

## Sources of Hourly Surface Data and Weather Maps for the U.S.

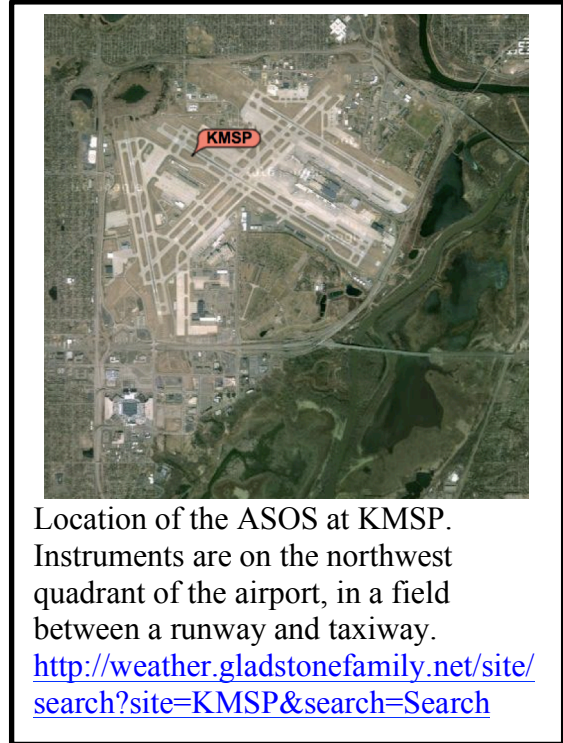
### National Weather Service

An alternative source to Plymouth State College to get hourly observations is the National Weather Service (NWS). Hourly surface observations at KMSP (Minneapolis-St. Paul International Airport), or for any major U.S. airport, can be obtained from a number of sources. Data from for the past 720 hours (30 days) are available at URL

<http://www.wrh.noaa.gov/mesowest/timeseries.php?wfo=twc&sid=KMSP&num=720> .

The following table shows data for KMSP for the 24 hours ending 2:53 pm CDT, 4 Oct 2016. Note that on rare occasions, data may be missing owing to power losses, instrument failure or routine maintenance.

A cautionary note: The amount of rain that appears in column labeled "24 Hour Precip" is not the amount that you want. It is precipitation for the 24-h period that ends 1200 UTC, or 6:00 am/7:00 am CST/CDT.



