

**From:** "Bosart, Lance F" <lbosart@albany.edu>  
**Subject:** **Fwd: another bomb**  
**Date:** 4 February 2013 5:18:28 PM EST  
**To:** "Kenyon, Jaymes S" <jkenyon@albany.edu>  
**Cc:** "Bosart, Lance F" <lbosart@albany.edu>  
▶ 2 Attachments, 1.7 MB

---

Hi Jaymes,

More maps from Ryan....along with explanations of his methodology....to add to the Atm 401/501 class web page.

Thanks.

Lance

Begin forwarded message:

**Resent-From:** <lbosart@albany.edu>  
**From:** "Maue, Ryan" <rnm02c@my.fsu.edu>  
**Subject:** **RE: another bomb**  
**Date:** 4 February, 2013 21:53:19 GMT  
**To:** "Bosart, Lance F" <lbosart@albany.edu>  
**Cc:** "MAP@listserv.albany.edu" <MAP@listserv.albany.edu>

Lance et al.

I should have clarified that I used a 6-hourly temporal sampling from the NCEP CFSR. The reanalysis output is available hourly with the 1-5 hour forecasts making up the increments between synoptic times. I will endeavor to make a more continuous "minima-map" using the 280,000 hourly time points available. The bulls-eyes do help to show the "most extreme" cyclones -- with one I know being ERICA IOP4 (Jan 1989). An Extratropical cyclone track database that's quality controlled with query capability sounds like a lot of work :-)

I've attached a global version and can make some broad judgments about this reanalysis (and others) which is probably conventional wisdom to many:

- (1) While 30-years is an accepted "normals" period, we know it is woefully short in terms of realizations of extreme events such as explosive extratropical cyclones. From 1979-2012, I have counted about ~1800 Northern Hemisphere "bombs" with a yearly frequency that is of the same order as tropical cyclones.
- (2) Comparing the most recent month (attached) to 32 previous years, the footprint of the extratropical cyclone storm track at low pressures (< 980 hPa) is actually quite small.
- (3) Tropical cyclones are typically poorly represented in the tropics (and subtropics) unless "normalized anomalies" are used to distinguish from the background pressure.
- (4) The Northern Hemisphere may have "more explosive" cyclones but their minimum-pressures are higher than the Southern Hemisphere where the background pressure is significantly lower. An energy or vorticity based intensity-metric applied objectively on normalized fields may help distinguish which basin is king.

I look forward to ECMWF's 20th Century reanalysis and JRA-55 to get us back into the 1950s-1970s with state-of-the-art data assimilation and modeling (at slightly higher-res).

RY

---

**From:** Bosart, Lance F [[lbosart@albany.edu](mailto:lbosart@albany.edu)]  
**Sent:** Monday, February 04, 2013 12:12 PM  
**To:** Maue, Ryan  
**Cc:** [MAP@listserv.albany.edu](mailto:MAP@listserv.albany.edu); Bosart, Lance F  
**Subject:** Re: another bomb

Hi Ryan,

Bomb fans rejoice. Thanks for the fascinating bomb map. You have plunged to new "depths" with your "minimalist" analysis approach.

A few questions about your analysis. Can one storm contribute to multiple grid point SLP minima? How many individual storms contributed to your map and where along the storm tracks was the lowest SLP found? Likewise, what storm produced the greatest number of grid points with lowest SLP? How do we interpret the local SLP minimum "firecrackers" between 37.5-45.0 N and 60.0-40.0 W? And what about the SLP minimum track that extends NE from near 45.0 N and 20.0 W? One storm or multiple storms?

The Groundhog Day storm of 2 Feb 1976 that I posed on earlier which reached a minimum SLP near (or just below) 945 hPa near the border of Quebec and southern Labrador, although outside the range of your CFSR analysis, would fall below the model-derived SLP minimum for 1979-2011 in the region.

Now if you can think of some way to move the Atlantic bombing range westward to help stir up some meteorological excitement in these parts I would be happy. Second dry and boring winter in a row here.

Lance

On 4 Feb, 2013, at 19:22, Maue, Ryan wrote:

Map,

Just a quick note about another explosive extratropical cyclone nearing 2-Bergerons will bottom at 948 hPa over Newfoundland taking a track along 60°W:

Current GFS cyclone phase (Bob Hart/FSU): <http://moe.met.fsu.edu/cyclonephase/gfs/fcst/archive/13020412/33.html>

At least since 1979, according to the NCEP CFSR, it will be one of the deepest over-land sea-level pressure readings for Eastern Canada & likely the "most explosive" in the neighborhood. It is another intense storm for the NH midlats during the past month or so.

