Appendix B

This appendix contains plots of the ensemble mean of simulated level-1\(^1\) annual mean streamflows at 12 locations and water levels at five reservoirs as a function of time. Separate narrow lines are plotted for each simulation based on the indicated Coupled Model Intercomparison Project - Phase 3 (CMIP3) data set and greenhouse-gas emission scenario combinations, as described in the following tables. Two wider lines are plotted representing the medians of simulation results based on the A2 and A1b emission scenarios. A dashed line is also drawn representing the mean annual streamflow or water level computed from simulation results for a historical reference period extending from 1991 to 2010.

The following tables list the identifiers or designations shown on the plots that are associated with the CMIP3 data sets, emission scenarios, and sites.

<table>
<thead>
<tr>
<th>CMIP3 Identifier</th>
<th>Originating group(s)</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCCR-BCM2</td>
<td>Bjerknes Centre for Climate Research</td>
<td>Norway</td>
</tr>
<tr>
<td>GISS-ER</td>
<td>NASA / Goddard Institute for Space Studies</td>
<td>USA</td>
</tr>
<tr>
<td>MIROC3.2</td>
<td>Center for Climate System Research (The University of Tokyo) National Institute for Environmental Studies and Frontier Research Center for Global Change</td>
<td>Japan</td>
</tr>
<tr>
<td>NCAR-PCM</td>
<td>National Center for Atmospheric Research</td>
<td>USA</td>
</tr>
</tbody>
</table>

\(^1\) Level 1 simulations account only for anticipated 21st-century changes in climate and operations of three City of Columbus upground reservoirs located in northwest Delaware County, Ohio.
### Special Report on Emissions Scenario Designation

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
</table>
| A2          | The A2 scenario represents a divided world that is characterized by:  
• A world of independently operating, self-reliant nations.  
• Continuously increasing population.  
• Regionally oriented economic development. |
| A1b         | The A1b scenario represents a more integrated world that is characterized by:  
• Rapid economic growth.  
• A global population that reaches almost 9 billion in 2050 and then gradually declines.  
• The quick spread of new and efficient technologies.  
• A convergent world - income and way of life converge between regions. Extensive social and cultural interactions worldwide.  
• A balanced emphasis on all energy sources. |

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Description</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFRI</td>
<td>Alum Creek at Africa, OH</td>
<td>40° 10' 56&quot;</td>
<td>82° 57' 41&quot;</td>
</tr>
<tr>
<td>ALUM</td>
<td>Alum Creek Reservoir, OH</td>
<td>40° 11' 11&quot;</td>
<td>82° 57' 59&quot;</td>
</tr>
<tr>
<td>CBUS</td>
<td>Scioto River at Columbus, OH</td>
<td>39° 54' 34&quot;</td>
<td>83° 00' 32&quot;</td>
</tr>
<tr>
<td>CCOL</td>
<td>Big Walnut Creek at Central College, OH</td>
<td>40° 06' 12&quot;</td>
<td>82° 53' 02&quot;</td>
</tr>
<tr>
<td>CIRC</td>
<td>Scioto River at Circleville, OH</td>
<td>39° 36' 05&quot;</td>
<td>82° 57' 18&quot;</td>
</tr>
<tr>
<td>CLAR</td>
<td>Olentangy River at Claridon, OH</td>
<td>40° 34' 59&quot;</td>
<td>82° 59' 22&quot;</td>
</tr>
<tr>
<td>DELA</td>
<td>Olentangy River near Delaware, OH</td>
<td>40° 21' 18&quot;</td>
<td>83° 04' 05&quot;</td>
</tr>
<tr>
<td>DELL</td>
<td>Delaware Lake, OH</td>
<td>40° 21' 31&quot;</td>
<td>83° 04' 09&quot;</td>
</tr>
<tr>
<td>GRIG</td>
<td>Griggs Reservoir, OH</td>
<td>40° 00' 58&quot;</td>
<td>83° 05' 38&quot;</td>
</tr>
<tr>
<td>HOOV</td>
<td>Hoover Reservoir, OH</td>
<td>40° 06' 30&quot;</td>
<td>82° 52' 53&quot;</td>
</tr>
<tr>
<td>LSCI</td>
<td>Little Scioto River at mouth, OH</td>
<td>40° 31' 21&quot;</td>
<td>83° 12' 20&quot;</td>
</tr>
<tr>
<td>MILL</td>
<td>Mill Creek near Bellepoint, OH</td>
<td>40° 14' 55&quot;</td>
<td>83° 10' 26&quot;</td>
</tr>
<tr>
<td>OLEN</td>
<td>Olentangy River at mouth, OH</td>
<td>39° 57' 54&quot;</td>
<td>83° 01' 01&quot;</td>
</tr>
<tr>
<td>OLOC</td>
<td>Olentangy River near Olentangy Caverns, OH</td>
<td>40° 11' 55&quot;</td>
<td>83° 03' 09&quot;</td>
</tr>
<tr>
<td>OSHY</td>
<td>O'Shaughnessy Reservoir, OH</td>
<td>40° 09' 14&quot;</td>
<td>83° 07' 32&quot;</td>
</tr>
<tr>
<td>PROS</td>
<td>Scioto River near Prospect, OH</td>
<td>40° 25' 10&quot;</td>
<td>83° 11' 50&quot;</td>
</tr>
<tr>
<td>SROR</td>
<td>Scioto River at confluence with Olentangy River</td>
<td>39° 57' 54&quot;</td>
<td>83° 01' 01&quot;</td>
</tr>
</tbody>
</table>
AFRI