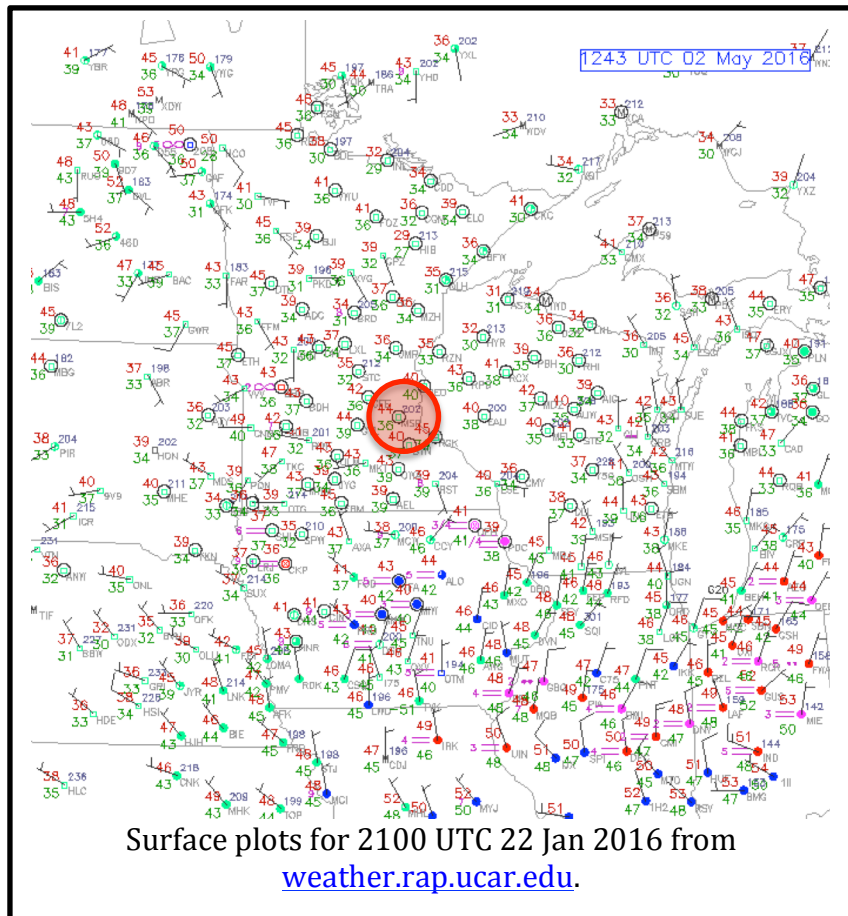
Date (CDT)	Temp (F)	Dew (F)	Relative Humidity (%)	Wind Direction	Wind Speed (MPH)	Visibility (miles)	Weather	Clouds	Station Pressure (inches)	Sea Level Pressure (mb)	Altimeter Setting (inches)	1 Hour Precip (inches)	3 Hour Precip (inches)	6 Hour Precip (inches)	24 Hour Precip (inches)	Hr6 Max (F)	Hr24 Max (F)	Hr24 Min (F)	
04 Oct 2:53 pm	75	57	54	SSE	20G28	10.00		SCT048,BKN140	28.87	1007.4	29.76								
04 Oct 1:53 pm	74	58	57	SE	24G31	10.00		FEW060,BKN140	28.89	1008.2	29.78								
04 Oct 12:53 pm	70	57	64	SSE	18G25	10.00		FEW060,BKN110,BKN150	28.92	1009.3	29.81	T		0.06		70	58		
04 Oct 11:53 am	67	58	73	SE	20G29	10.00		BKN110,BKN150	28.95	1010.3	29.84	T							
04 Oct 10:53 am	63	58	83	SE	16	10.00	Lt Rain	SCT060,BKN100,BKN180	28.96	1011.1	29.86	0.02							
04 Oct 9:53 am	60	55	82	SE	16	9.00	Mod Rain	FEW065,OVC100	28.96	1011.2	29.86	0.03	0.04						
04 Oct 8:53 am	59	54	82	SE	18	8.00	Lt Rain	SCT055,BKN075,OVC100	28.97	1011.4	29.87	0.01							
04 Oct 7:53 am	59	54	82	SE	14	10.00	Lt Rain	OVC050	28.98	1011.6	29.88	T							
04 Oct 6:53 am	59	52	77	SE	15	10.00		FEW100,BKN170	28.97	1011.3	29.87					60	58		