Extreme easterly winds in the Labrador Sea should excite a decent Greenland tip-jet.

Cheers  
RYAN

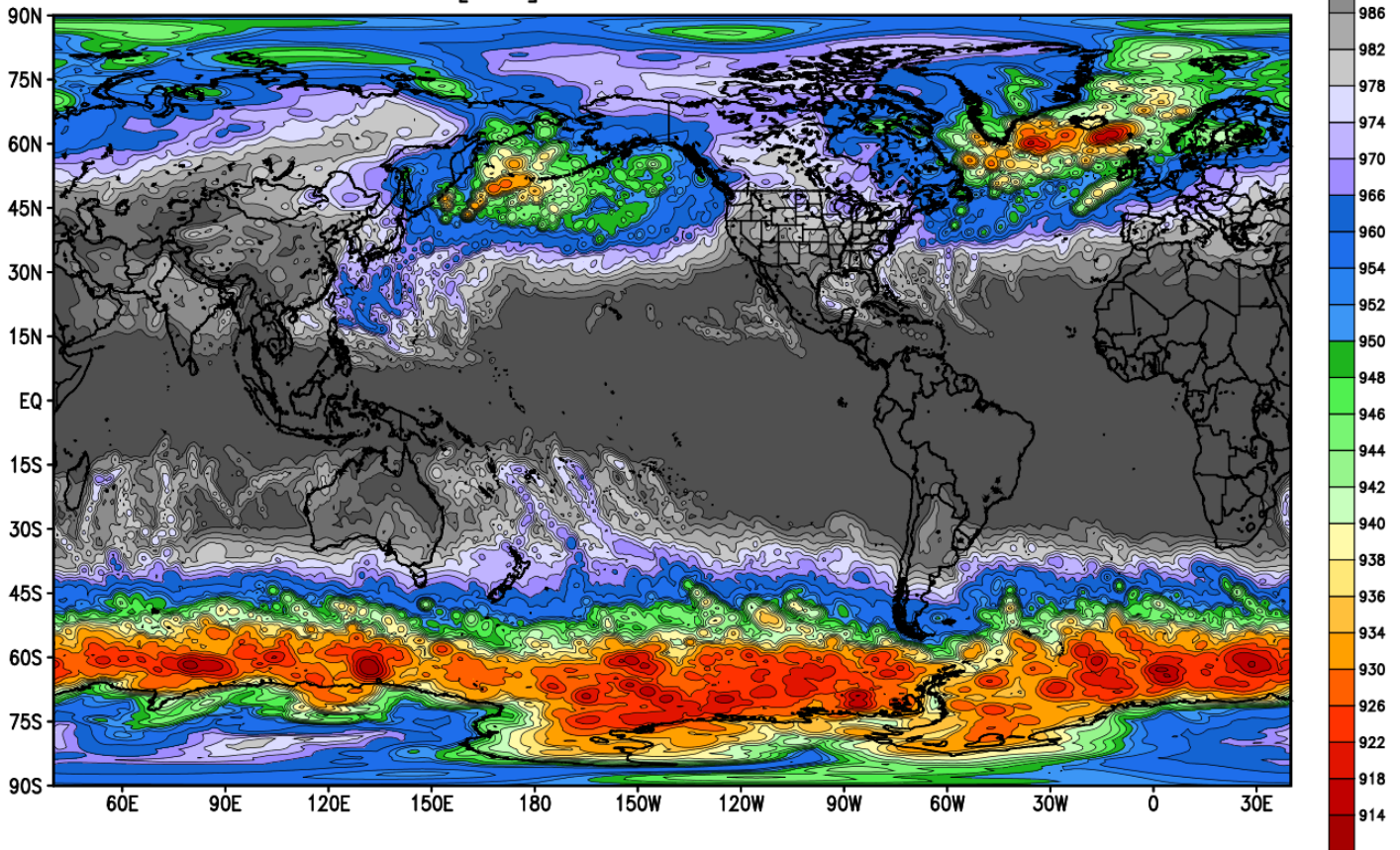
---

To unsubscribe from the MAP list, click the following link and send the email generated:

