga. | 33°14'39" | 84°25'45" | 272 | 711 | 08/56-07/76 | 157 | 16.0 | 10.0 | 2.85 | 2.06 | 91.8 |
| 02344700 | Line Creek near Senoia, Ga. | 33°19'10" | 84°31'25" | 101 | 729 | 09/64-07/76 | 98 | 15.3 | 9.8 | 2.79 | 2.25 | 87.2 |
| 02346500 | Potato Creek near Thomaston, Ga. | 32°54'15" | 84°21'45" | 186 | 605 | 07/56-06/74 | 103 | 16.7 | 9.8 | 2.80 | 2.20 | 89.4 |
| 02347500 | Flint River near Culloden, Ga. | 32°43'17" | 84°13'57" | 1,850 | 335 | 04/54-06/79 | 189 | 17.6 | 10.2 | 2.82 | 2.48 | 87.8 |
| 02349000 | Whitewater Creek below Rambulette Creek near Butler, Ga. | 32°28'00" | 84°15'58" | 93 | 366 | 04/54-11/73 | 103 | 17.1 | 6.2 | 2.90 | 1.65 | 87.2 |
| 02349500 | Flint River at Montezuma, Ga. | 32°17'53" | 84°02'38" | 2,900 | 256 | 05/54-12/84 | 245 | 18.0 | 9.0 | 2.87 | 2.16 | 87.5 |
| 02349900 | Turkey Creek at Byronville, Ga. | 32°11'44" | 83°54'03" | 45 | 386 | 07/54-06/82 | 124 | 17.2 | 7.3 | 2.91 | 2.17 | 83.8 |
| 02350600 | Kinchafoonee Creek at Preston, Ga. | 32°03'09" | 84°32'53" | 197 | 338 | 05/54-07/84 | 169 | 16.9 | 8.0 | 2.91 | 2.52 | 81.2 |
| 02353400 | Pachitla Creek near Edison, Ga. | 31°33'17" | 84°40'43" | 188 | 213 | 10/54-11/73 | 68 | 17.3 | 7.2 | 2.90 | 1.96 | 83.0 |
| 02353500 | Ichawaynochaway Creek at Milford, Ga. | 31°22'58" | 84°32'52" | 620 | 150 | 04/54-07/84 | 152 | 18.4 | 7.6 | 2.82 | 2.22 | 86.9 |
| 02357000 | Spring Creek near Iron City, Ga. | 31°02'23" | 84°44'18" | 485 | 86 | 08/57-07/78 | 128 | 18.2 | 8.1 | 2.81 | 2.07 | 93.7 |
| COOSA RIVER BASIN | | | | | | | | | | | | |
| 02379500 | Carteay River near Ellijay, Ga. | 34°40'53" | 84°27'20" | 134 | 1,255 | 06/57-08/75 | 154 | 13.9 | 7.5 | 2.79 | 1.90 | 92.5 |

Table 3. Periodic stream-temperature stations used for regression analyses, periods of analysis, selected station information, and harmonic properties--Continued
 [mi², square miles; ft, feet; ° C, degrees Celsius]

| Station number | Station name | Latitude | Longitude | Drainage area (mi ²) | Altitude (ft) | Period of record | Number of observations | Harmonic properties computed from observed data | | | | |
|-------------------------------------|--|-----------|-----------|----------------------------------|---------------|------------------|------------------------|---|-----------------|-----------------|----------------------|--------------------|
| | | | | | | | | Mean (° C) | Amplitude (° C) | Phase (radians) | Standard error (° C) | Variance (percent) |
| COOSA RIVER BASIN--Continued | | | | | | | | | | | | |
| 02380000 | Elijay River at Elijay, Ga. | 34°41'06" | 84°28'40" | 88 | 1,242 | 06/57-07/74 | 121 | 13.6 | 8.0 | 2.82 | 2.04 | 89.1 |
| 02380500 | Coosawattee River near Elijay, Ga. | 34°40'18" | 84°30'31" | 236 | 1,216 | 05/63-08/83 | 175 | 13.7 | 8.0 | 2.77 | 1.88 | 88.4 |
| 02382500 | Coosawattee River at Carters, Ga. | 34°36'13" | 84°41'44" | 521 | 651 | 07/65-12/72 | 32 | 15.1 | 9.6 | 2.76 | 1.48 | 93.7 |
| 02383500 | Coosawattee River near Pine Chapel, Ga. | 34°34'35" | 84°51'37" | 831 | 616 | 06/57-12/72 | 92 | 15.2 | 9.4 | 2.78 | 2.30 | 85.9 |
| 02384748 | Conasauga River (Dalton Intake) near Dalton, Ga. | 34°47'20" | 84°52'30" | 308 | 650 | 07/74-12/84 | 119 | 15.1 | 9.9 | 2.78 | 1.96 | 92.5 |
| 02385800 | Holly Creek near Chatsworth, Ga. | 34°43'00" | 84°46'12" | 64 | 689 | 07/60-06/83 | 202 | 14.7 | 9.0 | 2.75 | 2.27 | 84.4 |
| 02387500 | Oostanaula River at Resaca, Ga. | 34°34'42" | 84°56'29" | 1,602 | 604 | 09/57-12/72 | 111 | 15.0 | 9.8 | 2.77 | 2.12 | 89.1 |
| 02389000 | Etowah River near Dawsonville, Ga. | 34°22'57" | 84°03'21" | 103 | 1,050 | 09/56-08/84 | 163 | 13.6 | 8.2 | 2.74 | 1.90 | 90.2 |
| 02392000 | Etowah River at Canton, Ga. | 34°14'23" | 84°29'47" | 613 | 845 | 06/57-10/84 | 212 | 14.2 | 8.9 | 2.81 | 1.97 | 92.1 |
| 02398000 | Chattooga River at Summerville, Ga. | 34°28'03" | 85°20'19" | 192 | 613 | 07/57-12/84 | 290 | 15.6 | 7.2 | 2.74 | 1.83 | 85.2 |
| 02411930 | Tallapoosa River below Tallapoosa, Ga. | 33°44'27" | 85°20'11" | 272 | 920 | 07/74-11/84 | 80 | 15.4 | 9.4 | 2.83 | 2.33 | 88.3 |
| 02413210 | Little Tallapoosa River below Bowdon, Ga. | 33°29'34" | 85°16'45" | 245 | 919 | 07/74-12/84 | 117 | 15.6 | 9.1 | 2.85 | 2.09 | 89.9 |
| TENNESSEE RIVER BASIN | | | | | | | | | | | | |
| 03545000 | Hiwassee River at Presley, Ga. | 34°54'17" | 83°43'01" | 46 | 1,933 | 08/51-06/82 | 270 | 12.7 | 6.5 | 2.81 | 2.13 | 79.0 |
| 03558000 | Toccoa River near Dial, Ga. | 34°47'24" | 84°14'24" | 177 | 1,782 | 01/51-06/84 | 297 | 12.9 | 8.1 | 2.77 | 2.04 | 89.6 |
| 03560000 | Fightingtown Creek at McCalysville, Ga. | 34°58'53" | 84°23'12" | 71 | 1,450 | 01/51-06/74 | 218 | 13.5 | 7.9 | 2.82 | 2.21 | 85.5 |
| 03566800 | South Chickamauga Creek at Graysville, Ga. | 34°58'39" | 85°08'42" | 198 | 680 | 08/74-11/84 | 80 | 14.8 | 9.0 | 2.79 | 2.03 | 90.0 |
| 03567340 | West Chickamauga Creek near Lakeview, Ga. | 34°57'26" | 85°12'20" | 148 | 679 | 08/74-12/84 | 119 | 15.3 | 8.5 | 2.77 | 1.76 | 92.6 |

**GRAPHS SHOWING HARMONIC
STREAM-TEMPERATURE CURVES OF
OBSERVED DATA AND STATEWIDE
HARMONIC EQUATION FOR
SELECTED STATIONS, FIGURES 14-211**

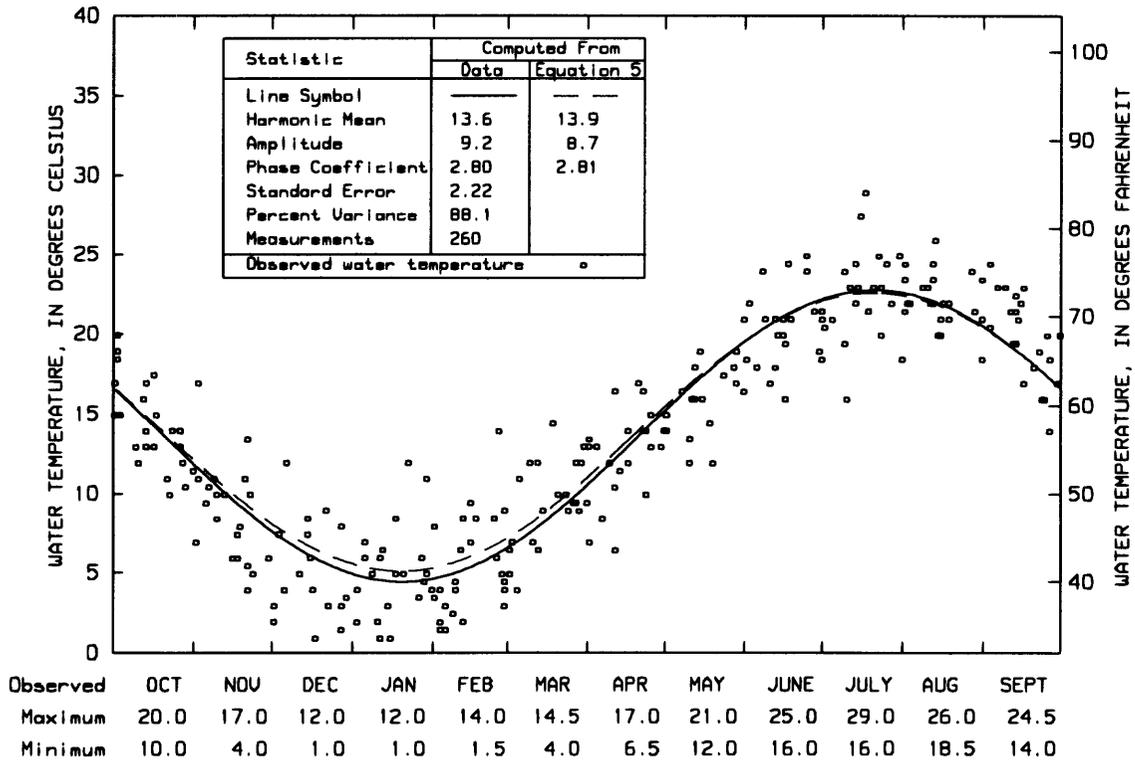


Figure 14. Chattooga River near Clayton, Georgia, Station 02177000, September 1957 to December 1984.

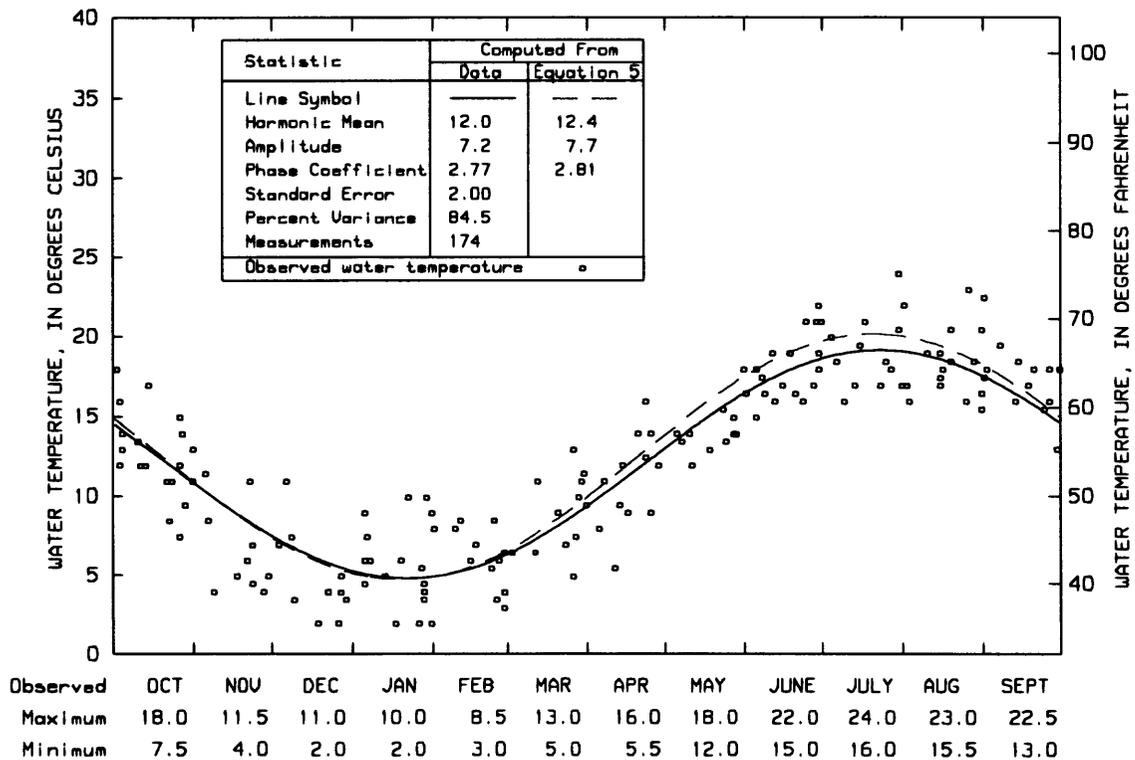


Figure 15. Tallulah River near Clayton, Georgia, Station 02178400, July 1964 to August 1984.

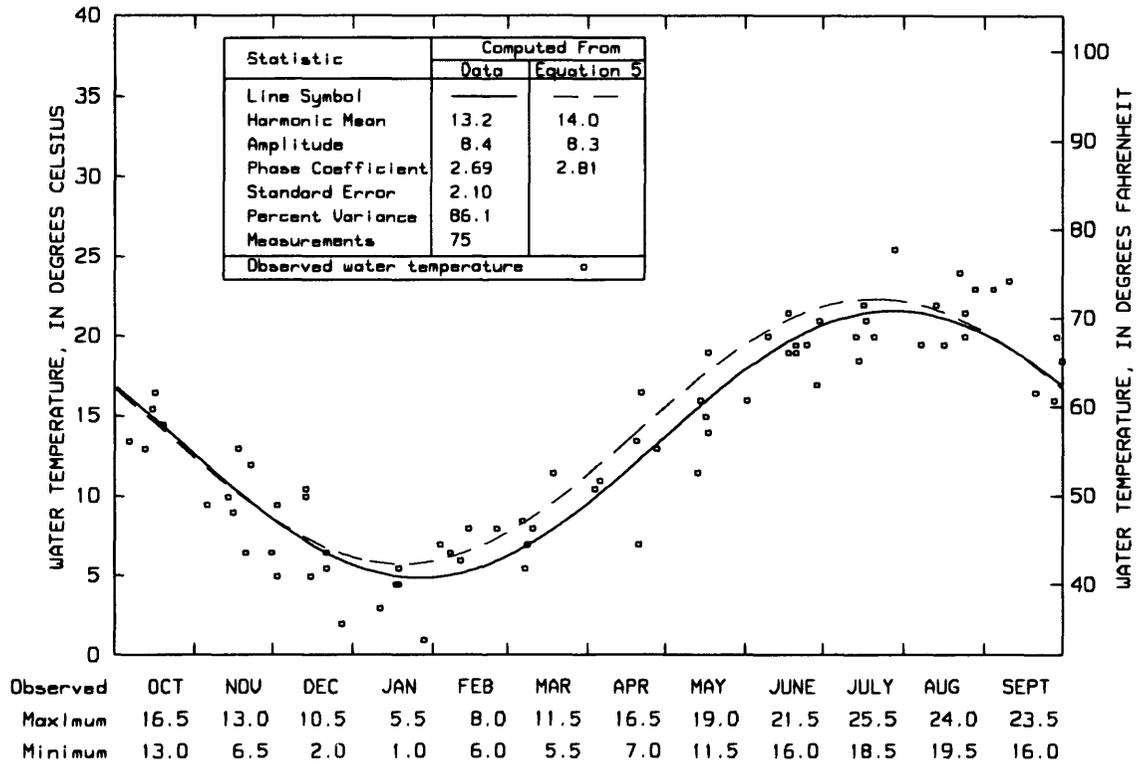


Figure 16. Panther Creek near Toccoa, Georgia, Station 02182000, September 1959 to June 1974.

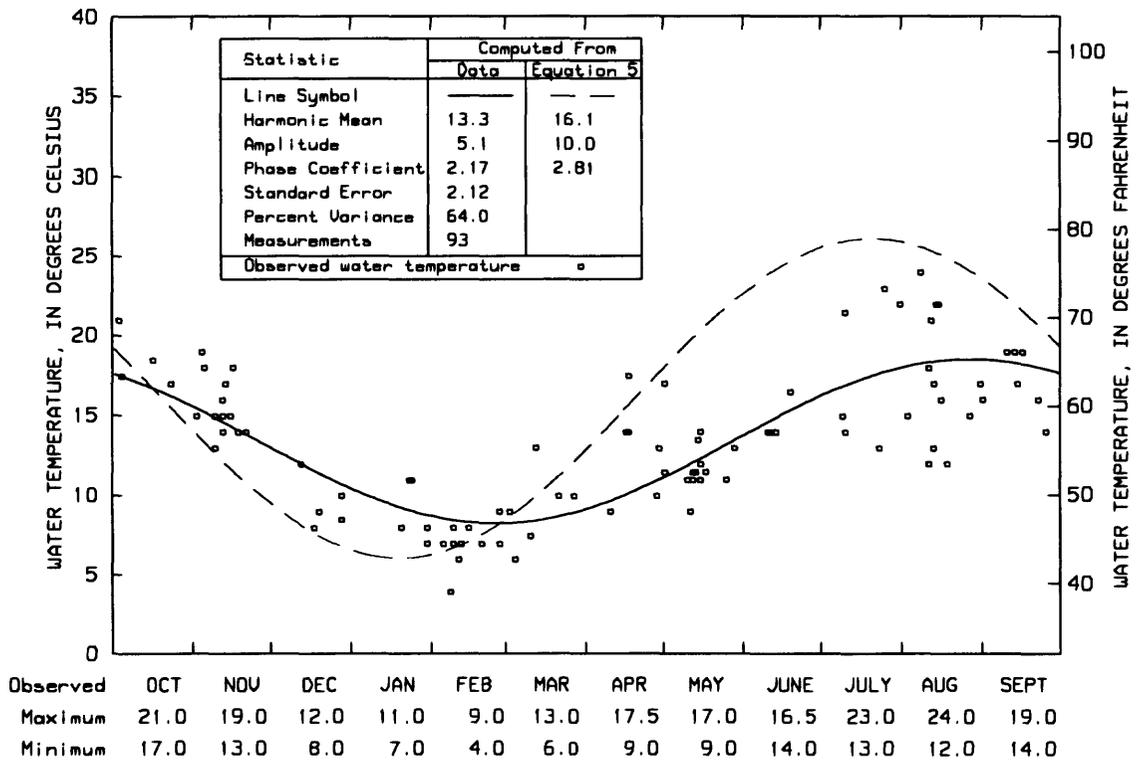


Figure 17. Savannah River near Iva, South Carolina Station 02187500, May 1958 to November 1984.

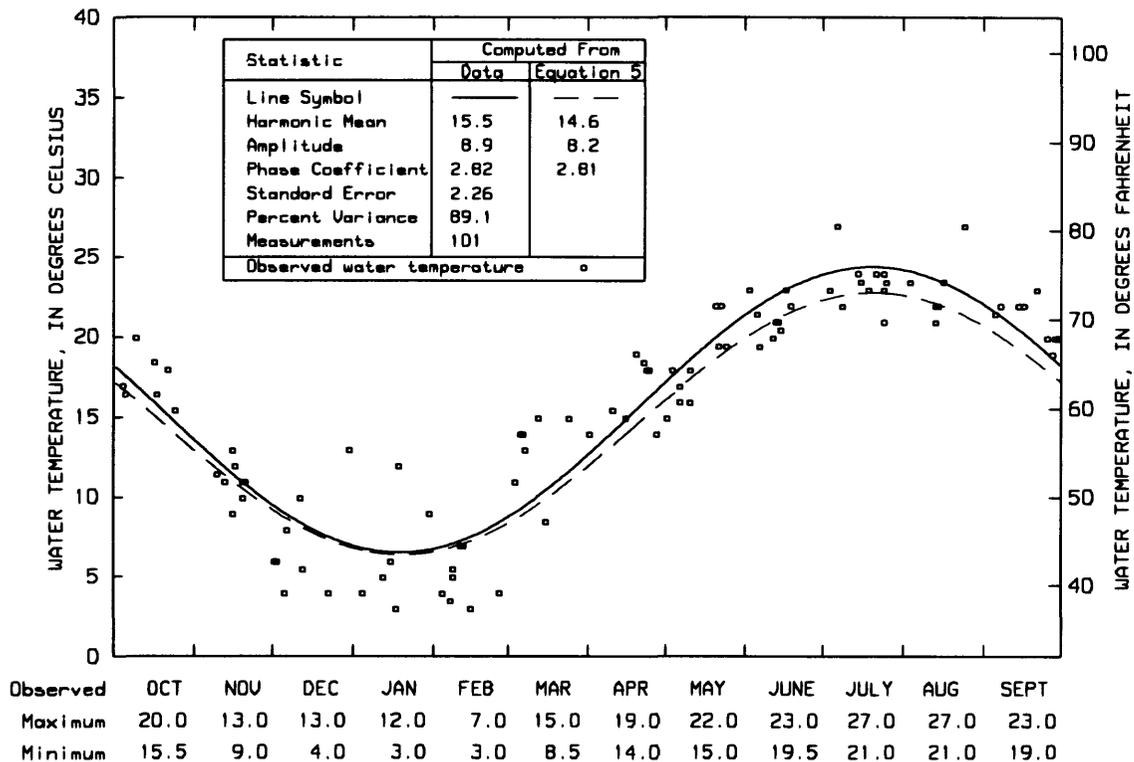


Figure 18. Beaverdam Creek at Dewy Rose, Georgia, Station 02188500, February 1958 to July 1975.

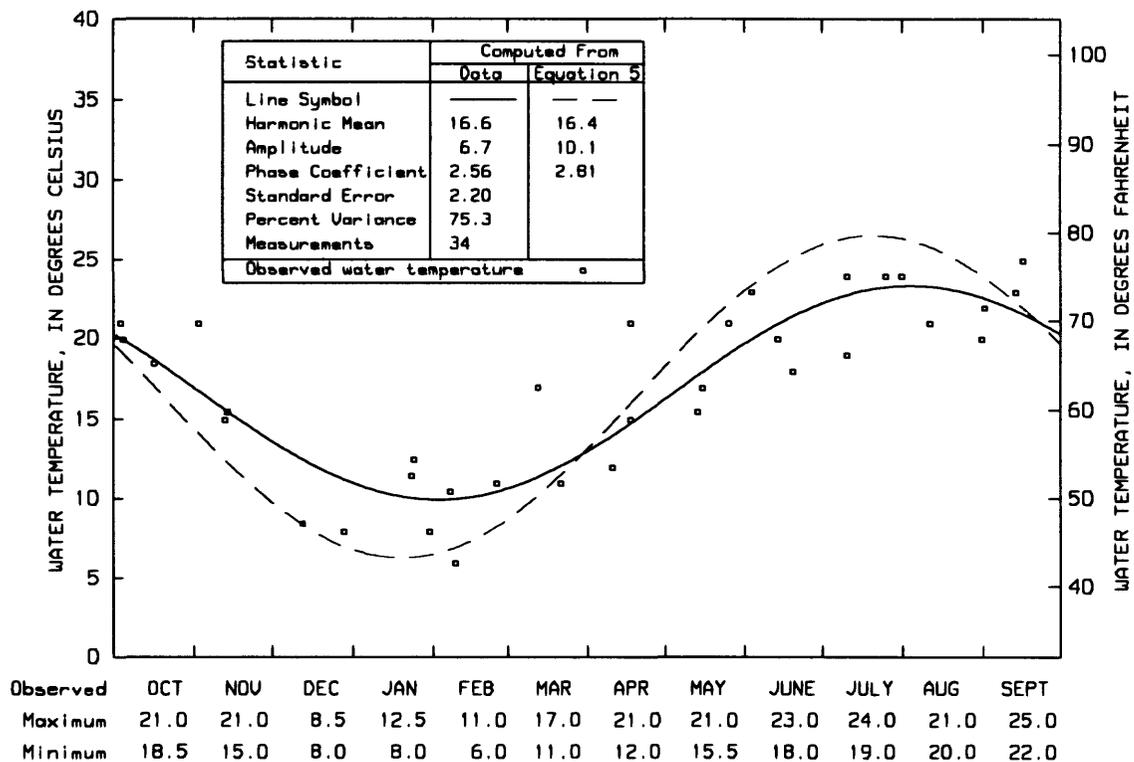


Figure 19. Savannah River near Calhoun Falls, South Carolina Station 02189000, September 1957 to July 1974.

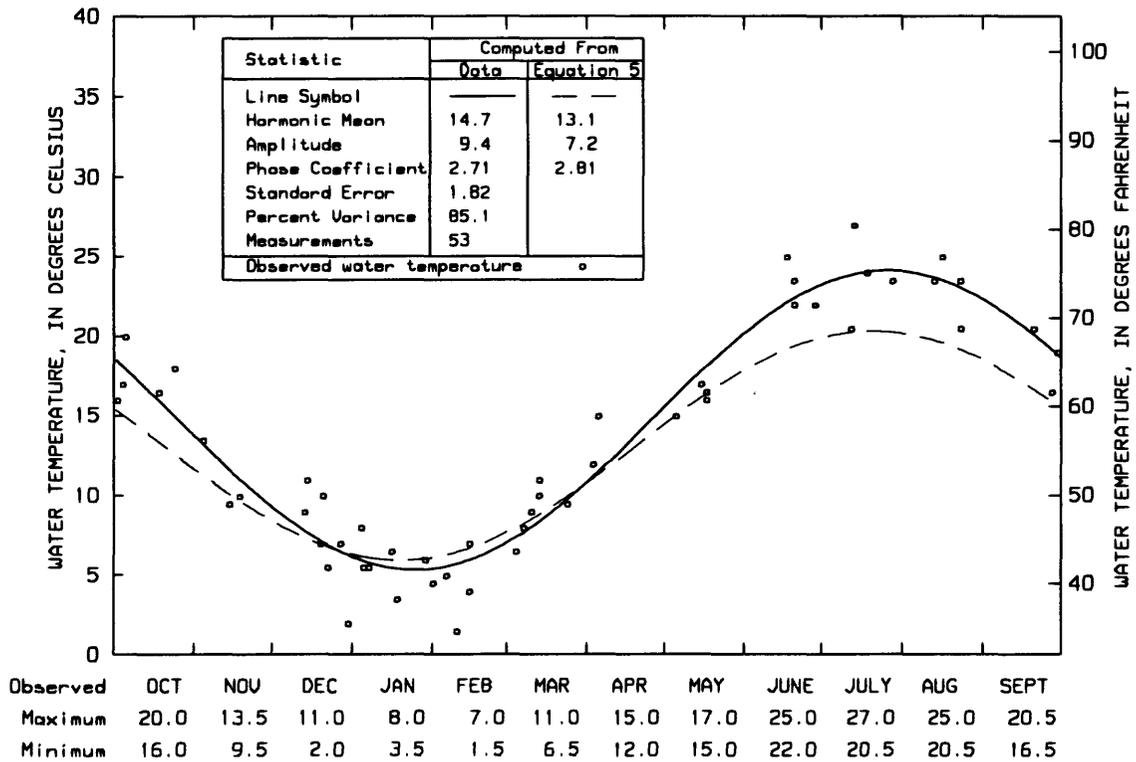


Figure 20. North Fork Broad River above Toccoa, Georgia, Station 02189050, October 1958 to August 1968.

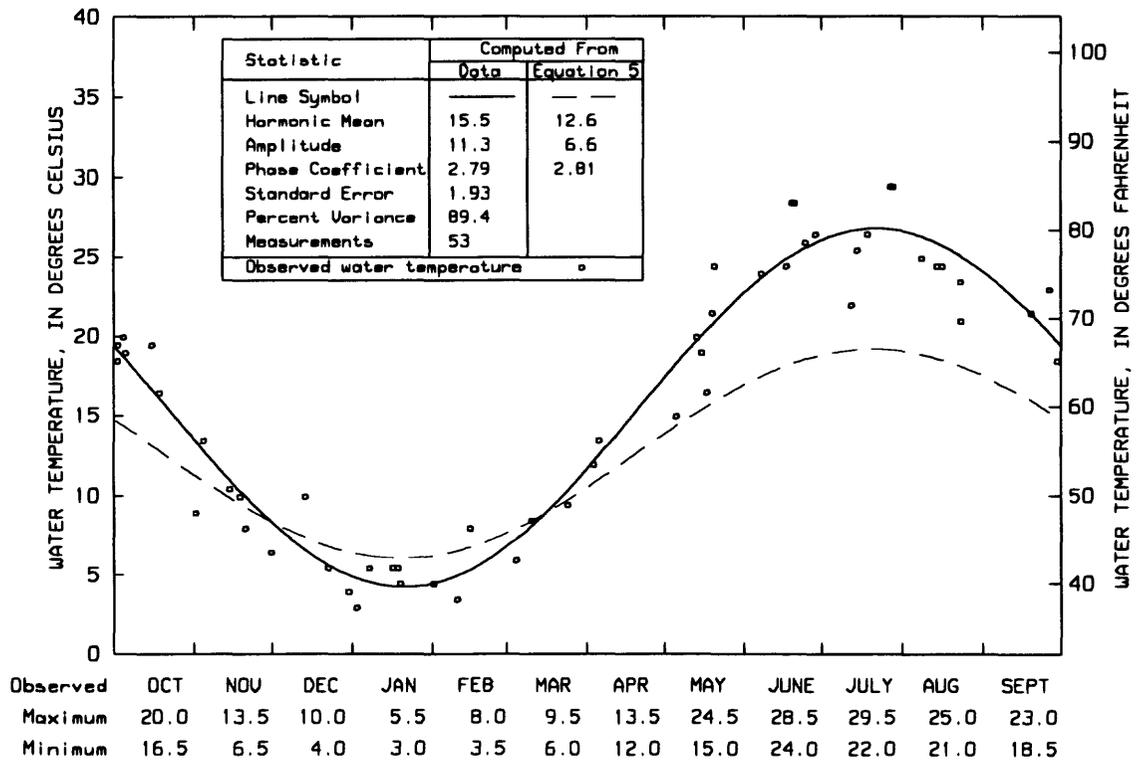
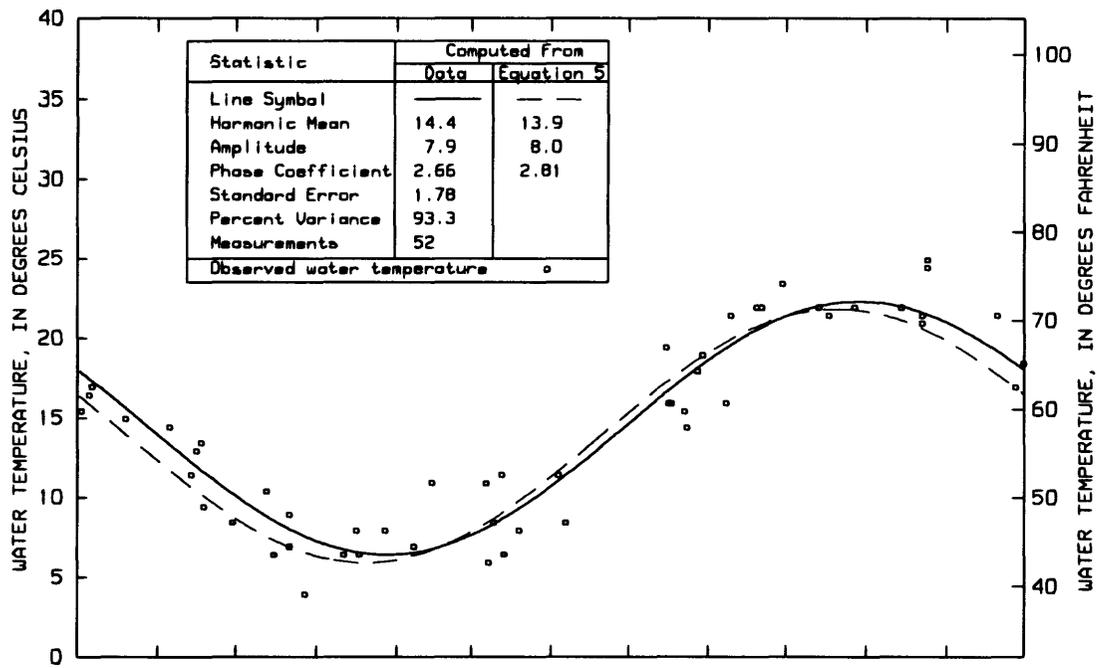
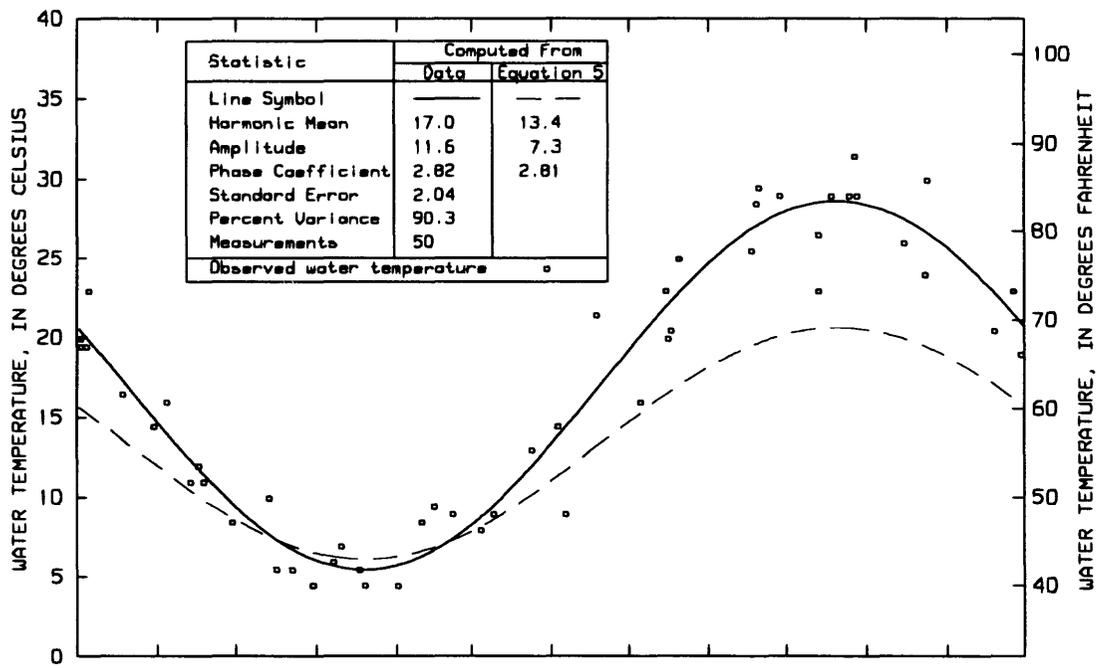


Figure 21. Denmans Creek near Toccoa, Georgia, Station 02189100, October 1958 to October 1969.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 17.0 | 14.5 | 10.5 | 8.0 | 11.0 | 11.5 | 11.5 | 19.5 | 23.5 | 22.0 | 25.0 | 21.5 |
| Minimum | 15.0 | 8.5 | 4.0 | 6.5 | 7.0 | 6.0 | 8.5 | 14.5 | 16.0 | 21.5 | 21.0 | 17.0 |

Figure 22. North Fork Broad River near Toccoa, Georgia, Station 02189500, October 1958 to August 1968.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| Maximum | 23.0 | 16.0 | 10.0 | 7.0 | 9.5 | 13.0 | 21.5 | 25.0 | 29.5 | 31.5 | 30.0 | 23.0 |
| Minimum | 14.5 | 8.5 | 4.5 | 4.5 | 4.5 | 8.0 | 9.0 | 16.0 | 25.5 | 23.0 | 24.0 | 19.0 |

Figure 23. Bear Creek near Mize, Georgia, Station 02189600, October 1958 to July 1968.

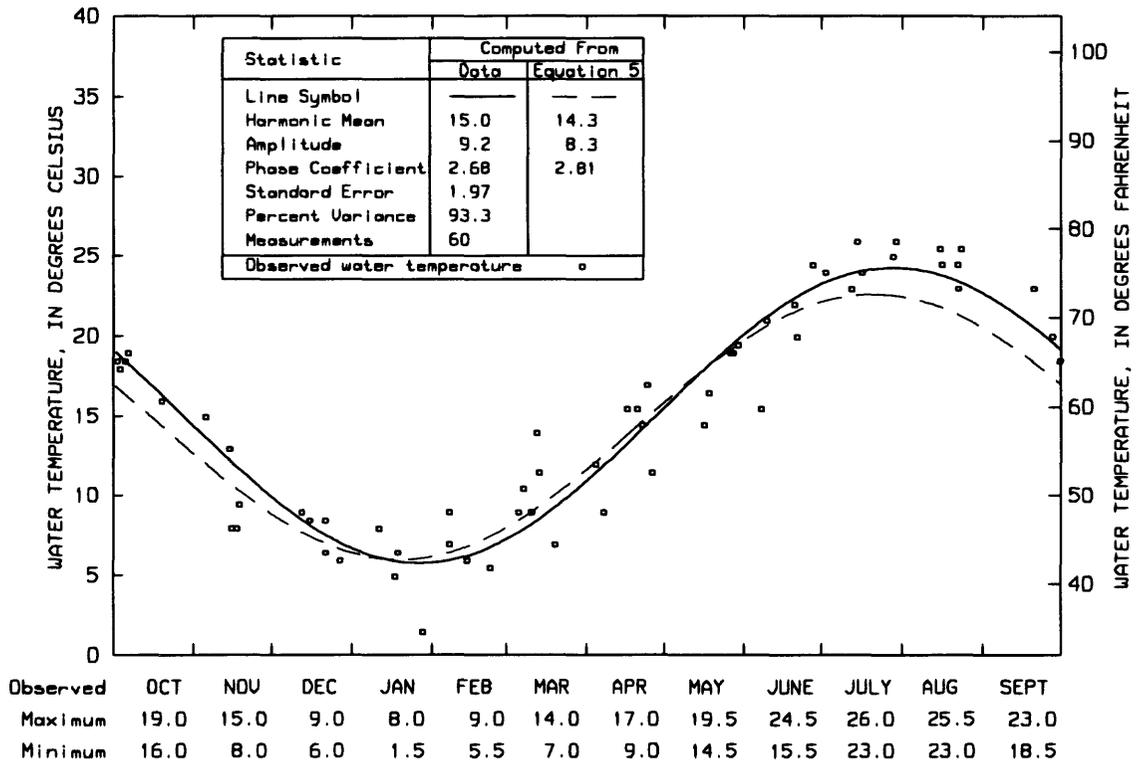


Figure 24. North Fork Broad River near Lavonia, Georgia, Station 02190000, July 1958 to August 1968.

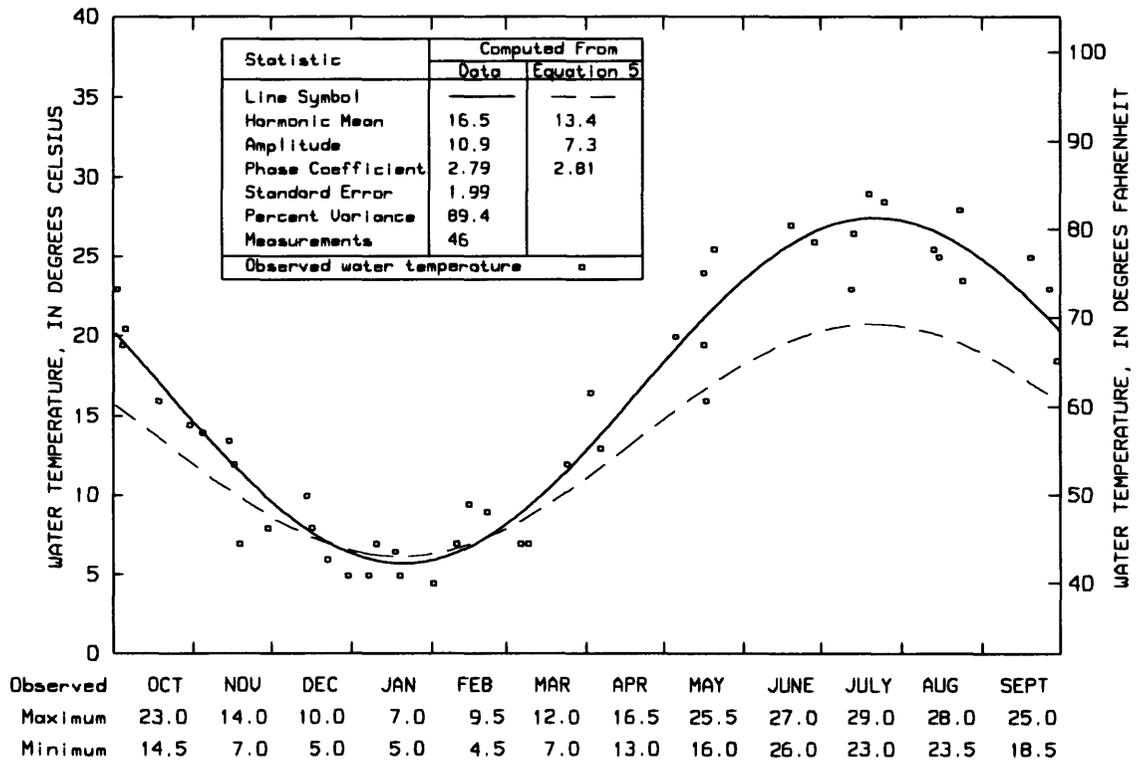


Figure 25. Toms Creek near Eastanollee, Georgia, Station 02190100, July 1962 to August 1968.

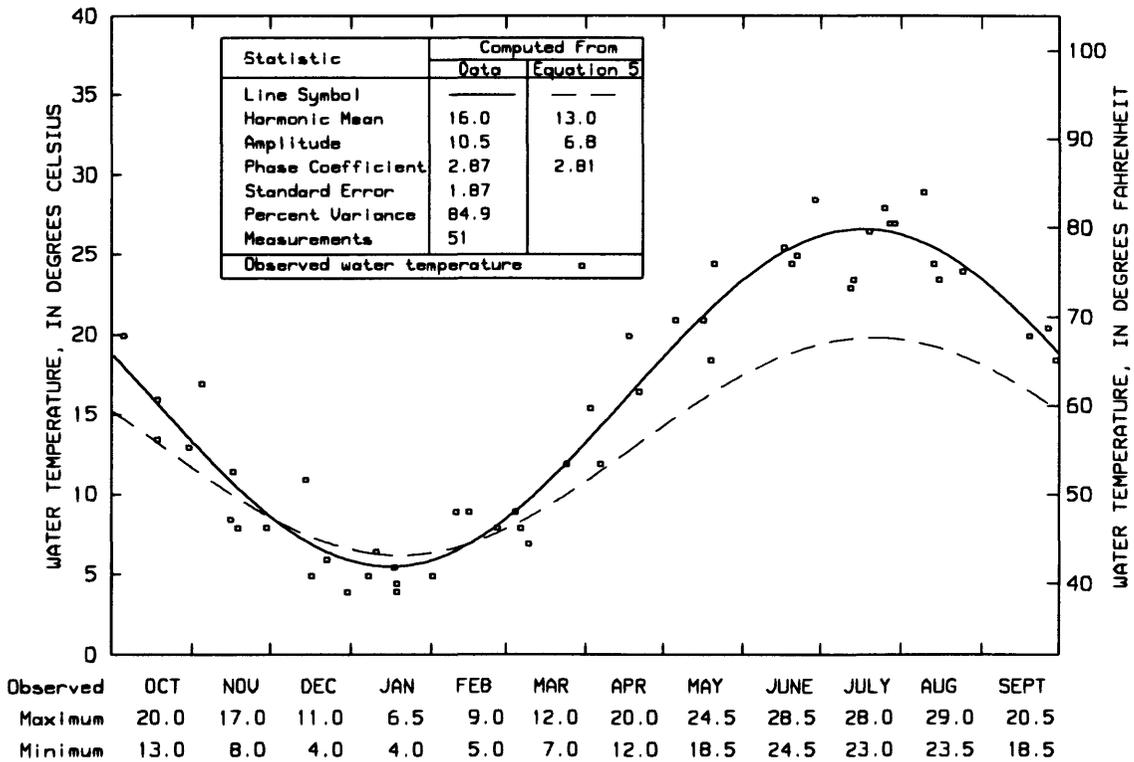


Figure 26. Toms Creek tributary near Avalon, Georgia, Station 02190200, July 1962 to August 1968.

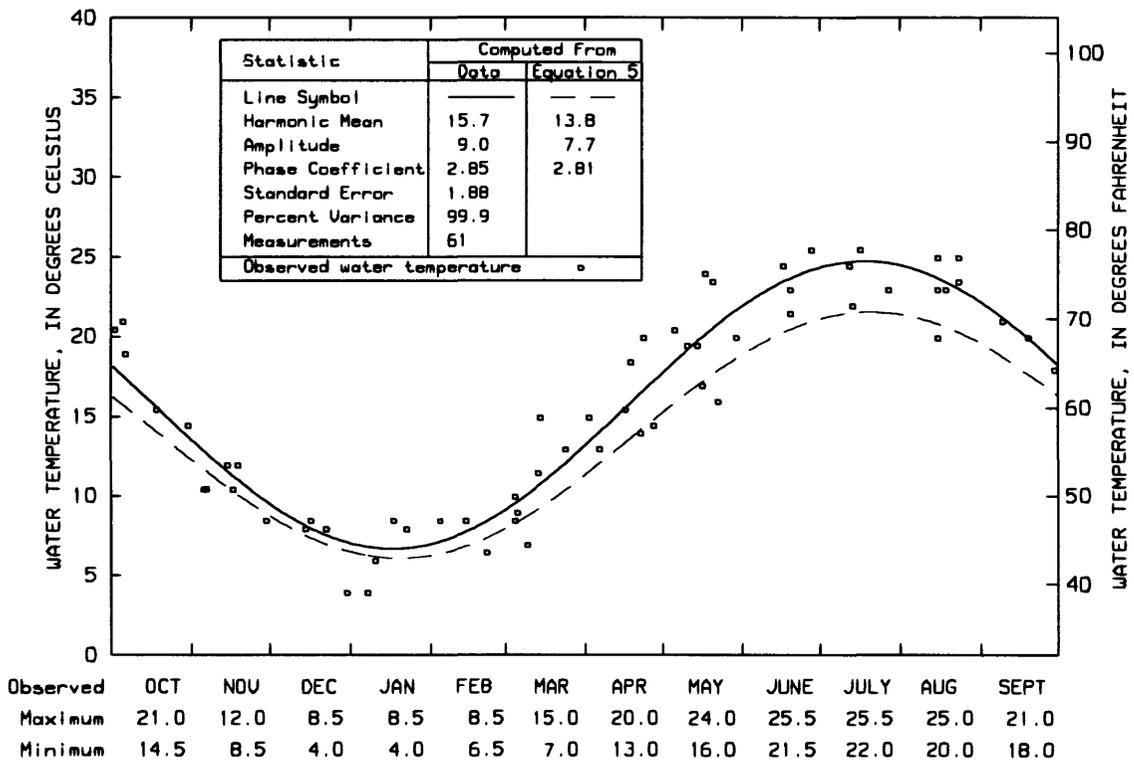


Figure 27. Toms Creek near Martin, Georgia, Station 02190500, October 1962 to September 1968.

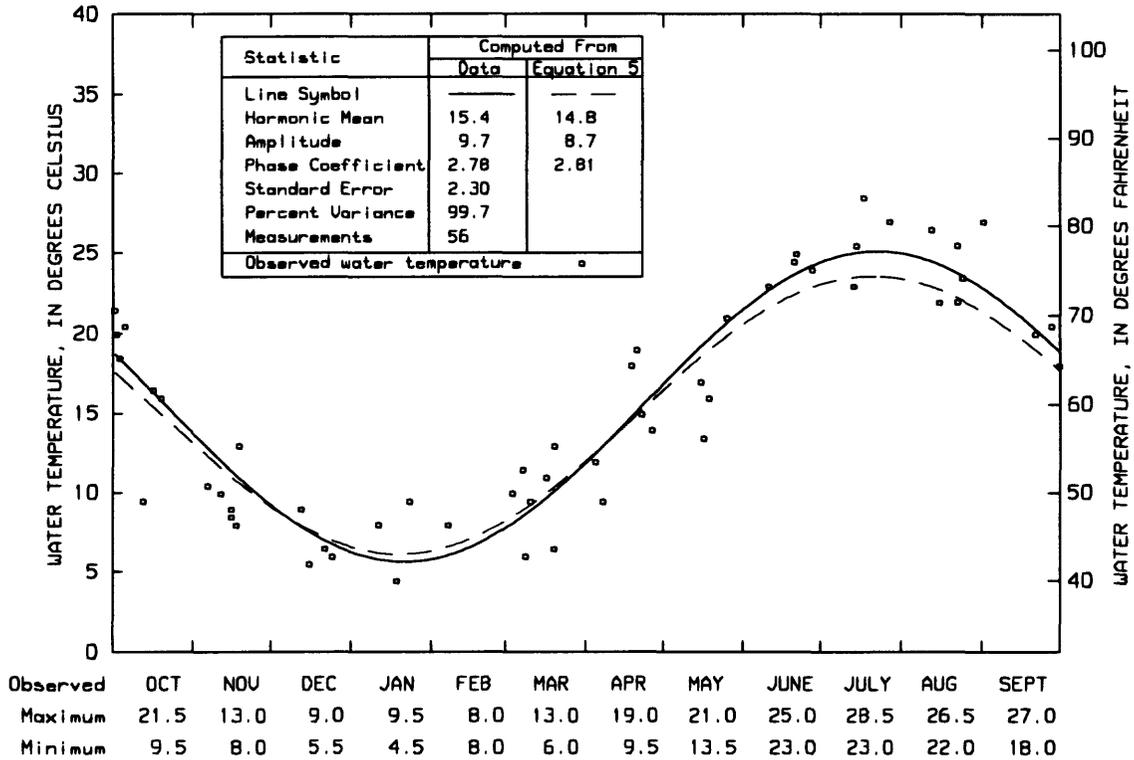


Figure 28. North Fork Broad River near Carnesville, Georgia, Station 02191000, October 1962 to September 1970.

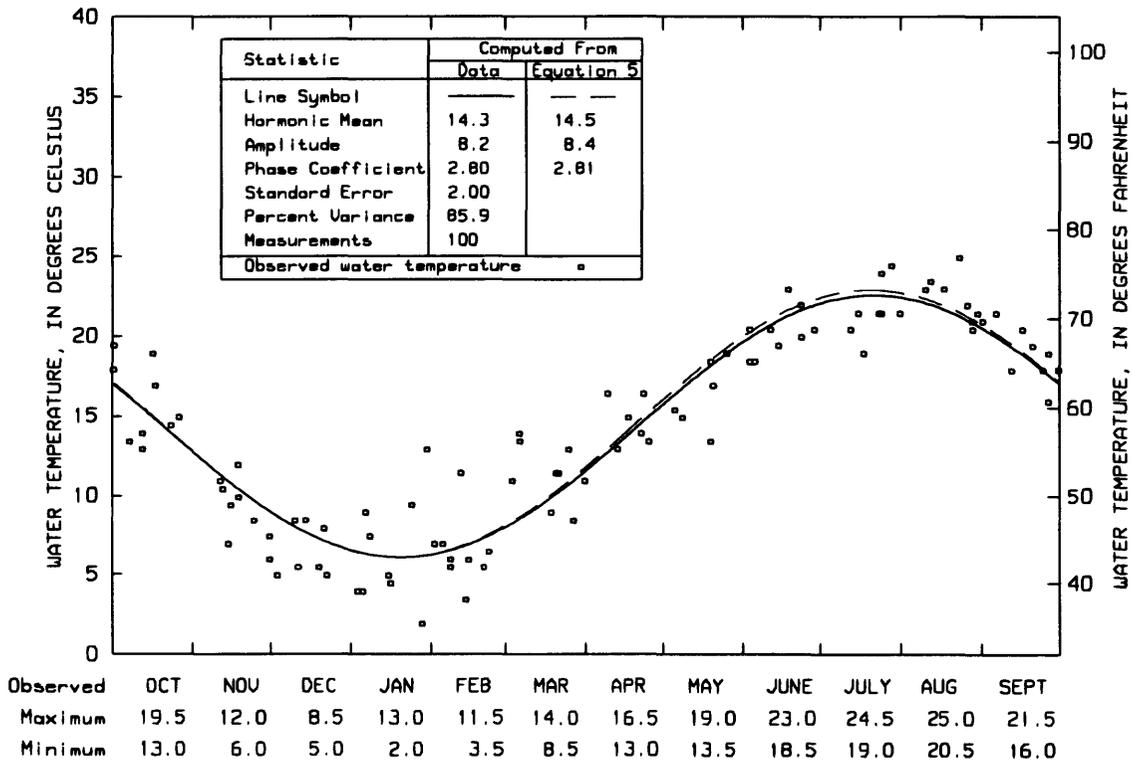


Figure 29. Hudson River at Homer, Georgia, Station 02191200, August 1962 to July 1975.

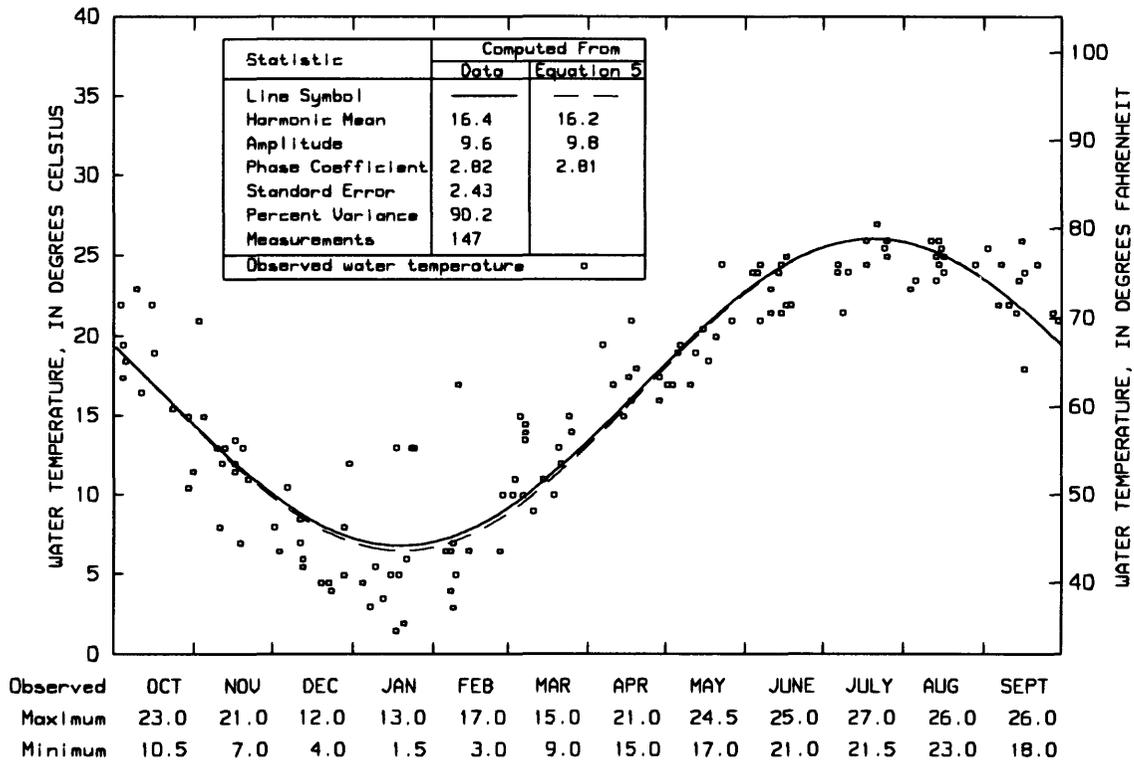


Figure 30. Broad River near Bell, Georgia, Station 02192000, October 1956 to October 1979.

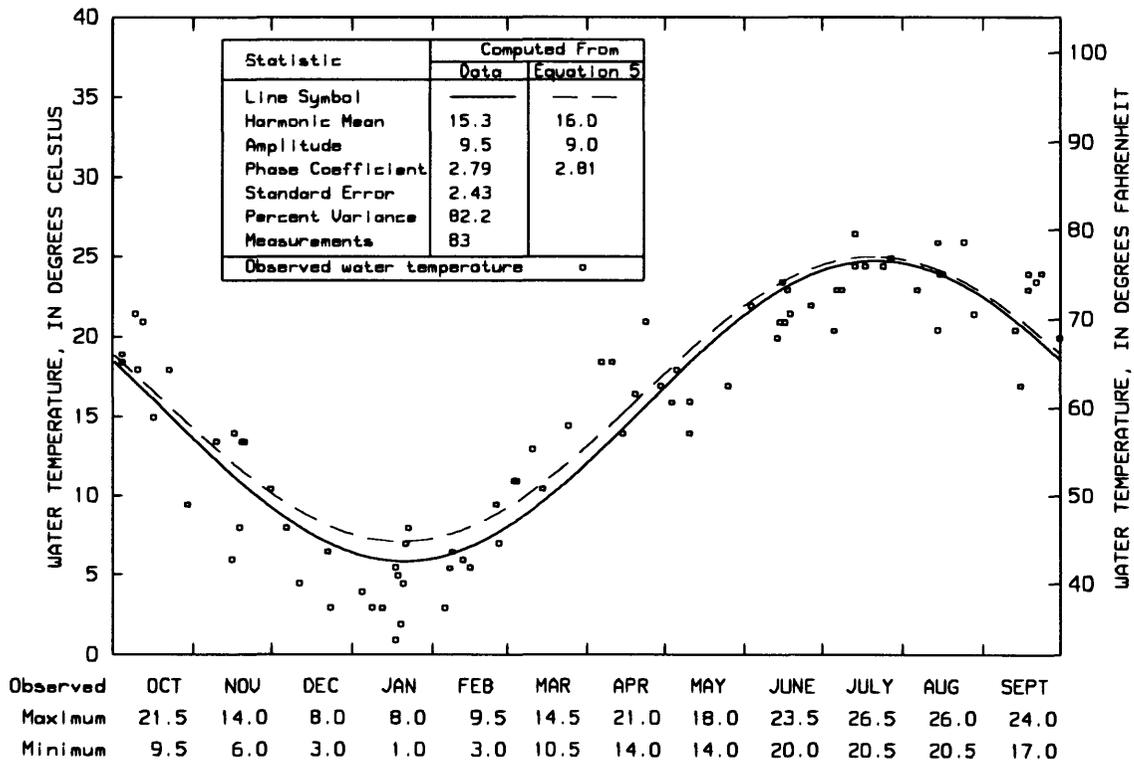


Figure 31. Little River near Washington, Georgia, Station 02193500, October 1954 to June 1974.

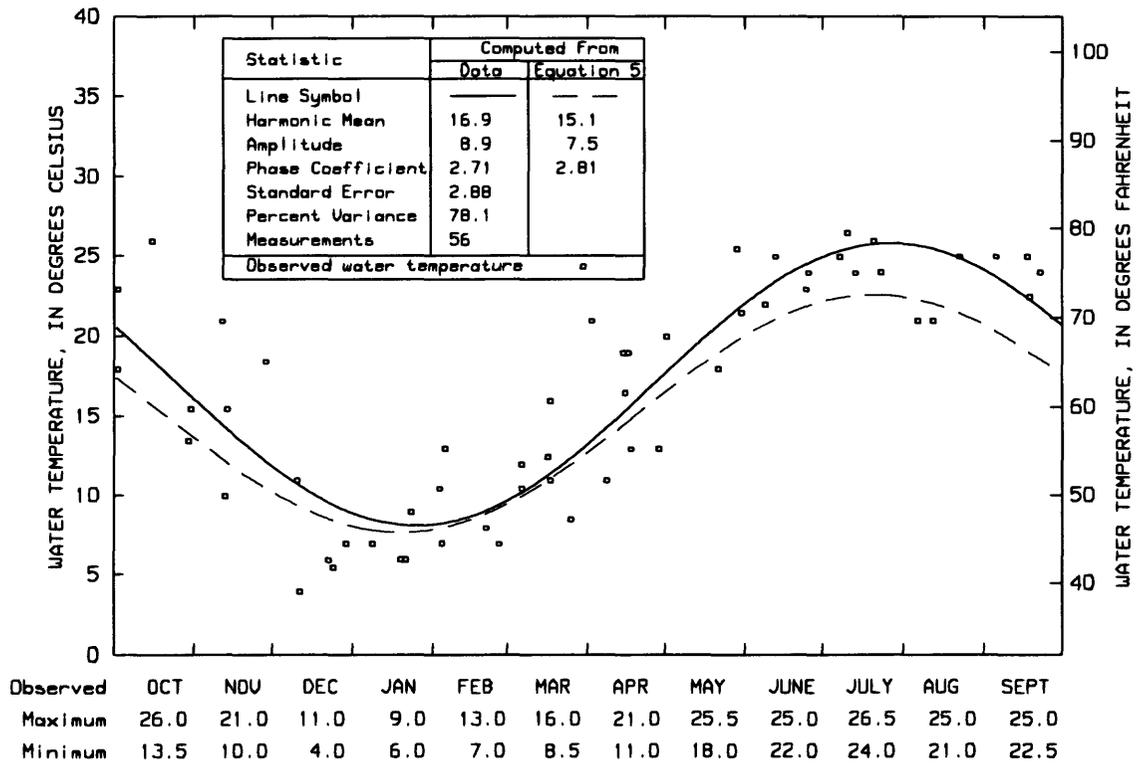


Figure 32. Butler Creek at Fort Gordon, Georgia, Station 02196820, March 1968 to July 1976.

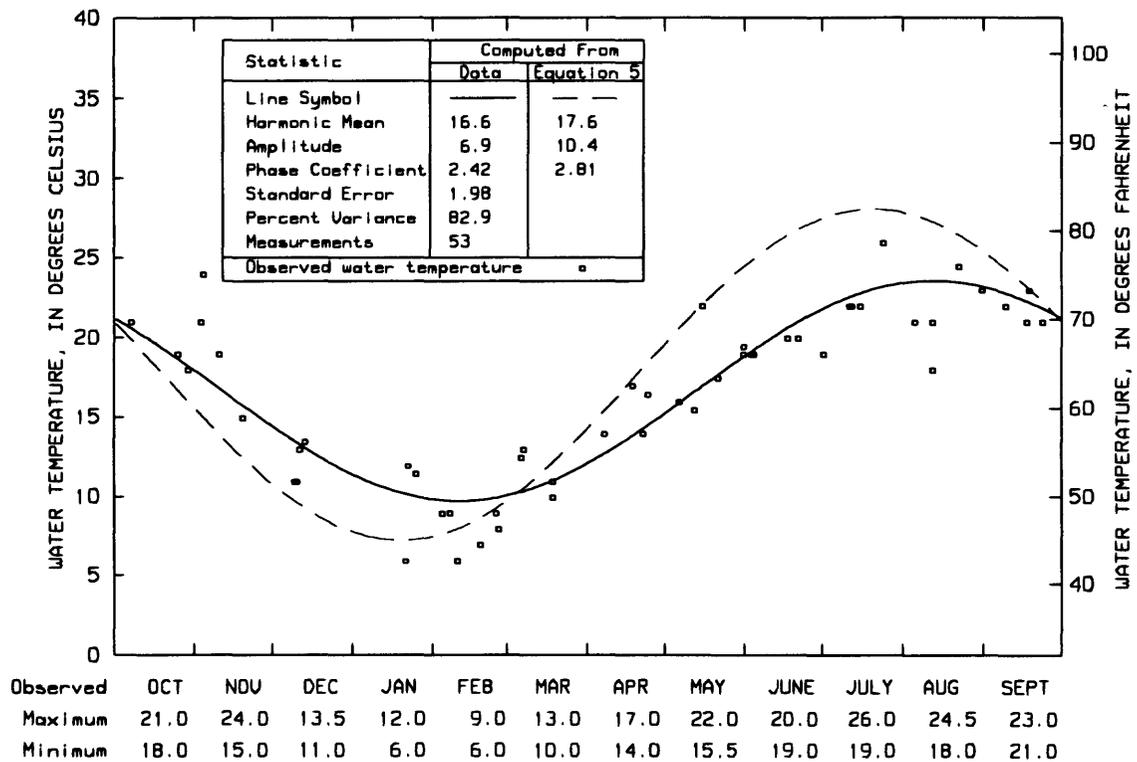
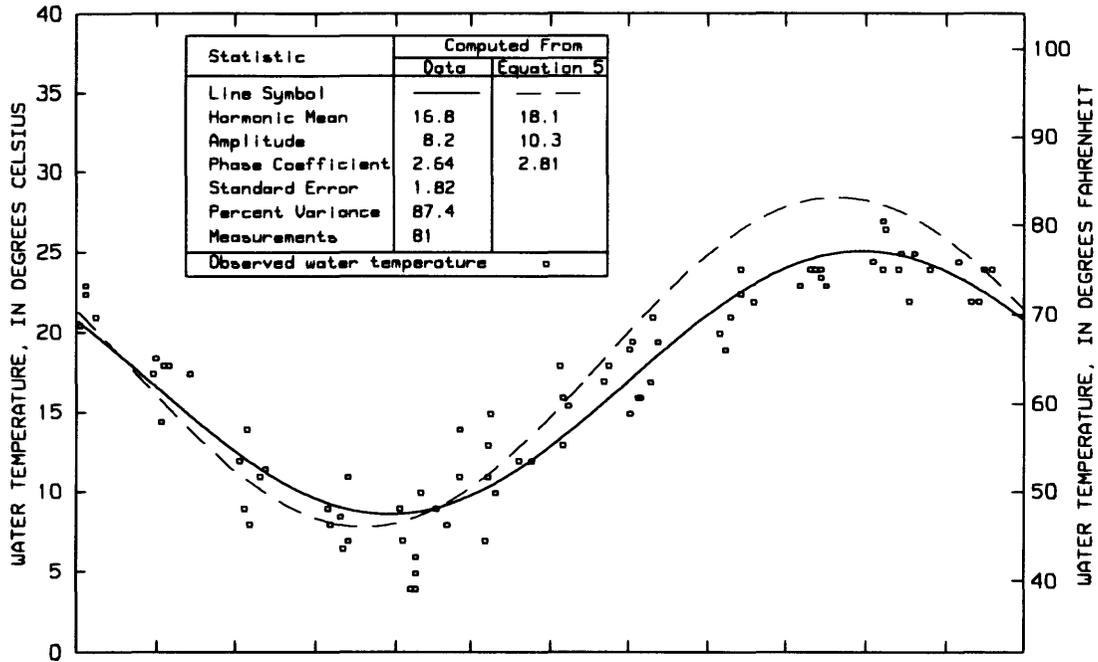
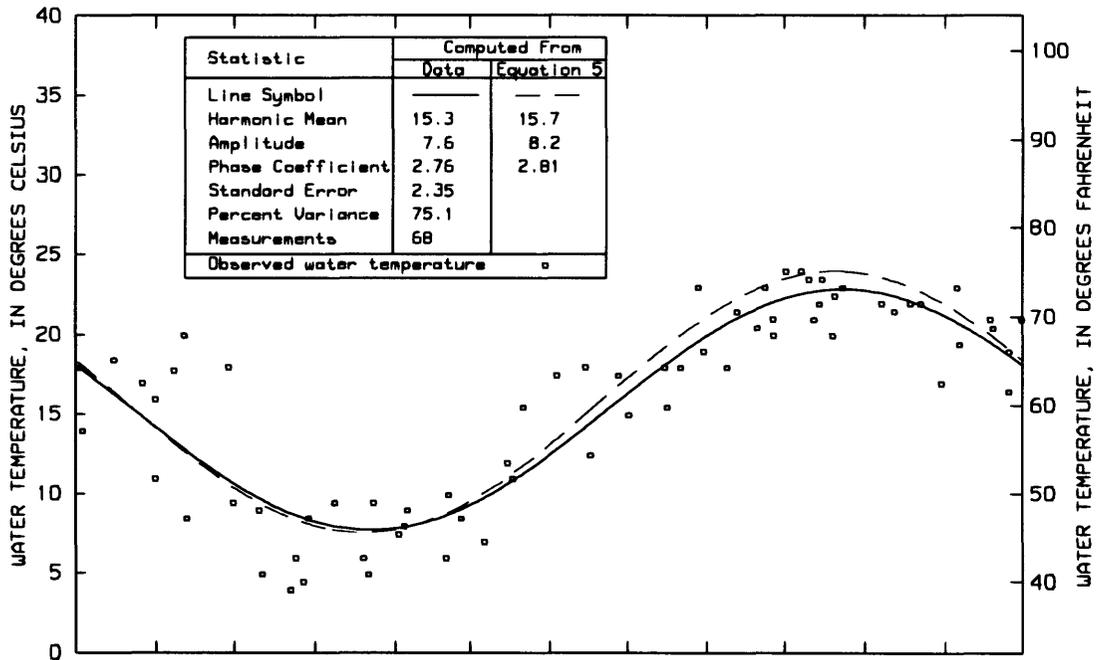


Figure 33. Savannah River at Augusta, Georgia, Station 02197000, February 1958 to July 1973.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.0 | 18.0 | 14.0 | 11.0 | 14.0 | 15.0 | 18.0 | 21.0 | 24.0 | 24.0 | 27.0 | 24.5 |
| Minimum | 17.5 | 14.5 | 8.0 | 6.5 | 4.0 | 7.0 | 13.0 | 15.0 | 19.0 | 23.0 | 22.0 | 22.0 |

Figure 34. Savannah River at Burtans Ferry near Millhaven, Georgia, Station 02197500, August 1957 to June 1979.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|-----|-----|------|------|------|------|------|------|------|------|
| Maximum | 18.5 | 20.0 | 9.0 | 9.5 | 10.0 | 15.5 | 18.0 | 23.0 | 23.0 | 24.0 | 22.0 | 23.0 |
| Minimum | 11.0 | 8.5 | 4.0 | 5.0 | 6.0 | 7.0 | 12.5 | 15.0 | 18.0 | 20.0 | 17.0 | 16.5 |

Figure 35. Brier Creek near Thomson, Georgia, Station 02197520, November 1958 to July 1976.

