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Preliminary Stage and Streamflow Data at Selected U.S. Geological Survey Streamgages in New England for the Floods of April 2019

The combination of rainfall and snowmelt in northern New England and rainfall in southern New England resulted in minor to major flooding from April 15 to 24, 2019, according to stage and streamflow data collected at 63 selected U.S. Geological Survey (USGS) streamgages. A typical USGS streamgage measures and records stream stage and estimates streamflow based on a relation (rating curve) of discrete measurements of streamflow and the recorded stage. USGS hydrographers were deployed during and after these storms to measure the streamflow of the flooded rivers and confirm streamgage rating curves.

Photograph by Donald Dumont, National Oceanic and Atmospheric Administration.

Photograph of an ice jam on the Aroostook River at Washburn, Maine, U.S. Geological Survey streamgage (station 01017000) on April 19, 2019.

Photograph by Brianna Smith, USGS.

Photograph of U.S. Geological Survey (USGS) hydrographer using an acoustic Doppler current profiler to measure streamflow from a bridge at the Fish River near Fort Kent, Maine, U.S. Geological Survey streamgage (station 01013500), on April 23, 2019.

Preliminary Data Indicate…

- The National Weather Service flood stage was reached at 36 USGS streamgages selected for monitoring; the minor flood stage category was reached at 30 streamgages, moderate flood stage category at 5 streamgages, and major flood stage category at 1 streamgage.
- Peak streamflows for the period of record occurred at three streamgages in Maine. Of these, the peak at the St. John River at Ninemile Bridge, Maine streamgage was the highest in its 67-year period of record.
- A total of 30 streamgages—15 streamgages in Maine, 9 in Vermont, 4 in New Hampshire, and 1 each in Connecticut and Massachusetts—recorded peak streamflows within the top 10 for their period of record. Two of these streamgages, the Clyde River at Newport, Vermont and the Saco River at Cornish, Maine, have periods of record greater than 100 years.
- In total, USGS hydrographers made more than 210 streamflow measurements during the April 15–24 floods in New England.

Study Area

In total, 63 streamgages were selected for this report to provide context for the April 15-24 flooding. The 63 selected streamgages in New England (fig. 1) are adjacent to the Atlantic Ocean in the New England Upland, White Mountain, Green Mountain, and Taconic physiographic provinces (Olcott, 1995). Land-surface elevations of the gaged watersheds range from at mean sea level for many of the watersheds to more than 6,200 feet above mean sea level at Mount Washington in New Hampshire. Average annual precipitation in the area is in the 40- to 50-inch range, with averages greater than 50 inches in the higher elevations of the White Mountains.

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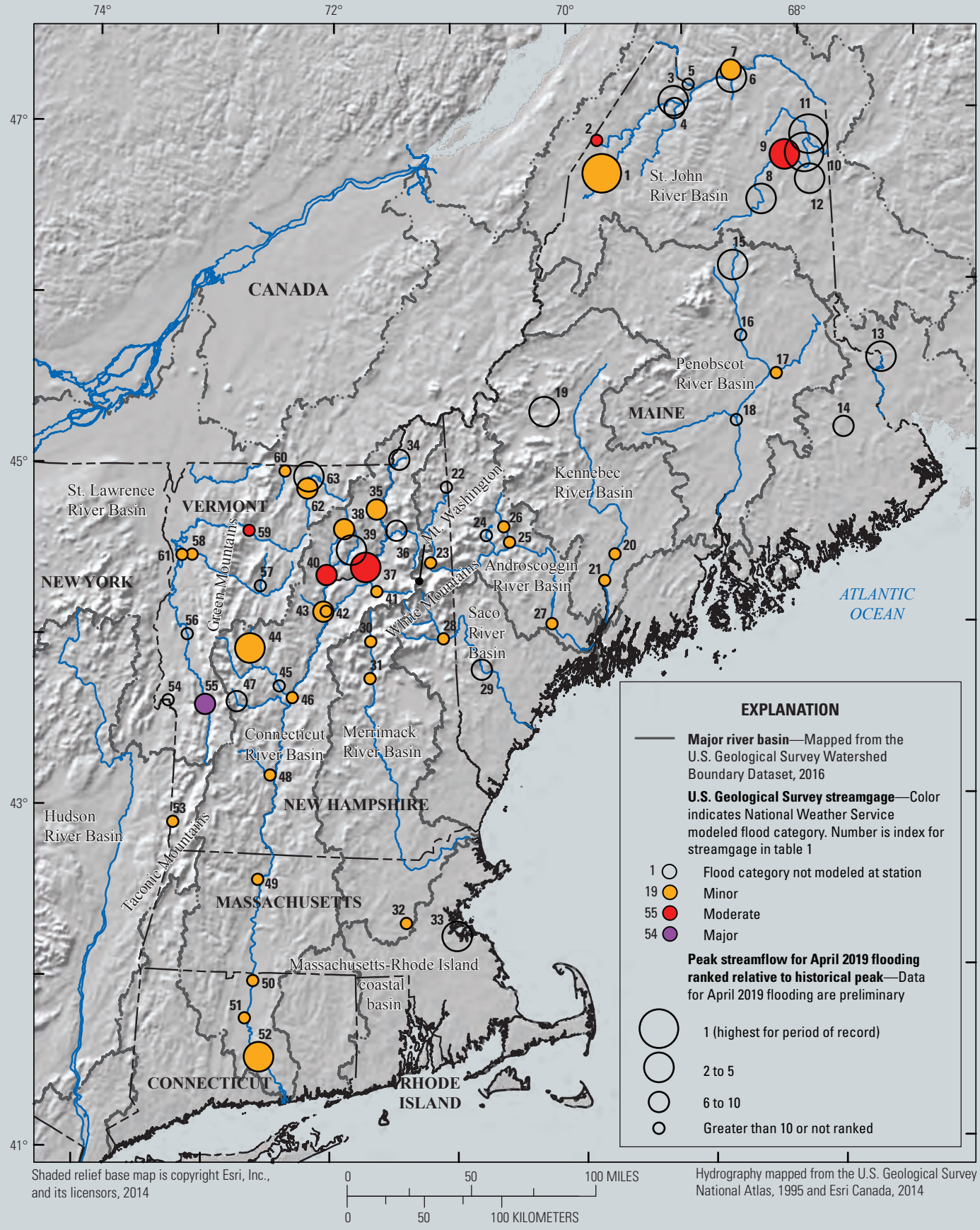


