

# Weather Briefing

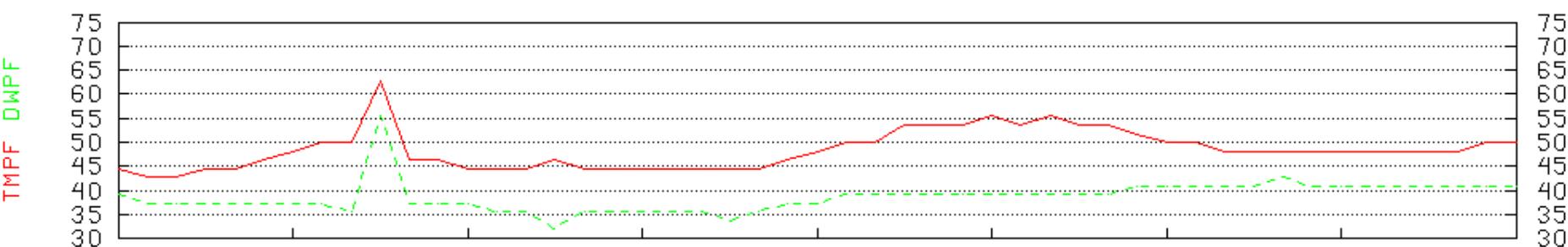
13 February 2015

Jim Bresch and Shawn Honomichi  
ORCAS Forecast team

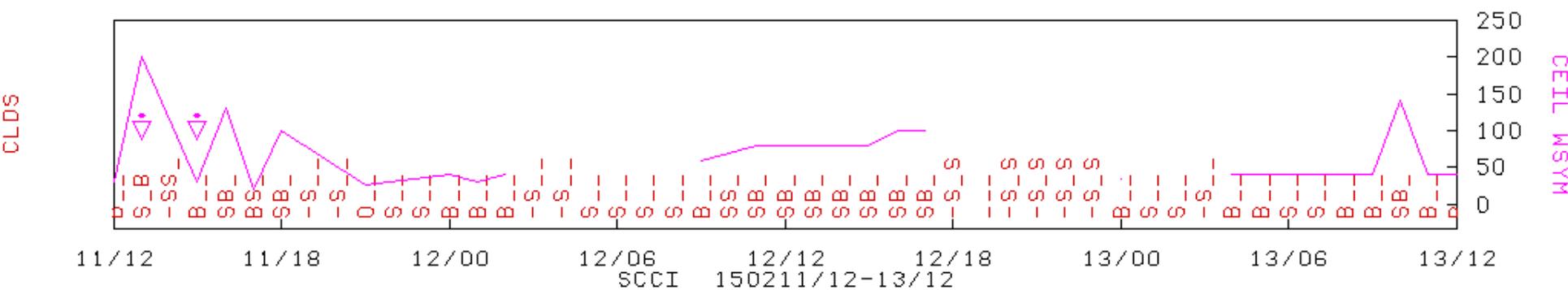
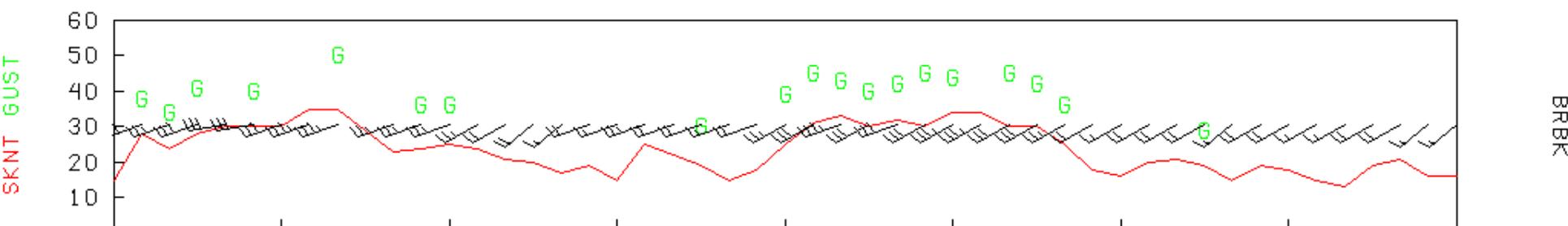
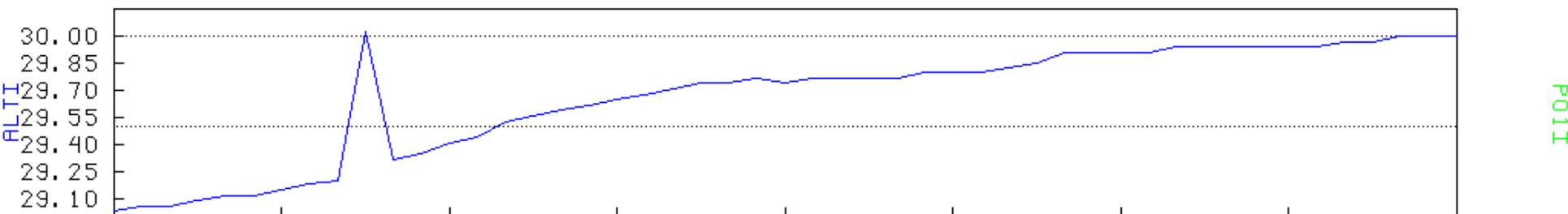
The weather for a lovely weekend.

Forecast issues:

- Location of (potentially) cloud free areas
- Where are the cyclones?
- Potential for a Lagrangian flight
- Takeoff and landing conditions



Punta Arenas meteogram for the past 48 hours



Punta Arenas: High: 56 Low: 48, No rain.

Sunrise: 6:38 AM

Sunset: 9:17 PM

Frontal passage with showers tonight followed by a stronger front and rain Sunday afternoon.

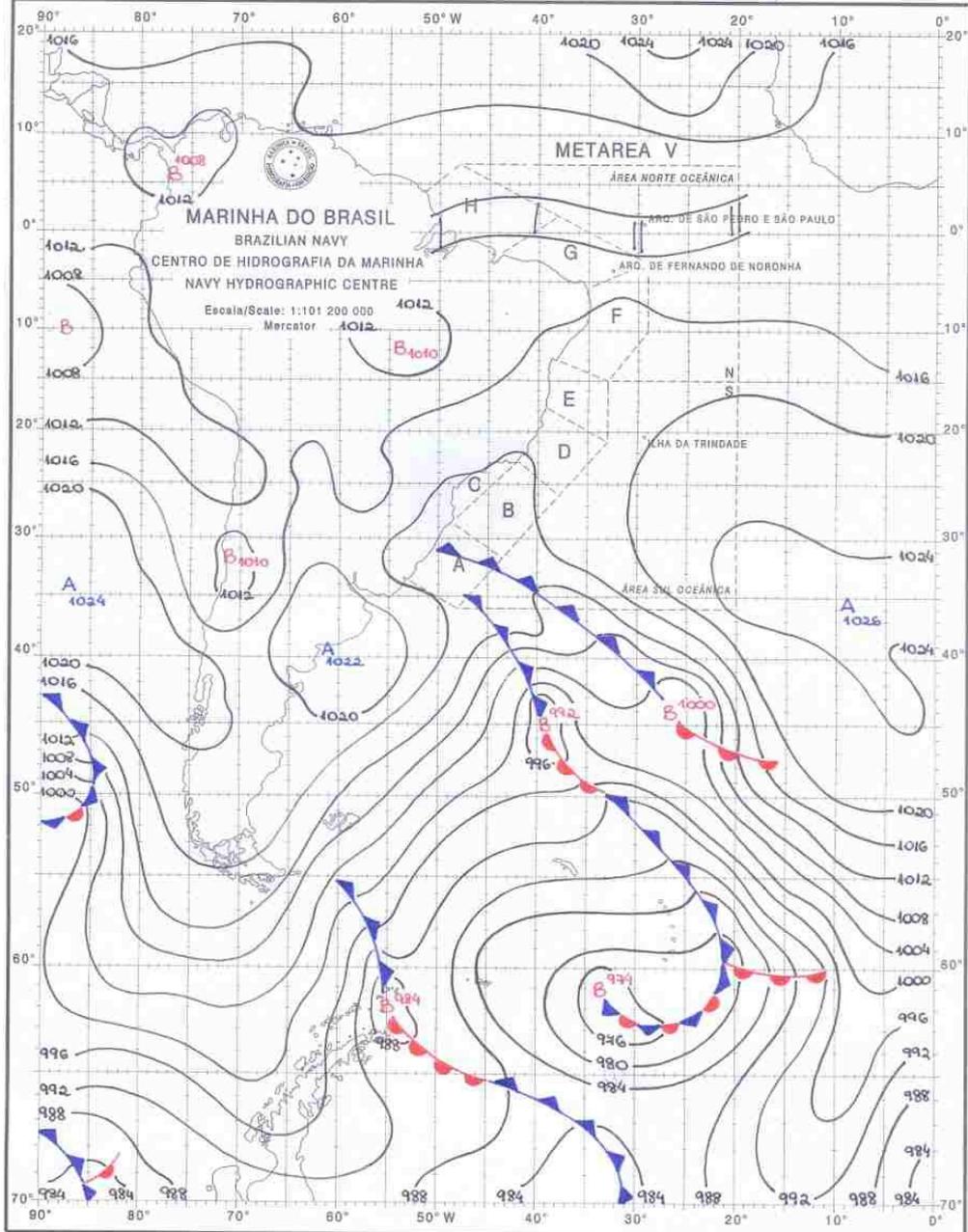
# 9 AM CST surface analysis

## CARTA DE PRESSÃO AO NÍVEL DO MAR SEA LEVEL PRESSURE CHART

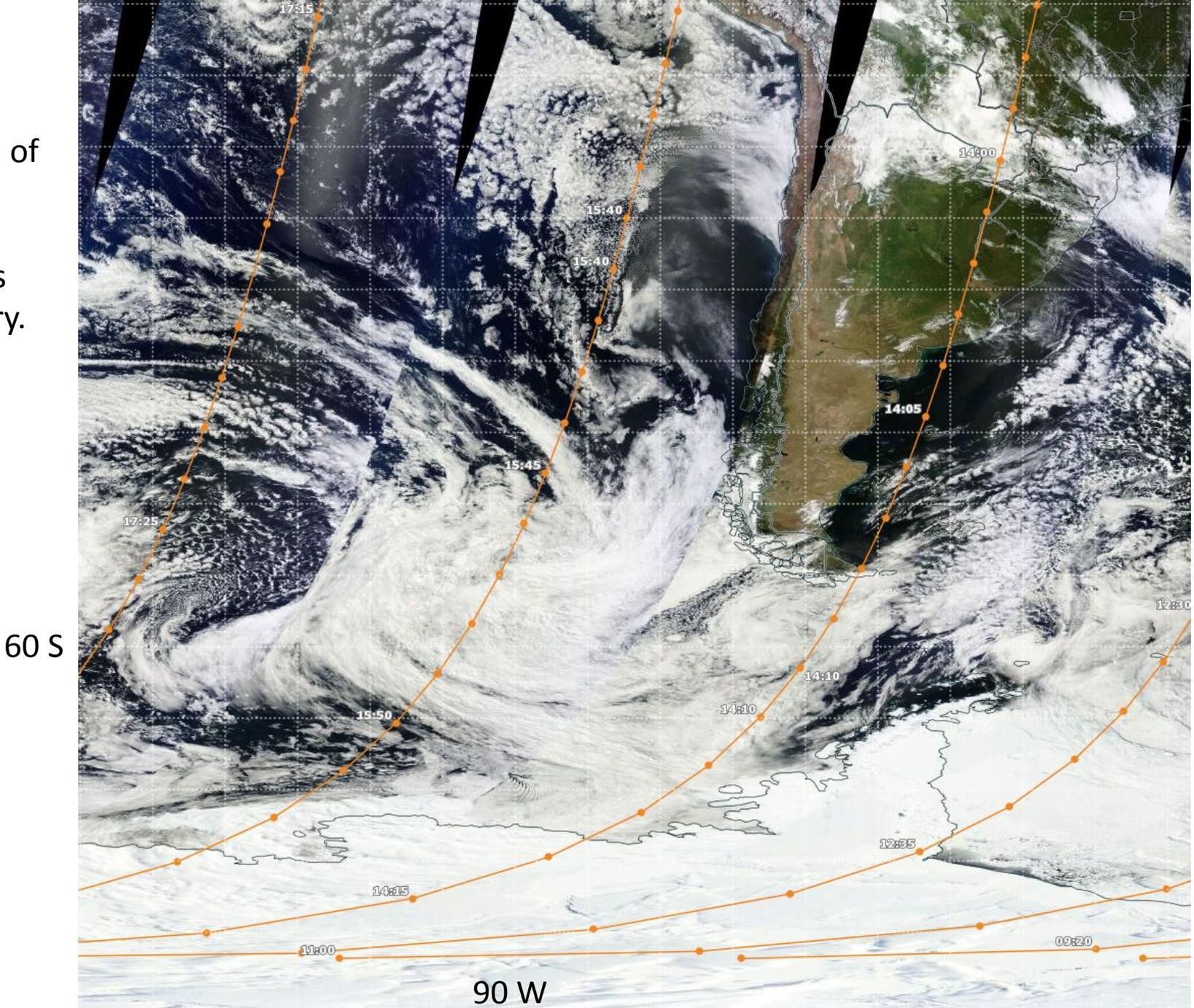
Referência/Reference: 131200Z / FEB 2005

Solicita-se aos navios que informem sua posição, direção e intensidade do vento, altura das ondas e pressão atmosférica ao Centro de Hidrografia da Marinha/Serviço Meteorológico Marinho.

All ships are welcome to inform their position, wind direction and speed, waves height and atmospheric pressure to Navy Hydrographic Centre/Marine Meteorological Service.