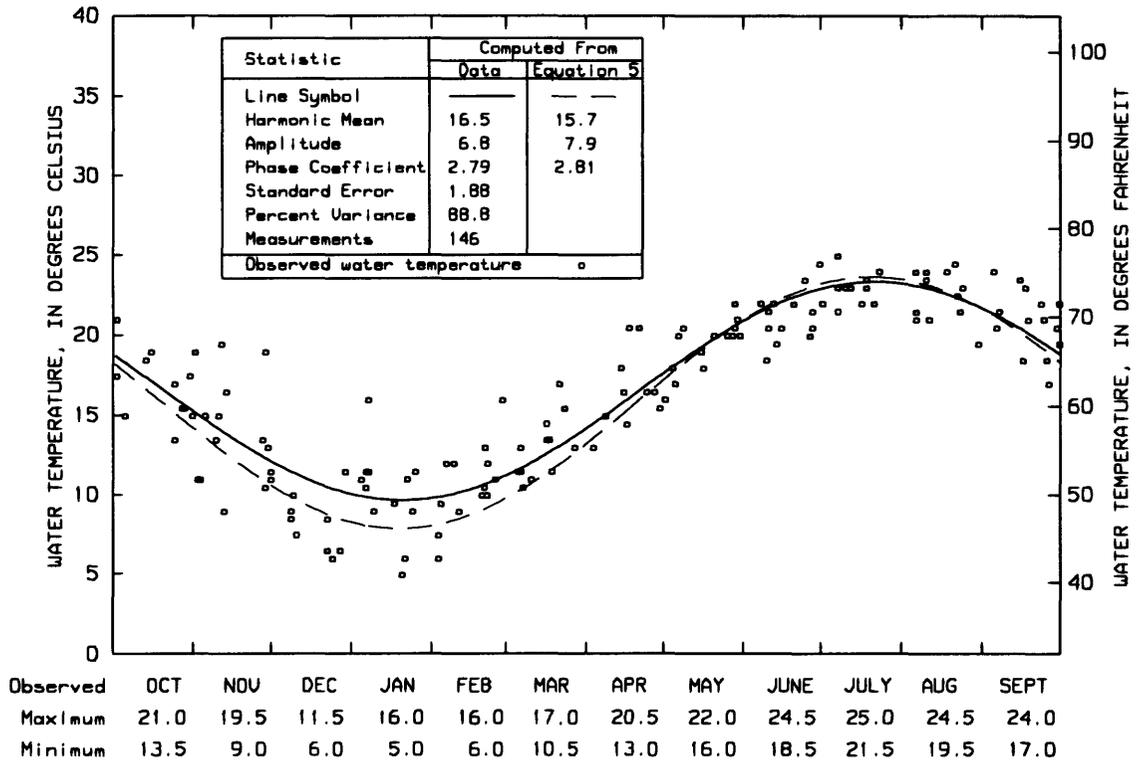


Figure 36. Brushy Creek near Wrens, Georgia, Station 02197600, May 1958 to July 1976.

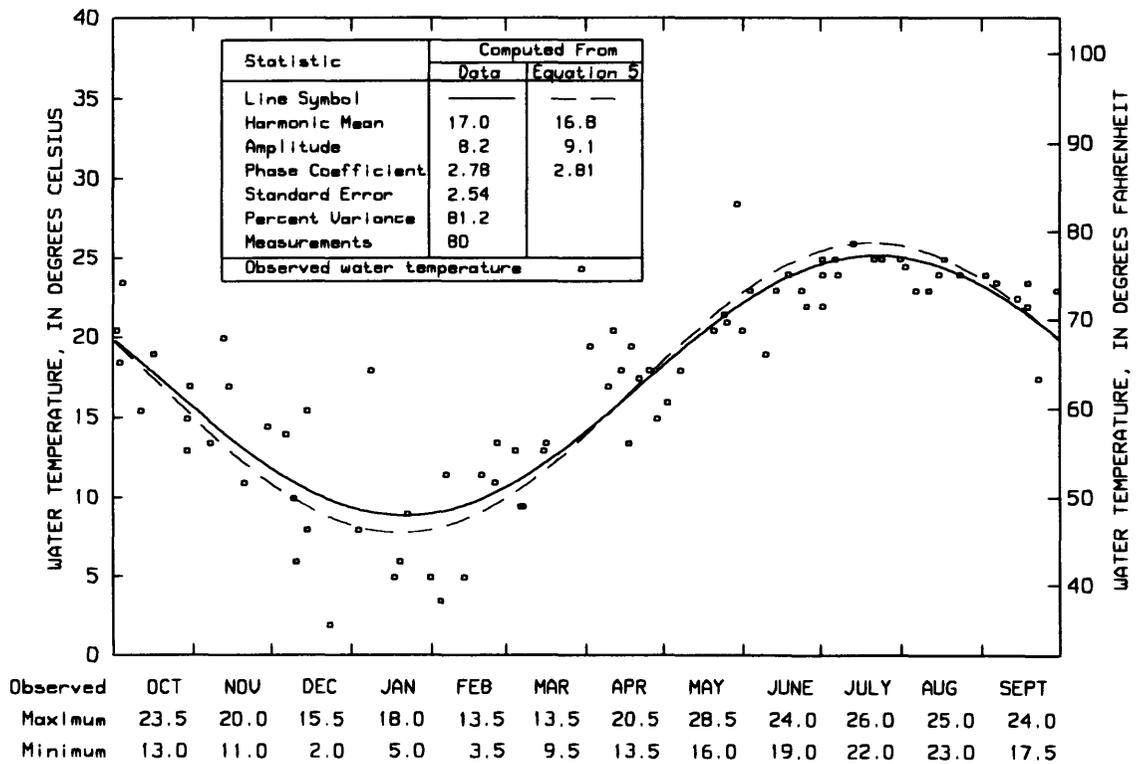
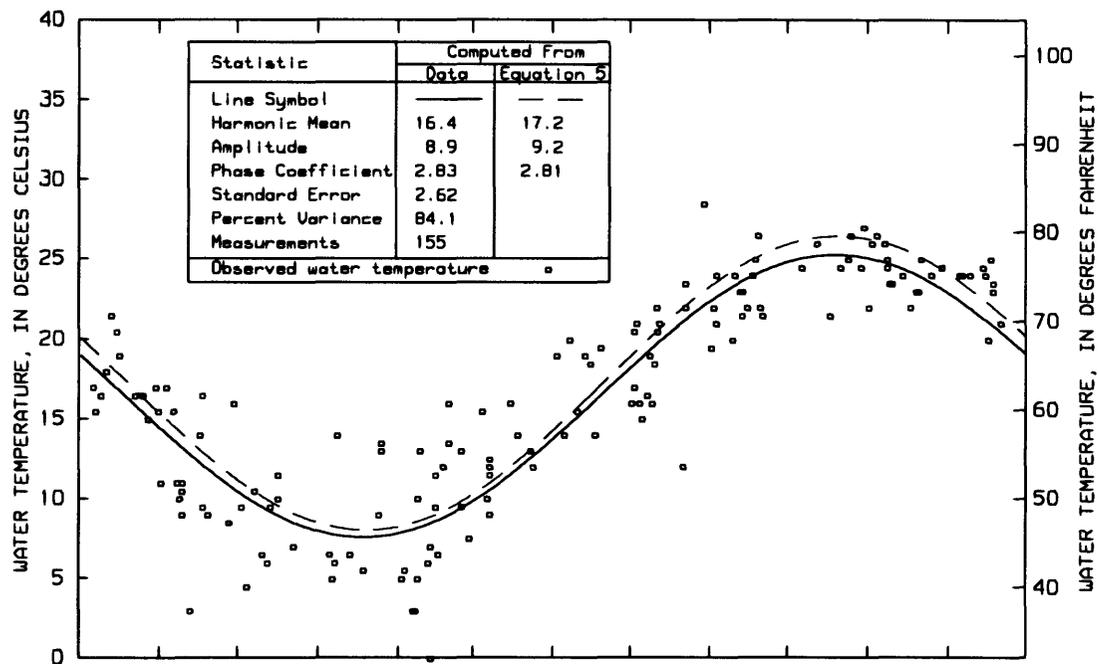
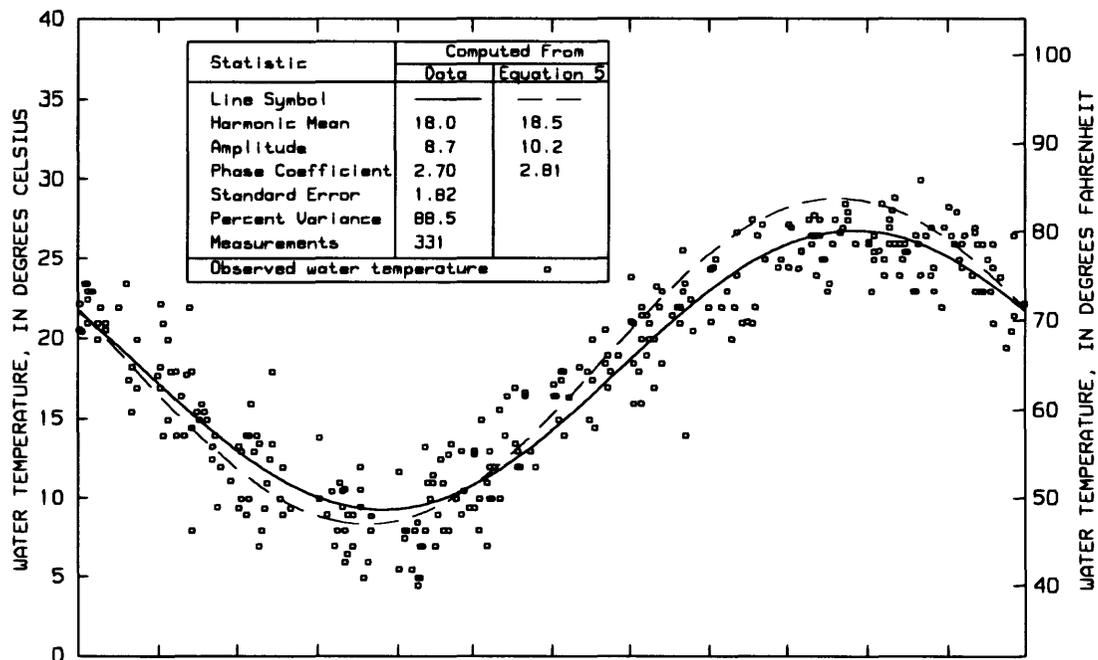


Figure 37. Brier Creek near Waynesboro, Georgia, Station 02197830, October 1954 to September 1983.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 21.5 | 17.0 | 11.5 | 14.0 | 16.0 | 16.0 | 20.0 | 28.5 | 26.5 | 27.0 | 26.5 | 25.0 |
| Minimum | 15.0 | 3.0 | 4.5 | 5.0 | 0.1 | 9.0 | 14.0 | 12.0 | 19.5 | 21.5 | 22.0 | 20.0 |

Figure 38. Brier Creek at Millhaven, Georgia, Station 02198000, July 1954 to June 1979.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.5 | 22.2 | 18.0 | 13.9 | 13.5 | 17.0 | 20.6 | 25.6 | 27.5 | 28.5 | 30.0 | 28.3 |
| Minimum | 15.5 | 8.0 | 7.0 | 5.0 | 4.5 | 7.0 | 14.0 | 14.0 | 20.0 | 23.0 | 22.0 | 19.5 |

Figure 39. Savannah River near Clio, Georgia, Station 02198500, May 1938 to December 1984.

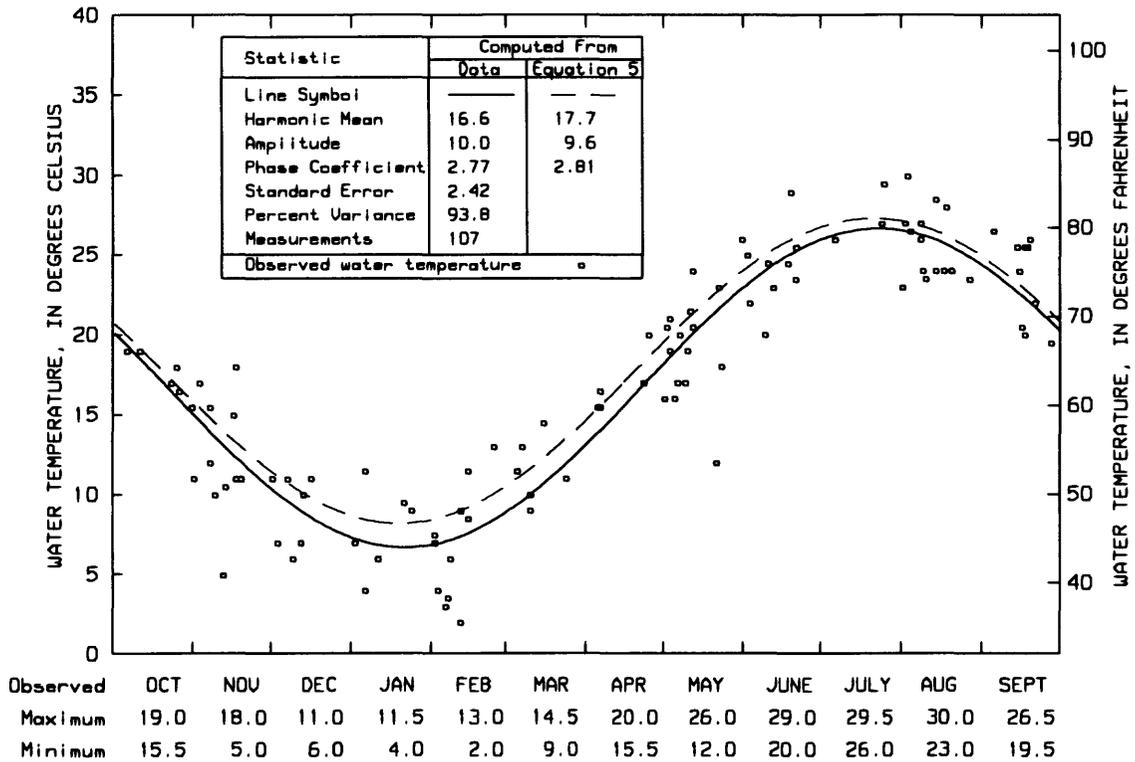


Figure 40. Ogeechee River at Scarborough, Georgia, Station 02202000, October 1954 to June 1979.

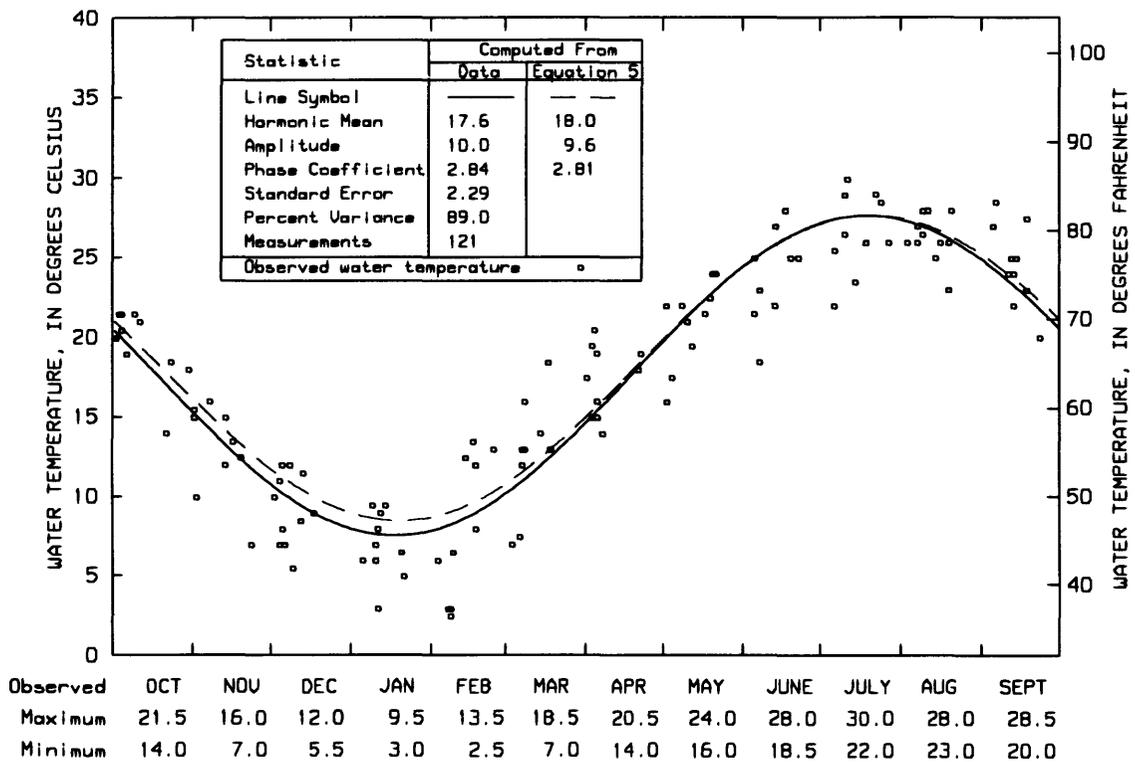
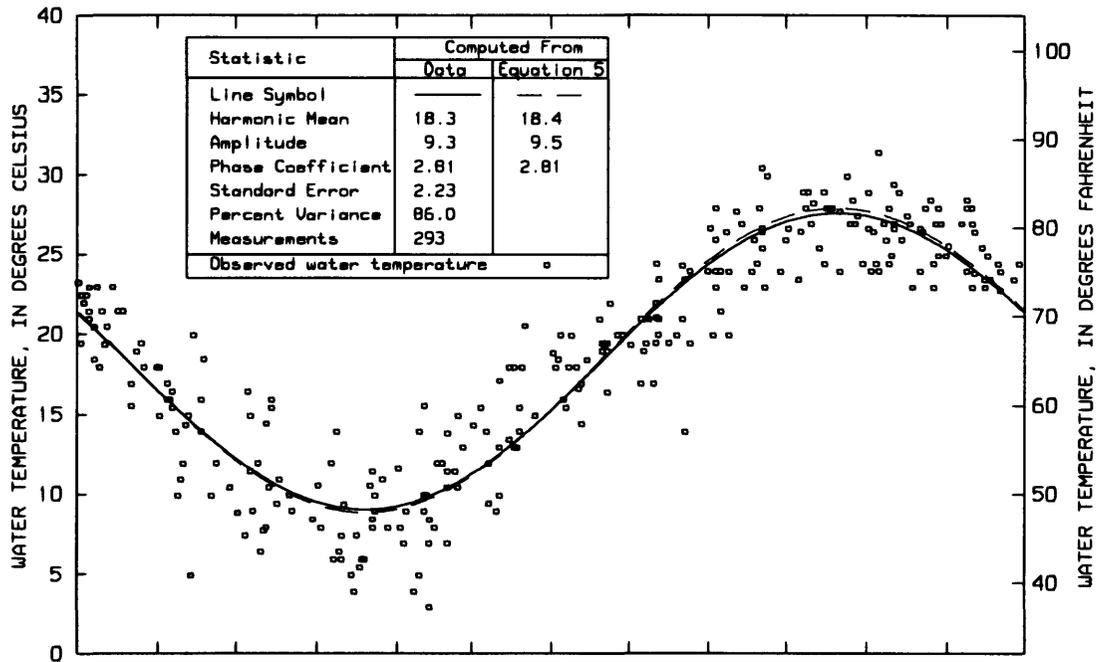
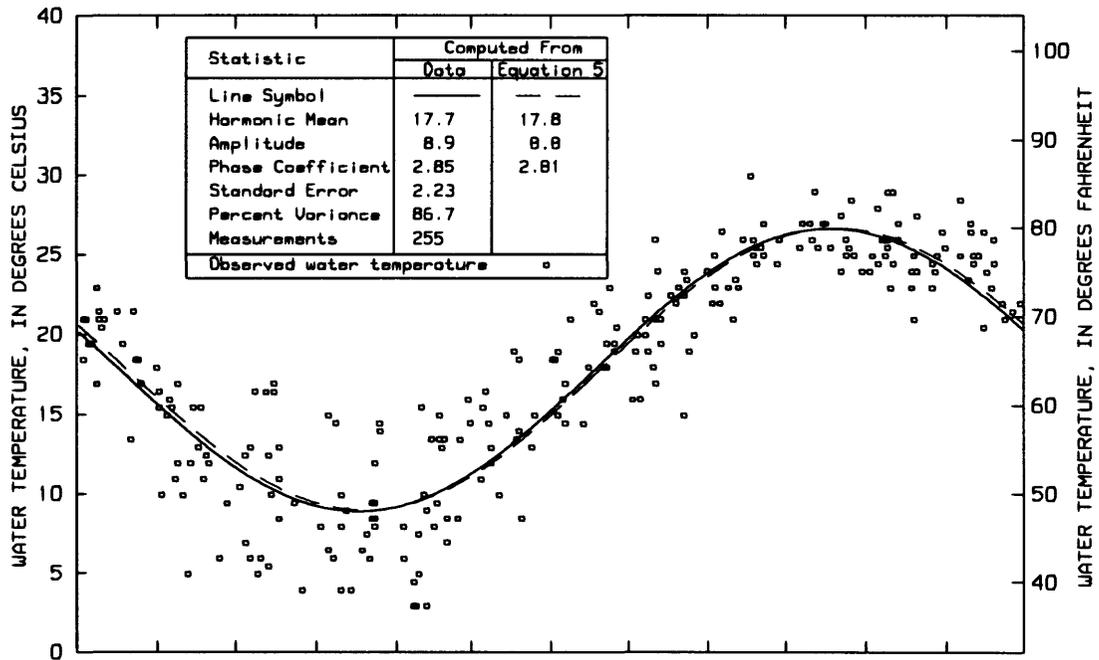


Figure 41. Ogeechee River at Oliver, Georgia, Station 02202190, August 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.3 | 20.0 | 16.5 | 14.0 | 15.6 | 20.6 | 22.0 | 24.5 | 30.5 | 30.0 | 31.5 | 28.5 |
| Minimum | 15.6 | 5.0 | 6.5 | 4.0 | 3.0 | 9.0 | 14.5 | 14.0 | 20.0 | 23.5 | 23.0 | 22.8 |

Figure 42. Ogeechee River near Eden, Georgia, Station 02202500, May 1937 to October 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.0 | 17.0 | 17.0 | 15.0 | 16.0 | 19.0 | 23.0 | 26.0 | 30.0 | 29.0 | 29.0 | 28.5 |
| Minimum | 13.5 | 5.0 | 4.0 | 4.0 | 3.0 | 8.5 | 14.5 | 15.0 | 21.0 | 24.0 | 21.0 | 20.5 |

Figure 43. Canoochee River near Claxton, Georgia, Station 02203000, September 1954 to December 1984.

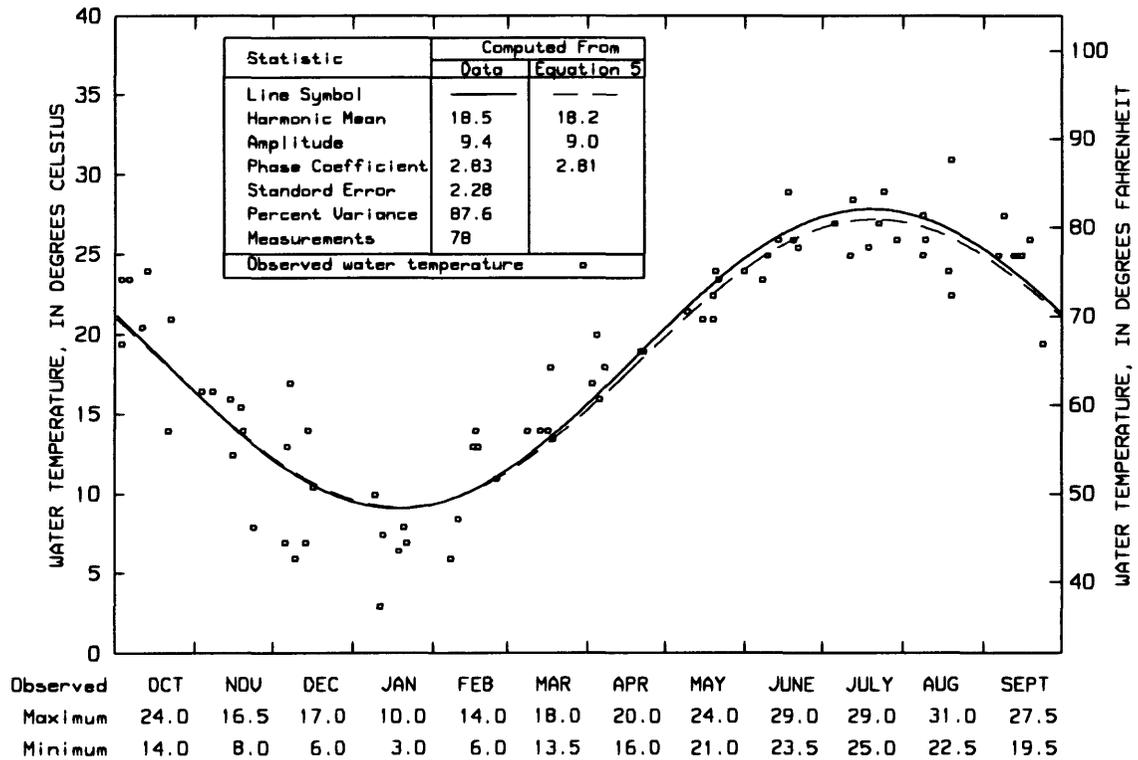


Figure 44. Canoochee River at Fort Stewart, Georgia, Station 02203519, February 1958 to December 1984.

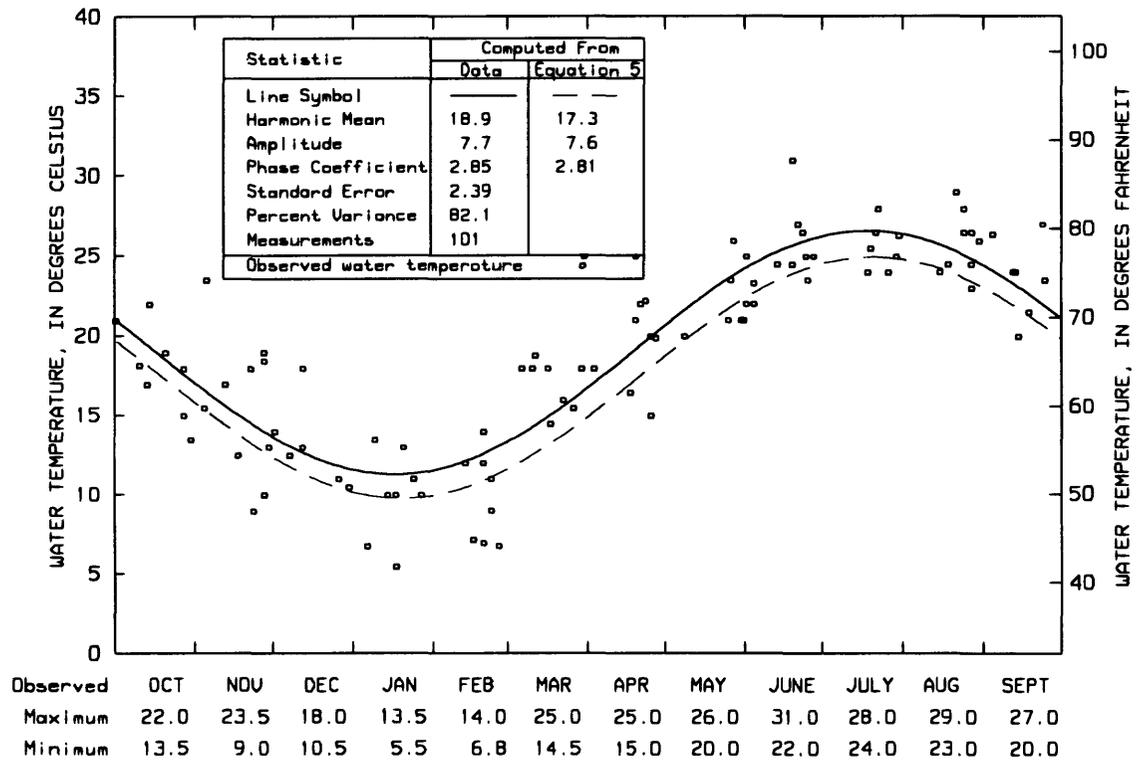
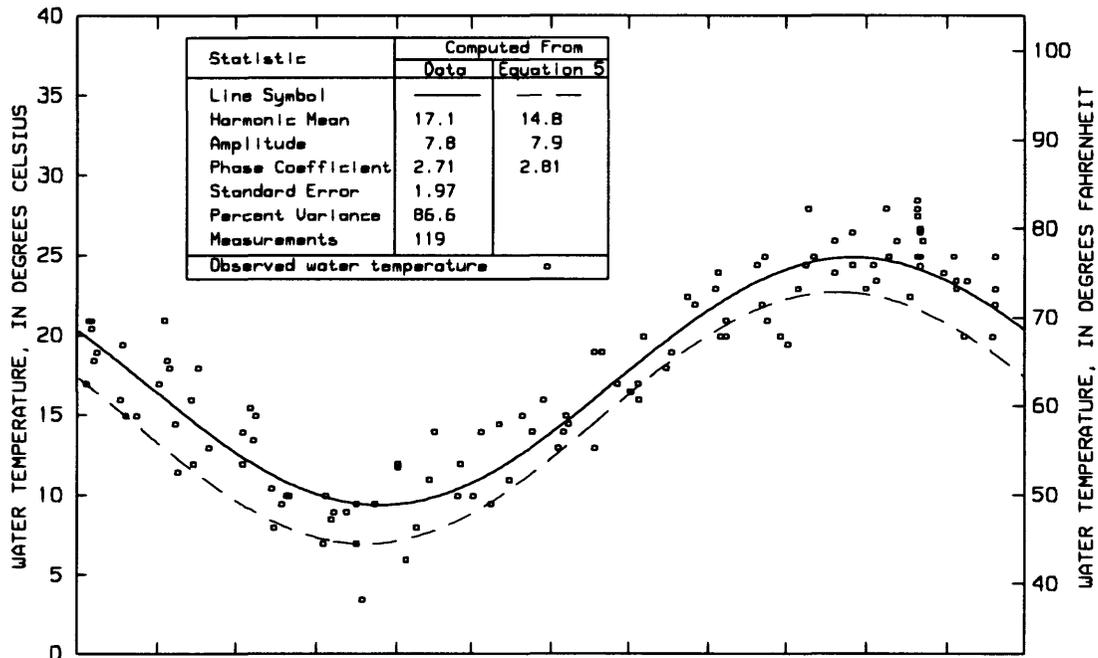
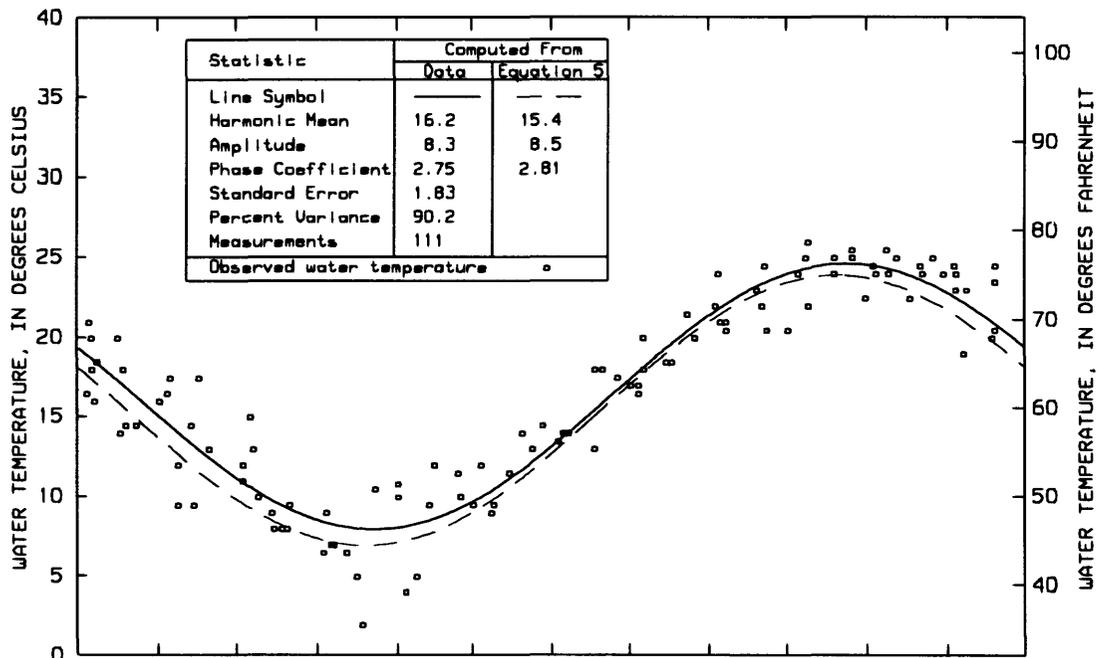


Figure 45. Peacock Creek at McIntosh, Georgia, Station 02203559, September 1966 to November 1977.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 21.0 | 21.0 | 15.5 | 10.0 | 14.0 | 16.0 | 19.0 | 22.5 | 25.0 | 28.0 | 28.5 | 25.0 |
| Minimum | 15.0 | 11.5 | 8.0 | 3.5 | 6.0 | 9.5 | 13.0 | 16.0 | 20.0 | 19.5 | 22.5 | 20.0 |

Figure 46. South River at Bouldercrest Road at Atlanta, Georgia, Station 02203800, August 1970 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 21.0 | 17.5 | 15.0 | 10.5 | 12.0 | 14.5 | 18.0 | 21.5 | 24.5 | 26.0 | 25.5 | 24.5 |
| Minimum | 14.0 | 9.5 | 8.0 | 2.0 | 4.0 | 9.0 | 13.0 | 16.5 | 20.5 | 20.5 | 22.5 | 19.0 |

Figure 47. South River at State Highway 155 near Atlanta, Georgia, Station 02203965, October 1970 to December 1984.

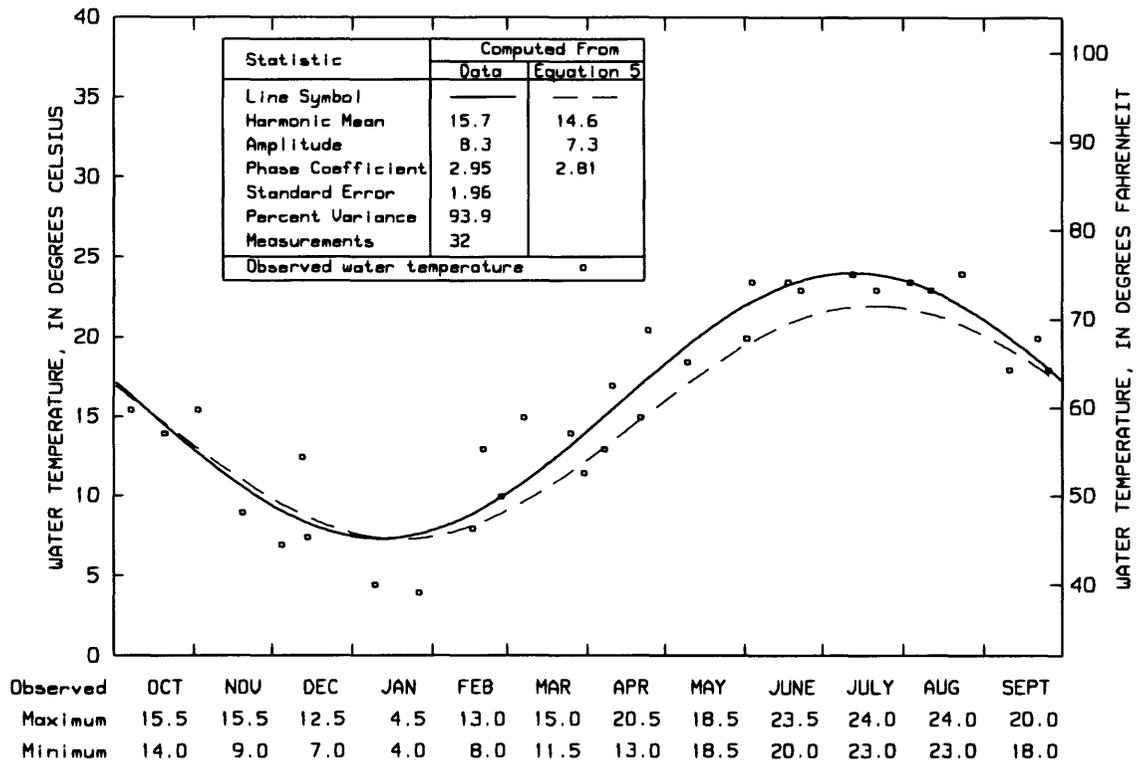


Figure 48. Pates Creek at Buster Lewis Road near Flippen, Georgia, Station 02204285, February 1978 to August 1983.

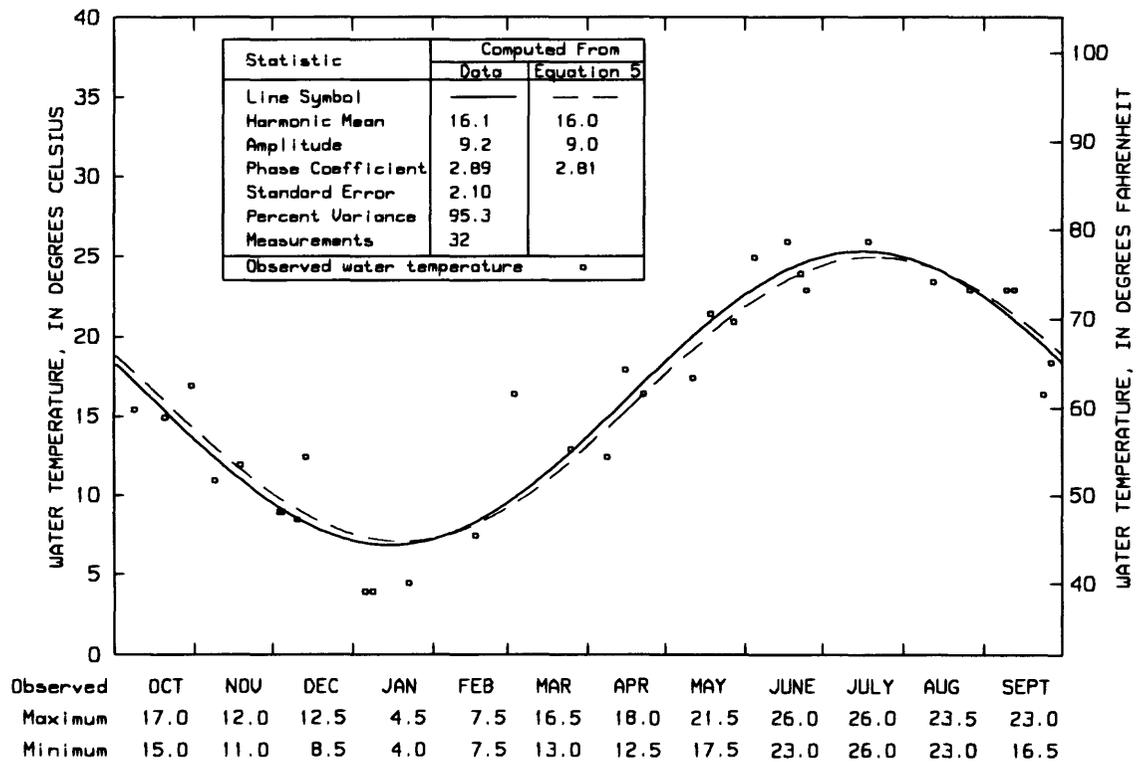
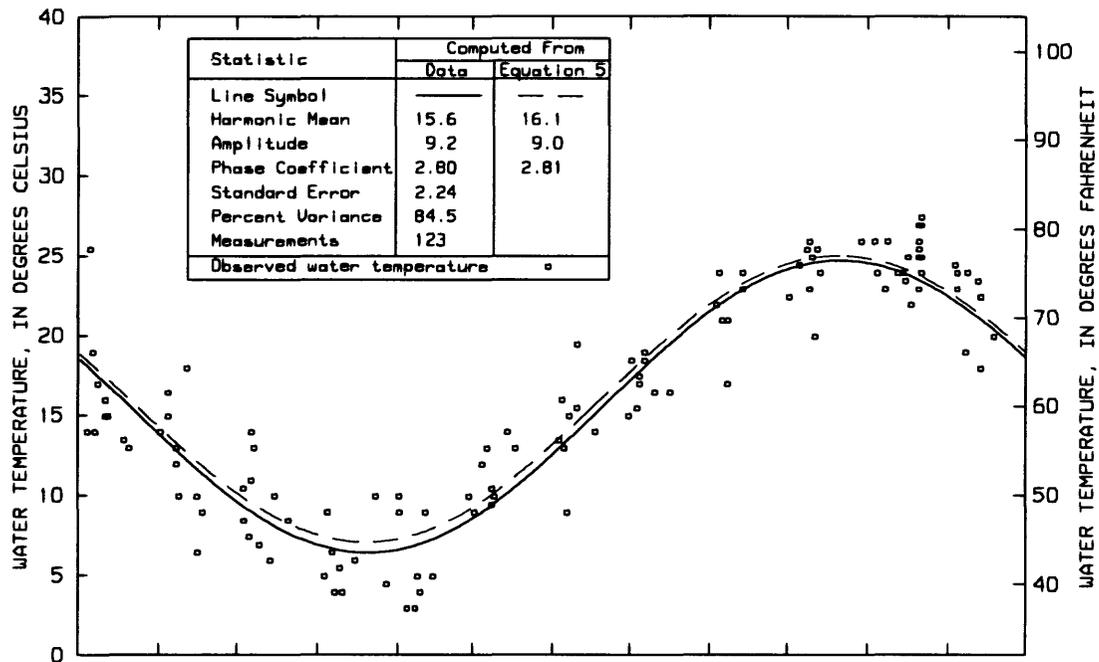
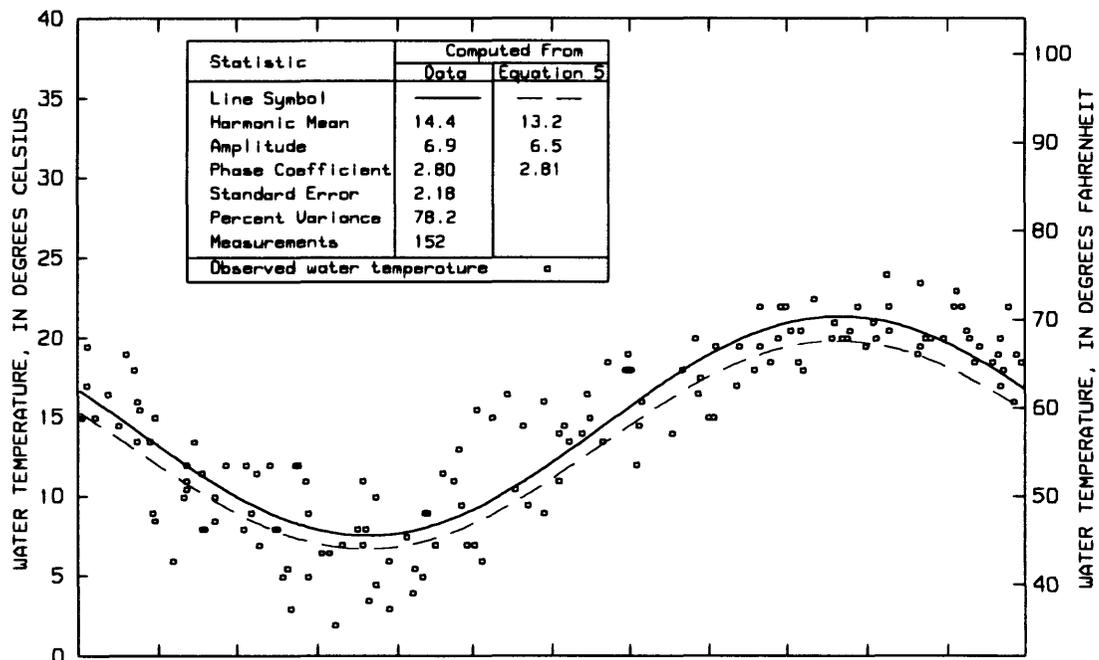


Figure 49. South River near McDonough, Georgia, Station 02204500, December 1957 to September 1982.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 25.5 | 18.0 | 14.0 | 10.0 | 10.0 | 14.0 | 19.5 | 19.0 | 24.0 | 26.0 | 27.5 | 24.5 |
| Minimum | 13.0 | 6.5 | 6.0 | 4.0 | 3.0 | 9.0 | 9.0 | 15.5 | 17.0 | 20.0 | 22.0 | 18.0 |

Figure 50. South River at State Highway 81 at Snapping Shoals, Georgia, Station 02204520, August 1970 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 19.5 | 13.5 | 12.0 | 11.0 | 13.0 | 16.5 | 19.0 | 20.0 | 22.0 | 22.5 | 24.0 | 23.0 |
| Minimum | 8.5 | 6.0 | 3.0 | 2.0 | 4.0 | 6.0 | 11.0 | 12.0 | 15.0 | 18.0 | 19.0 | 16.0 |

Figure 51. Wildcat Creek near Lawrenceville, Georgia, Station 02205000, October 1956 to September 1976.

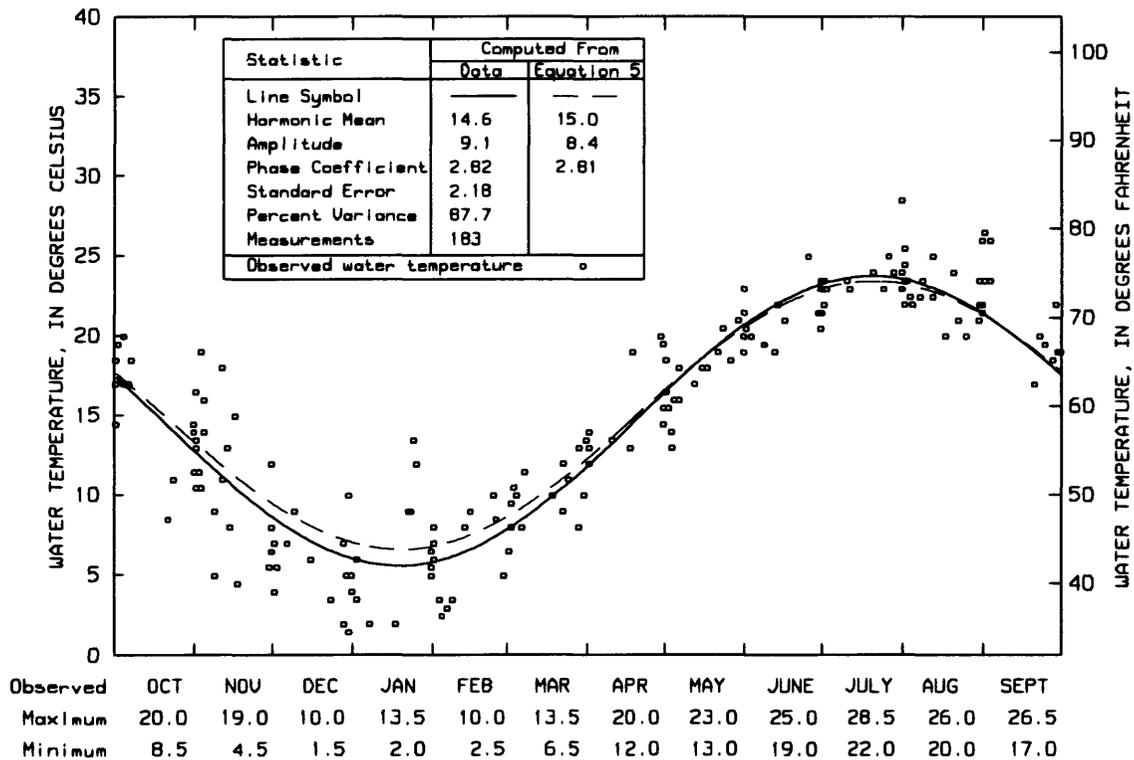


Figure 52. Yellow River near Snellville, Georgia, Station 02206500, August 1956 to November 1984.

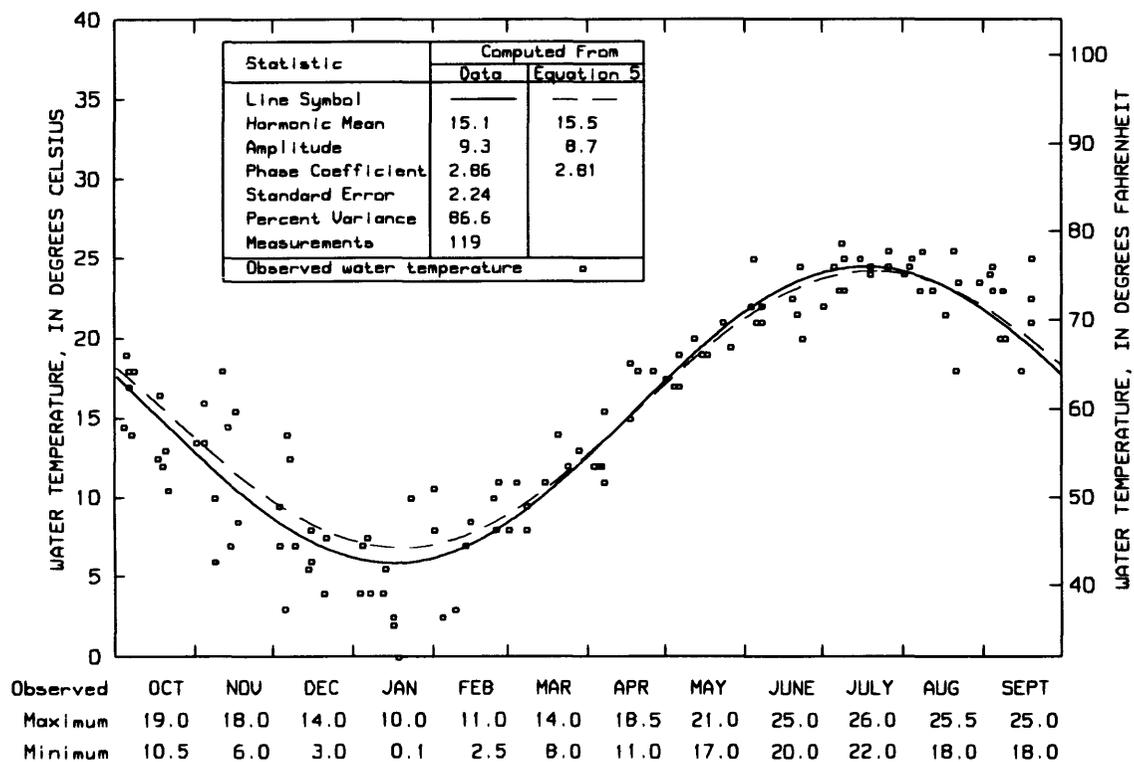
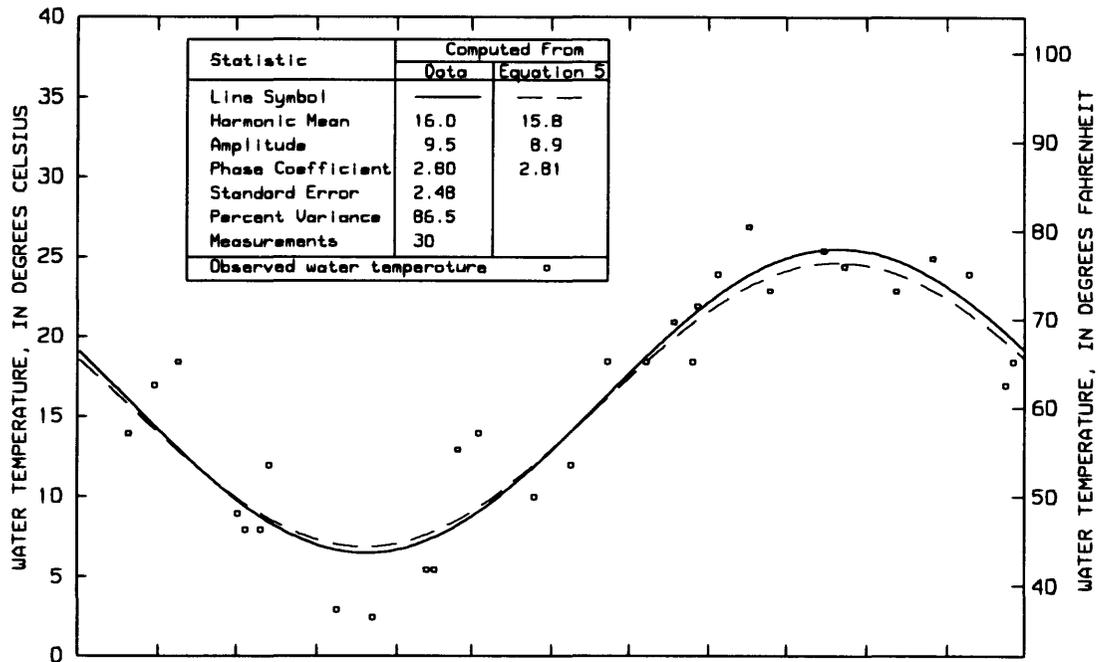
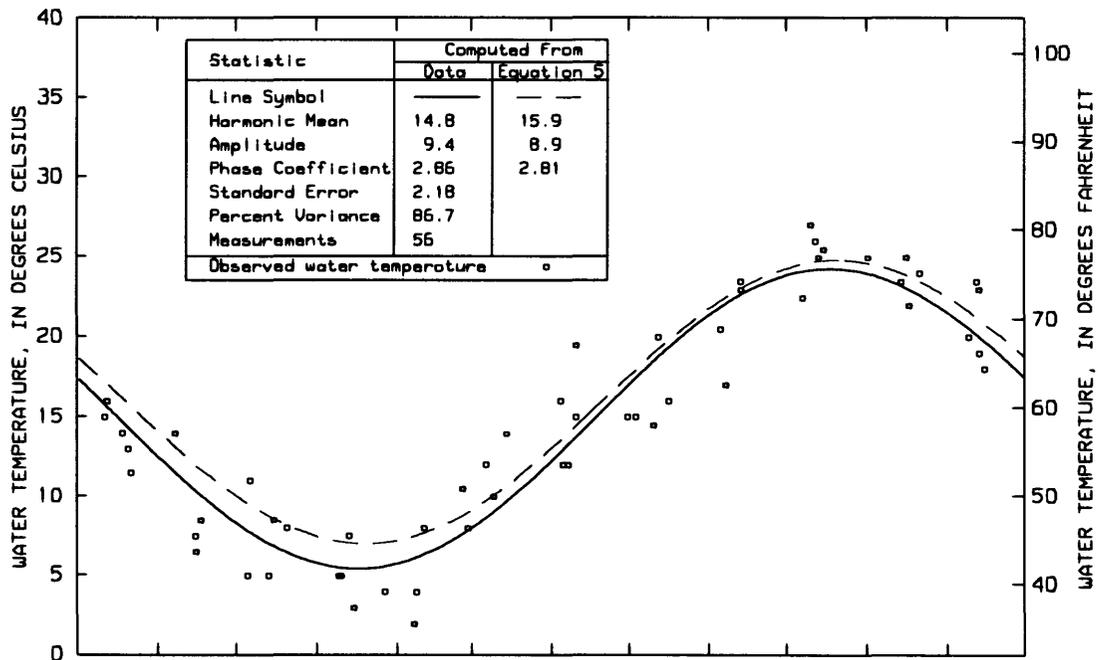


Figure 53. Yellow River (Conyers Intake) at Conyers, Georgia, Station 02207300, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 17.0 | 18.5 | 12.0 | 3.0 | 13.0 | 14.0 | 18.5 | 22.0 | 27.0 | 25.5 | 25.0 | 24.0 |
| Minimum | 14.0 | 18.5 | 8.0 | 2.5 | 5.5 | 10.0 | 12.0 | 18.5 | 23.0 | 24.5 | 23.0 | 17.0 |

Figure 54. Yellow River near Covington, Georgia, Station 02207500, December 1957 to September 1982.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 16.0 | 14.0 | 11.0 | 7.5 | 10.5 | 14.0 | 19.5 | 20.0 | 23.5 | 27.0 | 25.0 | 23.5 |
| Minimum | 11.5 | 6.5 | 5.0 | 3.0 | 2.0 | 10.0 | 12.0 | 14.5 | 17.0 | 22.5 | 22.0 | 18.0 |

Figure 55. Yellow River at Porterdale, Georgia, Station 02207540, July 1974 to June 1979.

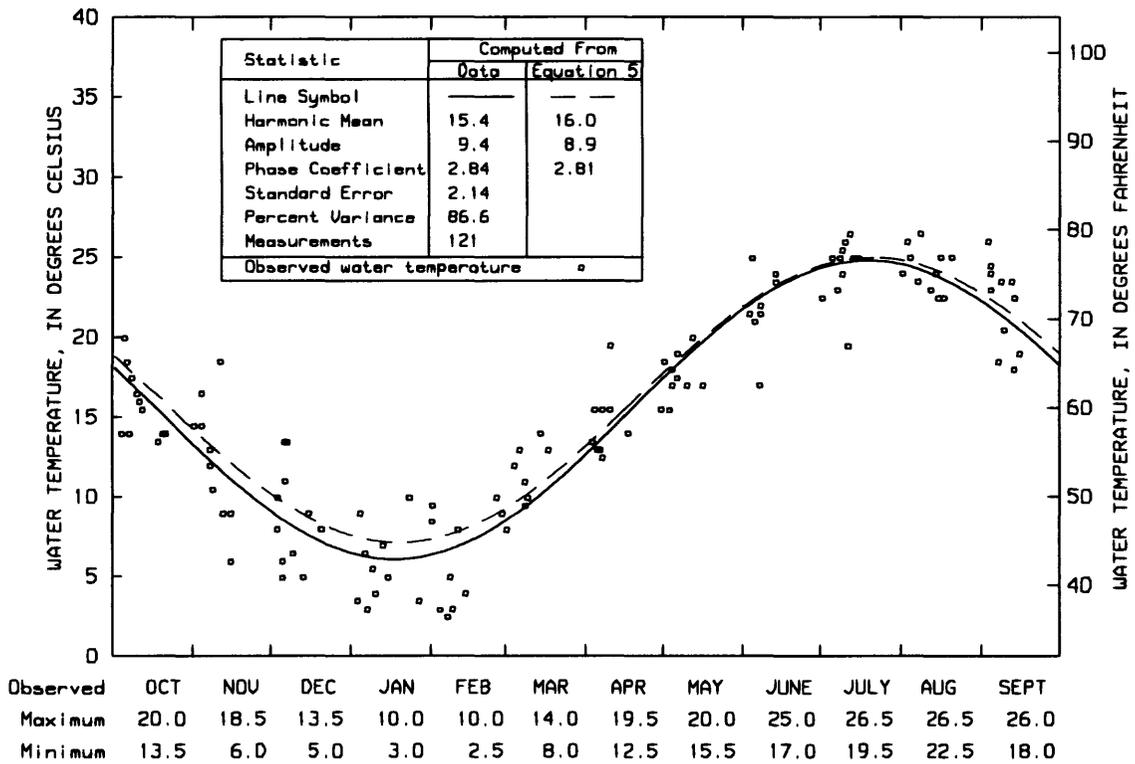


Figure 56. Yellow River at State Highway 212 near Stewart, Georgia, Station 02208005, July 1974 to December 1984.

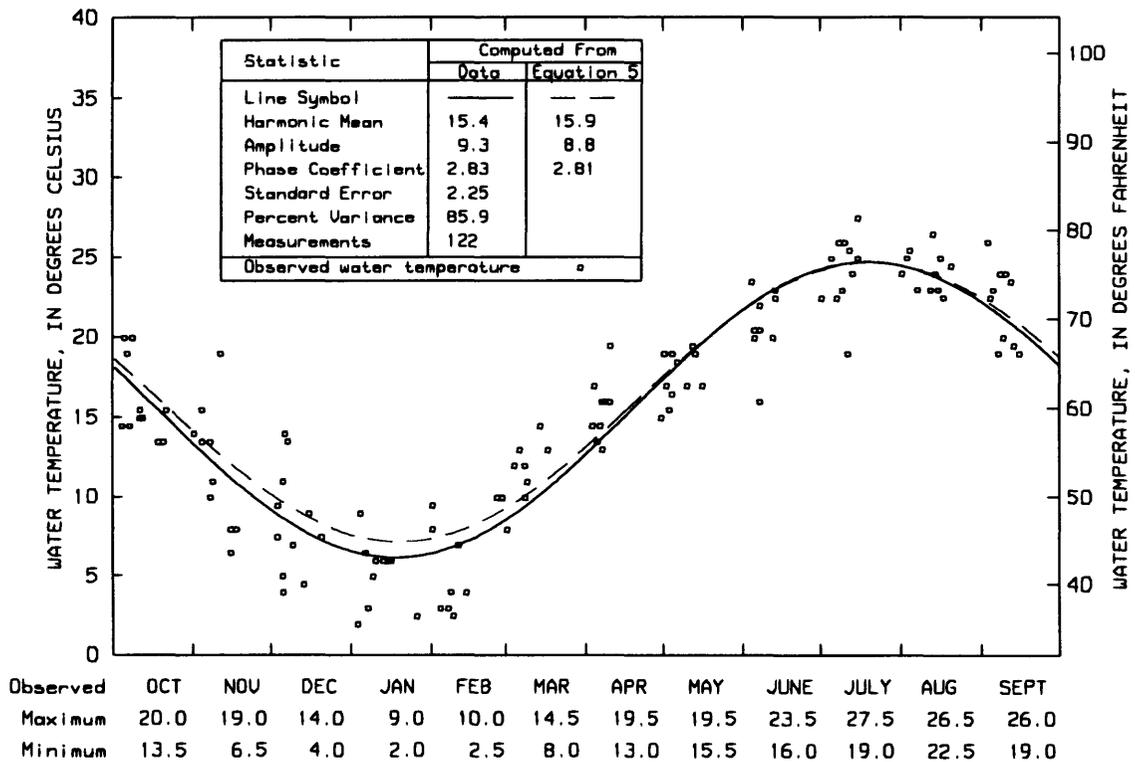


Figure 57. Alcovy River Newton above Stewart, Georgia, Station 02209260, May 1972 to December 1984.

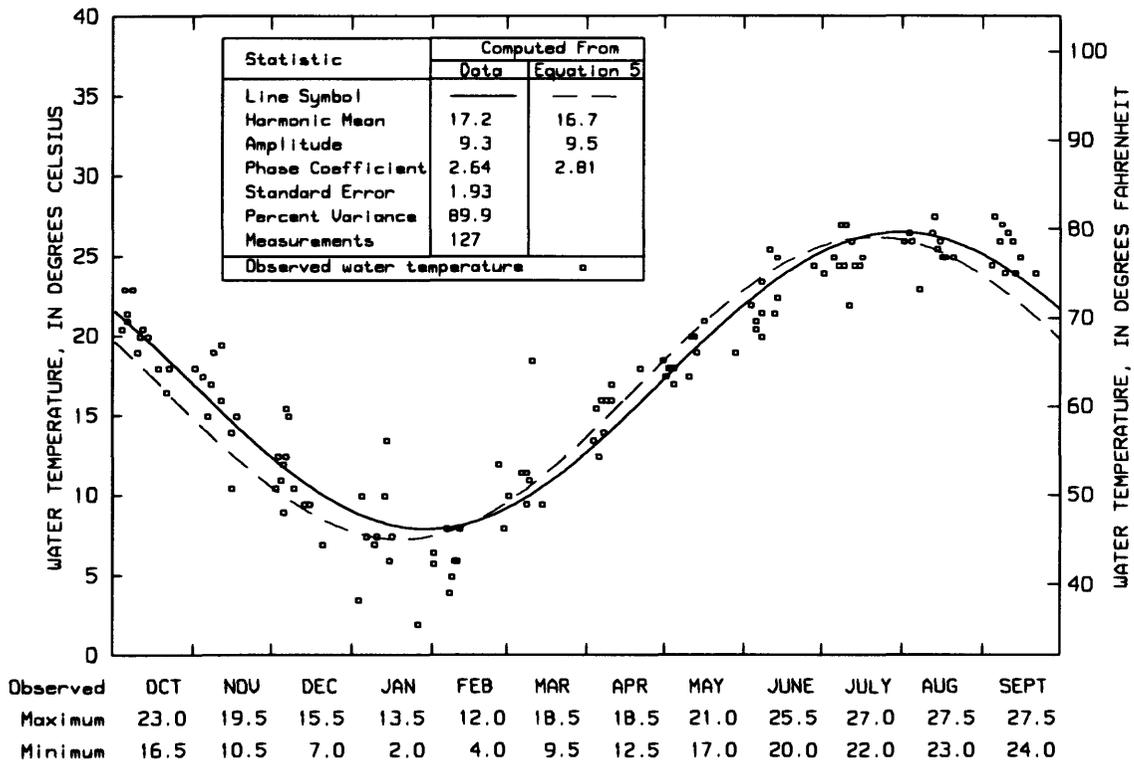


Figure 58. Ocmulgee River near Jackson, Georgia, Station 02210500, December 1957 to December 1984.

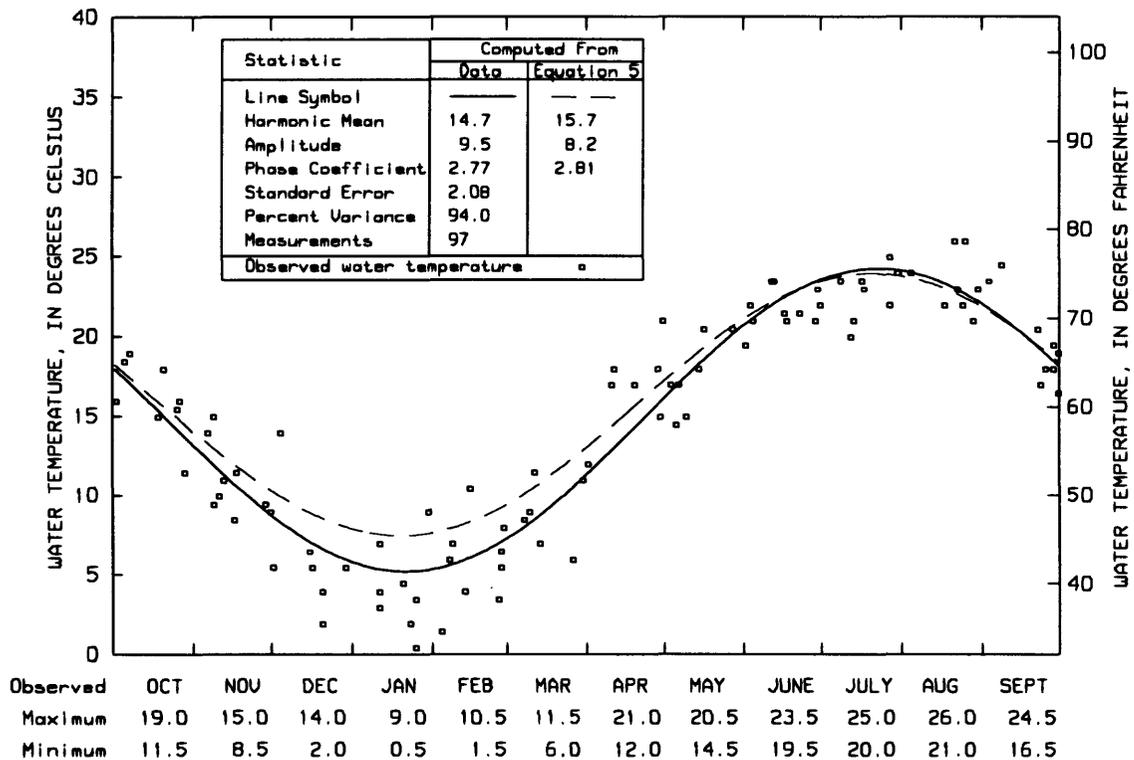


Figure 59. Towaliga River near Jackson, Georgia, Station 02211300, June 1960 to December 1973.

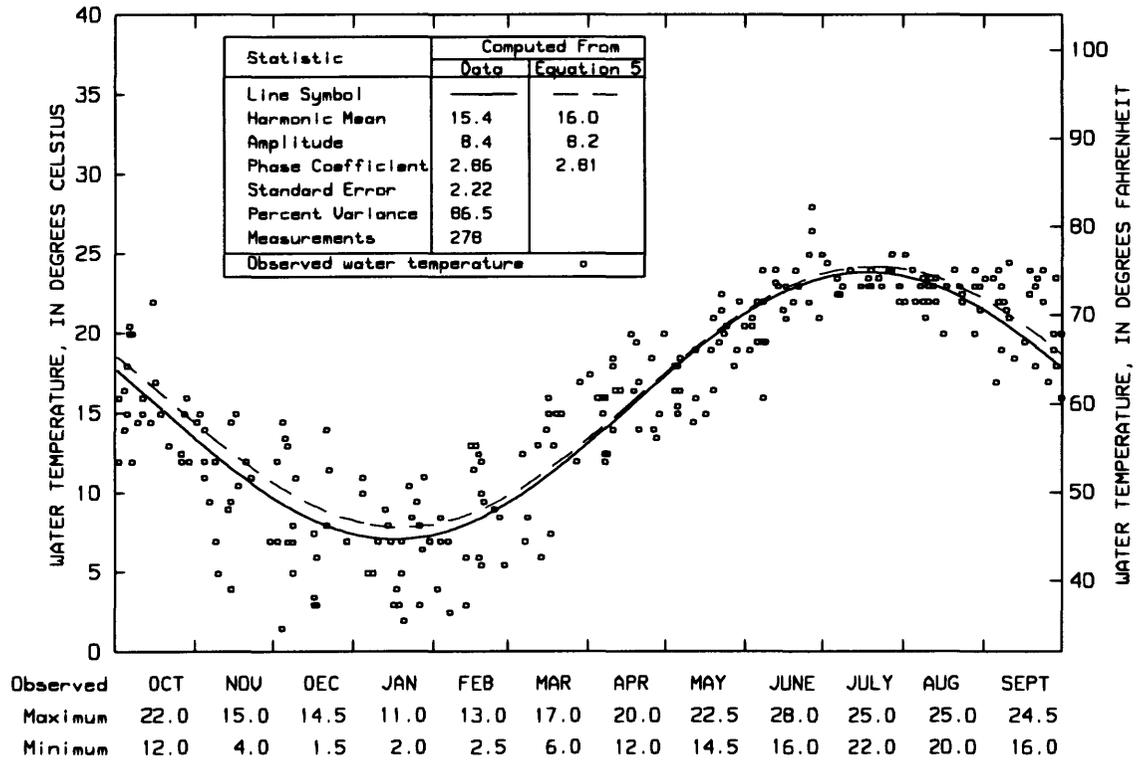


Figure 60. Falling Creek near Juliette, Georgia, Station 02212600, July 1964 to January 1985.

