

MONTHLY REPORT OF HYDROLOGIC CONDITIONS

REPORT FOR:
MONTH YEAR
JUNE 2013

TO: Hydrologic Information Center, W/OS31
NOAA's National Weather Service
1325 East West Highway
Silver Spring, MD 20910-3283

SIGNATURE
Kimberly G. McMahon, GF, WFO BTV

DATE
July 14, 2013

When no flooding occurs, include miscellaneous river conditions below the small box, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924).

An X inside this box indicates that no flooding occurred within this hydrologic service area.

Following a record breaking wet May, June continued to see wet conditions with an overall unchanged synoptic pattern. An upper level trough over eastern Canada persisted, varying in strength and southward extent throughout the month, combined with a ridge of high pressure in the Atlantic strengthening towards the end of the month lead to an influx of warm moist air from the south...even tapping into moisture from the Gulf of Mexico. This overall pattern resulted wet conditions across the entire eastern USA as seen in Figure 1. NWS Burlington observed over 20 days where precipitation was observed within the County Warning Area (CWA) throughout the month (Figure 2). Most areas received above normal monthly precipitation...with large portions of northern New York across the Champlain Valley and into the central Green Mountains receiving eight or more inches above normal (Figure 3).

Significant and/or widespread flooding were observed June 11-12 & June 28; where over two inches of rain fell in areas (Figures 4 -6) leading to flooding on the Ausable and Saranac Rivers (Figures 7-10). On June 11, a closed low pressure system moved northeast across New York into a warm moist air mass in place over the Northeast United States (Figure 11). Six Flood Warnings were issued for Northern New York (Table 2), with headwaters of the Saranac River in Clinton County and the Salmon River in Franklin County the hardest hit areas. There was minor river flooding on the Saranac River at Plattsburgh (PBG6), Ausable River at Au Sable Forks (AUS6) (Figures 7&8).

Towards the end of the month, high pressure anchored itself off the Atlantic coast, putting the Northeast on the northwest edge of the ridge, allowing south to southwest flow to usher in continuous warm moist air. This included Precipitable Water values of two inches to move over the NWS Burlington CWA. This pattern allowed several upper level shortwaves to move across the region and produce multiple, consecutive days of rainfall. Some of the rainfall was very heavy over a brief amount of time, and one to two inches of rain in an hour caused flash flooding and washed out roads in Williston and Richmond Vermont, as well as Dannemora NY on June 25.

On June 28th, another closed low pressure system moved into the warm moist airmass over the Northeast, resulting in convection and heavy rainfall (Figure 12), which was preceded by six days of rainfall. As noted on Table 2, five Flood Warnings were issued from the evening of June 27 to the evening of June 28 due to the widespread rainfall of one inch or more (Figure 5&6). The Ausable River once again flooded (Table 1), reaching Moderate Flood Stage on the East Branch Ausable River below Au Sable Forks (ASF6) (Figure 10). Flash flooding also resulted from the rainfall. Headwaters of the Boquet and Ausable Rivers washed out roads

and forced evacuations in Elizabethtown. Flash flooding returned on the 29th, flooding urban areas of Burlington & South Burlington along with rural areas of eastern Chittenden County VT.

The many days of rain over the month of June along with moist conditions from the previous month caused very high stream flow across the United States (Figure 13). The persistent influx of warm moist air as NWS Burlington's CWA was sandwiched between high pressure off in the Atlantic and upper level low pressure trough over the Great Lakes into the Ohio River Valley (Figure 14), allowed daily convective activity with heavy rainfall to add to the already saturated soils. Figures 15 and 16 show the elevated streamflow for northern New York and all of Vermont for June, which continued into early July.

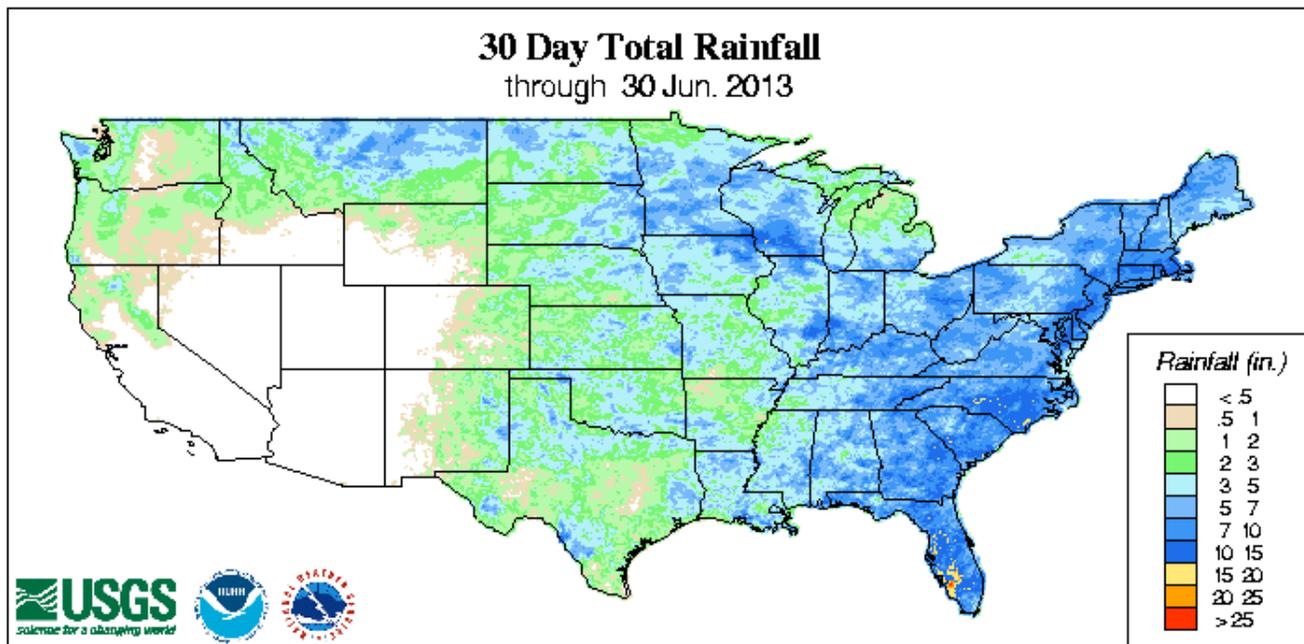


Figure 1. 30 Day Total Rainfall for the United States June 1-30, 2013. [USGS]