Figure 1. Map showing locations of selected U.S. Geological Survey streamgages in New England that reached a National Weather Service-designated flood stage category (if available) and the rank of the preliminary peak streamflow relative to the annual peak streamflows for the period of record at each streamgage.

Timeline for the Storms

Flooding resulting from rainfall combined with snowmelt in northern New England and rainfall in southern New England occurred on numerous rivers in New England from April 15 to 24. On April 14 and 15, a low-pressure system moved through New England and produced widespread rainfall of 0.5 to 1.5 inches regionally with estimates of more than 2 inches of water-equivalent from snowmelt in northern New England (National Oceanic and Atmospheric Administration, 2019a). A second low-pressure system moved through New England on April 20–21, producing up to 2 inches of precipitation regionally (and 3.9 to 9.8 inches of snowmelt in northern New England (National Oceanic and Atmospheric Administration, 2019a). The additional rainfall and associated runoff from snowmelt caused substantial damage to infrastructure and road closures throughout northern New England. In Vermont, officials have stated that the floods caused at least $2 million in damages to public infrastructure (Leighton, 2019). Road closures in Maine's Aroostook County were so numerous that emergency management officials activated the county's Emergency Operations Center (Whitney McKay, Maine Emergency Management Agency, written commun., April 26, 2019).

Flood Monitoring

The U.S. Geological Survey (USGS), in cooperation with Federal, State, and local agencies, collects water resources data at streamgages in New England each year. These data are valuable for developing an improved understanding of the water resources of the United States. To make these data readily available to interested parties outside the USGS, preliminary stage and streamflow data at continuous record streamgages are available in near real-time through the USGS National Water Information System (NWIS; U.S. Geological Survey, 2019). Preliminary data are provisional and subject to revision until they have been fully reviewed and received final approval. Final streamflow data are published in NWIS following further analysis of the hydraulic characteristics and the stability of those characteristics at each streamgage. Streamflow data are summarized annually by water year, which is the 12-month period October 1 through September 30 (designated by the calendar year in which it ends).

General Weather Conditions

The accumulated snow cover was a considerable further factor in the flooding from April 15 to 24. Modeled snow-water equivalent for April 14 was estimated to be more than 20 inches of water in parts of the Green and White Mountains (fig. 2).

The low-pressure system that passed through New England on April 14 and 15 produced snowmelt estimates of up to 3-inches of water equivalent, based on 48-hour modeled snowmelt (National Oceanic and Atmospheric Administration, 2019b). The second low-pressure system that moved through the area on April 20 produced precipitation totals of 0.25 to 2 inches over most of New England with additional snowmelt. At the high elevations of the White Mountains in northern New Hampshire and in western Maine, modeled snowmelt totals of 3.9 to 9.8 inches were estimated for April 20 and 21 (National Oceanic and Atmospheric Administration, 2019b).