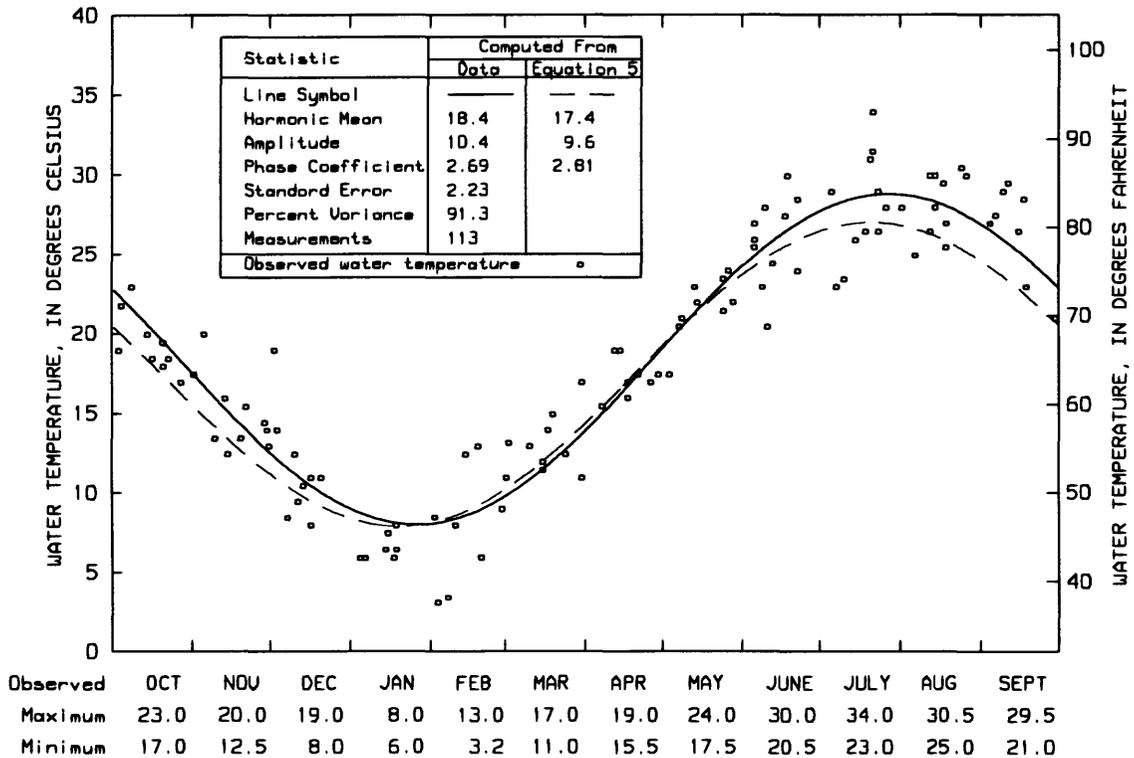
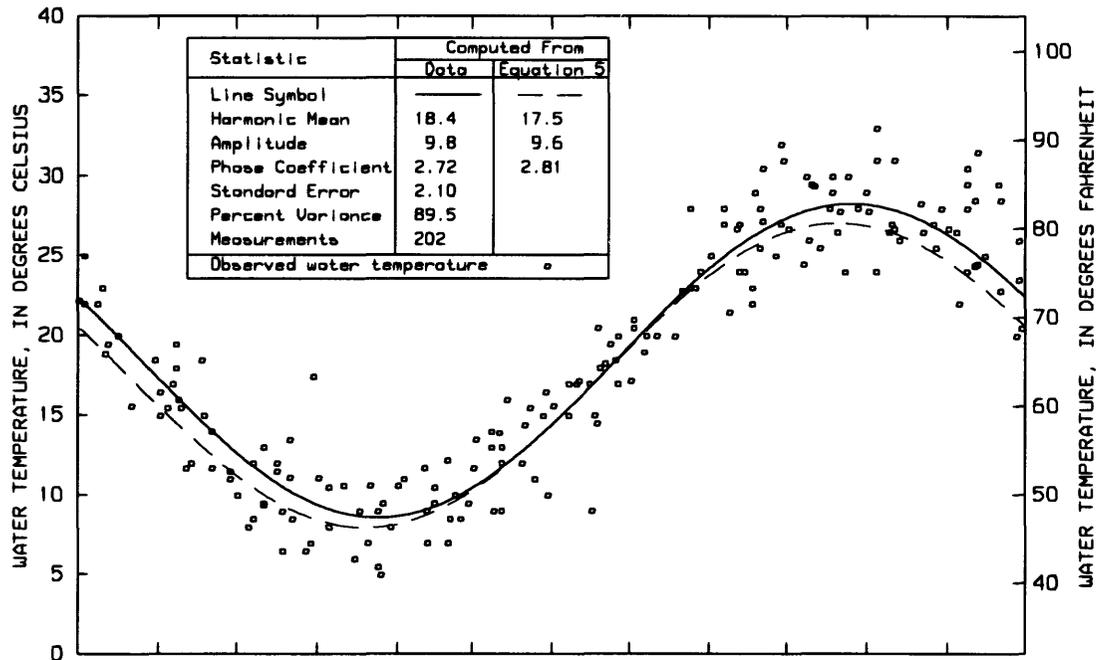
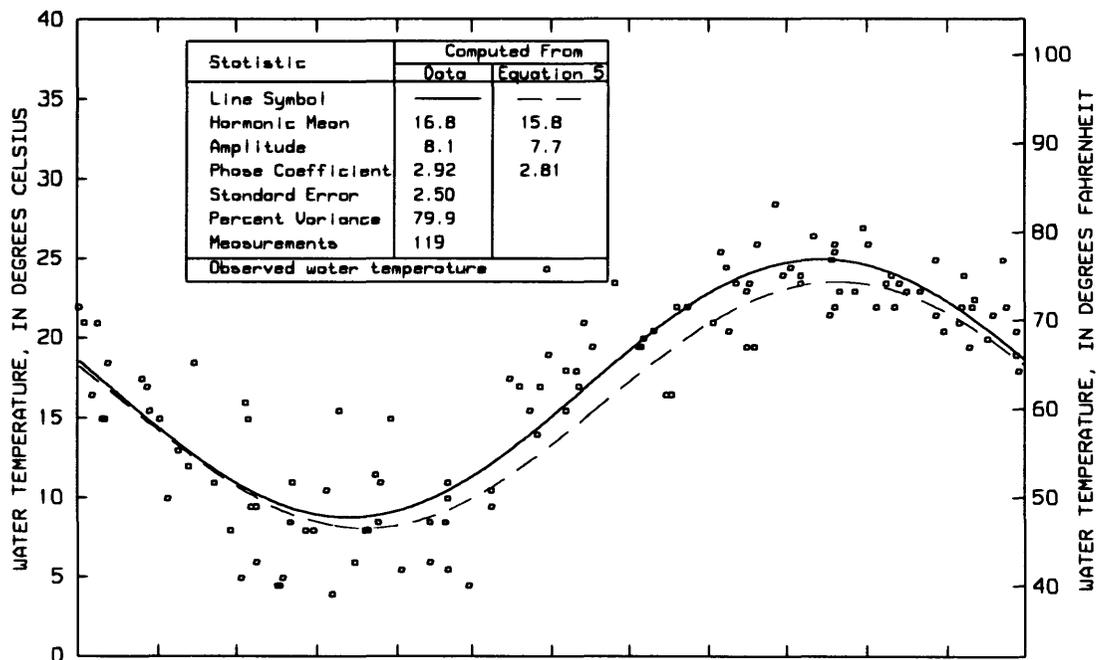


Figure 61. Ocmulgee River (Macon Intake) at Macon, Georgia, Station 02212950, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 25.0 | 19.5 | 17.5 | 11.1 | 12.2 | 16.5 | 20.5 | 28.0 | 32.0 | 30.0 | 33.0 | 31.5 |
| Minimum | 15.6 | 11.0 | 6.5 | 5.0 | 7.0 | 9.0 | 9.0 | 17.2 | 21.5 | 24.0 | 24.0 | 20.0 |

Figure 62. Ocmulgee River at Macon, Georgia, Station 02213000, May 1937 to December 1975.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 22.0 | 18.5 | 16.0 | 15.5 | 11.0 | 19.0 | 23.5 | 22.0 | 28.5 | 27.0 | 26.0 | 25.0 |
| Minimum | 15.0 | 8.0 | 4.5 | 4.0 | 4.5 | 9.5 | 15.5 | 16.5 | 19.5 | 21.5 | 20.5 | 18.0 |

Figure 63. Walnut Creek near Gray, Georgia, Station 02213050, August 1962 to July 1976.

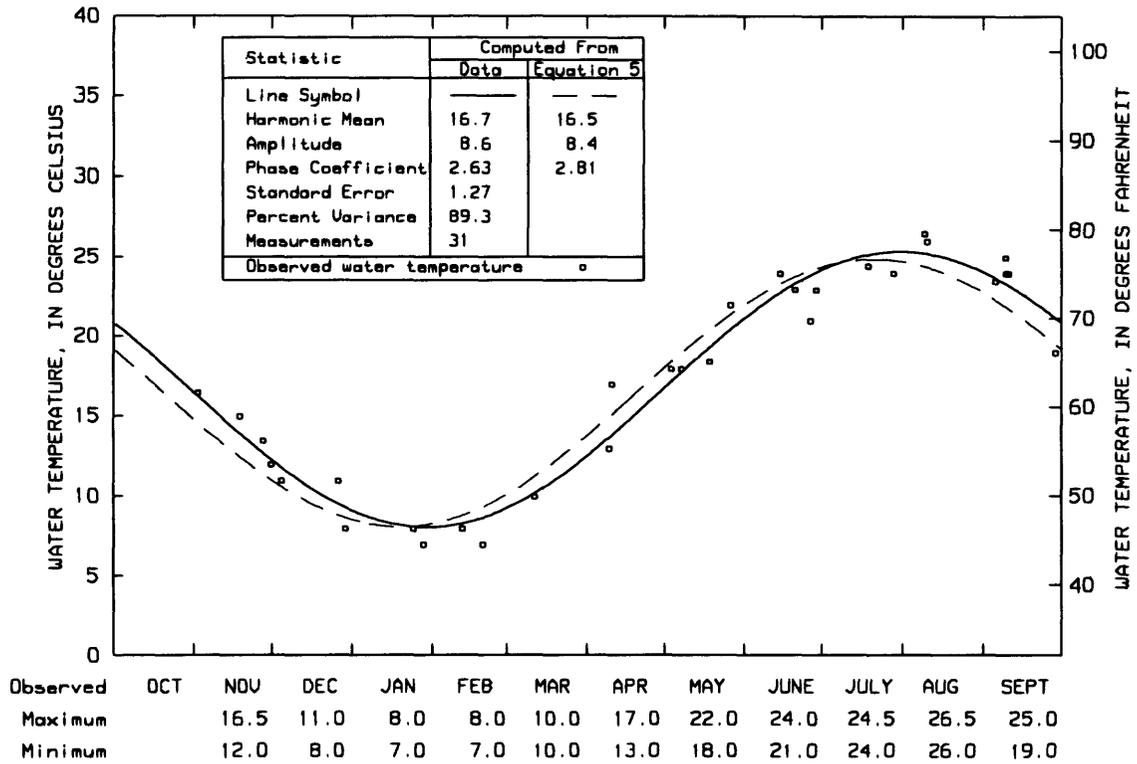


Figure 64. Tobesofkee Creek above Macon, Georgia, Station 02213470, May 1967 to December 1973.

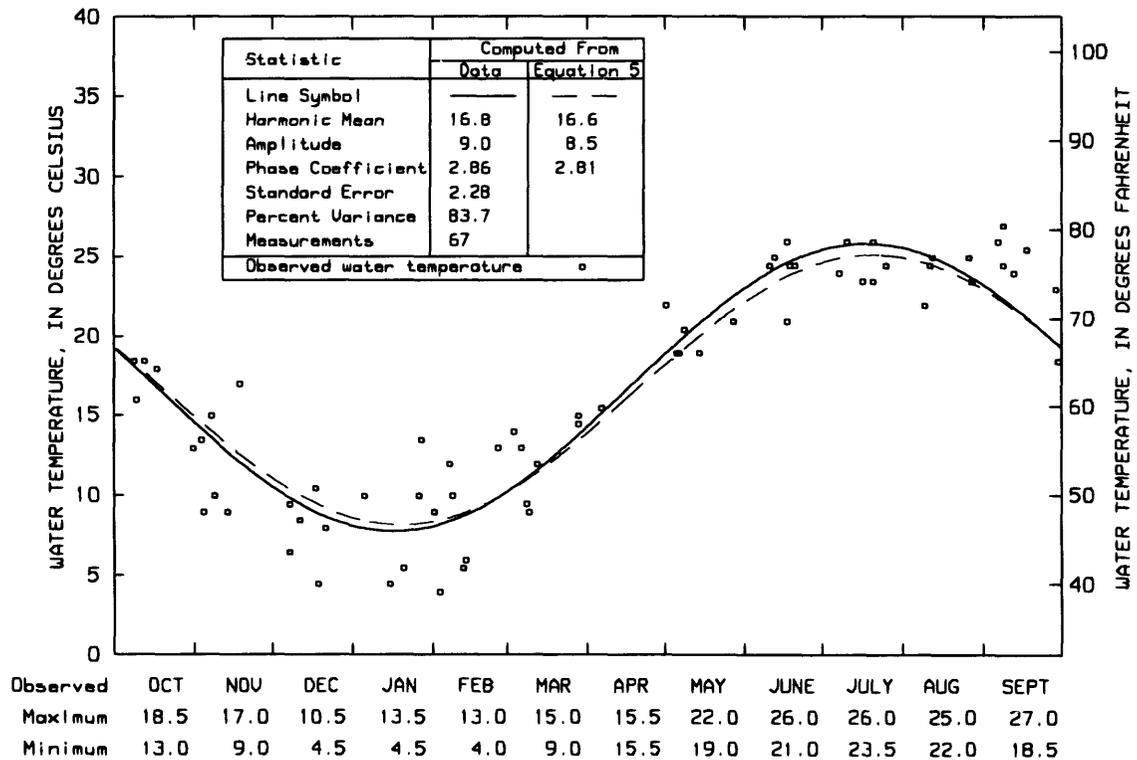


Figure 65. Tobesofkee Creek near Macon, Georgia, Station 02213500, October 1955 to October 1966.

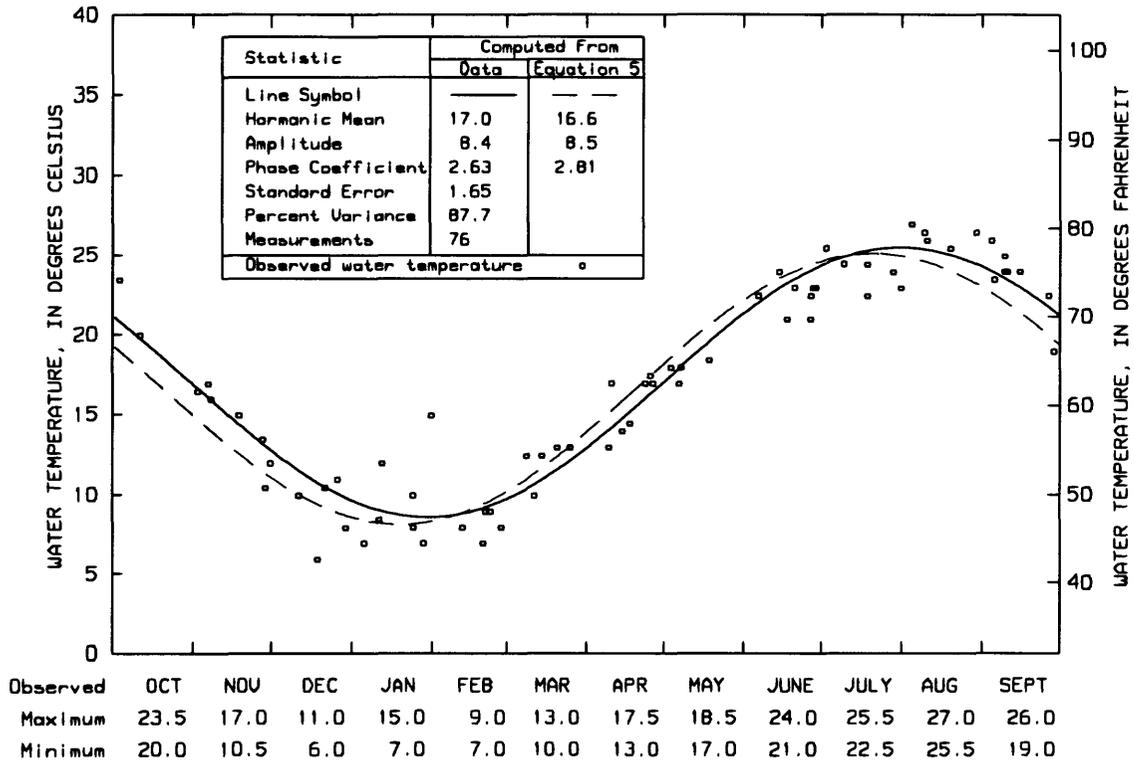


Figure 66. Tabesofkee Creek near Macon, Georgia, Station O2213500, November 1966 to September 1974.

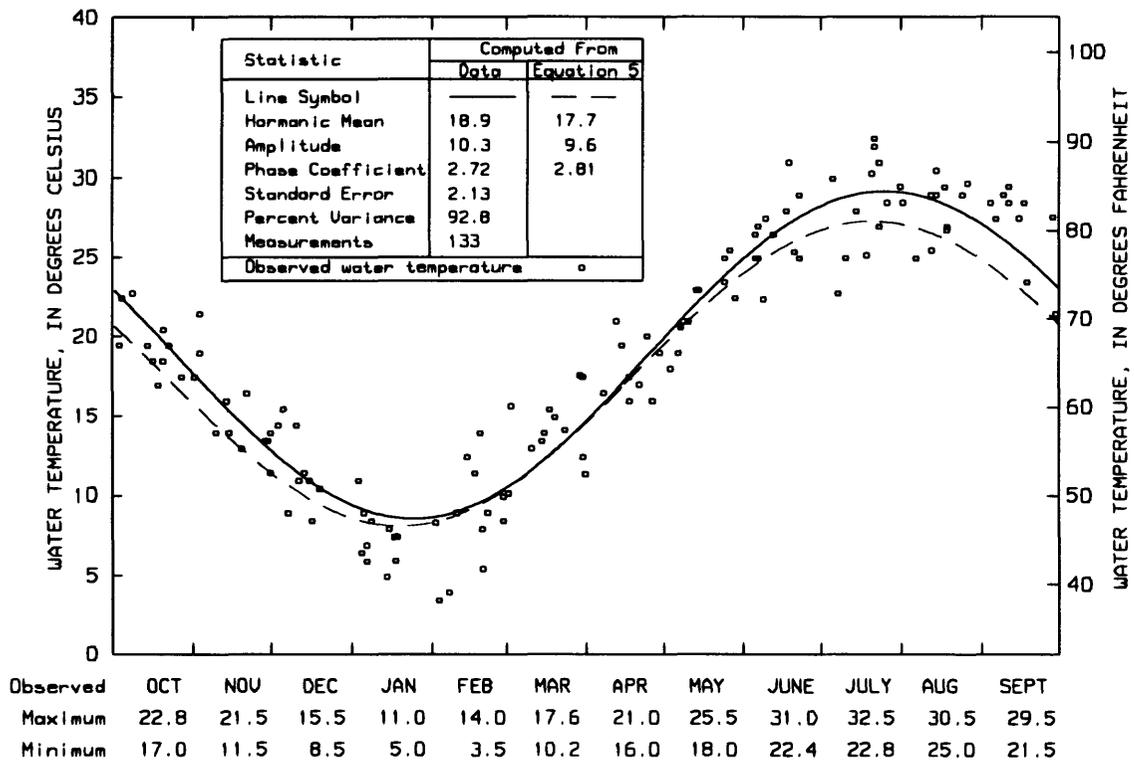


Figure 67. Ocmulgee River near Warner Robins, Georgia, Station O2213700, November 1970 to December 1984.

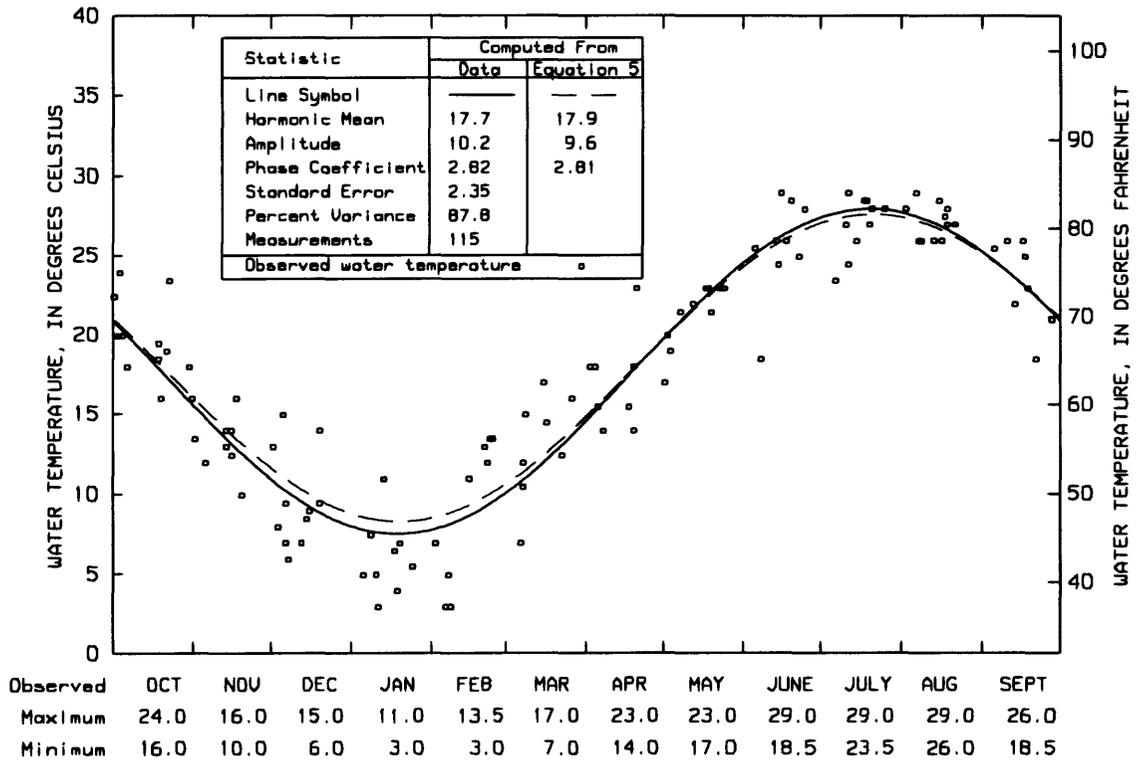


Figure 68. Ocmulgee River near Bonaire, Georgia, Station 02214265, August 1974 to December 1984.

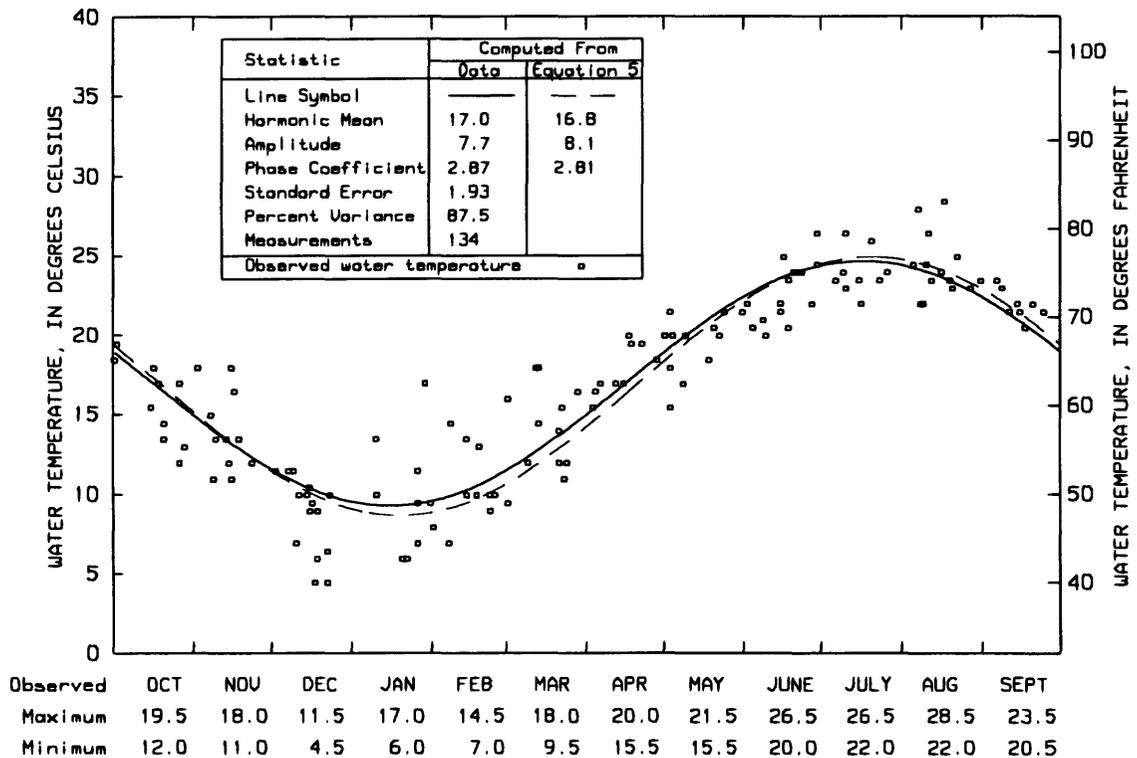
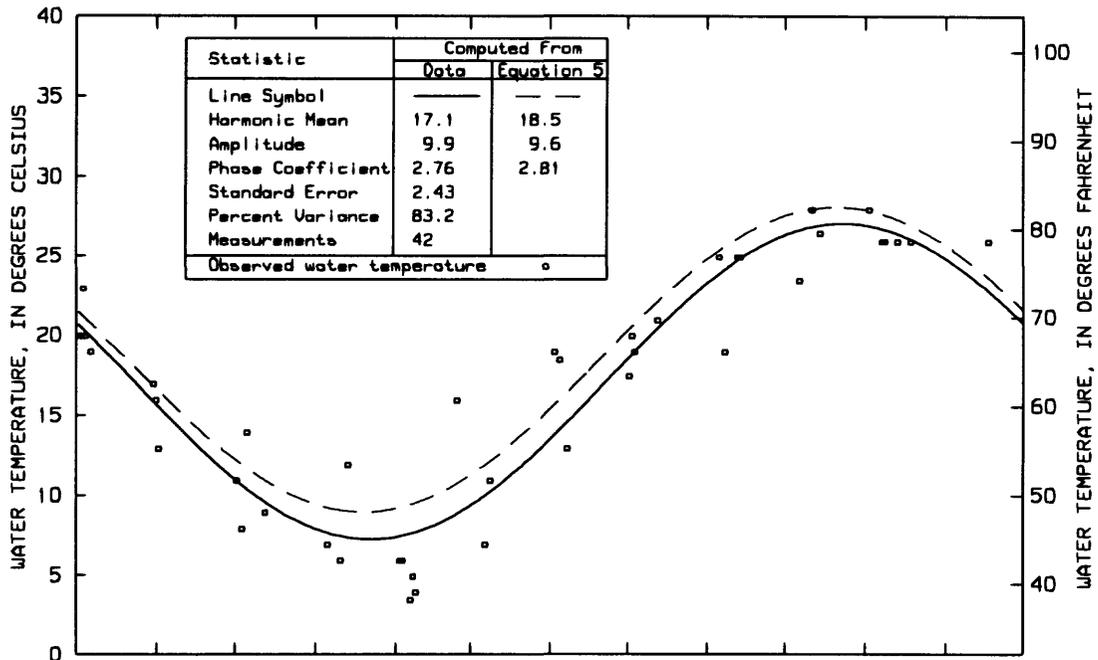
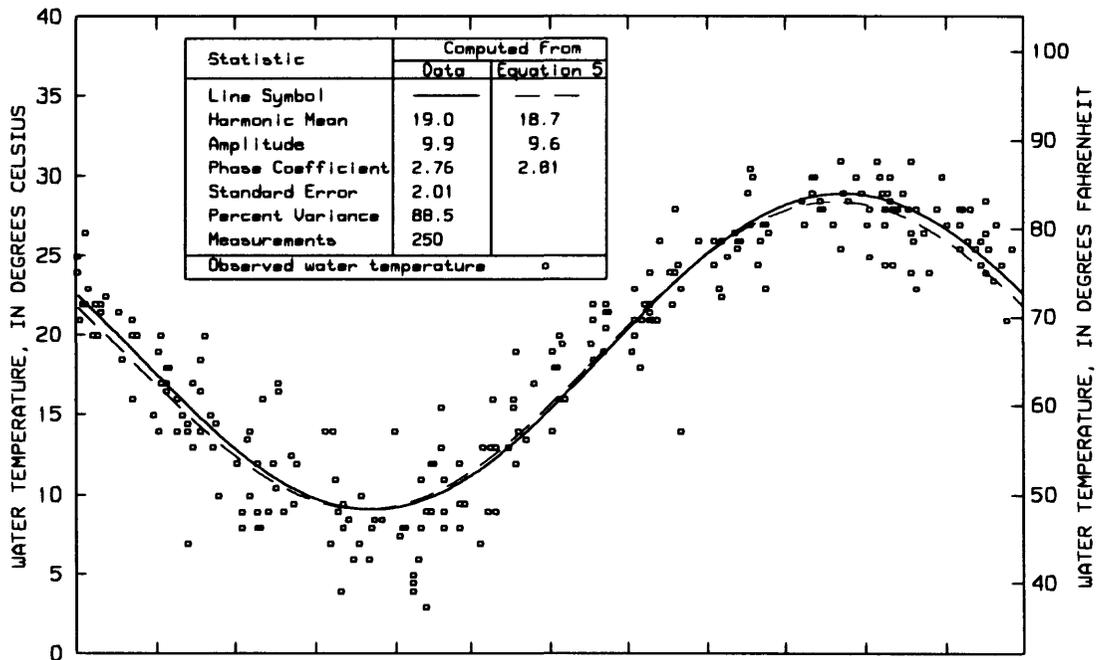


Figure 69. Big Indian Creek at Perry, Georgia, Station 02214500, April 1954 to January 1974.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.0 | 13.0 | 14.0 | 12.0 | 16.0 | 11.0 | 19.0 | 21.0 | 25.0 | 28.0 | 28.0 | 26.0 |
| Minimum | 16.0 | 13.0 | 8.0 | 6.0 | 3.5 | 7.0 | 13.0 | 17.5 | 19.0 | 23.5 | 26.0 | 26.0 |

Figure 70. Ocmulgee River at Abbeville, Georgia, Station 02215260, February 1958 to June 1979.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 26.5 | 20.0 | 17.0 | 14.0 | 15.5 | 19.0 | 22.0 | 28.0 | 30.5 | 31.0 | 31.0 | 28.5 |
| Minimum | 15.0 | 7.0 | 8.0 | 4.0 | 3.0 | 7.0 | 14.0 | 14.0 | 22.5 | 25.5 | 23.0 | 21.0 |

Figure 71. Ocmulgee River at Lumber City, Georgia, Station 02215500, June 1954 to December 1984.

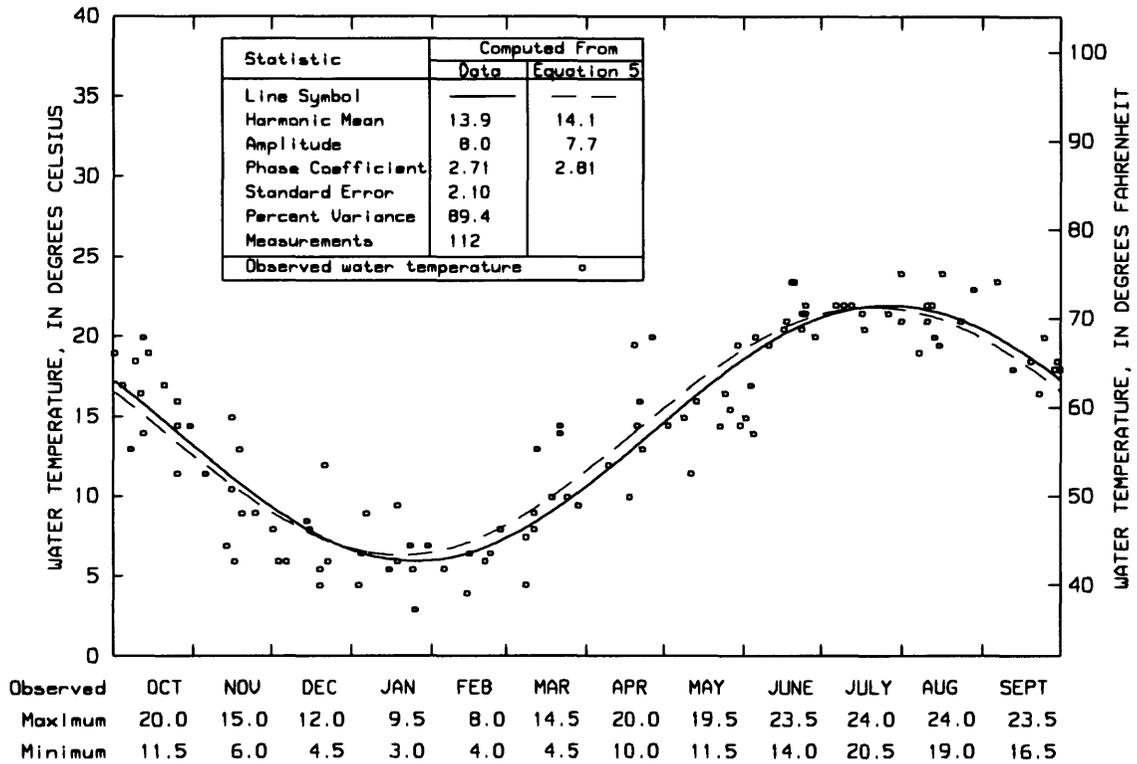


Figure 72. Allen Creek at Talmo, Georgia, Station 02217000, October 1956 to June 1974.

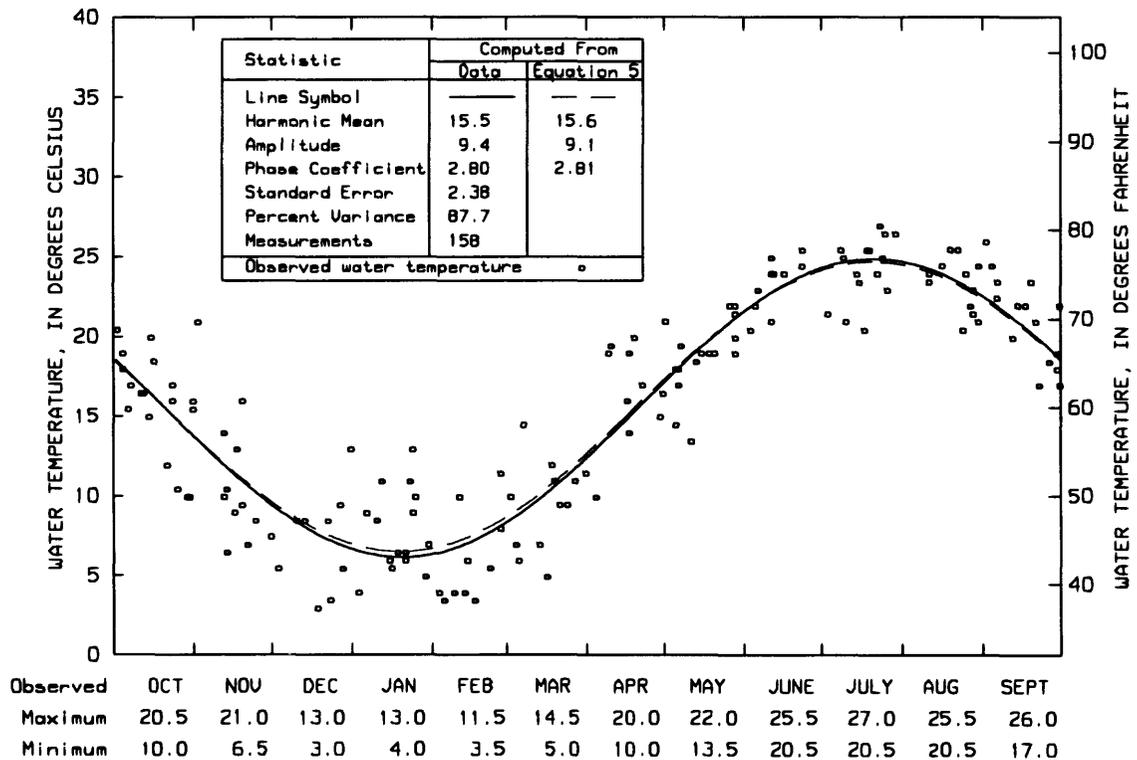


Figure 73. Middle Oconee River near Athens, Georgia, Station 02217500, August 1956 to October 1977.

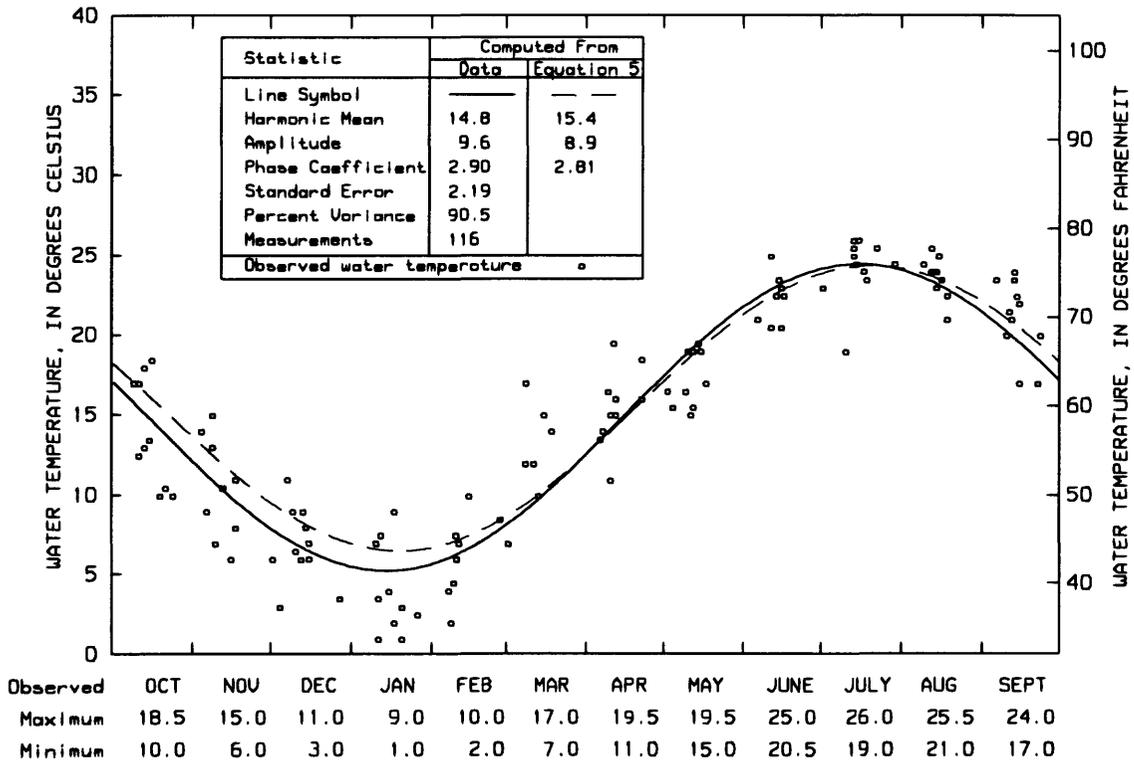


Figure 74. North Oconee River (Athens Intake) at Athens, Georgia, Station 02217740, July 1974 to December 1984.

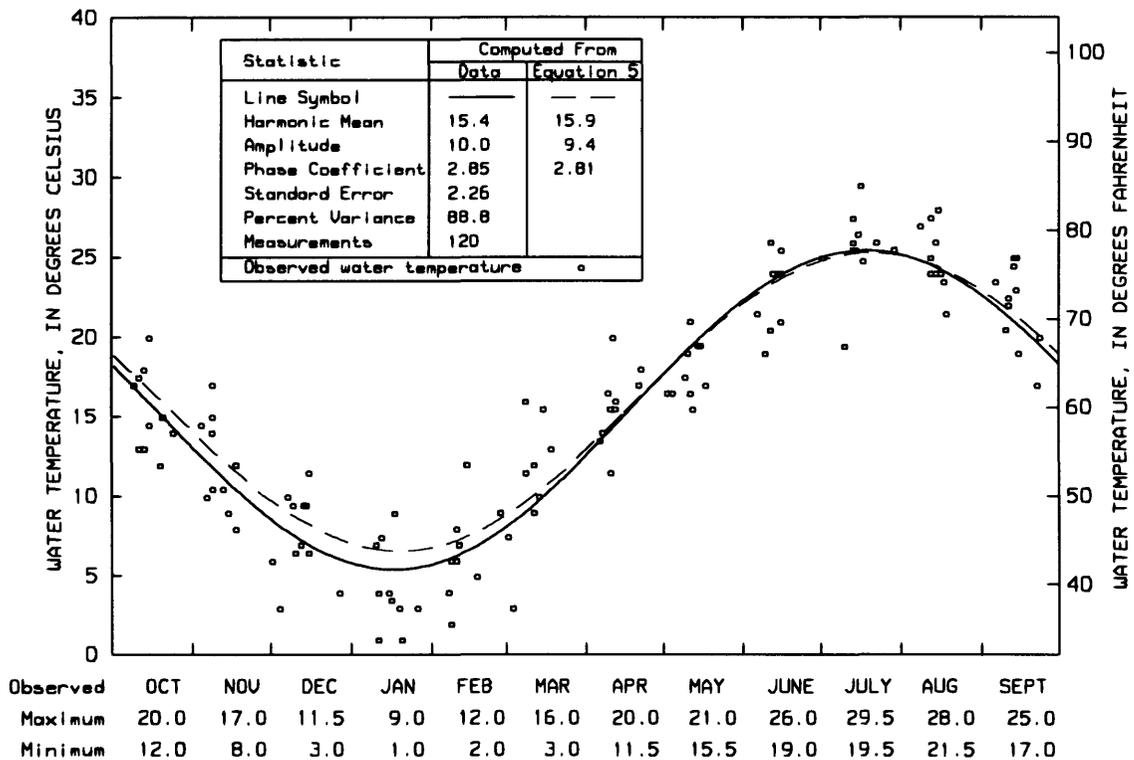


Figure 75. Oconee River at Barnett Shoals near Watkinsville, Georgia, Station 02218000, July 1974 to December 1984.

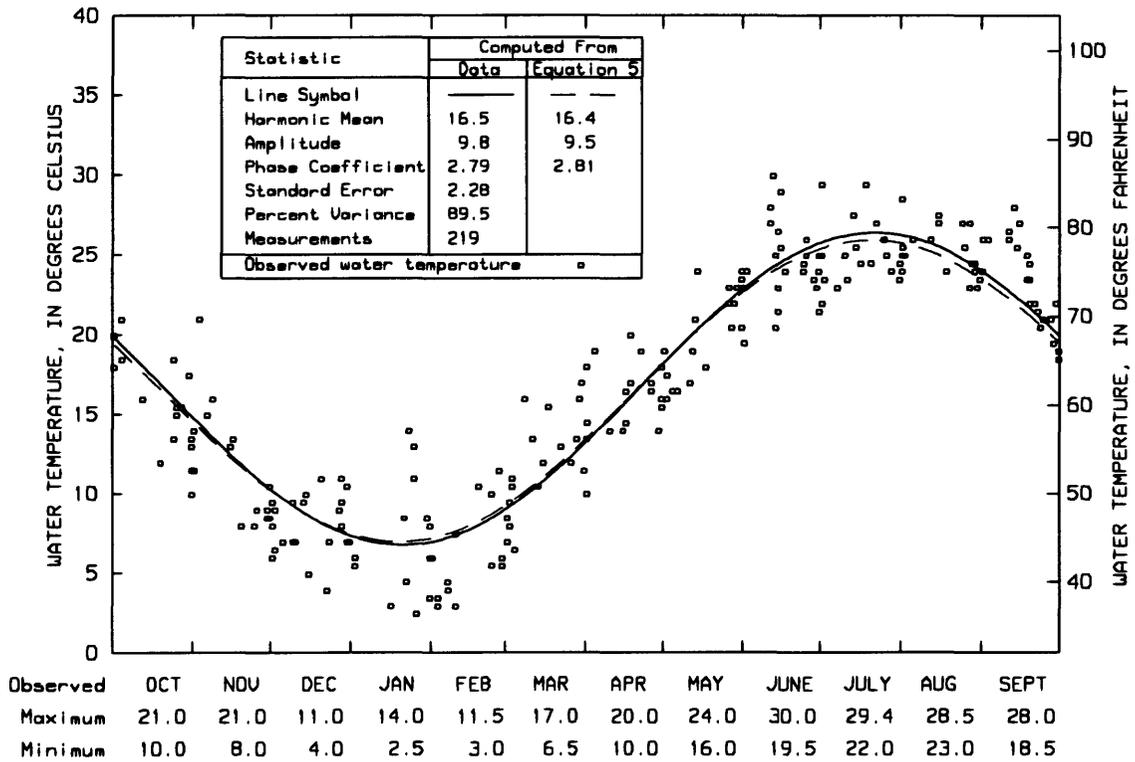


Figure 76. Dcone River near Greensboro, Georgia, Station 02218500, July 1956 to December 1984.

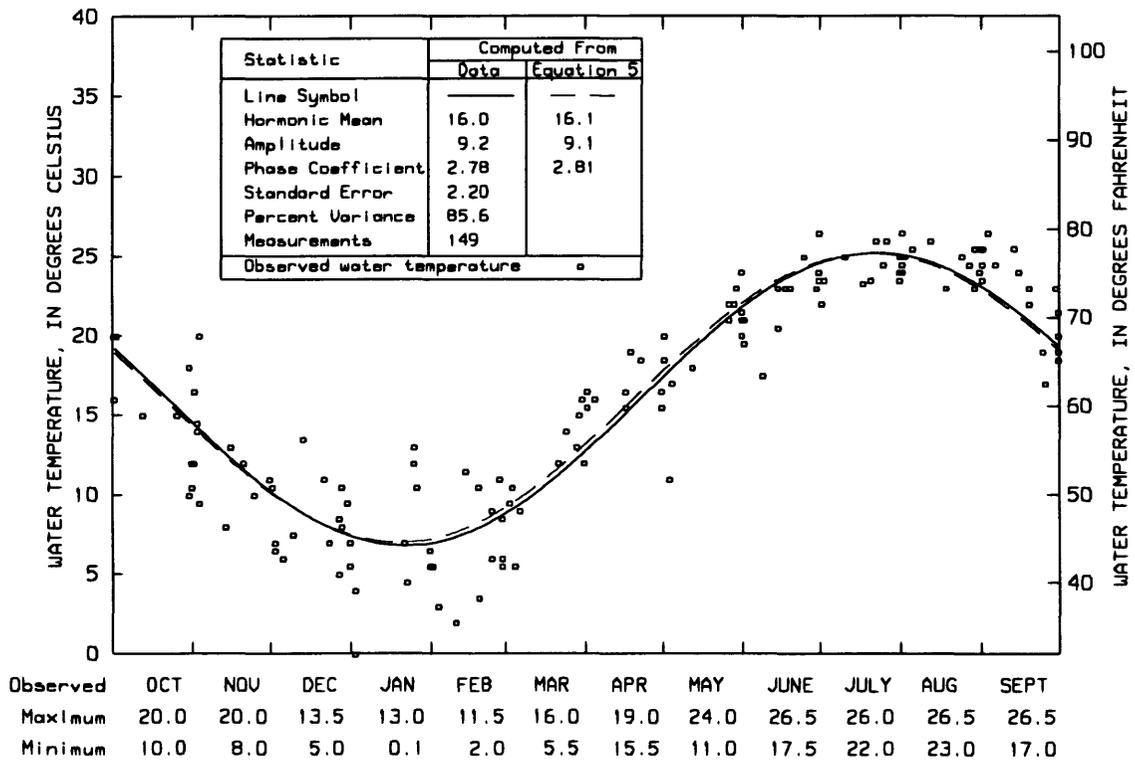


Figure 77. Apalachee River near Buckhead, Georgia, Station 02219500, July 1956 to July 1976.

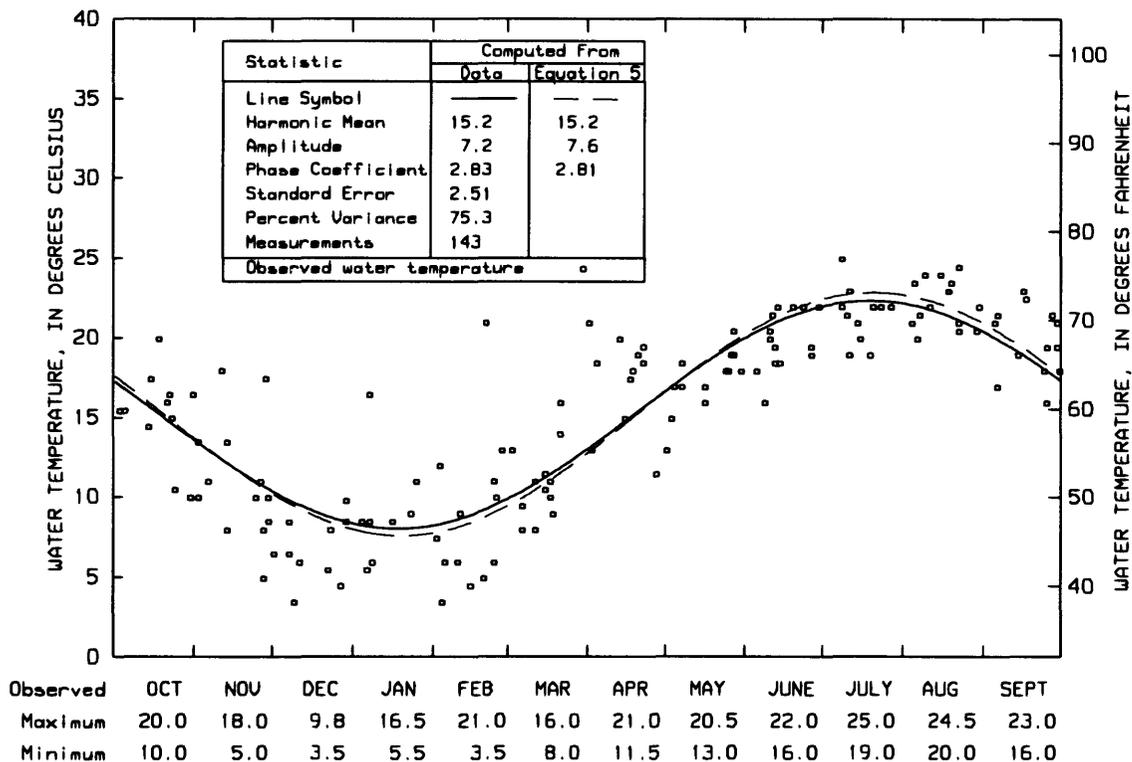


Figure 78. Whitten Creek near Sparta, Georgia, Station O2220550, December 1960 to August 1976.

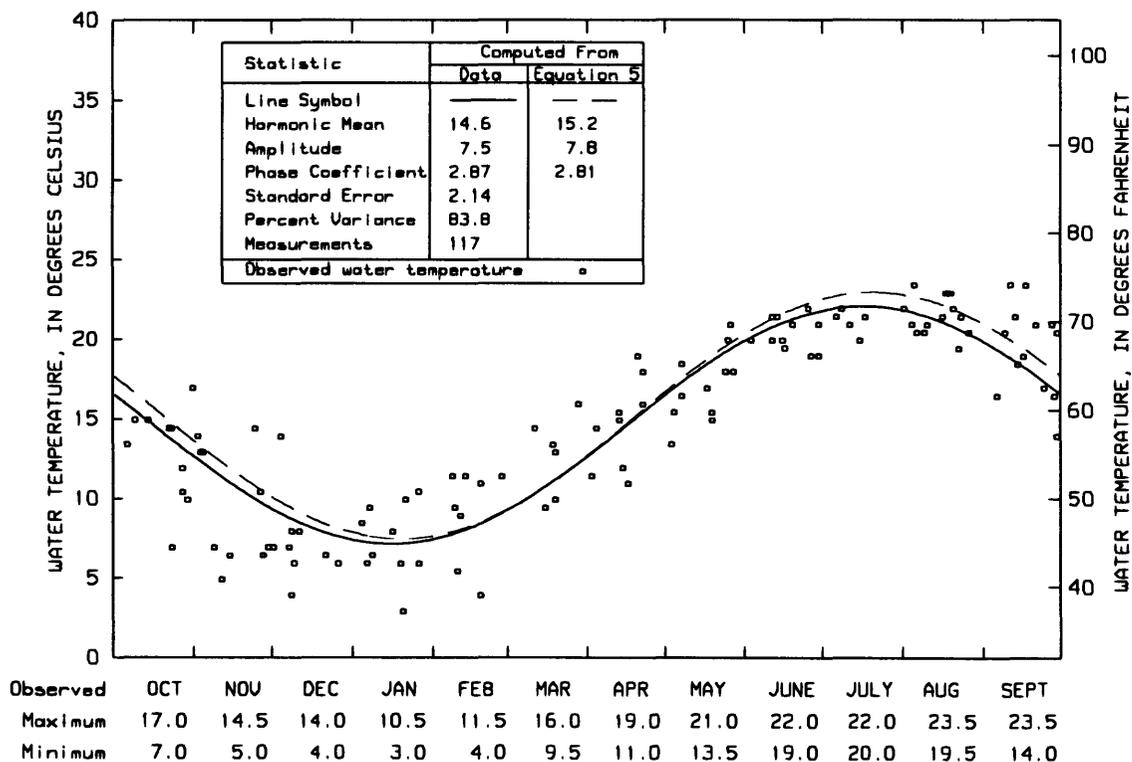


Figure 79. Murder Creek near Monticello, Georgia, Station O2221000, August 1956 to December 1973.

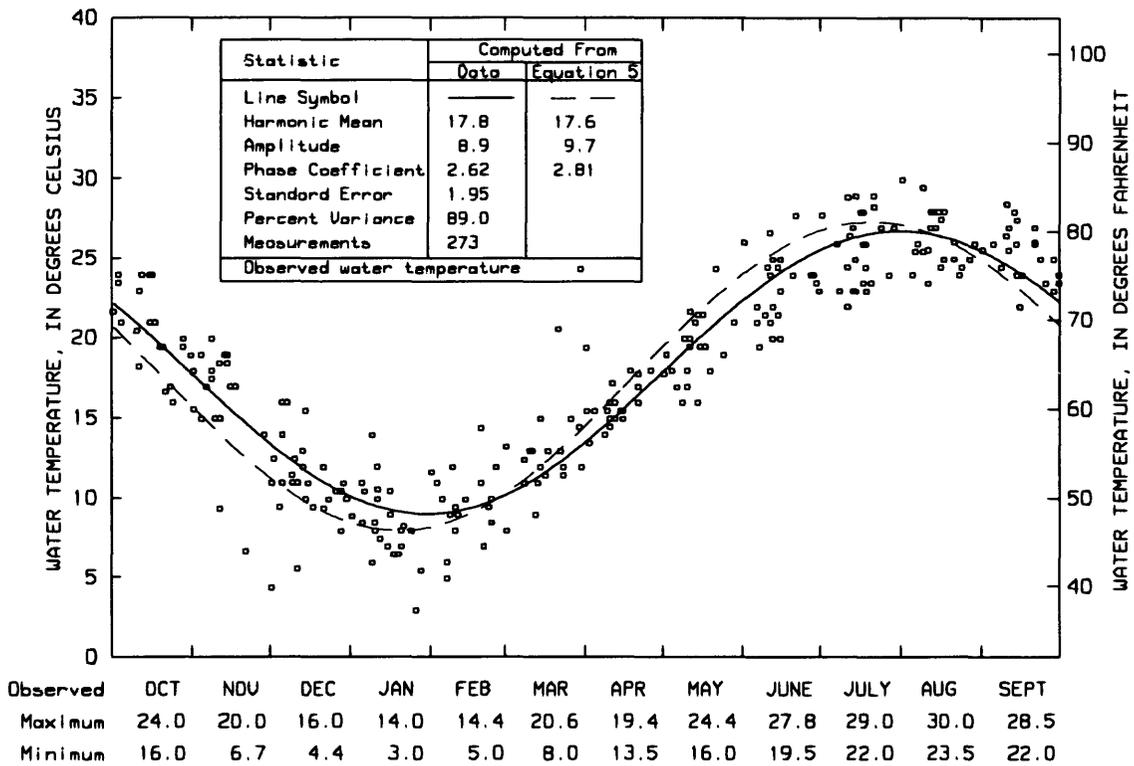


Figure 80. Oconee River at Milledgeville, Georgia, Station 02223000, May 1937 to December 1984.

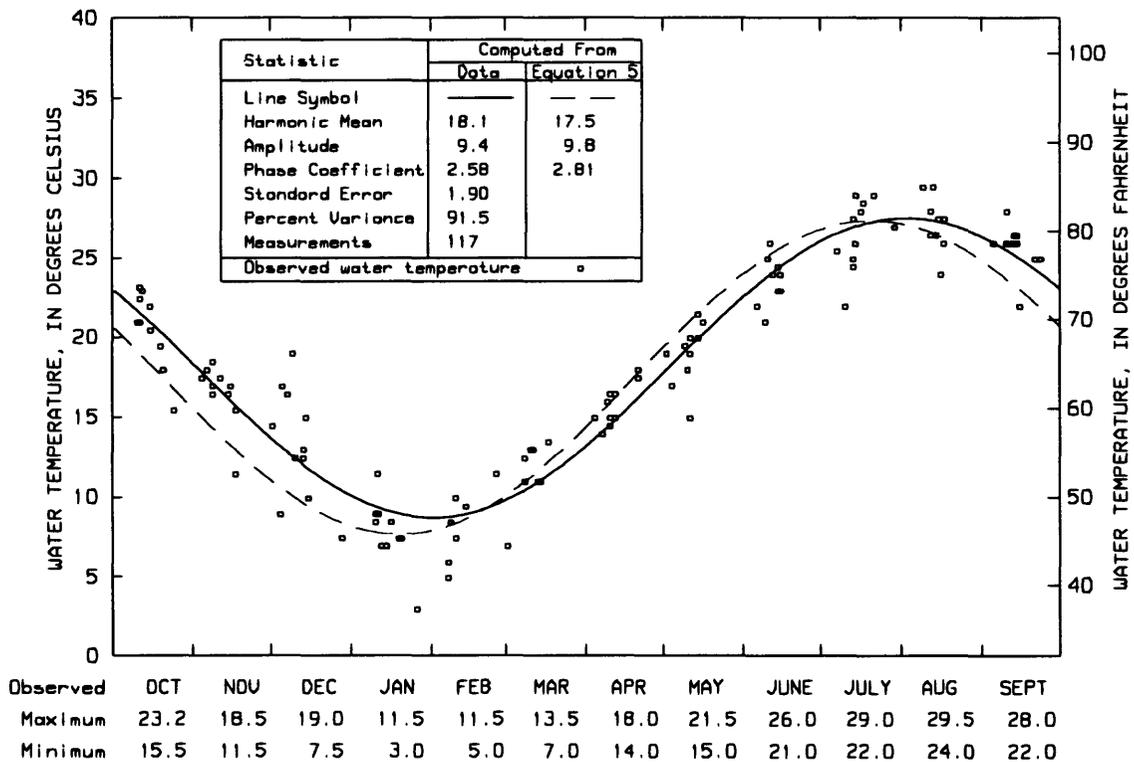
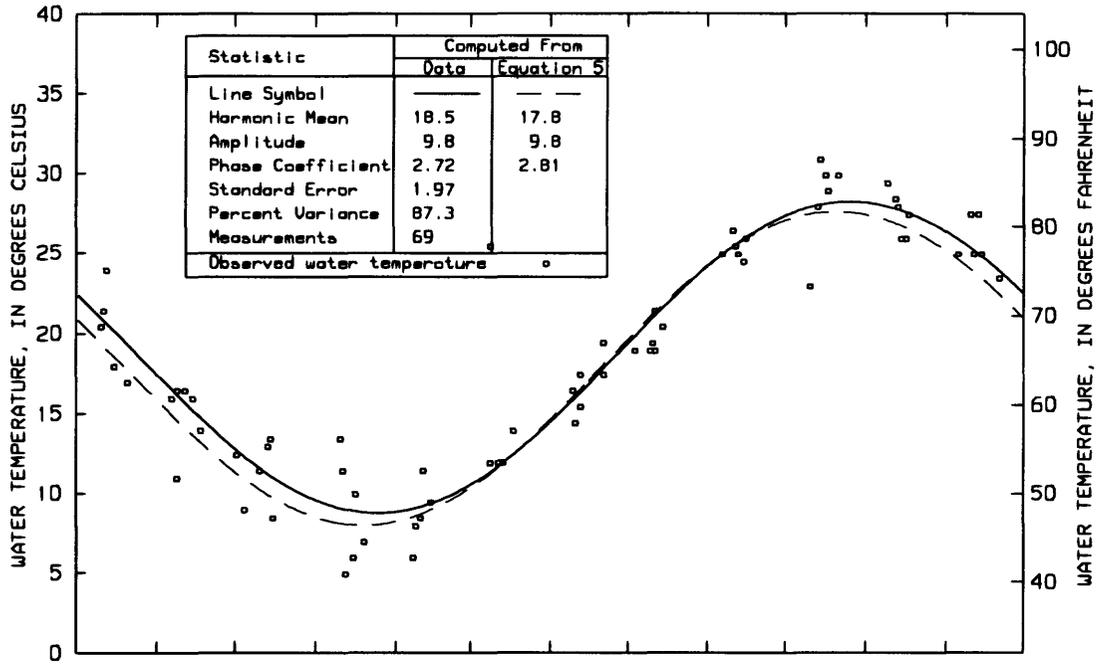
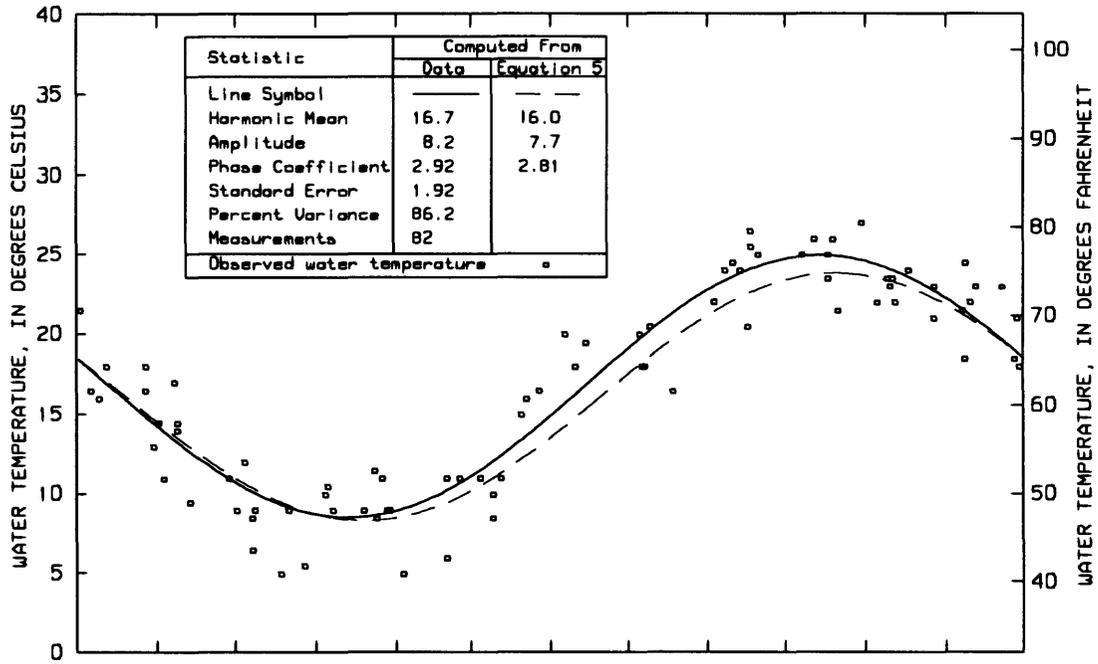


Figure 81. Oconee River near Hardwick, Georgia, Station 02223040, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 24.0 | 16.5 | 13.5 | 13.5 | 11.5 | 25.5 | 19.5 | 21.5 | 26.5 | 31.0 | 29.5 | 27.5 |
| Minimum | 17.0 | 11.0 | 8.5 | 5.0 | 6.0 | 12.0 | 14.5 | 19.0 | 24.5 | 23.0 | 26.0 | 23.5 |

Figure 82. Oconee River at State Highway 57 near Toombsboro, Georgia, Station 02223250, February 1979 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 21.5 | 17.0 | 12.0 | 11.5 | 11.0 | 16.5 | 20.0 | 20.5 | 26.5 | 27.0 | 24.0 | 24.5 |
| Minimum | 13.0 | 9.5 | 5.0 | 8.5 | 5.0 | 8.5 | 18.0 | 16.5 | 20.5 | 21.5 | 21.0 | 18.0 |

Figure 83. Big Sandy Creek near Jeffersonville, Georgia, Station 02223300, August 1958 to December 1973.

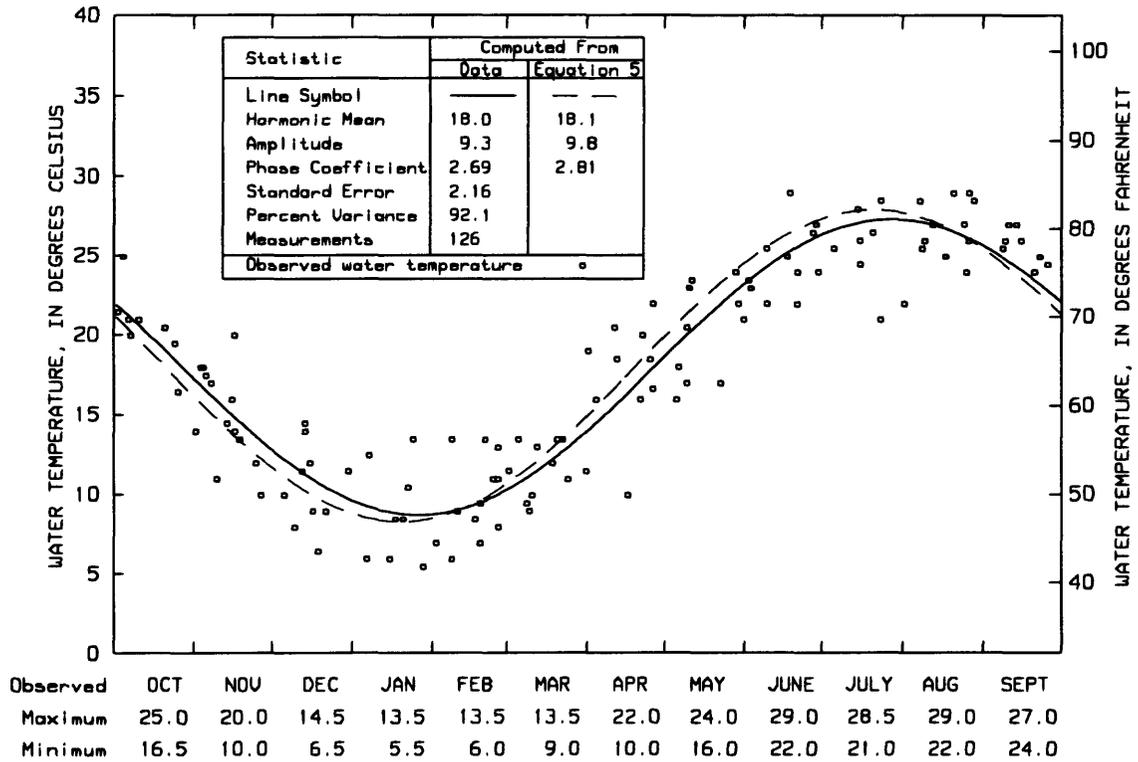


Figure 84. Oconee River at Dublin, Georgia, Station 02223500, November 1954 to November 1976.

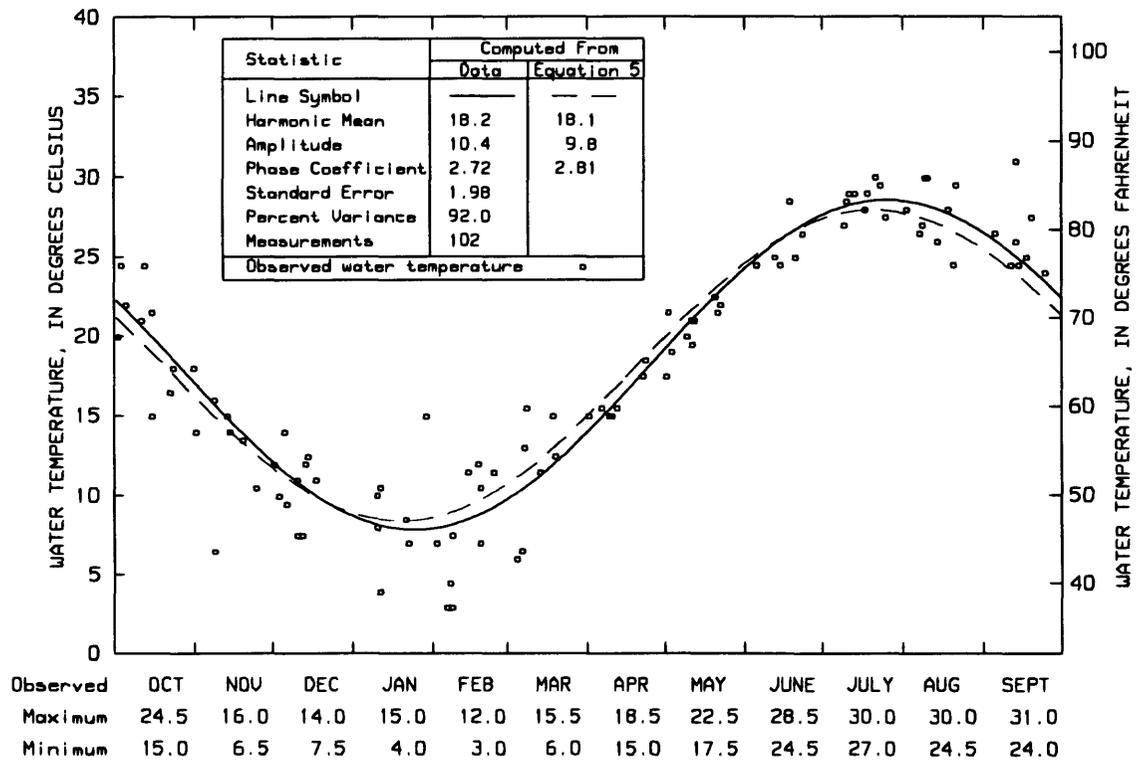


Figure 85. Oconee River at Interstate Highway 16 near Dublin, Georgia, Station 02223600, October 1973 to December 1984.

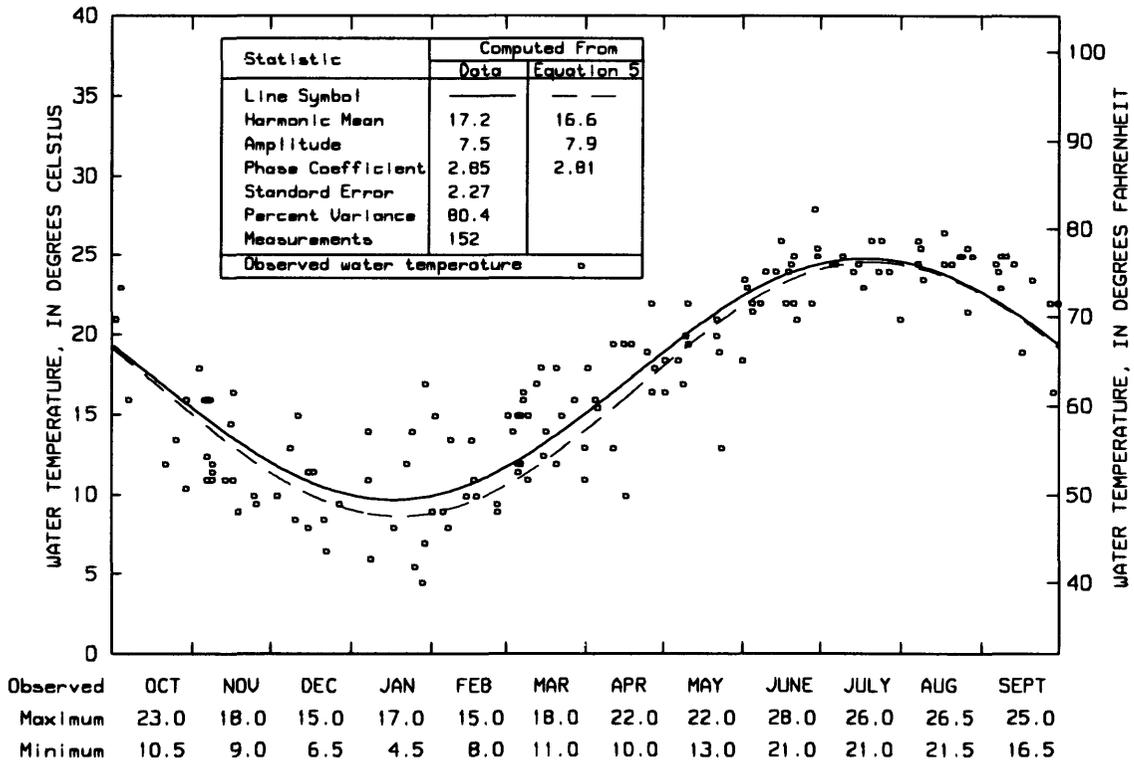


Figure 86. Rocky Creek near Dudley, Georgia, Station 02224000, August 1954 to March 1984.

