

# Advances in Numerical Weather Prediction and Weather Forecasting Systems in Support of the Australian Antarctic Program.

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Australian Government  
Bureau of Meteorology



Whoop Whoop ski-way – courtesy Rod MacDonald.

Acknowledgements: Kevin Manning and Michael Duda from the AMPS team at MMM, NCAR for providing the AMPS time-series data for Australian and international Antarctic stations and field camps.

**1. Demonstrate the Australian Forecast systems, through a case-study.**

**a. Forecast area,**

**b. Single station forecasting,**

**c. NWP output,**

**d. Route forecasting,**

**e. Verification.**

**2. Experimental Antarctic Ensemble System.**

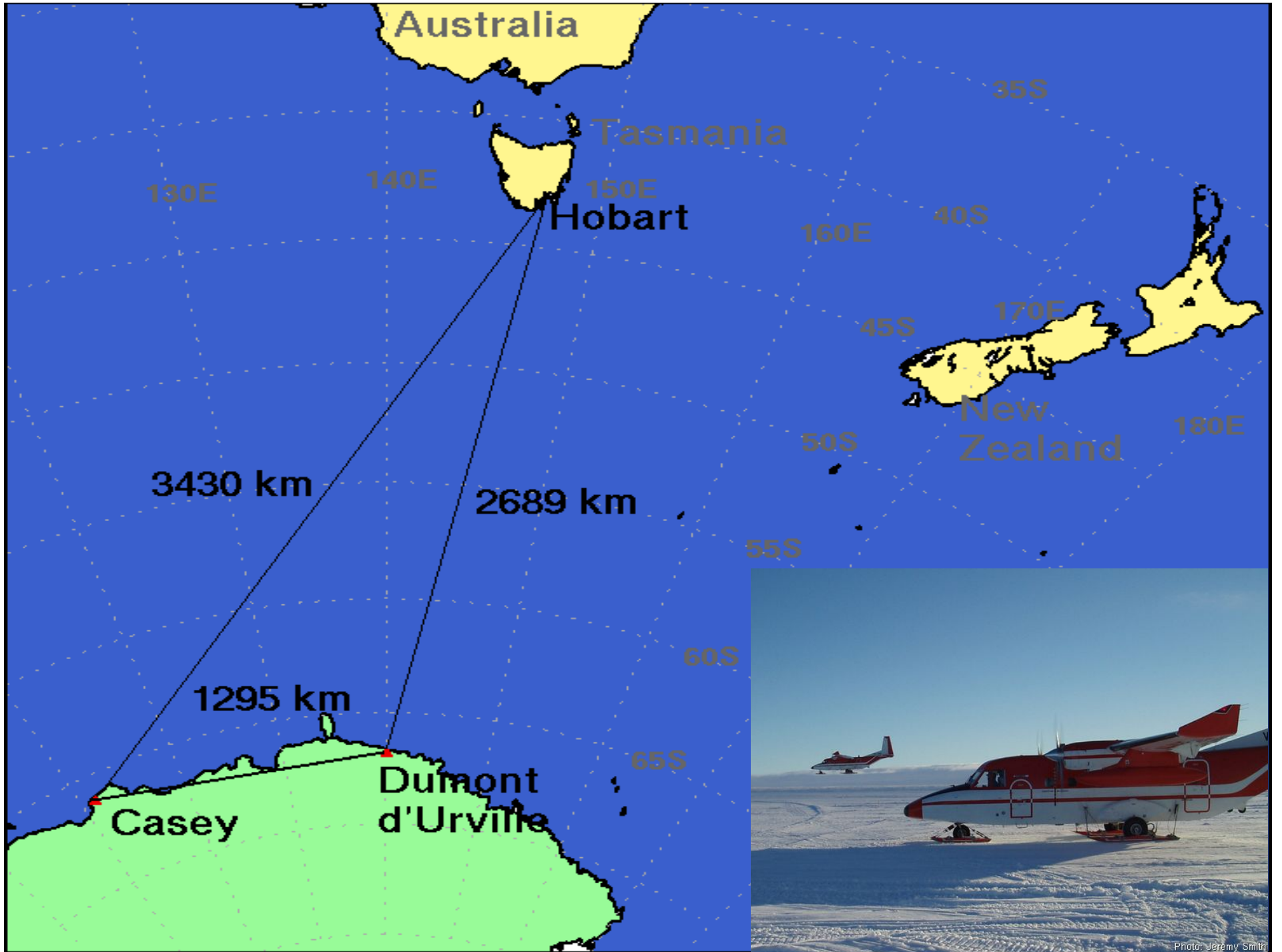
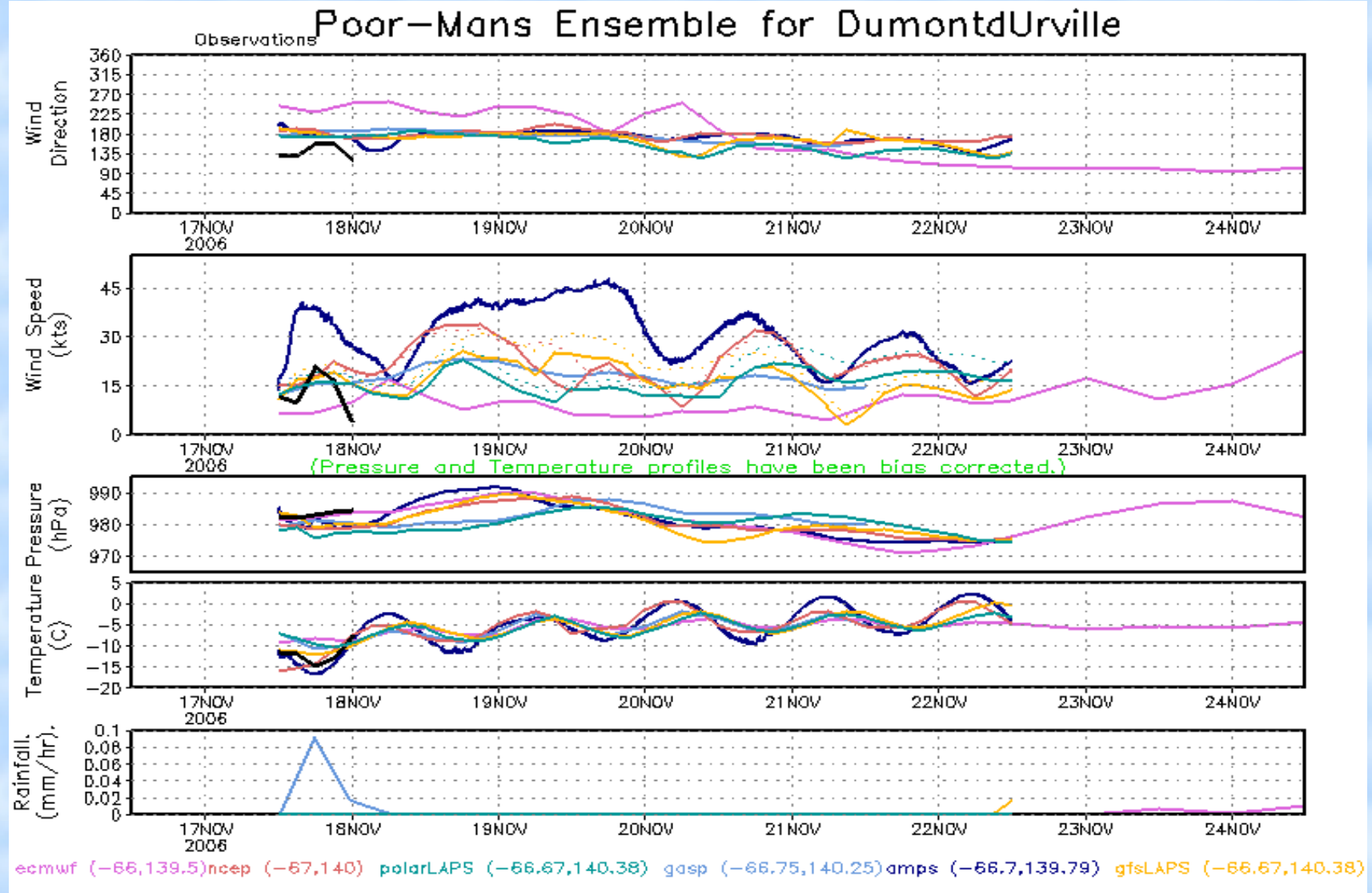