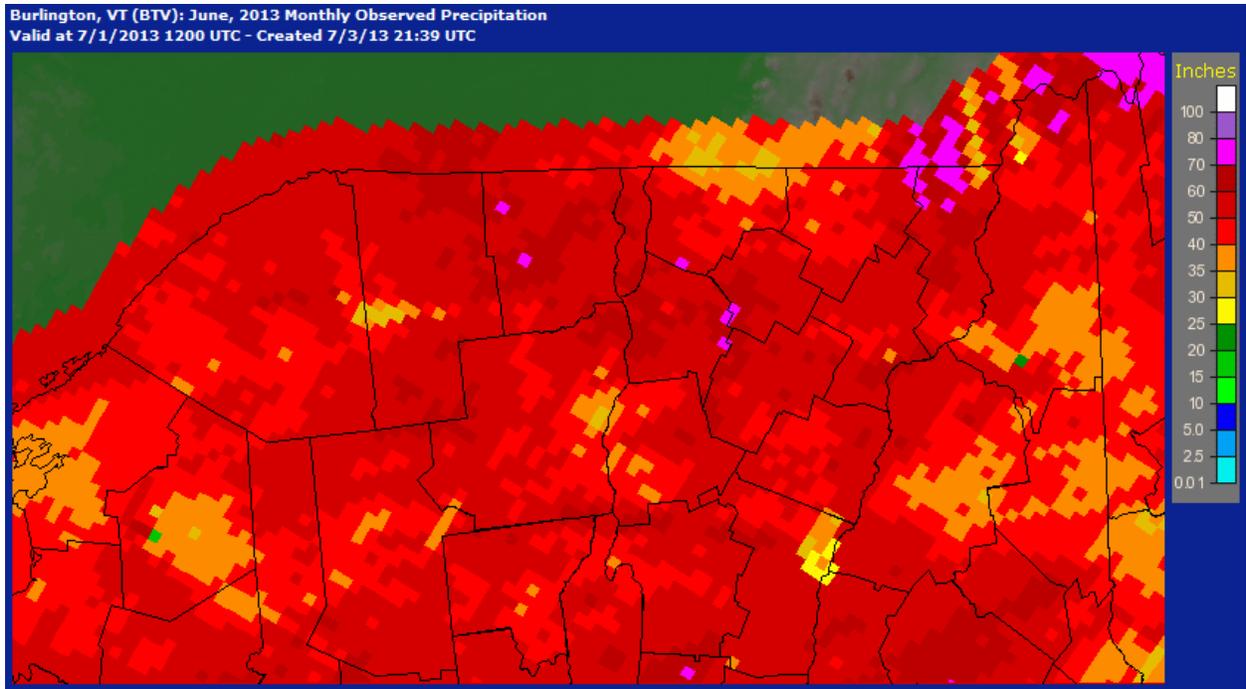


Figure 2. NWS Burlington, VT Monthly Observed Rainfall for June 2013. [NERFC]

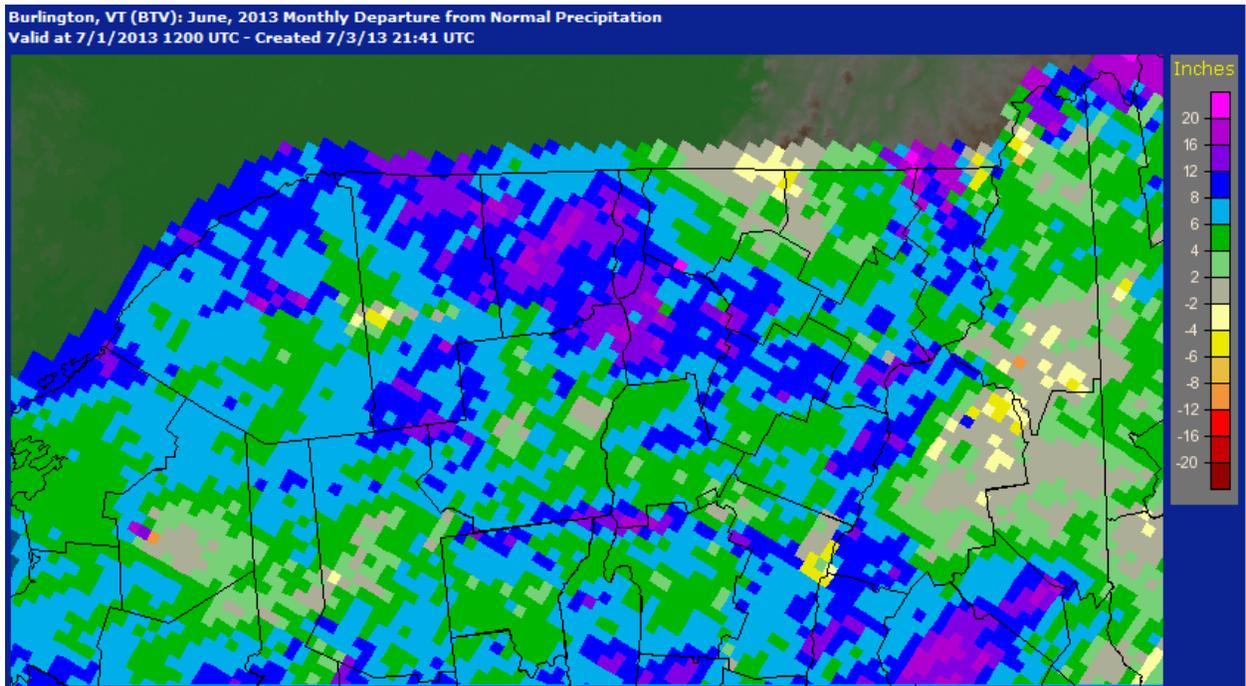


Figure 3. NWS Burlington, VT Monthly Departure from Normal Rainfall for June 2013. [NERFC]