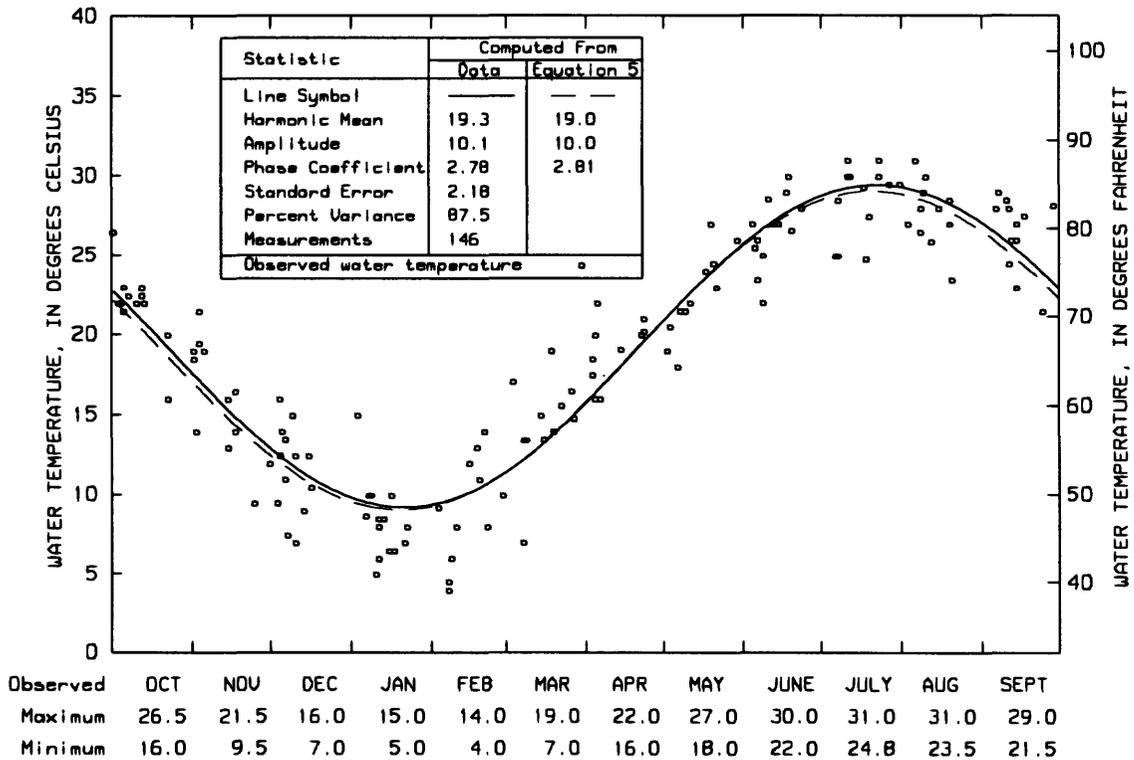


Figure 87. Altamaha River near Baxley, Georgia, Station 02225000, December 1957 to December 1984.

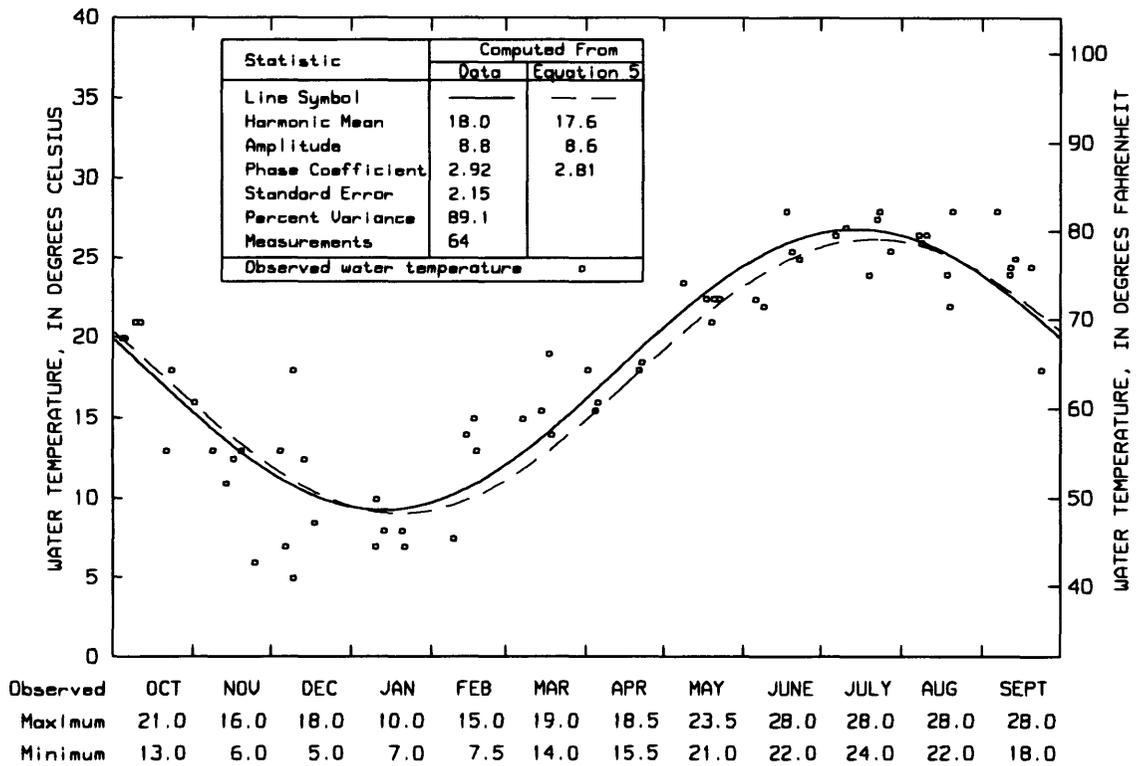


Figure 88. Pendleton Creek at State Highway 86 below Ohoopsee, Georgia, Station 02225470, July 1979 to December 1984.

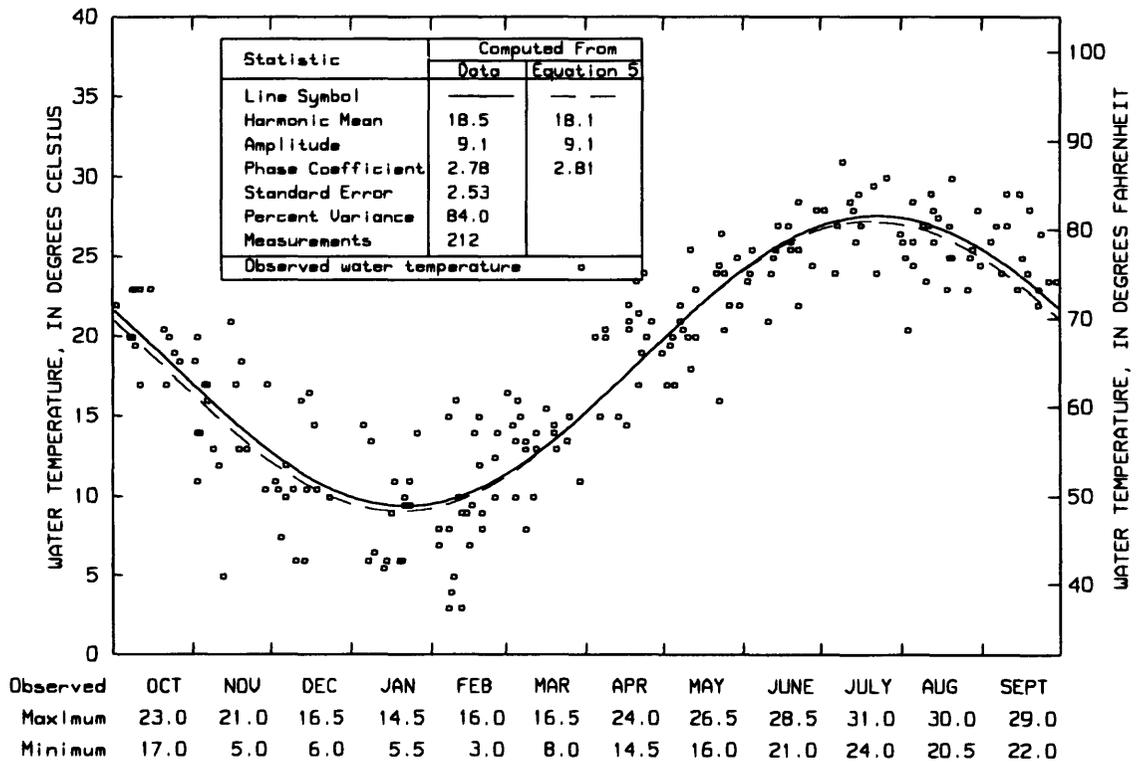
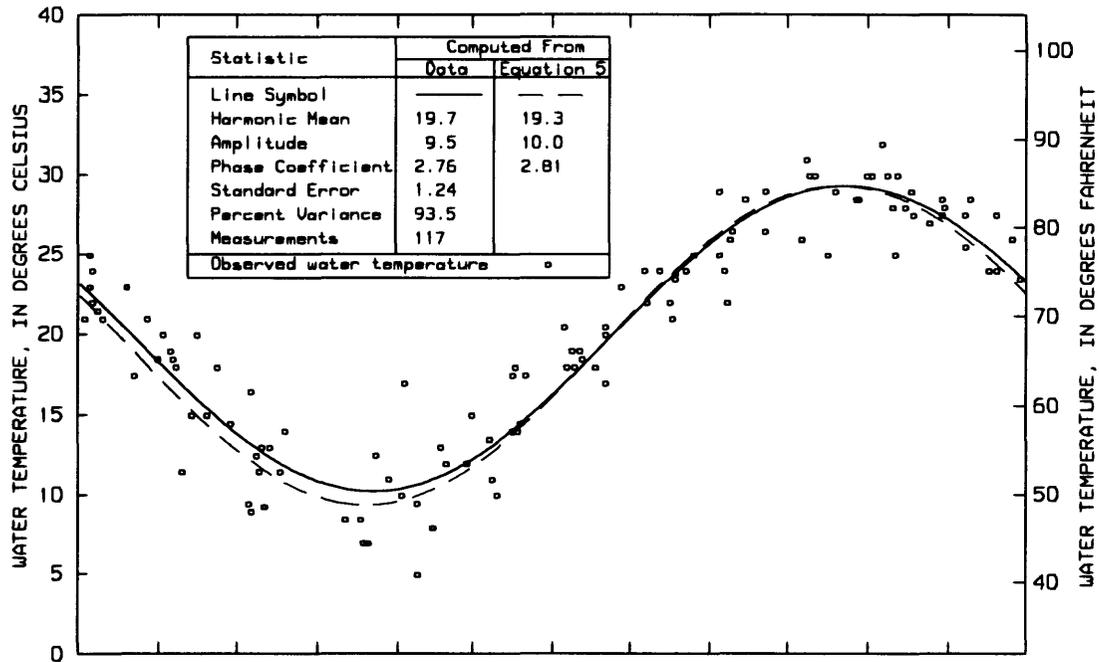
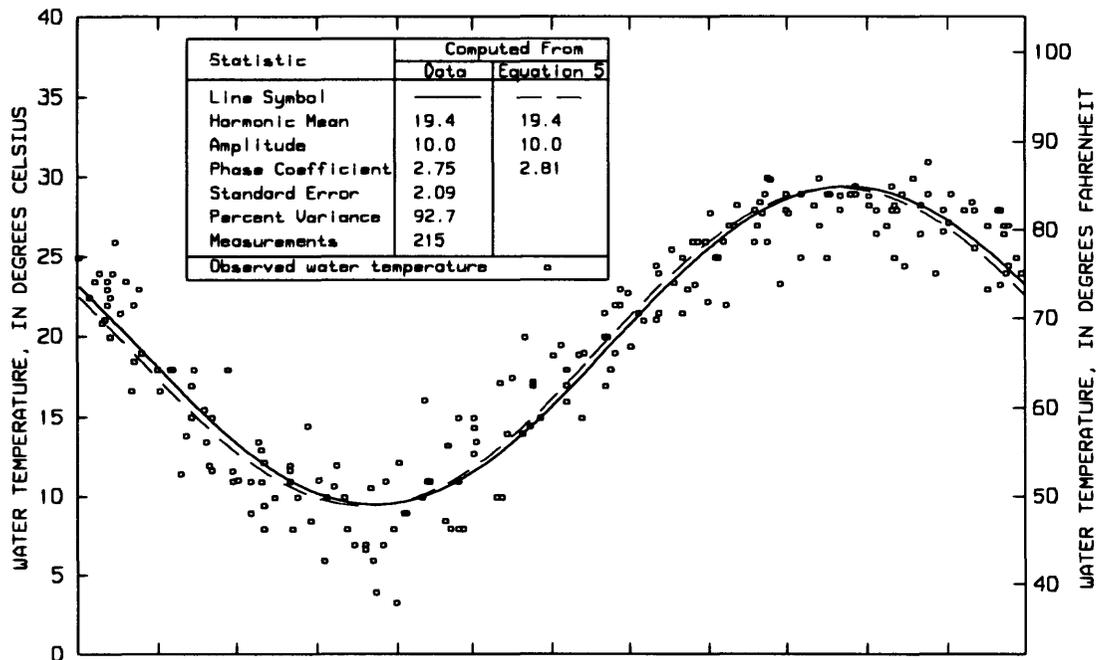


Figure 89. Ohoopsee River near Reidsville, Georgia, Station 02225500, July 1954 to October 1982.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 25.0 | 20.0 | 16.5 | 12.5 | 17.0 | 18.0 | 23.0 | 25.0 | 29.0 | 31.0 | 32.0 | 28.5 |
| Minimum | 17.5 | 11.5 | 9.0 | 7.0 | 5.0 | 10.0 | 17.0 | 21.0 | 22.0 | 25.0 | 25.0 | 23.5 |

Figure 90. Altamaha River near Jesup, Georgia, Station 02225990, August 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 26.0 | 18.0 | 14.5 | 12.0 | 16.1 | 20.0 | 23.0 | 26.0 | 30.0 | 30.0 | 31.0 | 29.0 |
| Minimum | 16.7 | 11.0 | 8.0 | 3.3 | 8.0 | 10.0 | 15.0 | 19.4 | 22.0 | 25.0 | 24.0 | 23.0 |

Figure 91. Altamaha River at Doctortown, Georgia, Station 02226000, May 1937 to October 1979.

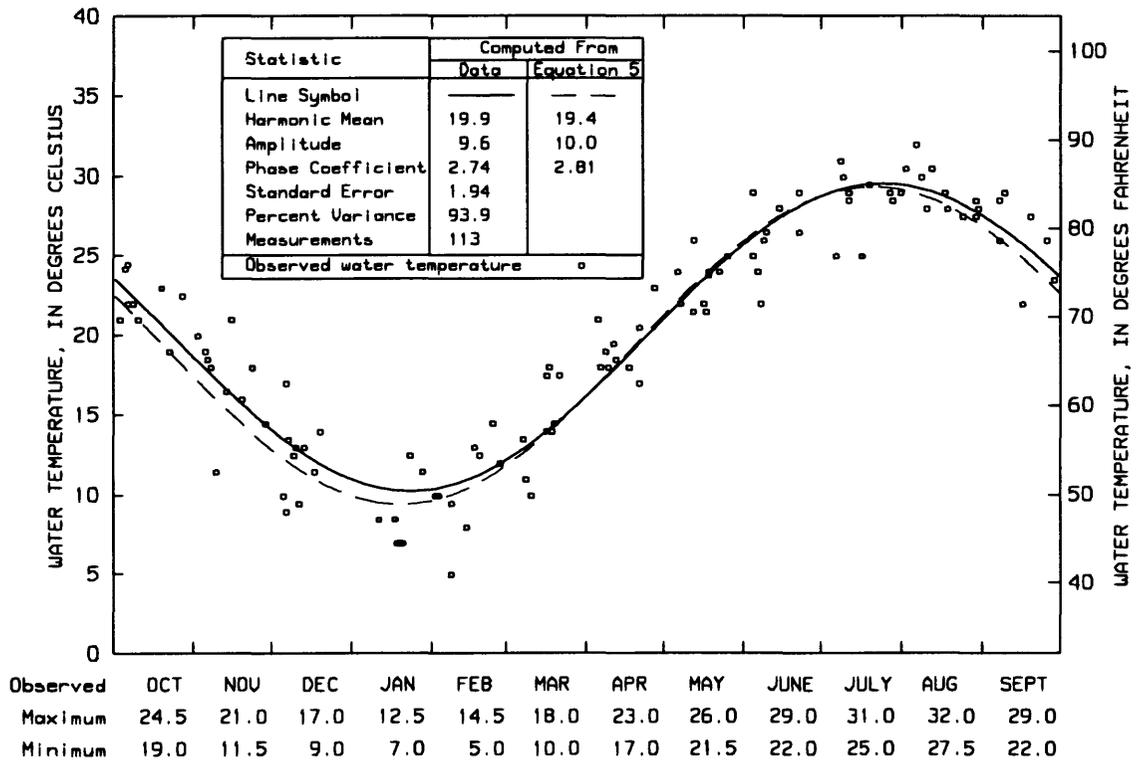


Figure 92. Altamaha River near Gardi, Georgia, Station O2226010, November 1974 to December 1984.

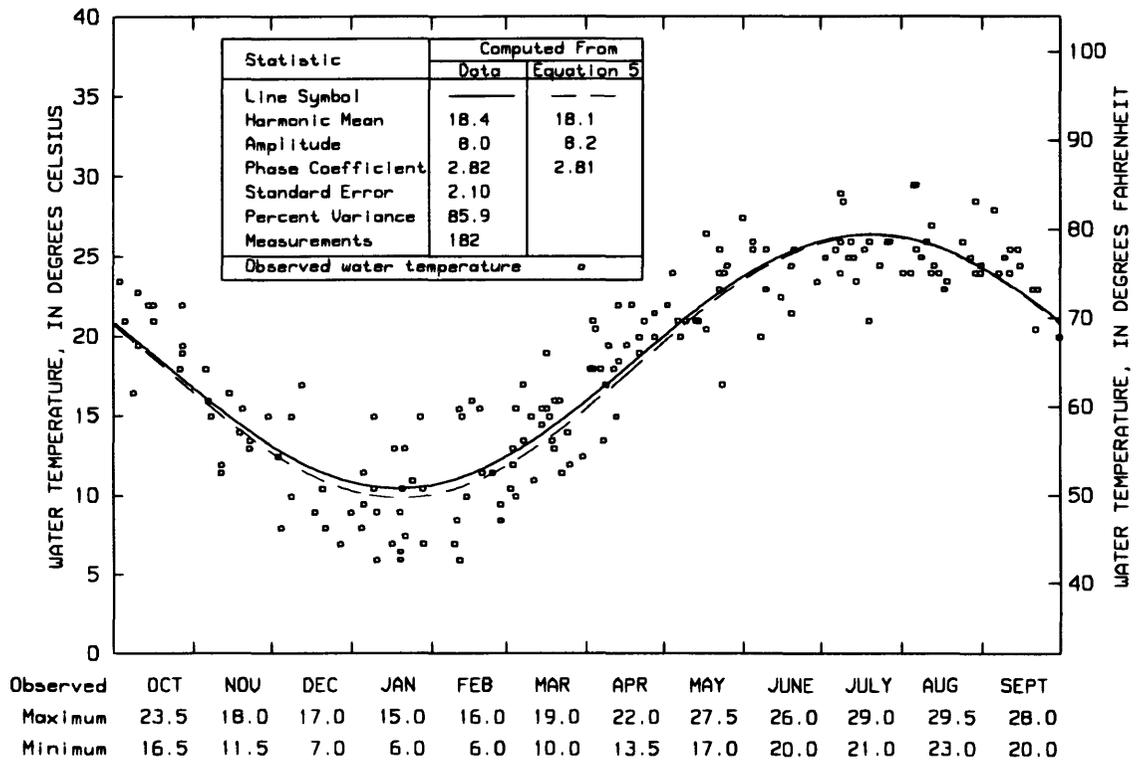
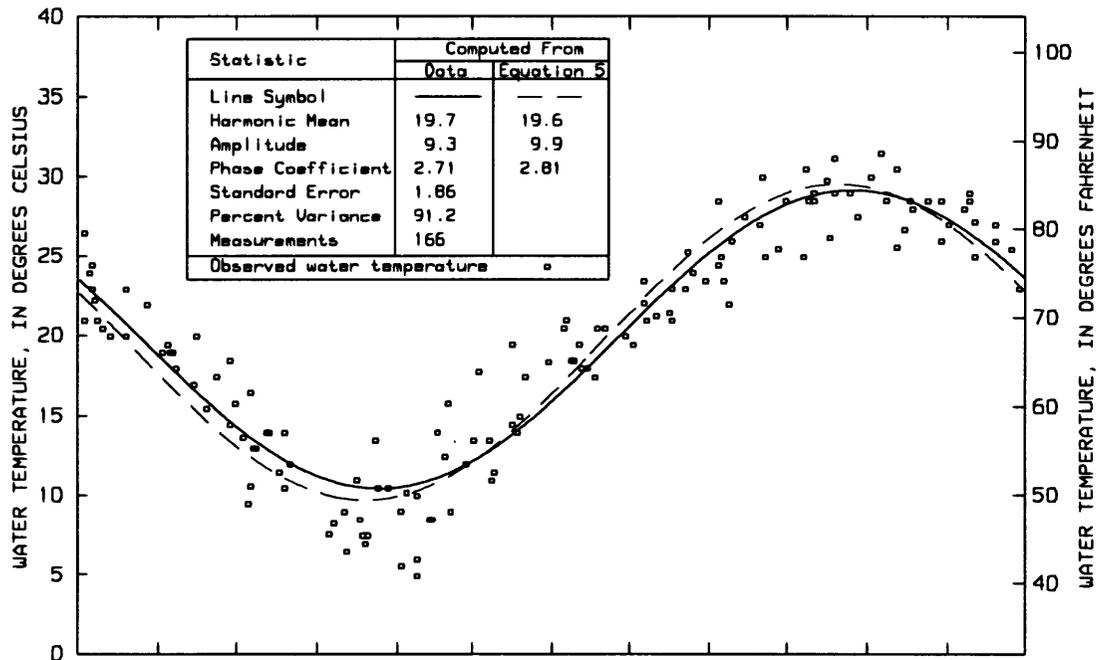
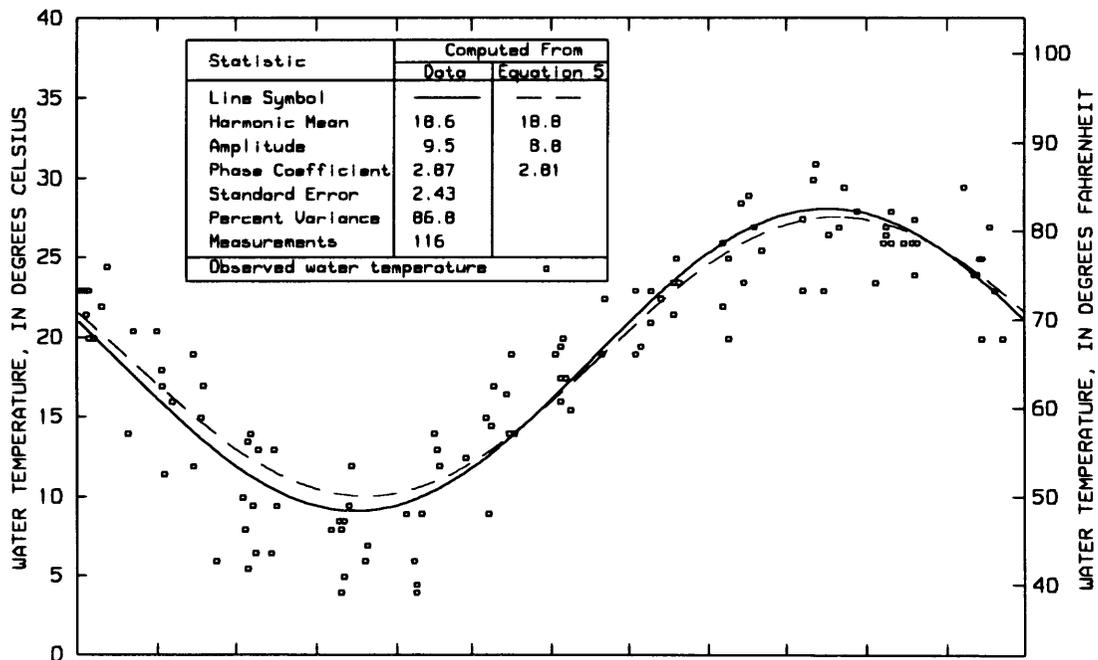


Figure 93. Penholoway Creek near Jesup, Georgia, Station O2226100, December 1958 to July 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 26.5 | 20.0 | 16.5 | 13.5 | 15.8 | 19.5 | 21.0 | 25.3 | 30.0 | 31.2 | 31.5 | 29.0 |
| Minimum | 20.0 | 14.5 | 9.5 | 6.5 | 5.0 | 11.0 | 17.5 | 19.5 | 22.0 | 25.0 | 25.6 | 23.0 |

Figure 94. Altamaha River at Everett City, Georgia, Station O2226160, December 1970 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 24.5 | 19.0 | 14.0 | 12.0 | 14.0 | 19.0 | 22.5 | 25.0 | 29.0 | 31.0 | 28.0 | 29.5 |
| Minimum | 14.0 | 6.0 | 5.5 | 4.0 | 4.0 | 9.0 | 15.5 | 19.0 | 20.0 | 23.0 | 23.5 | 20.0 |

Figure 95. Satilla River at Walerstown, Georgia, Station O2226475, August 1974 to December 1984.

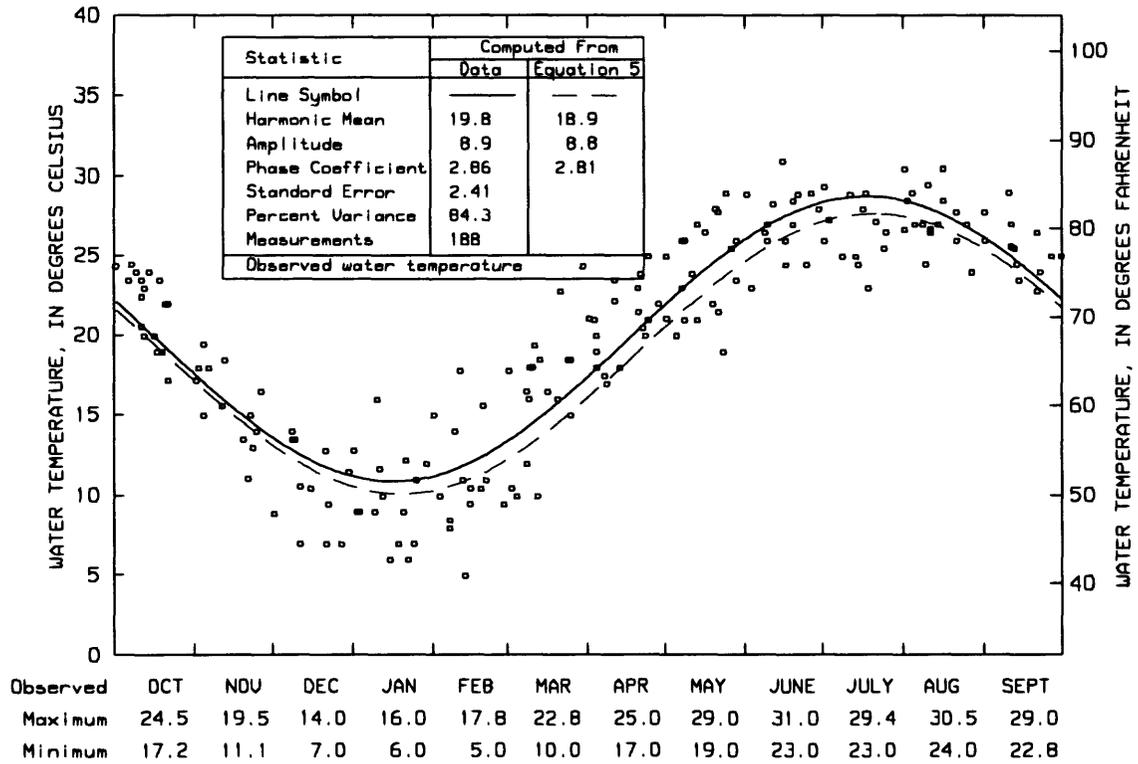


Figure 96. Satilla River near Waycross, Georgia, Station 02226500, May 1937 to August 1974.

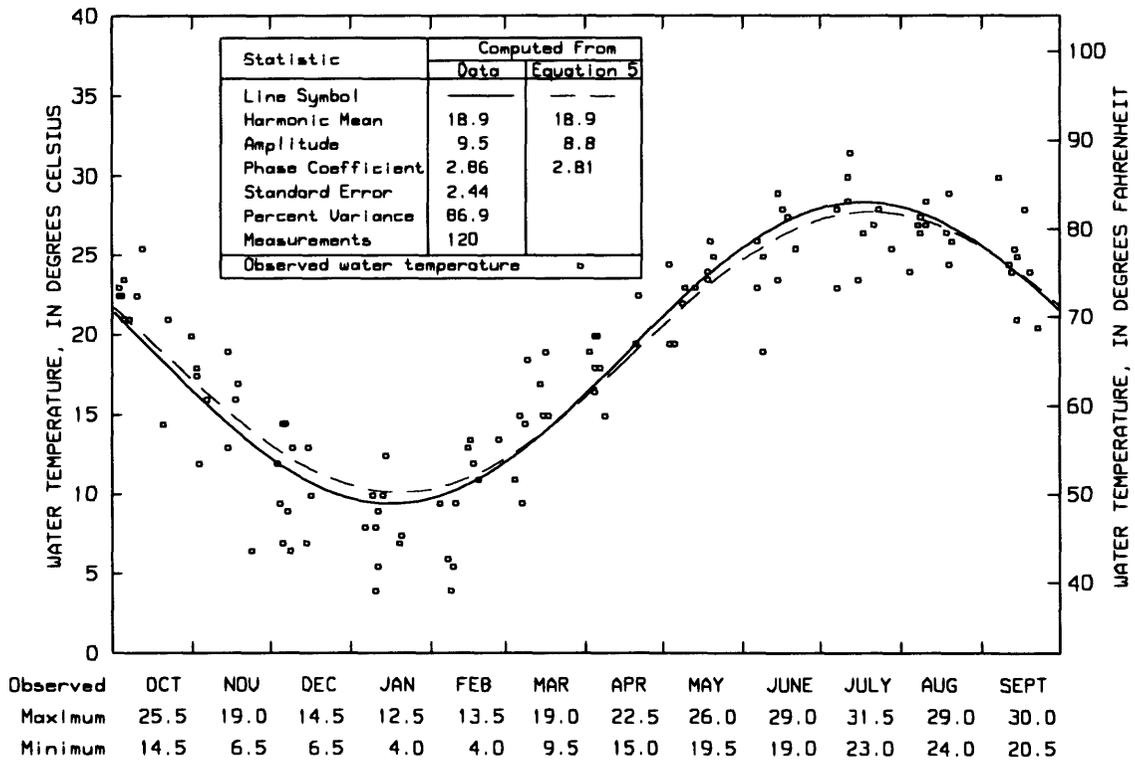
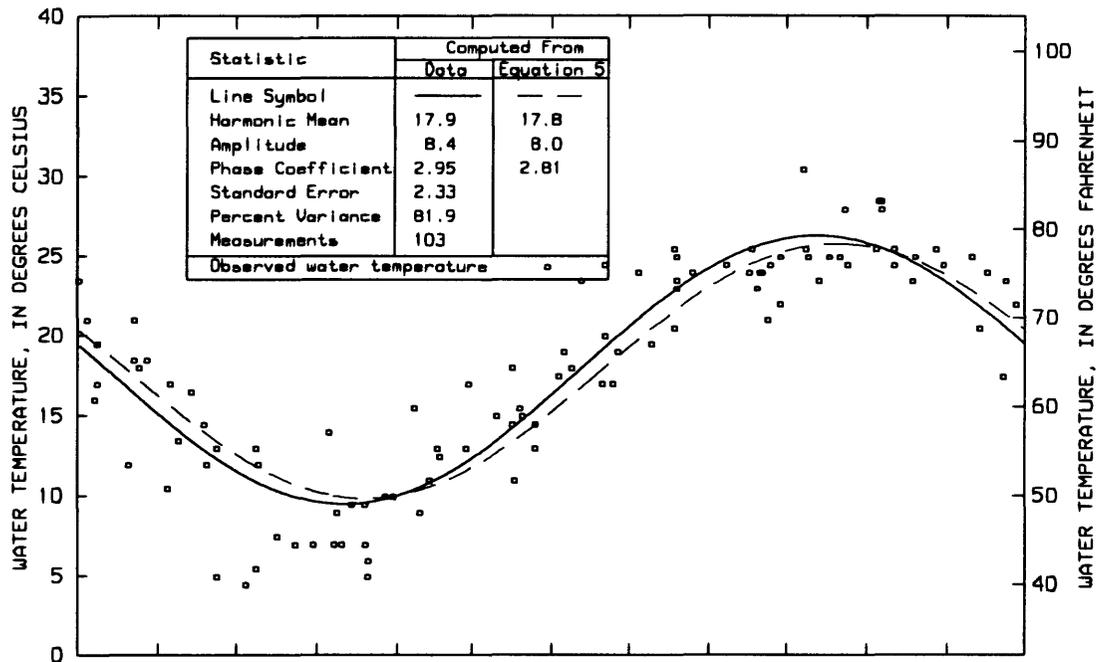
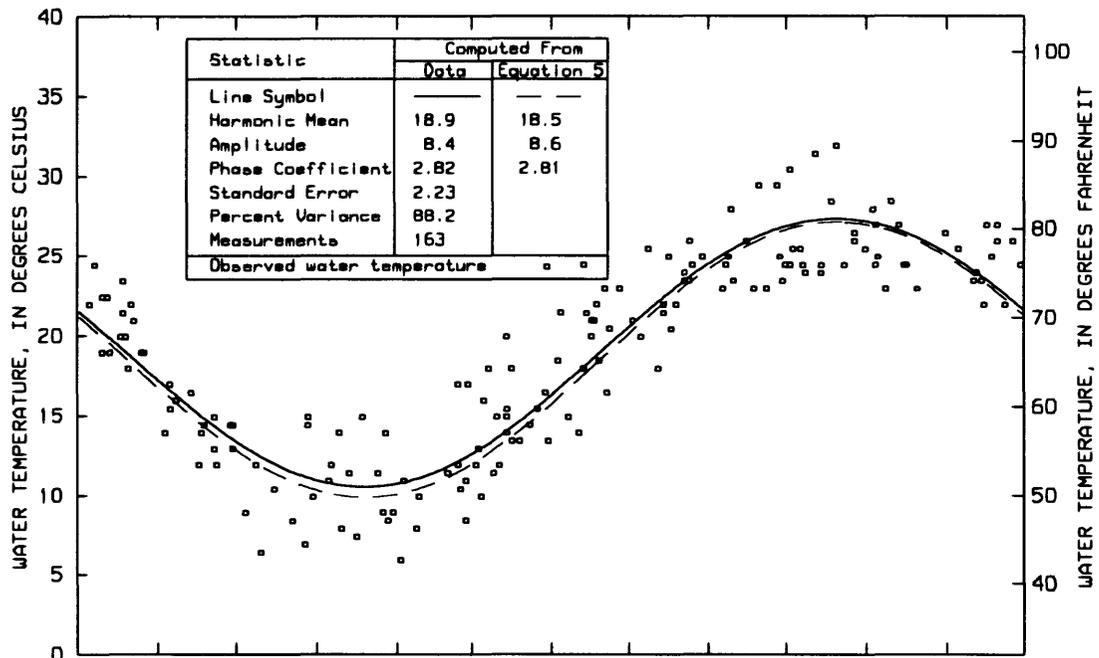


Figure 97. Satilla River at State Highways 15 and 121 near Hoboken, Georgia, Station 02226582, August 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.5 | 17.0 | 13.0 | 14.0 | 17.0 | 18.0 | 24.5 | 25.5 | 25.5 | 30.5 | 28.5 | 25.0 |
| Minimum | 12.0 | 5.0 | 4.5 | 5.0 | 9.0 | 11.0 | 17.0 | 19.5 | 21.0 | 23.5 | 23.5 | 17.5 |

Figure 98. Hurricane Creek near Alma, Georgia, Station 02227000, January 1955 to June 1982.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 24.5 | 17.0 | 15.0 | 15.0 | 17.0 | 20.0 | 24.5 | 26.0 | 29.5 | 32.0 | 28.5 | 27.0 |
| Minimum | 18.0 | 12.0 | 6.5 | 7.5 | 6.0 | 10.0 | 14.0 | 18.0 | 23.0 | 24.0 | 23.0 | 22.0 |

Figure 99. Little Satilla River near Offerman, Georgia, Station 02227500, January 1955 to September 1983.

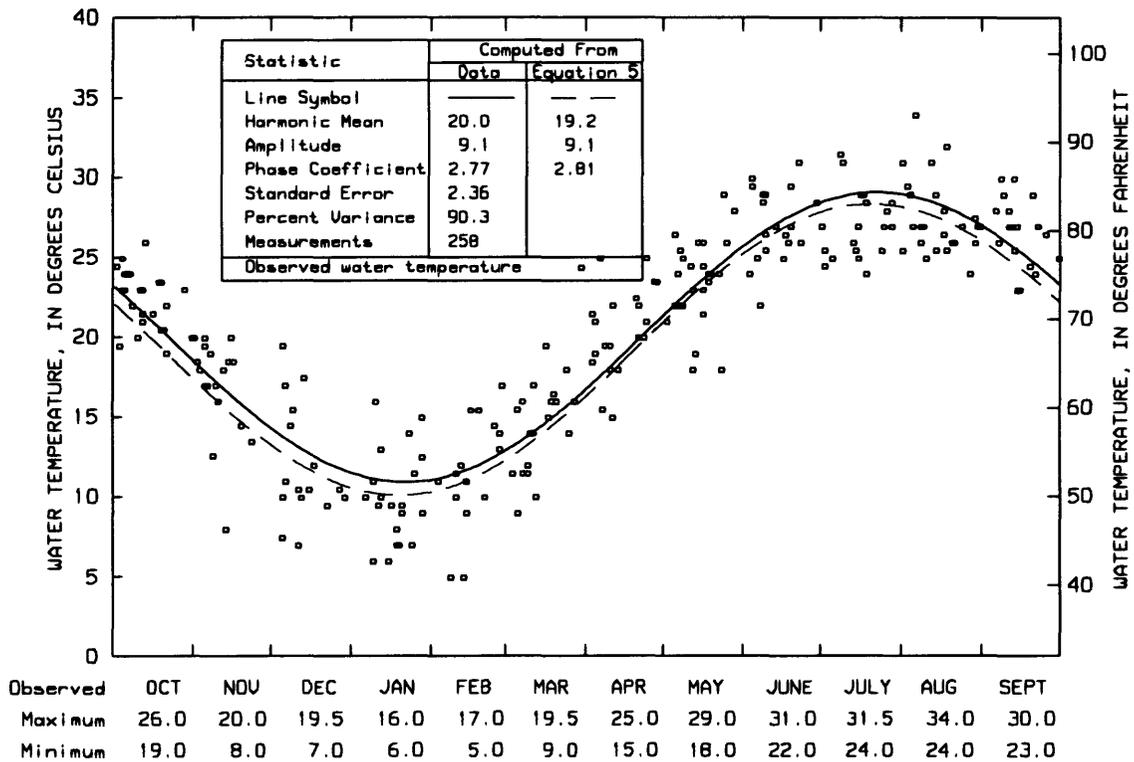


Figure 100. Satilla River at Atkinson, Georgia, Station 02228000, May 1954 to October 1984.

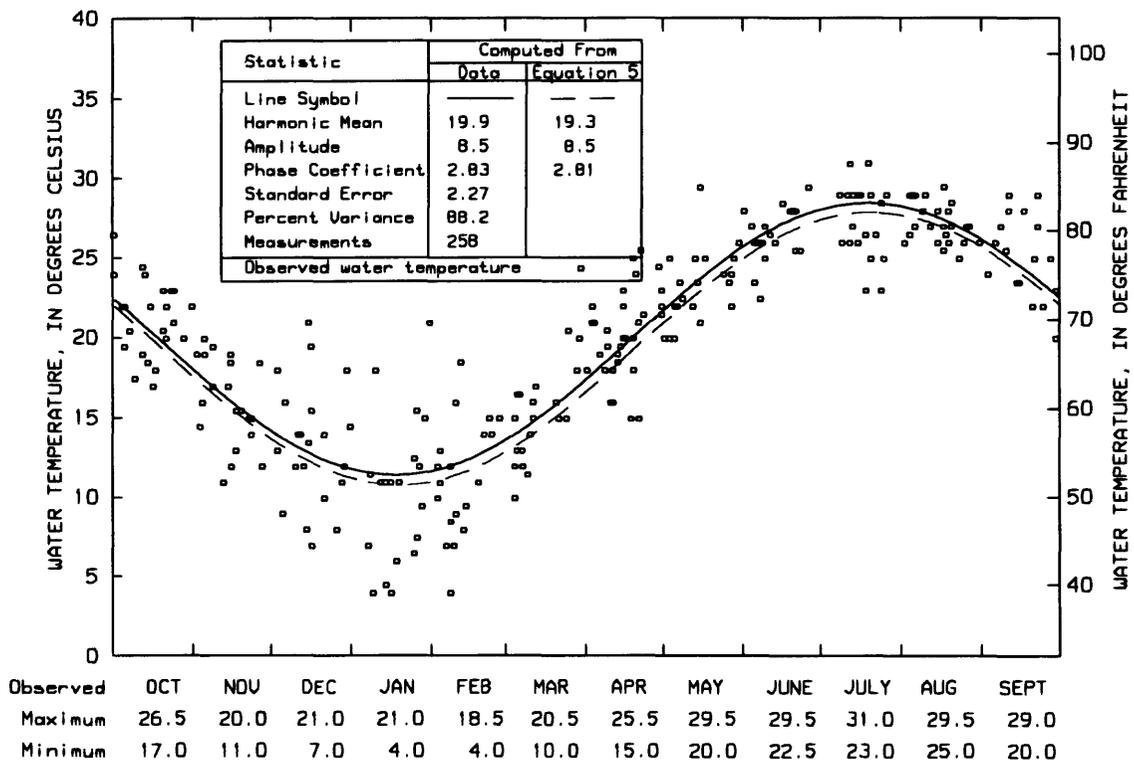
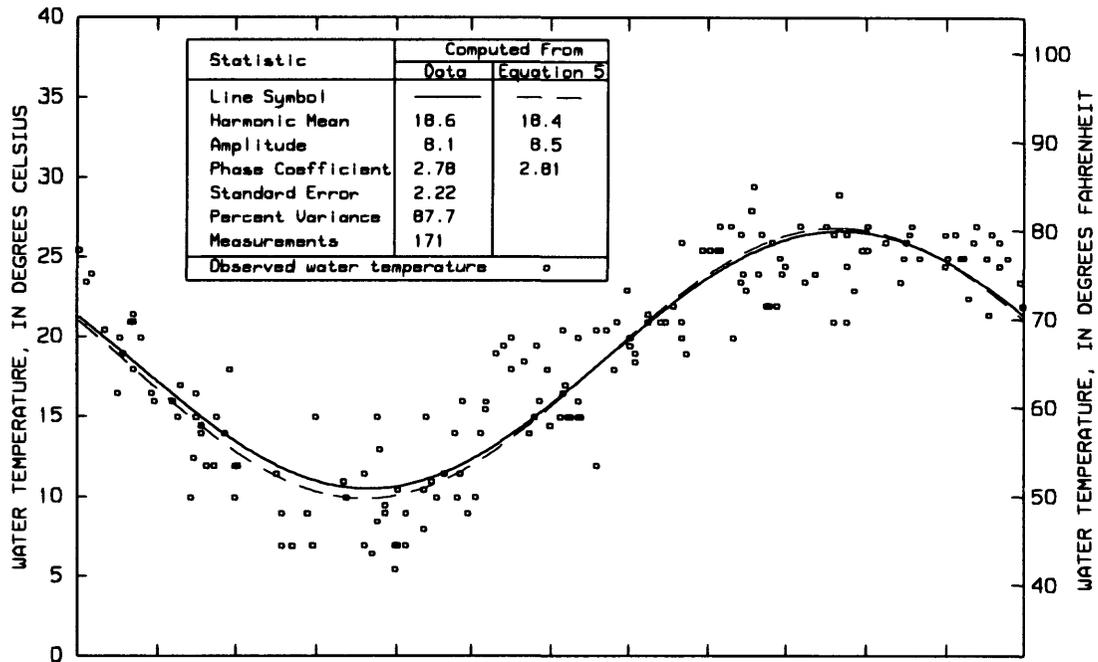
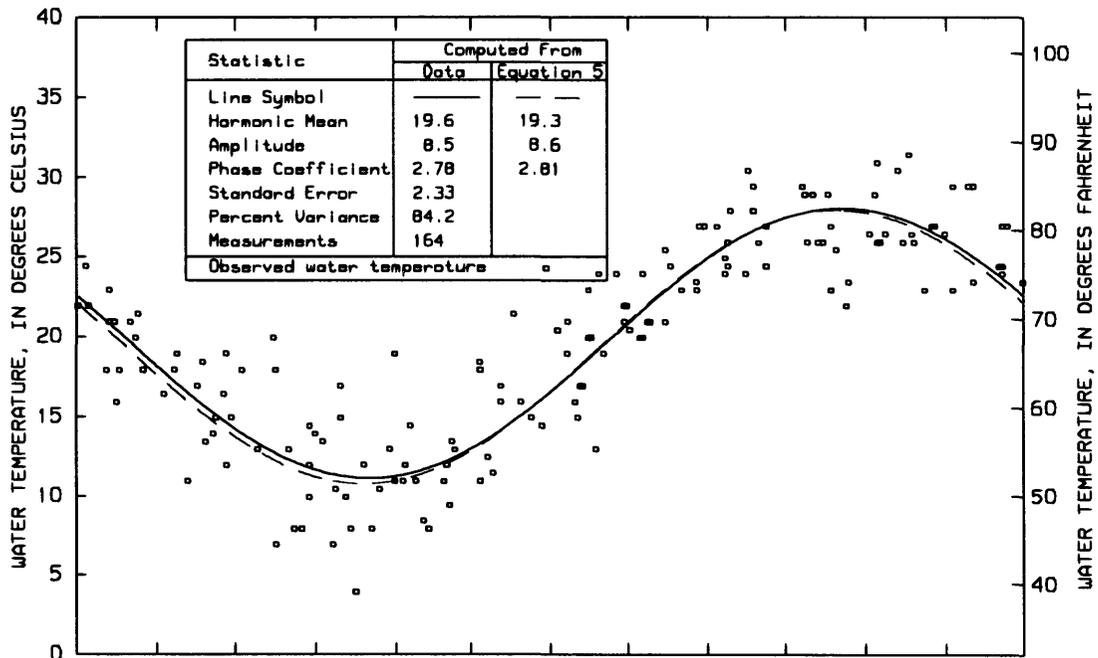


Figure 101. Suwannee River at Fargo, Georgia, Station 02314500, August 1957 to November 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 25.5 | 18.0 | 15.0 | 15.0 | 16.0 | 20.0 | 23.0 | 26.0 | 29.5 | 29.0 | 27.0 | 27.0 |
| Minimum | 16.0 | 10.0 | 7.0 | 5.5 | 7.0 | 10.0 | 12.0 | 18.5 | 20.0 | 21.0 | 23.5 | 21.5 |

Figure 102. Alapaha River near Alapaha, Georgia, Station 02316000, March 1953 to July 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 24.5 | 19.0 | 20.0 | 19.0 | 14.5 | 21.5 | 24.0 | 27.0 | 30.5 | 29.5 | 31.5 | 29.5 |
| Minimum | 16.0 | 11.0 | 7.0 | 4.0 | 8.0 | 11.0 | 13.0 | 20.0 | 24.0 | 22.0 | 23.0 | 23.0 |

Figure 103. Alapaha River at Statenville, Georgia, Station 02317500, January 1954 to August 1974.

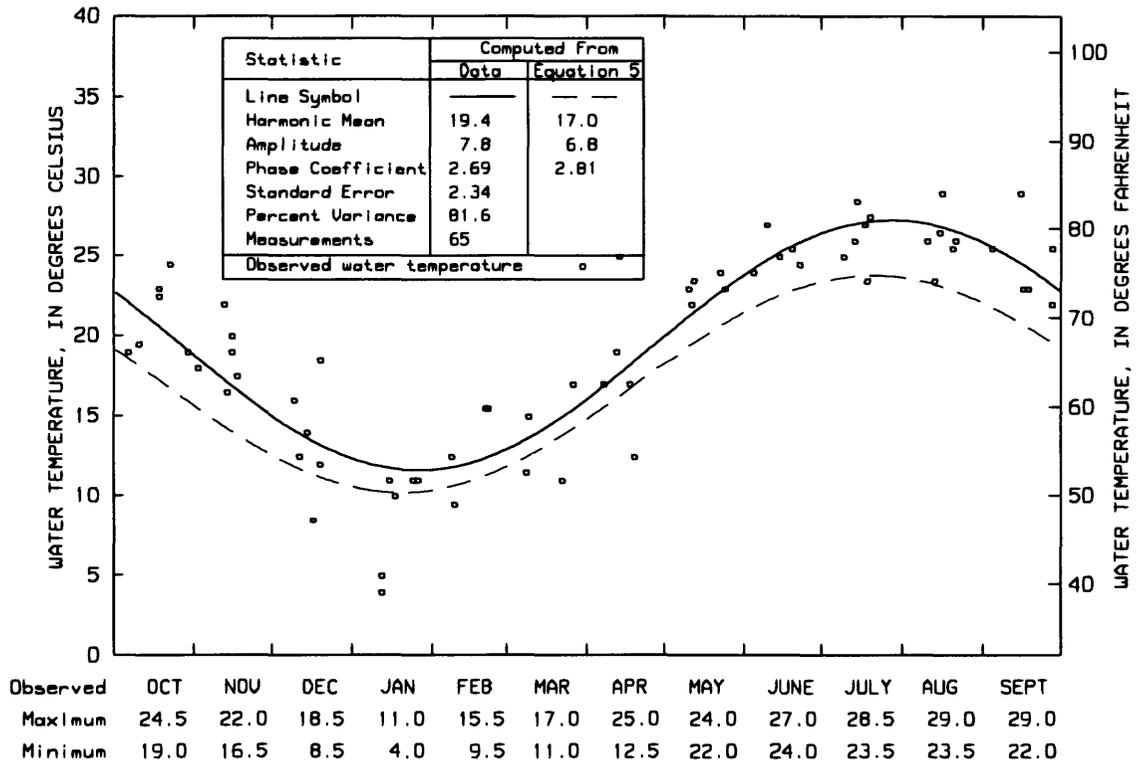


Figure 104. New River at U.S. Highway 82 near Tifton, Georgia, Station 02317718, July 1979 to December 1984.

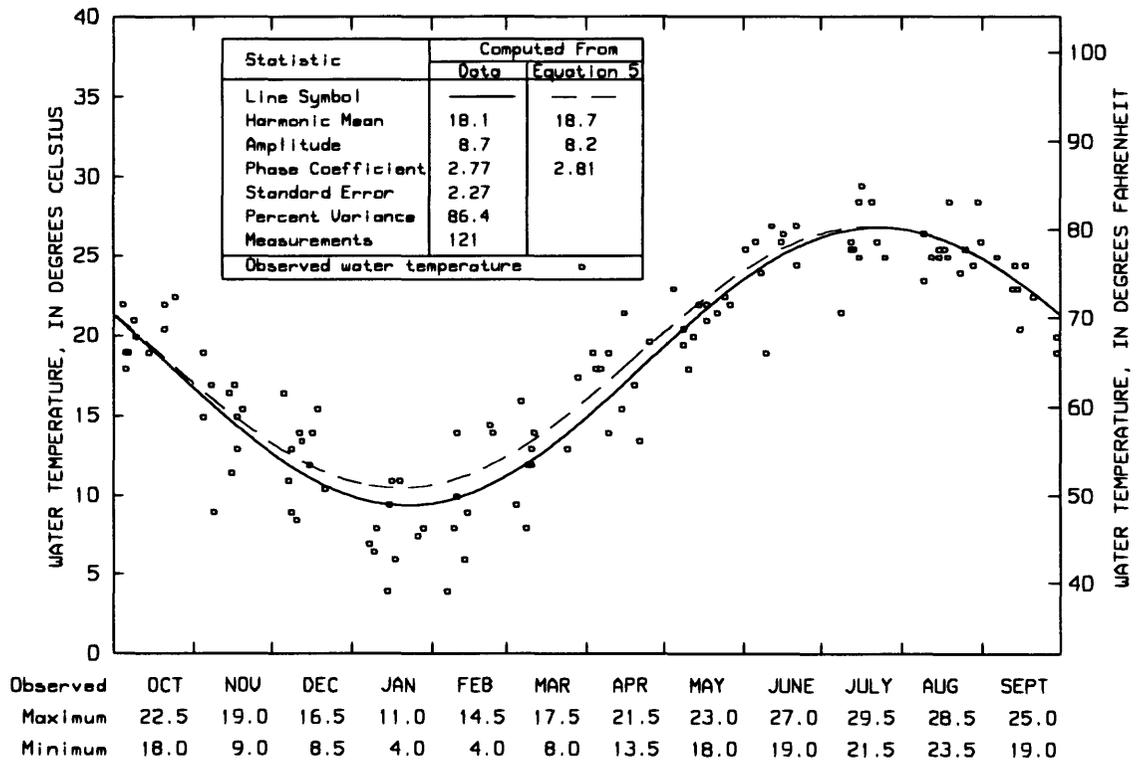


Figure 105. Withlacoochee River near Valdosta, Georgia, Station 02317749, November 1974 to December 1984.

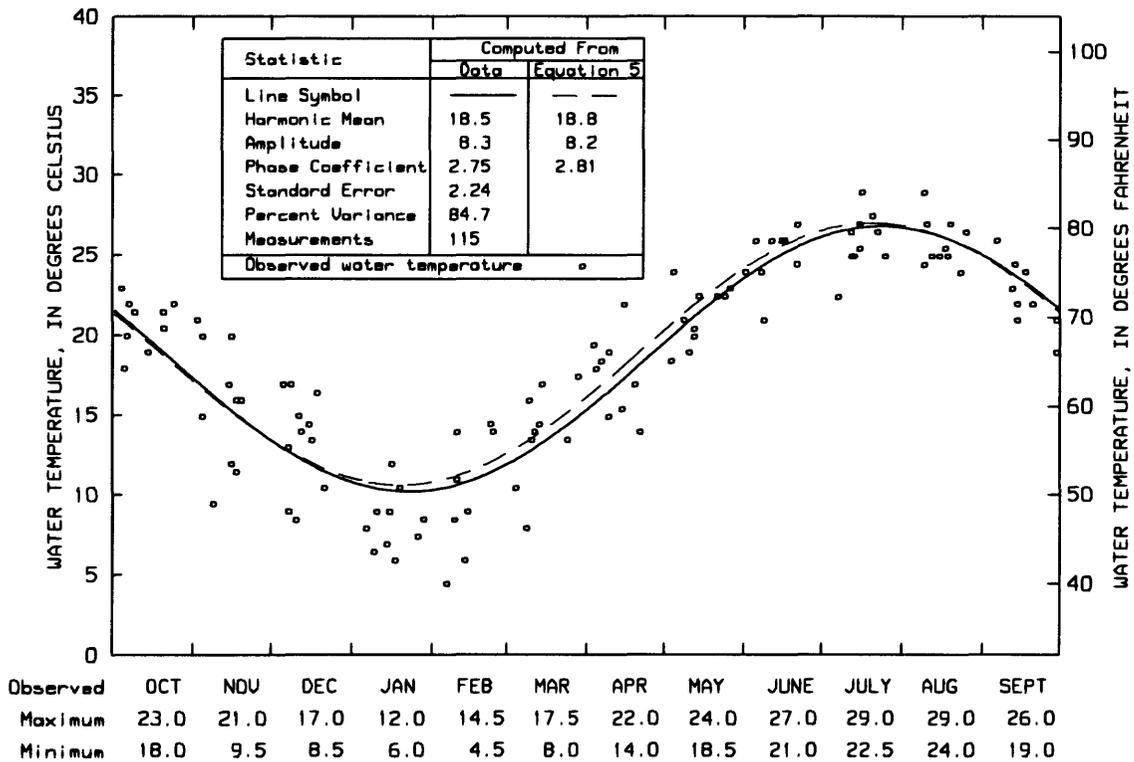


Figure 106. Withlacoochee River at State Highway 94 near Valdosta, Georgia, Station 02317757, November 1974 to December 1984.

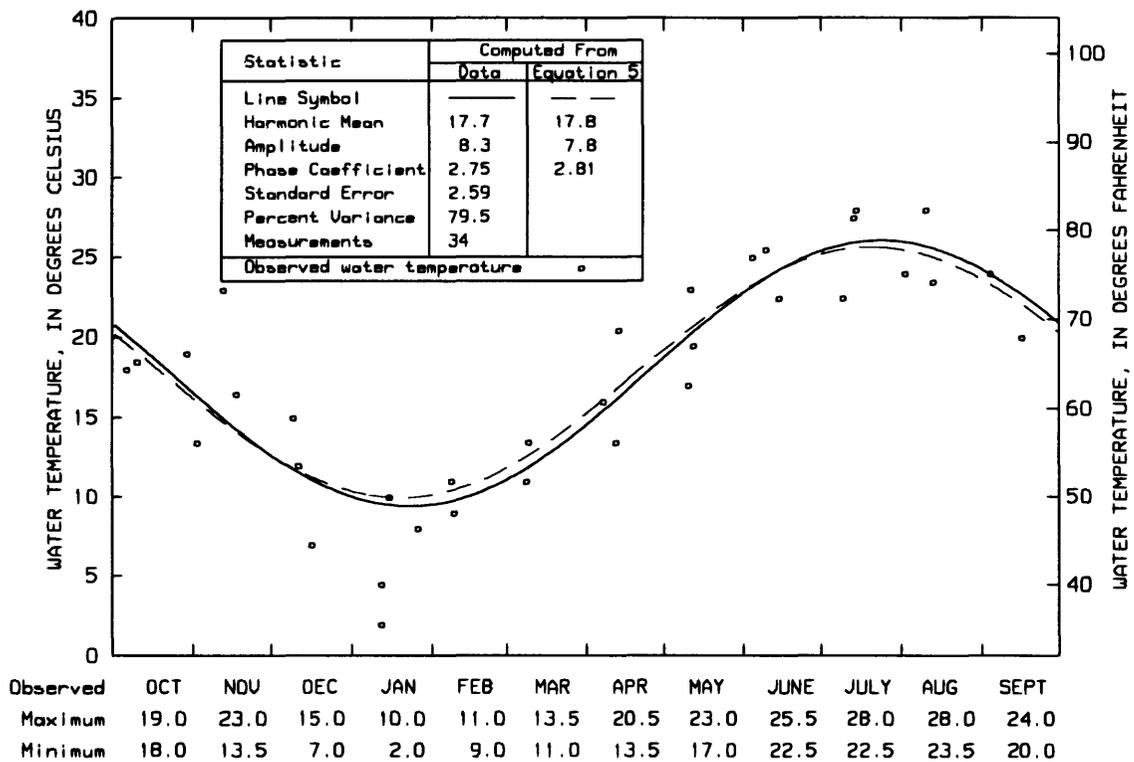


Figure 107. Little River at U.S. Highway 82 near Tifton, Georgia, Station 02317800, August 1977 to June 1982.

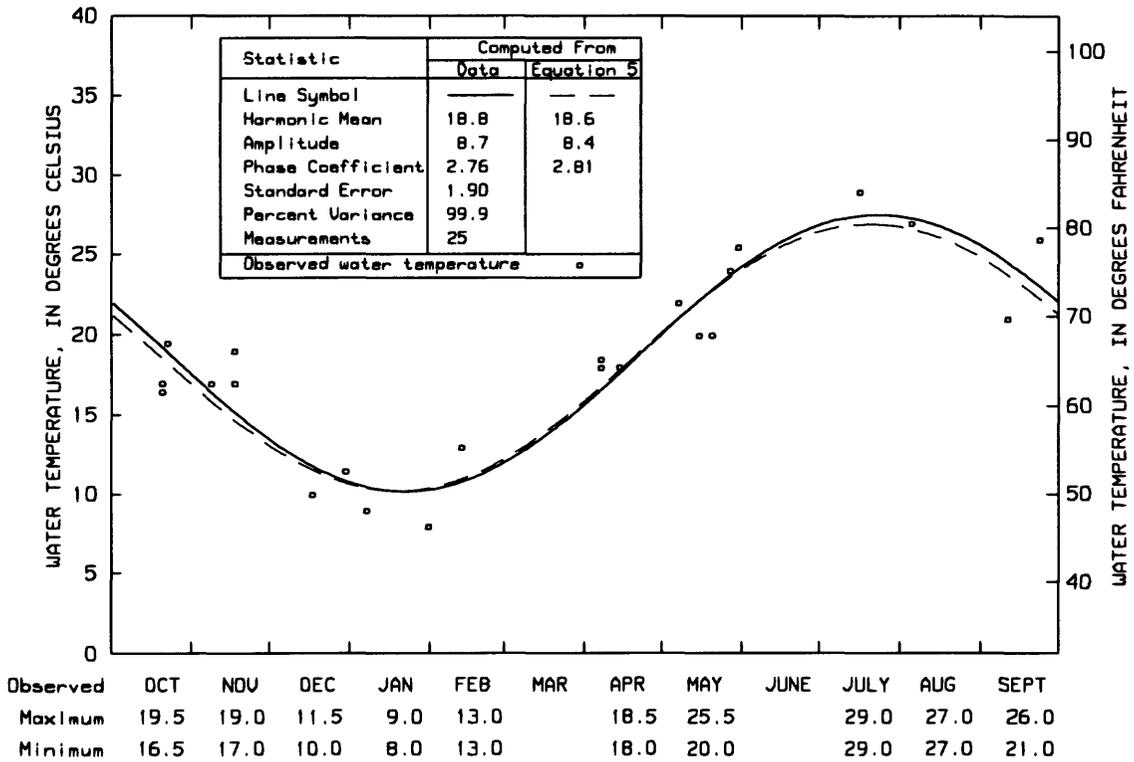


Figure 108. Little River near Adel, Georgia, Station 02318000, October 1955 to March 1961.

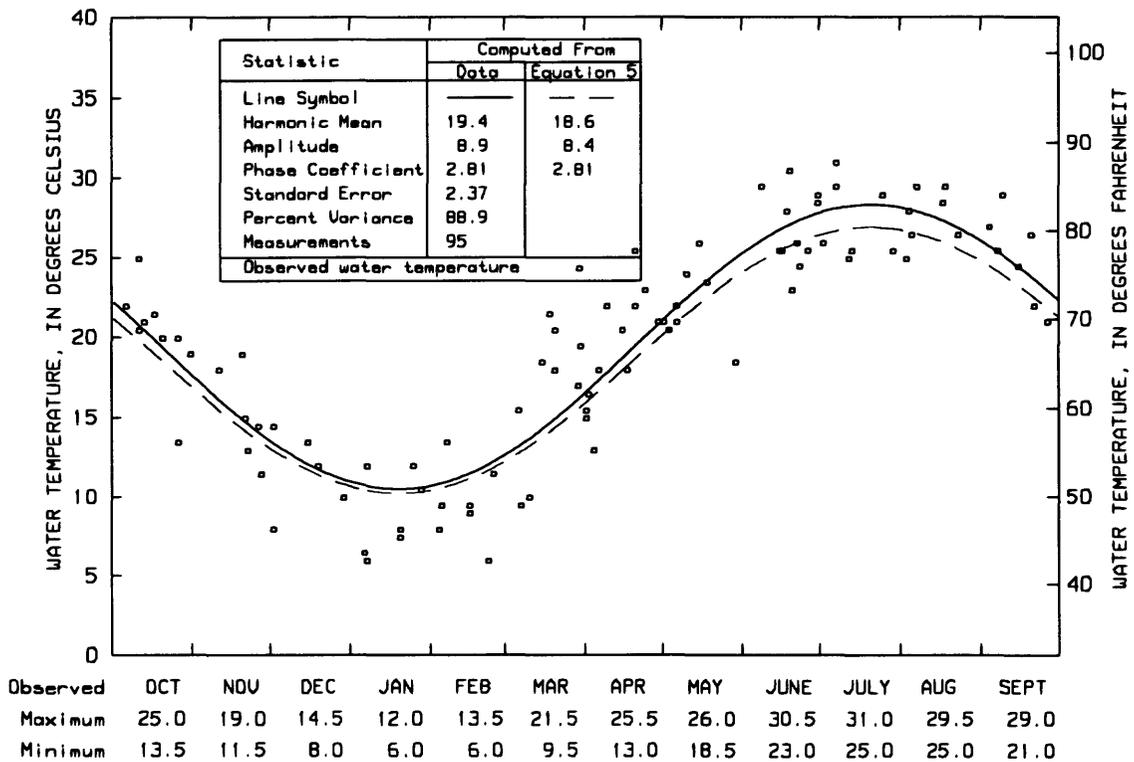


Figure 109. Little River near Adel, Georgia, Station 02318000, April 1961 to July 1974.

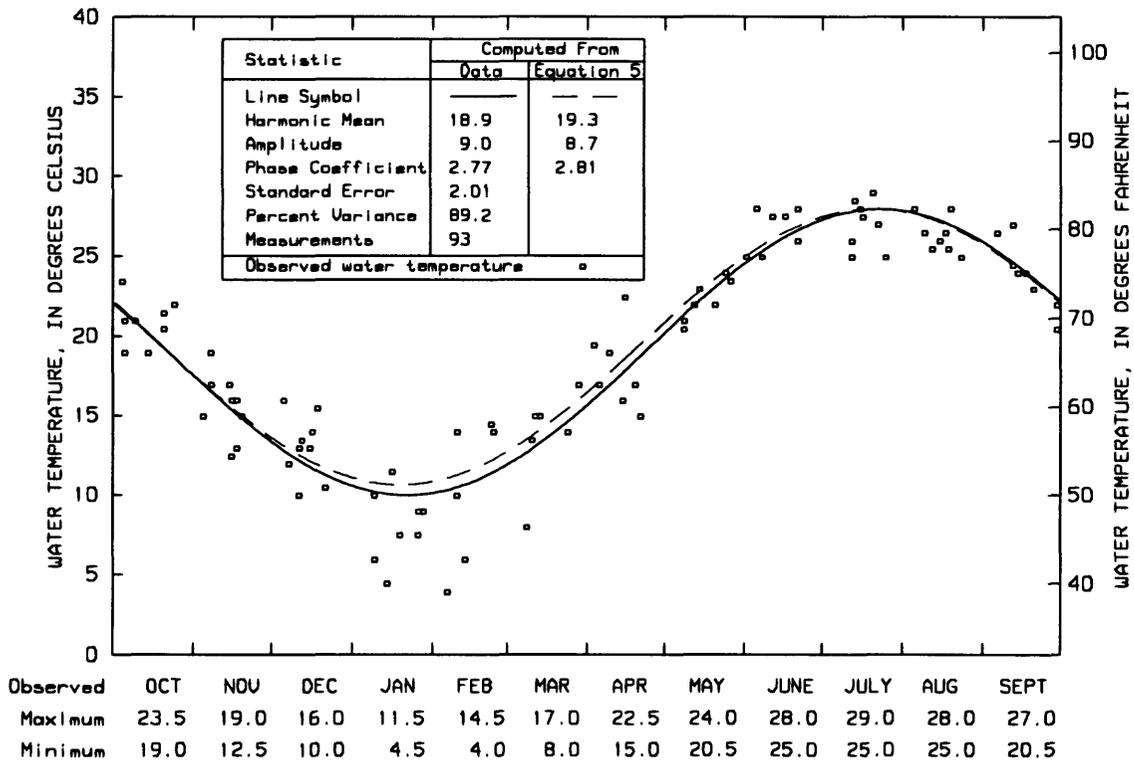


Figure 110. Withlacoochee River near Quitman, Georgia, Station 02318500, August 1957 to December 1984.

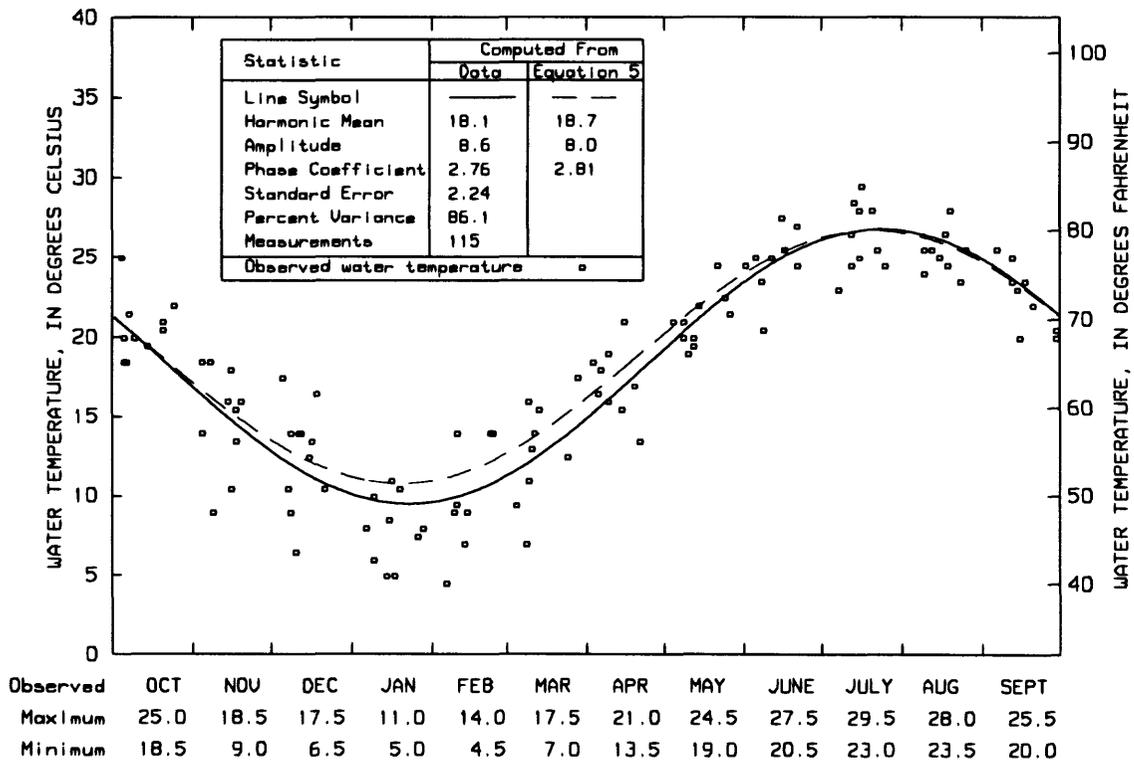


Figure 111. Okapilco Creek at U.S. Highway 84 at Quitman, Georgia, Station 02318725, November 1974 to December 1984.