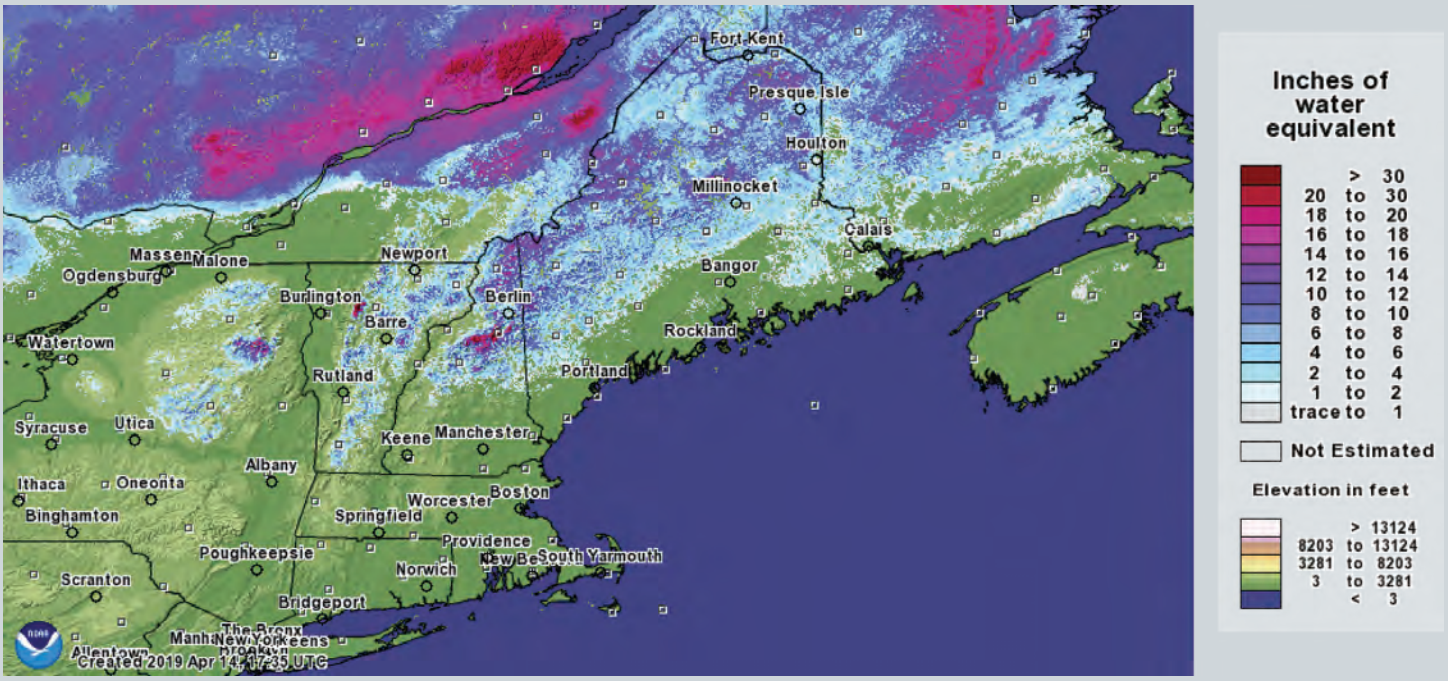


Figure 2. Screenshot showing the National Weather Service modeled snow-water equivalent for April 14, 2019; from National Oceanic and Atmospheric Administration (2019a).

Methods Used To Collect Streamflow Data

The USGS currently [2019] operates 411 real-time streamgages in New England to characterize hydrologic conditions. A typical USGS streamgage measures and records stream stage at 5- to 15 minute intervals using established techniques (Rantz and others, 1982; Turnipseed and Sauer, 2010) and estimates streamflow based on a relation of discrete measurements of streamflow and the recorded stage. This stage-to-streamflow relation is referred to as the rating curve (fig. 3). The USGS routinely collects discrete measurements of streamflow (fig. 4) using established techniques (Rantz and others, 1982; Turnipseed and Sauer, 2010; Mueller and others, 2009). To continually confirm a rating curve, streamflow measurements are made over the range of observed hydrologic conditions at a streamgage each year.

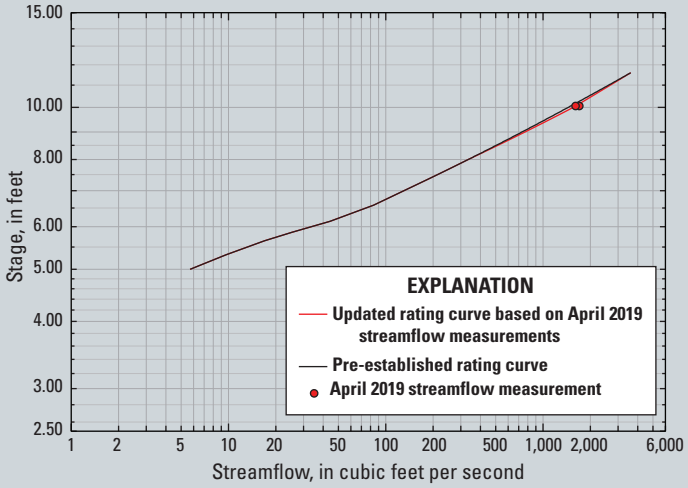


Figure 3. Pre-established rating curve (black) and updated rating curve (red) based on streamflow measurements made during the April 2019 event at the Kingsbury Stream at Abbot Village, Maine, U.S. Geological Survey streamgage (station 01031450).