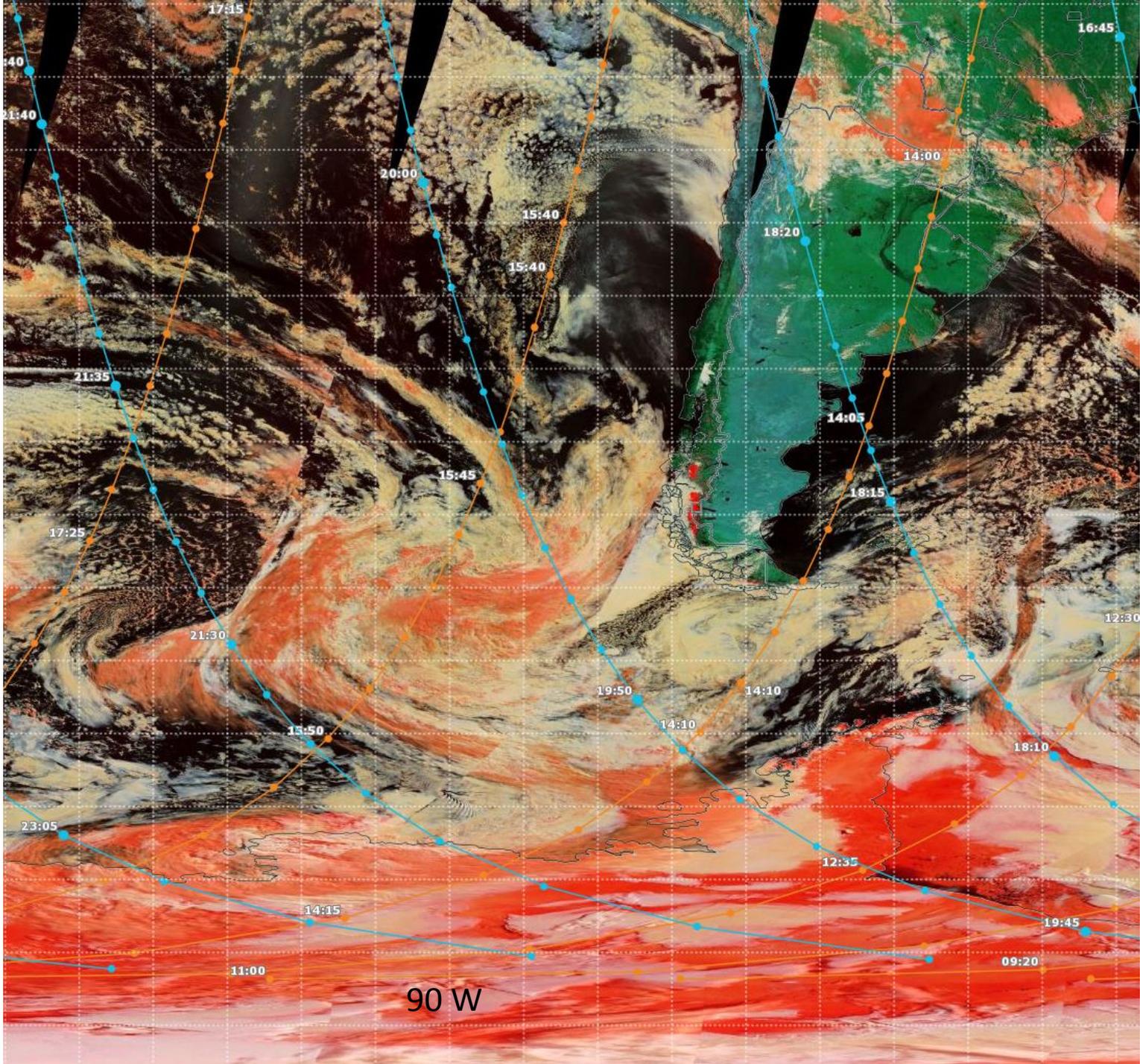
Composite of  
Terra's  
morning  
overpasses  
13 February.

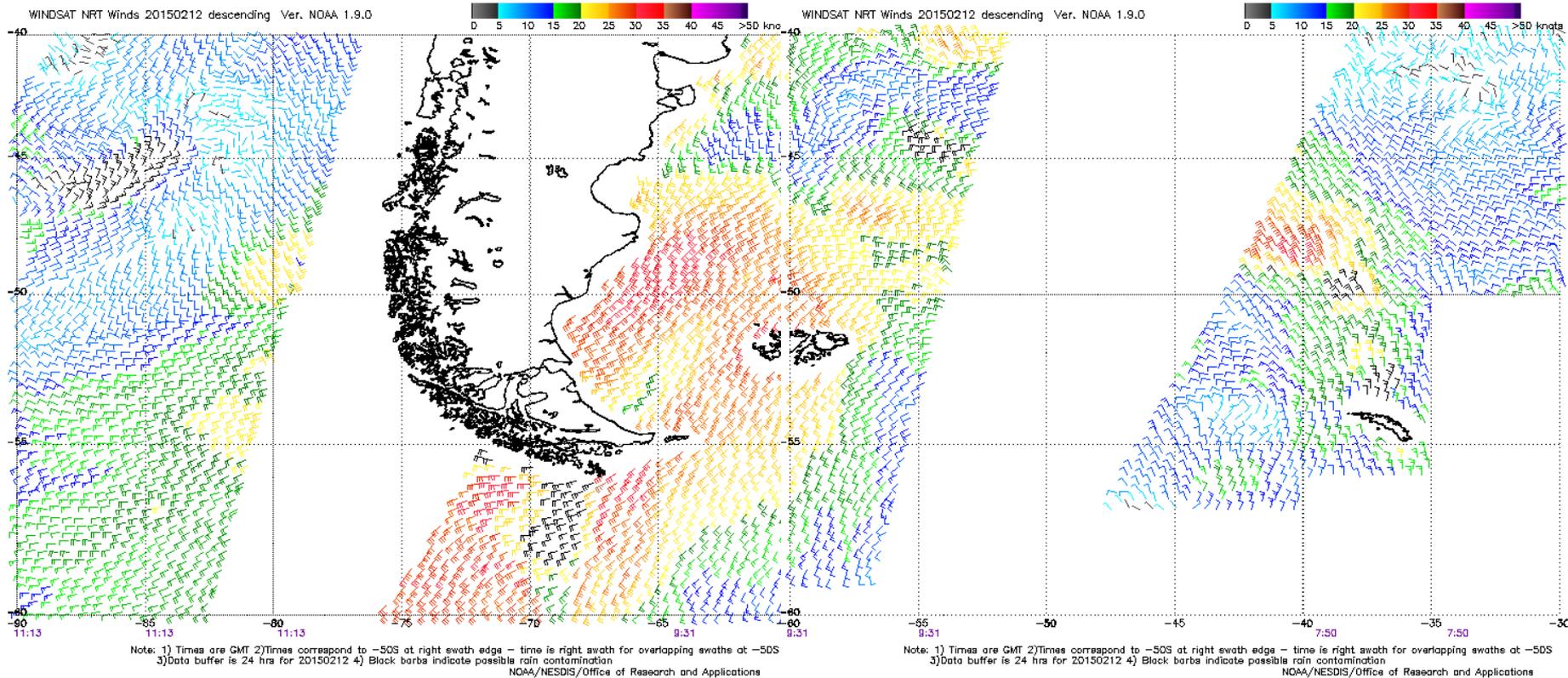


Terra Bands  
3-6-7. Ice  
clouds are  
reddish,  
water clouds  
are white.  
13 February.

60 S

90 W





This morning's Windsat overpasses show relatively light winds west of 80W and a channel of strong SW'erlies from the Drake Passage to the Argentine Basin.

NCEP GFS 0.25 degree  
Fcst: 6 h  
Relative vorticity  
Geopotential height  
Horizontal wind vectors

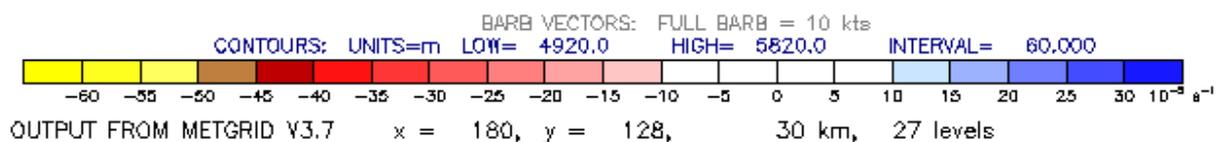
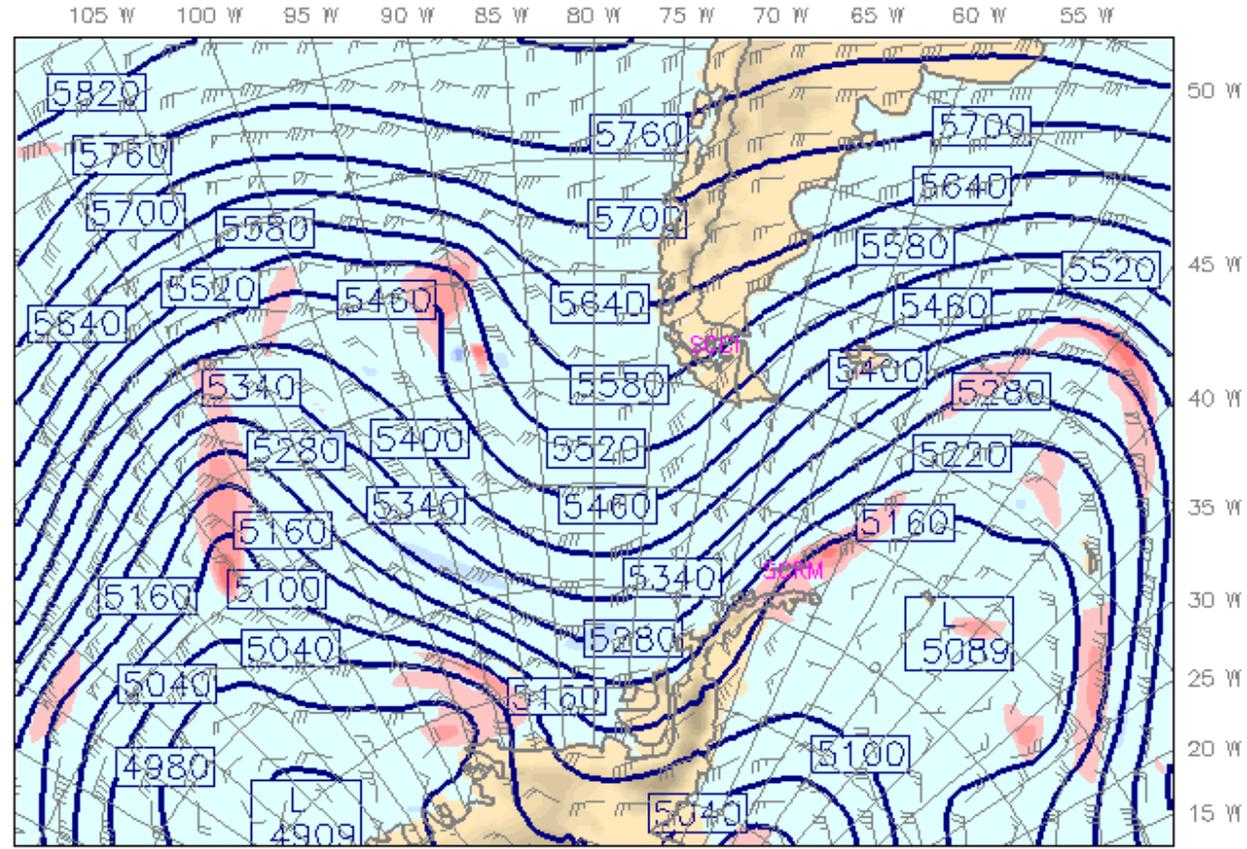
NCAR/MMM

Init: 06 UTC Fri 13 Feb 15  
Valid: 12 UTC Fri 13 Feb 15 (09 LST Fri 13 Feb 15)  
at pressure = 500 hPa  
at pressure = 500 hPa  
at pressure = 500 hPa  
sm = 1

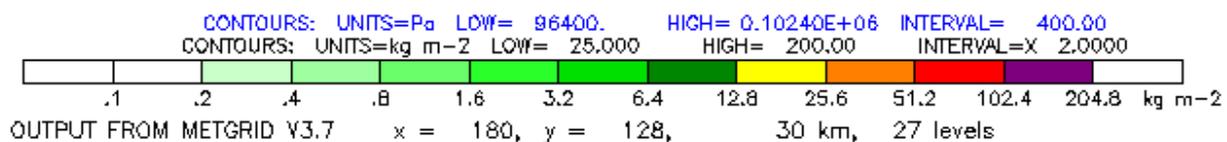
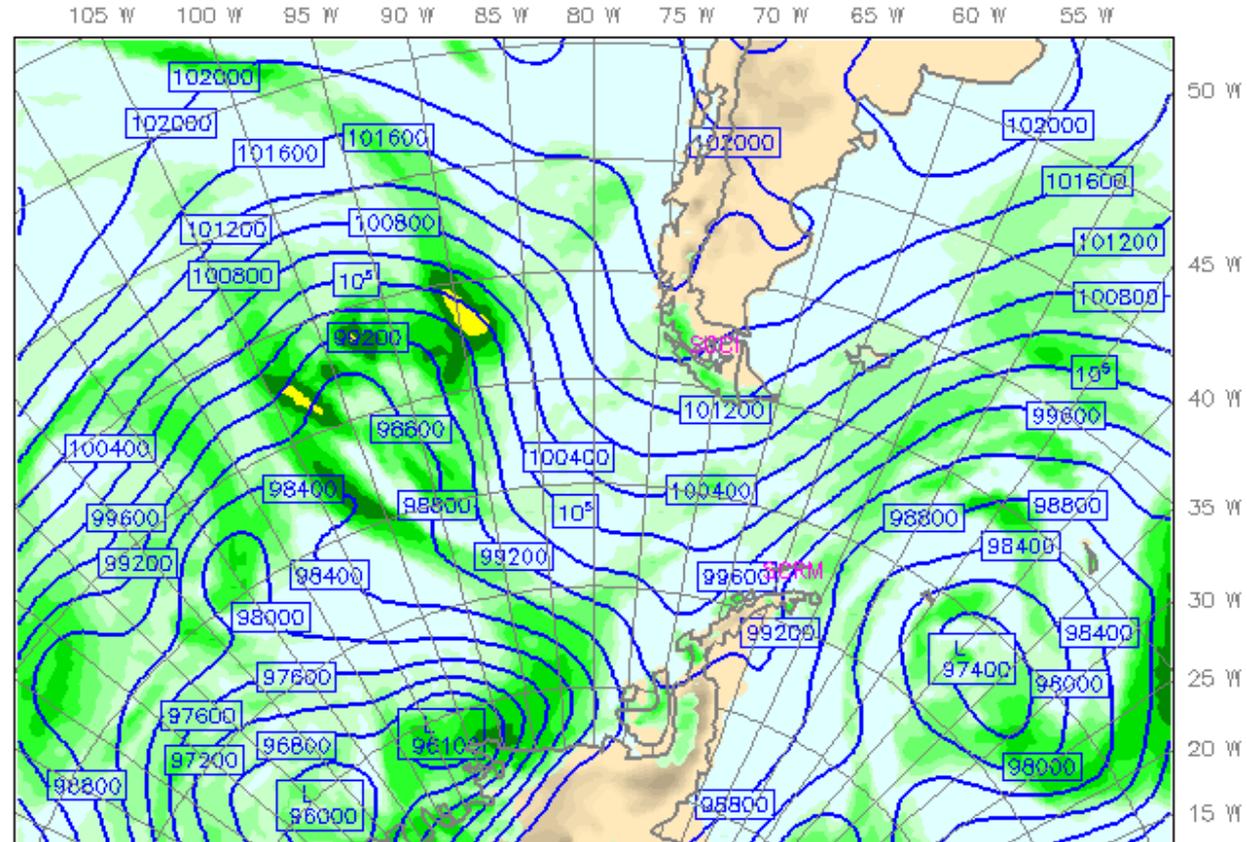
500 mb