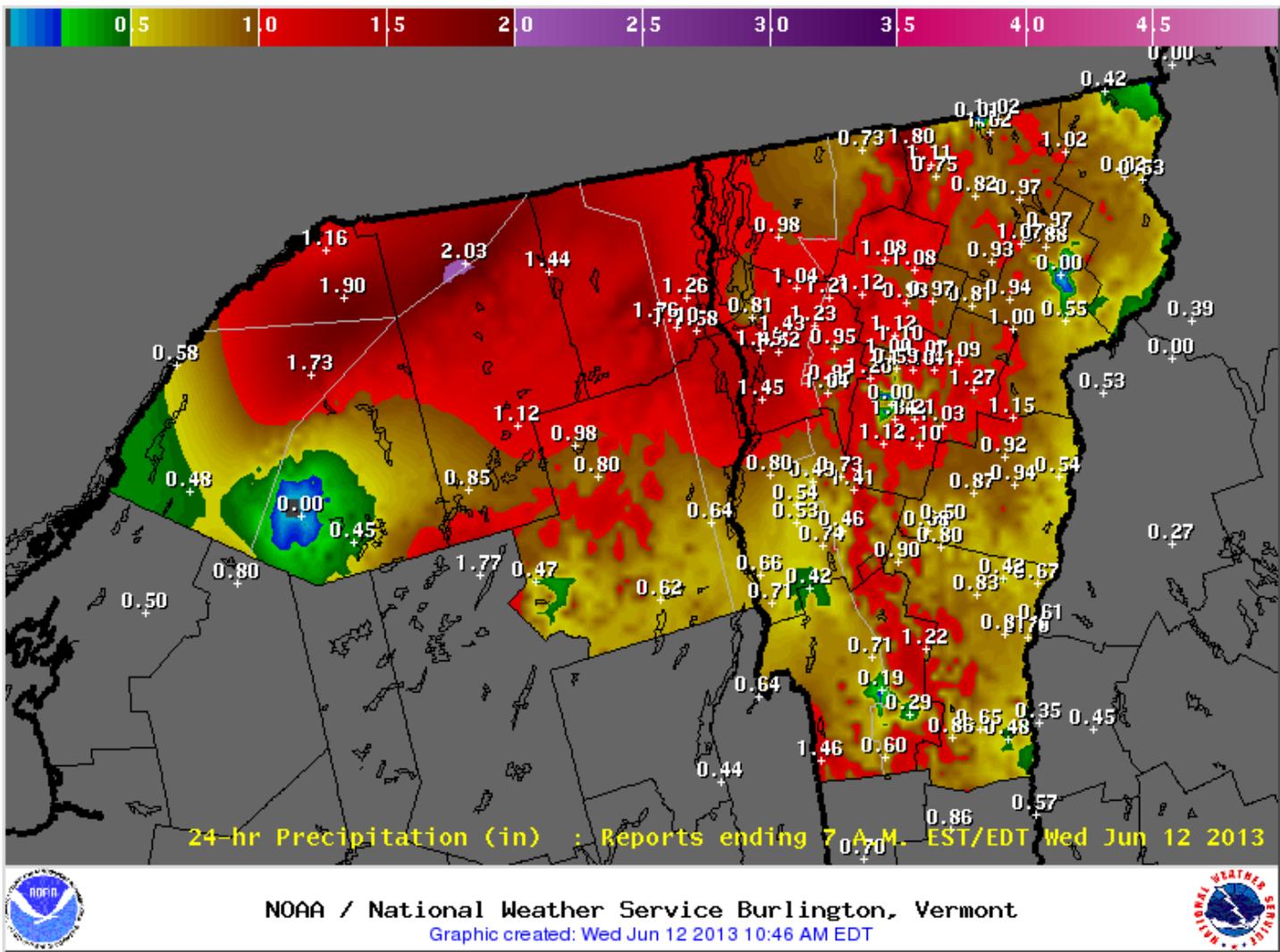


Figure 4. 24 hour rainfall amounts ending 7 am EDT June 12, 2013.