Floods of April 15–24, 2019

During the April 15–24 floods, USGS hydrographers made more than 210 streamflow measurements in New England to verify, update, or extend existing rating curves. Flooding on April 15–17 generally affected northern New England, including parts of northwestern Maine, southwestern to northern Vermont, and the mainstem of the Connecticut River from central New Hampshire to southern Connecticut. As waters rose in northern New Hampshire and Maine, ice jams formed at three USGS streamgages. An ice jam on the St. John River at the St. John River at Ninemile Bridge, Maine streamgage caused the river stage to reach the National Weather Service (NWS) flood stage, whereas the peak stage associated with an ice jam on the Diamond River near Wentworth Location, New Hampshire, was the highest recorded in the 76-year period of record for the streamgage (table 1). Ten streamgages in New England reached the NWS minor to major flood category during this series of storms. Six of the 10 streamgages experiencing minor to major flooding were in the Connecticut, Hudson, and Saint Lawrence Rivers Basins in Vermont (table 1). Minor flooding was experienced along the Connecticut River in West Lebanon, N.H., Montague City, Massachusetts, and Thompsonville, Hartford, and Middle Haddam, Connecticut.

Flooding on April 20–24 was widespread throughout New England based on peak streamflows at 48 streamgages (table 1). Twenty-six streamgages reached a minor to moderate NWS flood stage category in the St. John, Penobscot, Kennebec, Androscoggin, Saco, Merrimack, Connecticut, and St. Lawrence Rivers Basins (table 1).

To gain a historical perspective on the relative magnitude of the flood, peak streamflows at the 63 selected streamgages were ranked against previously recorded peaks of record (fig. 1; table 1). Forty-six of the 63 selected streamgages have more than 50 years of streamflow record, and 21 of these 46 long-term streamgages recorded preliminary streamflow peaks rank within the top 10 for their periods of record. Several of these rivers had historic streamflows during this flood. For example, the streamgage on the St. John River at Ninemile Bridge, Maine, recorded the largest streamflow in the 67 years of record, the Clyde River at Newport, Vermont streamgage recorded the fourth largest streamflow in the 101 years of record, and the St. Croix River at Vanceboro, Maine streamgage recorded the largest streamflow since 1984 and third largest in the 89 years of record (fig. 5; table 1).

Figure 4. Photograph of U.S. Geological Survey (USGS) hydrographer using an acoustic Doppler current profiler to measure streamflow at the Ottauquechee River near West Bridgewater, Vermont, USGS streamgage (station 01150900) on April 18, 2019. Photograph by Richard Kiah, USGS.

Table 1. Preliminary peak stage and streamflow data collected at select streamgages in New England for the floods of April 15–24, 2019.

[Orange shading indicates streamgages where the peak stage was greater than the National Weather Service (NWS)-established flood stage; red shading indicates streamgages where the peak stage was greater than the NWS-established moderate flood stage; purple shading indicates streamgages where the peak stage was greater than the NWS-established major flood stage. mi^2, square mile; ft, foot; ft^3/s, cubic foot per second; NA, not applicable; Mtn, Mountain; R, River; nr, near; Brk, Brook; NH, New Hampshire; Vt, Vermont; MA, Massachusetts; CT, Connecticut]