FL180

At 12z, the GFS shows two major troughs, one along 45W and the other roughly 110W. A shortwave is near 50S, 90W moving SE towards the ridge axis along 80W. Extensive clouds are found downstream of the trough towards the ridge axis.



At the surface, cyclones are located along the ice edge at 70S and at 62S, 40W. Significant precip is indicated along 90W.

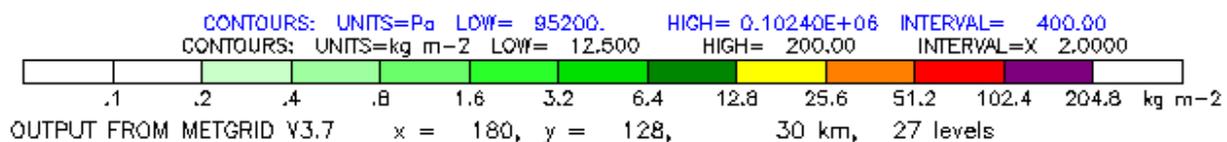
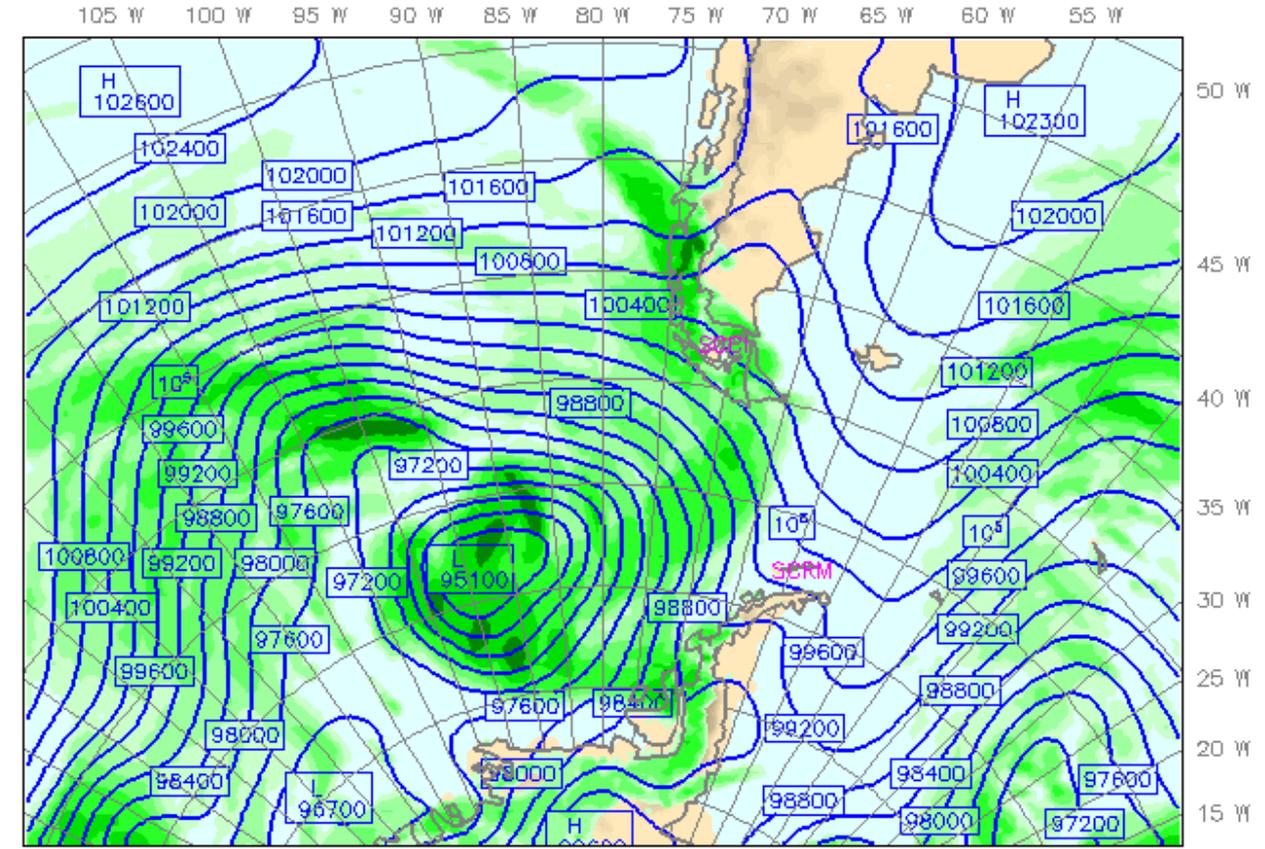


NCEP GFS 0.25 degree  
Fcast: 30 h  
Total Precipitation  
Total Precipitation  
Sea-level Pressure

NCAR/MMM

Init: 06 UTC Fri 13 Feb 15  
Valid: 12 UTC Sat 14 Feb 15 (09 LST Sat 14 Feb 15)

By takeoff time Saturday, the shortwave has induced strong cyclogenesis near 64S, 95W and is pushing a front through the Drake Passage.

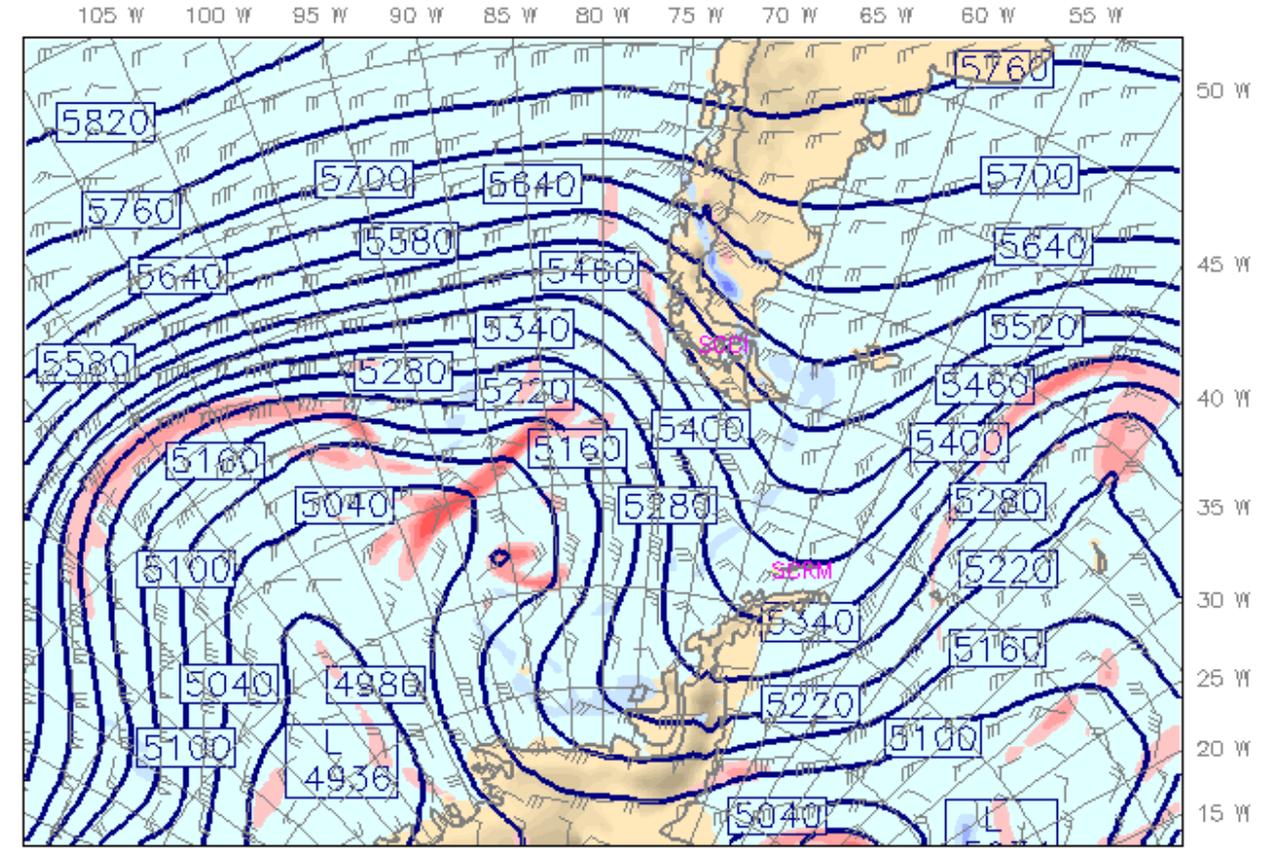


NCEP GFS 0.25 degree  
Fcst: 30 h  
Relative vorticity  
Geopotential height  
Horizontal wind vectors

NCAR/MMM

Valid: 12 UTC Sat 14 Feb 15 (09 LST Sat 14 Feb 15)  
at pressure = 500 hPa  
at pressure = 500 hPa  
at pressure = 500 hPa  
sm = 1

At 500 mb the ridge axis has shifted to near 64W with a large area of cyclonic flow west of 80W.



BARB VECTORS: FULL BARB = 10 kts  
CONTOURS: UNITS=m LOW= 4980.0 HIGH= 5820.0 INTERVAL= 60.000  
-60 -55 -50 -45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 10<sup>-3</sup> s<sup>-1</sup>  
OUTPUT FROM METGRID V3.7 x = 180, y = 128, 30 km, 27 levels

NCEP GFS 0.25 degree  
Fcst: 30 h  
Low cloud fraction  
Horizontal wind vectors

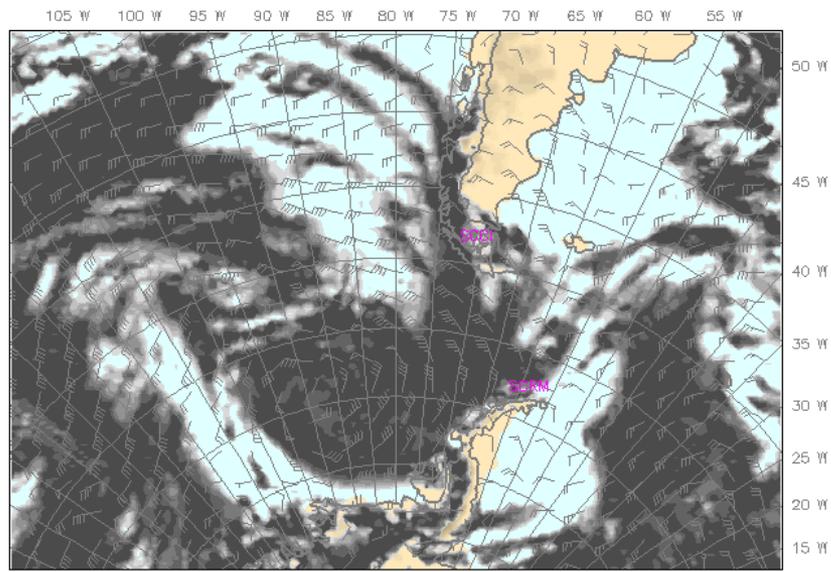
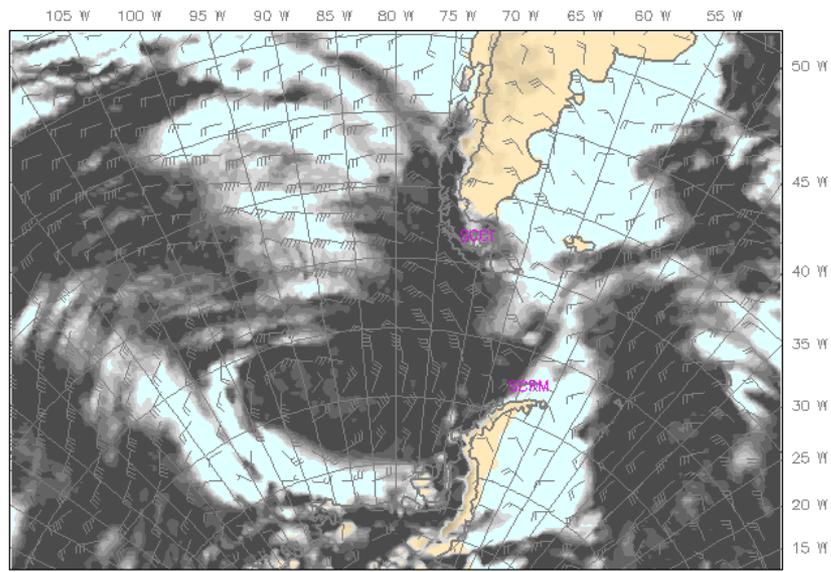
NCAR/MMM  
Valid: 12 UTC Sat 14 Feb 15 (09 LST Sat 14 Feb 15)  
at pressure = 900 hPa

