Resent-From: <jkenyon@ALBANY.EDU>
From: "Bosart, Lance F" <lbosart@ALBANY.EDU>
Subject: **Dec12-Jan13 NH climate**
Date: 4 February 2013 12:25:26 PM EST
To: <MAP@listserv.albany.edu>
Reply-To: "Bosart, Lance F" <lbosart@ALBANY.EDU>
6 Attachments, 348 KB

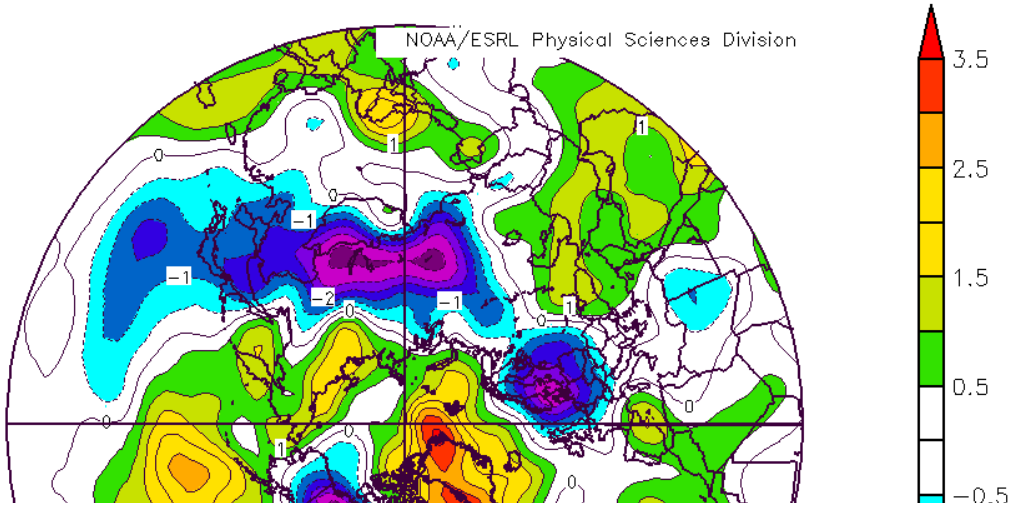
Hi Everyone,

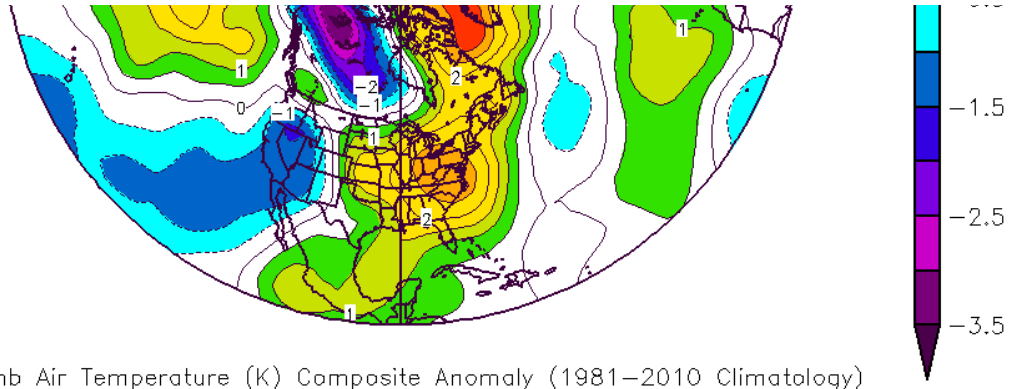
A brief report on NH meteorological winter at the 2/3 point. Attached images of: 1) anomalies of the 850 hPa temperature over the Northern Hemisphere (NH) and 700 hPa relative humidity anomalies over North America, and 2) the mean and anomaly 200 hPa geopotential heights and winds for the NH depict the grosswetterlagen features of the large-scale circulation (source: NOAA/ESRL/PSD).