04 Oct 5:53 am	58	52	82	SE	10	10.00		BKN110	28.96	1011.0	29.86								
04 Oct 4:53 am	58	52	82	SE	14	10.00		FEW200	28.97	1011.1	29.87								
04 Oct 3:53 am	58	52	82	SE	14G23	10.00		FEW200	28.97	1011.1	29.87								
04 Oct 2:53 am	59	52	77	SE	14G21	10.00		FEW200	28.99	1011.8	29.89								
04 Oct 1:53 am	59	52	77	SE	11	10.00		CLR	28.99	1011.8	29.89								
04 Oct 12:53 am	59	52	77	SE	11	10.00		CLR	29.00	1012.4	29.90					70	59	76	53
03 Oct 11:53 pm	60	51	72	SSE	11	10.00		CLR	29.01	1012.6	29.91								
03 Oct 10:53 pm	62	51	68	SSE	11	10.00		SCT300	29.00	1012.2	29.90								
03 Oct 9:53 pm	64	51	64	SSE	11	10.00		BKN300	29.00	1012.5	29.90								
03 Oct 8:53 pm	65	50	60	SSE	15G21	10.00		BKN300	29.01	1012.7	29.91								
03 Oct 7:53 pm	68	52	56	SE	13	10.00		FEW300	29.00	1012.4	29.90								
03 Oct 6:53 pm	70	50	49	SE	15	10.00		FEW300	29.00	1012.3	29.90					76	70		
03 Oct 5:53 pm	73	51	47	SE	13	10.00		FEW300	29.00	1012.2	29.90								
03 Oct 4:53 pm	75	52	44	SSE	17	10.00		FEW055,FEW300	29.01	1012.7	29.91								
03 Oct 3:53 pm	75	52	44	SSE	15G23	10.00		FEW055	29.03	1013.5	29.93								
03 Oct 2:53 pm	75	52	44	S	8	10.00		CLR	29.05	1013.9	29.95								

Hourly reports for KMSP from the above NWS link.