Init: 06 UTC Fri 13 Feb 15  
sm= 1

NCEP GFS 0.25 degree  
Fcst: 33 h  
Low cloud fraction  
Horizontal wind vectors

NCAR/MMM  
Valid: 15 UTC Sat 14 Feb 15 (12 LST Sat 14 Feb 15)  
at pressure = 900 hPa

Init: 06 UTC Fri 13 Feb 15  
sm= 1

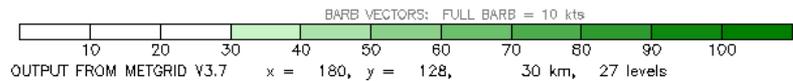
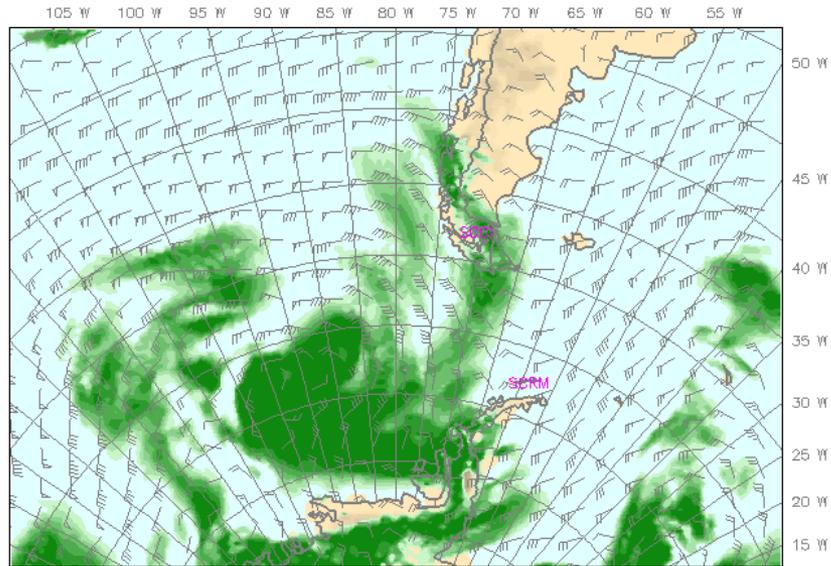


BARB VECTORS: FULL BARB = 10 kts  
OUTPUT FROM METGRID V3.7 x = 180, y = 128, 30 km, 27 levels

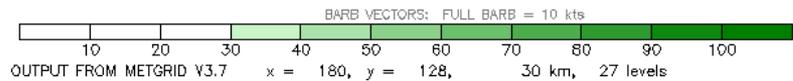
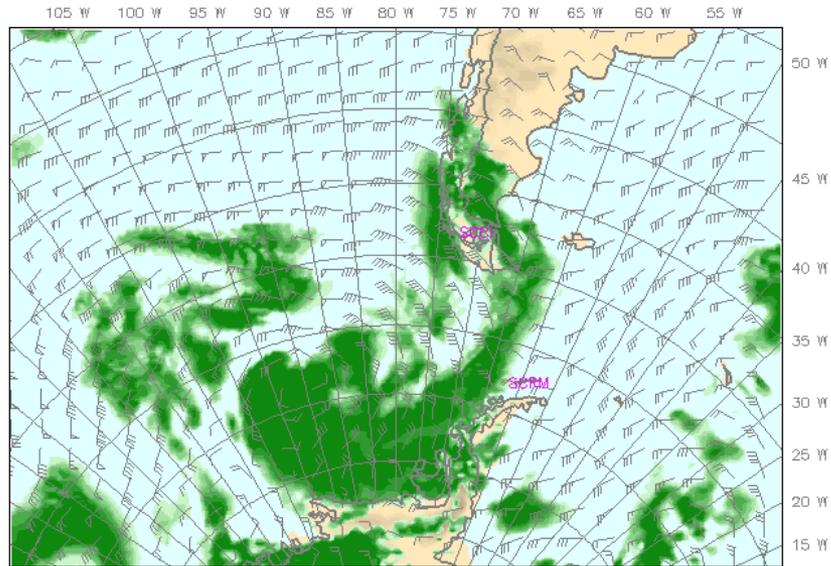
BARB VECTORS: FULL BARB = 10 kts  
OUTPUT FROM METGRID V3.7 x = 180, y = 128, 30 km, 27 levels

The GFS low-cloud fraction shows extensive cloud between the trough and ridge axes with a clear slot, indicative of synoptic-scale subsidence, moving SE toward 60S80W. Frontal clouds are suggested from the central DP to the west coast of Chile. Clear skies are predicted for the AB.

NCEP GFS 0.25 degree      NCAR/MMM  
Fcst: 30 h      Valid: 12 UTC Sat 14 Feb 15 (09 LST Sat 14 Feb 15)  
Middle cloud fraction  
Horizontal wind vectors      at pressure = 650 hPa      sm= 1



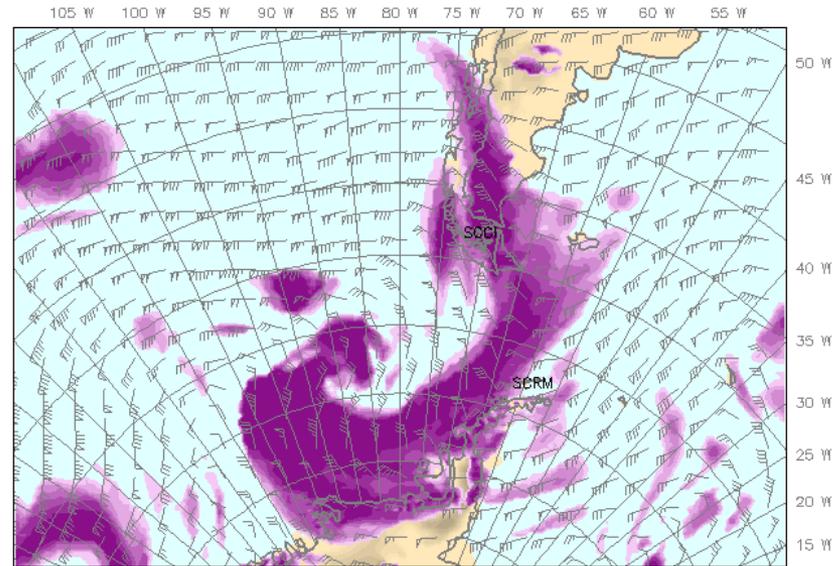
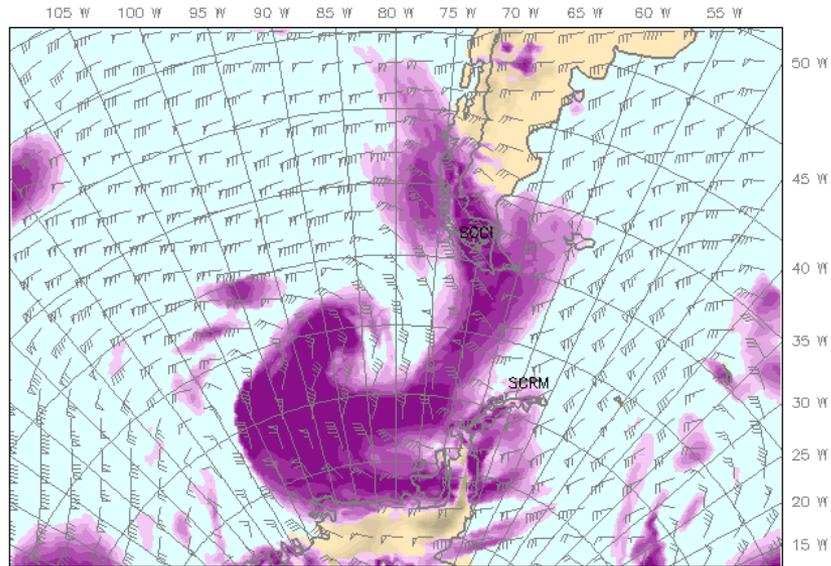
NCEP GFS 0.25 degree      NCAR/MMM  
Fcst: 33 h      Valid: 15 UTC Sat 14 Feb 15 (12 LST Sat 14 Feb 15)  
Middle cloud fraction  
Horizontal wind vectors      at pressure = 650 hPa      sm= 1



The GFS middle-cloud fraction indicates likely clouds near the cyclone center, just ahead of the frontal zone along 65W and along the west coast of Chile. Clear areas are east of 65W and in the occlusion/dry slot entering 80W.

NCEP GFS 0.25 degree      NCAR/MMM      Init: 06 UTC Fri 13 Feb 15      NCEP GFS 0.25 degree  
Fcst: 30 h      Valid: 12 UTC Sat 14 Feb 15 (09 LST Sat 14 Feb 15)      Fcst: 33 h  
High cloud fraction      at pressure = 250 hPa      sm= 1

NCAR/MMM      Init: 06 UTC Fri 13 Feb 15      NCEP GFS 0.25 degree  
Valid: 15 UTC Sat 14 Feb 15 (12 LST Sat 14 Feb 15)      Fcst: 33 h  
High cloud fraction      at pressure = 250 hPa      sm= 1

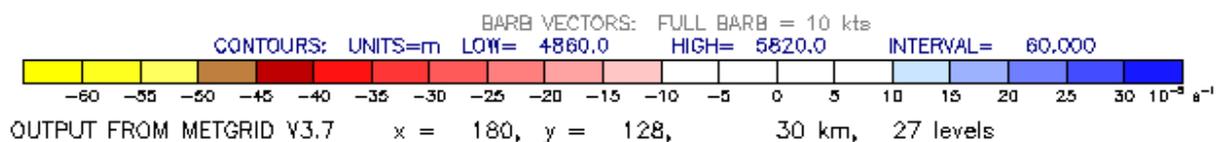
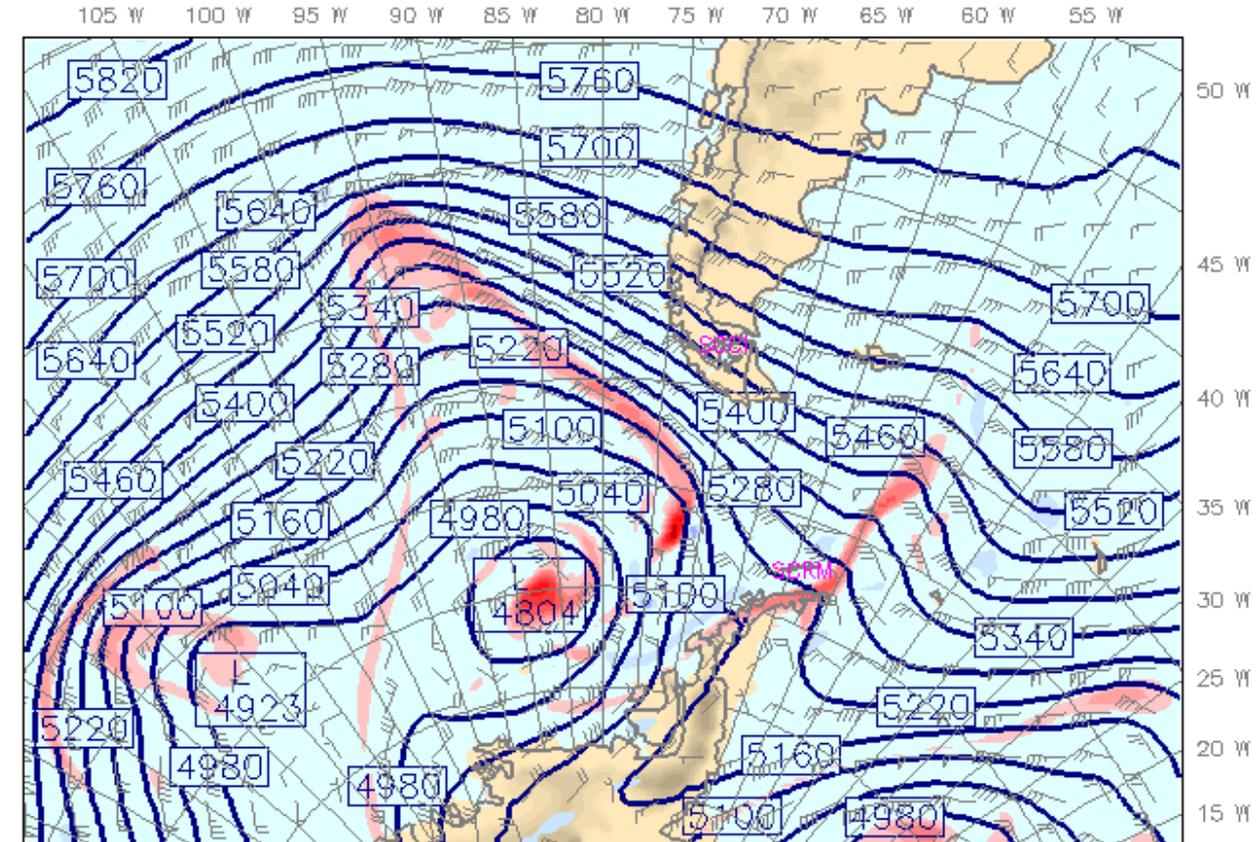


BARB VECTORS: FULL BARB = 10 kts  
OUTPUT FROM METGRID V3.7    x = 180, y = 128,    30 km, 27 levels