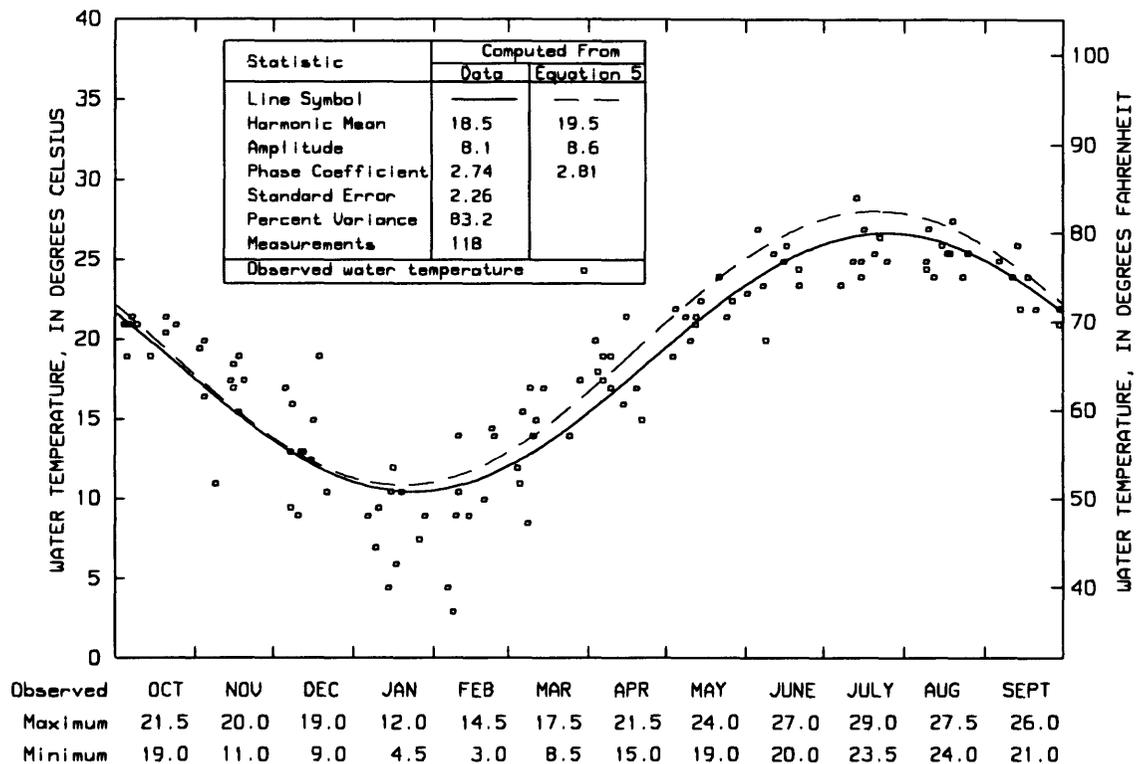


Figure 112. Withlacoochee River near Clyattville, Georgia, Station 02318960, November 1974 to December 1984.

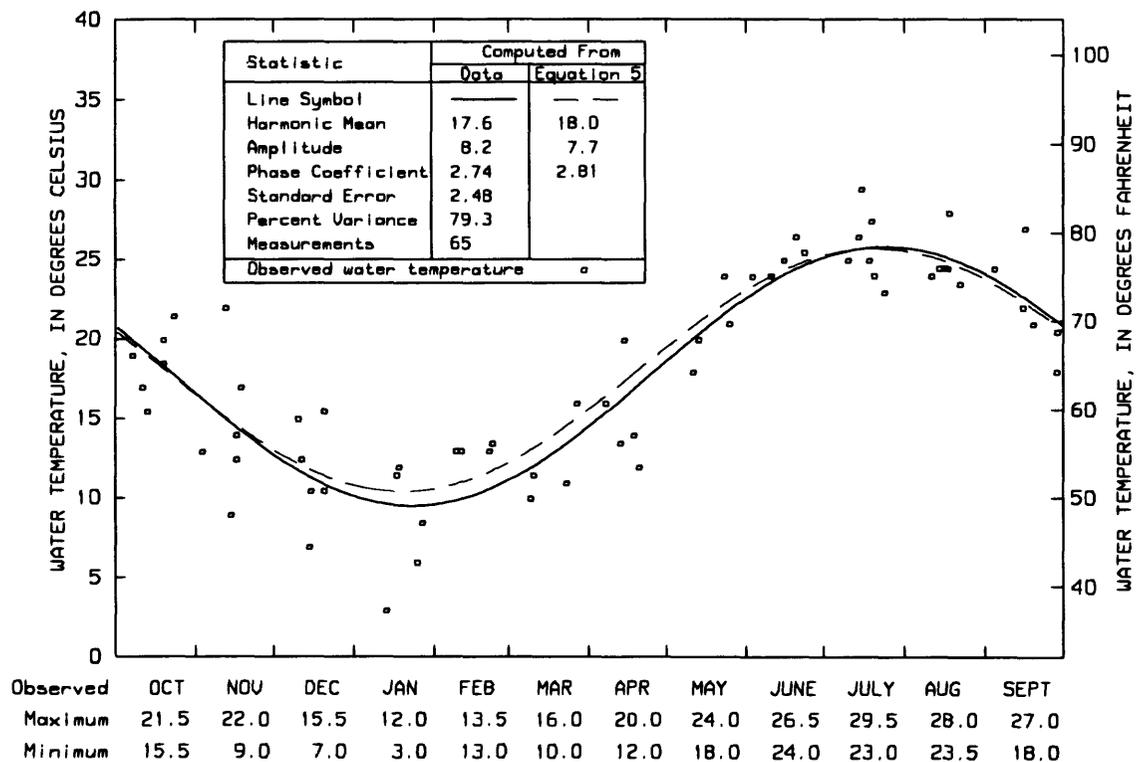


Figure 113. Ochlockonee River near Moultrie, Georgia, Station 02327205, July 1979 to December 1984.

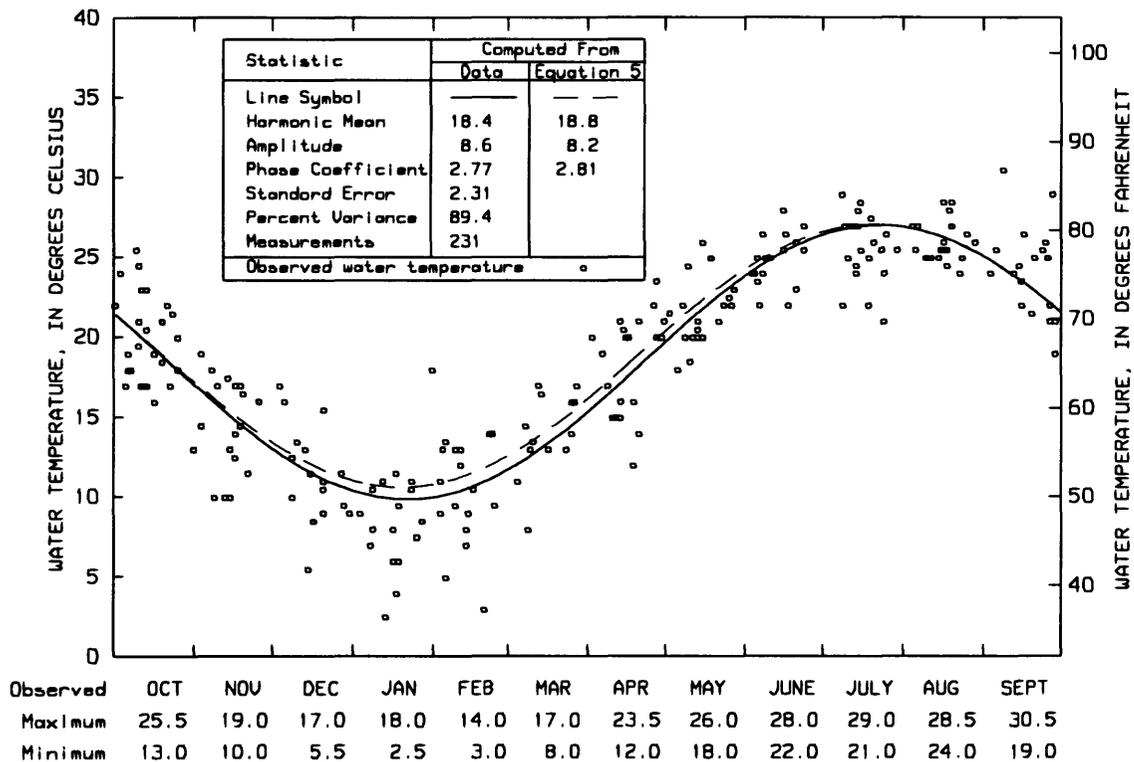


Figure 114. Ochlockonee River near Thomasville, Georgia, Station 02327500, April 1954 to December 1984.

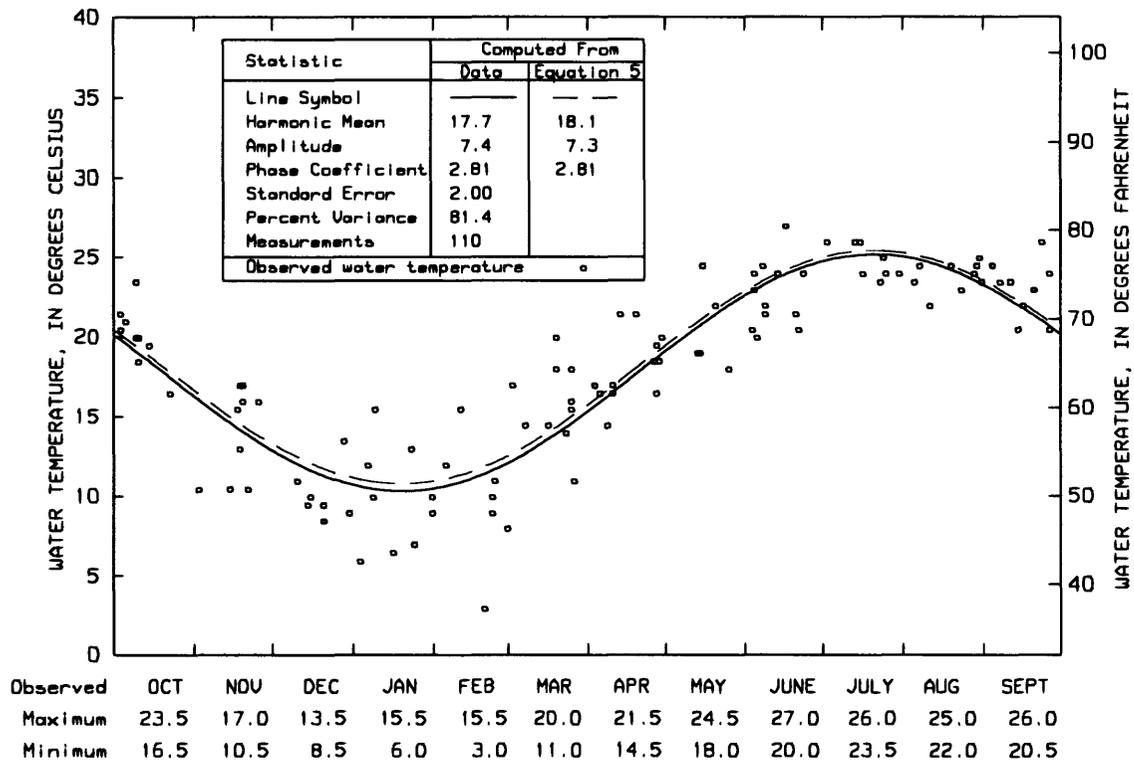


Figure 115. Tired Creek near Cairo, Georgia, Station 02328000, May 1954 to July 1974.

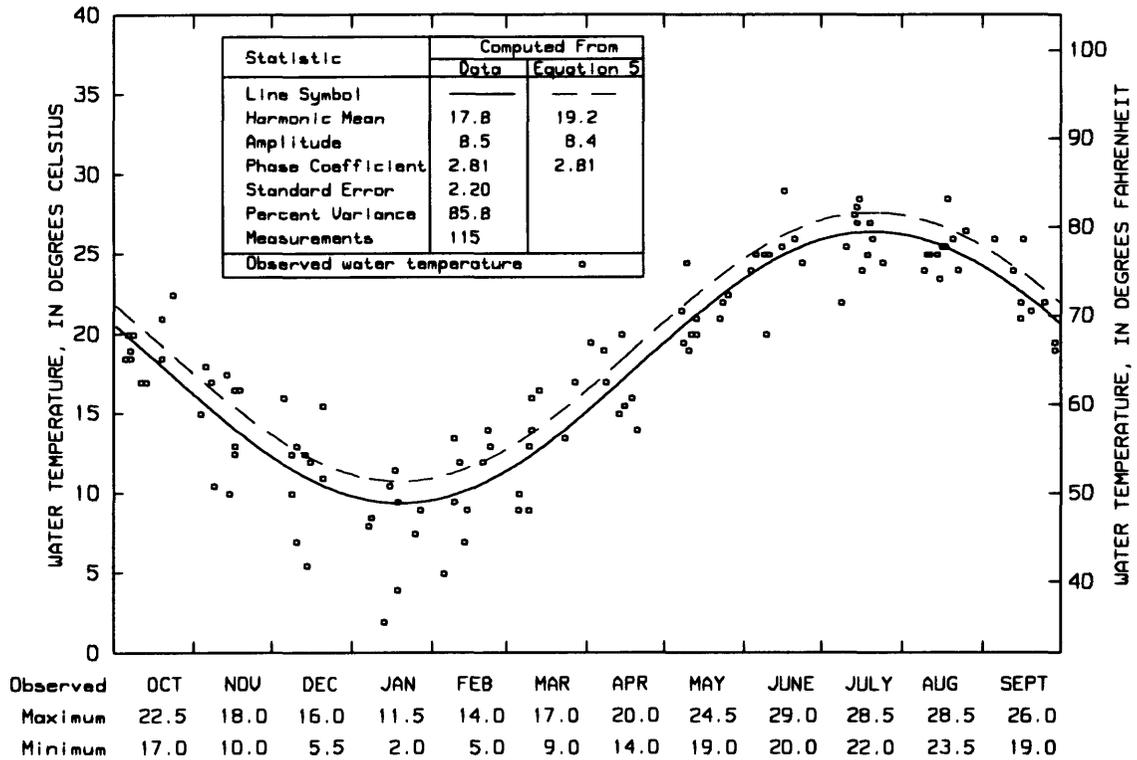


Figure 116. Ochlockonee River near Calvary, Georgia, Station 02328200, August 1974 to December 1984.

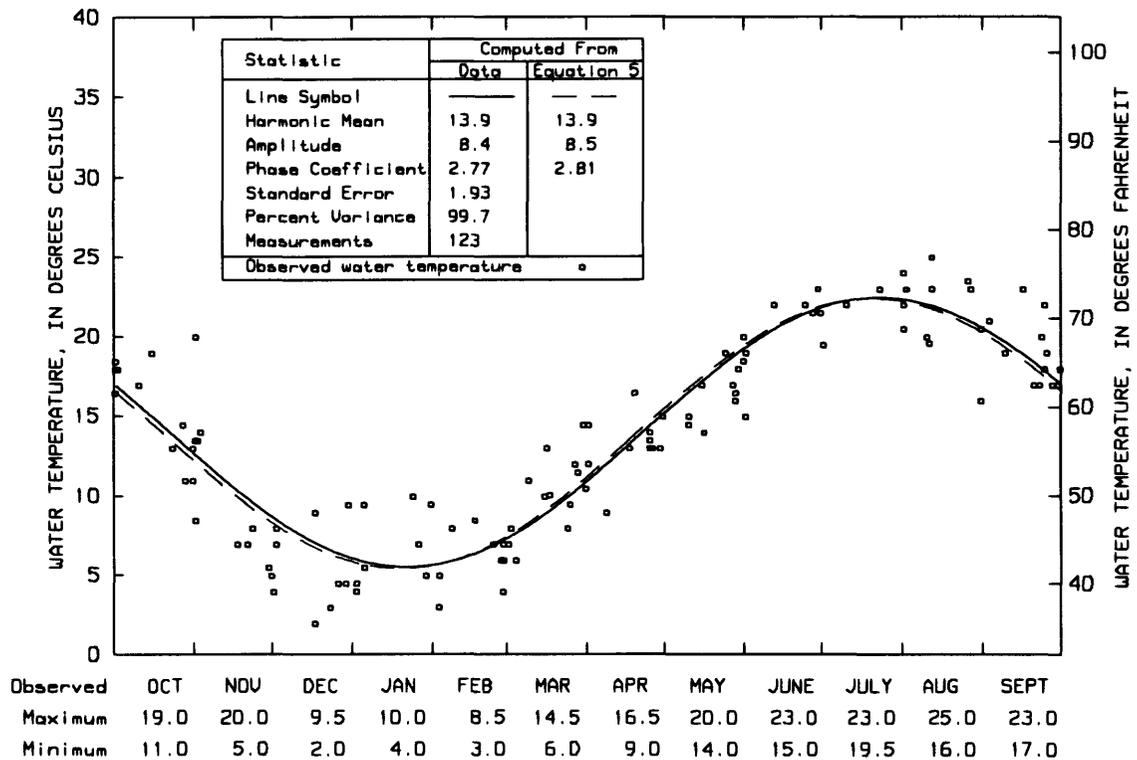
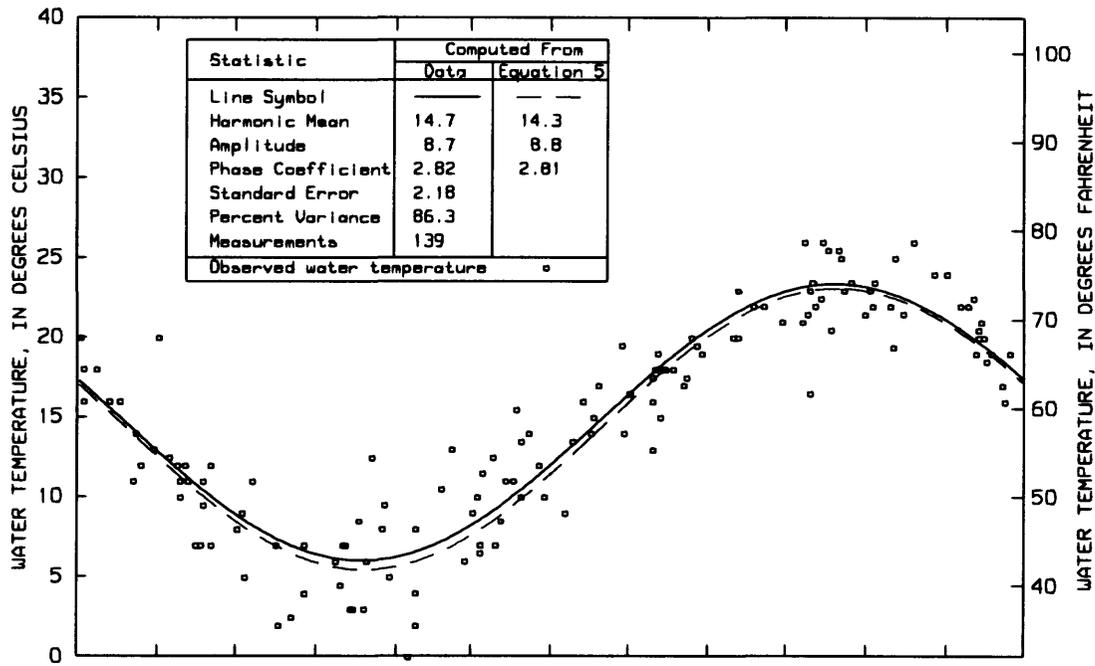
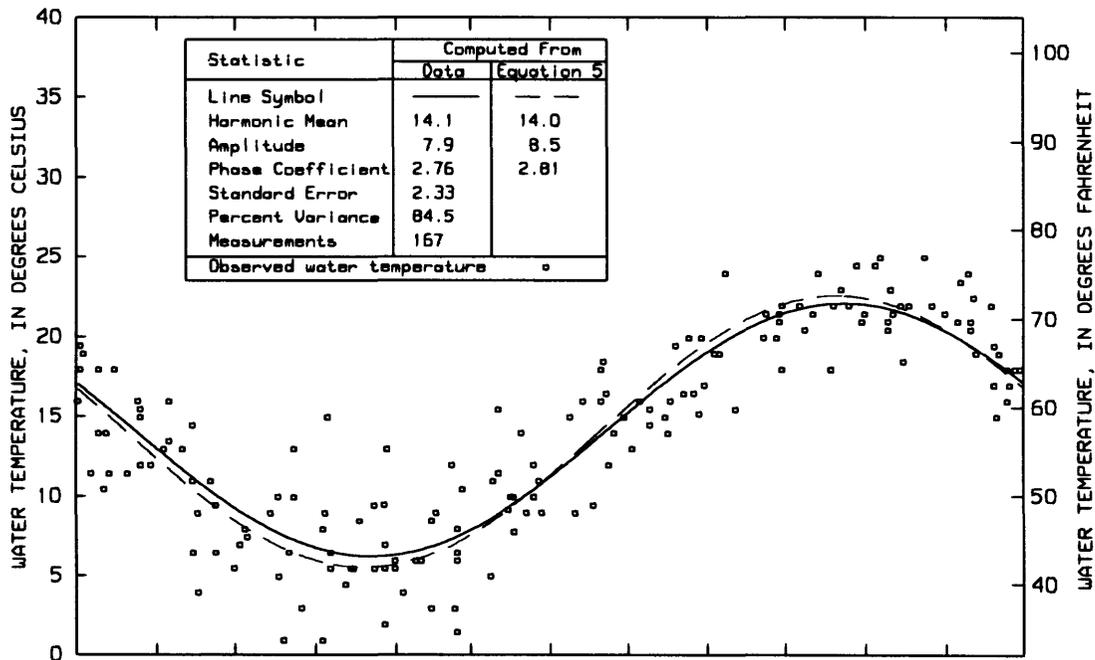


Figure 117. Chattahoochee River near Leaf, Georgia, Station 02331000, September 1957 to August 1976.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 20.0 | 20.0 | 11.0 | 12.5 | 13.0 | 15.5 | 19.5 | 20.0 | 23.0 | 26.0 | 26.0 | 24.0 |
| Minimum | 11.0 | 7.0 | 2.0 | 3.0 | 0.1 | 6.5 | 9.0 | 13.0 | 20.0 | 16.5 | 19.4 | 16.0 |

Figure 118. Chattahoochee River near Cornelia, Georgia, Station 02331600, February 1968 to November 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 19.5 | 16.0 | 13.0 | 15.0 | 12.0 | 15.5 | 18.5 | 20.0 | 24.0 | 24.5 | 25.0 | 24.0 |
| Minimum | 10.5 | 4.0 | 1.0 | 1.0 | 1.5 | 5.0 | 9.0 | 13.0 | 15.5 | 18.0 | 18.5 | 15.0 |

Figure 119. Chestatee River at State Highway 52 near Dahlonega, Georgia, Station 02333500, October 1956 to September 1976.

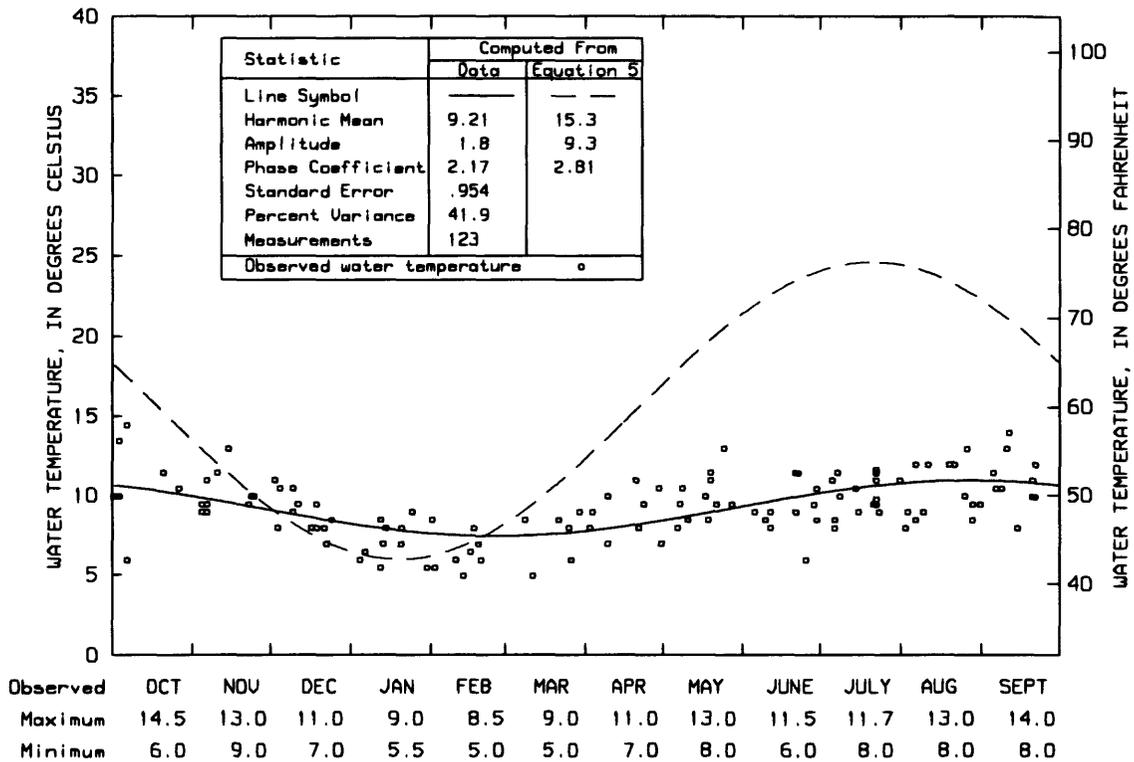


Figure 120. Chattahoochee River near Buford, Georgia, Station 02334500, May 1957 to August 1977.

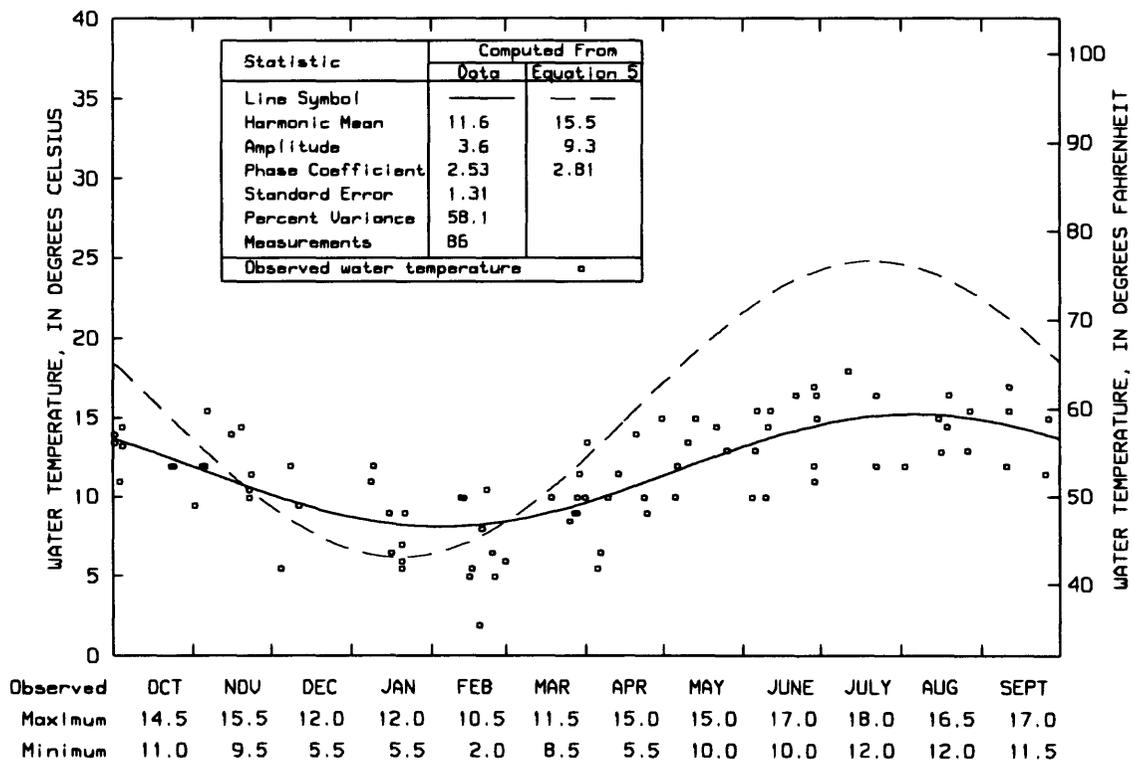


Figure 121. Chattahoochee River near Norcross, Georgia, Station 02335000, October 1957 to September 1976.

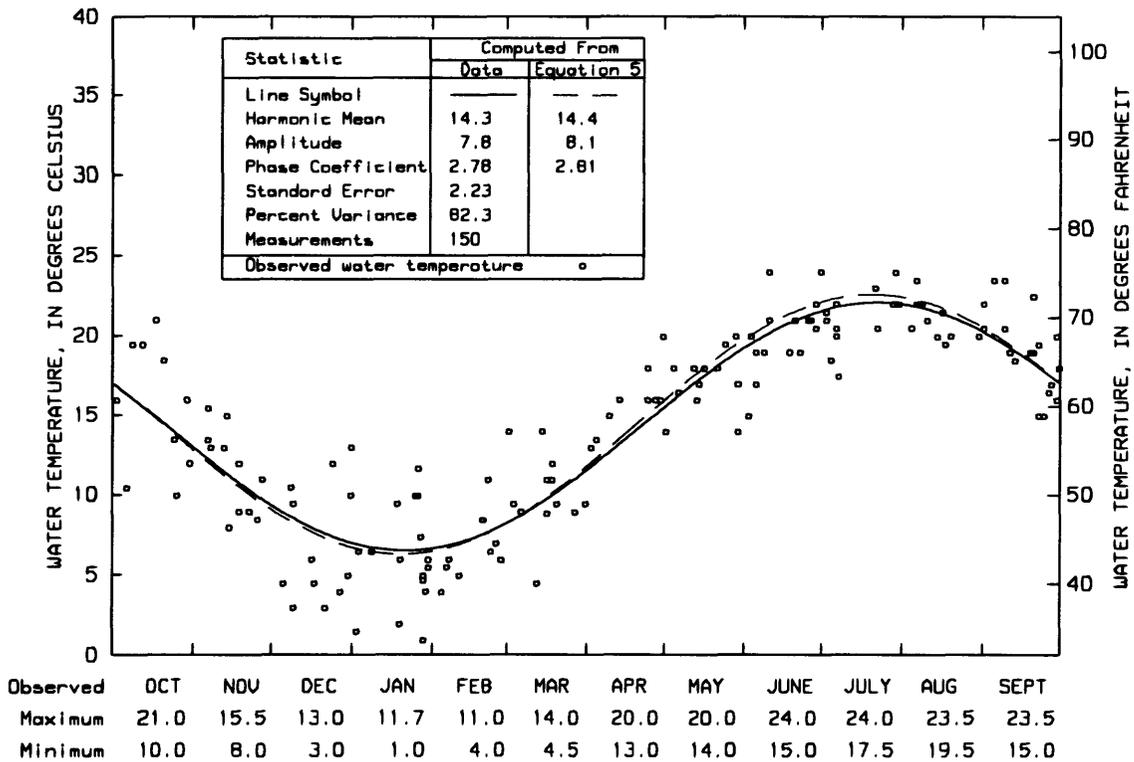


Figure 122. Big Creek near Alpharetta, Georgia, Station 02335700, May 1960 to September 1976.

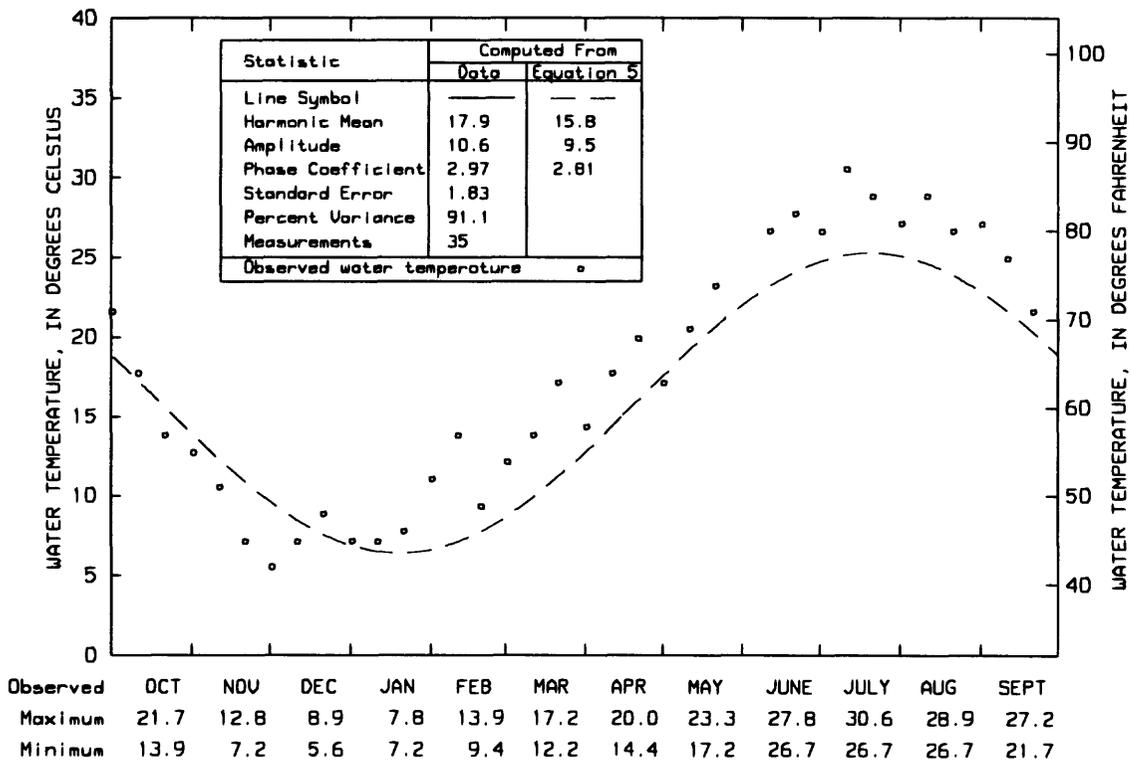


Figure 123. Chattahoochee River at Atlanta, Georgia, Station 02336000, May 1937 to December 1938.

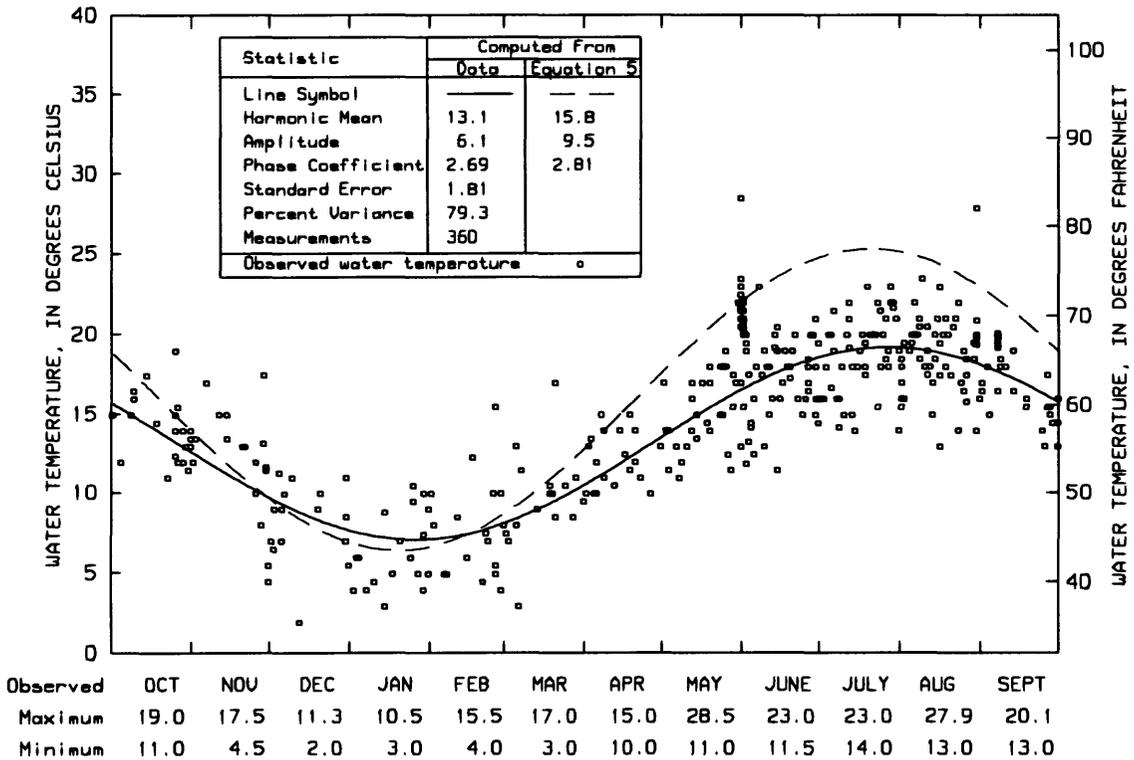


Figure 124. Chattahoochee River at Atlanta, Georgia, Station 02336000, November 1957 to September 1979.

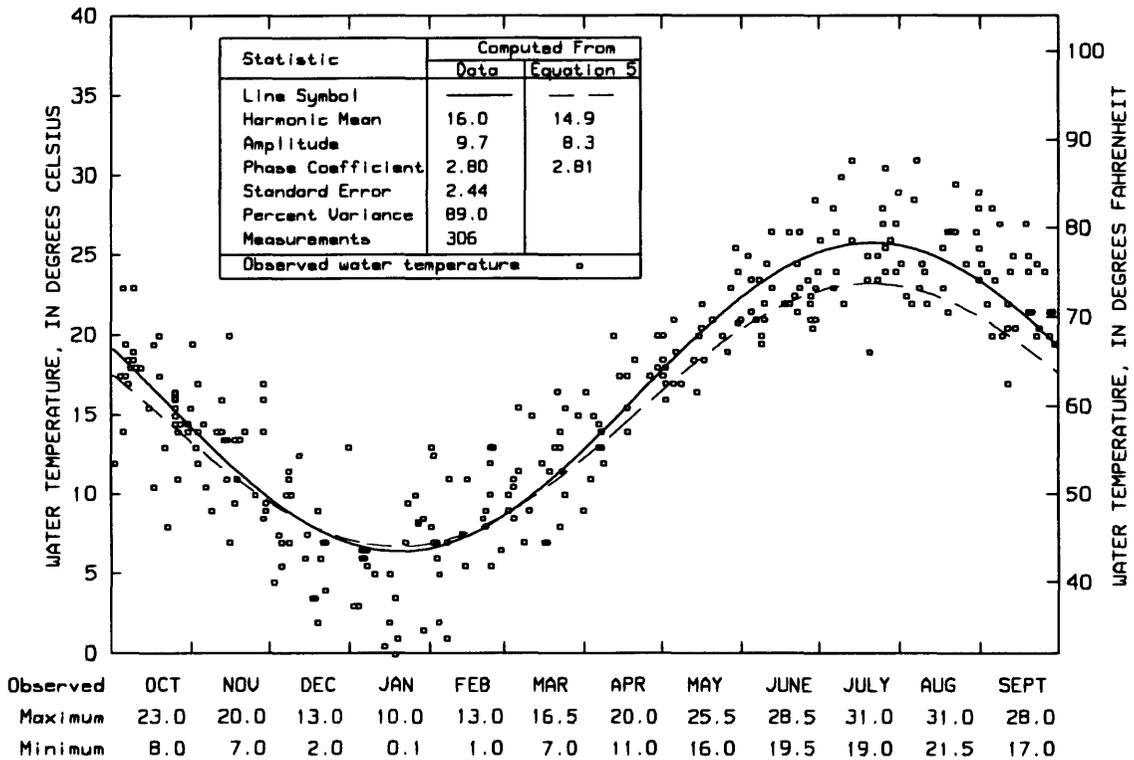


Figure 125. Peachtree Creek at Atlanta, Georgia, Station 02336300, July 1959 to December 1984.

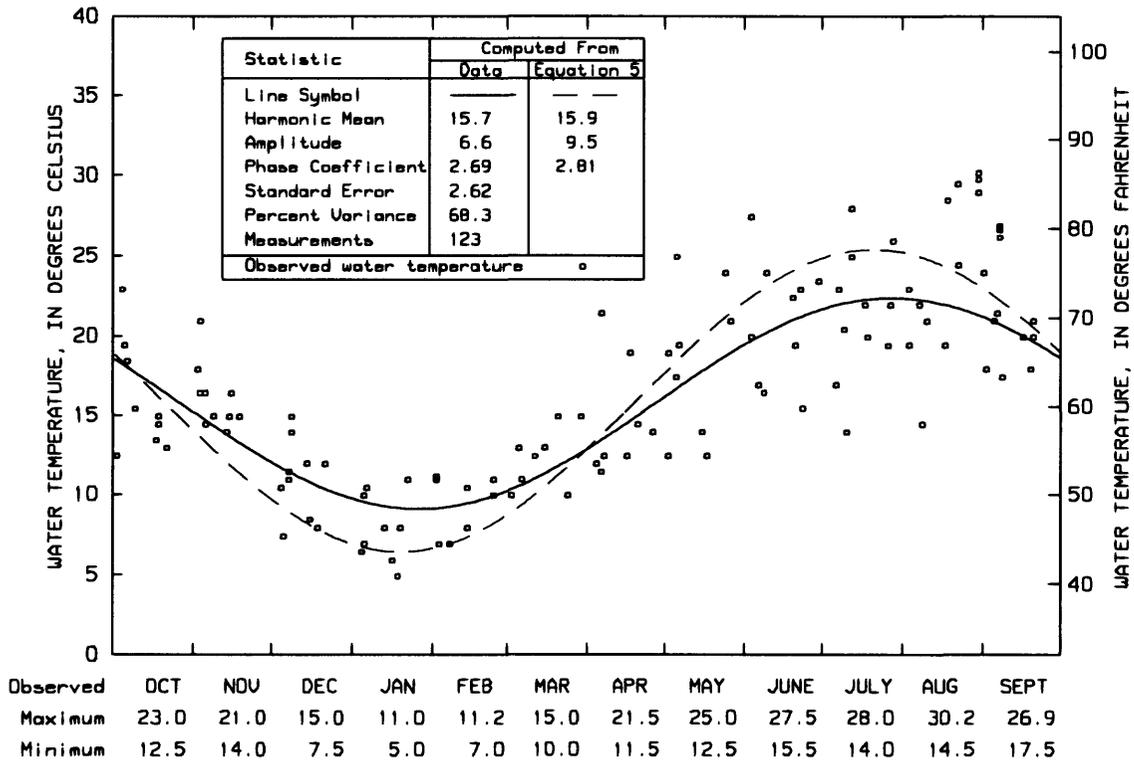


Figure 126. Chattahoochee River at Interstate Highway 285 near Atlanta, Georgia, Station 02336502, July 1975 to December 1984.

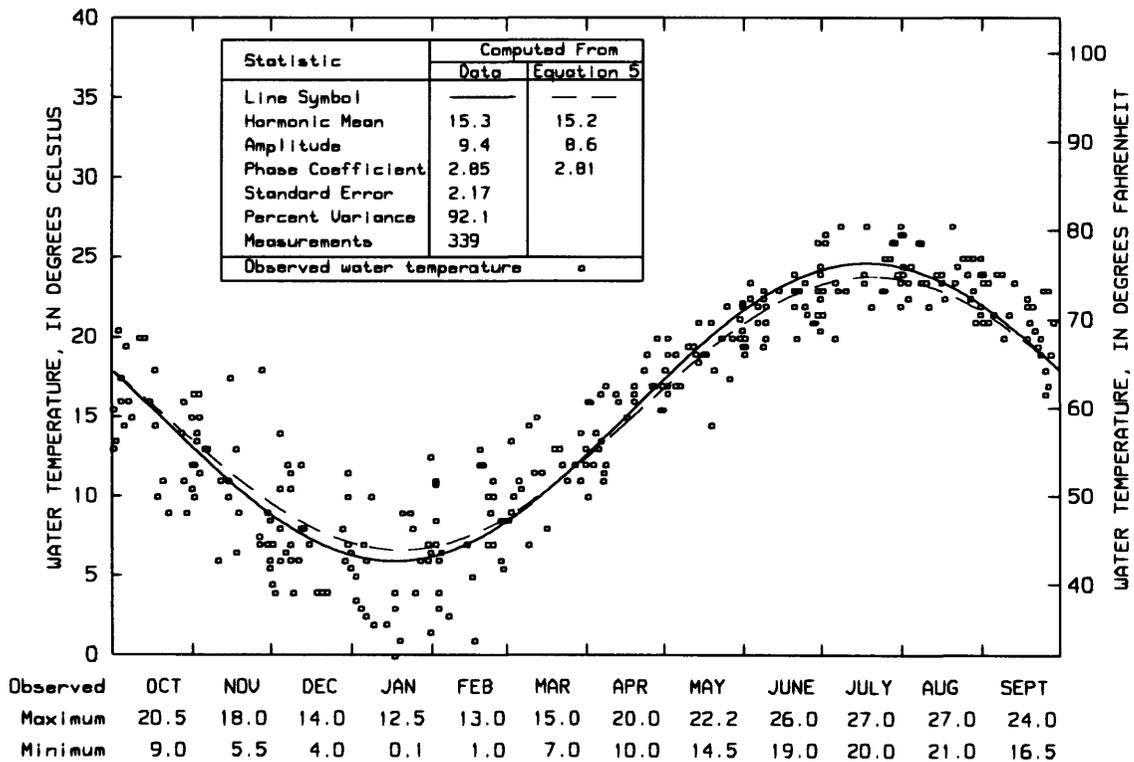


Figure 127. Sweetwater Creek near Austell, Georgia, Station 02337000, May 1957 to December 1984.

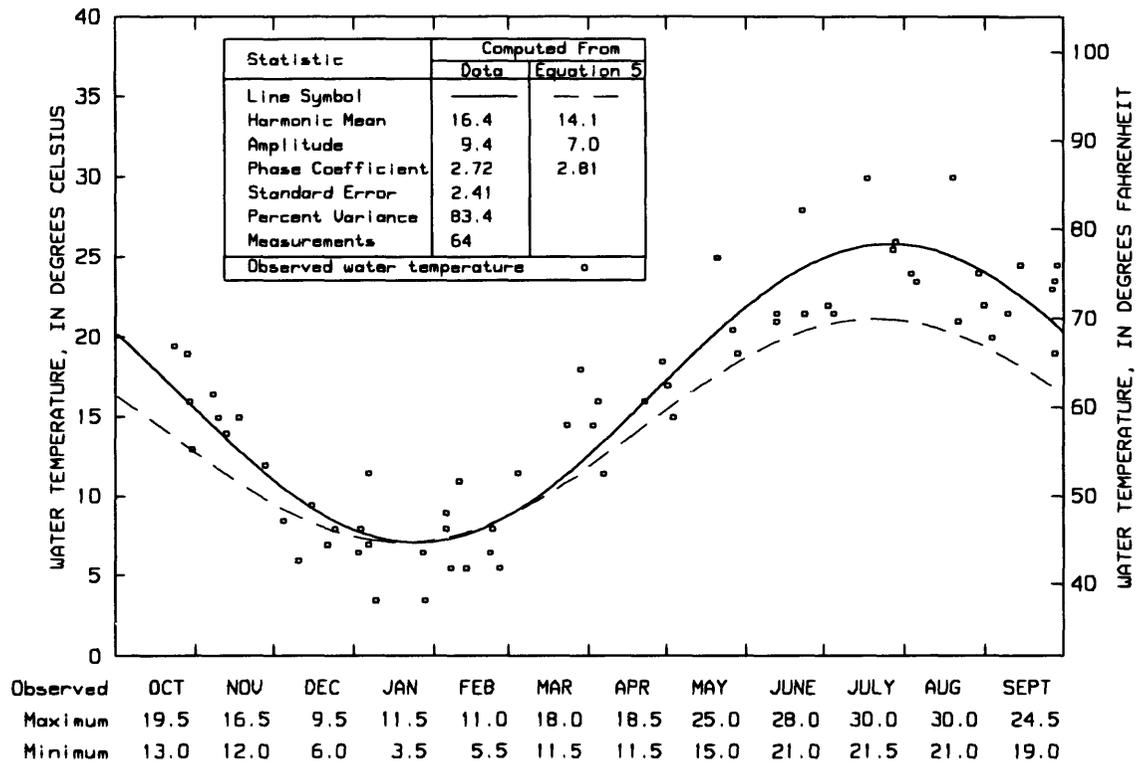


Figure 128. North Fork Camp Creek at Atlanta, Georgia, Station 02337100, October 1963 to July 1970.

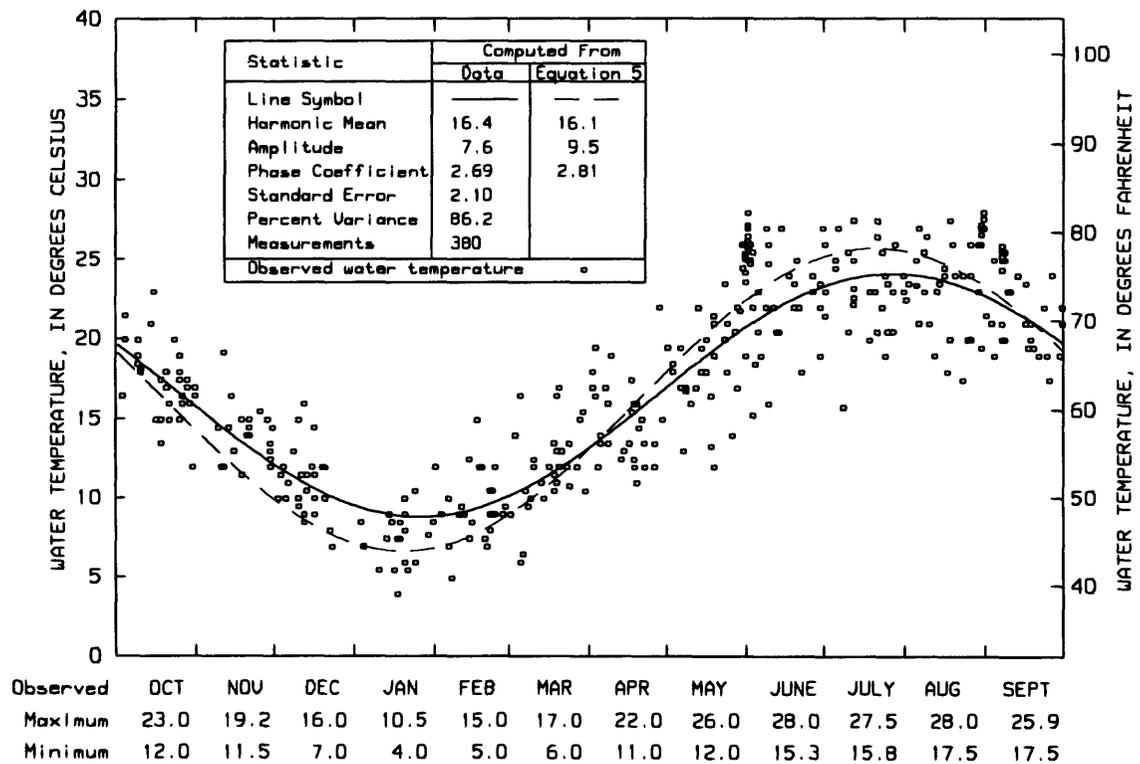


Figure 129. Chattahoochee River near Fairburn, Georgia, Station 02337170, July 1965 to December 1984.

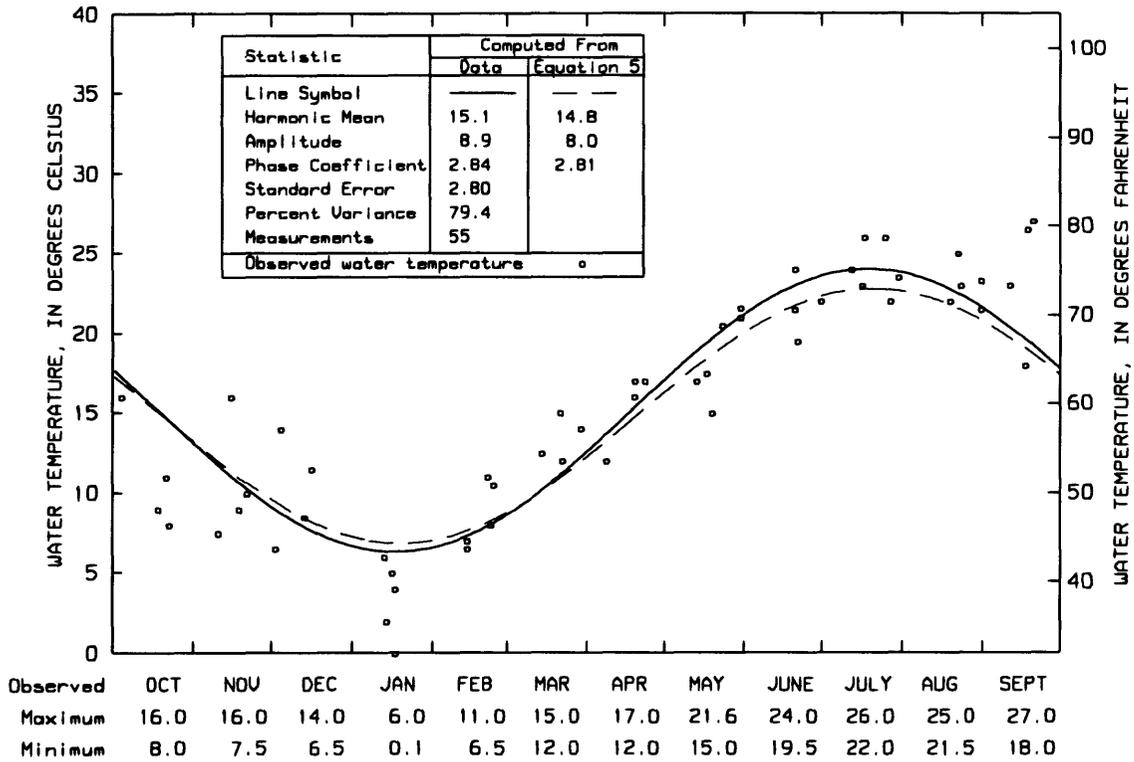


Figure 130. Dog River at State Highway 166, near Fairplay, Georgia, Station 02337438, July 1974 to May 1979.

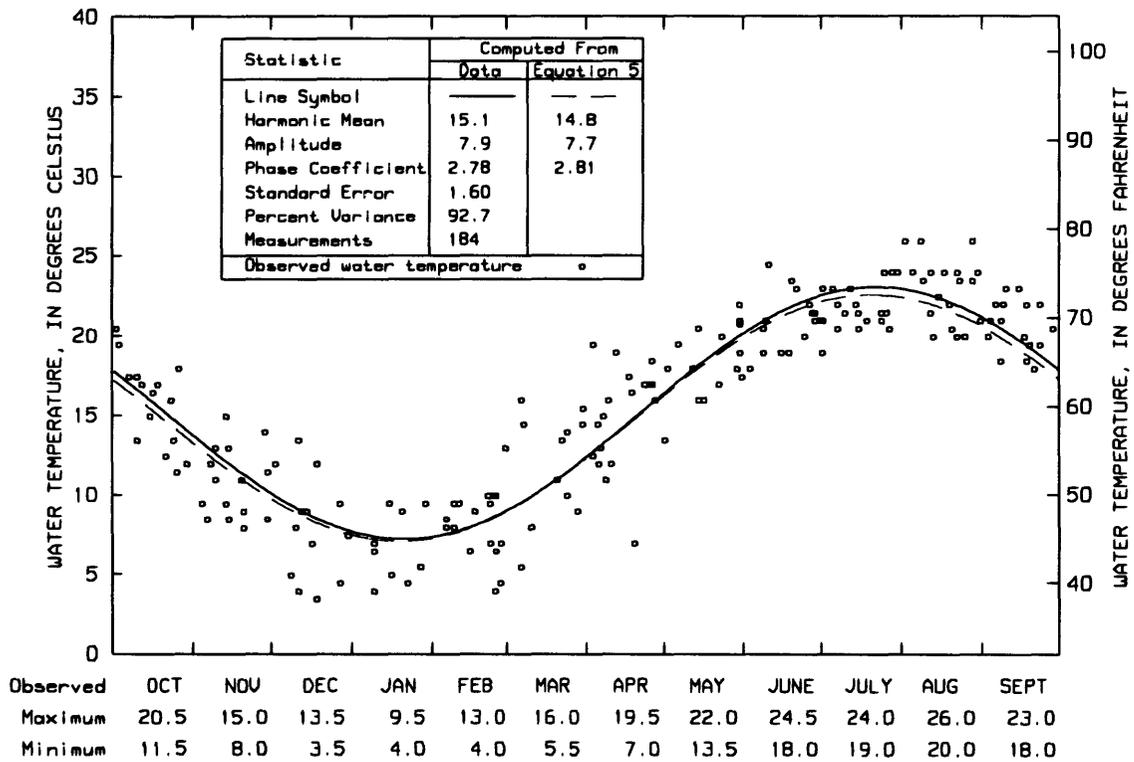


Figure 131. Snake Creek near Whitesburg, Georgia, Station 02337500, October 1959 to July 1984.

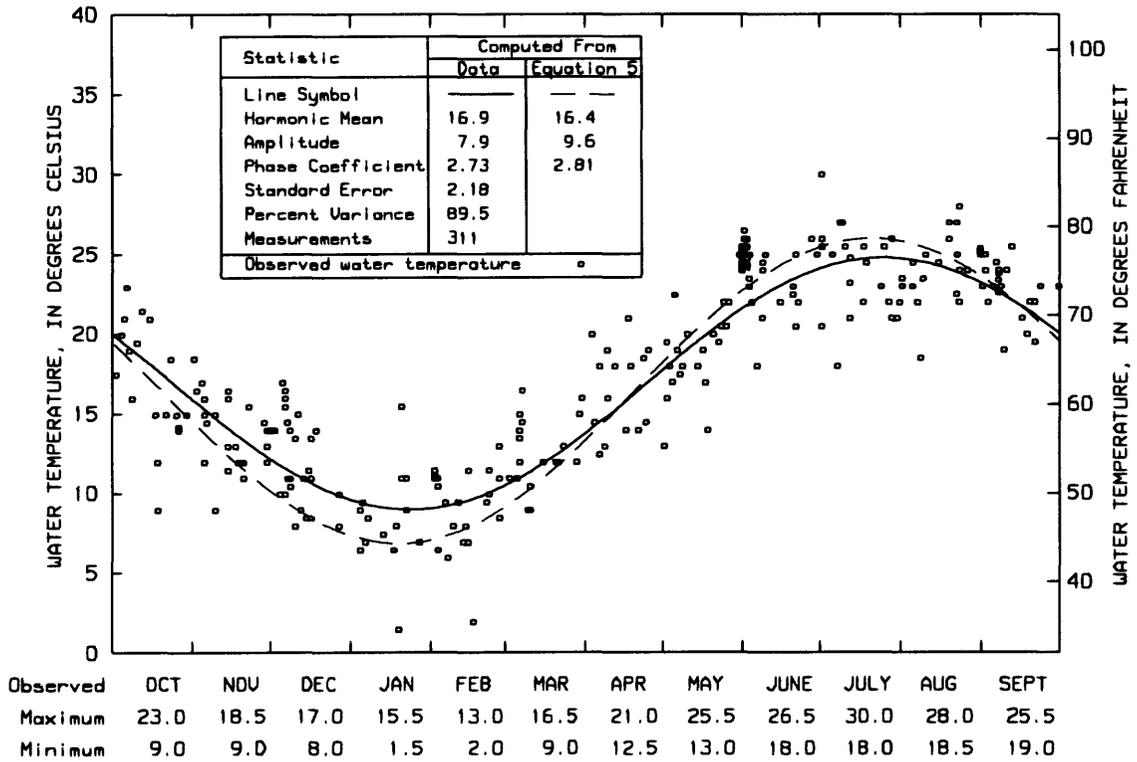


Figure 132. Chattahoochee River near Whitesburg, Georgia, Station 02338000, February 1958 to December 1984.

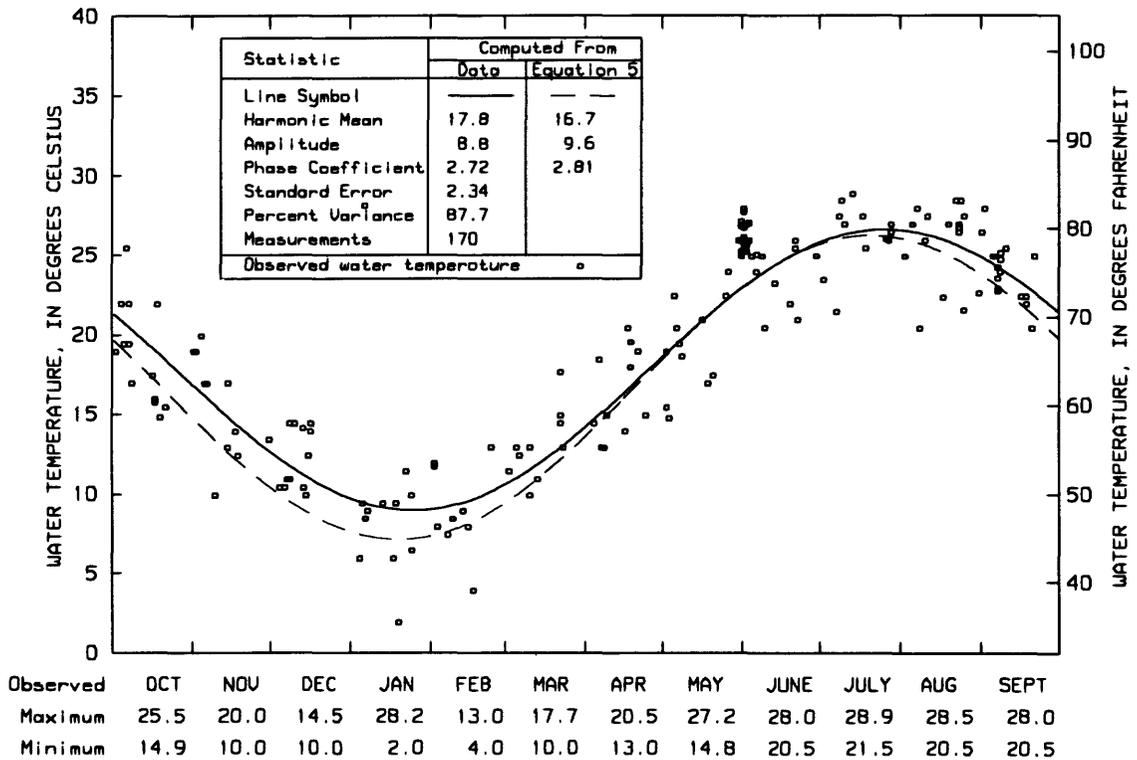
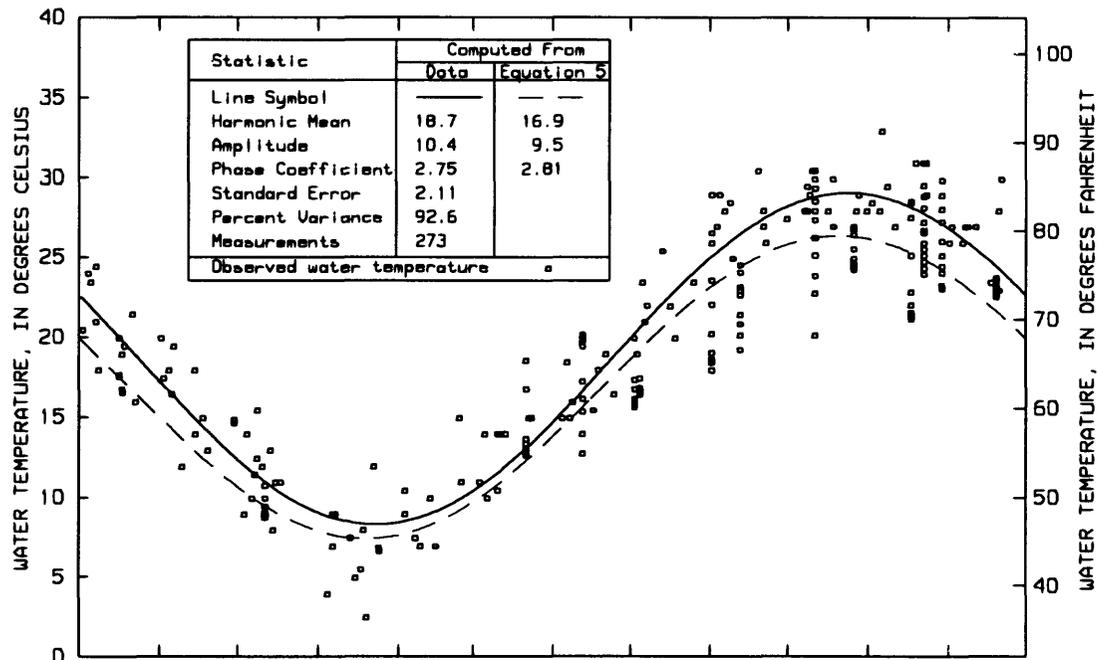
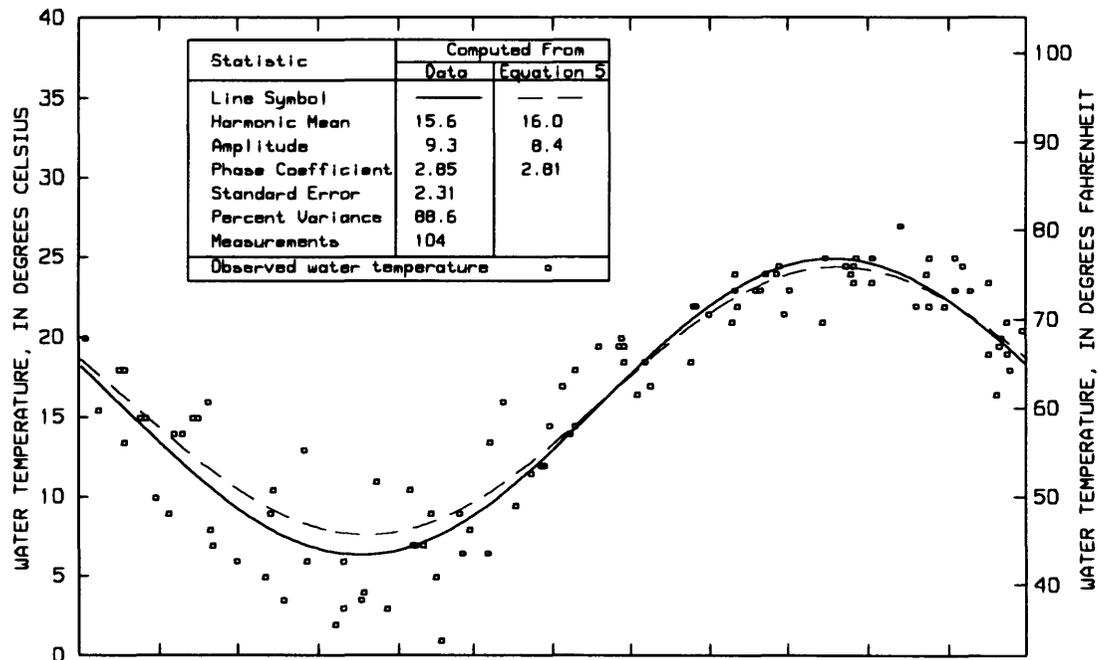


Figure 133. Chattahoochee River at U.S. Highway 27 at Franklin, Georgia, Station 02338500, February 1958 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 24.5 | 20.0 | 15.5 | 12.0 | 15.0 | 18.6 | 20.2 | 25.5 | 30.5 | 30.5 | 33.0 | 30.0 |
| Minimum | 16.0 | 12.0 | 8.0 | 2.5 | 7.0 | 10.0 | 12.8 | 15.7 | 18.0 | 20.2 | 21.2 | 22.6 |

Figure 134. Chattahoochee River (LaGrange Intake) near LaGrange, Georgia, Station 02338720, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 20.0 | 16.0 | 13.0 | 11.0 | 10.5 | 16.0 | 20.0 | 22.0 | 24.5 | 25.0 | 27.0 | 25.0 |
| Minimum | 10.0 | 6.0 | 3.5 | 2.0 | 1.0 | 6.5 | 14.0 | 16.5 | 21.0 | 21.0 | 22.0 | 16.5 |

Figure 135. Yellowjacket Creek near LaGrange, Georgia, Station 02339000, August 1956 to September 1970.

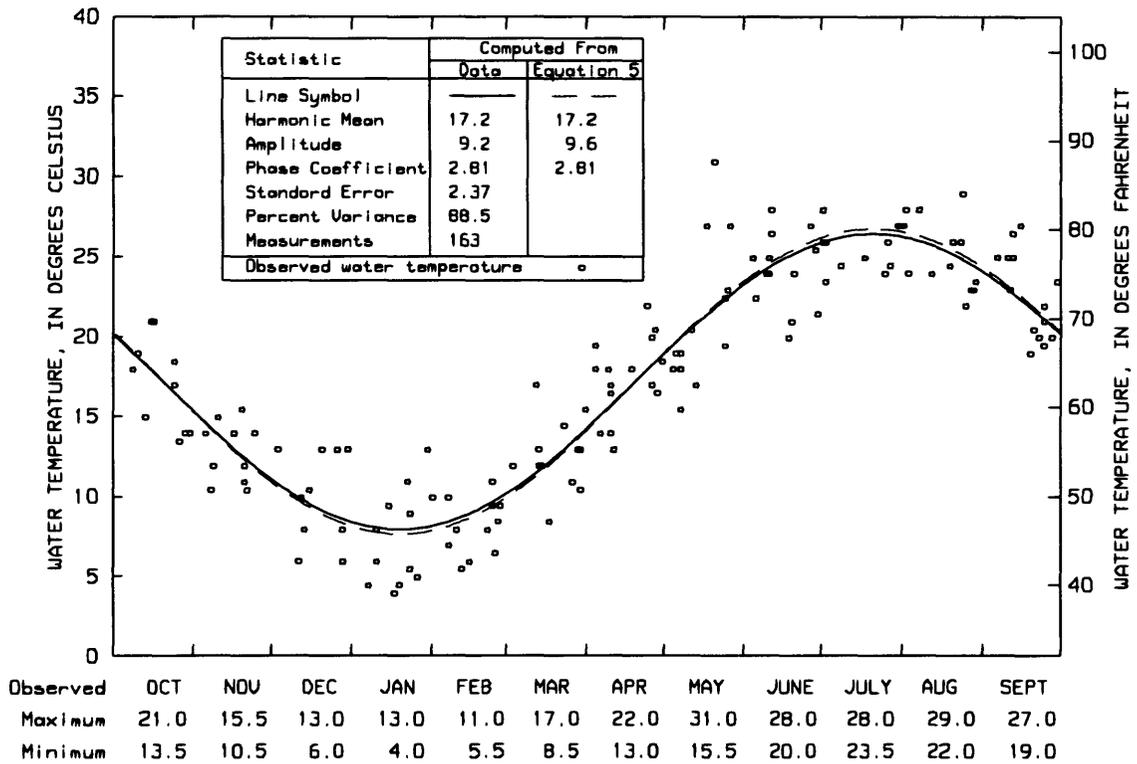


Figure 136. Chattahoochee River at West Point, Georgia, Station 02339500, September 1957 to September 1974.

