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From: WeatherTalk - Mark Seeley's Weekly Weather Commentary
[WEATHERTALK@LISTS.UMN.EDU] on behalf of Mark Seeley [mseeley@UMN.EDU]
Sent: Friday, July 01, 2005 8:50 AM
To: WEATHERTALK@LISTS.UMN.EDU
Subject: Minnesota WeatherTalk for Friday, July 1, 2005

To: WeatherTalk for MPR's Morning Edition
From: Mark Seeley, Dept of Soil, Water, and Climate
Re: Topics for MPR's Morning Edition, Friday, July 1, 2005

Headlines:

- It's hot and humid elsewhere as well
- Preliminary Climate Summary for June
- Positive Response to the 1978 flash floods
- Extreme heat and rain on the 4th of July
- Almanac for July 1st
- LEWP defined
- Outlooks

Topic: Not alone in coping with heat and humidity

Some central and southern European countries have been suffering from too much heat this month. There were 18 heat related deaths reported from Vicenza and Milan in Italy this week. In fact, Spain, France, and Italy have invoked precautionary procedures to protect the elderly from heat related health risks. Many of these new procedures were instituted in larger European cities as a result of the lethal heat wave of August 2003, which resulted in thousands of deaths. The recent heat has had some detrimental effects on crops in those countries as well. Fortunately the spell of warm weather in France will moderate this week for the start of the Tour de France bike race.

Topic: Preliminary Climate Summary for June

A tropical like weather pattern dominated in June across Minnesota. Dewpoints exceeded 70 degrees F, even 80 degrees F on some days, producing Heat Index values of over 100 degrees F. Rainfall was frequent and abundant. Most locations reported above normal rainfall for the month, with the heaviest amounts in western sections of the state. Rainfall was recorded on 15 to 18 days during the month at most stations. Numerous severe thunderstorms occurred bringing hail and heavy rains. It hailed for over 30 minutes in Meeker County on the 27th and on the 8th thunderstorms brought 5 to 6 inches of rainfall to parts of Goodhue and Wabasha Counties (near Wanamingo and Zumbro Falls). Thunderstorm generated winds in excess of 70 mph snapped and uprooted trees in several areas on the 20th, the 27th and the 29th. Six Minnesota Counties reported tornadoes on the 29th including Lyon, Cottonwood, Nicollet, Le Sueur, Watonwan, and Blue Earth. An additional 14 counties also reported large hail. June concluded with a record 2.08 inches of rainfall reported at Grand Marais on the 30th.

Temperatures averaged 1 to 6 degrees F warmer than normal for June, mostly thanks to warm nights. In fact in southern locations June of 2005 will rank in the warmest 10 percent historically. Extremes ranged from 99 degrees F at Benson and Ortonville on the 23rd to just 31 degrees F at Embarrass on the 17th. For late planted and slowly developing crops, the warm temperatures of June were beneficial in accelerating plant growth. Growing Degree Days were well above normal for the month.

For the second month in a row Minnesota did not report the nation's lowest temperature on any date, a highly unusual occurrence historically for a state known by some as the American Siberia.

Topic: Positive Response to the flash floods of 1978

As we find ourselves in the midst of yet another wet growing season in Minnesota, all the

reports of excessive rainfall bring back memories of the 1978 growing season when nine separate flash floods occurred around the state, two particularly traumatic ones in the Rochester area. On July 1st that year flash floods struck in Goodhue, Wabasha, Winona and Houston Counties of southeastern Minnesota, dumping 7-9 inches of rain in places and flooding most watersheds, including the Zumbro River. Rochester received over 1.5 inches from that storm, but it was a modest precursor of what was to come. A few days later on July 5-6 Rochester received nearly 7 inches of rainfall, five inches coming in just a three hour period. This flooded Bear Creek, Silver Creek, Cascade Creek and the South Fork of the Zumbro River, all of which flow through Rochester. An all-time flood crest record was established on the South Zumbro River with a gage reading of 23.36 feet. Five people were killed and hundreds of properties were damaged, totaling an estimated \$79 million in losses. About 1/4 of the city was under six feet of water and over 5000 were forced to evacuate their homes. And that was just the first chapter of severe weather for Rochester that summer. On September 12th a second flash flood occurred as a result of 7.07 inches of rainfall in the downtown area. Although no deaths were reported, another \$5 million in damages occurred.