## University Corporation for Atmospheric Research

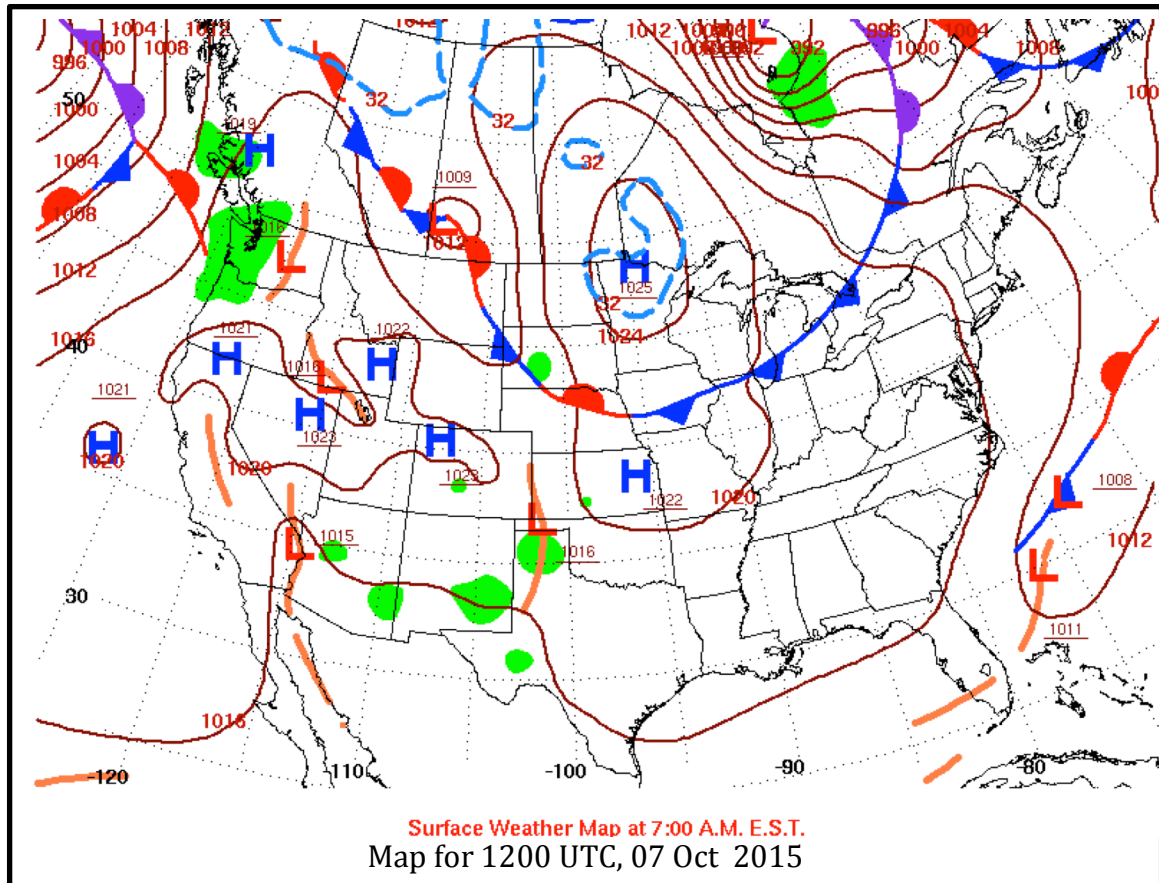
Regional maps for the U.S. with surface station plots having the KMSP observation can be obtained from a copy and paste of the following link IF the data remain in the NCAR archives... up to one week under ideal circumstances. For example, to obtain the map for a local time that is closest to 2 May 2016, 1200 UTC (7:00 pm CDT), navigate to <http://weather.rap.ucar.edu/surface/displaySfc.php?region=abi&endDate=20160215&endTime=22&duration=0>. Note how I put the proper UTC date/time of endDate=20160502 and endTime=12. What appears is a map with a time of "1243 UTC 2 May 2016". Do not let the time label of 1243 fool you. The map with the 1200 UTC reports is labeled with the UTC time when the computer generated the plot, which is usually 30 to 45 minutes past the hour.