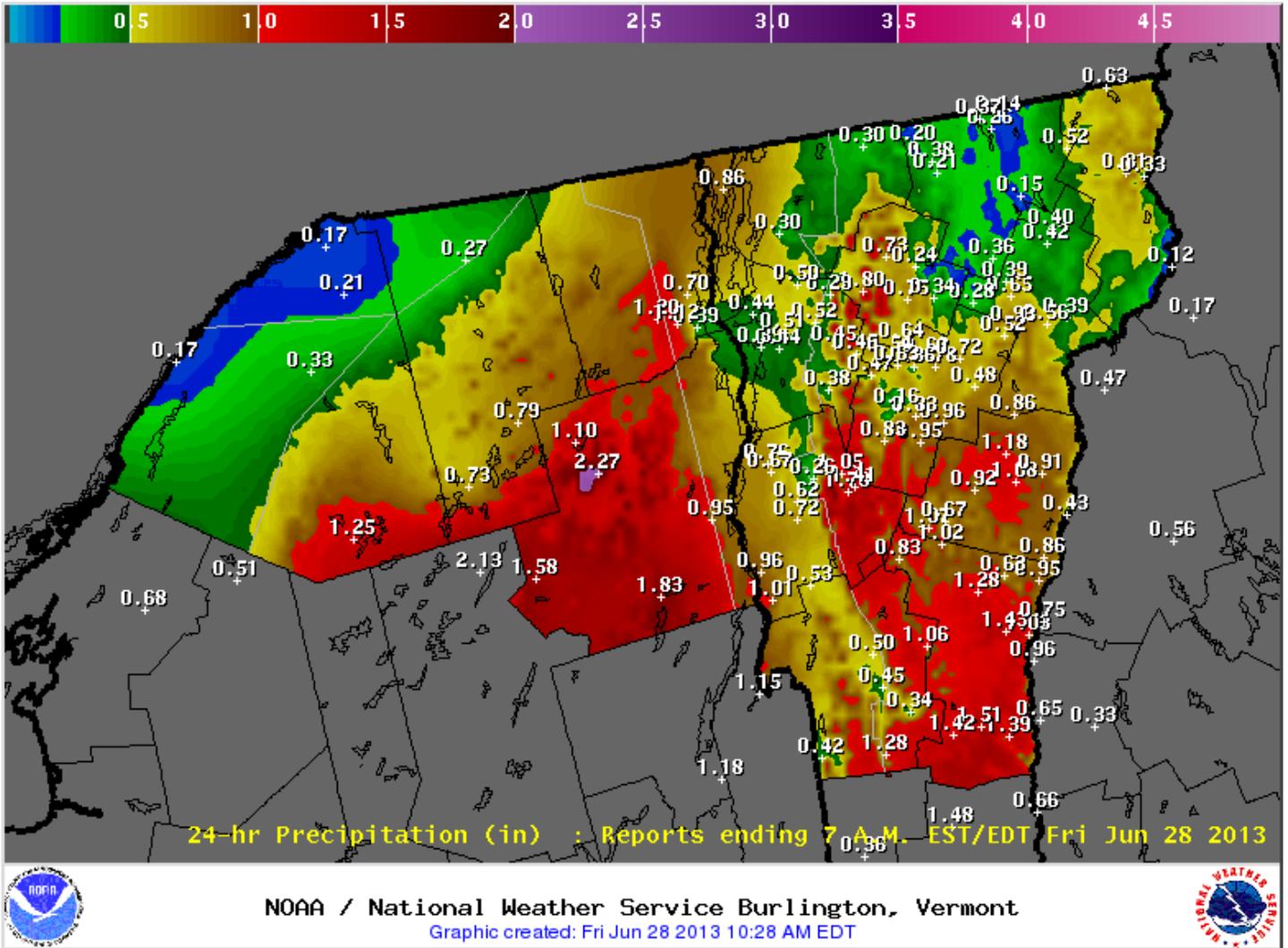


Figure 5. 24 hour rainfall amounts ending 7 am EDT June 28, 2013

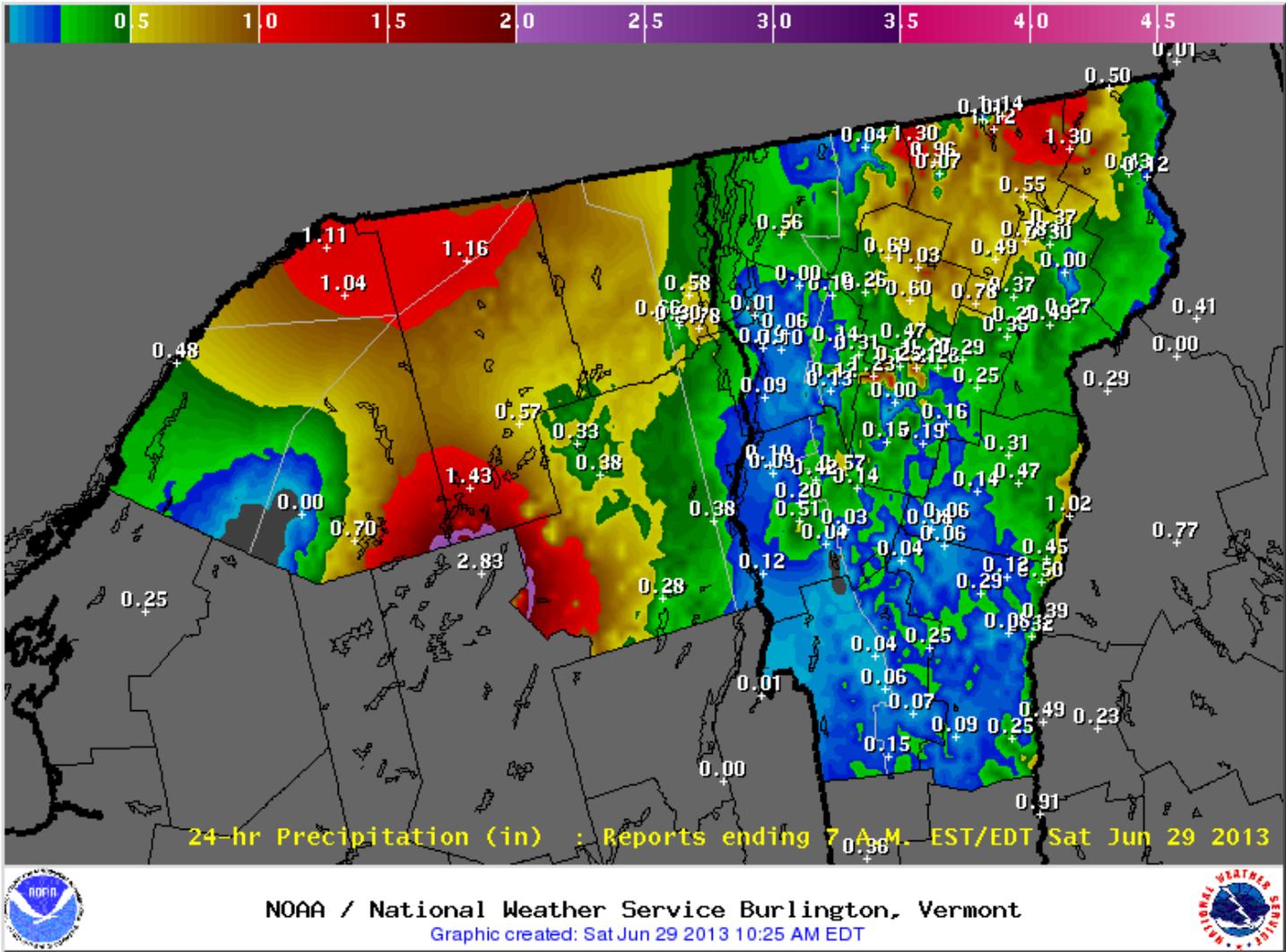


Figure 6. 24 hour rainfall amounts ending 7 am EDT June 29, 2013

**Significant River Crests
June 2013
WFO Burlington, VT**

Location	ID	Date	Time (UTC)	Crest Stage (ft)	Flood Stage (ft)
Saranac River at Plattsburgh	PBGN6	6/12/2013	1215	9.88	9.0
Ausable River below Au Sable Forks	AUSN6	6/12/2013	0600	7.20	7.0
Ausable River below Au Sable Forks	AUSN6	6/28/2013	2030	8.96	7.0
East Branch of the Ausable River at Au Sable Forks	ASFN6	6/28/2013	1915	9.63	7.0

Table 1.