<minslp\_cfsr.png>

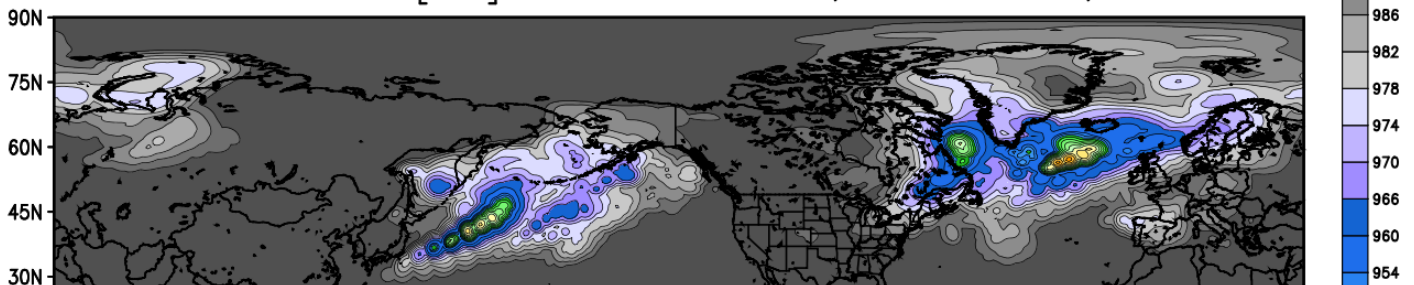
MaxSLP 1010.7 hPa  
MinSLP 909.2 hPa

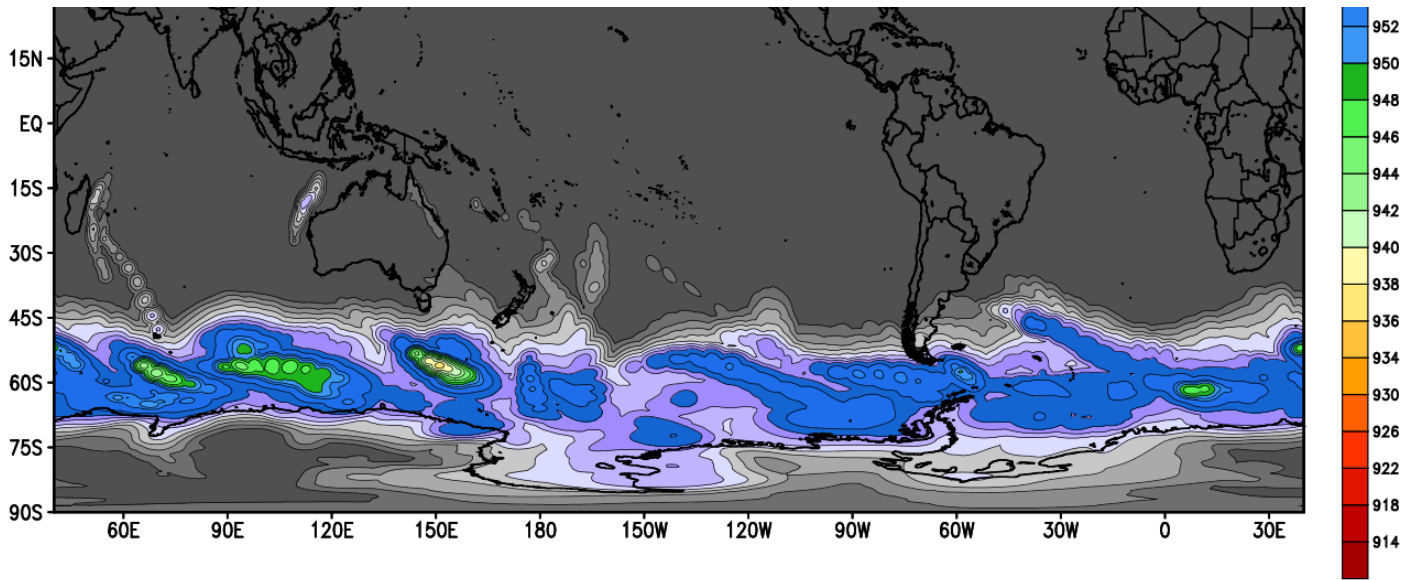
Minimum MSLP [hPa] NCEP CFSR Jan 1979 – March 2011



MaxSLP 1028.7 hPa  
MinSLP 933.1 hPa

Minimum MSLP [hPa] NCEP CDASv2 Jan 1, 2013 – Feb 4, 2013





Lance F. Bosart  
Distinguished Professor  
Department of Atmospheric and Environmental Sciences  
The University at Albany/SUNY/ES-227  
1400 Washington Avenue  
Albany, NY 12222 USA

Email: [lbosart@albany.edu](mailto:lbosart@albany.edu)  
Phone: 518-442-4564  
Fax: 518-442-5825