With the exception of parts of western Canada, the western CONUS and eastern Pacific, positive temperature anomalies dominated the Western Hemisphere (WH). Negative 850 hPa over the western U.S. contributed to air quality problems when cold air was frequently trapped beneath subsidence inversions in the various mountain valleys as discussed previously by Jim Steenburgh. Unlike the wavy east-west oriented 850 hPa temperature anomaly pattern over much of the WH that largely reflects amplified flow, the 850 hPa temperature anomaly patterns over the Eastern Hemisphere (EH) are more meridionally oriented, consistent with a more wave number one/two flow pattern. Over the central and eastern U.S., much of eastern Canada, and part of the Arctic it's been yet another warm winter. The warmth over much of the central and eastern U.S. is also consistent with anomalously low 700 hPa % relative humidity with the exception of parts of the Southeast along the boundary where cold fronts frequently stalled and rainfall was concentrated.

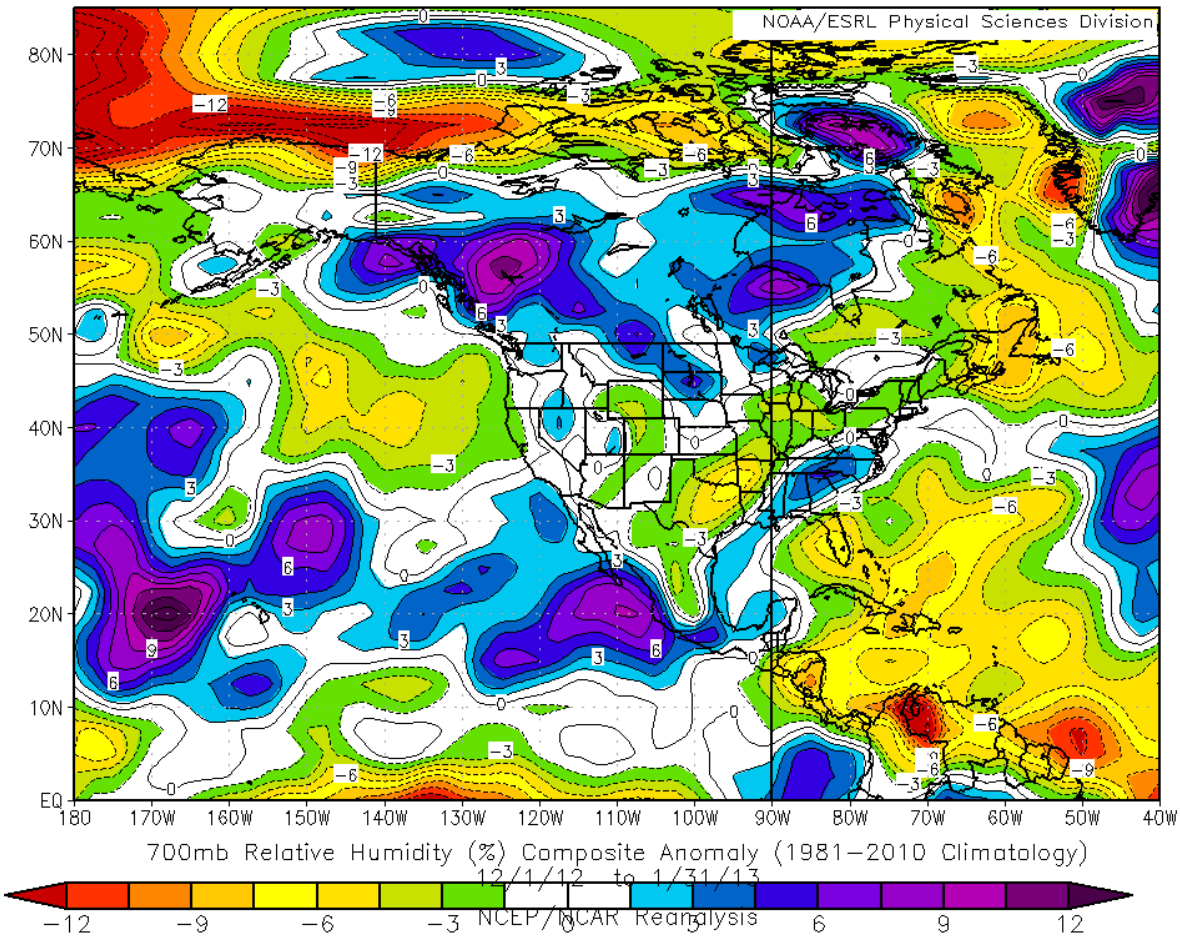
The 200 hPa flow over the EH is characterized by a broad wave number one pattern with a strong subtropical jet (STJ) and weaker middle and higher latitude flow. A quasi wave number two pattern prevailed over the WH. These NH 200 hPa flow patterns are somewhat similar to what was observed during winter 2011-2012. Once again, anomalously high 200 hPa geopotential heights prevailed over the Arctic Ocean and extended equatorward over the eastern Pacific and eastern North America. The STJ over much of the Western Hemisphere is anomalously weak, especially in the eastern Pacific. A downstream impact of an anomalously weak STJ over the eastern Pacific is the relative absence of southern stream disturbances entering western North America. Continued dryness over Texas reflects the relative absence of these southern stream disturbances. Anomalous upper-level southerly flow east of the Rockies minimized the frequency and equatorward extent of cold-air outbreaks and reduced the likelihood of strong surface boundaries setting up shop over the southern Plains where they could serve as a focus for cyclogenesis and precipitation.