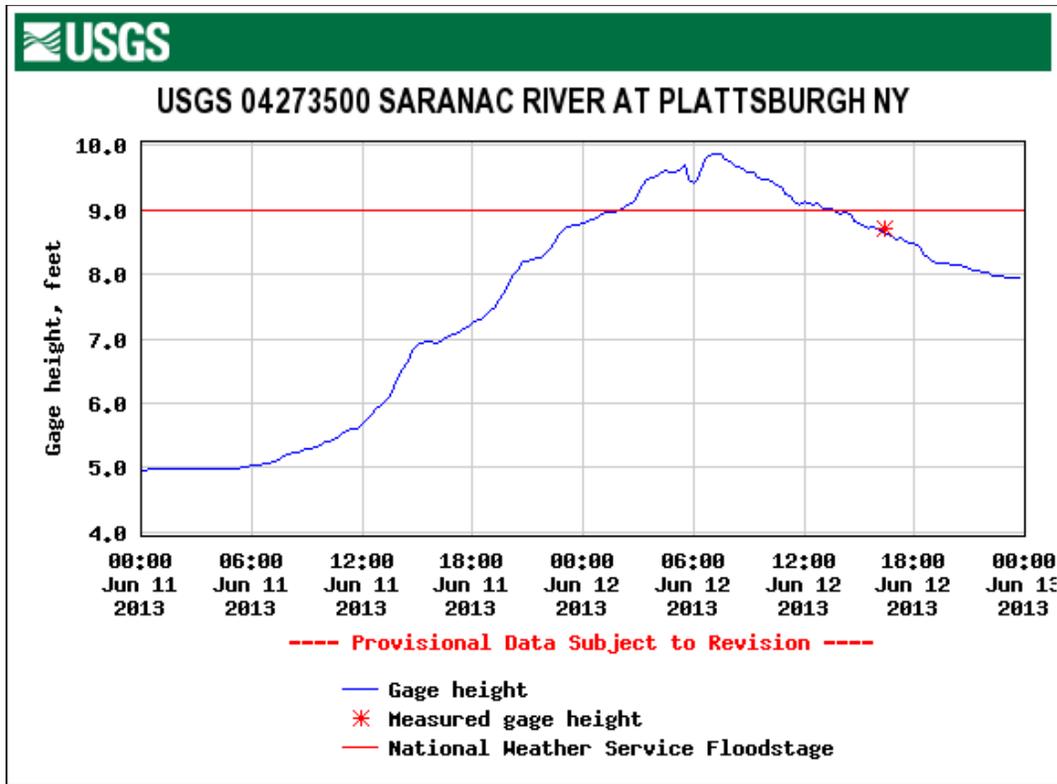


Figure 7.

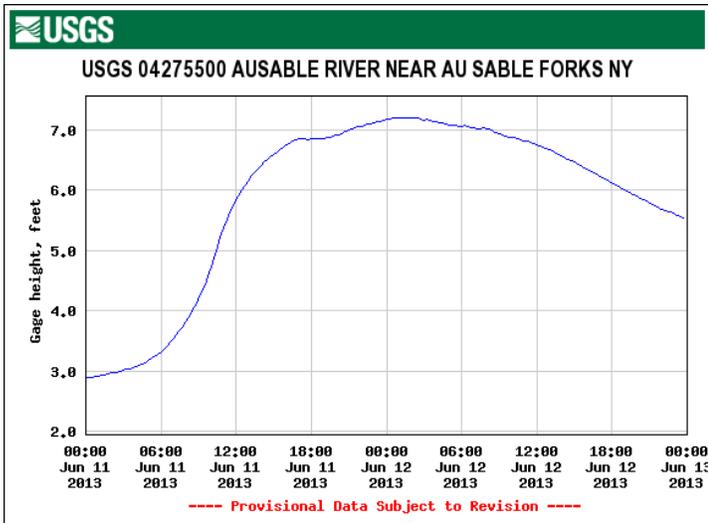


Figure 8.

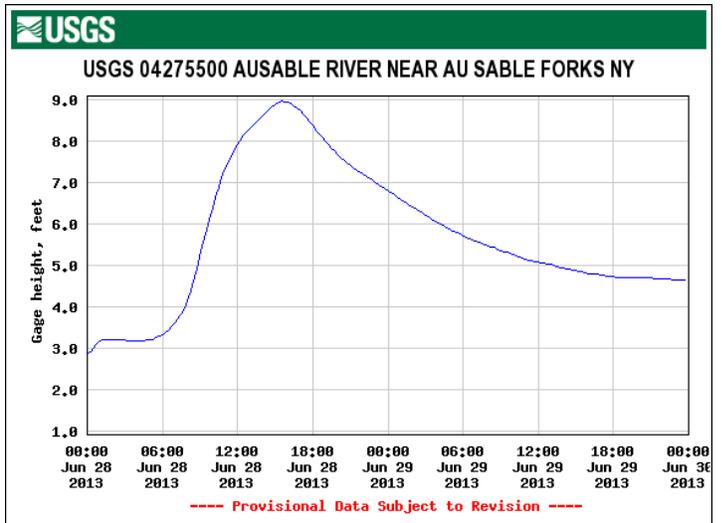


Figure 9.