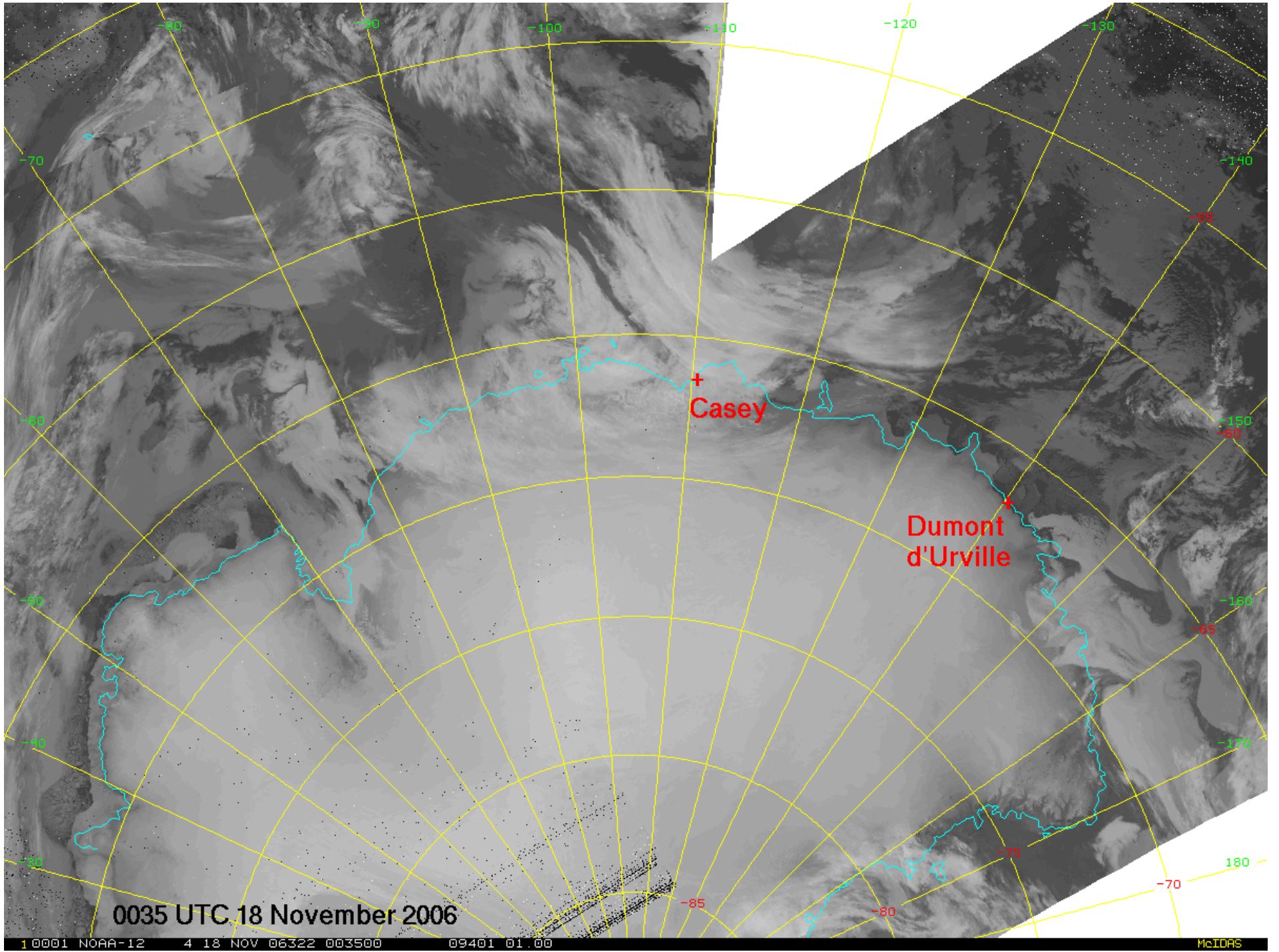
Photo: Jeremy Smith

## Single Station Forecasting:



**TAF DDU 0012 13015 9999**  
**FM 10 16030 9999**  
**T