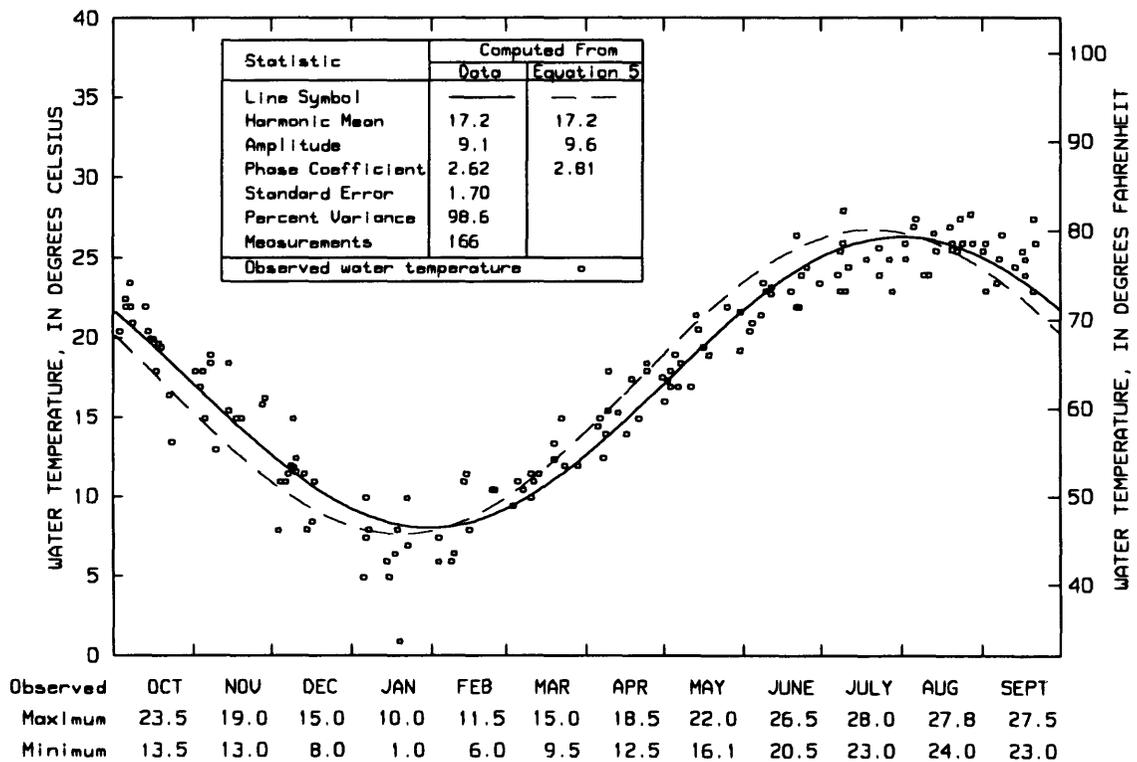
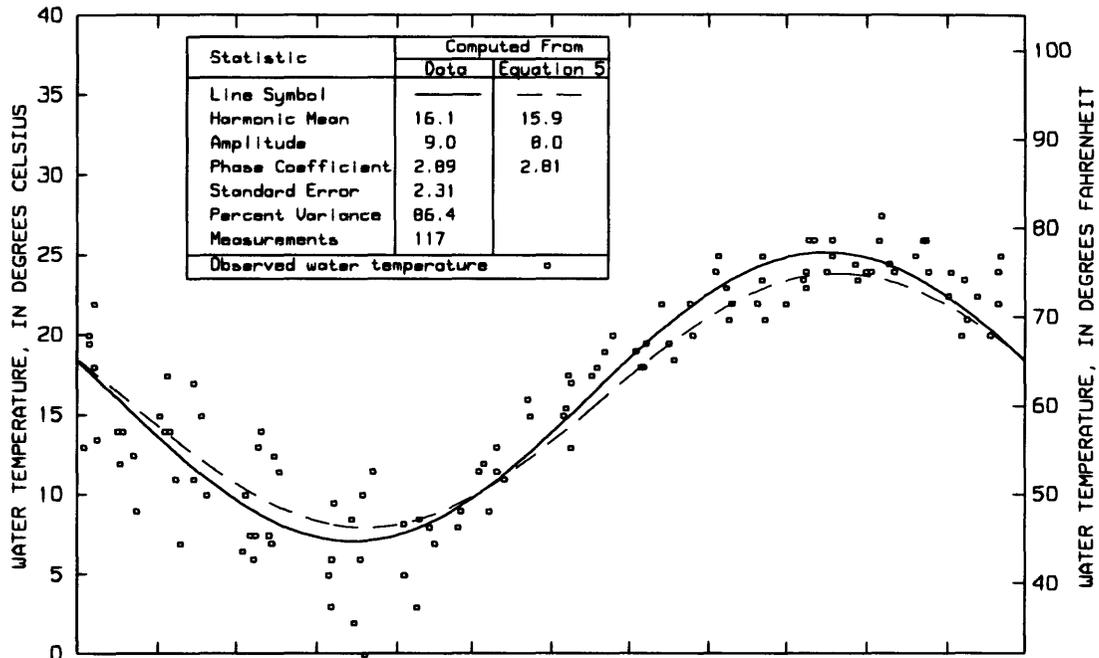
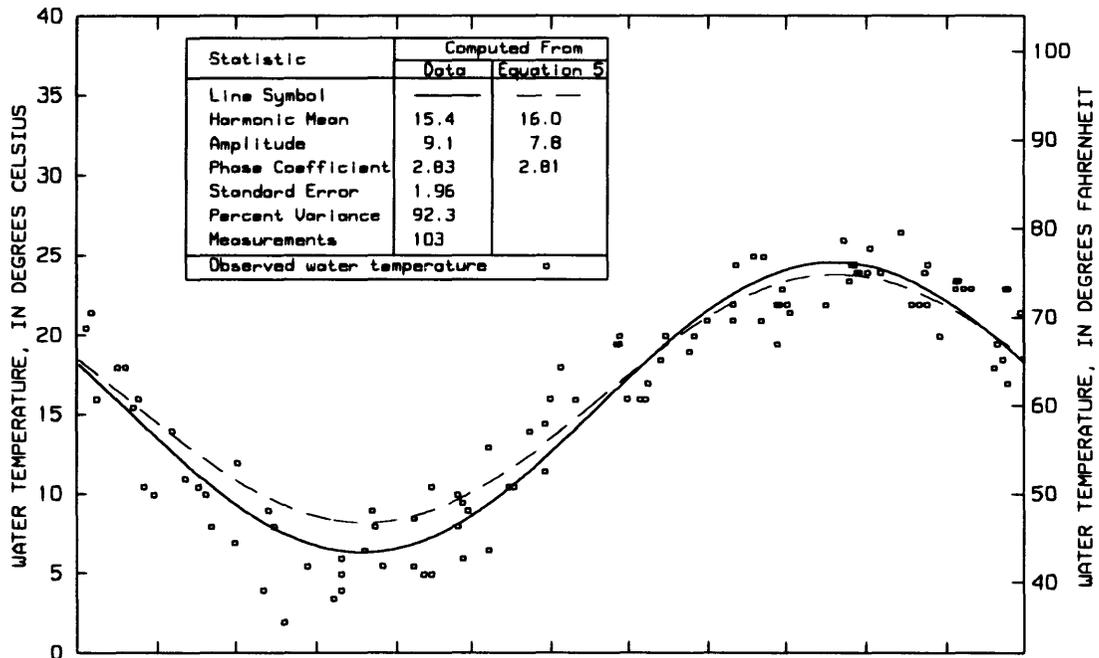


Figure 137. Chattahoochee River at West Point, Georgia, Station 02339500, October 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|-----|------|------|------|------|------|------|------|
| Maximum | 22.0 | 17.5 | 14.0 | 11.5 | 9.0 | 16.0 | 20.0 | 22.0 | 25.0 | 26.0 | 27.5 | 25.0 |
| Minimum | 9.0 | 7.0 | 6.0 | 0.1 | 3.0 | 9.0 | 13.0 | 18.0 | 21.0 | 23.0 | 24.0 | 20.0 |

Figure 138. Long Cane Creek near West Point, Georgia, Station 02339720, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 21.5 | 14.0 | 12.0 | 9.0 | 10.5 | 16.0 | 20.0 | 21.0 | 25.0 | 26.0 | 26.5 | 23.5 |
| Minimum | 10.0 | 7.0 | 2.0 | 3.5 | 5.0 | 6.5 | 16.0 | 16.0 | 19.5 | 21.5 | 20.0 | 17.0 |

Figure 139. Mountain Oak Creek near Hamilton, Georgia, Station 02340500, August 1956 to June 1974.

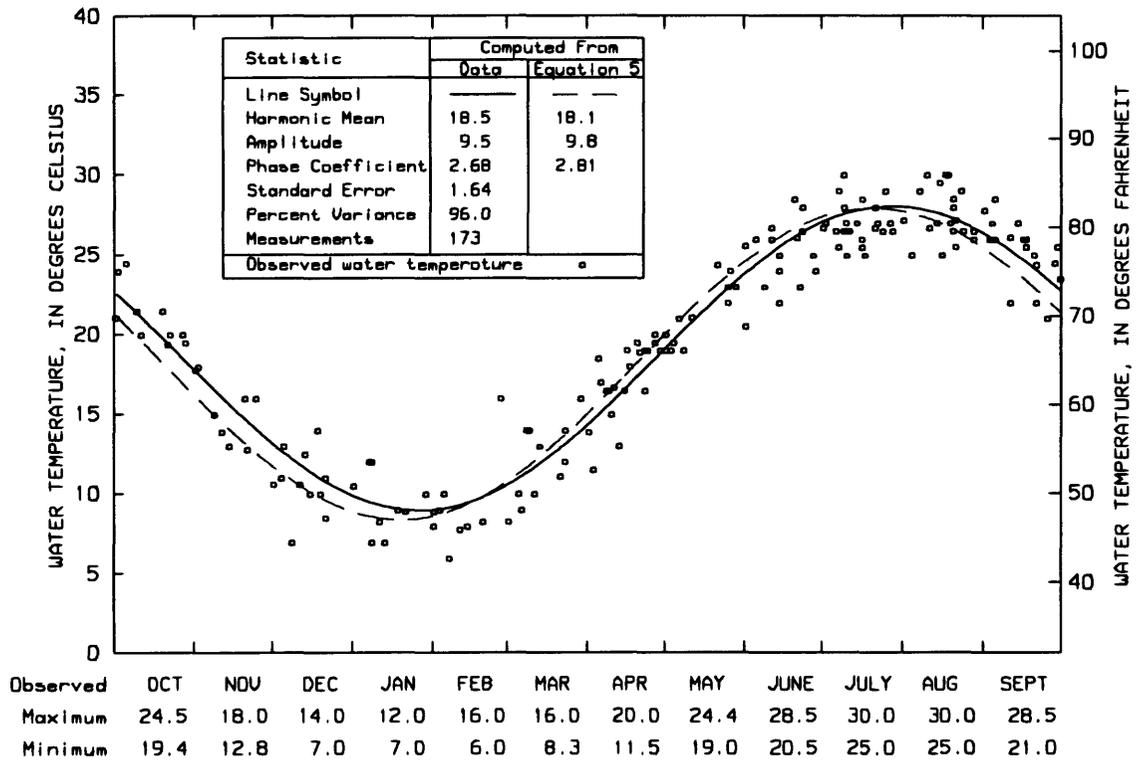


Figure 140. Chattahoochee River at Columbus, Georgia, Station 02341500, October 1940 to September 1974.

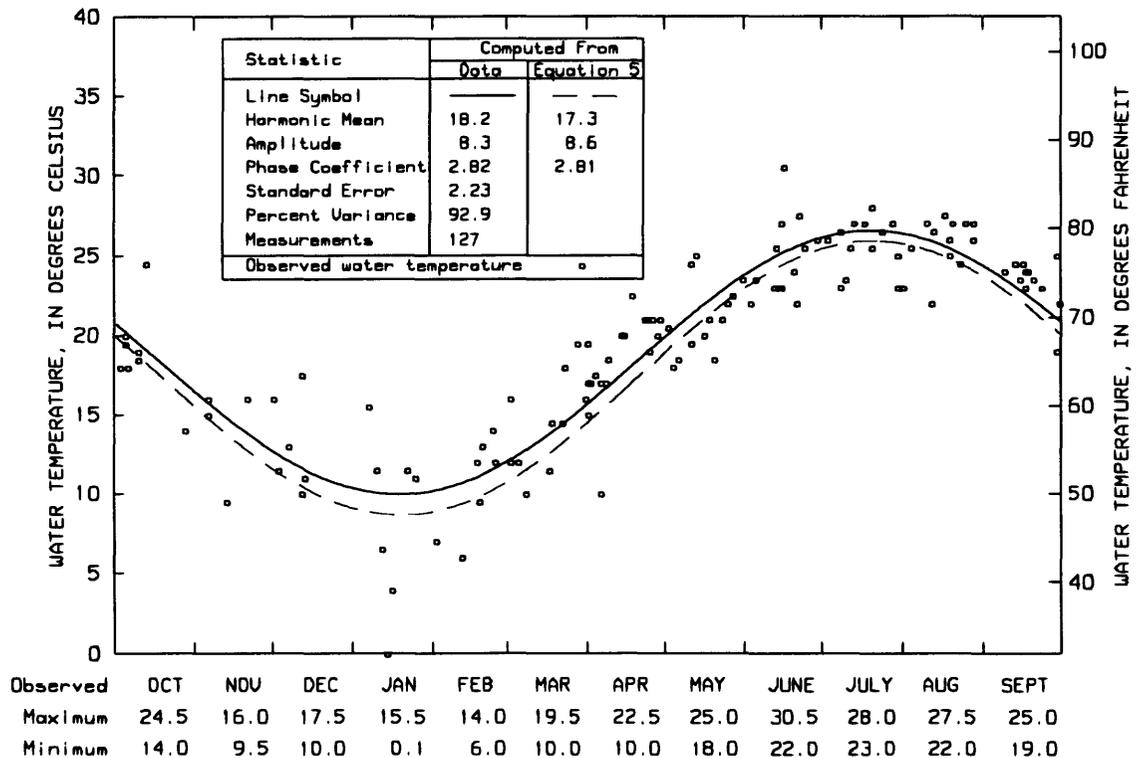


Figure 141. Upatoi Creek near Columbus, Georgia, Station 02341800, April 1965 to September 1983.

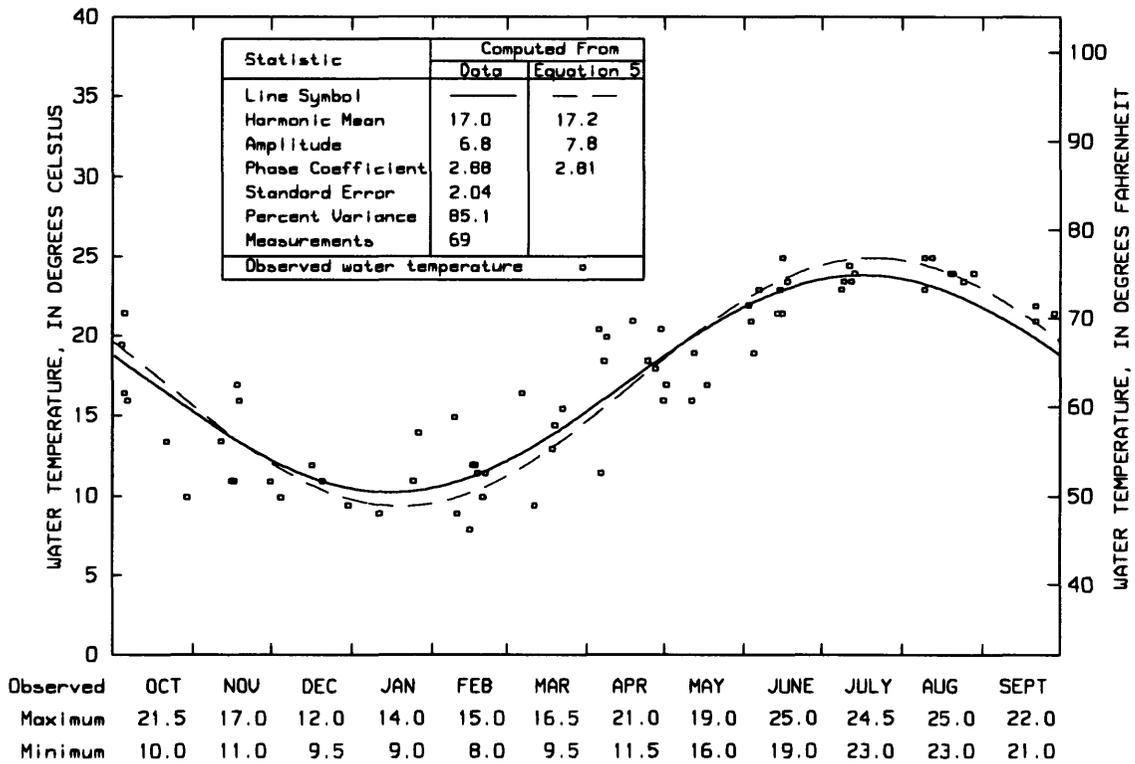


Figure 142. Pataula Creek near Lumpkin, Georgia, Station 02343200, August 1962 to November 1973.

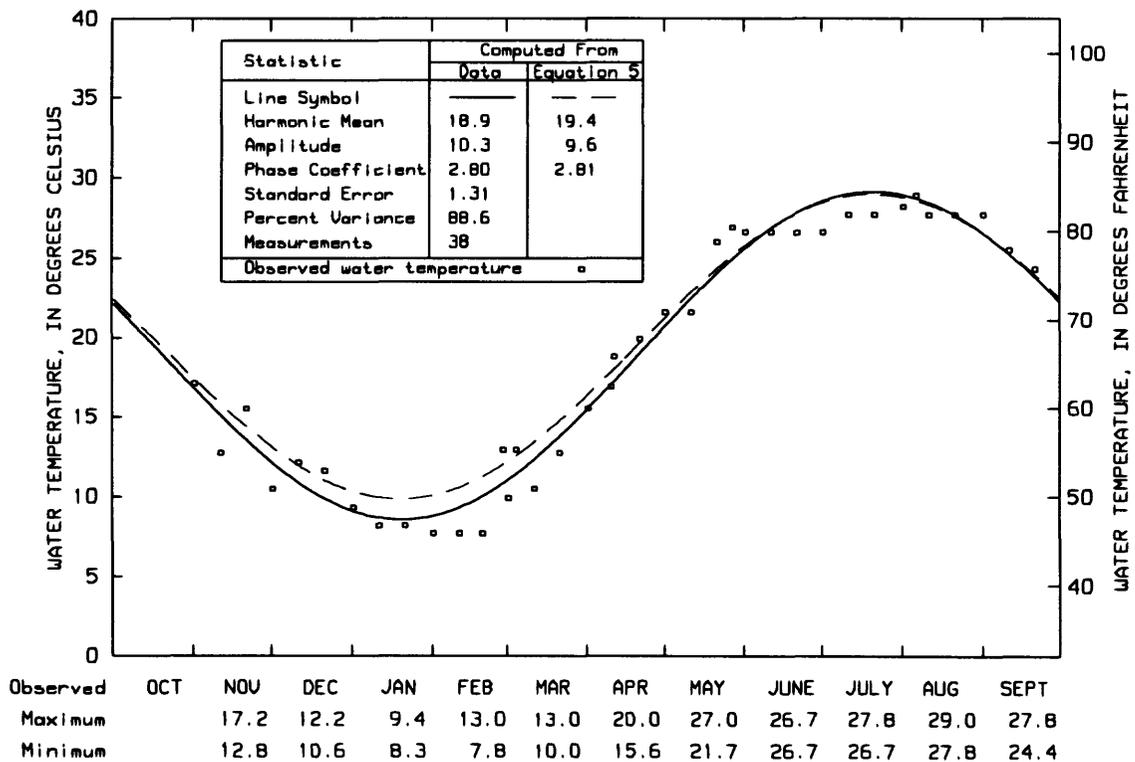


Figure 143. Chattahoochee River at Columbia, Alabama, Station 02343500, November 1940 to April 1958.

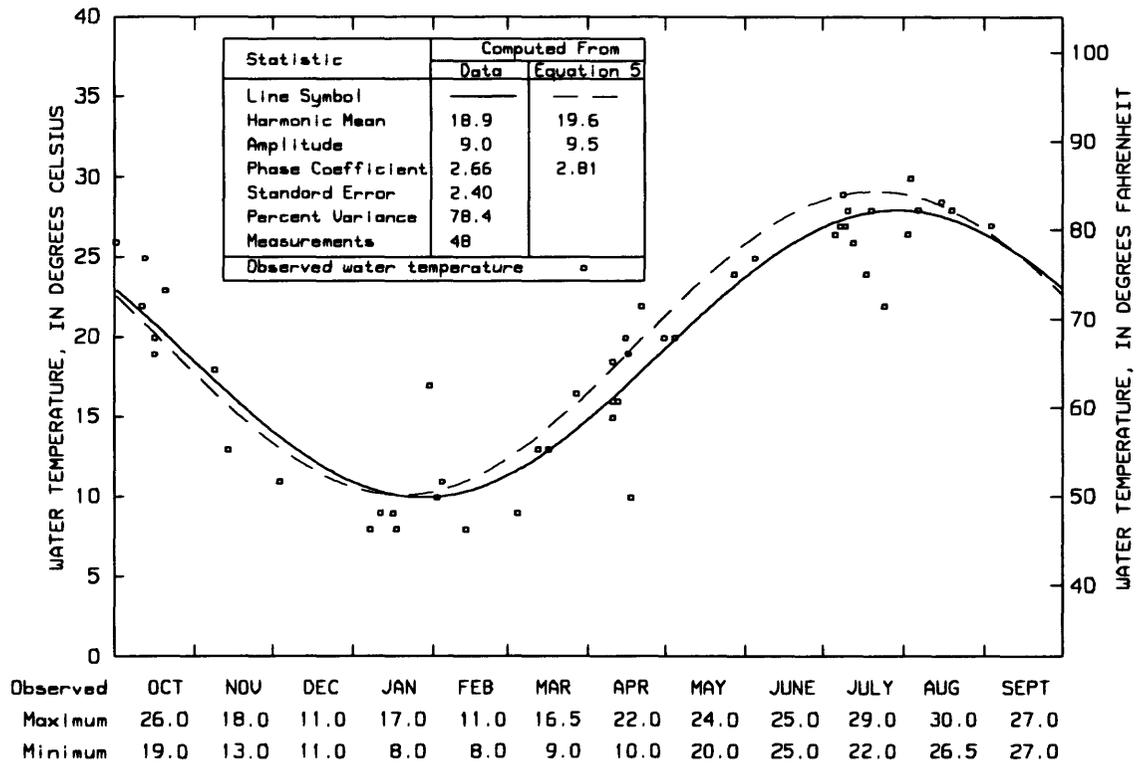


Figure 144. Chattahoochee River at Alaga, Alabama, Station 02344000, January 1964 to July 1974.

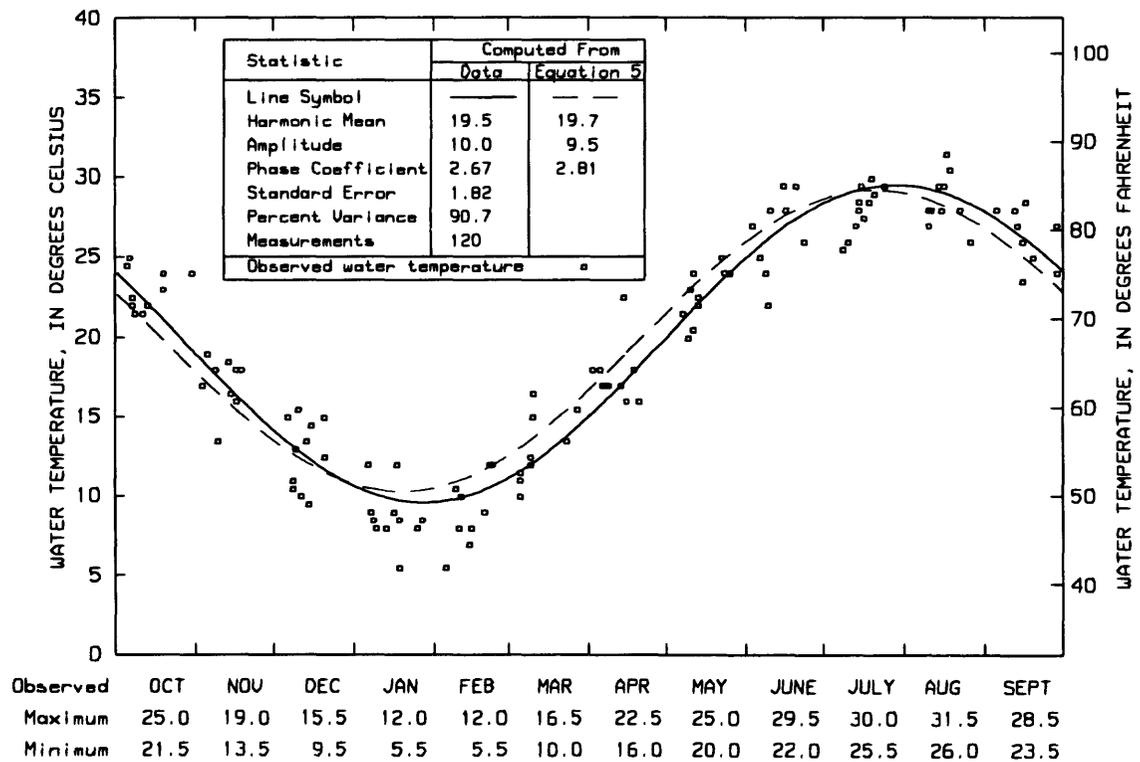
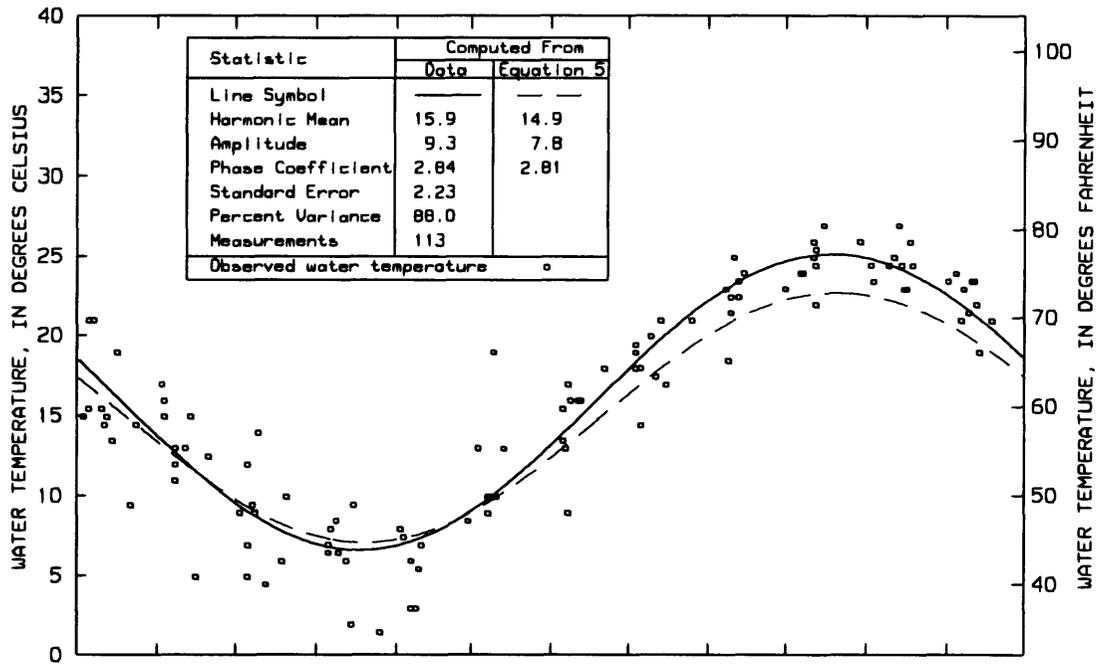
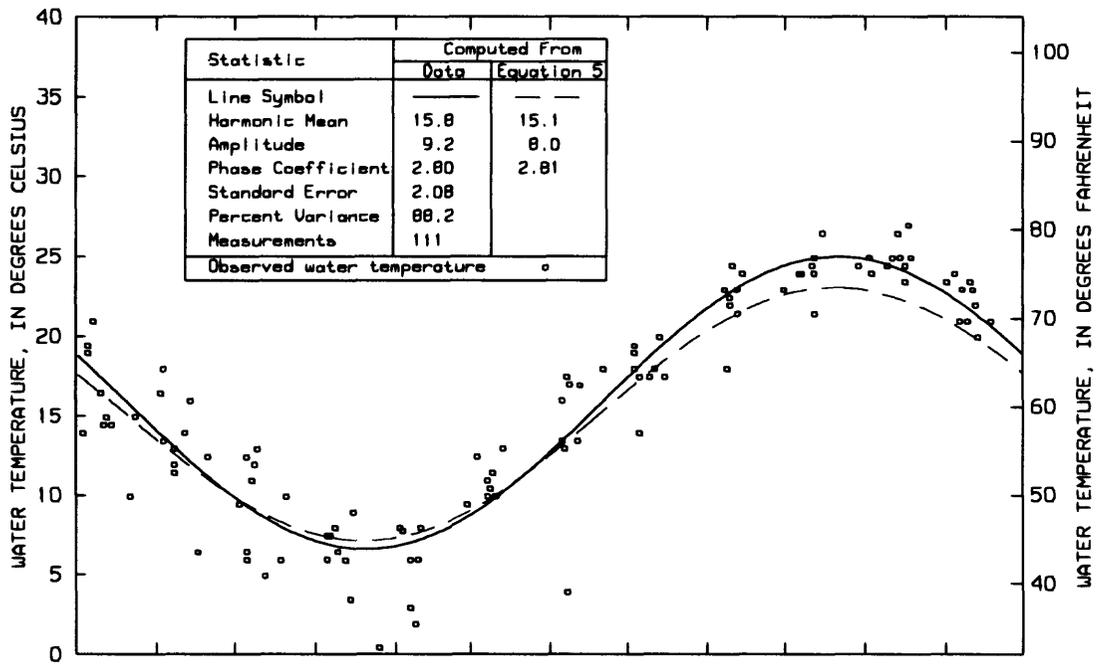


Figure 145. Chattahoochee River near Steam Mill, Georgia, Station 02344040, October 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| Maximum | 21.0 | 17.0 | 14.0 | 9.5 | 8.5 | 19.0 | 18.0 | 21.0 | 25.0 | 27.0 | 27.0 | 24.0 |
| Minimum | 9.5 | 5.0 | 4.5 | 1.5 | 3.0 | 9.0 | 9.0 | 14.5 | 18.5 | 22.0 | 23.0 | 19.0 |

Figure 146. Flint River at State Highway 138 near Jonesboro, Georgia, Station 02344180, May 1958 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| Maximum | 21.0 | 18.0 | 13.0 | 9.0 | 9.5 | 13.0 | 18.0 | 20.0 | 24.5 | 26.5 | 27.0 | 24.0 |
| Minimum | 10.0 | 6.5 | 5.0 | 0.5 | 2.0 | 10.0 | 4.0 | 14.0 | 18.0 | 21.5 | 23.5 | 20.0 |

Figure 147. Flint River at State Highway 54 near Fayetteville, Georgia, Station 02344190, July 1975 to December 1984.

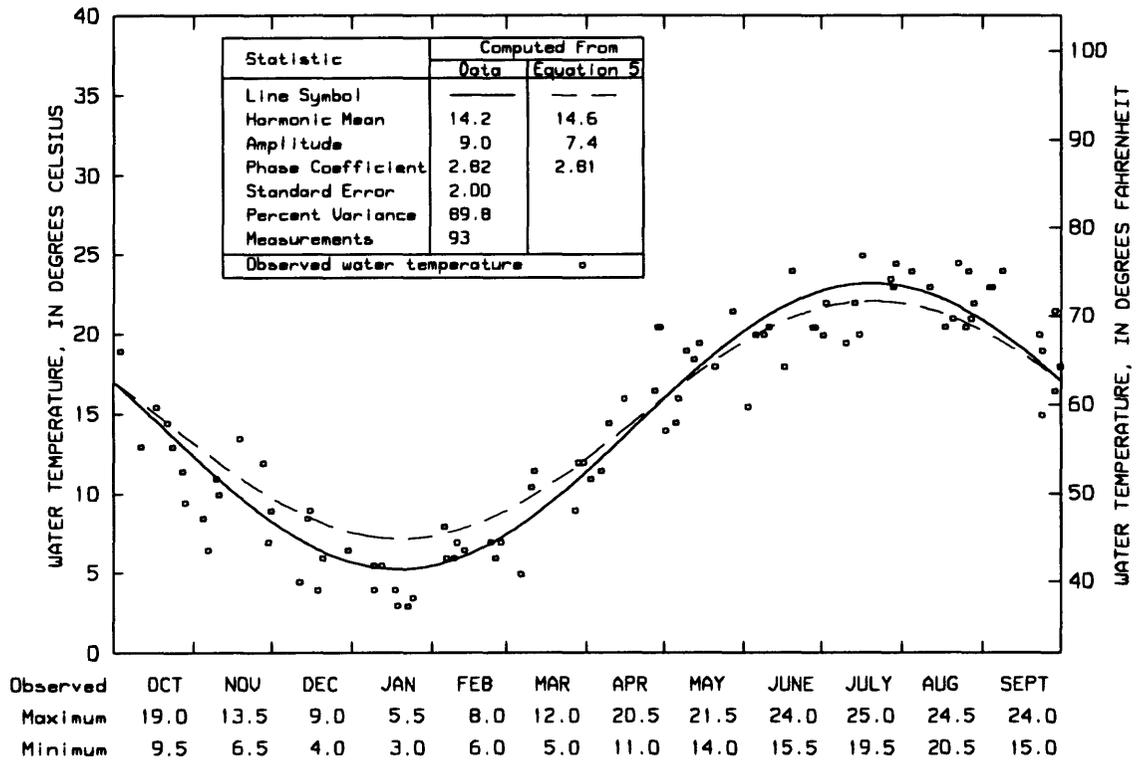


Figure 148. Camp Creek near Fayetteville, Georgia, Station 02344300, July 1960 to September 1970.

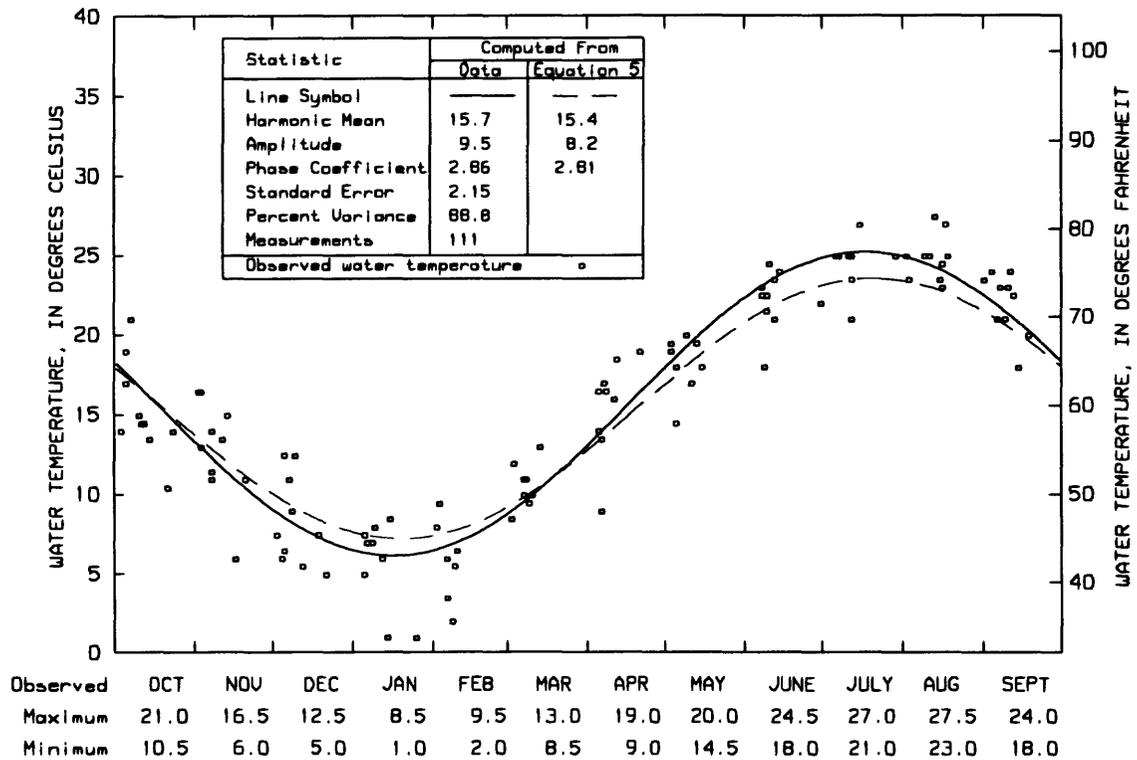
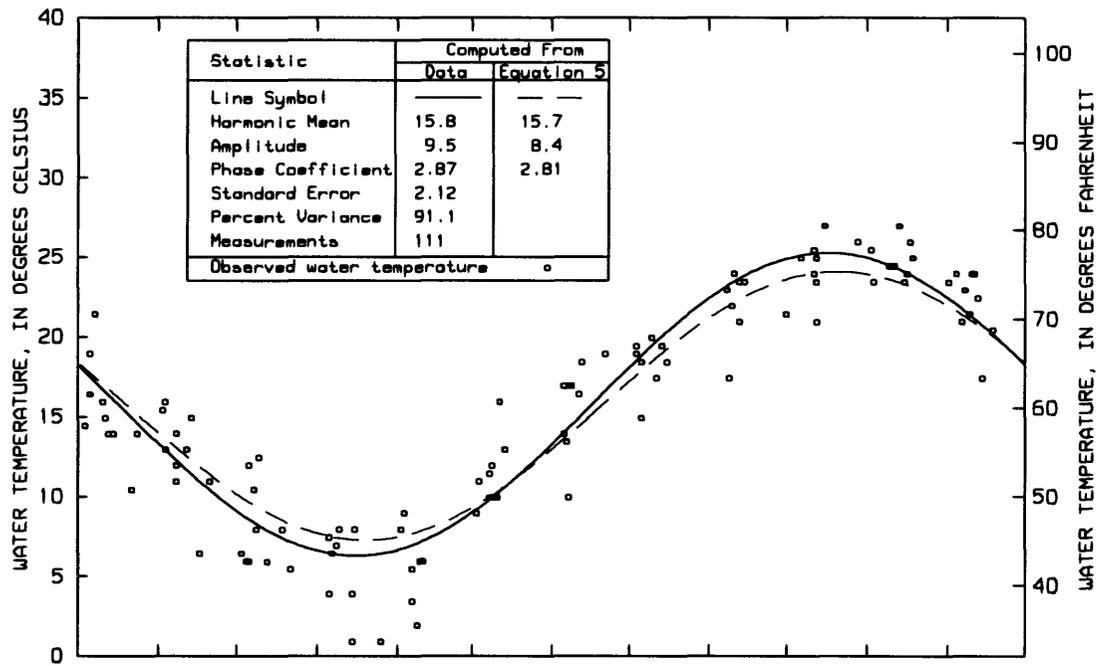
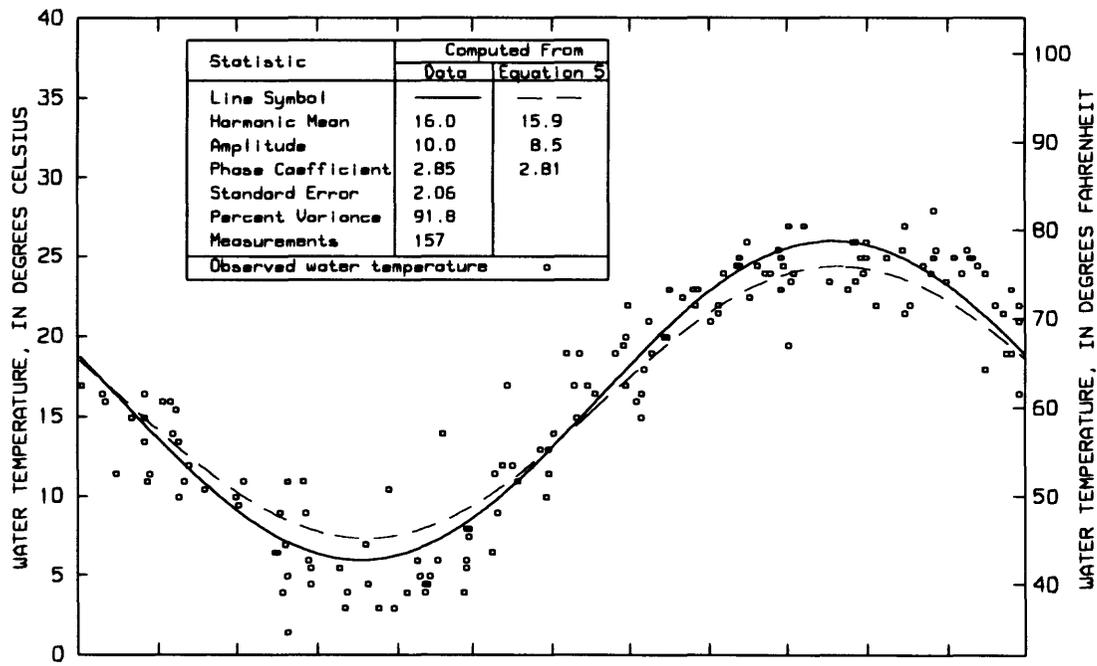


Figure 149. Flint River at Ackert Road near Inman, Georgia, Station 02344380, July 1975 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| Maximum | 21.5 | 16.0 | 12.5 | 8.0 | 9.0 | 16.0 | 19.0 | 20.0 | 24.0 | 27.0 | 27.0 | 24.0 |
| Minimum | 10.5 | 6.5 | 5.5 | 1.0 | 2.0 | 9.0 | 10.0 | 15.0 | 17.5 | 21.0 | 23.5 | 17.5 |

Figure 150. Flint River at State Highway 92 above Griffin, Georgia, Station 02344400, July 1975 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 17.0 | 16.0 | 11.0 | 10.5 | 14.0 | 17.0 | 22.0 | 23.0 | 26.0 | 27.0 | 28.0 | 25.5 |
| Minimum | 11.0 | 10.0 | 1.5 | 3.0 | 4.0 | 6.5 | 14.0 | 15.0 | 21.0 | 19.5 | 21.5 | 16.5 |

Figure 151. Flint River near Griffin, Georgia, Station 02344500, August 1956 to July 1976.

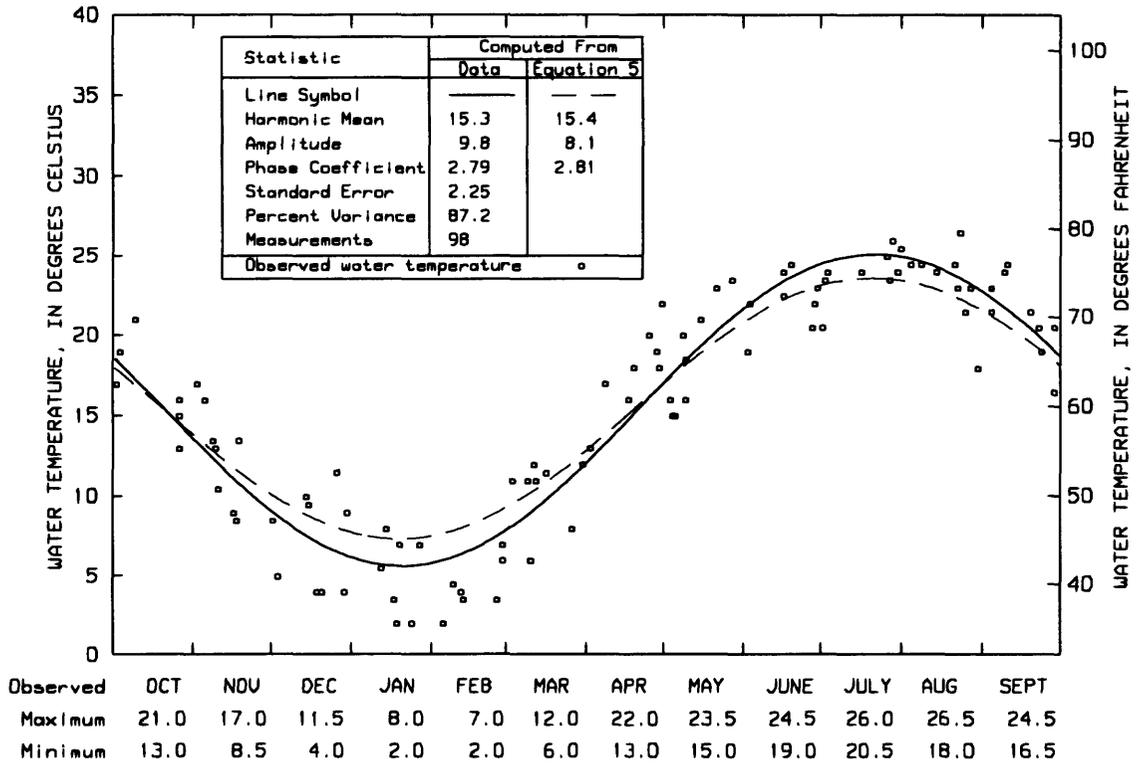


Figure 152. Line Creek near Senoia, Georgia, Station 02344700, September 1964 to July 1976.

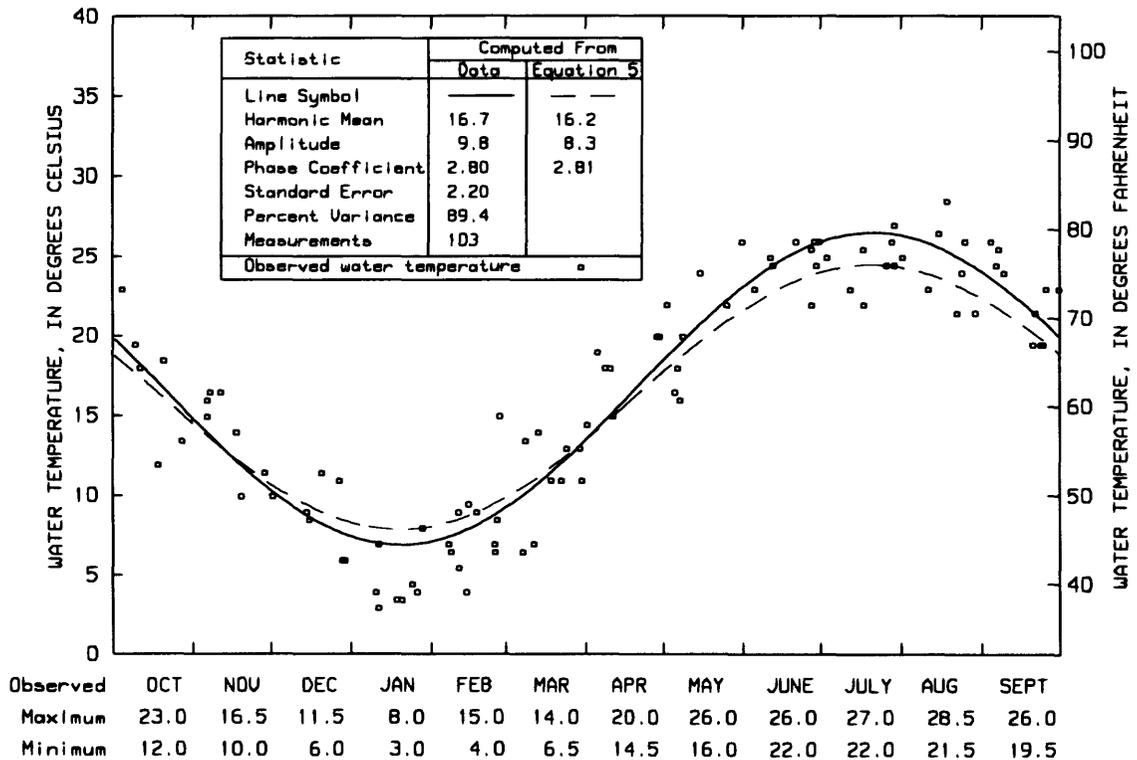


Figure 153. Potato Creek near Thomaston, Georgia, Station 02346500, July 1956 to June 1974.

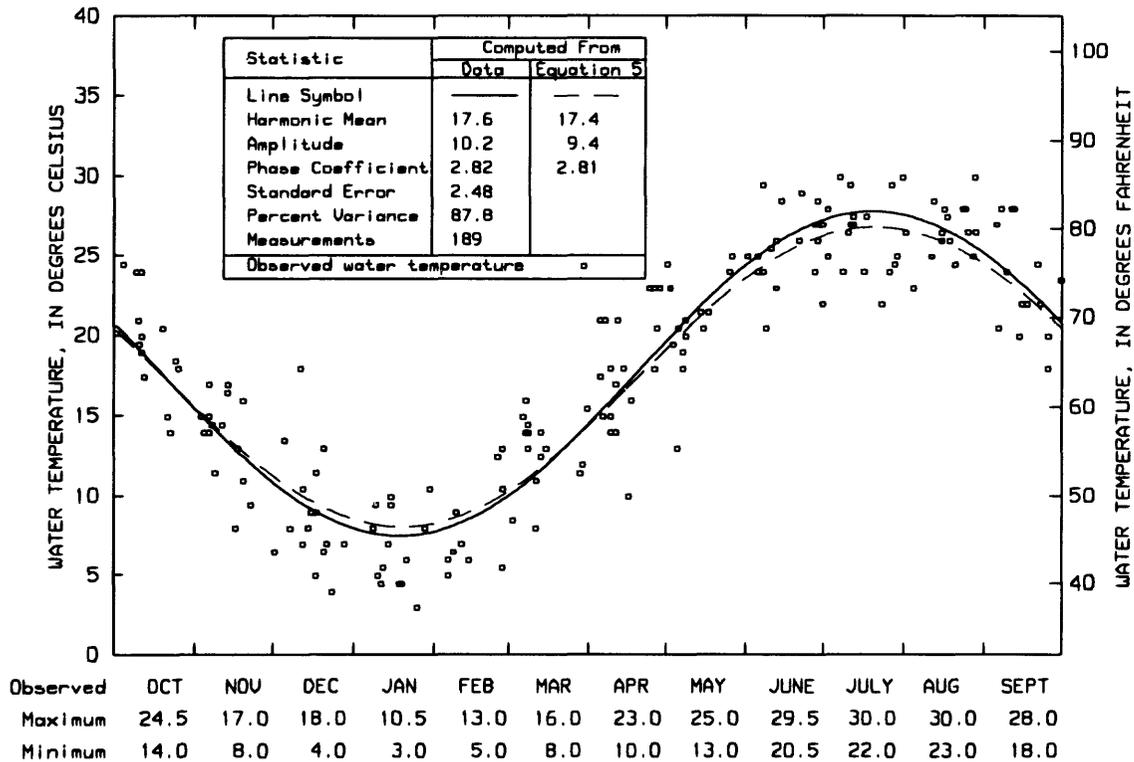


Figure 154. Flint River near Culloden, Georgia, Station 02347500, April 1954 to June 1979.

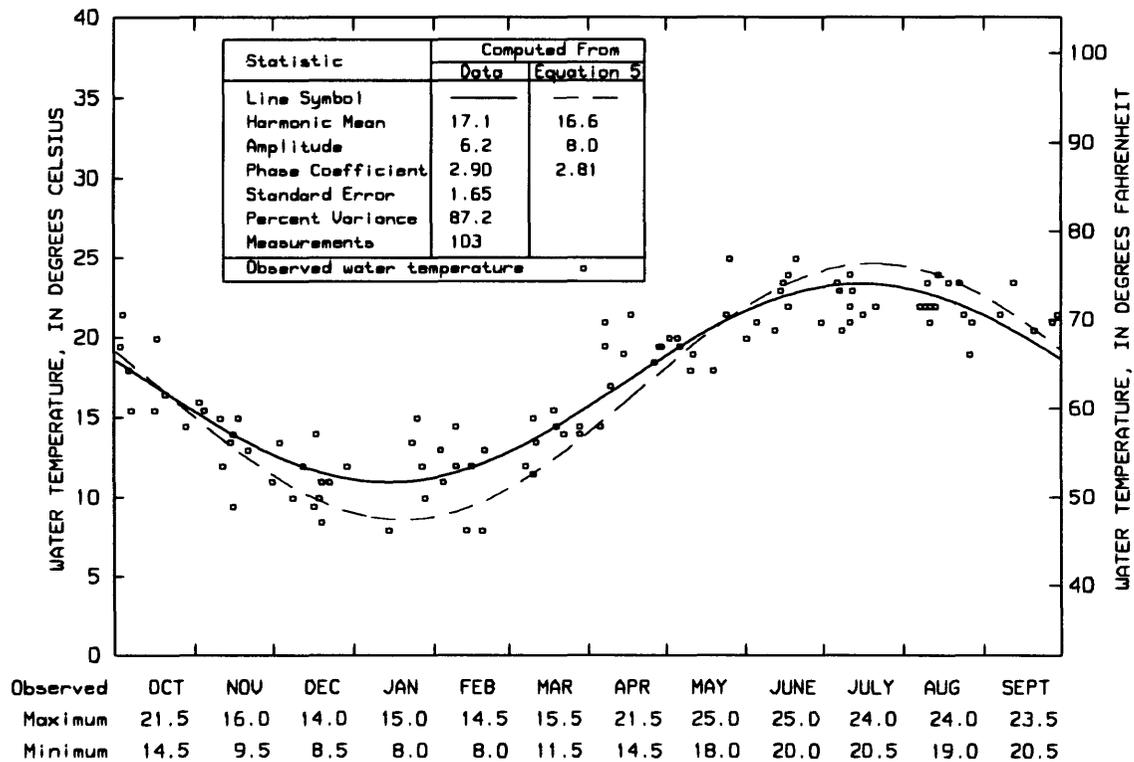


Figure 155. Whitewater Creek below Rambulette Creek near Butler, Georgia, Station 02349000, April 1954 to November 1973.

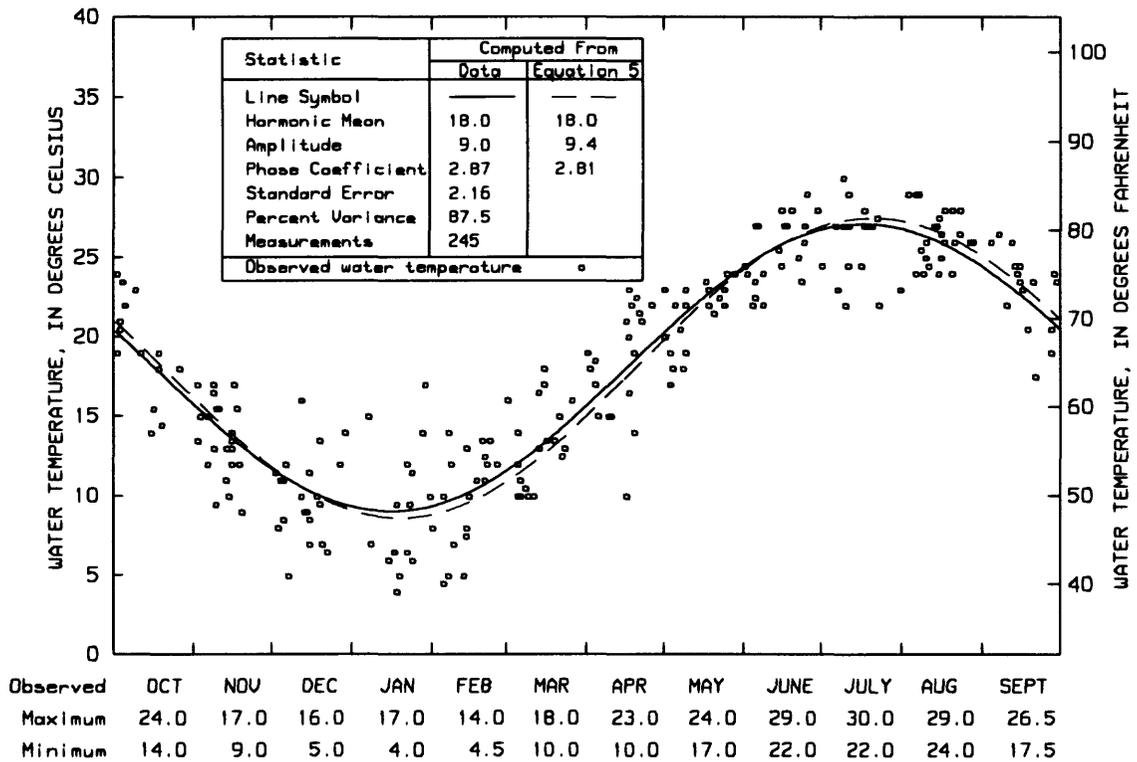


Figure 156. Flint River at Montezuma, Georgia, Station 02349500, May 1954 to December 1984.

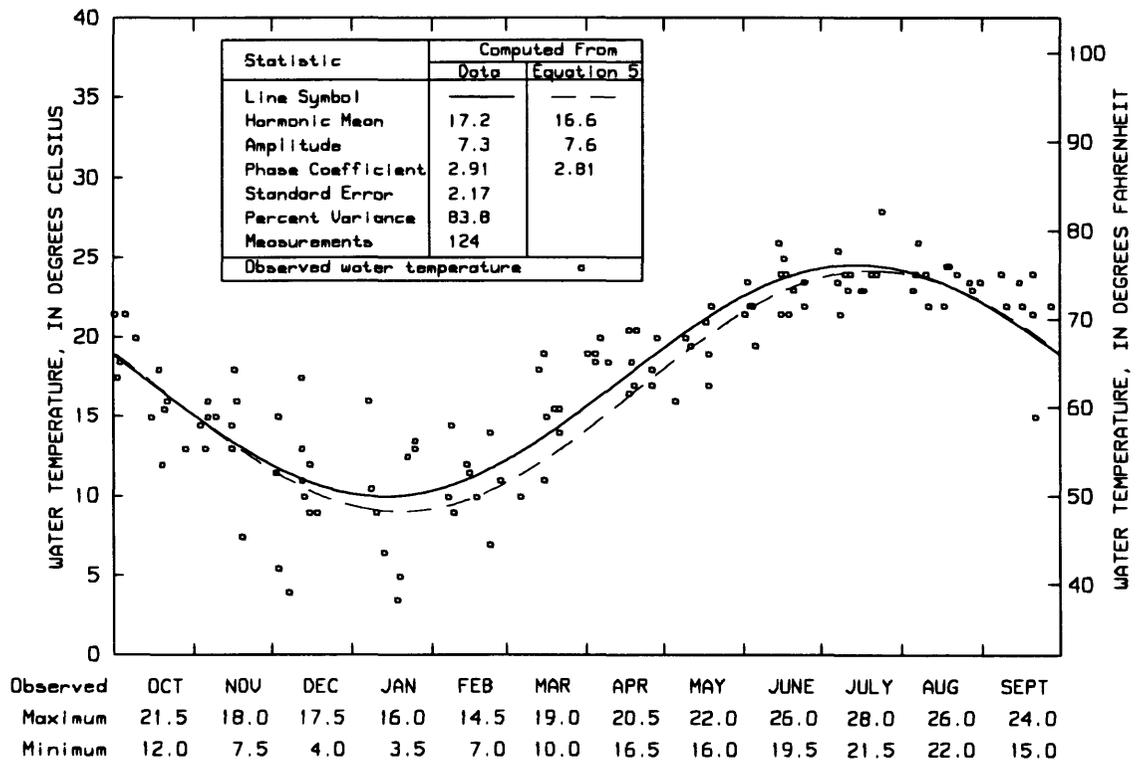


Figure 157. Turkey Creek at Byronville, Georgia, Station 02349900, July 1954 to June 1982.

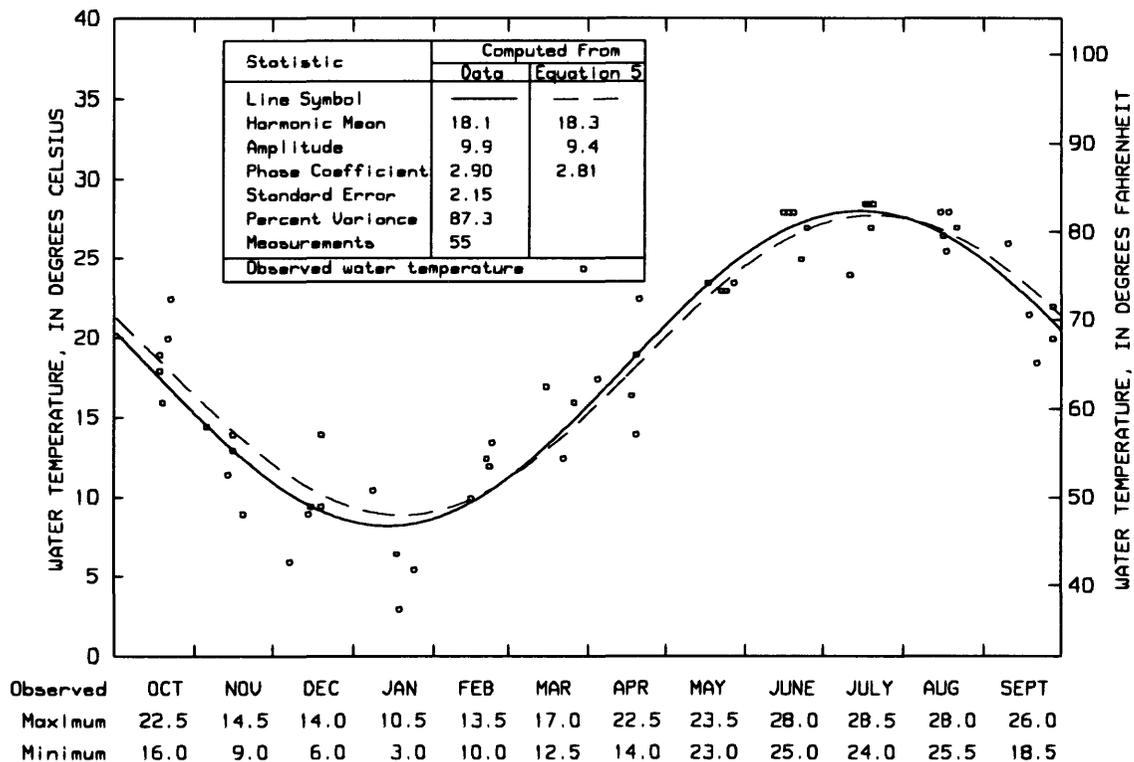


Figure 158. Flint River at State Highway 27 near Vienna, Georgia, Station 02350001, July 1979 to December 1984.

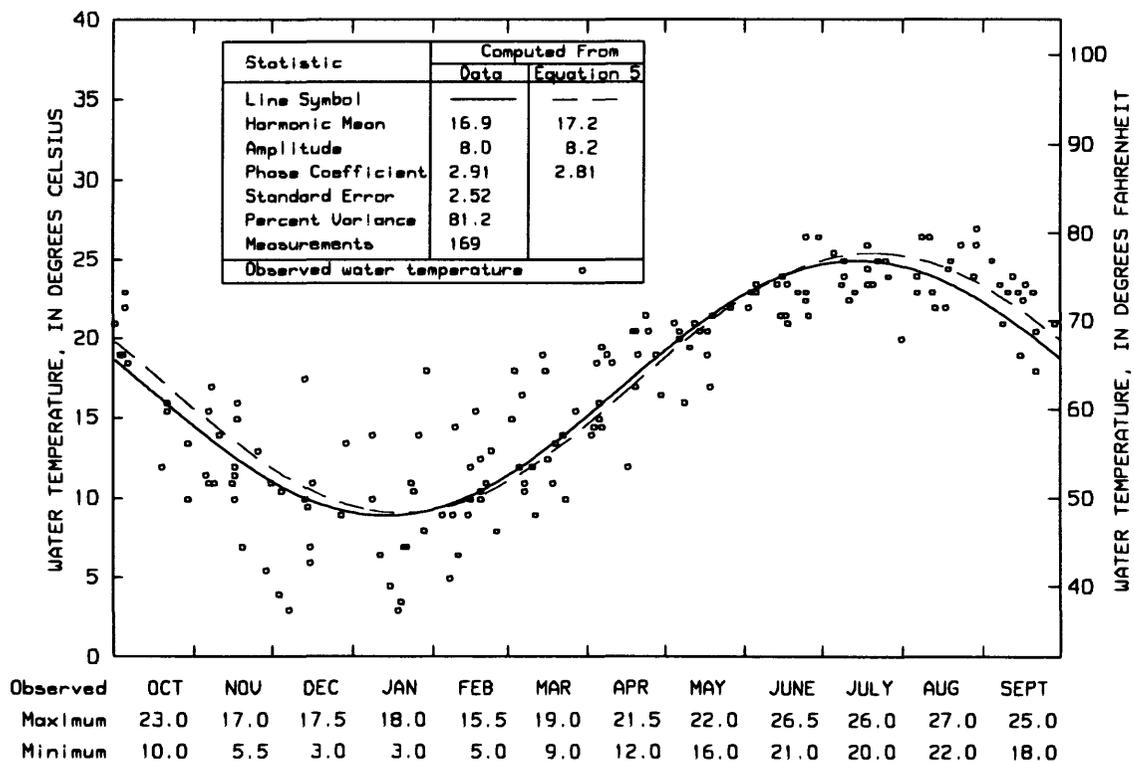


Figure 159. Kinchafoonee Creek at Preston, Georgia, Station 02350600, May 1954 to July 1984.

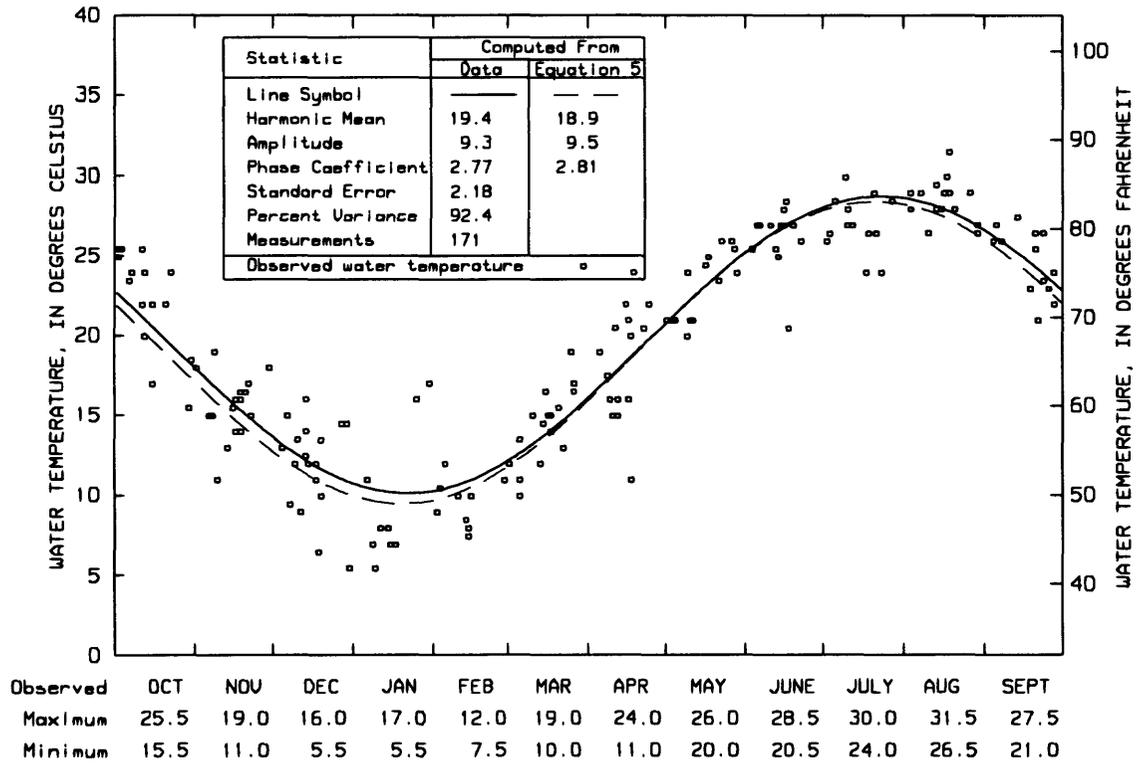


Figure 160. Flint River at Albany, Georgia, Station 02352500, May 1954 to December 1984.

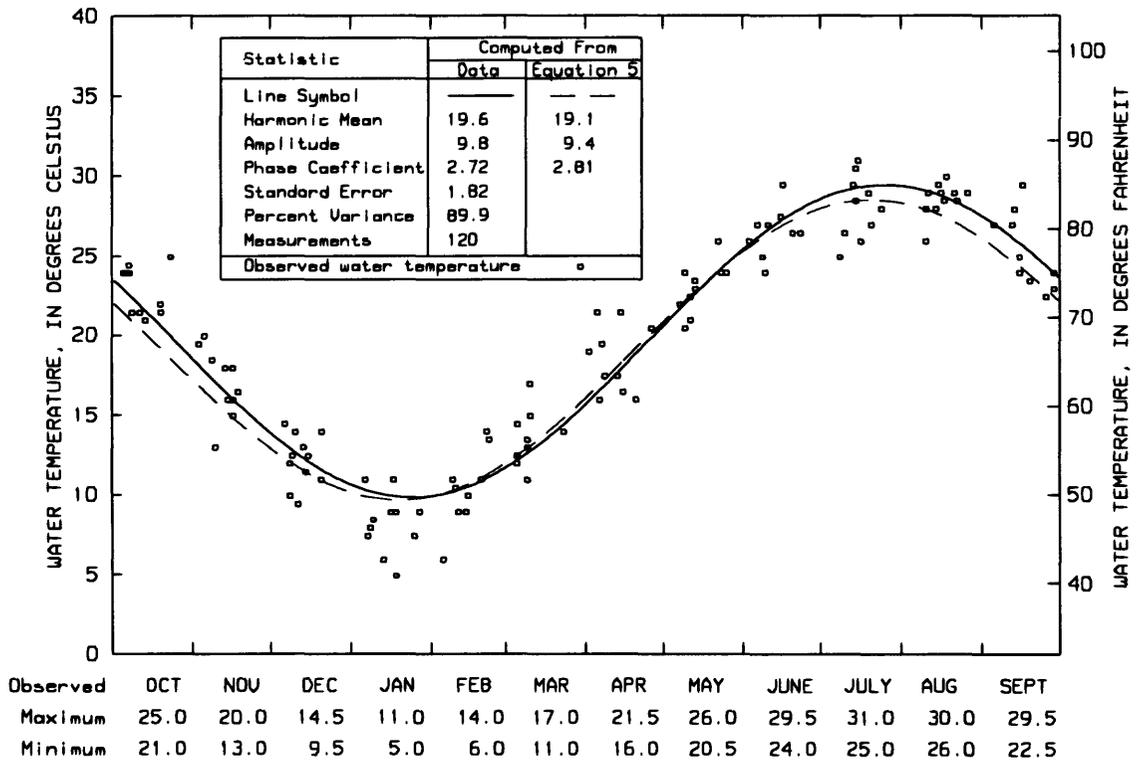


Figure 161. Flint River (Putney Intake) near Putney, Georgia, Station 02352790, August 1974 to December 1984.