Map number	Station number	Station name	Drainage area (mi^2)	NWS flood stage (ft)	Preliminary peaks for April 15–24, 2019					Historical (period of record) peak		
					Peak stage		Peak streamflow					
					Date	Stage (ft)	Date	Streamflow (ft^3/s)	Rank[a]	Number of water years	Water year	Streamflow (ft^3/s)
		St. John River Basin										
1	01010000	St. John River at Ninemile Bridge, Maine	1,341	15.00	4/16/2019	19.10[b]	4/22/2019	47,700	1	67	1974	44,400
2	01010070	Big Black River near Depot Mtn, Maine	171	12.00	4/21/2019	14.03[b]	NA	NA	NA	36	1987	8,680
3	01010500	St. John River at Dickey, Maine	2,680	25.00	4/15/2019	20.55[b]	4/23/2019	85,900	4	71	2008	104,000
4	01011000	Allagash River near Allagash, Maine	1,478	15.00	4/23/2019	11.91	4/23/2019	26,400	8	86	2008	40,900
5	01011500	St. Francis River near Connors, New Brunswick	524	NA	4/24/2019	11.52	4/24/2019	9,850	13	65	2008	18,700
6	01013500	Fish River near Fort Kent, Maine	873	11.00	4/23/2019	10.94	4/23/2019	13,700	5	93	2008	18,300
7	01014000	St. John River below Fish R, nr Fort Kent, Maine	5,929	22.50	4/23/2019	23.39	4/23/2019	137,000	6	91	2008	183,000
8	01015800	Aroostook River near Masardis, Maine	892	17.00	4/22/2019	16.22	4/22/2019	21,900	4	60	2008	29,500
9	01017000	Aroostook River at Washburn, Maine	1,654	14.00	4/20/2019	19.66	4/22/2019	40,900	5	87	2008	49,500
10	01017060	Hardwood Brook below Glidden Brk nr Caribou, Maine	5.7	NA	4/20/2019	4.89	4/20/2019	544	1	9	2010	506
11	01017290	Little Madawaska River at Caribou, Maine	234	NA	4/22/2019	10.14	4/22/2019	7,050	1	9	2012	5,940
12	01017550	Williams Brook at Phair, Maine	3.82	NA	4/20/2019	4.96	4/20/2019	189	3	18	2014	364
		St. Croix River Basin										
13	01018500	St. Croix River at Vanceboro, Maine	413	NA	4/23/2019	11.05	4/23/2019	6,630	3	89	1984	6,730
14	01019000	Grand Lake Stream at Grand Lake Stream, Maine	228.3	NA	4/23/2019	5.51	4/23/2019	2,080	10	89	2005	3,990
		Penobscot River Basin										
15	01029200	Seboeis River near Shin Pond, Maine	173	NA	4/22/2019	10.86	4/22/2019	4,050	4	20	2008	6,350
16	01029500	East Branch Penobscot River at Grindstone, Maine	837	13.00	4/22/2019	12.22	4/22/2019	21,100	16	99	1923	37,000
17	01030500	Mattawamkeag River near Mattawamkeag, Maine	1,418	13.50	4/24/2019	15.78	4/24/2019	23,900	13	115	1923	46,600
18	01034500	Penobscot River at West Enfield, Maine	6,422	18.00	4/22/2019	17.11	4/22/2019	86,100	24	116	1923	153,000
		Kennebec River Basin										
19	01044550	Spencer Stream near Grand Falls, Maine	193	NA	4/22/2019	8.75	4/22/2019	6,350	3	18	2008	7,470
20	01049265	Kennebec River at North Sidney, Maine	5403	17.00	4/21/2019	17.50	4/21/2019	64,400	17	32	1987	232,000
21	01049320	Kennebec River at Calumet Bridge at Augusta, Maine	5513	12.00	4/21/2019	14.16	NA	NA	NA	NA	NA	NA
		Androscoggin River Basin										
22	01052500	Diamond River near Wentworth Location, NH	152	NA	4/15/2019	12.15[b]	4/21/2019	7,490	11	76	1998	12,800
23	01054000	Androscoggin River near Gorham, NH	1,361	8.00	4/22/2019	8.83	4/22/2019	15,400	19	105	1923	21,900
24	01054300	Ellis River at South Andover, Maine	130	NA	4/21/2019	17.11	4/21/2019	4,930	15	36	2003	7,830
25	01054500	Androscoggin River at Rumford, Maine	2,068	15.00	4/21/2019	16.00	4/21/2019	41,700	14	125	1936	74,000
26	01055000	Swift River near Roxbury, Maine	96.9	7.00	4/20/2019	8.67	4/20/2019	6,810	43	88	1959	16,800
27	01059000	Androscoggin River near Auburn, Maine	3,263	13.00	4/22/2019	14.07	4/22/2019	49,300	21	89	1936	135,000
		Saco River Basin										
28	01064500	Saco River near Conway, NH	385	9.00	4/21/2019	11.13	4/21/2019	21,700	31	94	2011	58,200
29	01066000	Saco River at Cornish, Maine	1,293	NA	4/24/2019	12.96	4/24/2019	20,600	10	101	1936	46,600
		Merrimack River Basin										
30	01075000	PEMIGEWASSET RIVER AT WOODSTOCK, NH	193	9.00	4/20/2019	11.30	4/20/2019	18,200	18	73	2011	53,700
31	01076500	PEMIGEWASSET RIVER AT PLYMOUTH, NH	622	13.00	4/21/2019	16.42	4/21/2019	26,200	30	114	1936	65,400
32	01098530	SUDBURY RIVER AT SAXONVILLE, MA	106	10.00	4/23/2019	10.67	4/23/2019	1,090	14	38	2010	2,570

Table 1. Preliminary peak stage and streamflow data collected at select streamgages in New England for the floods of April 15–24, 2019.—Continued

[Orange shading indicates streamgages where the peak stage was greater than the National Weather Service (NWS)-established flood stage; red shading indicates streamgages where the peak stage was greater than the NWS-established moderate flood stage; purple shading indicates streamgages where the peak stage was greater than the NWS-established major flood stage. mi^2, square mile; ft, foot; ft^3/s, cubic foot per second; NA, not applicable; Mtn, Mountain; R, River; nr, near; Brk, Brook; NH, New Hampshire; Vt, Vermont; MA, Massachusetts; CT, Connecticut]