Lance

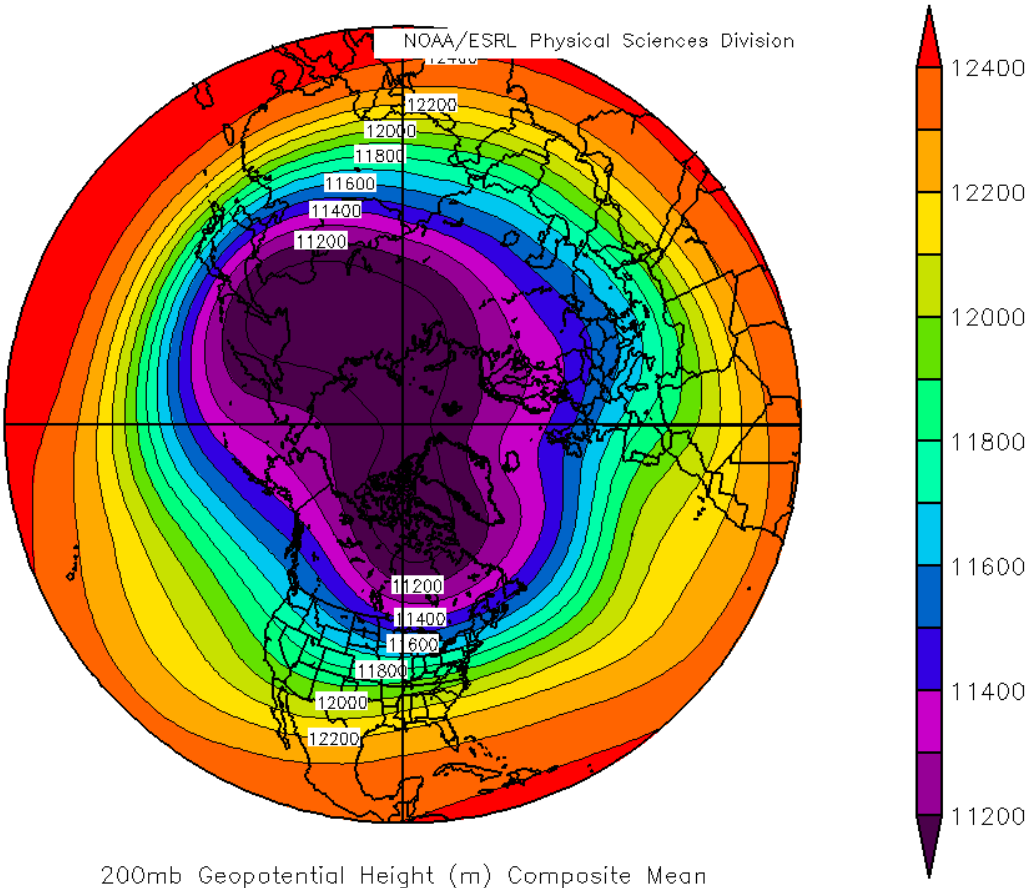




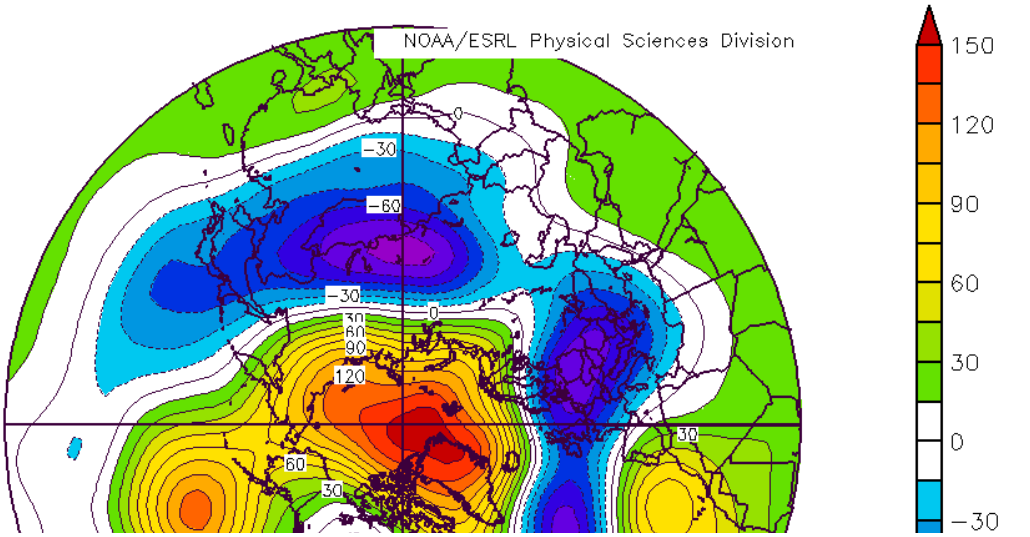
850mb Air Temperature (K) Composite Anomaly (1981−2010 Climatology)
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis

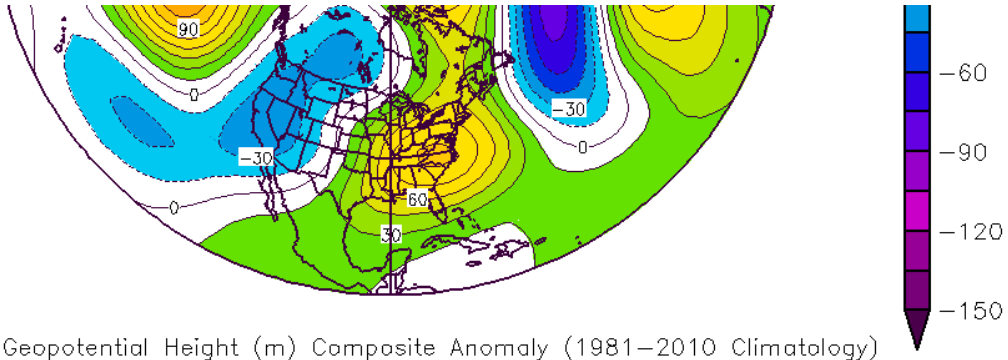


700mb Relative Humidity (%) Composite Anomaly (1981−2010 Climatology)
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis

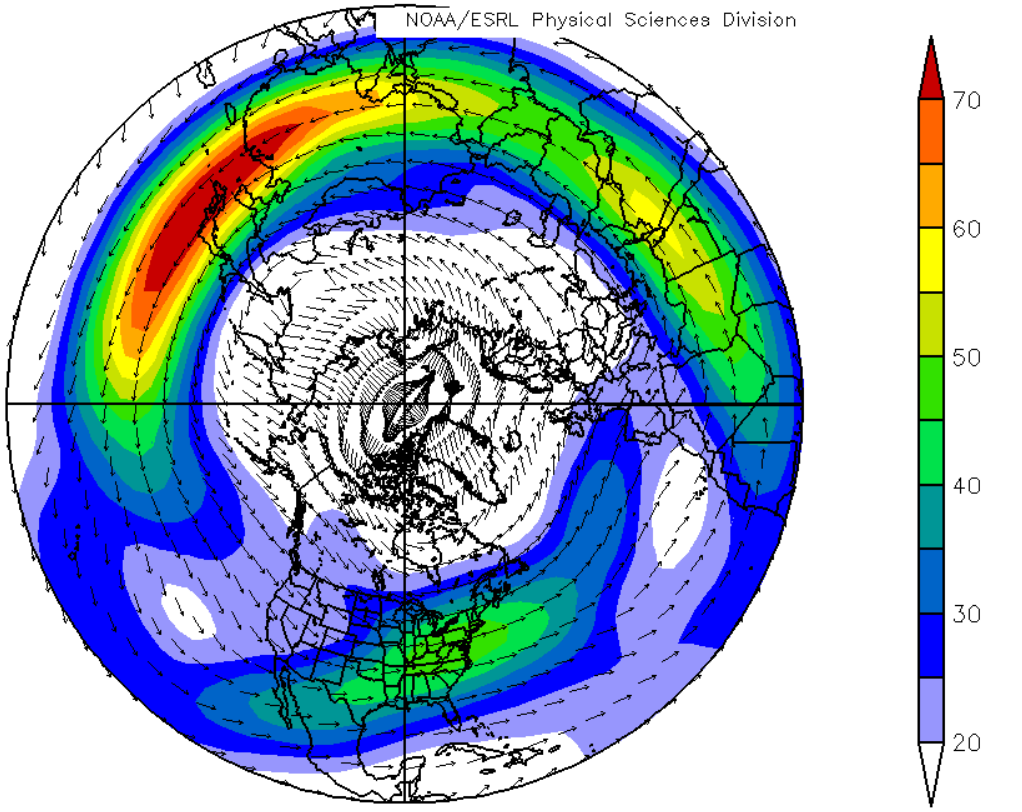


200mb Geopotential Height (m) Composite Mean
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis

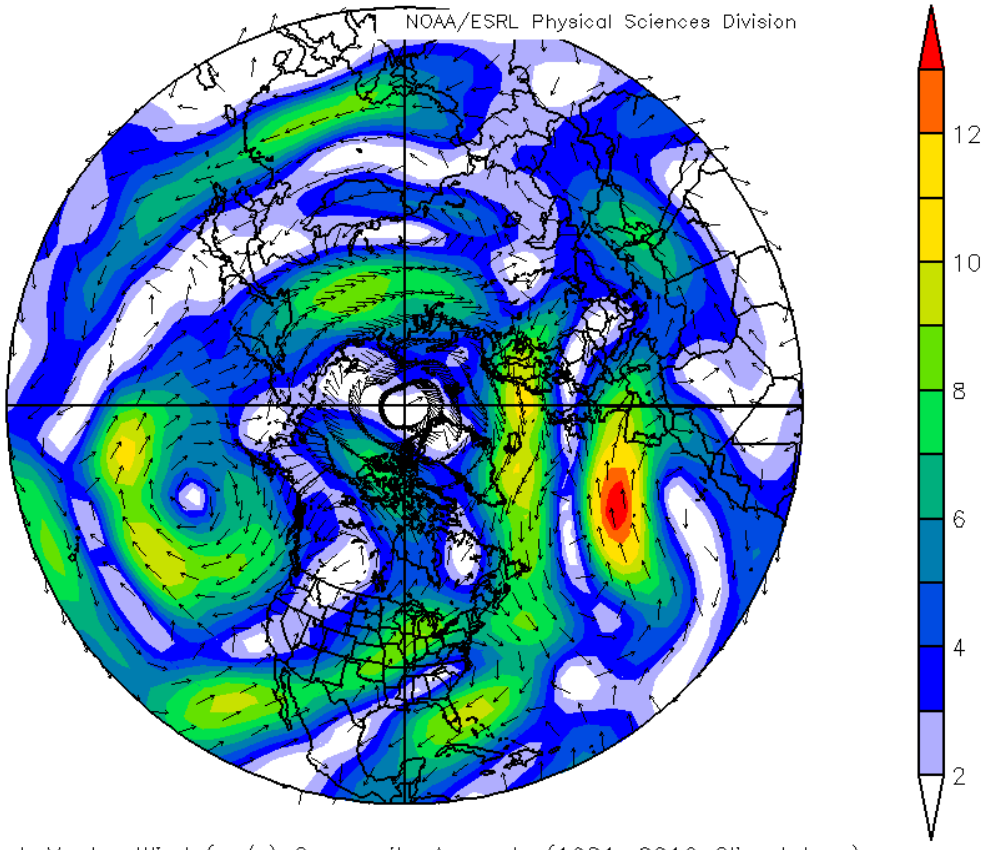




200mb Geopotential Height (m) Composite Anomaly (1981-2010 Climatology)
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis



200mb Vector Wind (m/s) Composite Mean
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis



200mb Vector Wind (m/s) Composite Anomaly (1981-2010 Climatology)
12/1/12 to 1/31/13
NCEP/NCAR Reanalysis