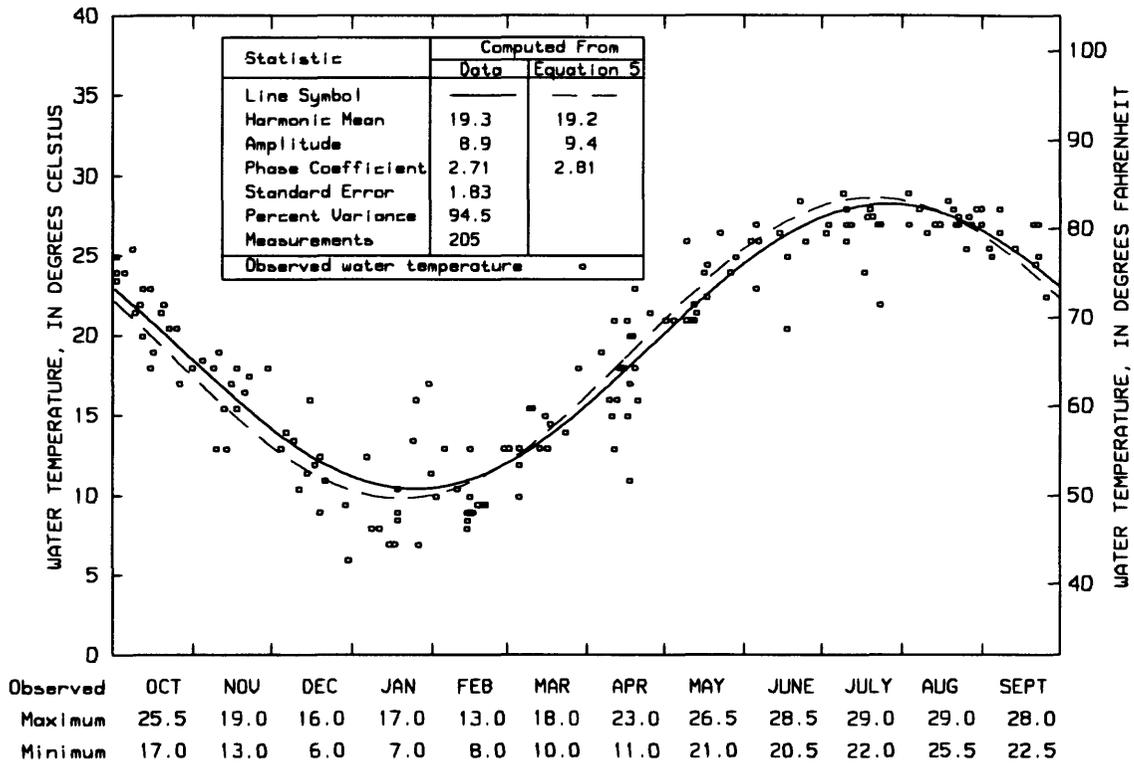


Figure 162. Flint River at Newton, Georgia, Station 02353000, August 1956 to October 1984.

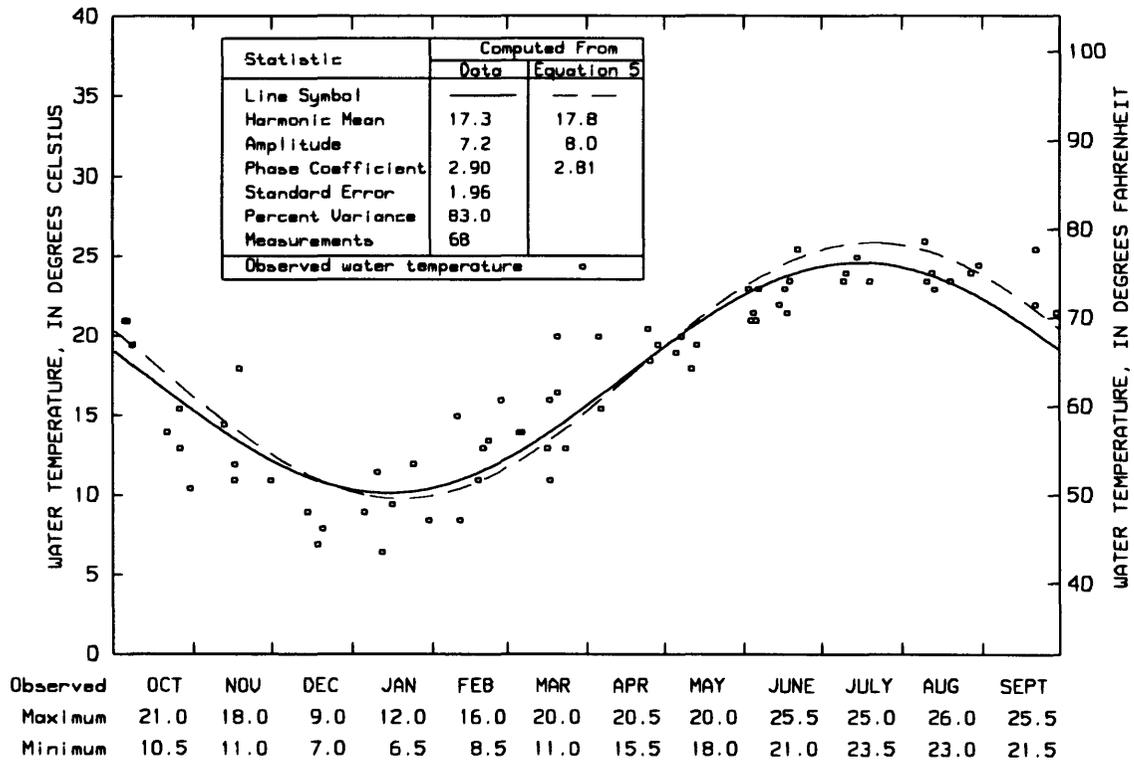


Figure 163. Pachitla Creek near Edison, Georgia, Station 02353400, October 1954 to November 1973.

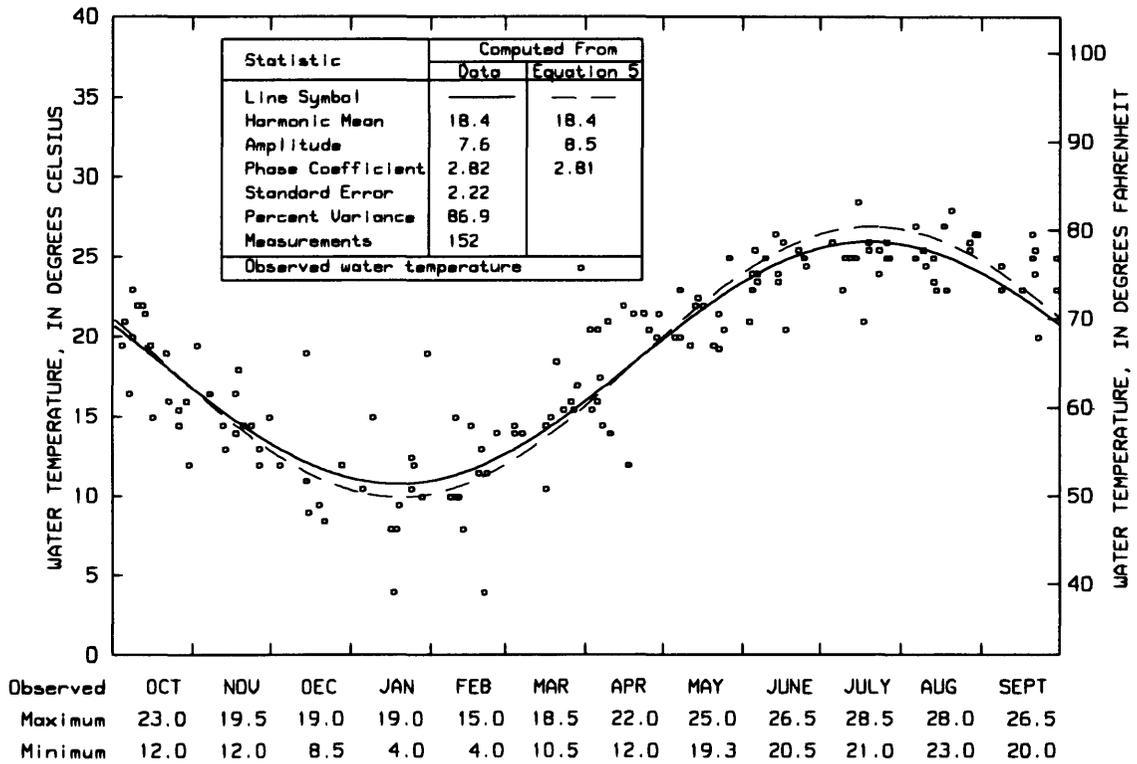


Figure 164. Ichawaynochaway Creek at Milford, Georgia, Station 02353500, April 1954 to July 1984.

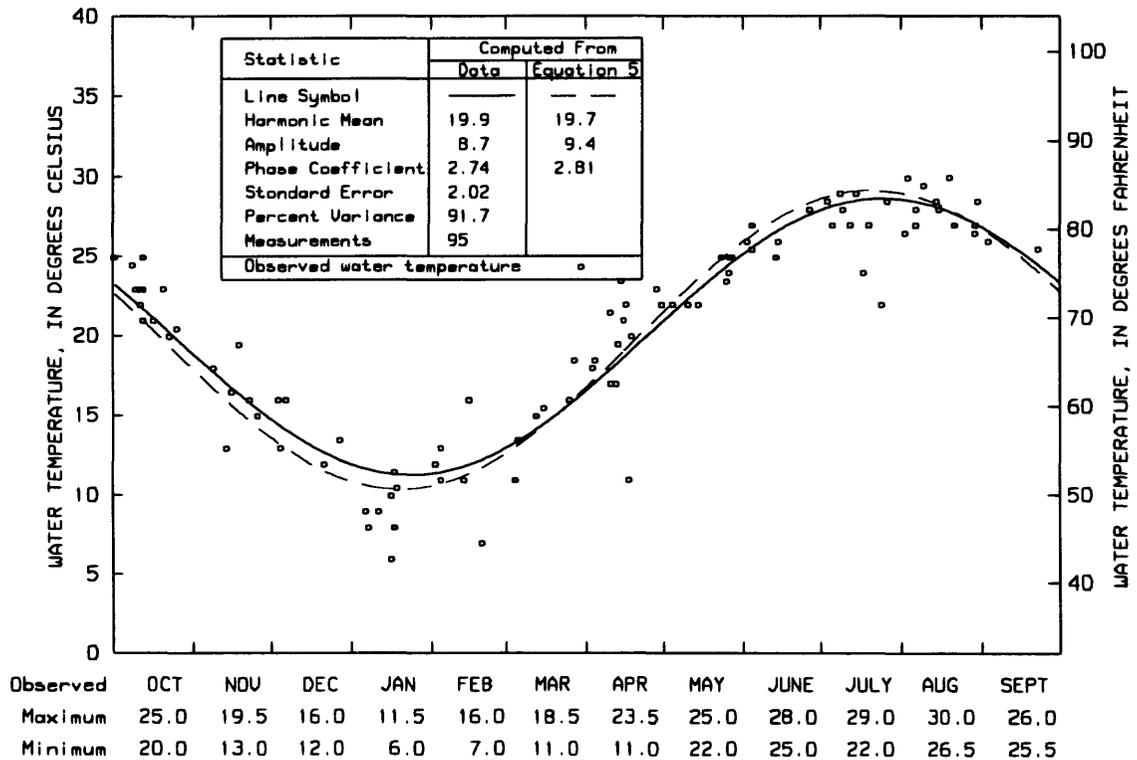
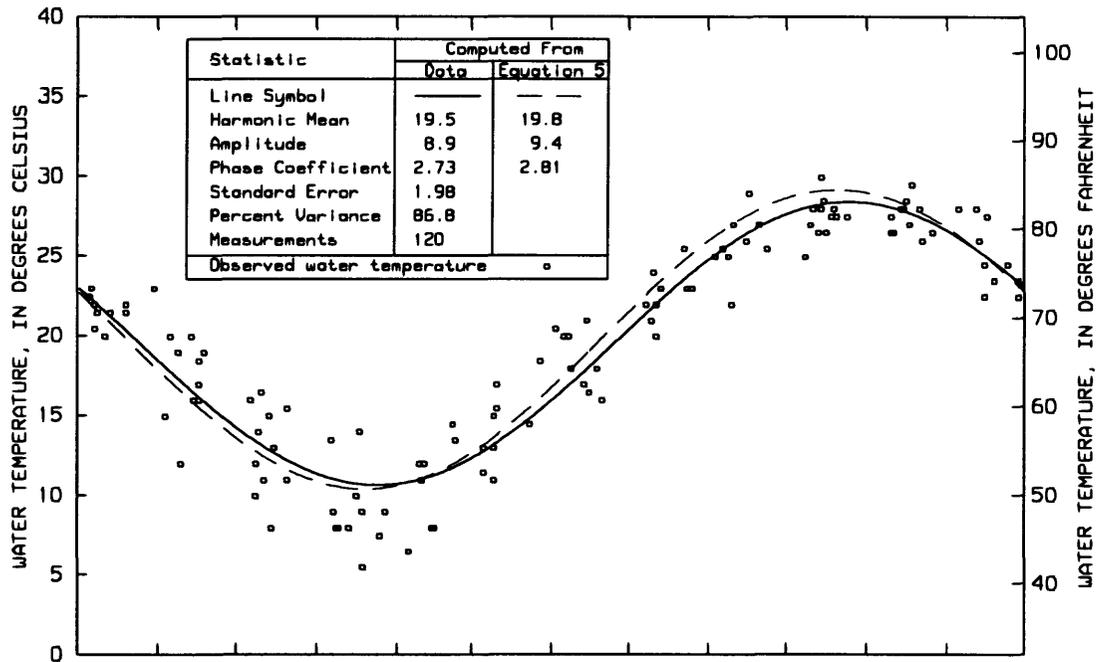
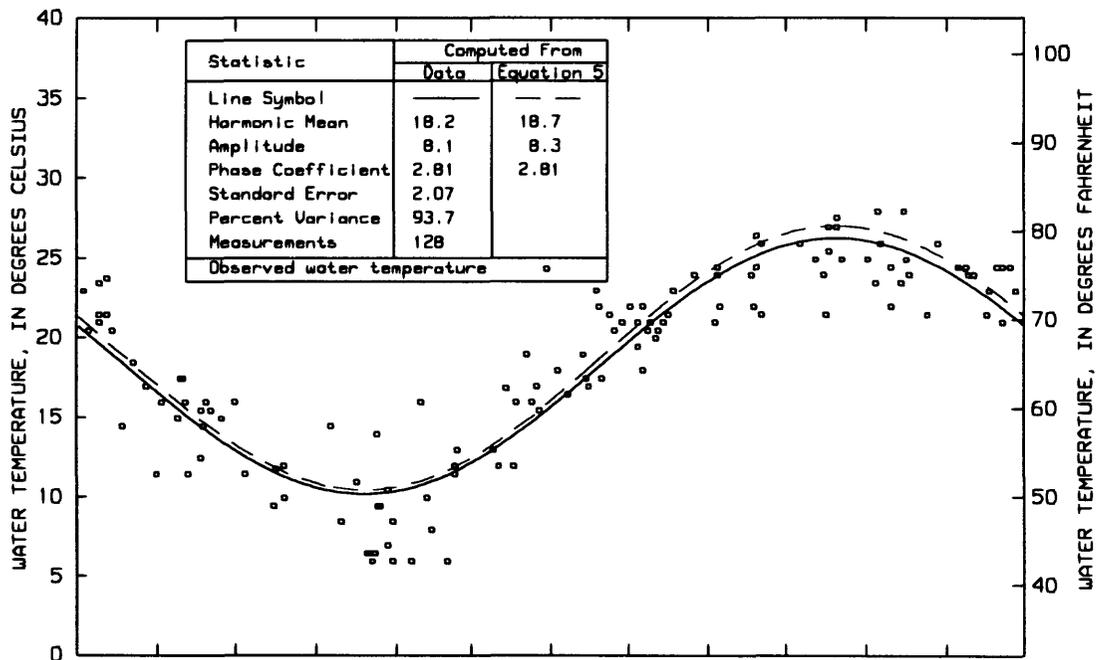


Figure 165. Flint River at Bainbridge, Georgia, Station 02356000, April 1954 to July 1973.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.0 | 20.0 | 16.5 | 14.0 | 14.5 | 18.5 | 21.0 | 25.5 | 29.0 | 30.0 | 29.5 | 28.0 |
| Minimum | 20.0 | 12.0 | 8.0 | 5.5 | 6.5 | 11.0 | 16.0 | 20.0 | 22.0 | 25.0 | 26.0 | 22.5 |

Figure 166. Flint River below State Docks at Bainbridge, Georgia, Station 02356015, July 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.8 | 17.5 | 12.0 | 14.5 | 16.0 | 19.0 | 23.0 | 24.0 | 26.5 | 27.6 | 28.0 | 24.5 |
| Minimum | 11.5 | 11.5 | 9.5 | 6.0 | 6.0 | 12.0 | 16.5 | 18.0 | 21.0 | 21.5 | 21.5 | 21.0 |

Figure 167. Spring Creek near Iron City, Georgia, Station 02357000, August 1957 to July 1978.

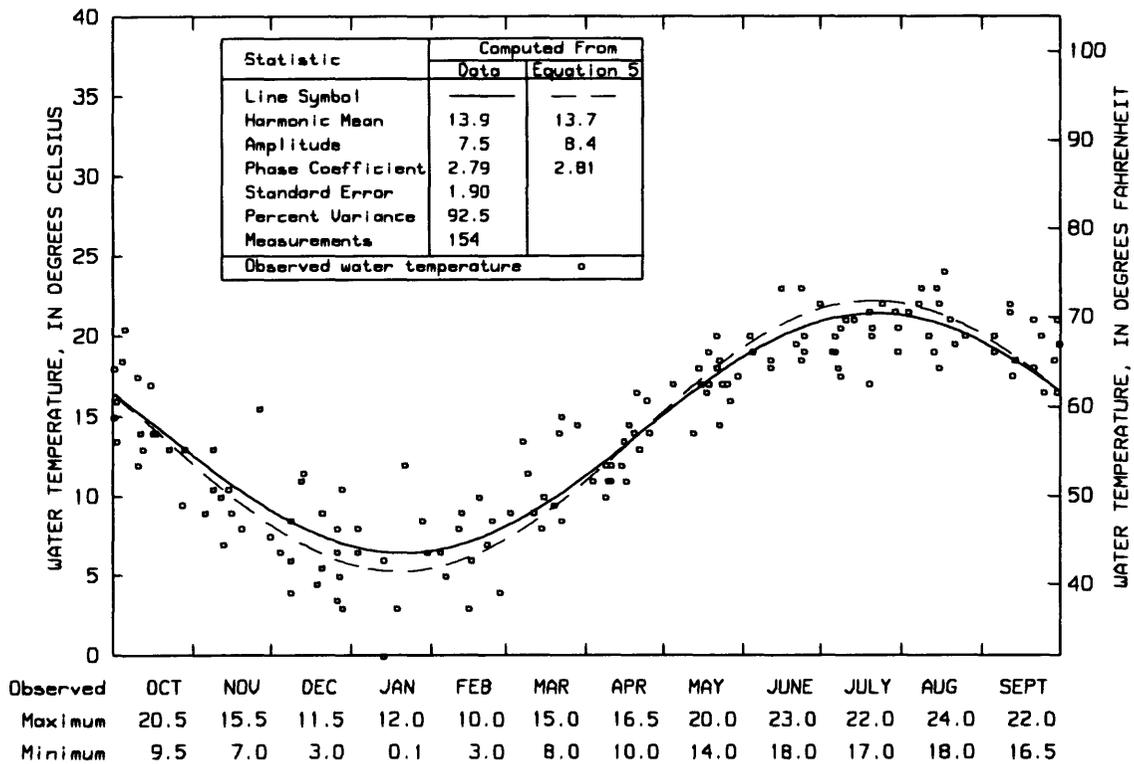


Figure 168. Cartecay River near Ellijay, Georgia, Station 02379500, June 1957 to August 1975.

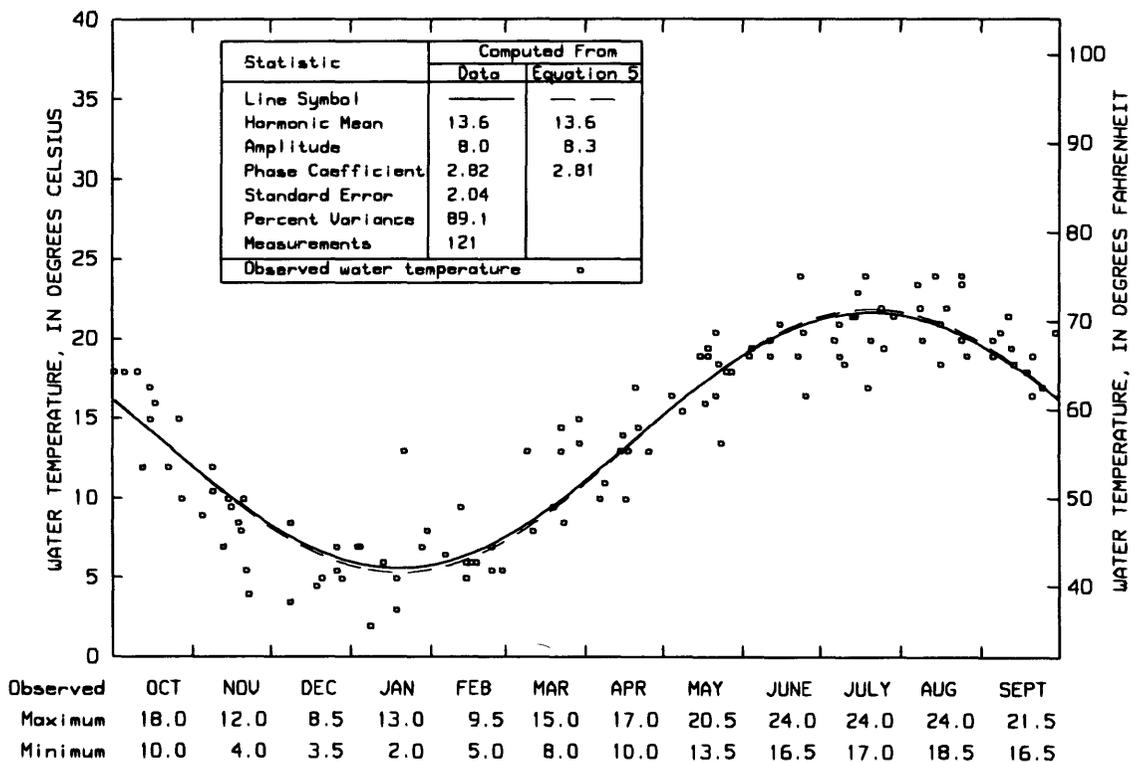
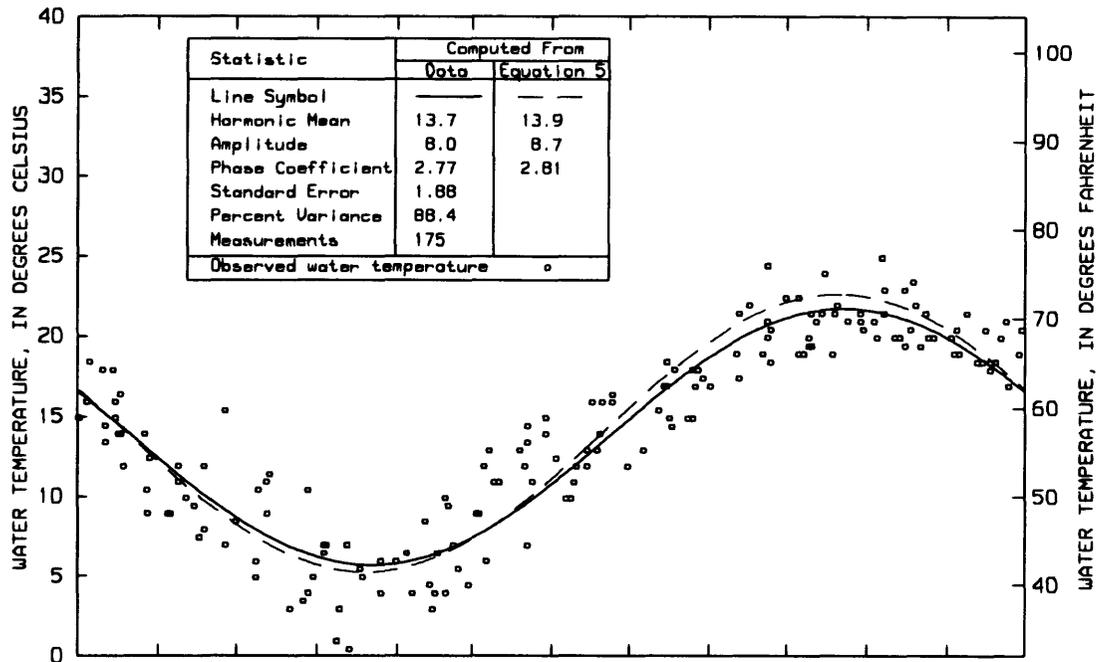
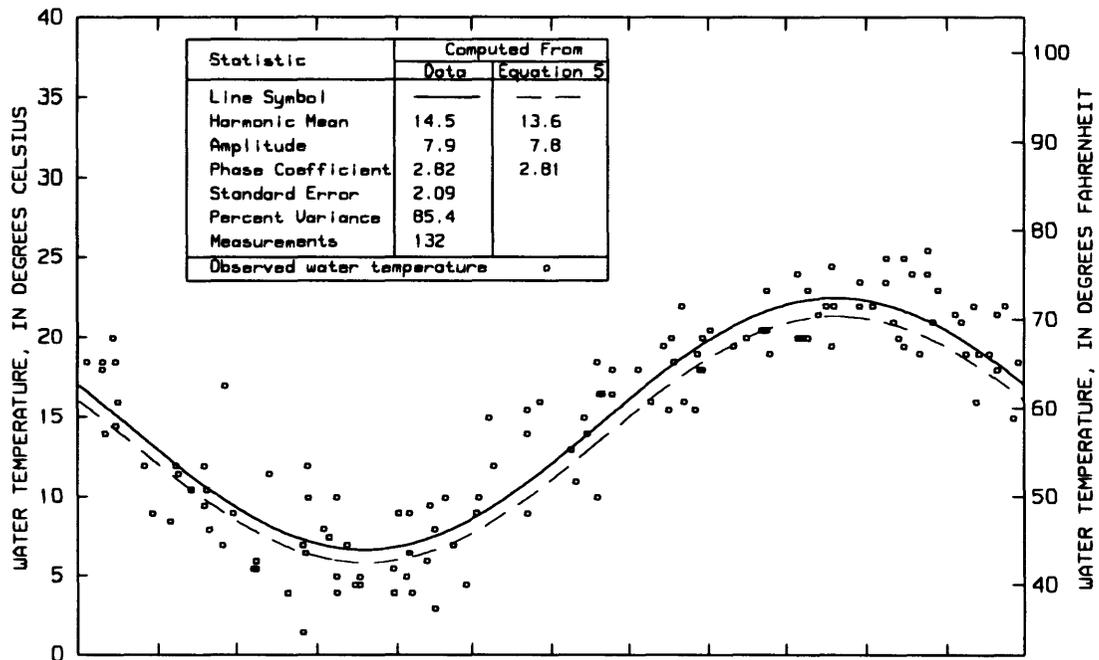


Figure 169. Ellijay River at Ellijay, Georgia, Station 02380000, June 1957 to July 1974.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 18.5 | 15.5 | 11.5 | 7.0 | 10.0 | 15.0 | 16.5 | 18.5 | 24.5 | 24.0 | 25.0 | 21.5 |
| Minimum | 9.0 | 7.0 | 3.0 | 0.5 | 3.0 | 6.0 | 10.0 | 13.0 | 17.0 | 19.0 | 19.5 | 17.0 |

Figure 170. Coosawattee River near Ellijay, Georgia, Station 02380500, May 1963 to August 1983.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 20.0 | 17.0 | 12.0 | 10.0 | 10.0 | 16.0 | 18.5 | 22.0 | 23.0 | 24.5 | 25.5 | 22.0 |
| Minimum | 9.0 | 7.0 | 1.5 | 4.0 | 3.0 | 9.0 | 10.0 | 15.5 | 19.0 | 19.5 | 19.0 | 15.0 |

Figure 171. Scarecorn Creek at Hinton, Georgia, Station 02382000, May 1959 to July 1974.

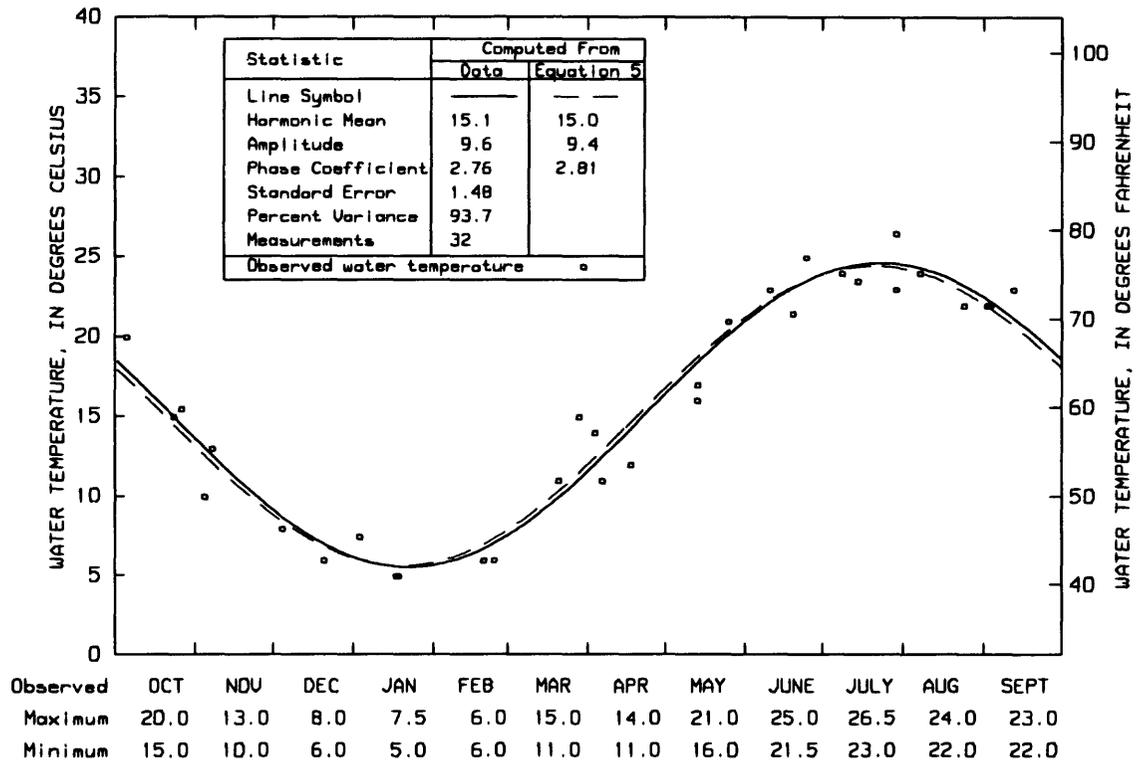


Figure 172. Coosawattee River at Carters, Georgia, Station 02382500, July 1965 to December 1972.

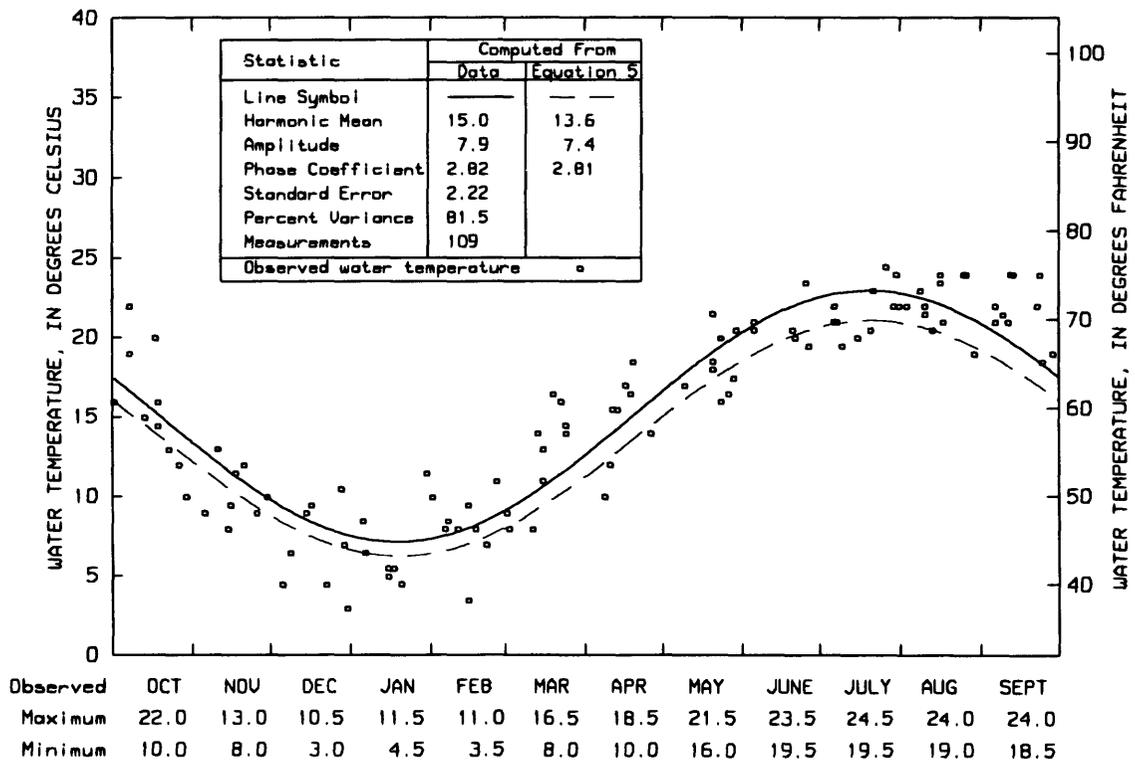


Figure 173. Rock Creek near Fairmount, Georgia, Station 02383000, July 1957 to September 1972.

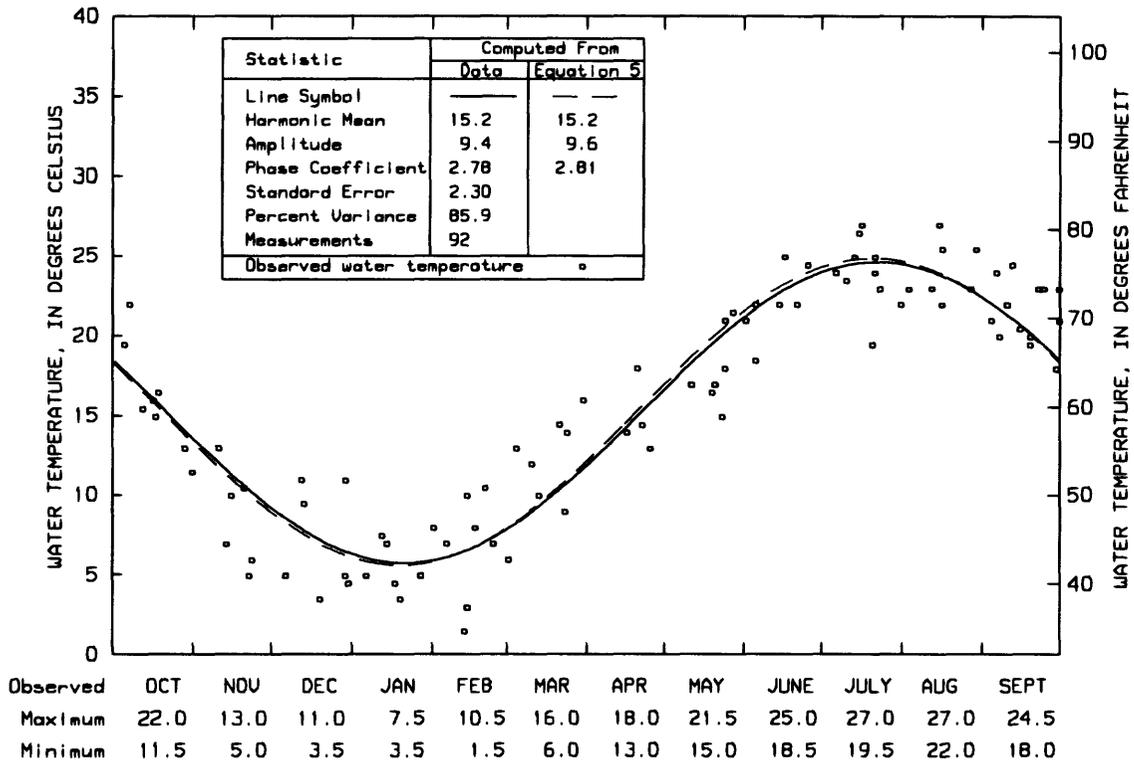


Figure 174. Coosawatee River near Pine Chapel, Georgia, Station 02383500, June 1957 to December 1972.

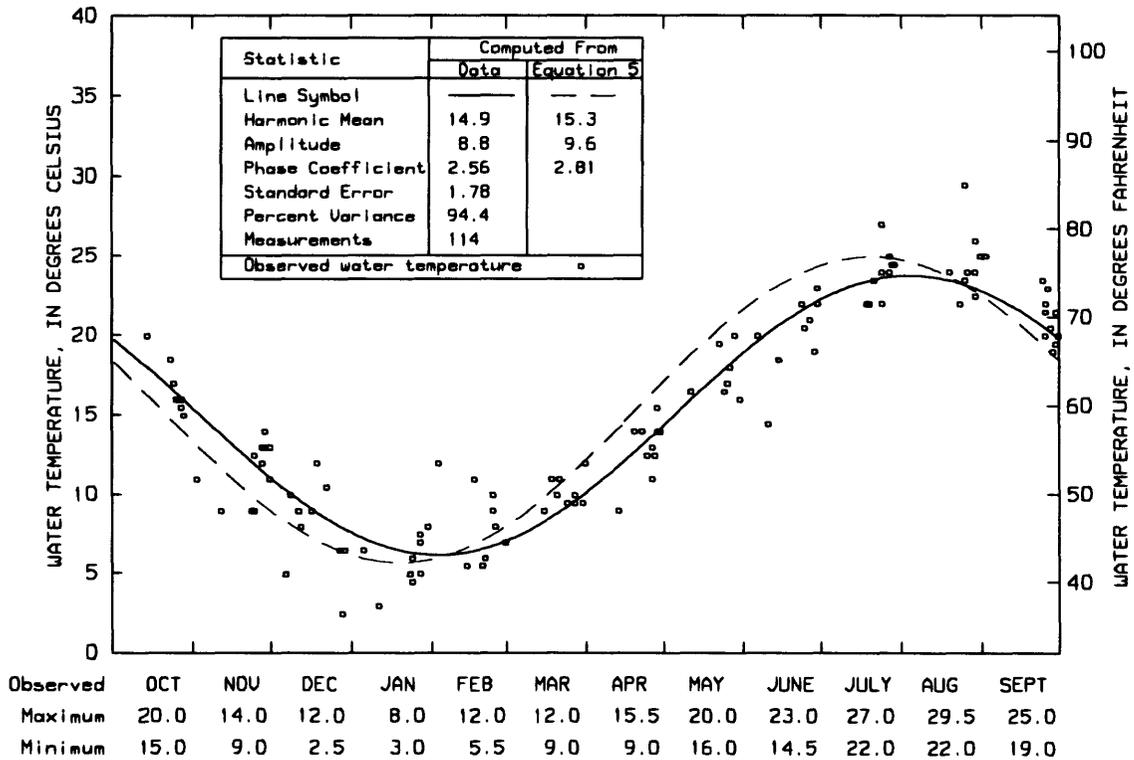


Figure 175. Coosawatee River near Calhoun, Georgia, Station 02383540, August 1974 to December 1984.

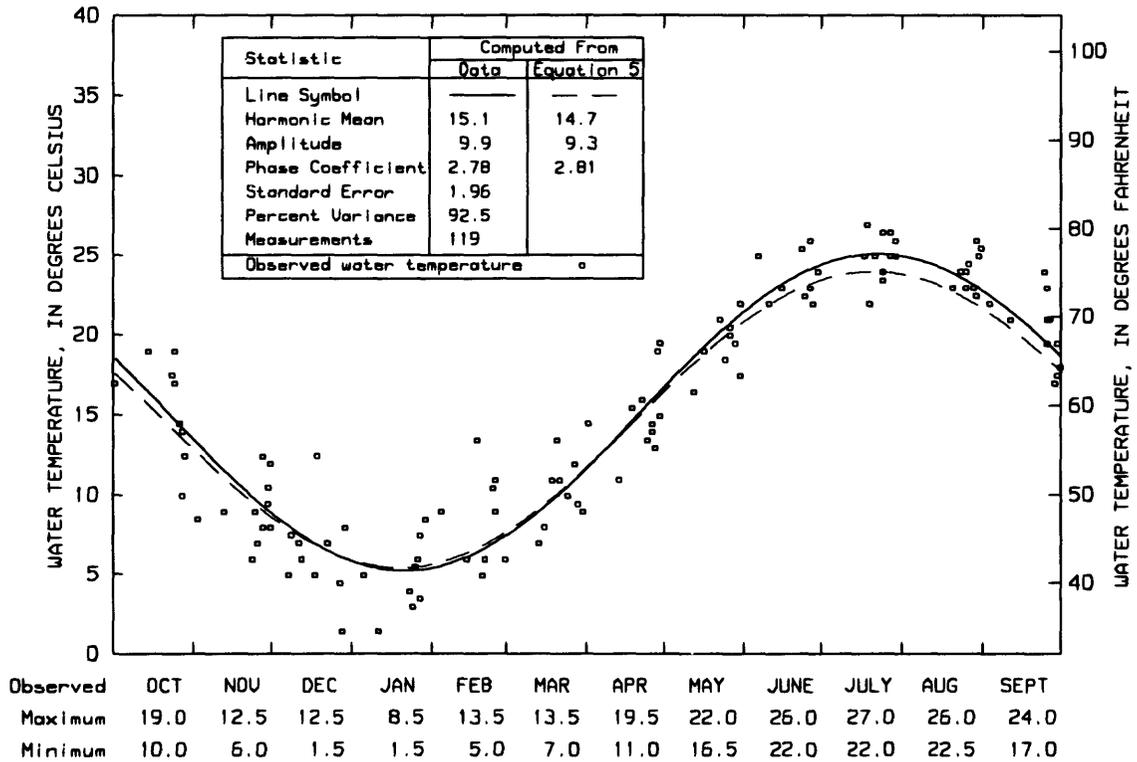


Figure 176. Conasauga River (Dalton Intake) near Dalton, Georgia, Station 02384748, July 1974 to December 1984.

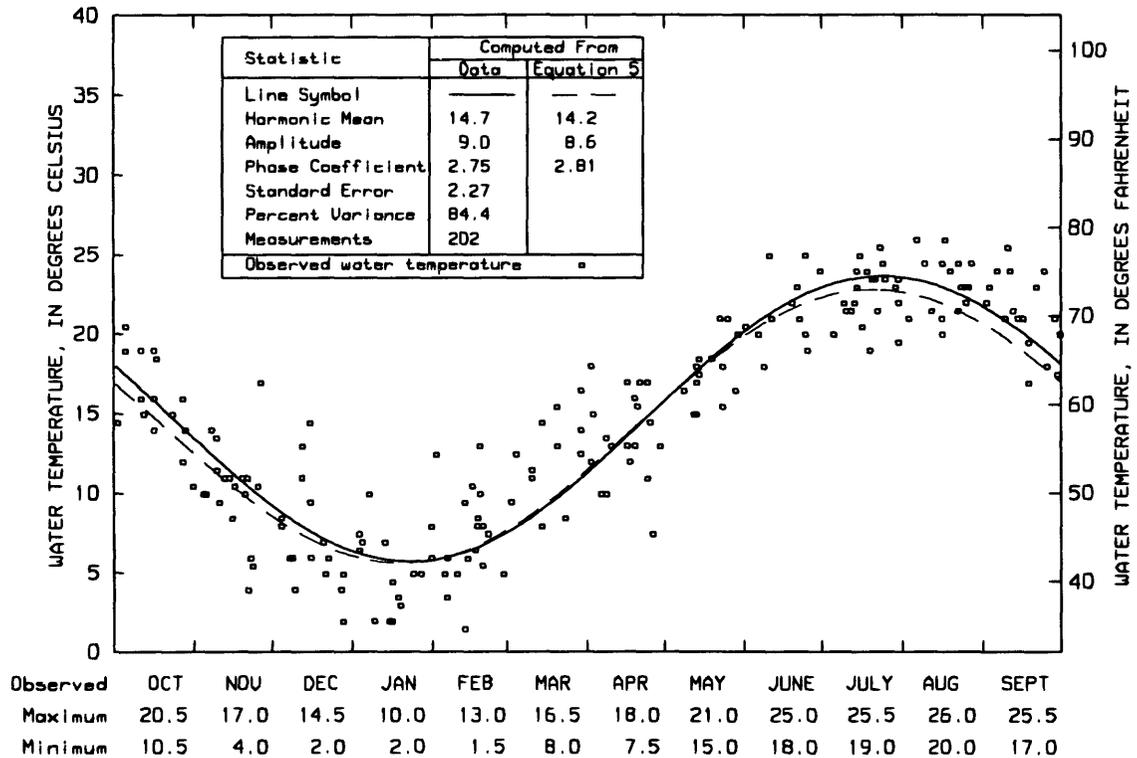
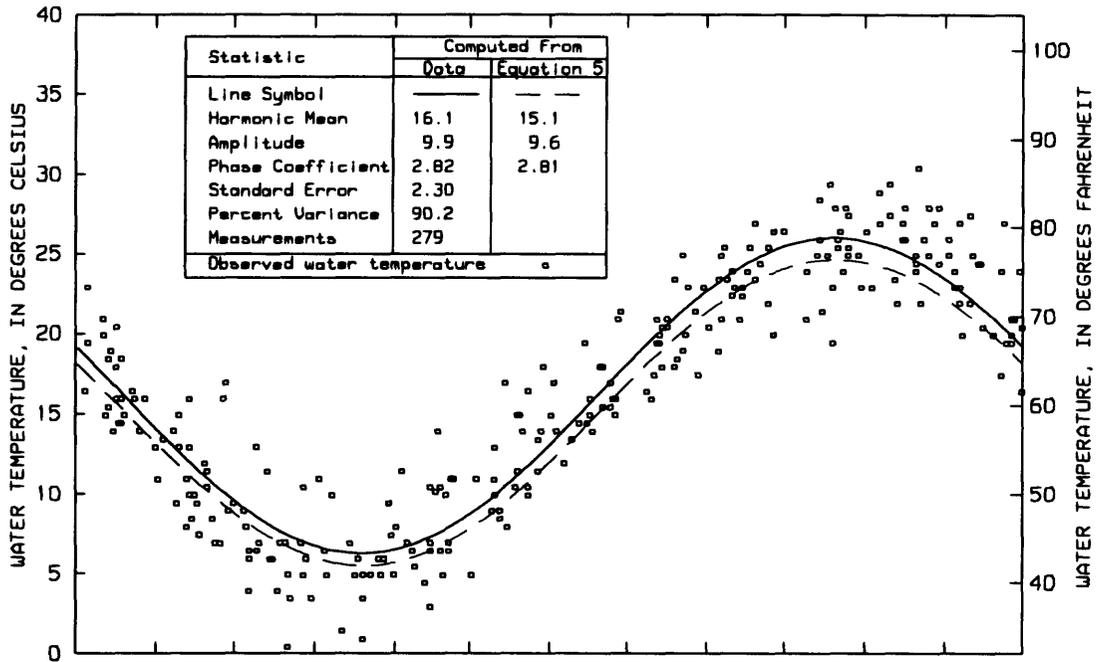
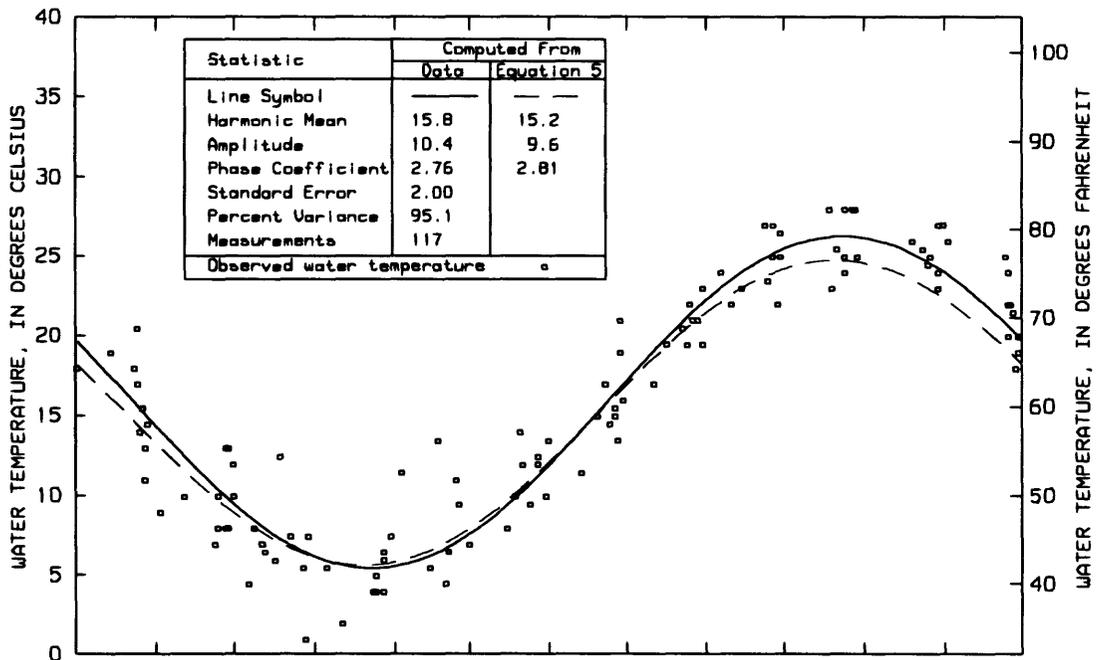


Figure 177. Holly Creek near Chatsworth, Georgia, Station 02385800, July 1960 to June 1983.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 23.0 | 17.0 | 13.0 | 11.0 | 14.0 | 18.0 | 21.5 | 25.0 | 27.0 | 29.5 | 30.5 | 27.5 |
| Minimum | 13.0 | 7.0 | 0.5 | 1.0 | 3.0 | 5.0 | 12.0 | 16.0 | 19.0 | 19.5 | 22.0 | 16.5 |

Figure 178. Conasauga River at Tilton, Georgia, Station 02387000, June 1957 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 20.5 | 13.0 | 12.5 | 7.5 | 13.5 | 14.0 | 21.0 | 23.0 | 27.0 | 28.0 | 27.0 | 26.0 |
| Minimum | 11.0 | 7.0 | 1.0 | 2.0 | 4.5 | 8.0 | 11.5 | 17.0 | 22.0 | 23.0 | 23.0 | 18.0 |

Figure 179. Conasauga River near Resaca, Georgia, Station 02387050, August 1974 to December 1984.

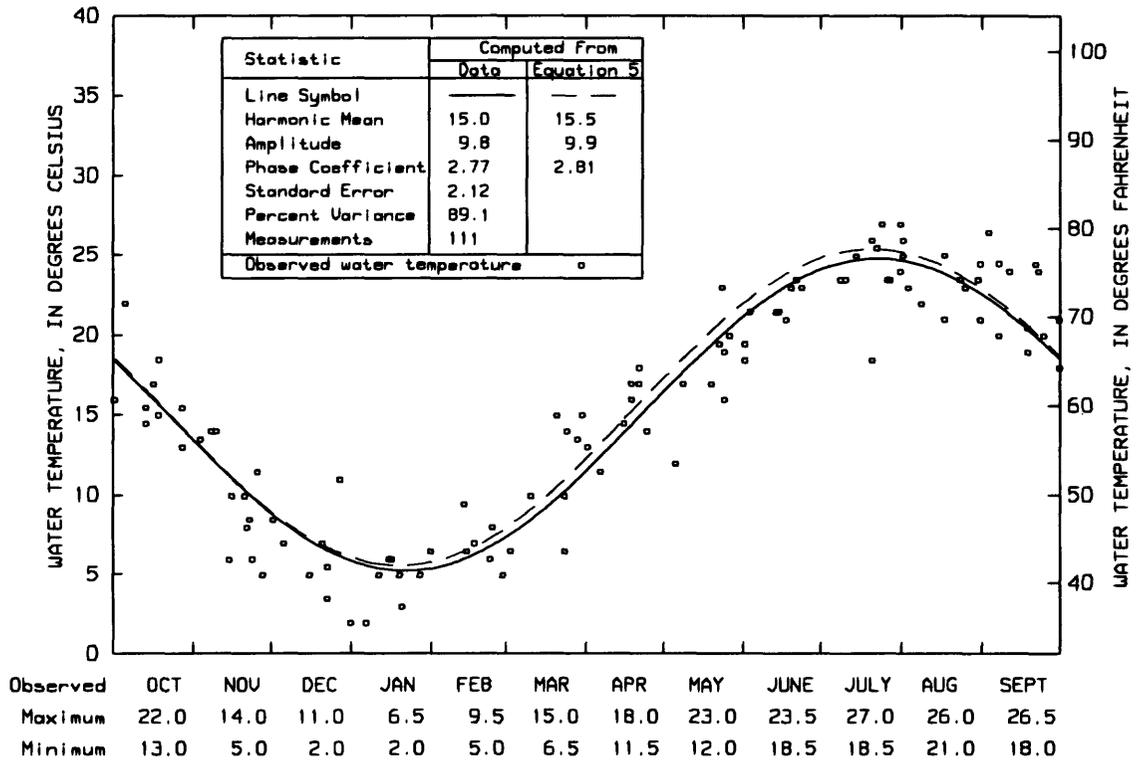


Figure 180. Dostanaula River at Resaca, Georgia, Station 02387500, September 1957 to December 1972.

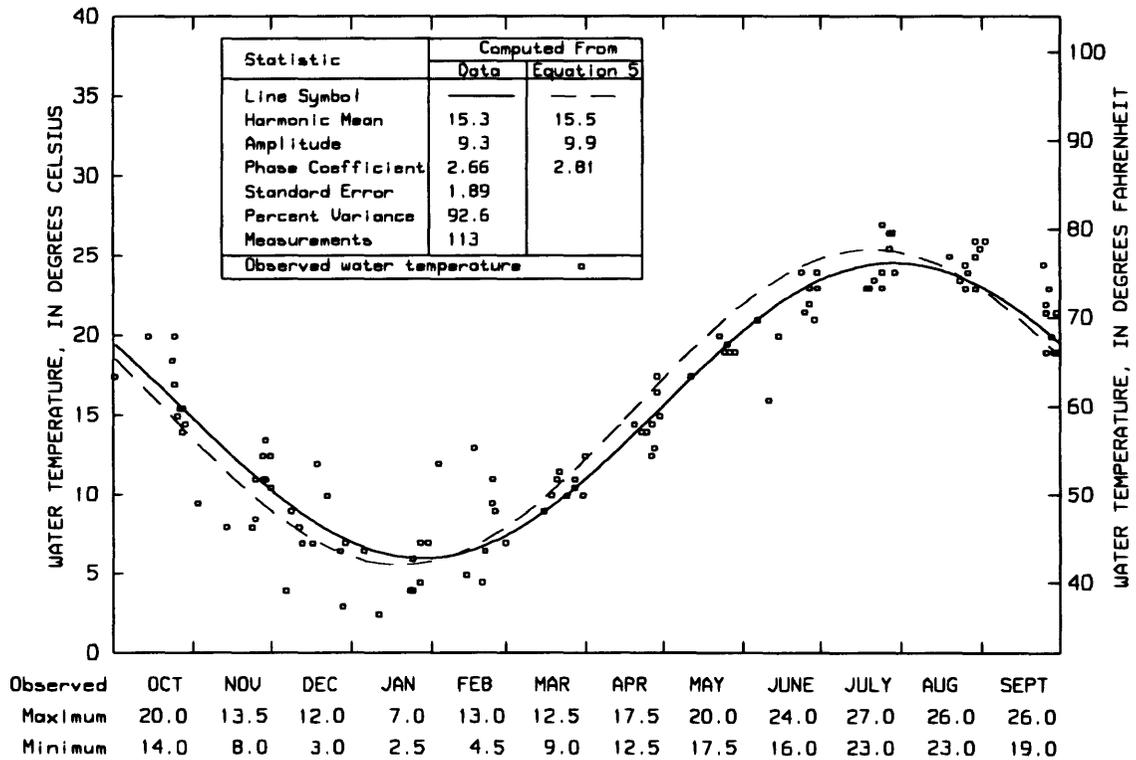
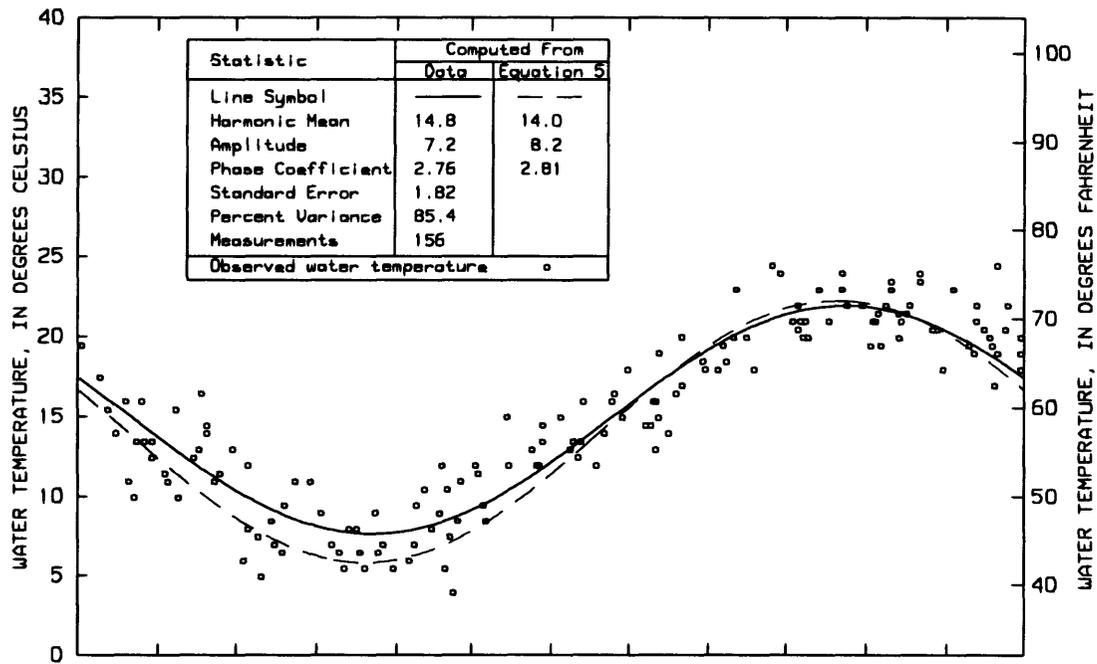
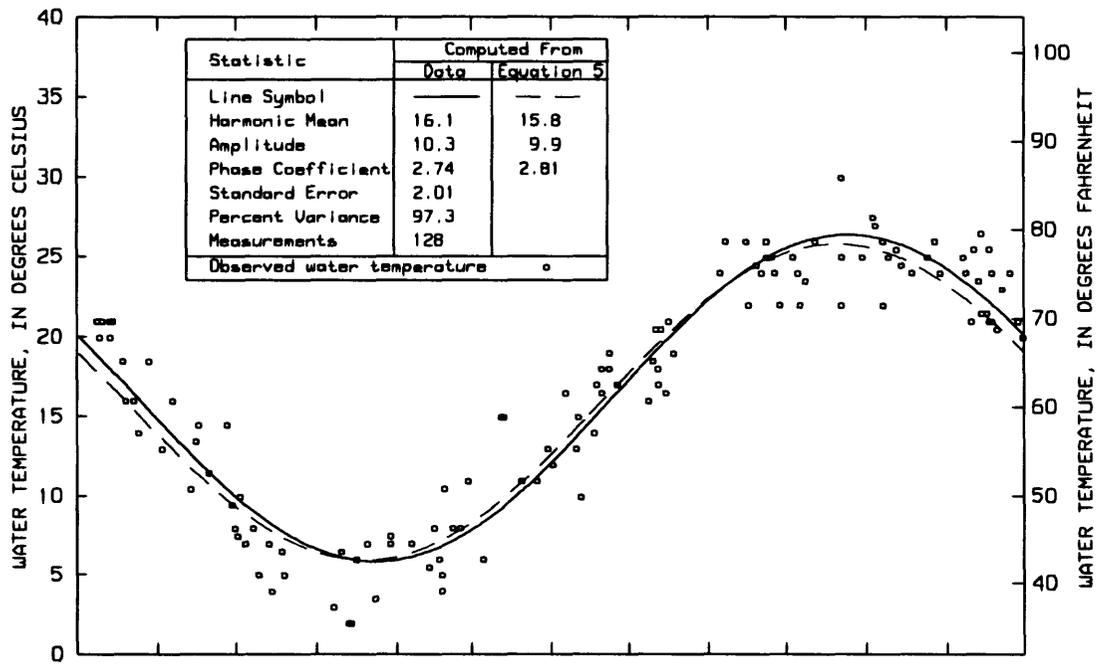


Figure 181. Dostanaula River at Interstate Highway 75 at Resaca, Georgia, Station 02387502, August 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 19.5 | 16.5 | 12.0 | 9.0 | 12.0 | 15.0 | 18.0 | 20.0 | 24.5 | 24.0 | 24.0 | 24.5 |
| Minimum | 10.0 | 10.0 | 5.0 | 5.5 | 4.0 | 8.5 | 12.0 | 13.0 | 18.0 | 20.0 | 18.0 | 17.0 |

Figure 182. West Armuchee Creek near Subligna, Georgia, Station 02388000, May 1960 to April 1982.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 21.0 | 16.0 | 10.0 | 7.5 | 11.0 | 15.0 | 19.0 | 21.0 | 26.0 | 30.0 | 27.5 | 26.5 |
| Minimum | 14.0 | 8.0 | 4.0 | 2.0 | 4.0 | 6.0 | 10.0 | 16.0 | 22.0 | 22.0 | 22.0 | 20.0 |

Figure 183. Oostanaula River at Rome, Georgia, Station 02388500, September 1957 to December 1973.

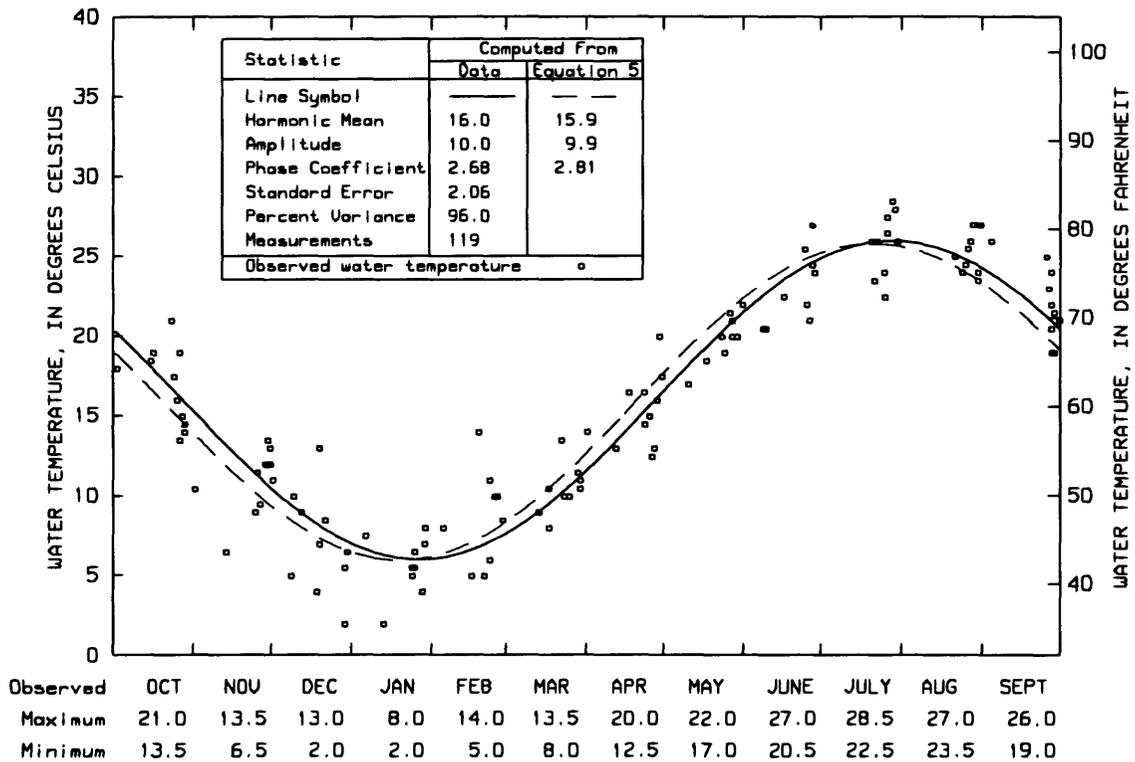


Figure 184. Dostanaula River (Rome Intake) at Rome, Georgia, Station 02388520, August 1974 to December 1984.

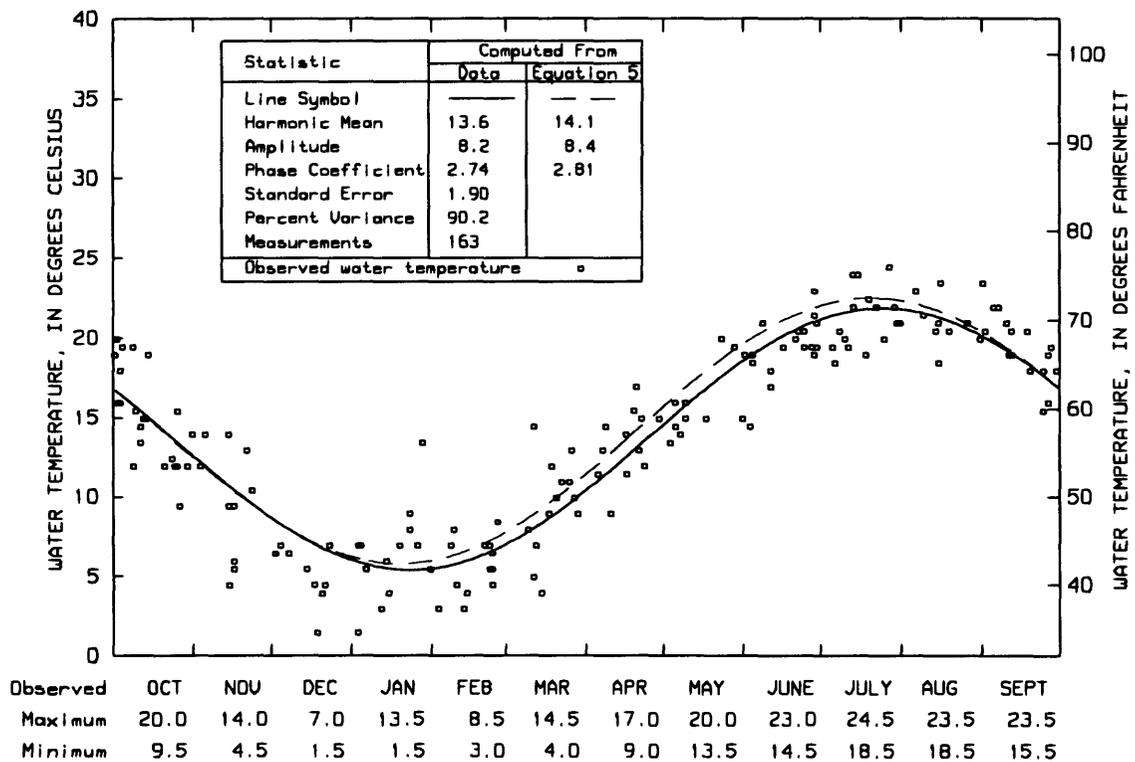
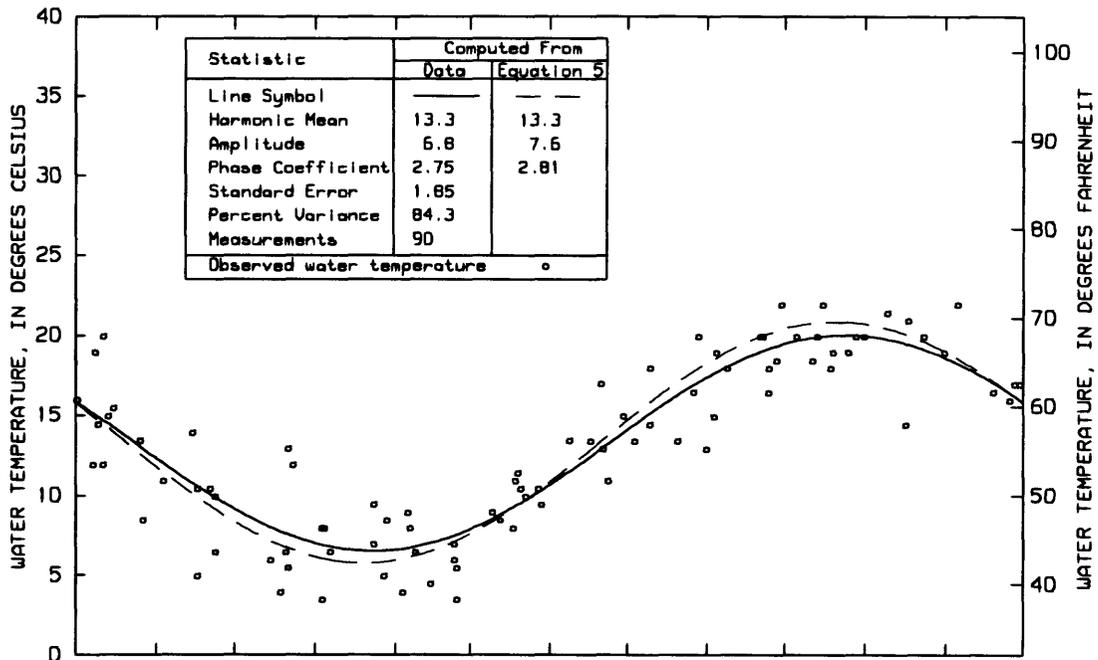
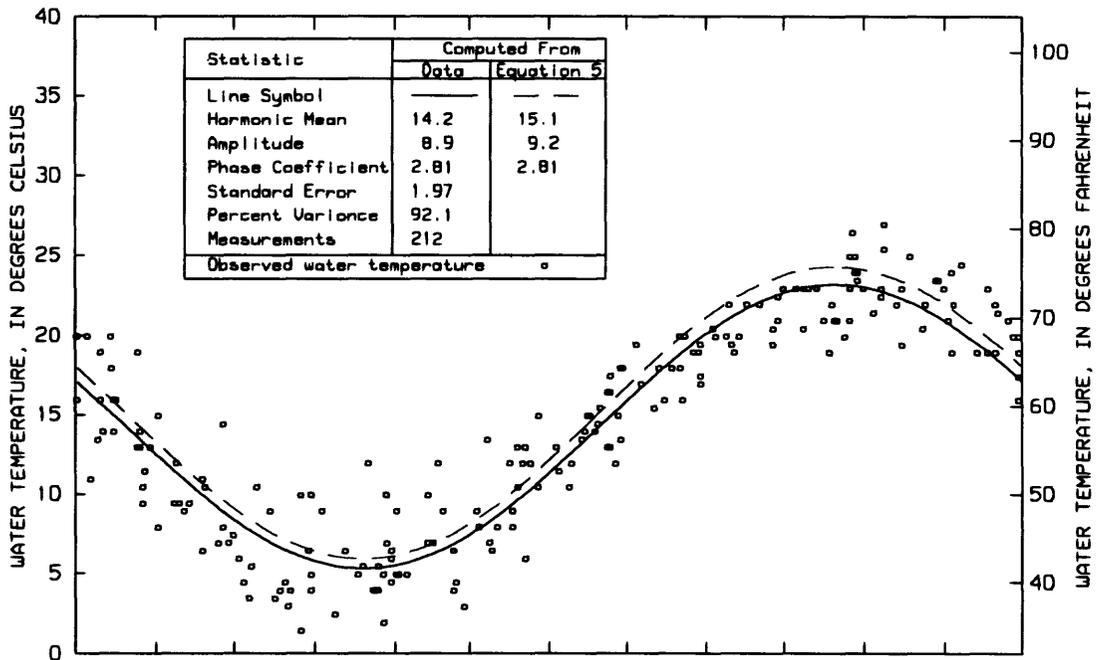


Figure 185. Etowah River near Dawsonville, Georgia, Station 02389000, September 1956 to August 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| Maximum | 20.0 | 14.0 | 13.0 | 9.5 | 9.0 | 11.5 | 17.0 | 20.0 | 22.0 | 22.0 | 21.5 | 22.0 |
| Minimum | 8.5 | 5.0 | 4.0 | 3.5 | 3.5 | 8.0 | 11.0 | 13.0 | 15.0 | 18.0 | 14.5 | 16.0 |

Figure 186. Shoal Creek near Dawsonville, Georgia, Station 02389300, June 1958 to June 1974.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Maximum | 20.0 | 15.0 | 10.5 | 12.0 | 12.0 | 15.0 | 18.0 | 20.0 | 23.0 | 26.5 | 27.0 | 24.5 |
| Minimum | 9.5 | 6.5 | 1.5 | 2.0 | 3.0 | 6.0 | 10.5 | 15.5 | 19.0 | 19.0 | 19.5 | 16.0 |

Figure 187. Etowah River at Canton, Georgia, Station 02392000, June 1957 to October 1984.