To obtain plots for other dates and times, you must edit the "endDate" and "endTime" strings accordingly. For example, to obtain the surface plot closest to 3 May 2016 for 2000 UTC (if the date has not been purged or is not in the future!), you would change the endDate string to "20160503" and and endTime=12. Again, maps older than 7 days are permanently purged from their system. Maps for the central and eastern U.S., where the density of weather stations is much higher than in the West, may seem rather cluttered and difficult to read at first to find the station plot for the airport that you desire. Solution: know your geography of major cities: e.g. MSP is enclosed by the red circle.



## NOAA National Centers for Environmental Prediction

High-quality, daily surface maps for 1200 UTC can be obtained from National Oceanic and Atmospheric Administration (NOAA), National Centers for Environmental Prediction INCEP) at <http://www.wpc.ncep.noaa.gov/dailywxmap/index.html>. The maps generally run 24 hours behind real-time.



If you desire a version of the above map that has station plots too, just click on the map itself when at the link <http://www.wpc.ncep.noaa.gov/dailywxmap/index.html>.

The WPC site is also source for lower-resolution, historical surface weather maps every three hours.. The following links give URL's for maps valid 0000 UTC 08 Oct 2014 with isobars and fronts that also either have station plots, IR satellite imagery or composite radar reflectivity.

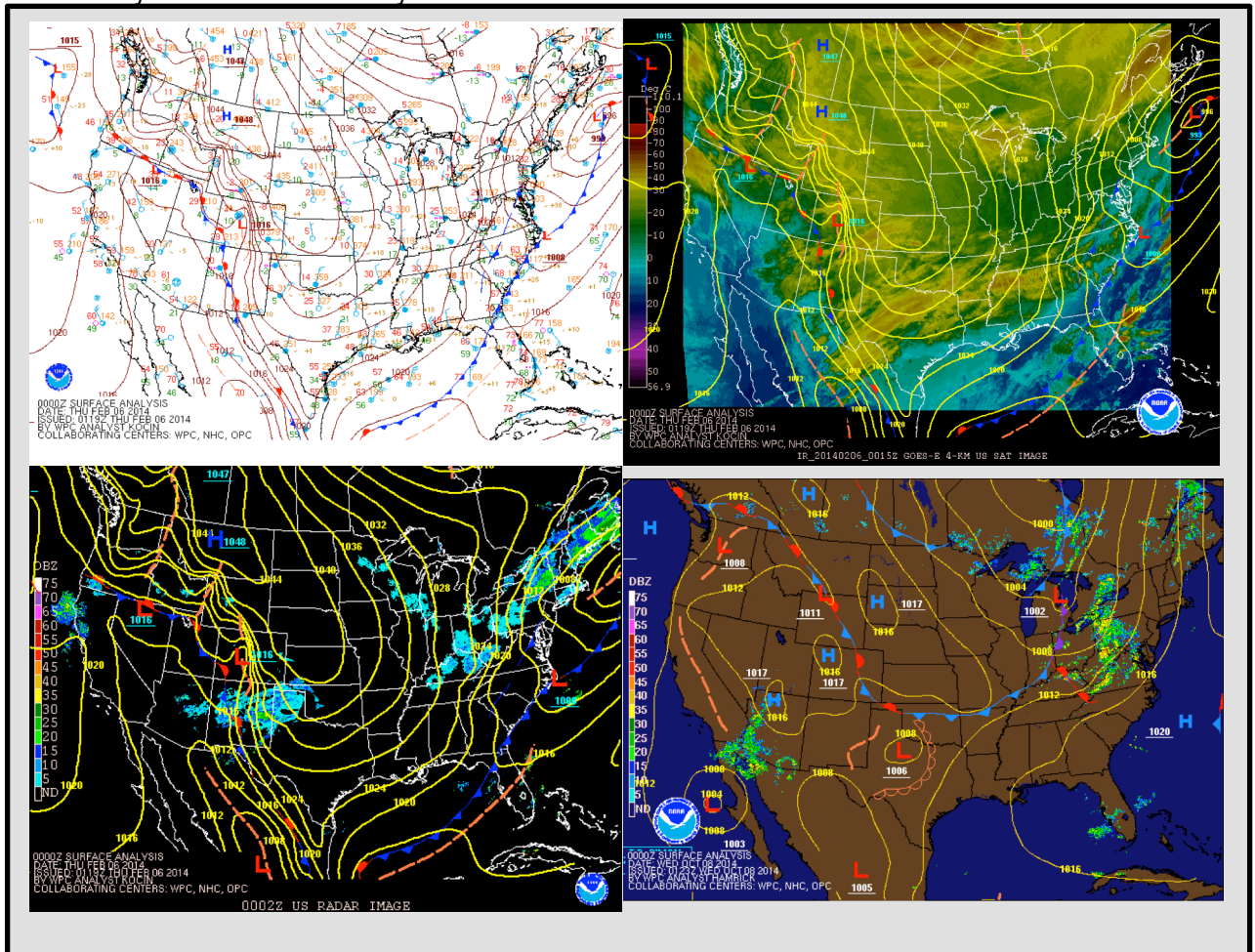
<http://www.wpc.ncep.noaa.gov/archives/sfc/2014/namussfc2014100800.gif>