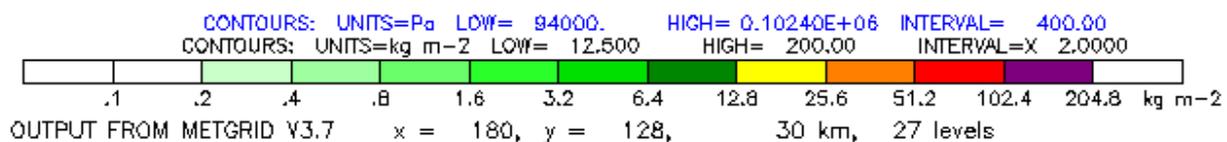
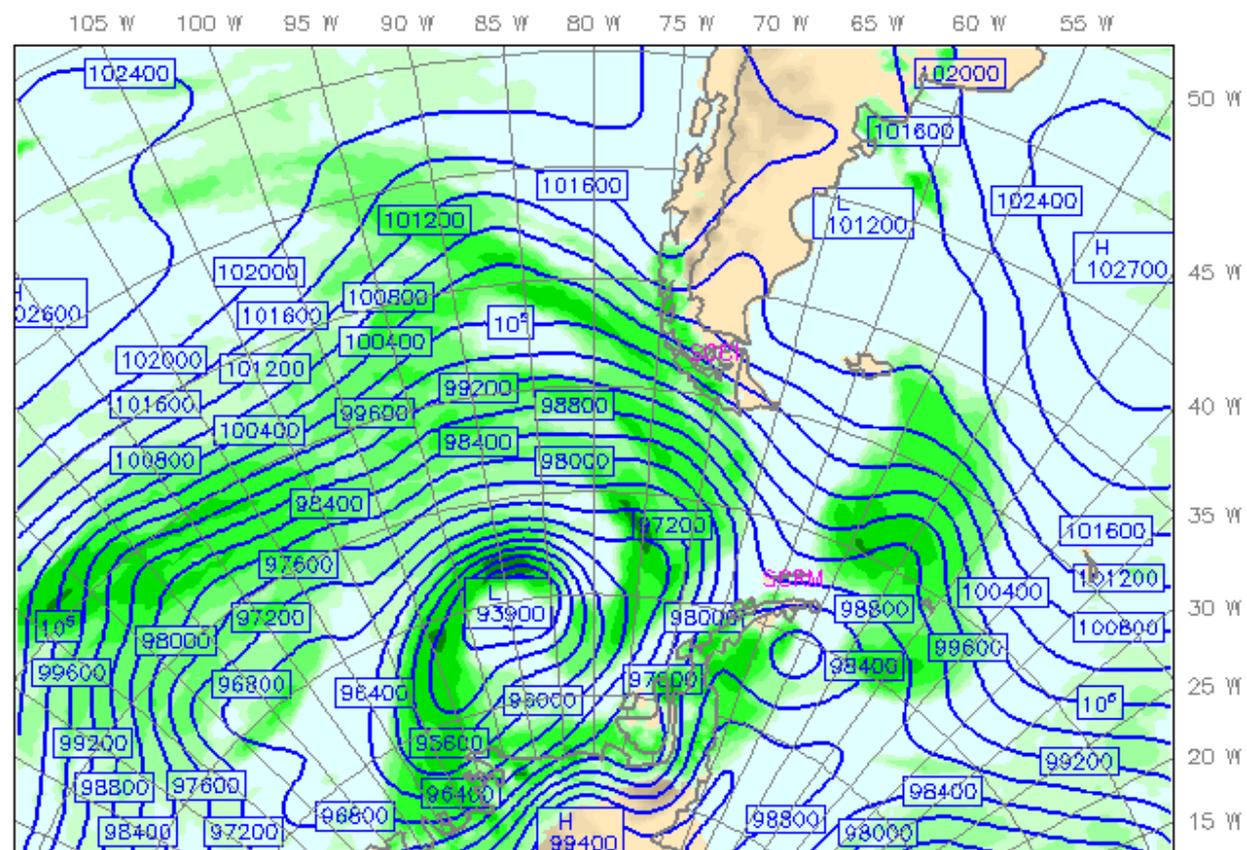
BARB VECTORS: FULL BARB = 10 kts  
OUTPUT FROM METGRID V3.7    x = 180, y = 128,    30 km, 27 levels

The GFS high-cloud fraction shows a very pretty occluded cyclone. The dry slot along 80W has few clouds. Meanwhile, over the AB, high clouds are indicated south of 55S.

By Sunday morning the monster low over the western ocean has deepened and moved east with a trough along 93W moving towards Chile. Elsewhere to the east, flow is fast, but mainly zonal.

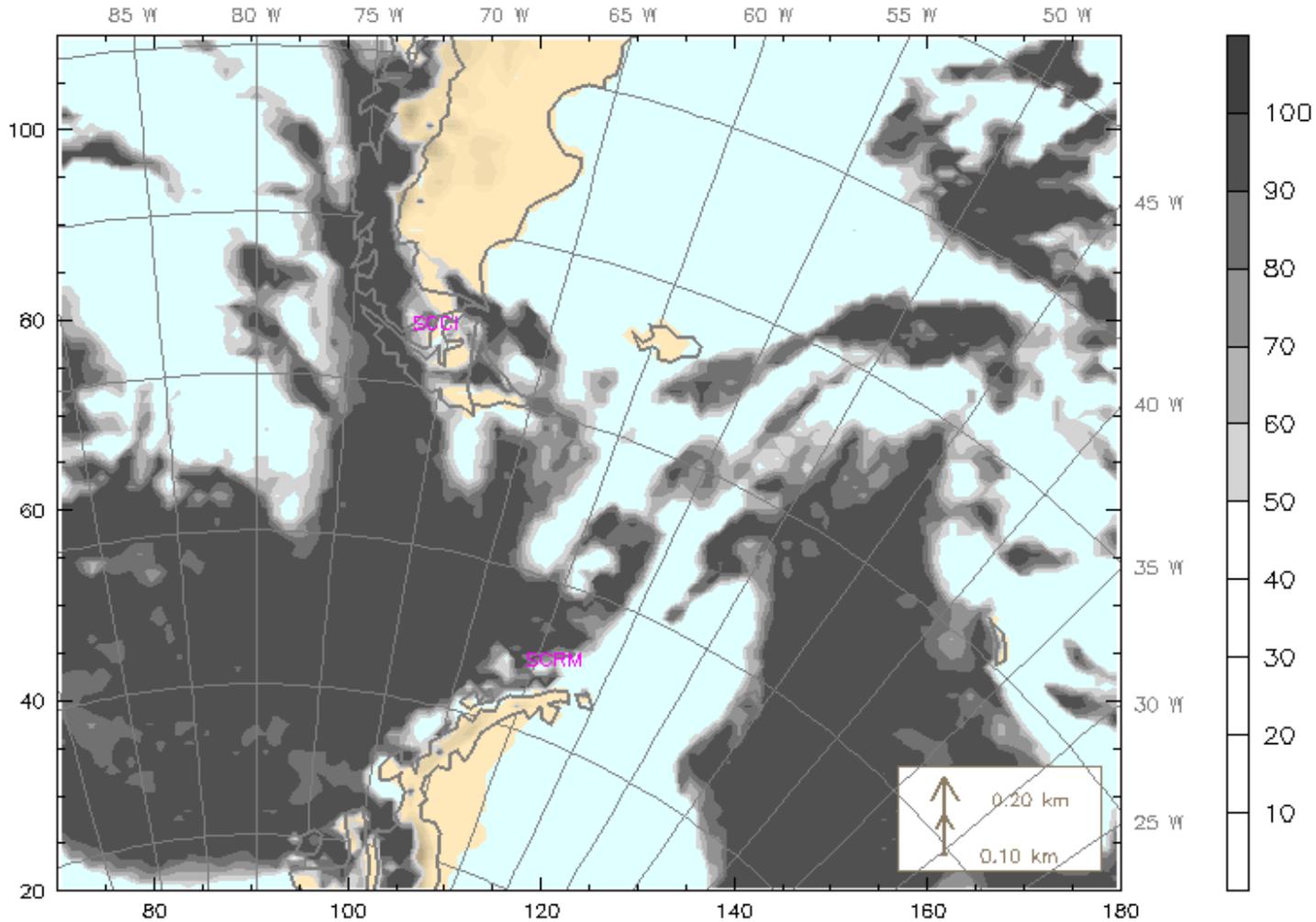


At the surface, the cyclone is centered at 65S90W with light precipitation over much of the ocean and west coast. No rain is predicted along 62W and north of the FI.