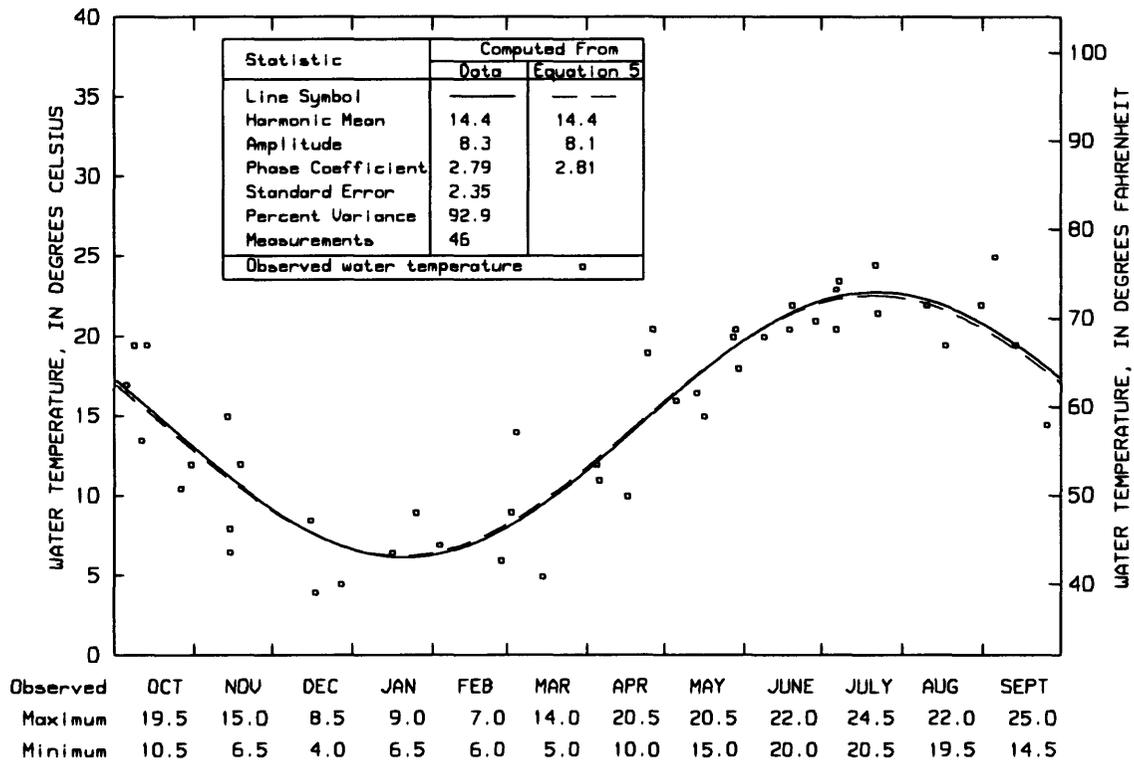


Figure 188. Little River near Roswell, Georgia, Station 02392500, August 1959 to September 1964.

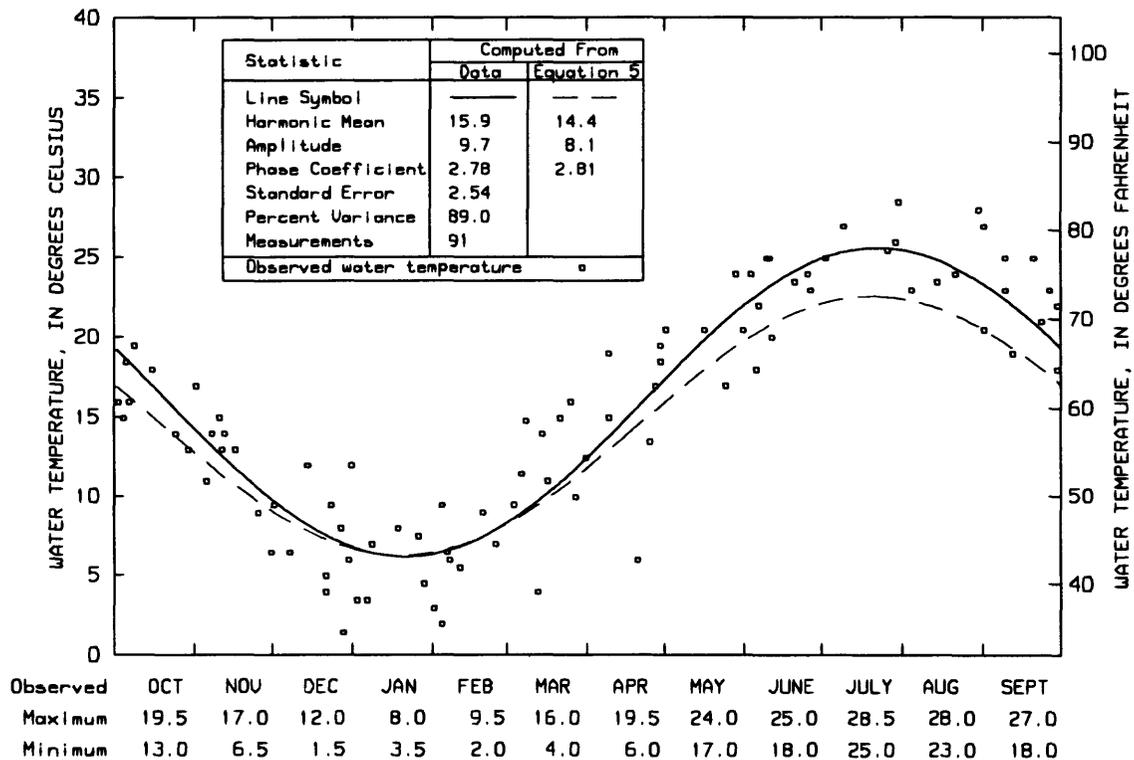


Figure 189. Little River near Roswell, Georgia, Station 02392500, October 1964 to June 1975.

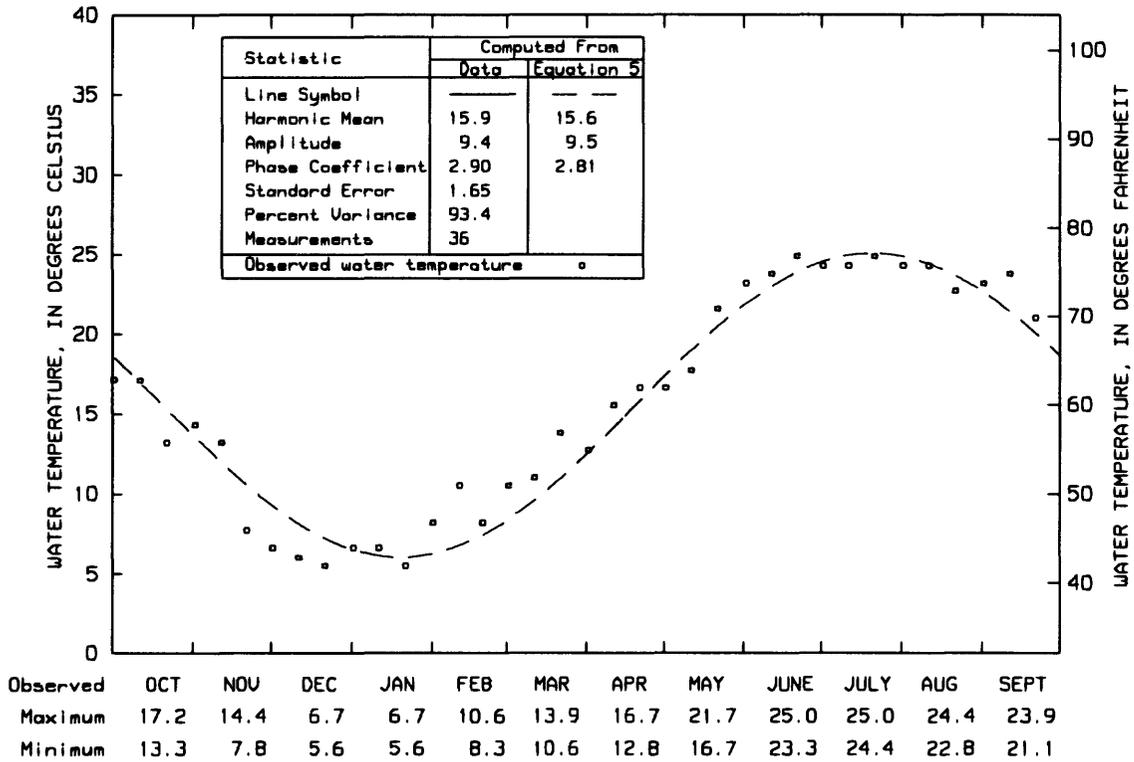


Figure 190. Etowah River at Allatoona Dam above Cartersville, Georgia, Station 02394000, October 1938 to September 1939.

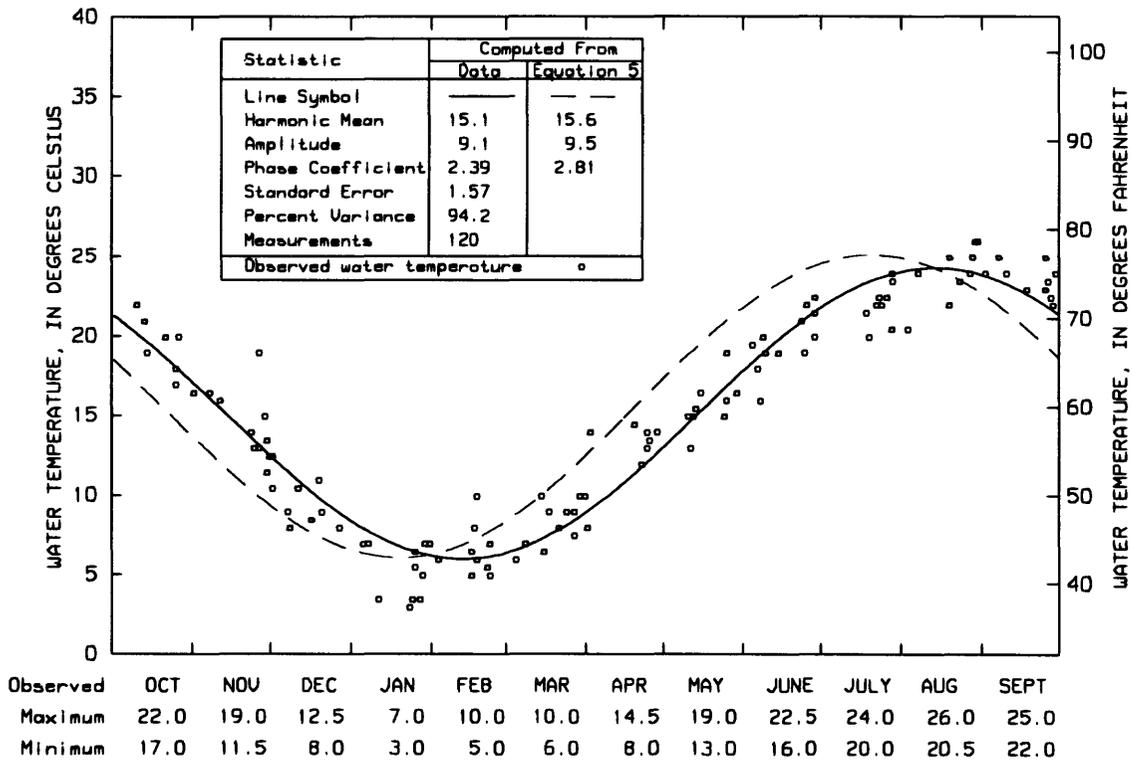


Figure 191. Etowah River at Allatoona Dam above Cartersville, Georgia, Station 02394000, January 1958 to November 1984.

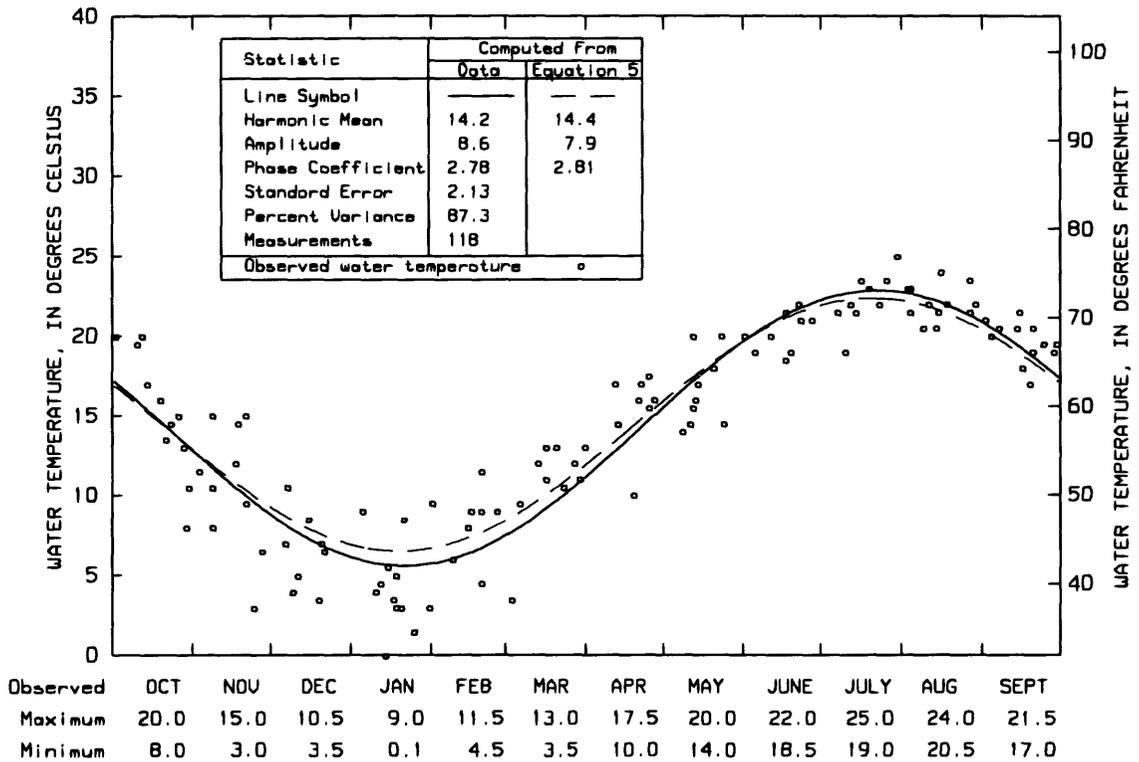


Figure 192. Hills Creek near Taylorsville, Georgia, Station 02394950, June 1959 to July 1974.

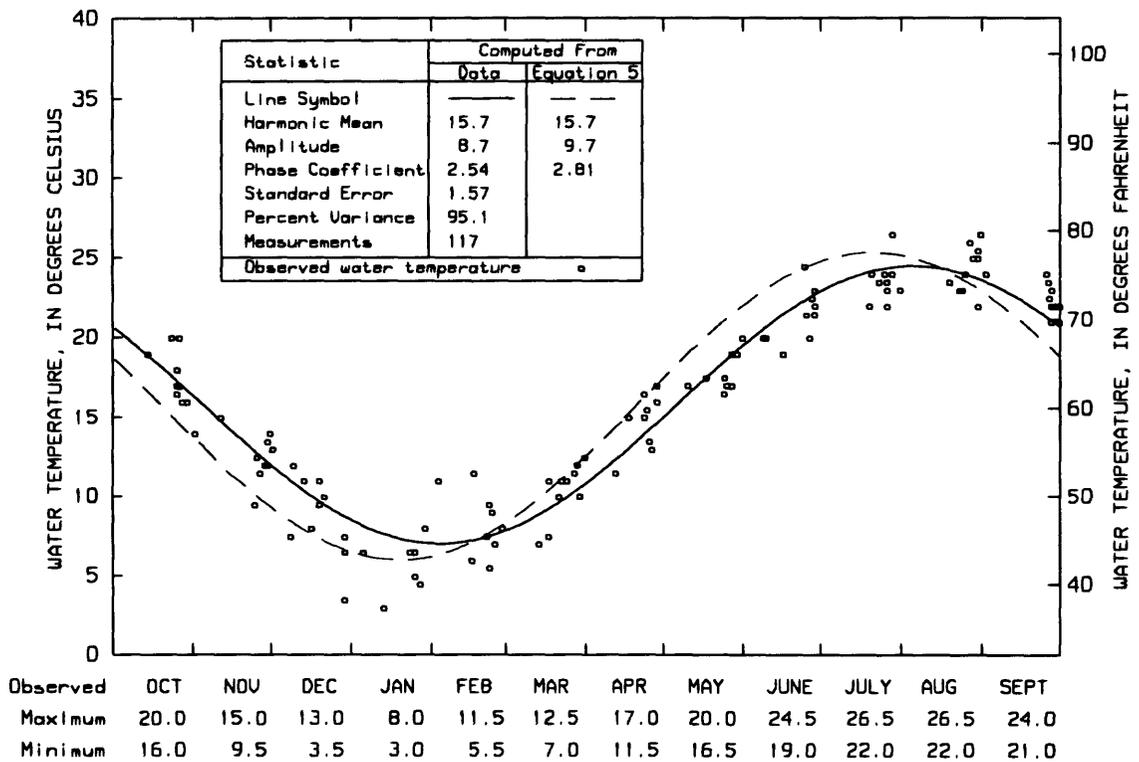
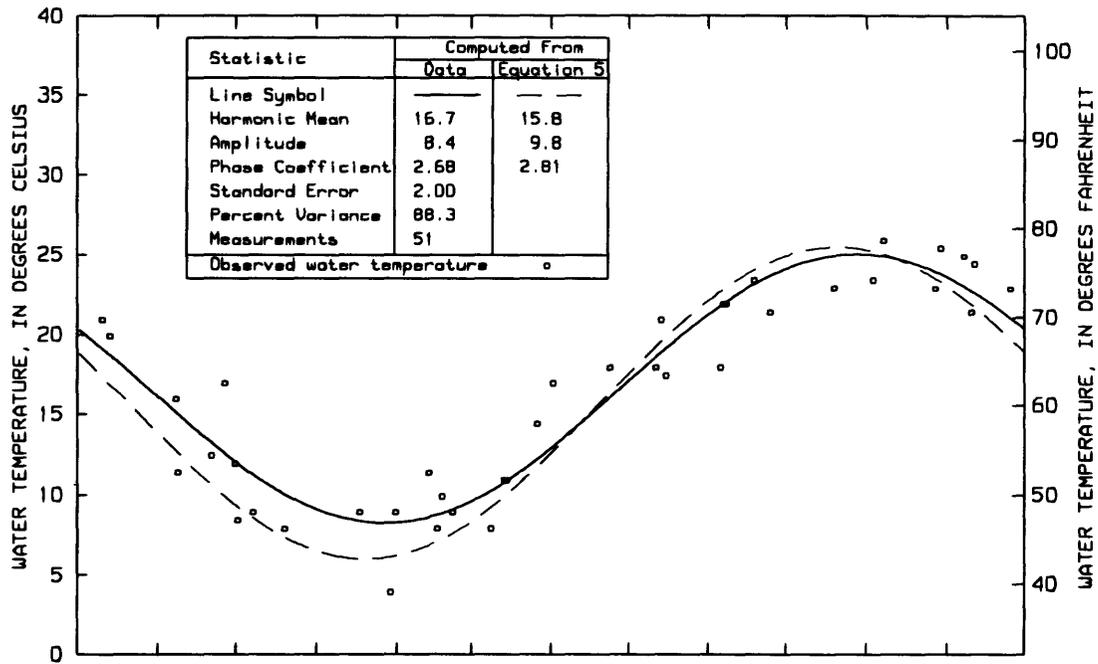
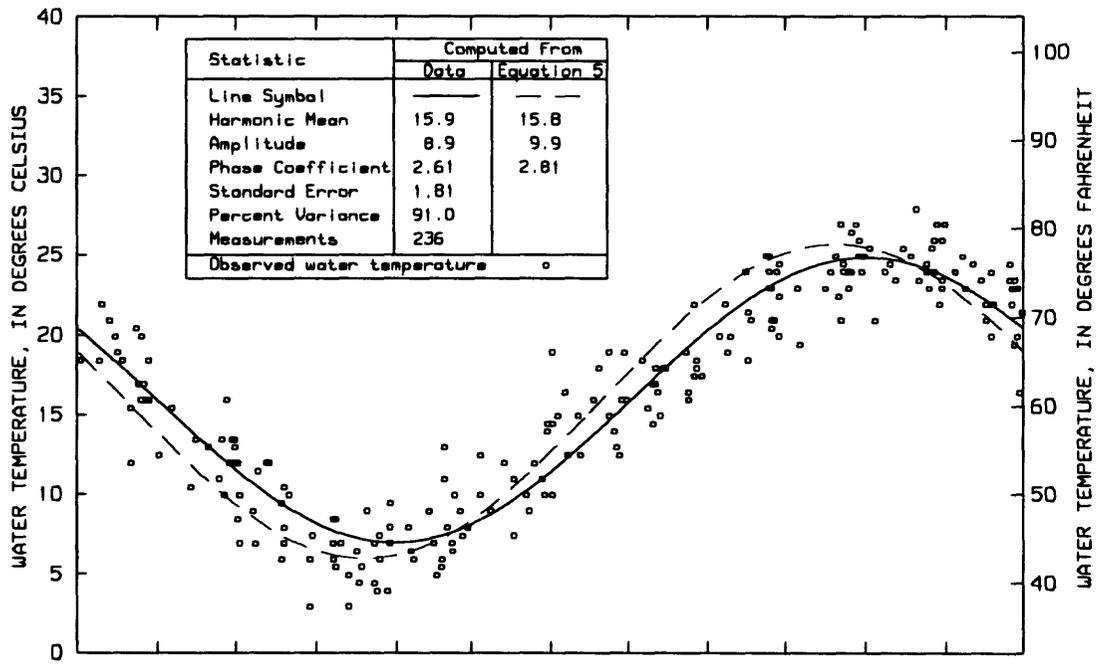


Figure 193. Etowah River above Kingston, Georgia, Station 02394980, August 1974 to December 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|-----|-----|------|------|------|------|------|------|------|------|
| Maximum | 21.0 | 17.0 | 9.0 | 9.0 | 11.5 | 14.5 | 18.0 | 21.0 | 23.5 | 23.0 | 26.0 | 25.0 |
| Minimum | 20.0 | 11.5 | 8.0 | 4.0 | 8.0 | 8.0 | 17.0 | 17.5 | 18.0 | 23.0 | 23.0 | 21.5 |

Figure 194. Etowah River near Kingston, Georgia, Station 02395000, October 1969 to September 1984.



| Observed | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT |
|----------|------|------|------|-----|------|------|------|------|------|------|------|------|
| Maximum | 22.0 | 16.0 | 12.0 | 9.5 | 13.0 | 14.5 | 19.0 | 22.0 | 25.0 | 27.0 | 28.0 | 25.0 |
| Minimum | 12.0 | 10.0 | 3.0 | 3.0 | 5.0 | 7.5 | 10.0 | 14.5 | 18.5 | 19.5 | 21.0 | 16.5 |

Figure 195. Etowah River at Rome, Georgia, Station 02396000, September 1957 to December 1984.

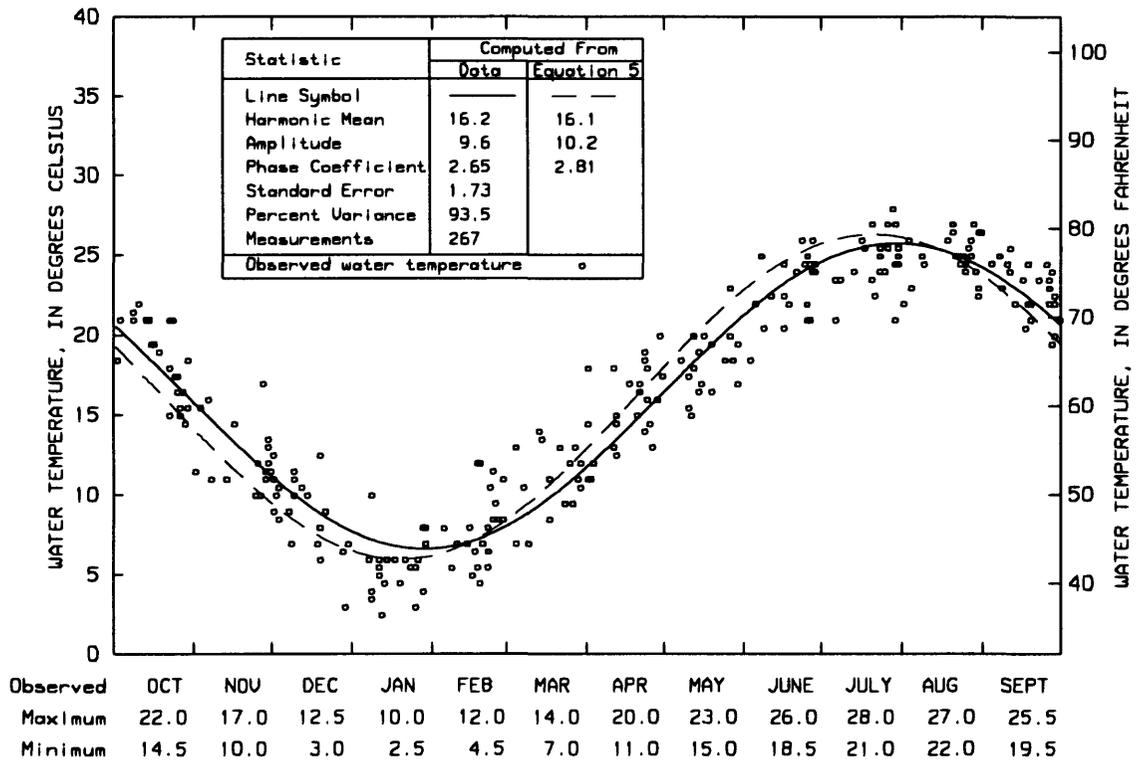


Figure 196. Coosa River near Rome, Georgia,
Station 02397000, July 1957 to December 1984.

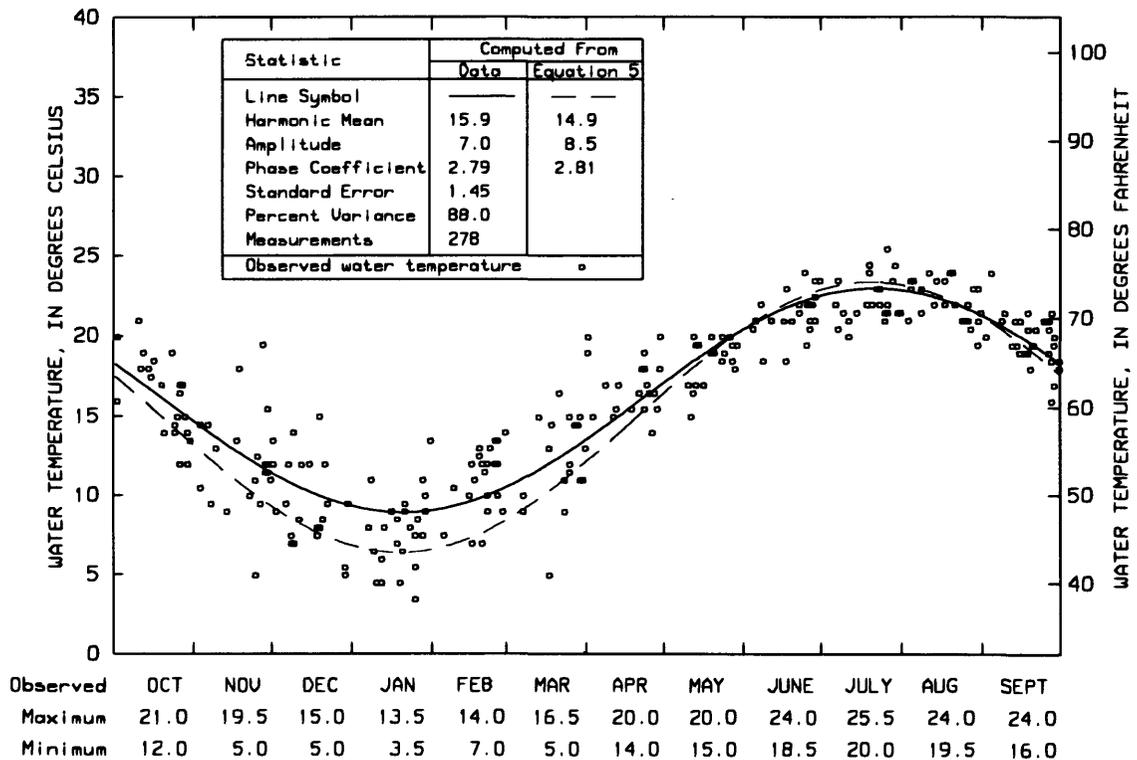


Figure 197. Cedar Creek near Cedartown, Georgia,
Station 02397500, June 1957 to December 1984.

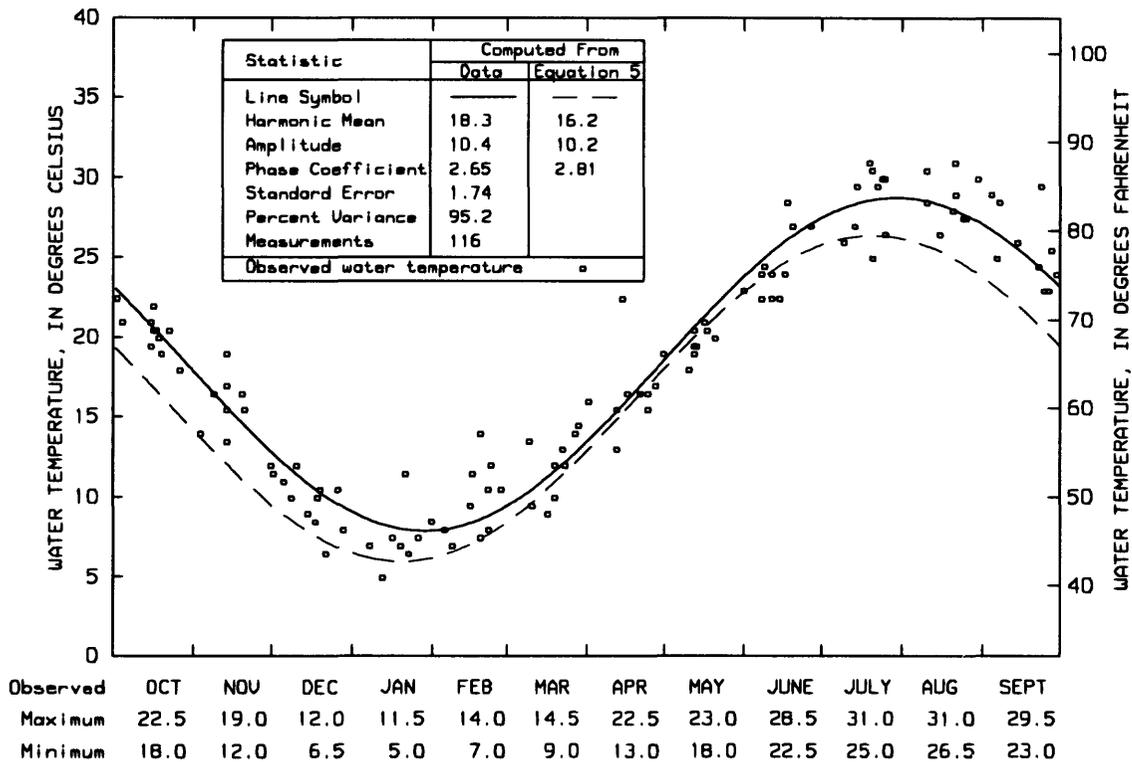


Figure 198. Coasa River near Coasa, Georgia, Station 02397530, August 1974 to December 1984.

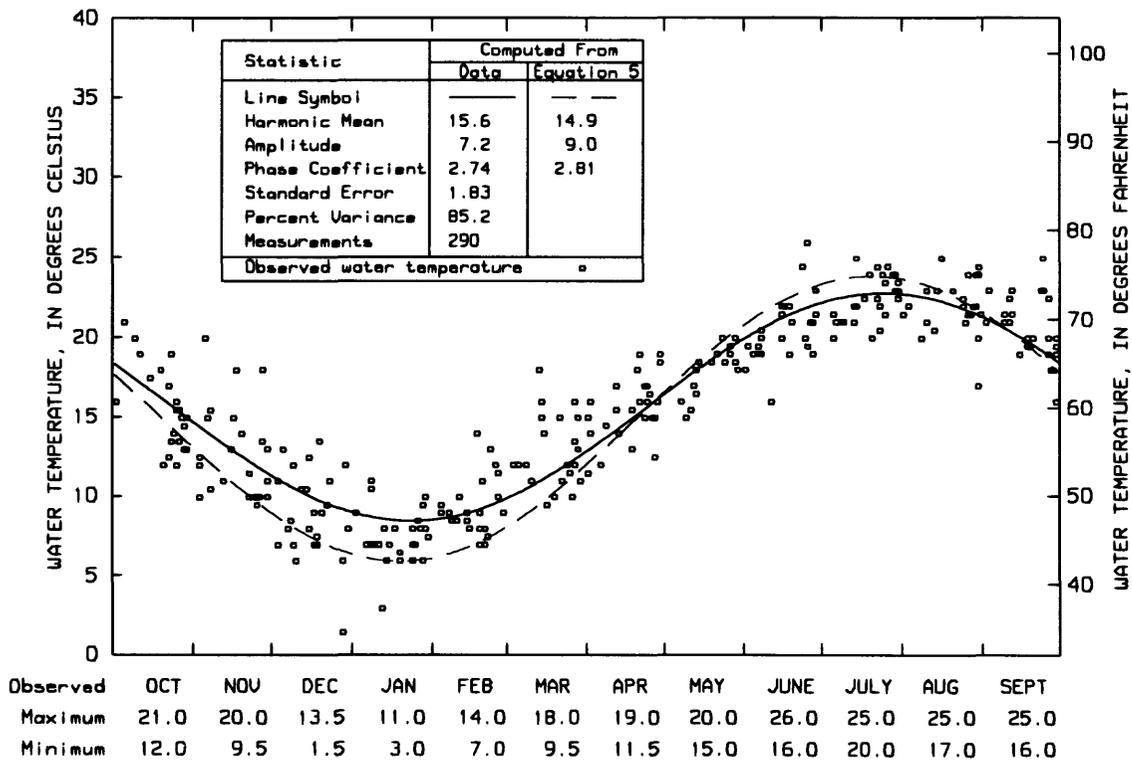


Figure 199. Chattooga River at Summerville, Georgia, Station 02398000, July 1957 to December 1984.

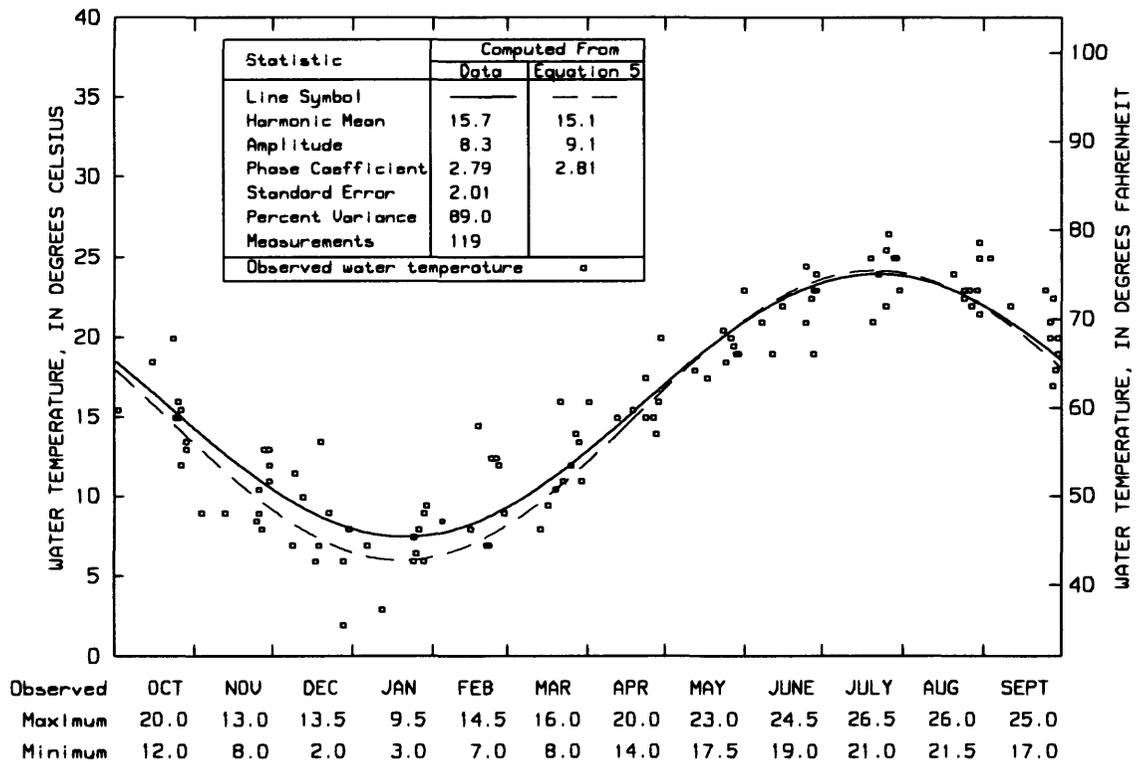


Figure 200. Chattooga River at Chattoogaville, Georgia, Station 02398037, August 1974 to December 1984.

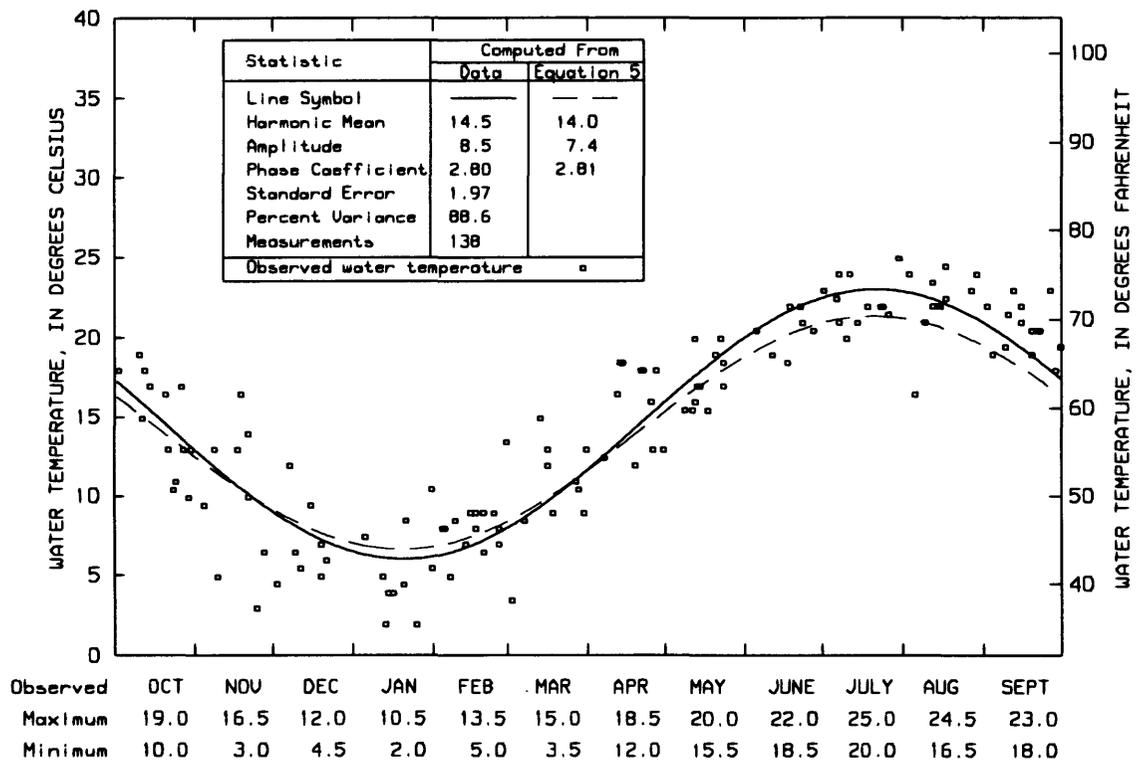


Figure 201. Little River near Buchanan, Georgia, Station 02411800, May 1959 to August 1975.

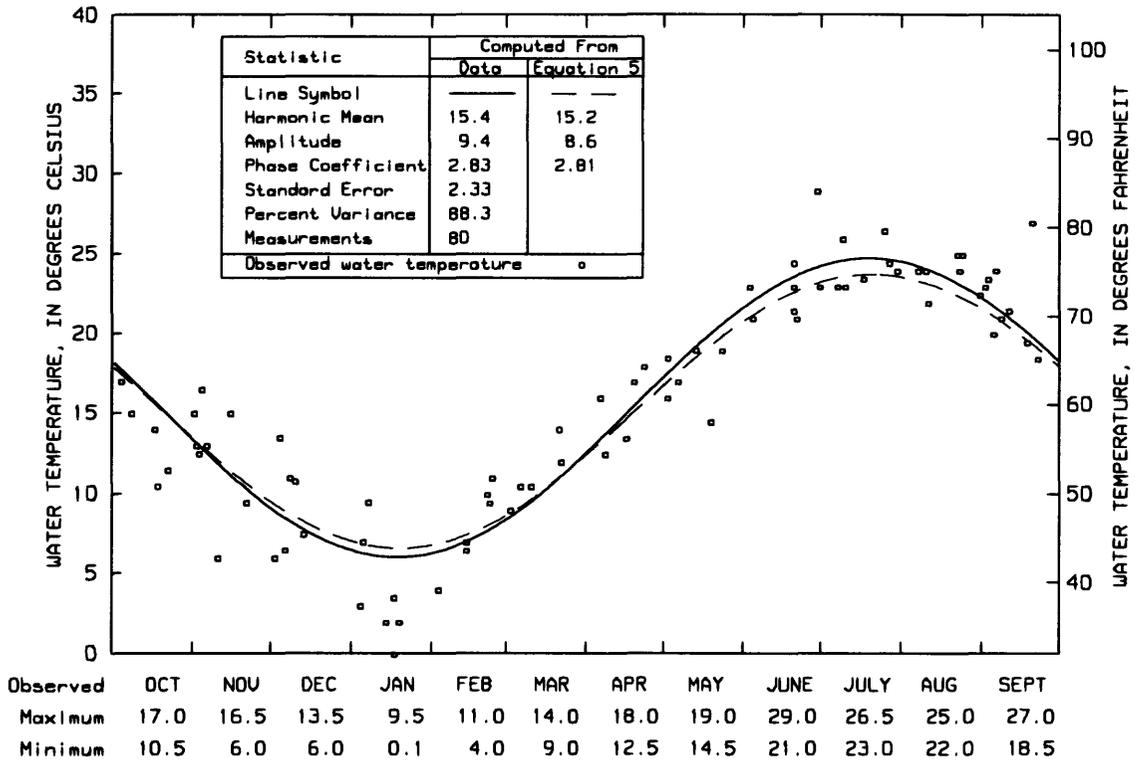


Figure 202. Tallapoosa River below Tallapoosa, Georgia, Station 02411930, July 1974 to November 1984.

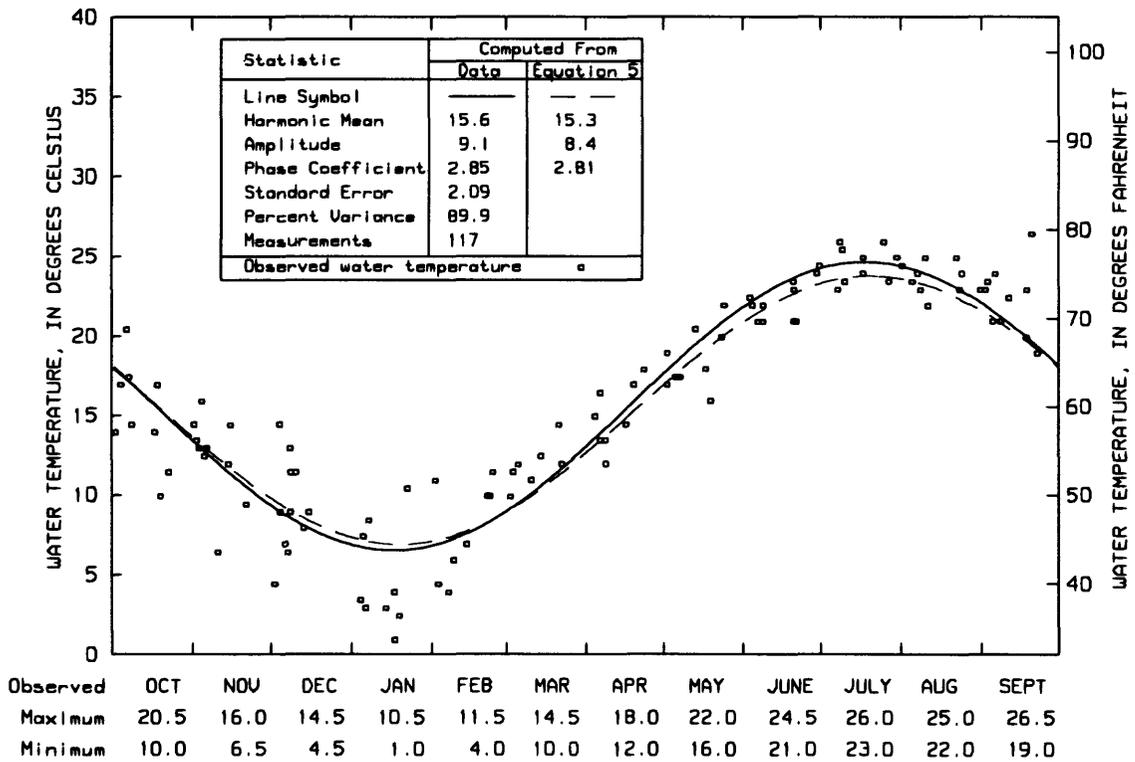


Figure 203. Little Tallapoosa River below Bowdon, Georgia, Station 02413210, July 1974 to December 1984.

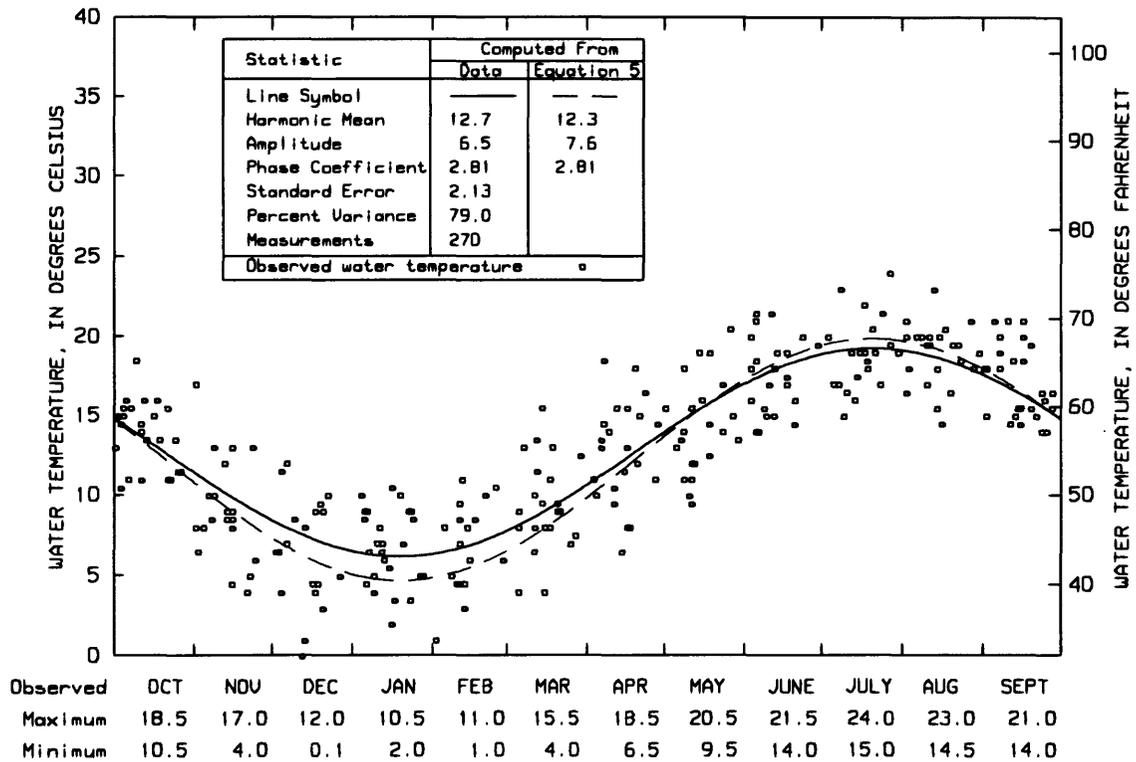


Figure 204. Hiwassee River at Presley, Georgia, Station 03545000, August 1951 to June 1982.

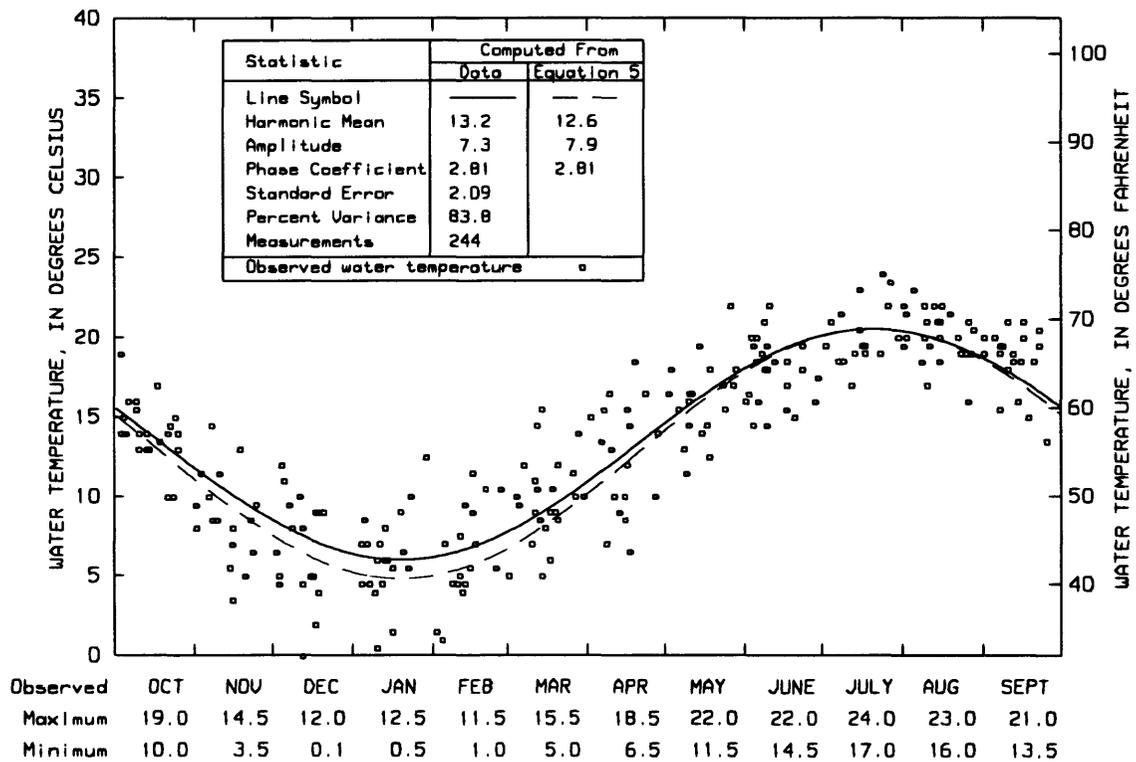


Figure 205. Nottely River near Blairsville, Georgia, Station 03550500, August 1951 to June 1982.

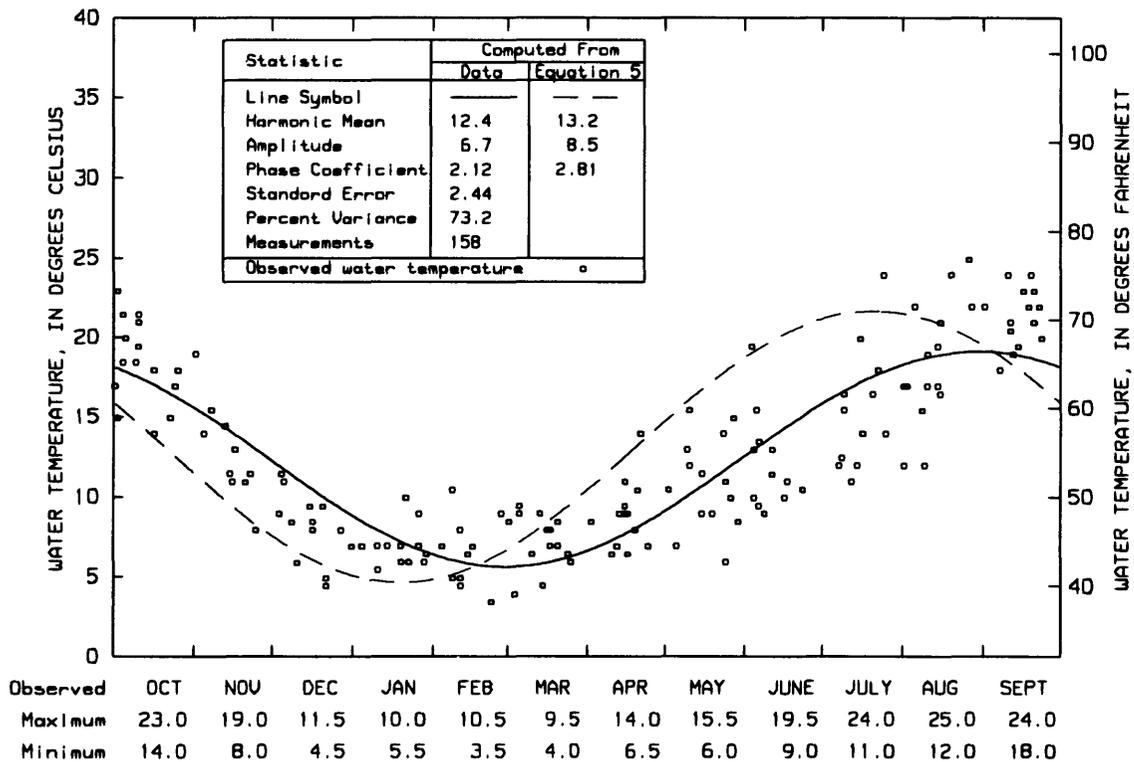


Figure 206. Nottely River at Nottely Dam near Ivylog, Georgia, Station 03553500, September 1951 to July 1974.

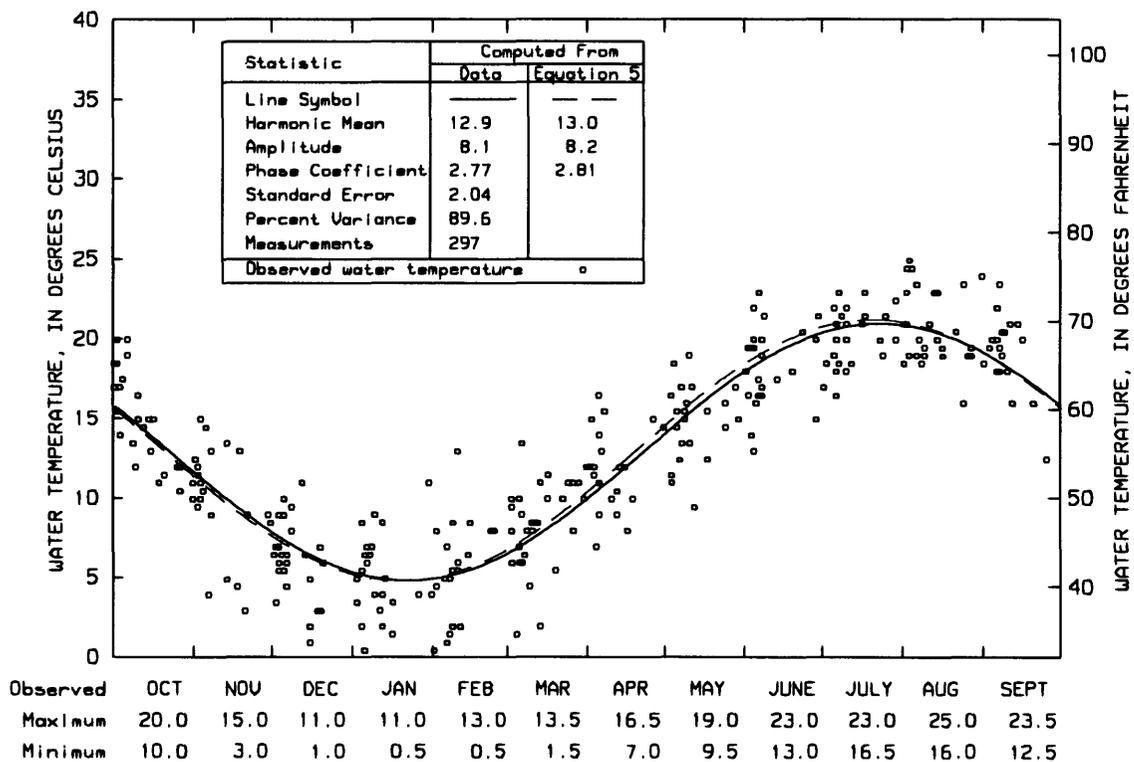


Figure 207. Toccoa River near Dial, Georgia, Station 03558000, January 1951 to June 1984.

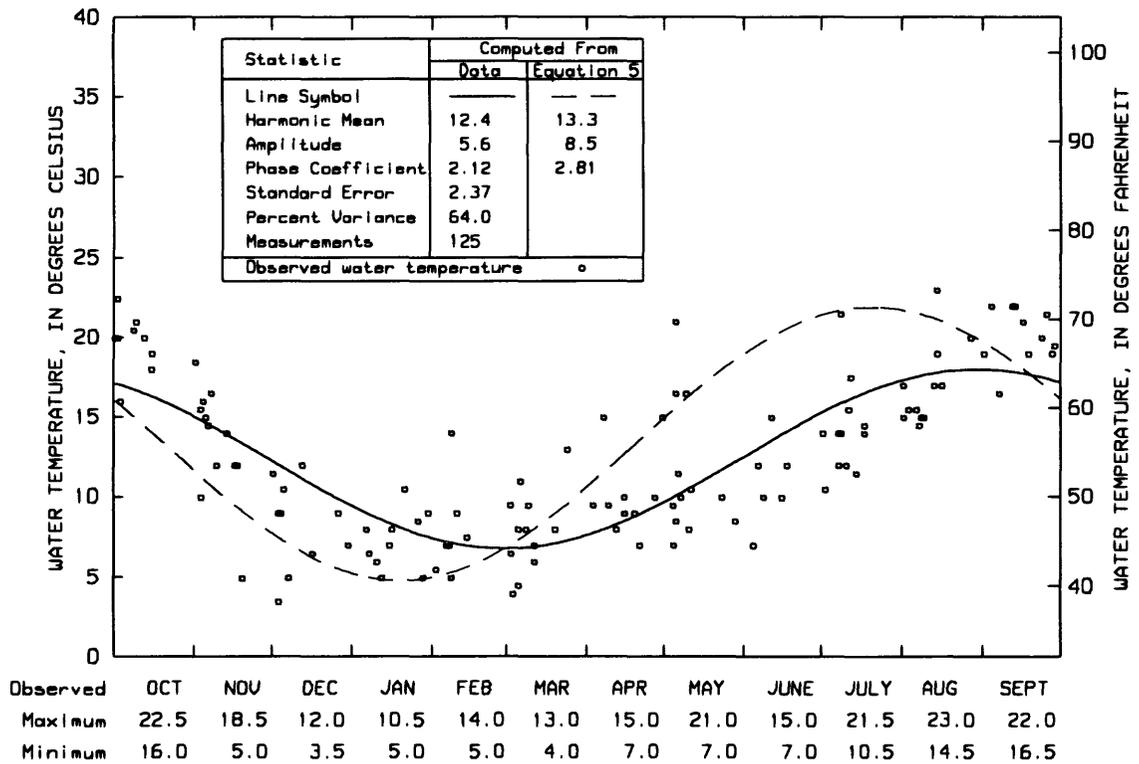


Figure 208. Toccoa River near Blue Ridge, Georgia, Station 03559000, January 1951 to July 1974.

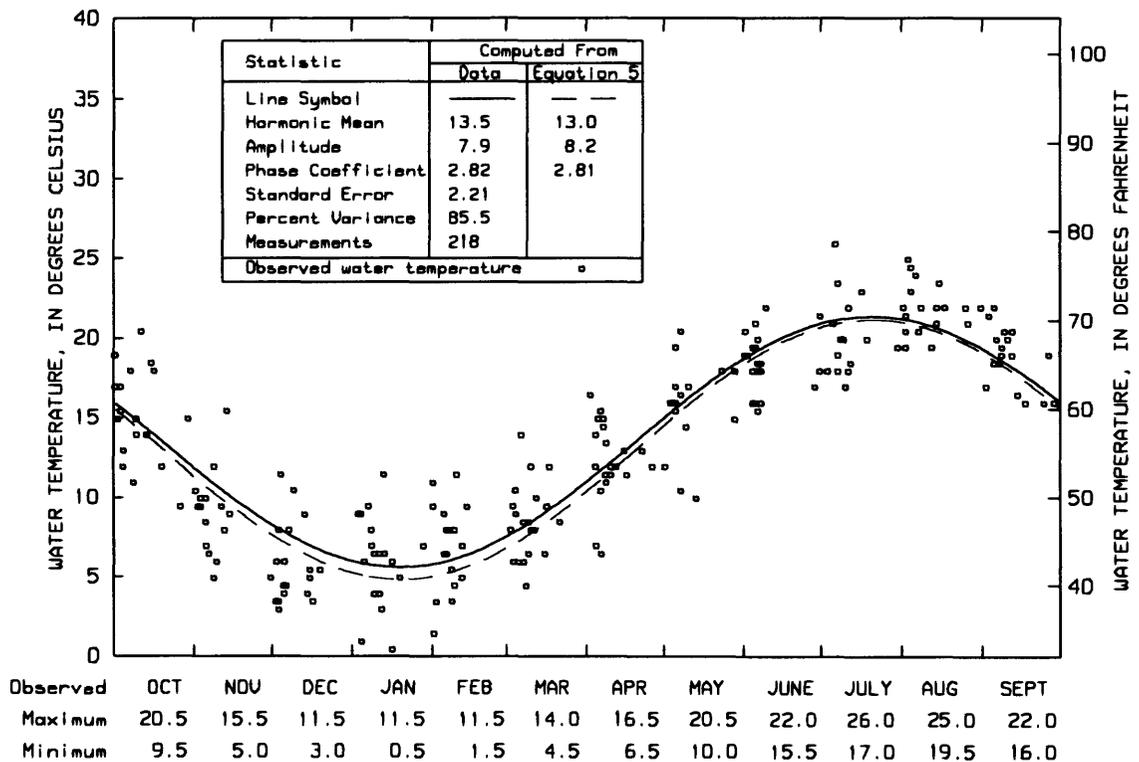


Figure 209. Fightingtown Creek at McCaysville, Georgia, Station 03560000, January 1951 to June 1974.

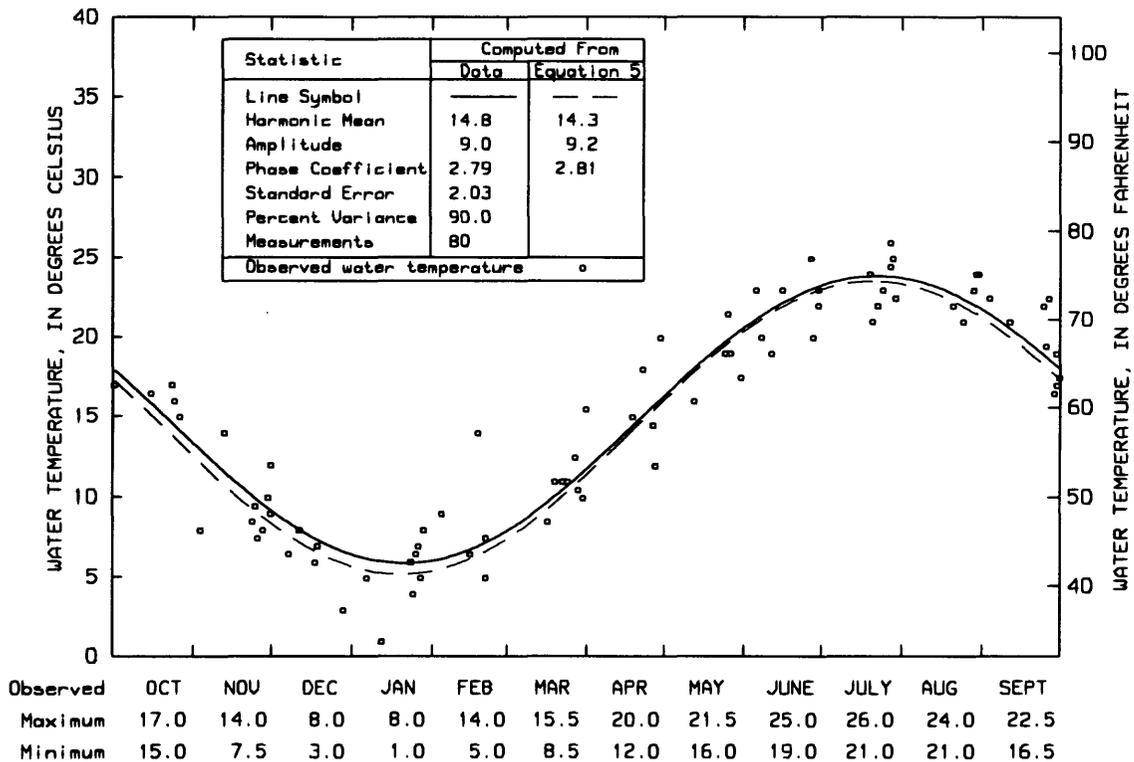


Figure 210. South Chickamauga Creek at Graysville, Georgia, Station 03566800, August 1974 to November 1984.

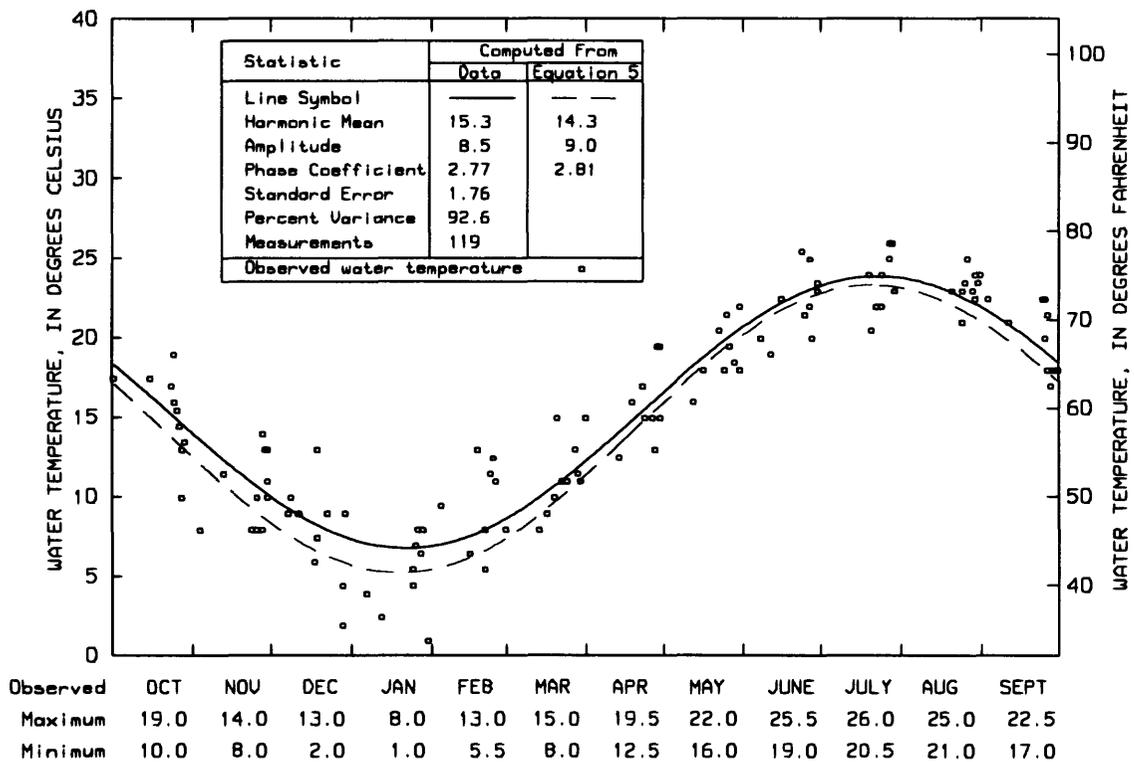


Figure 211. West Chickamauga Creek near Lakeview, Georgia, Station 03567340, August 1974 to December 1984.