<http://www.wpc.ncep.noaa.gov/archives/sfc/2014/ussatsfc2014100800.gif>

[http://www.wpc.ncep.noaa.gov/archives/sfc/2014/radsfcus\\_exp2014100800.gif](http://www.wpc.ncep.noaa.gov/archives/sfc/2014/radsfcus_exp2014100800.gif)

[http://www.wpc.ncep.noaa.gov/archives/sfc/2014/radsfcus\\_exp\\_new2014100800.gif](http://www.wpc.ncep.noaa.gov/archives/sfc/2014/radsfcus_exp_new2014100800.gif)

These analyses are available every 3 hours about two hours after the fact.



To get analyses for a different date/date, change the URL date/time string yyyyymmddhh (2014100800) accordingly. For example, to get maps for 1800 UTC on 4 October 2016, paste the following URL's into your browser:

<http://www.wpc.ncep.noaa.gov/archives/sfc/2016/namussfc2016100418.gif>

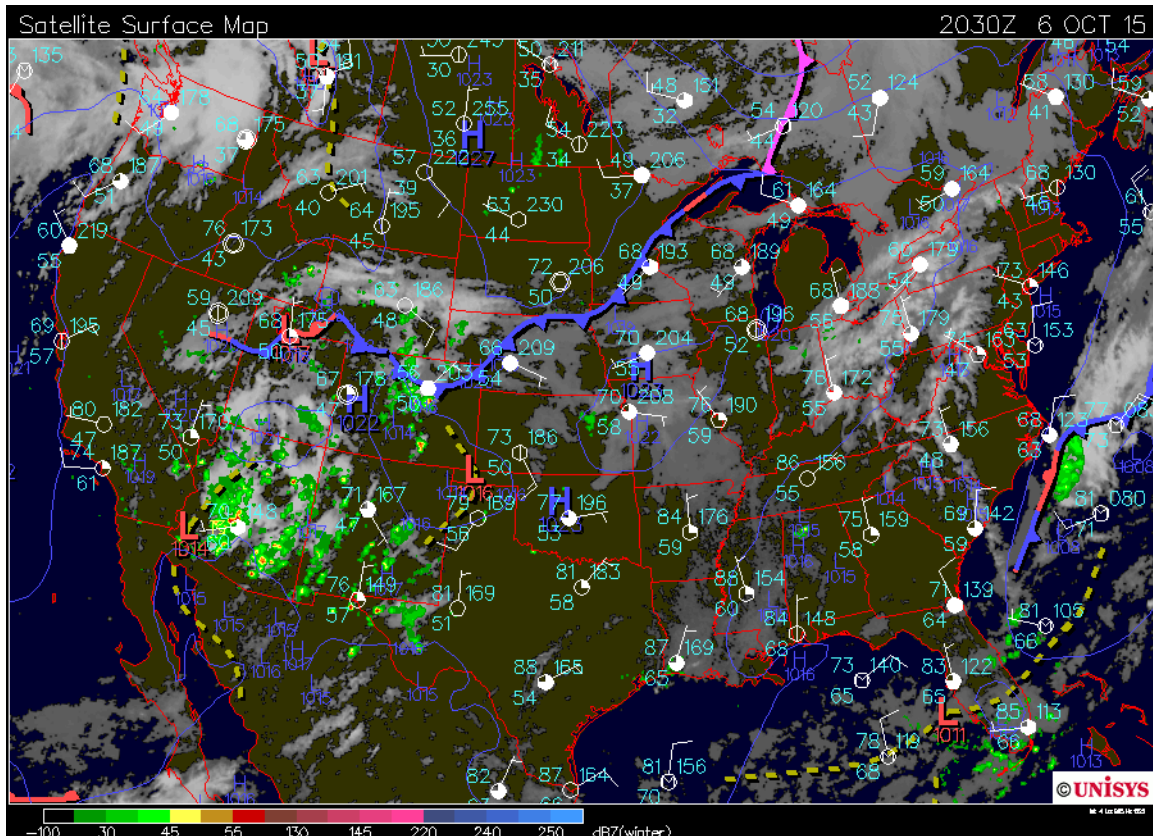
<http://www.wpc.ncep.noaa.gov/archives/sfc/2016/ussatsfc2016100418.gif>

[http://www.wpc.ncep.noaa.gov/archives/sfc/2016/radsfcus\\_exp2016100418.gif](http://www.wpc.ncep.noaa.gov/archives/sfc/2016/radsfcus_exp2016100418.gif)

[http://www.wpc.ncep.noaa.gov/archives/sfc/2016/radsfcus\\_exp\\_new2016100418.gif](http://www.wpc.ncep.noaa.gov/archives/sfc/2016/radsfcus_exp_new2016100418.gif)

## University Corporation for Atmospheric Research for Composite Loops

Loops of hourly surface maps with GOES satellite imagery and Doppler radar intensity can be obtained at <http://www.mmm.ucar.edu/imagearchive/>. (Maps are produced by Unisys Weather, <http://www.weather.unisys.com>.) The archives of surface, satellite and radar maps are generally posted online within 12 hours of the analysis time. Its menu is straightforward and intuitive to use. I highly recommend that you explore the site. It can be a valuable resource of weather maps for your project. The following is from an hourly loop for 06 OCT 15.