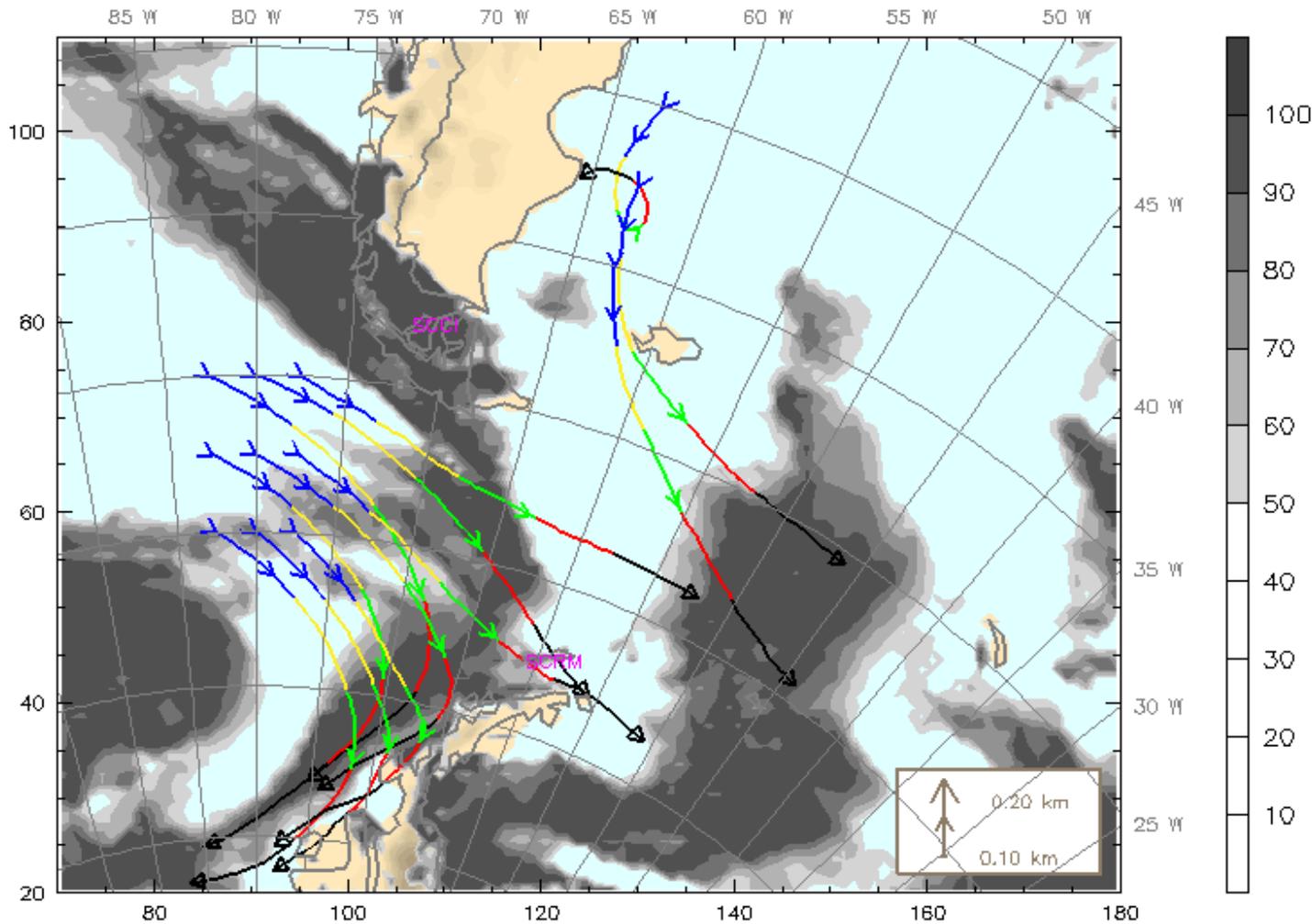


## Lagrangian flight prospects:

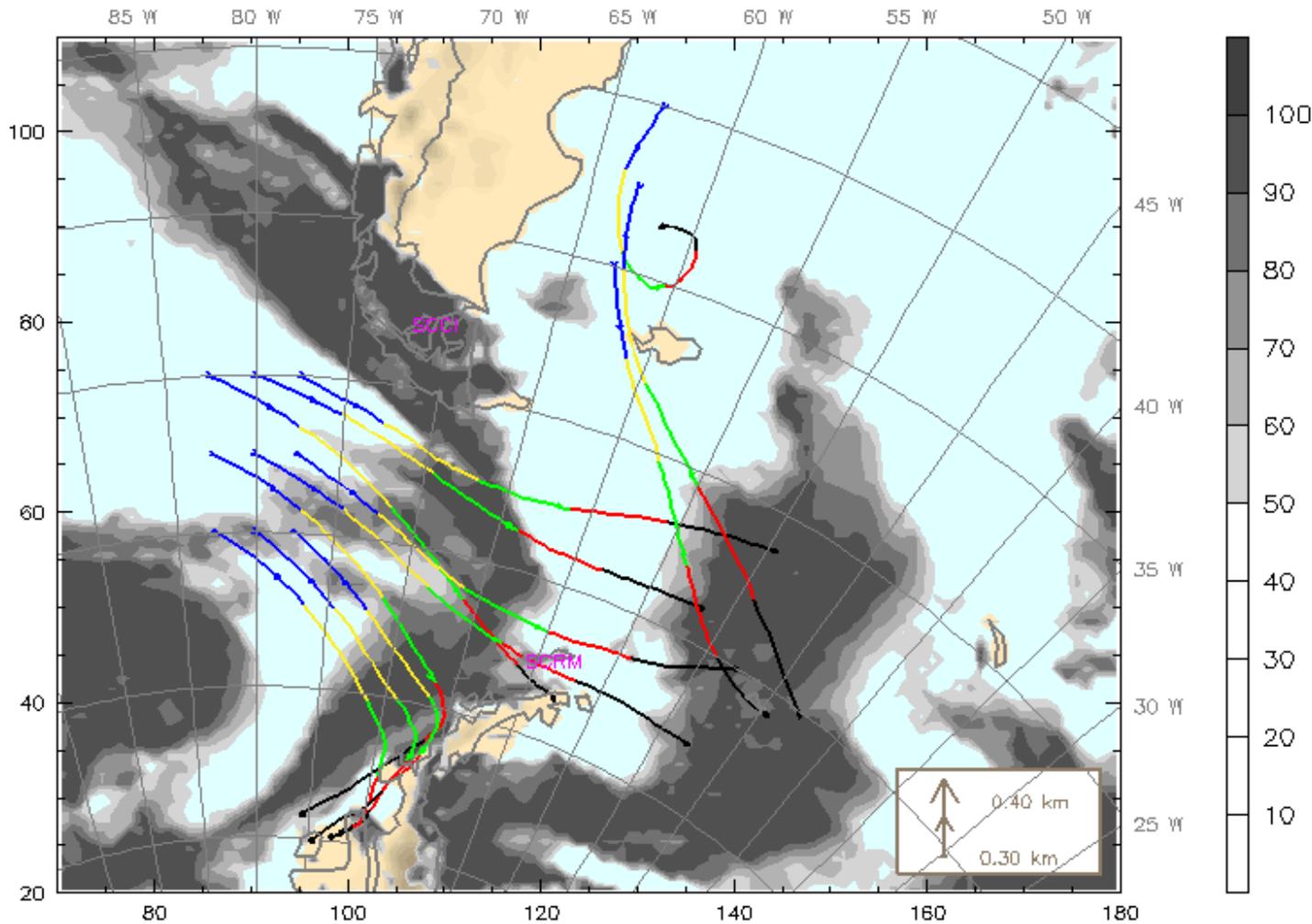
Likely clear/scattered cloud BL is found in the post-frontal airmass around 57S82W and in the AB. Assuming the G5 samples the region around noon, compute forward trajectories.



By Sunday afternoon, only a couple of trajectories are candidates for sampling based on the low cloud potential. The southern trajectories travel along the Antarctic coast toward the cyclone center. The AB trajectories head into a cloudy/rainy area. The remaining trajectories are in a clear zone near 57W.

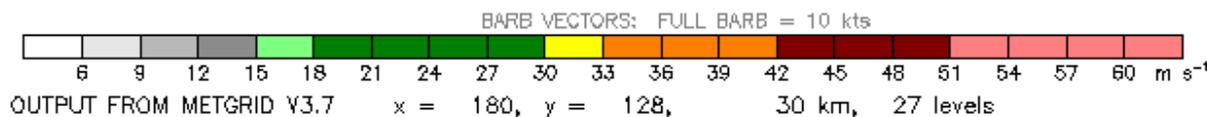
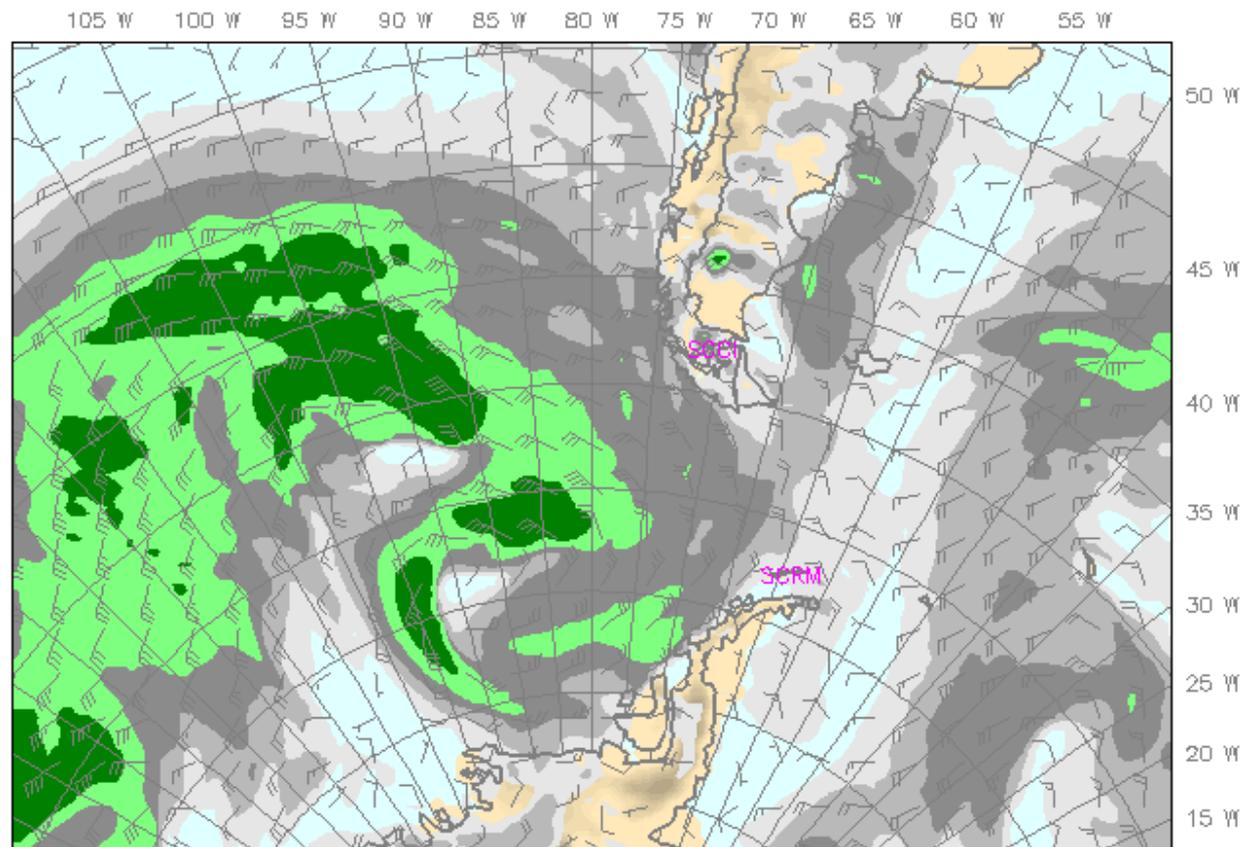


The 1000' trajectories are similar, but travel farther. It would be necessary to takeoff earlier in order to intercept these parcels in the clear zone.

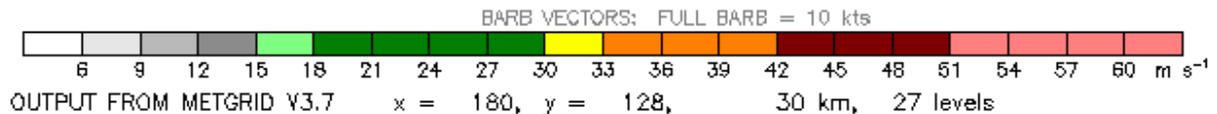
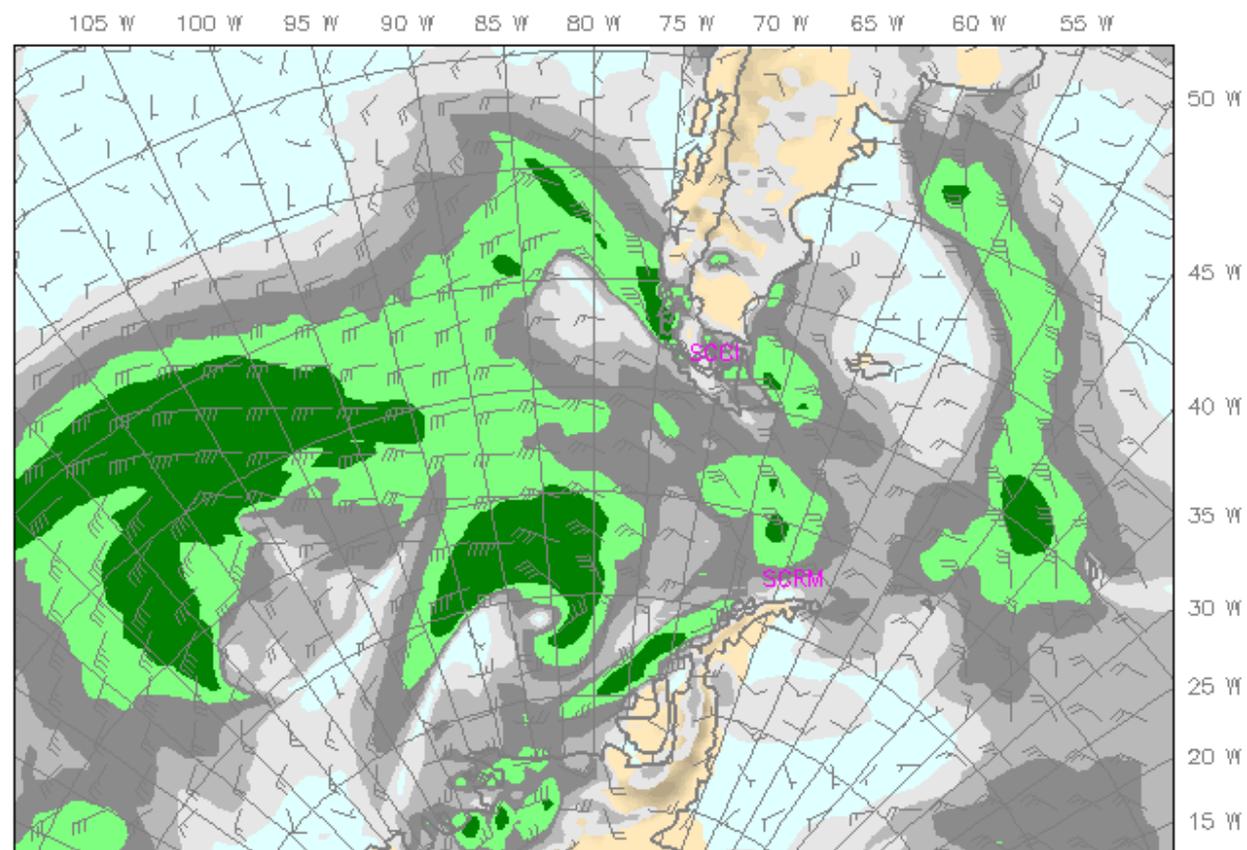




BL winds in the western sample region are 30 to 35 kts (light green) and less than 15 kts in the AB.



On Sunday afternoon BL winds are less than 35 kts in the possible sample regions.



AMPS -- Palmer 9-km nest  
Fcst. 36 h  
Cloud ceiling  
Horizontal wind vectors  
Relative humidity (w.r.t. ice)

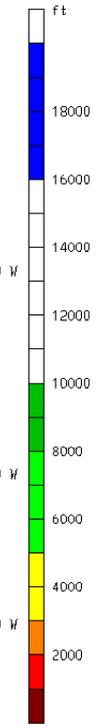
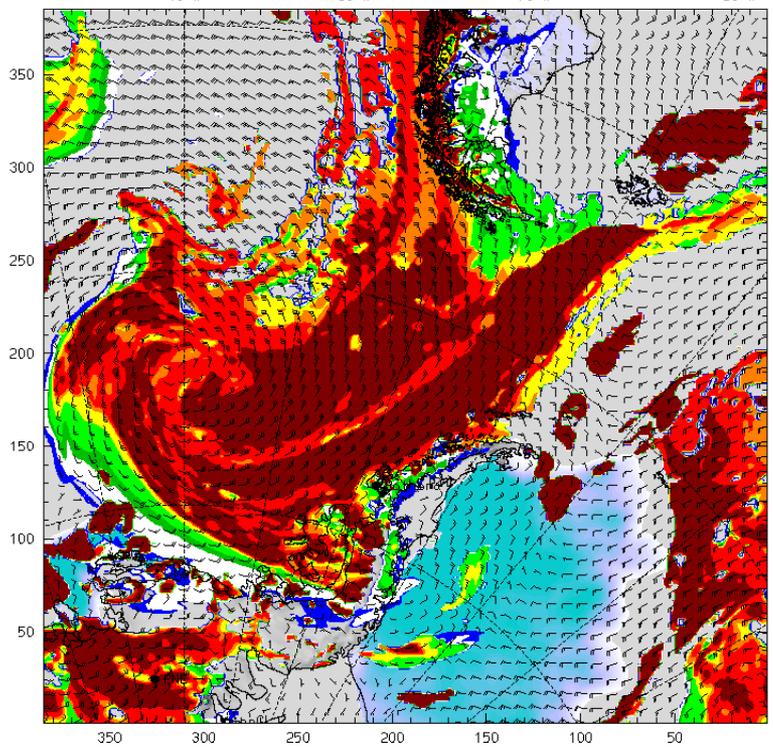
at k-index = 60  
at k-index = 21

Init. 00 UTC Fri 13 Feb 15 AMPS -- Palmer 9-km nest  
Valid. 12 UTC Sat 14 Feb 15