Ensemble mean of simulated annual mean streamflows, in cubic feet per second

YEAR

EXPLANATION

- **BCCR-BCM2 A1b**
- **BCCR-BCM2 A2**
- **GISS-ER A1b**
- **GISS-ER A2**
- **MIROC3.2 A1b**
- **MIROC3.2 A2**
- **NCAR-PCM A1b**
- **NCAR-PCM A2**
- **Median A1b**
- **Median A2**
- Reference period
Ensemble mean of simulated annual mean water levels, in feet above NGVD 1929

Year
Ensemble mean of simulated annual mean streamflows, in cubic feet per second.

Year

CBUS

EXPLANATION

BCCR−BCM2 A1b
BCCR−BCM2 A2
GISS−ER A1b
GISS−ER A2
MIROC3.2 A1b
MIROC3.2 A2
NCAR−PCM A1b
NCAR−PCM A2
Median A1b
Median A2
Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

Year

EXPLANATION

BCCR−BCM2 A1b
BCCR−BCM2 A2
GISS−ER A1b
GISS−ER A2
MIROC3.2 A1b
MIROC3.2 A2
NCAR−PCM A1b
NCAR−PCM A2
Median A1b
Median A2
Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

EXPLANATION

- BCCR-BCM2 A1b
- BCCR-BCM2 A2
- GISS-ER A1b
- GISS-ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR-PCM A1b
- NCAR-PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second.
Ensemble mean of simulated annual mean water levels, in feet above NGVD 1929

Year

DELL

EXPLANATION

- BCCR−BCM2 A1b
- BCCR−BCM2 A2
- GISS−ER A1b
- GISS−ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR−PCM A1b
- NCAR−PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second.
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

**EXPLANATION**

- BCCR-BCM2 A1b
- BCCR-BCM2 A2
- GISS-ER A1b
- GISS-ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR-PCM A1b
- NCAR-PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

- BCCR−BCM2 A1b
- BCCR−BCM2 A2
- GISS−ER A1b
- GISS−ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR−PCM A1b
- NCAR−PCM A2
- Median A1b
- Median A2

Reference period
Ensemble mean of simulated annual mean water levels, in feet above NGVD 1929
Ensemble mean of simulated annual mean water levels, in feet above NGVD 1929.
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

EXPLANATION

- BCCR-BCM2 A1b
- BCCR-BCM2 A2
- GISS-ER A1b
- GISS-ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR-PCM A1b
- NCAR-PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

EXPLANATION:
- BCCR–BCM2 A1b
- BCCR–BCM2 A2
- GISS–ER A1b
- GISS–ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR–PCM A1b
- NCAR–PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean streamflows, in cubic feet per second,

YEAR

REFERENCE PERIOD

EXPLANATION

- BCCR-BCM2 A1b
- BCCR-BCM2 A2
- GISS-ER A1b
- GISS-ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR-PCM A1b
- NCAR-PCM A2
- Median A1b
- Median A2
- Reference period
Ensemble mean of simulated annual mean water levels, in feet above NGVD 1929.

**EXPLANATION**

- BCCR–BCM2 A1b
- BCCR–BCM2 A2
- GISS–ER A1b
- GISS–ER A2
- MIROC3.2 A1b
- MIROC3.2 A2
- NCAR–PCM A1b
- NCAR–PCM A2
- Median A1b
- Median A2
- Reference period

**Year**

- 2030
- 2040
- 2050
- 2060
- 2070
- 2080
- 2090
- 2100
Ensemble mean of simulated annual mean streamflows, in cubic feet per second

PROS

Year

EXPLANATION

BCCR–BCM2 A1b
BCCR–BCM2 A2
GISS–ER A1b
GISS–ER A2
MIROC3.2 A1b
MIROC3.2 A2
NCAR–PCM A1b
NCAR–PCM A2
Median A1b
Median A2
Reference period

Reference period