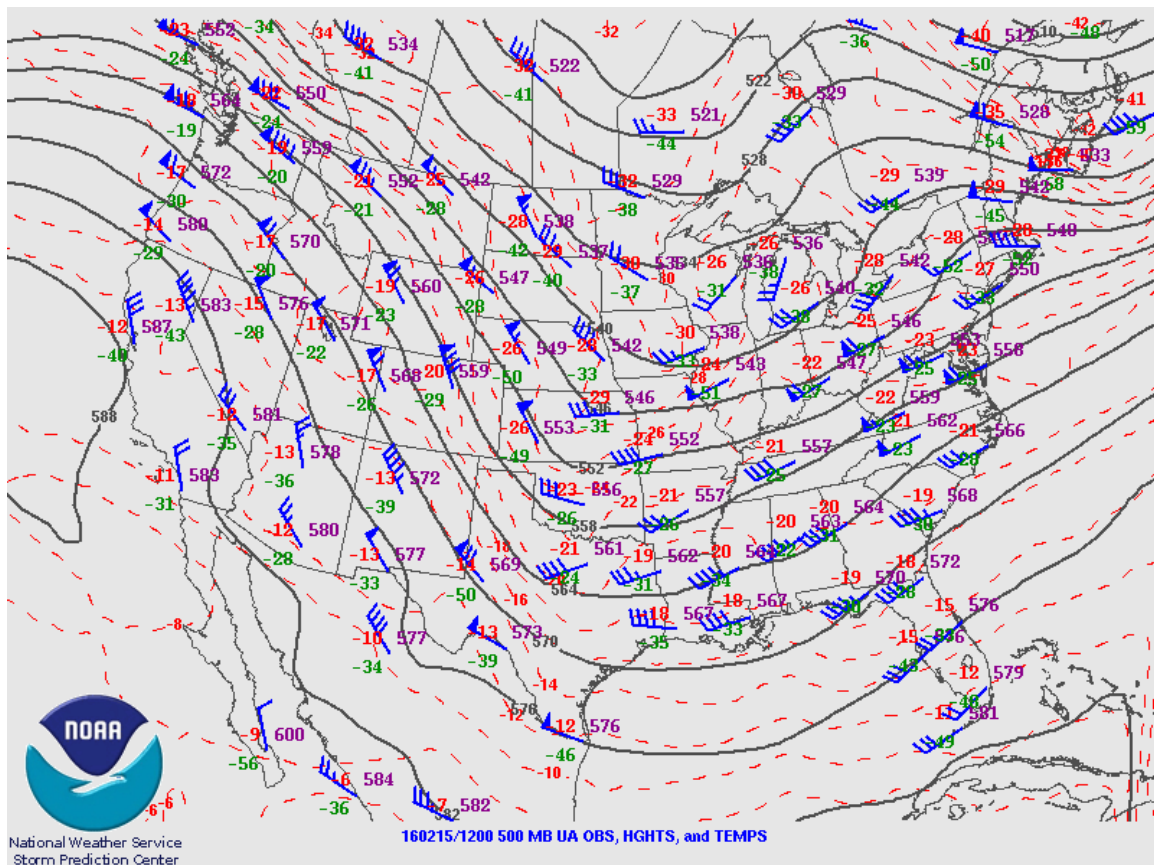
Another site to obtain historic surface weather maps (and upper-air maps too) with station model plots for the U.S. or other regions of the world is Plymouth State College at URL <http://vortex.plymouth.edu/u-make.html>. The menu is powerful and flexible, but it can seem overwhelming at first to set the menu to get what you want. I only recommend its use for the most patient of students who are driven to learn beyond minimum requirements. Unfortunately, I am not in a position to field individuals' questions or offer tutoring on how to use the site to its fullest capacity. These analyses become available approximately 24-36 hours after the fact.

## NOAA Storm Prediction Center (SPC) for Upper-Air Analyses

The NOAA Storm Prediction Center in Norman, OK is my preferred source to obtain upper-air maps in near real-time. Its repository of twice-daily analyses dates back to late 1998. I show the 500 mb analysis for 1200 UTC 15 Feb 2016 and the URL that retrieves it.

<http://www.spc.noaa.gov/cgi-bin-spc/getuadata.pl?MyDate1=160215&Time1=12&MyDate2=&Time2=12&align=V&Levels=500>.

To obtain the 500 mb map for 0000 UTC 15 Feb 2016, you would change string "MyDate1=160215&Time1=12" to "MyDate1=160215&Time1=00". To get a map for a different level, you would change the parameter "Levels=" to the mandatory pressure levels of either Sfc, 1000, 925, 850, 700, 300 or 250. When you use the site, you must make certain that upper and lower case letters agree with what is shown because the URL is case sensitive.



Hourly analyses and loops are archived at [http://www.spc.noaa.gov/exper/ma\\_archive/index2.html](http://www.spc.noaa.gov/exper/ma_archive/index2.html). These are advanced, detailed analyses that are obtained by setting the scroll tabs for the desired times, levels and parameters. Worth exploring if you are the adventuresome type with the interest and drive to delve deep into a subject on your own.