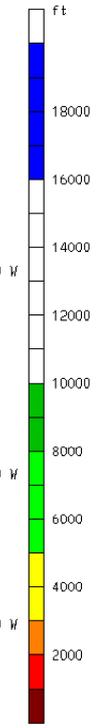
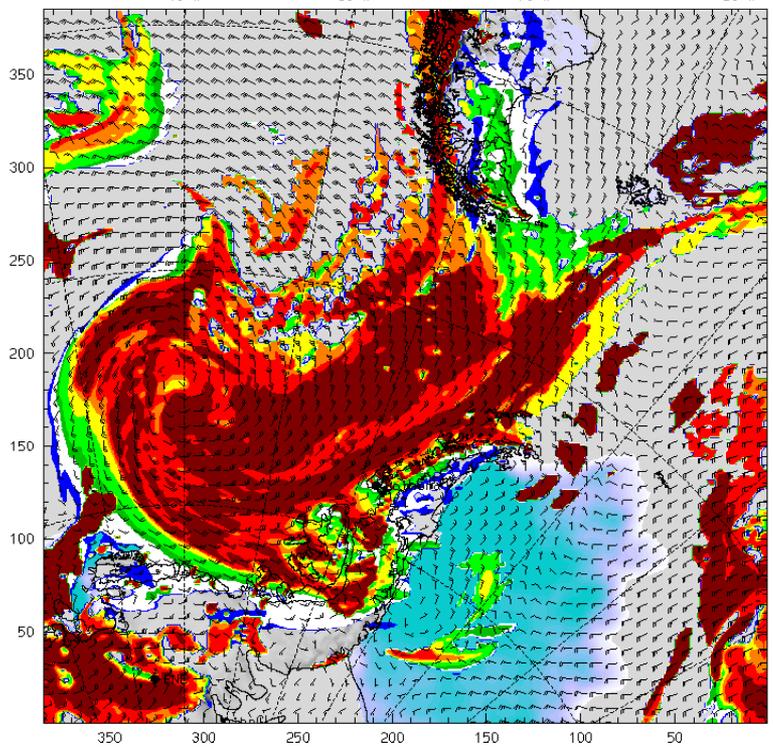
Cloud ceiling  
Horizontal wind vectors  
Relative humidity (w.r.t. ice)

at k-index = 60  
at k-index = 21

Init. 00 UTC Fri 13 Feb 15  
Valid. 15 UTC Sat 14 Feb 15



CONTOURS: UNITS=% LOW= 90.000 HIGH= 90.000 INTERVAL= 90.000  
Model Info: V3.3.1 KF MYJ PBL WSM Sclass Noah LSM 9.0 km, 60 levels,  
LW: RRTM SH: Goddard DIFF: simple KM: 2D Smagor



CONTOURS: UNITS=% LOW= 90.000 HIGH= 90.000 INTERVAL= 90.000  
Model Info: V3.3.1 KF MYJ PBL WSM Sclass Noah LSM 9.0 km, 60 levels,  
LW: RRTM SH: Goddard DIFF: simple KM: 2D Smagor

Like the GFS, AMPS shows clouds decreasing on Saturday along 80W. However, the clearest skies are farther west toward 55S 87W.

AMPS -- Palmer 9-km nest  
Fcst. 60 h  
Cloud ceiling  
Horizontal wind vectors  
Relative humidity (w.r.t. ice)

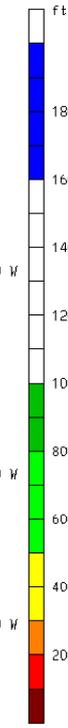
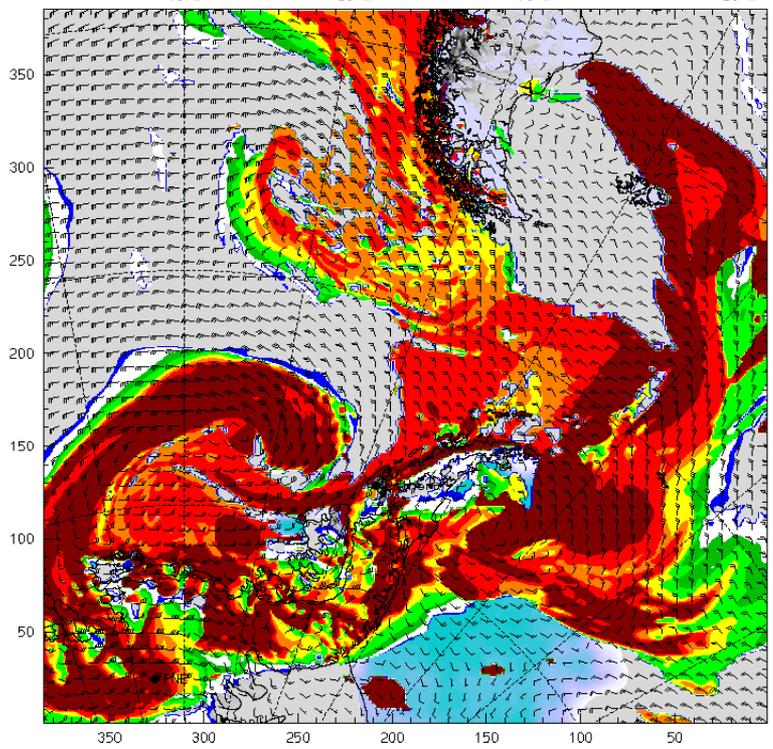
at k-index = 60  
at k-index = 21

Init. 00 UTC Fri 13 Feb 15 AMPS -- Palmer 9-km nest  
Valid. 12 UTC Sun 15 Feb 15 Fcst. 63 h

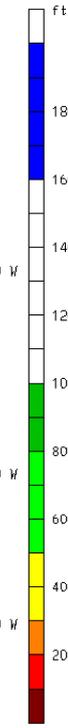
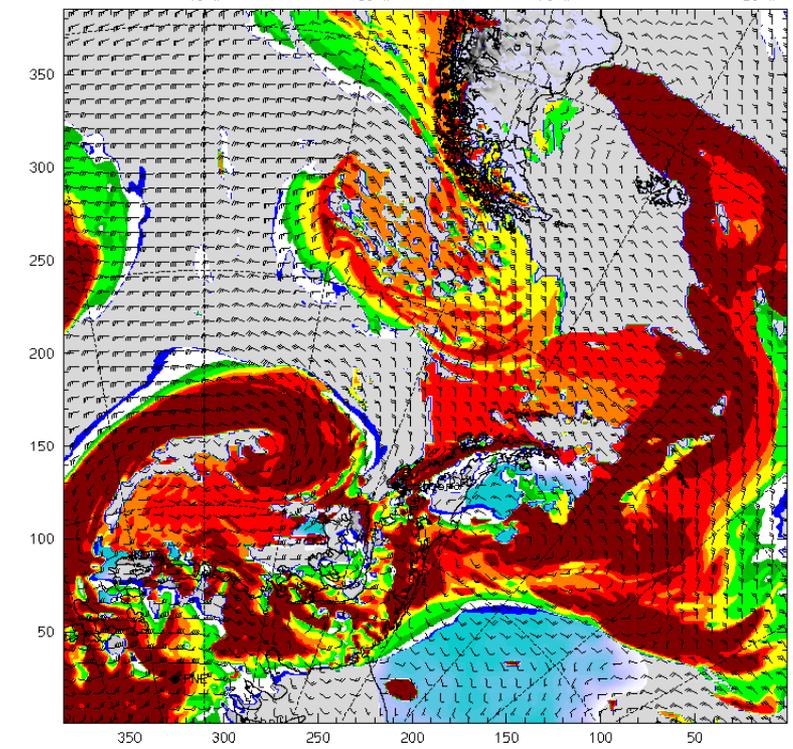
Cloud ceiling  
Horizontal wind vectors  
Relative humidity (w.r.t. ice)

at k-index = 60  
at k-index = 21

Init. 00 UTC Fri 13 Feb 15  
Valid. 15 UTC Sun 15 Feb 15



CONTOURS: UNITS=% LOW= 90.000 HIGH= 90.000 INTERVAL= 90.000  
Model Info: V3.3.1 KF MYJ PBL WSM Sciclass Noah LSM 9.0 km, 60 levels,  
LW: RRTM SH: Goddard DIFF: simple KM: 2D Smagor



CONTOURS: UNITS=% LOW= 90.000 HIGH= 90.000 INTERVAL= 90.000  
Model Info: V3.3.1 KF MYJ PBL WSM Sciclass Noah LSM 9.0 km, 60 levels,  
LW: RRTM SH: Goddard DIFF: simple KM: 2D Smagor

For Sunday, AMPS shows more clouds than the GFS, but does have a small area of clear skies near 62S 57W.

PBL HEIGHT

PBL HEIGHT

Horizontal wind vectors

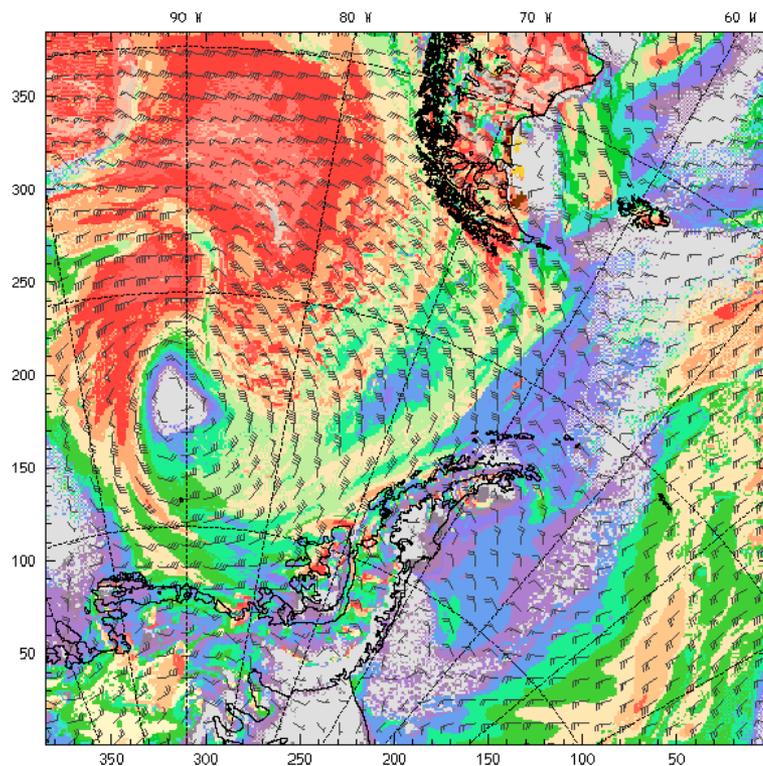
at pressure = 900 hPa

sm= 1

Horizontal wind vectors

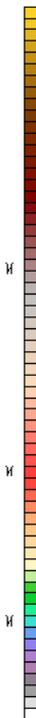
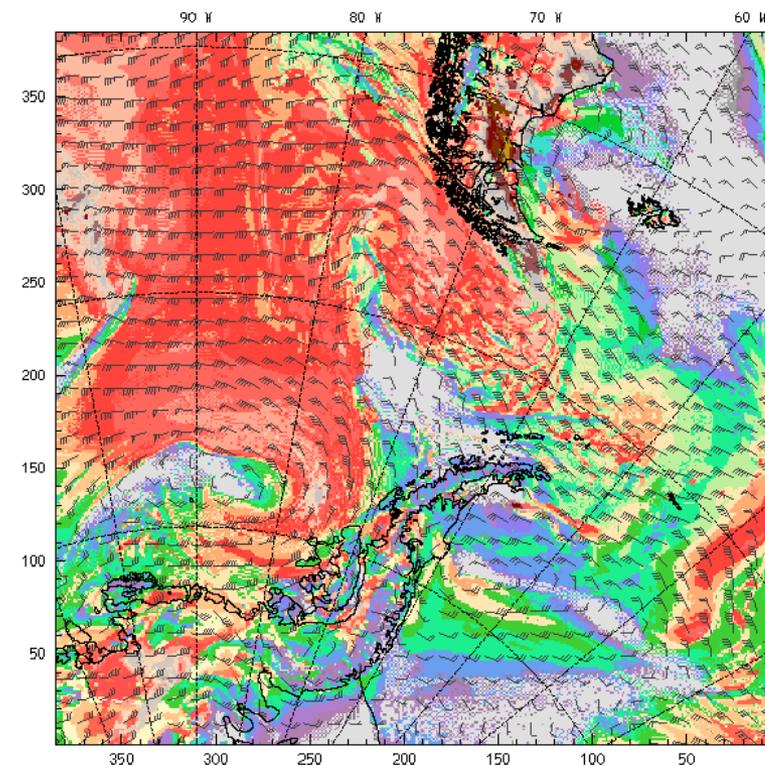
at pressure = 900 hPa

sm= 1



Model Info: V3.3.1 KF MYJ PBL WSM 5class Noah LSM 9.0 km, 60 levels,  
LW, RRTM SH, Goddard DIFF, simple KM, 2D Smagor

Saturday



Model Info: V3.3.1 KF MYJ PBL WSM 5class Noah LSM 9.0 km, 60 levels,  
LW, RRTM SH, Goddard DIFF, simple KM, 2D Smagor

Sunday

AMPS forecast PBL height. On Saturday PBL heights in excess of 1000m are found west of 78W where there is substantial heating from the ocean surface. On Sunday afternoon, the PBL heights through the DP toward 50W extend up to 1000m in places. Low PBL heights are expected near the FI.