A drier than normal August, followed by a dry early September was a blessing as the landscape was able to absorb more of the rainfall from the second storm than it had in the July storm.

As a result of this historic summer flood in Rochester, the Army Corps of Engineers, USDA National Resources Conservation Service, and the City of Rochester partnered to undertake a \$92 million flood control project on the south fork of the Zumbro River and its tributaries. The project was completed in 1995. Improvements to the channeling and routing of water through Rochester, as well as the building of upstream impoundment structures has greatly alleviated the flood risk. For example, since 1999 the Rochester area has recorded thunderstorm rainfall of over 4 inches in a 24 hour period on four occasions, only one of which has produced serious consequence for the downtown area or the local watersheds, that of June 9, 2004 when basements and streets were flooded as a result of getting nearly 2.5 inches of rain in less than one hour. During that storm a ten year old boy was rescued trying to cross Cascade Creek on a surf board.

MPR listener question: When was the hottest 4th of July in Minnesota? Also when was the wettest?

Answer: In the Twin Cities Metro Area, the hottest July 4th was in 1949 when it hit 100 degrees F and the Heat Index reached 111 degrees F. The wettest was in 1900 when 2.27 inches of rain fell in the Twin Cities. Statewide the hottest July 4th was in 1936 when both Pipestone and Worthington reported 107 degrees F. The all-time wettest July 4th was in 1995 when Milan received 9.78 inches of rainfall that produced flash flooding. The Chippewa River rose 9 feet and reached its 2nd highest ever flood crest. Thirty-two sheep were drowned in the flood.

Twin Cities Almanac for July 1st:

The average MSP high temperature for this date is 81 degrees F (plus or minus 7 degrees F standard deviation), while the average low is 61 degrees F (plus or minus 7 degrees F standard deviation).

MSP Local Records for July 1st:

MSP weather records for this date include: highest daily maximum temperature of 100 degrees F in 1883 (NWS 99 F in 1911); lowest daily maximum temperature of 60 degrees F in 1945; lowest daily minimum temperature of 46 degrees F in 1969 and 1995; highest daily minimum temperature of 80 degrees F in 2002; record precipitation of 2.85 inches in 1997. The Heat Index approached 108-110 degrees F on this date in both 1911 and 1916.

Average dew point for July 1st is 58 degrees F, with a maximum of 78 degrees F in 1916 and a minimum of 38 degrees F in 1995.

All-time state records for July 1st:

Scanning the state climatic data base: the all-time high for this date is 103 degrees F at Fergus Falls (Otter Tail County) in 1921 and at Winona in 1931; The all-time low for this date is 30 degrees F at Brimson (St Louis County) in 1988. The all-time state record for precipitation on this date is 8.00 inches at Theilman (Wabasha County) in 1978.

Word of the Week: LEWP (pronounced loop)

This is another severe weather acronym standing for Line Echo Wave Pattern. It is derived from the radar echo pattern observed on the screen when a line of convective thunderstorms has become subjected to uneven acceleration. As a consequence a portion of the line observed on the radar display developes a bulge or arch, while another portion shows a kink. The bulge portion of the line is usually associated with damaging winds. This pattern is smaller in scale than the large continuous bulge that is observed with a derecho (straight line wind storm). Some LEWP radar signatures have appeared during the recent June thunderstorms.

Outlook:

Looks like temperatures will stay near seasonal averages over the weekend with a chance for widely scattered showers and thunderstorms later on Saturday in the west and across the state on Sunday. The 4th of July looks to be dry, with increasing chances for showers again Tuesday and Wednesday. Another warming trend will be evident by the end of next week.

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