					Preliminary peaks for April 15-24, 2019					Historical (period of record) peak		
					Peak Stage		Peak Streamflow					
Map number	Station number	Station name	Drainage area (mi^2)	NWS flood stage (ft)	Date	Stage (ft)	Date	Streamflow (ft^3/s)	Rank[a]	Number of water years	Water year	Streamflow (ft^3/s)
		Massachusetts-Rhode Island Coastal Basin										
33	01105585	TOWN BROOK AT QUINCY, MA	4.11	NA	4/22/2019	6.50	4/22/2019	398	4	33	2013	469
		Connecticut River Basin										
34	01129200	CONNECTICUT R BELOW INDIAN STREAM NR PITTSBURG, NH	254	NA	4/20/2019	7.19	4/20/2019	4,650	7	61	2011	6,550
35	01129500	CONNECTICUT RIVER AT NORTH STRATFORD, NH	799	13.00	4/21/2019	13.36	4/21/2019	22,700	7	87	1998	32,300
36	01130000	UPPER AMMONOOSUC RIVER NEAR GROVETON, NH	232	NA	4/21/2019	8.48	4/21/2019	8,250	8	71	1969	24,100
37	01131500	CONNECTICUT RIVER NEAR DALTON, NH	1,514	17.00	4/22/2019	22.35	4/22/2019	37,300	5	90	1936	48,300
38	01133000	EAST BRANCH PASSUMPSIC RIVER NEAR EAST HAVEN, VT	53.8	6.50	4/20/2019	8.20	4/20/2019	2,240	8	58	1973	4,450
39	01134500	MOOSE RIVER AT VICTORY, VT	75.2	NA	4/21/2019	10.76	4/21/2019	3,510	5	71	1973	4,940
40	01135500	PASSUMPSIC RIVER AT PASSUMPSIC, VT	436	14.00	4/21/2019	17.25	4/21/2019	12,200	7	90	1973	18,200
41	01137500	AMMONOOSUC RIVER AT BETHLEHEM JUNCTION, NH	87.6	8.00	4/20/2019	8.07	4/20/2019	4,420	33	78	1995	11,300
42	01138500	CONNECTICUT RIVER AT WELLS RIVER, VT	2,644	11.00	4/23/2019	12.27	4/23/2019	41,100	15	68	1973	57,100
43	01139000	WELLS RIVER AT WELLS RIVER, VT	98.4	6.00	4/15/2019	7.21	4/15/2019	3,320	8	77	1973	5,970
44	01142500	AYERS BROOK AT RANDOLPH, VT	30.5	8.00	4/15/2019	9.55	4/15/2019	2,010	5	79	2011	3,920
45	01144000	WHITE RIVER AT WEST HARTFORD, VT	690	18.00	4/15/2019	15.66	4/15/2019	26,900	17	102	1927	120,000
46	01144500	CONNECTICUT RIVER AT WEST LEBANON, NH	4,092	22.00	4/15/2019	22.22	4/15/2019	65,300	17	104	1927	136,000
47	01150900	OTTAUQUECHEE RIVER NEAR WEST BRIDGEWATER, VT	23.4	NA	4/15/2019	8.79	4/15/2019	1,540	6	33	2011	9,070
48	01153550	WILLIAMS RIVER NEAR ROCKINGHAM VT	112	8.00	4/15/2019	8.18	4/15/2019	5,060	21	30	2011	21,300
49	01170500	CONNECTICUT RIVER AT MONTAGUE CITY, MA	7,860	28.00	4/16/2019	28.52	4/16/2019	81,700	64	114	1936	236,000
50	01184000	CONNECTICUT RIVER AT THOMPSONVILLE, CT	9,660	15.00	4/17/2019	15.54	4/17/2019	90,700	51	89	1936	282,000
51	01190070	CONNECTICUT RIVER AT HARTFORD, CT	10,487	16.00	4/24/2019	19.58	NA	NA	NA	NA	NA	NA
52	01193050	CONNECTICUT RIVER AT MIDDLE HADDAM, CT	10,897	7.00	4/24/2019	9.65	4/23/2019	93500	4	7	2011	120,000
		Hudson River Basin										
53	01334000	WALLOOMSAC RIVER NEAR NORTH BENNINGTON, VT	111	7.00	4/15/2019	7.32	4/15/2019	3,430	42	86	2011	9420
		St. Lawrence River Basin										
54	04280000	POULTNEY RIVER BELOW FAIR HAVEN, VT	187	20.00	4/15/2019	18.20	4/15/2019	6,720	12	89	1945	14,800
55	04282000	OTTER CREEK AT CENTER RUTLAND, VT	307	8.00	4/15/2019	12.34	4/15/2019	9,040	9	89	2011	15,700
56	04282500	OTTER CREEK AT MIDDLEBURY, VT	628	NA	4/21/2019	7.17	4/21/2019	5,950	16	102	1927	13,600
57	04285500	NORTH BRANCH WINOOSKI RIVER AT WRIGHTSVILLE, VT	69.2	NA	4/20/2019	4.20	4/20/2019	971	22	85	1927	17,200
58	04290500	WINOOSKI RIVER NEAR ESSEX JUNCTION, VT	1,044	12.00	4/16/2019	13.74	4/16/2019	20,900	45	90	1927	113,000
59	04292000	LAMOILLE RIVER AT JOHNSON, VT	310	13.00	4/20/2019	14.14	4/20/2019	9,300	17	91	1995	19,000
60	04293000	MISSISQUOI RIVER NEAR NORTH TROY, VT	131	9.00	4/20/2019	10.21	4/20/2019	6,140	16	86	2002	11,500
61	04294500	LAKE CHAMPLAIN AT BURLINGTON, VT		100.00	4/24/2019	100.62	NA	NA	NA	NA	NA	NA
62	04296280	BARTON RIVER NEAR COVENTRY, VT	155	8.00	4/20/2019	9.09	4/20/2019	2,500	6	7	2011	6,070
63	04296500	CLYDE RIVER AT NEWPORT, VT	142	NA	4/23/2019	8.81	4/23/2019	2,990	4	101	1936	3,900

[a]Rank of the maximum instantaneous peak streamflow measured during April 2019 compared with all systematic and historic annual peaks recorded through water year 2017.