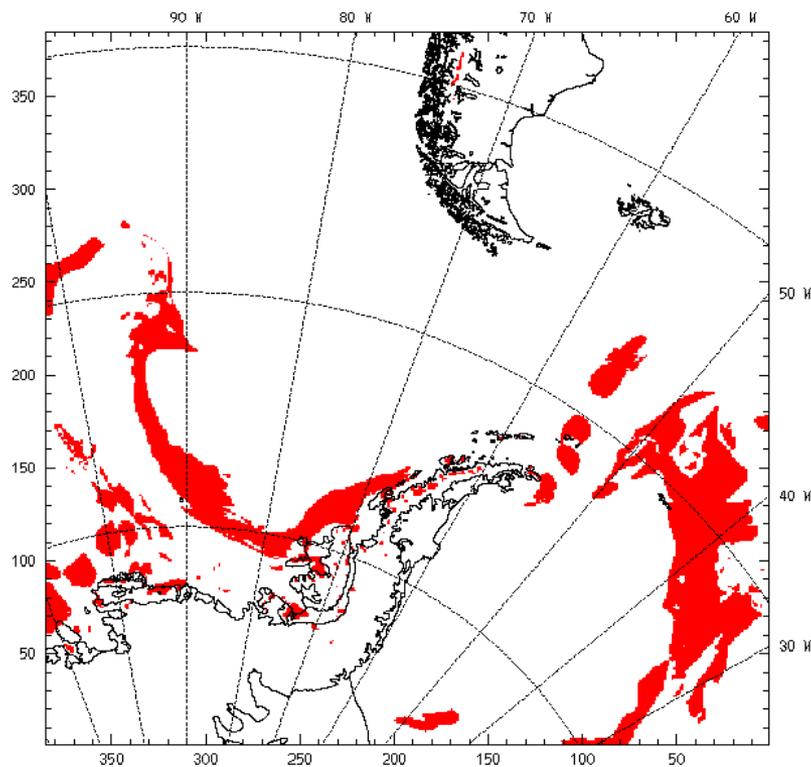
AMPS -- Palmer 9-km nest  
Fcst. 36 h  
Supercooled liquid water

Avg. k-index = 60 to 54

Init: 00 UTC Fri 13 Feb 15 AMPS -- Palmer 9-km nest  
Valid: 12 UTC Sat 14 Feb 15 Fcst. 66 h  
Supercooled liquid water

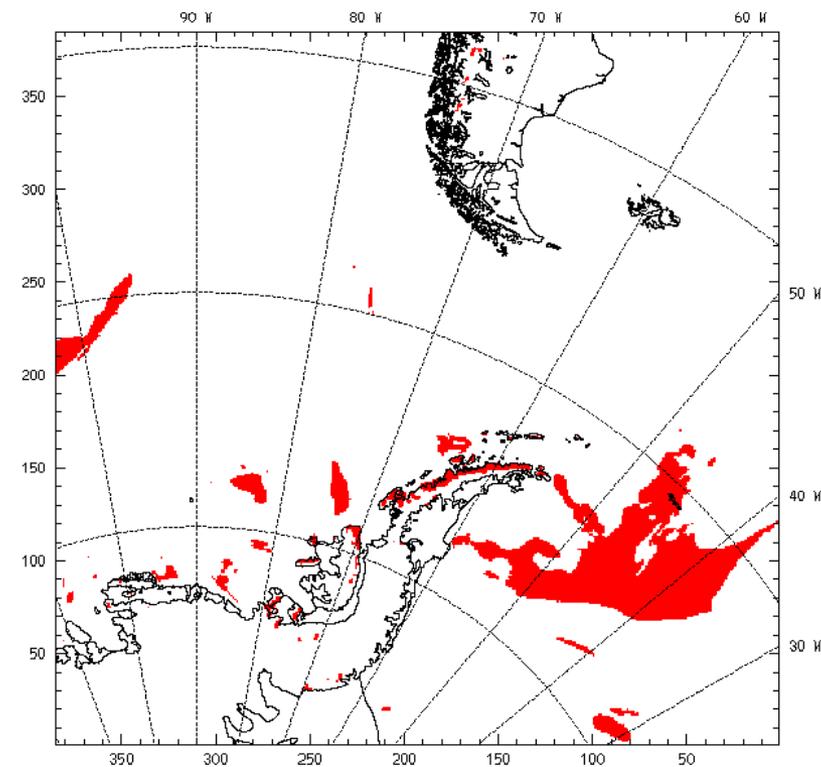
Avg. k-index = 60 to 54

Init: 00 UTC Fri 13 Feb 15  
Valid: 18 UTC Sun 15 Feb 15



Model Info: V3.3.1 KF MYJ PBL WSM 5class Noah LSM 9.0 km, 60 levels,  
LW, RRTM SH, Goddard DIFF, simple KH, 2D Smagor

Saturday



Model Info: V3.3.1 KF MYJ PBL WSM 5class Noah LSM 9.0 km, 60 levels,  
LW, RRTM SH, Goddard DIFF, simple KH, 2D Smagor

Sunday

Experimental AMPS plot of supercooled liquid water below 1000 feet MSL. Both plots indicate little threat in the possible sampling regions. (Either temperatures are too warm or there are ice clouds). Some caution may be needed if sampling is needed east of 50W.

# Punta Arenas: lat/lon = (-53.0000, -70.8500)

Grid Point (310, 159) lat/lon = (-53.0328, -70.8775)

AMPS WRF Forecast Cycle:

2015-02-13 / 00 Z

AMPS 9km

Rain likely Saturday morning, ending midday as it becomes windy.

Wind chill of -5C before takeoff on Sunday. Light rain developing during the afternoon.

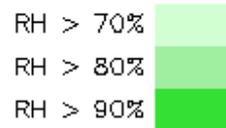
Model Grid ΔX:  
9.000 km

Temperature (°C)

RH (% WRT liq. wat.)

Cloud/Precip Outline

Wind Barbs (kts) (true)



Local Weekday  
Wind at 10 m

Wind Spd (kts)

Wind Barbs (true)

Wind Barbs (grid)

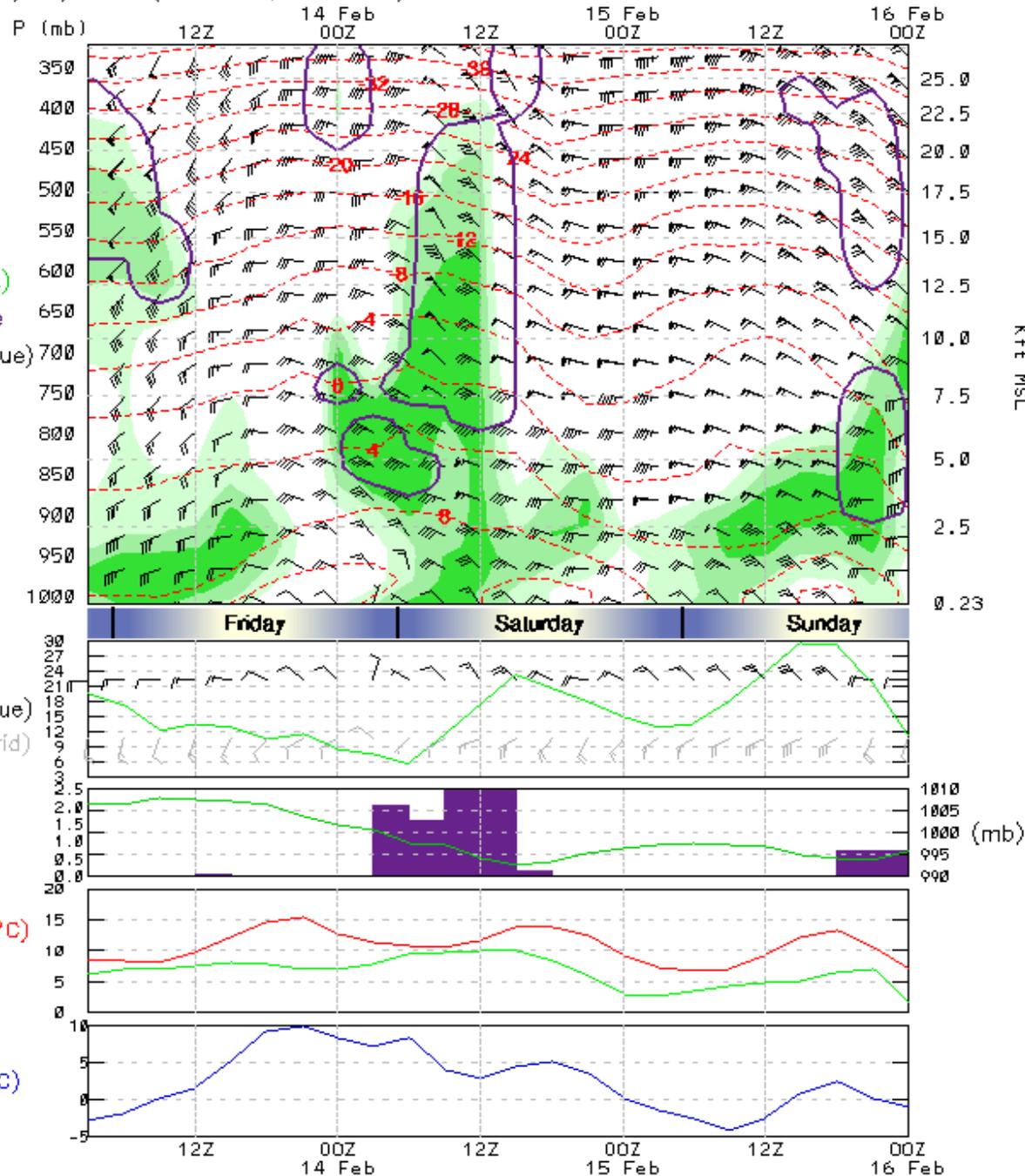
Precip (mm)  
liq. equiv.  
3-hr accum

Pressure (mb)

Temperature (°C)

Dewpoint (°C)

Wind Chill T (°C)



Eduardo Frei: lat/lon = (-62.1900, -58.9900)

Grid Point (167, 134) lat/lon = (-62.2022, -58.9427)

AMPS WRF Forecast Cycle:  
2015-02-13 / 00 Z

AMPS 9km

Weather at SCRМ

Light rain possibly mixed with snow on both Saturday and Sunday. Icing possible below 5 kft on Sunday.

Model Grid ΔX:  
9.000 km

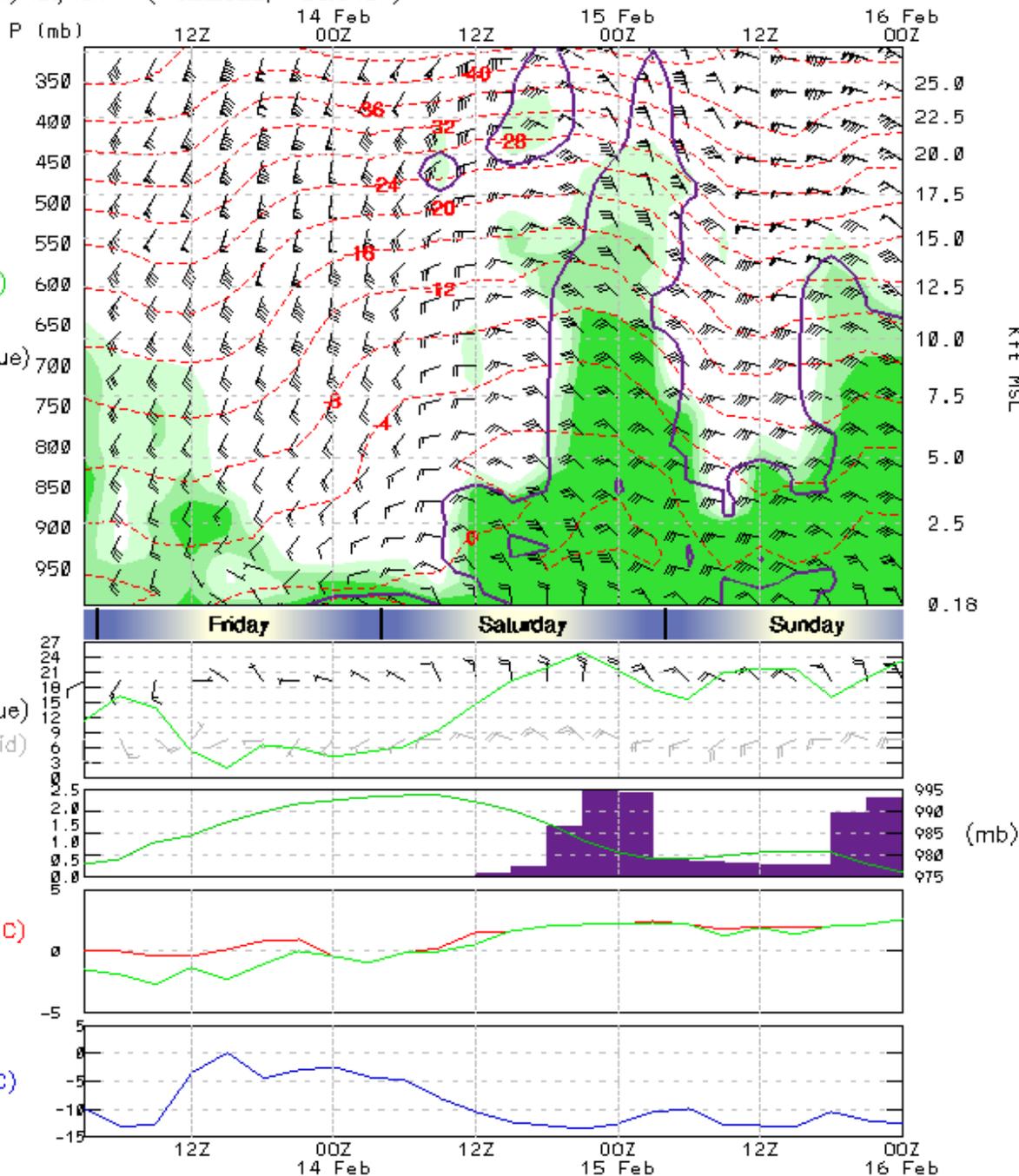
Temperature (°C)  
RH (% WRT liq. wat.)  
Cloud/Precip Outline  
Wind Barbs (kts) (true)

RH > 70%  
RH > 80%  
RH > 90%

Local Weekday  
Wind at 10 m  
Wind Spd (kts)  
Wind Barbs (true)  
Wind Barbs (grid)  
Precip (mm) liq. equiv.  
3-hr accum  
Pressure (mb)

Temperature (°C)  
Dewpoint (°C)

Wind Chill T (°C)



## Summary:

- The parade of fronts continues.
- An upstream 'clear' area develops during the day on Saturday that could be sampled.
- Clear skies should exist in the AB north of the FI.
- Forecast trajectories and cloud forecasts indicate a Lagrangian flight is possible.
- A flight to the Palmer coast is not recommended due to the strong cyclone in that vicinity.
- Takeoff weather on Saturday will be wet. Landing weather should be windy, but fair. Pre-takeoff weather on Sunday will be windy and cold with light rain developing by landing time.