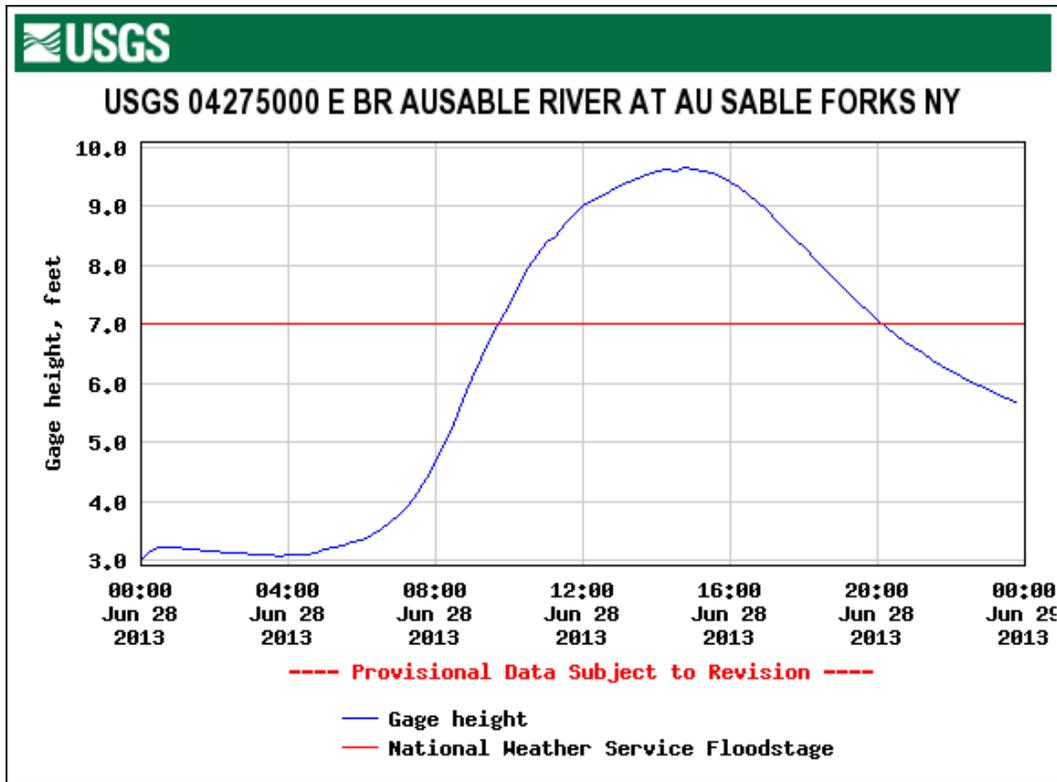
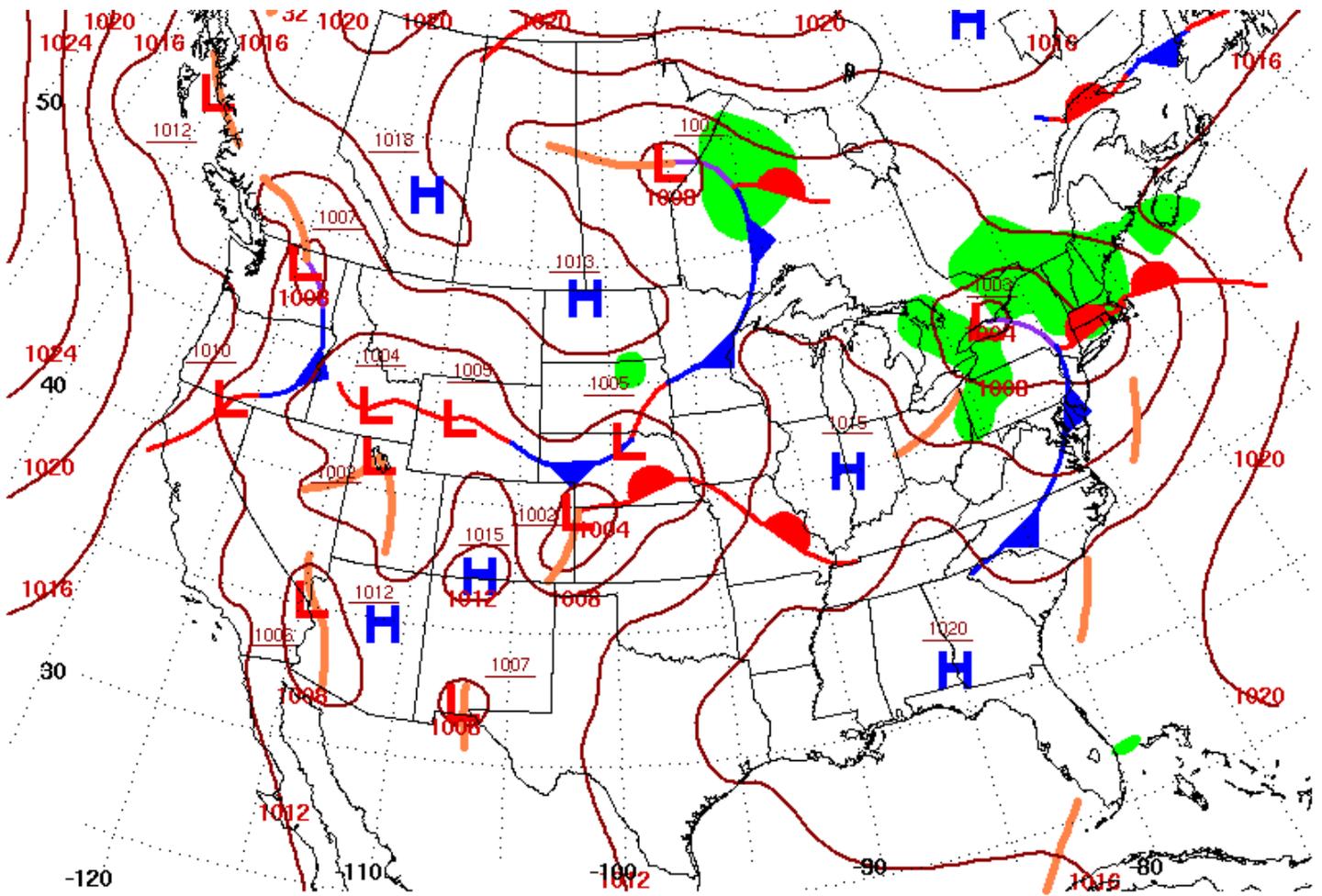


Figure 10.