[b]Ice jam.

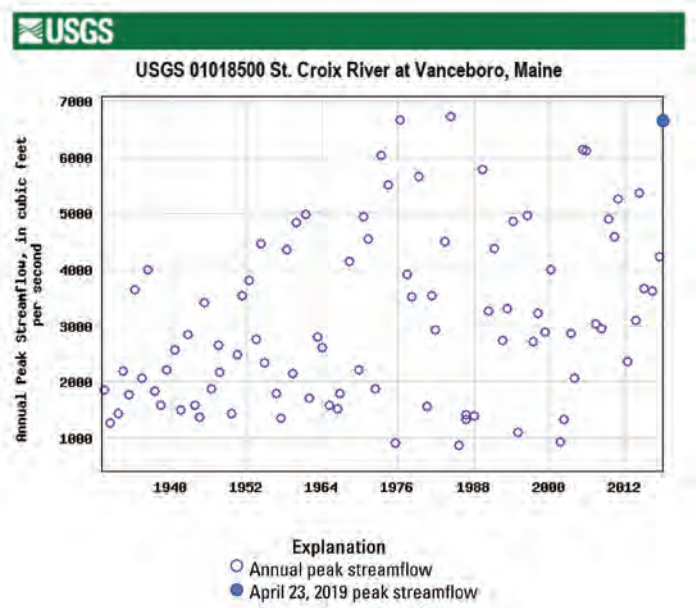


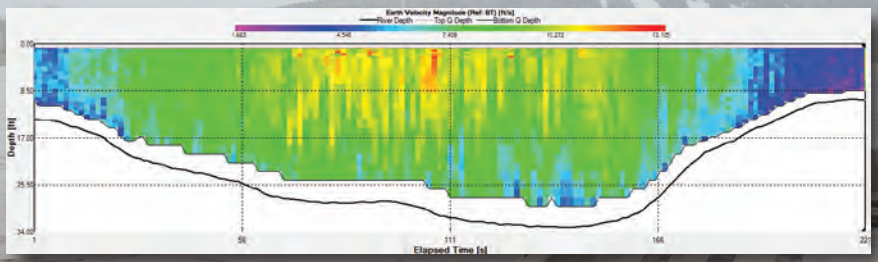
Figure 5. Screenshot of annual peak streamflow at the St. Croix River at Vanceboro, Maine, U.S. Geological Survey (USGS) streamgage (station 01018500) for water years 1929 to 2017 and preliminary peak streamflow for April 23, 2019, from the USGS National Water Information System (U.S. Geological Survey, 2019).

Summary

Rainfall combined with snowmelt in northern New England and rainfall in southern New England resulted in minor to major flooding from April 15 to 24, 2019. On April 15, a low- pressure system moved into New England. The resulting storm produced as much as 2.5 inches of rainfall in New England and 3 inches of snowmelt in the Green and White Mountains. A second low-pressure system passed through New England on April 20 and produced as much as 2 inches of rainfall in New England and upwards of 9.8 inches of snowmelt in the Green and White Mountains. These storms led to flooding in the St. John, St. Croix, Penobscot, Kennebec, Androscoggin, Saco, Connecticut, Merrimack, Hudson, and St. Lawrence Rivers Basins, as was determined by characterizations at 63 selected U.S. Geological Survey (USGS) streamgages in those drainage areas.

The April 15–17 flood primarily affected northern New England as indicated by 15 streamgages that recorded a peak stage or streamflow during this event. The April 20–24 flood was more widespread throughout New England with 48 streamgages across northern and southern New England recording a peak streamflow during this period. During the April 15–17 and 20–24 floods, the rivers at 10 and 26 streamgages, respectively, reached the National Weather Service (NWS) minor flood stage. Rivers at 30 of the 36 USGS streamgages reached the NWS minor flood stage category, 5 reached the moderate flood stage category, and 1 reached the major flood stage category during these two floods.

Three streamgages in Maine recorded their period-of-record peak streamflow during these floods, of which the St. John River at Ninemile Bridge, Maine was the largest in its 67-year record; the other two streamgages where record peak streamflow was recorded had less than 10 years of record. Thirty of the 63 streamgages recorded preliminary peak streamflows in the top 10 for their periods of record: 15 in Maine, 9 in Vermont, 4 in New Hampshire, 1 in Connecticut. Twenty-one of 46 streamgages with long-term records (greater than 50 years) recorded preliminary peak streamflows ranked in the top 10 for their periods of record. In addition to the St. John River at Ninemile Bridge, Maine, streamgage, which recorded the largest peak streamflow in the 67 years of record, the Clyde River at Newport, Vermont, produced the fourth largest streamflow in the 101 years of record, and the St. Croix River at Vanceboro, Maine, produced the largest streamflow since 1984 and third largest in the 89 years of record.



Screen capture from the Teledyne RD Instruments (TRDI) WinRiver II software, from an acoustic Doppler current profiler measurement at U.S. Geological Survey (USGS) streamgage 01014000, St. John River below Fish River, near Fort Kent, ME, on April 24, 2019. The depth of the river (in feet) is plotted on the y-axis, represented by the darkest black line. The river velocity (in feet/second) is represented by the colors on the plot, and is plotted by time on the x-axis (in seconds).

Photograph of equipment on a manned boat used to measure streamflow at U.S. Geological Survey (USGS) streamgage 01014000, St. John River below Fish River, near Fort Kent, ME, on April 24, 2019. This photo faces southwest towards the Town of Fort Kent, ME, with the Lonesome Pine Trails ski slopes in the background. Photograph by Brianna Smith, USGS.

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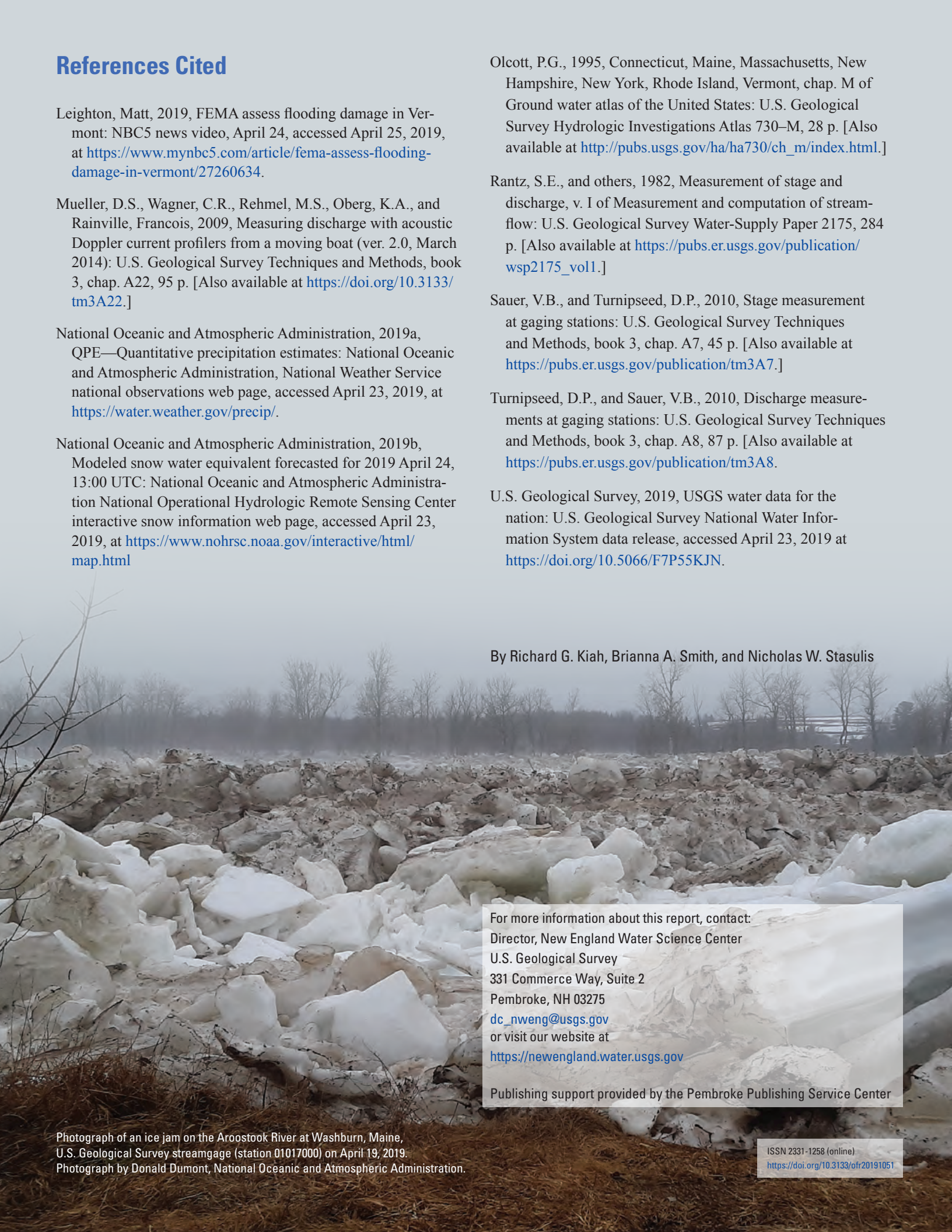

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Photograph of an ice jam on the Aroostook River at Washburn, Maine, U.S. Geological Survey streamgage (station 01017000) on April 19, 2019. Photograph by Donald Dumont, National Oceanic and Atmospheric Administration.

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