**Flood Products Issued June 2013
WFO Burlington**

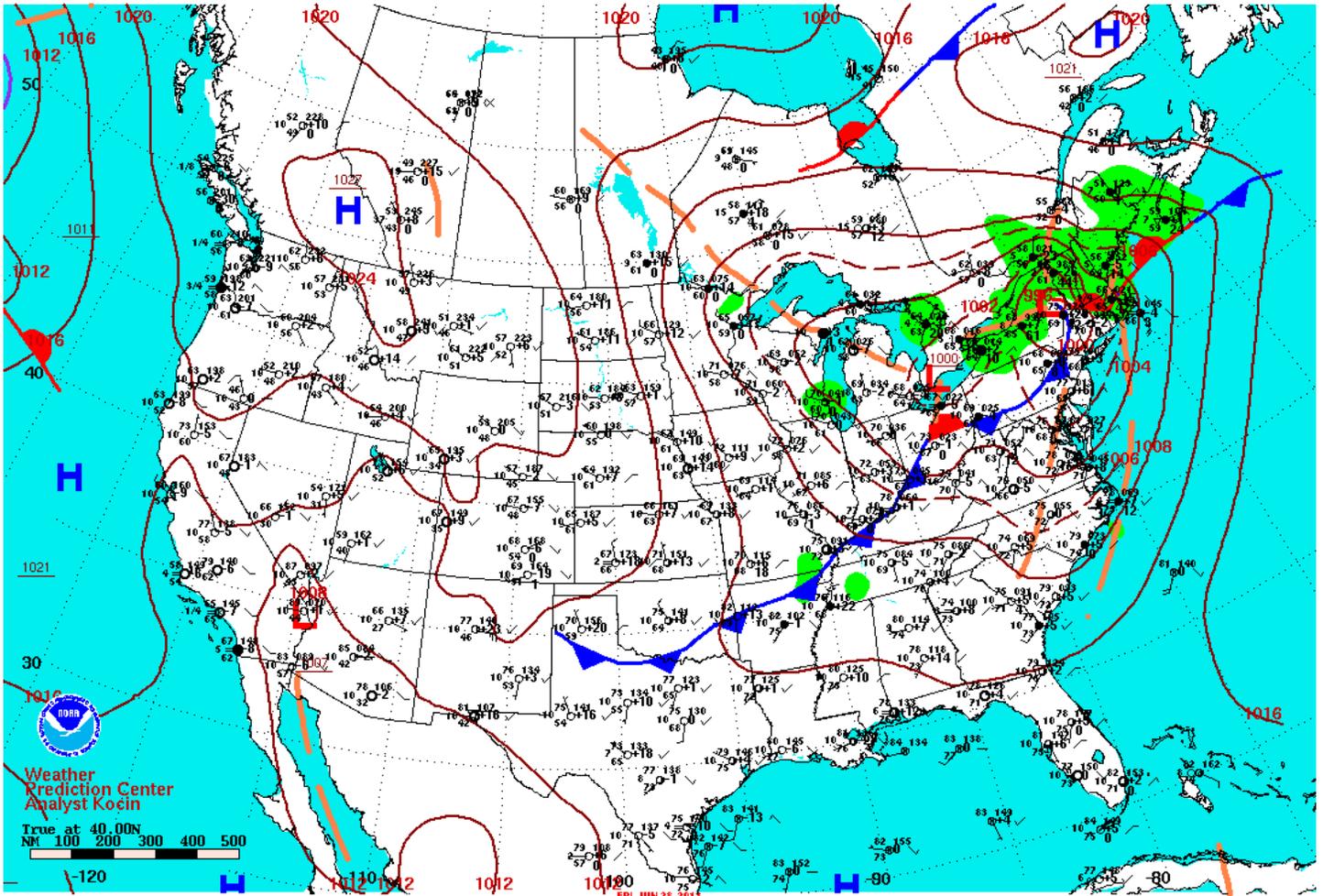
Product	Location (Counties/State)	Reason	Start (UTC)	End (UTC)
Flood Warning	Clinton, Franklin/ NY		12/0046	12/1245
Flood Warning	Clinton, Franklin, St Lawrence/ NY		12/0157	13/0817
Flood Warning	Clinton, Essex/ NY		12/0241	12/1430
River Flood Warning	Saranac River @ Plattsburgh/NY		12/0925	13/0353
Flood Warning	Clinton, Franklin/NY		12/1252	12/1845
Flood Warning	Clinton, Franklin/NY		12/1845	13/0814
Flash Flood Warning	Rutland, Windsor, Addison/ VT		23/2142	24/0145
Flash Flood Warning	Clinton/NY		25/2035	25/2330
Flash Flood Warning	Addison, Rutland/VT		25/2056	26/0000
Flash Flood Warning	Essex/NY		27/2211	28/0200
Flood Warning	Essex/NY		28/0401	28/2200
River Flood Warning	East Branch Ausable River @ Au Sable Forks/NY		28/0615	29/0205
Flood Warning	Franklin, St Lawrence/NY		28/1150	28/1745
Flash Flood Warning	Essex/NY		28/0159	28/0600
Flash Flood Warning	Washington, Lamoille, Addison, Chittenden/VT		29/1918	29/2315
Flash Flood Warning	Orleans, Caledonia, Essex/VT		29/2107	30/0100
Flood Warning	Clinton/NY		30/0012	30/0415

Table 2.



Surface Weather Map at 7:00 A.M. E.S.T.

Figure 11. Surface weather map at 7 am EST on June 12, 2013.

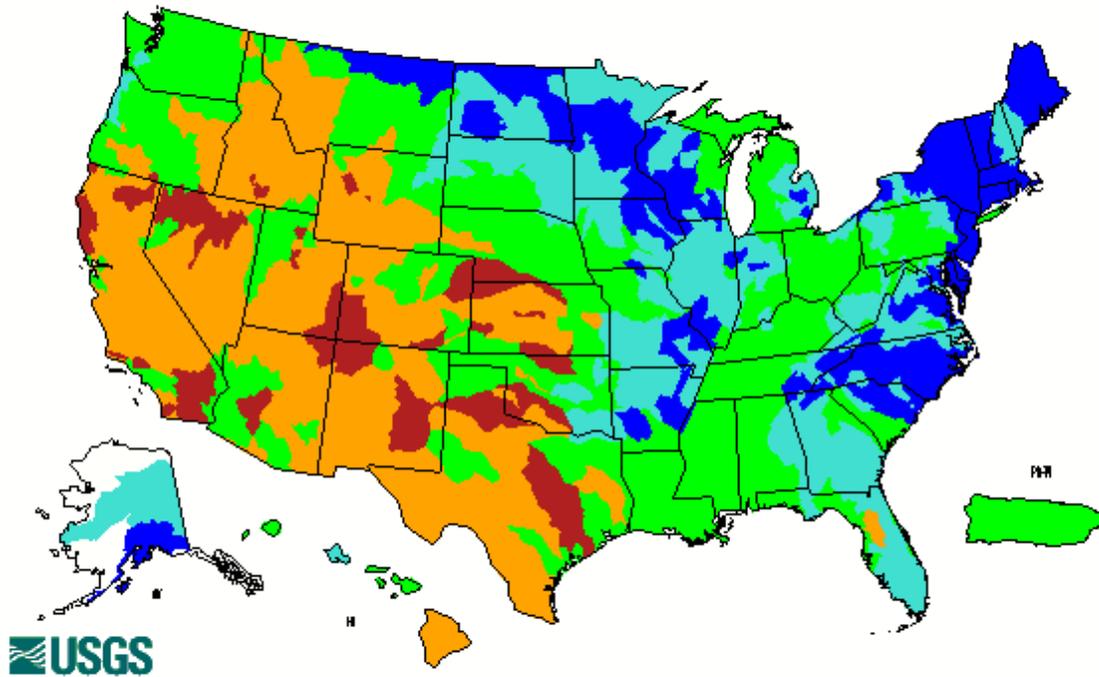


Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.
 Figure 12. Surface weather map at 7 am EST on June 28, 2013.

Map of monthly-average streamflow for the month of year

June 2013

June 2013



Explanation - Percentile classes							
							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Figure 13.

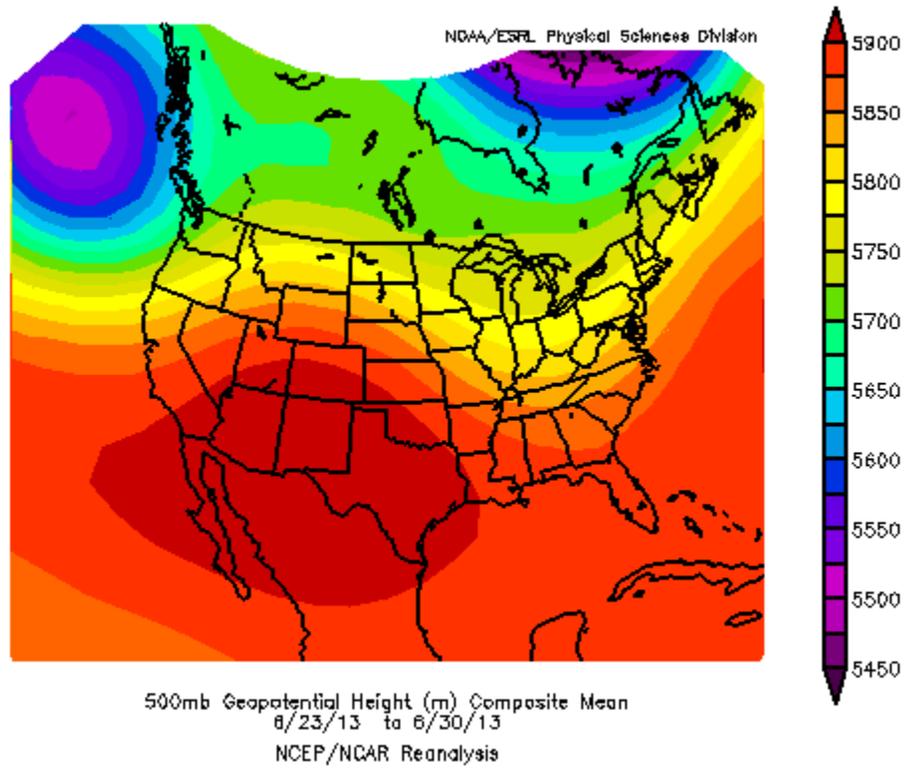
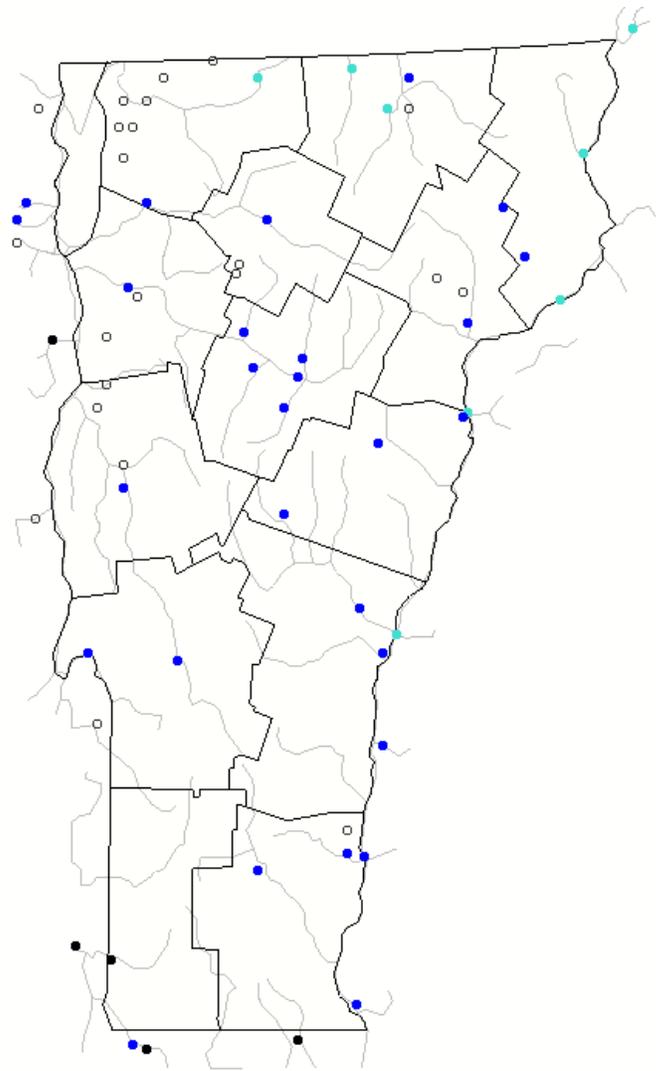
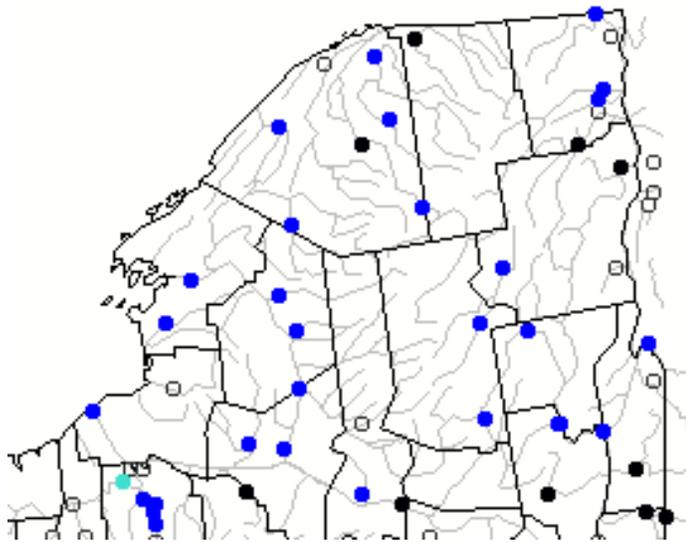


Figure 14. NCAR Reanalysis of Composite Mean 500mb Height for the last week of June (23-30) 2013.

- High
- > 90th percentile
- 76th - 90th percentile
- 25th - 75th percentile
- 10th - 24th percentile
- < 10th percentile
- Low
- Not ranked

June 2013



Figures 15 & 16. Monthly Average Streamflow for Northern New York and Vermont.