M11 M08 M08 M11 Q 977 977 978 979**





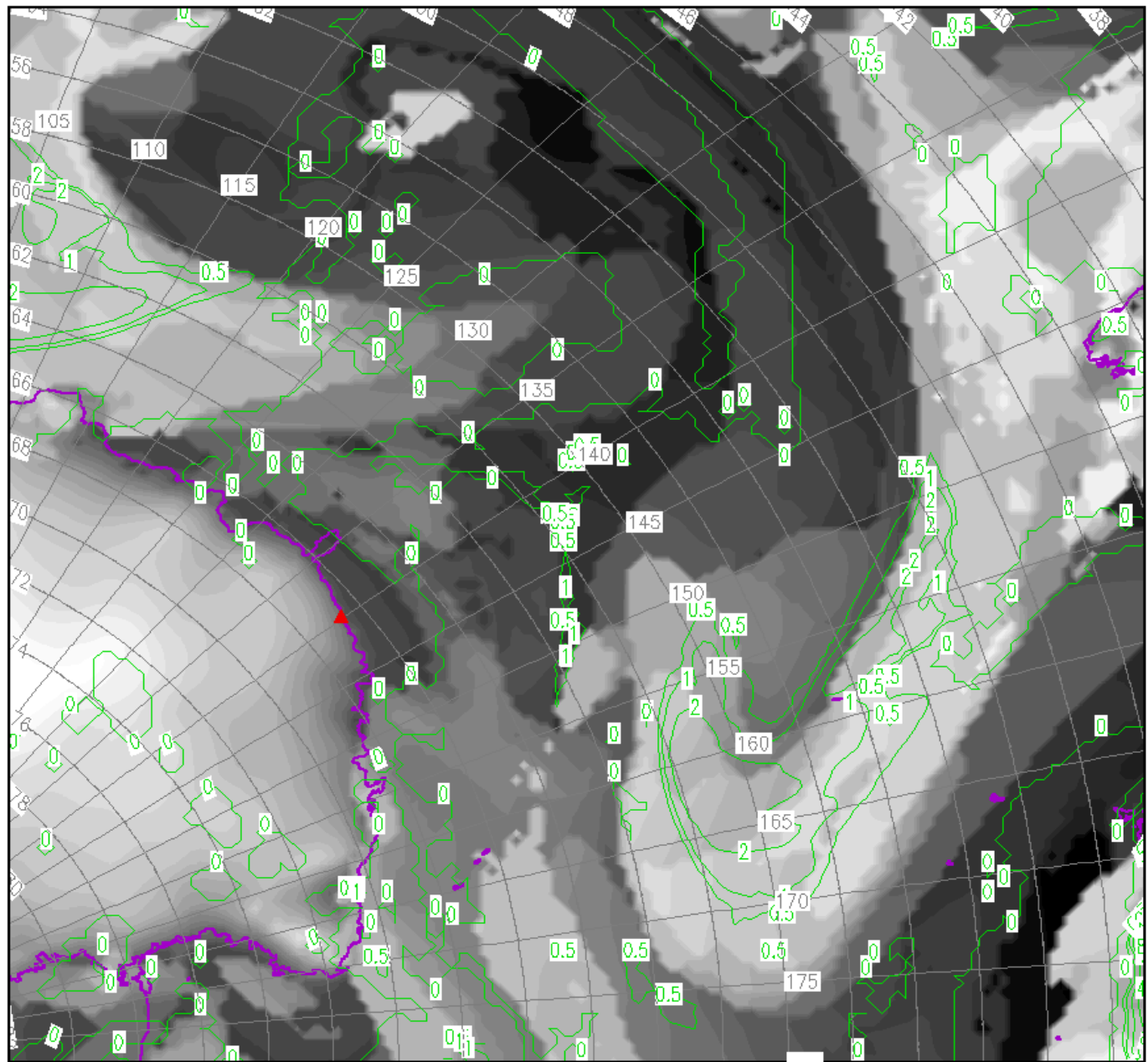
1 0001 NOAA-12 4 18 NOV 06322 003500

09401 01.00

McIDAS

NWP Output:

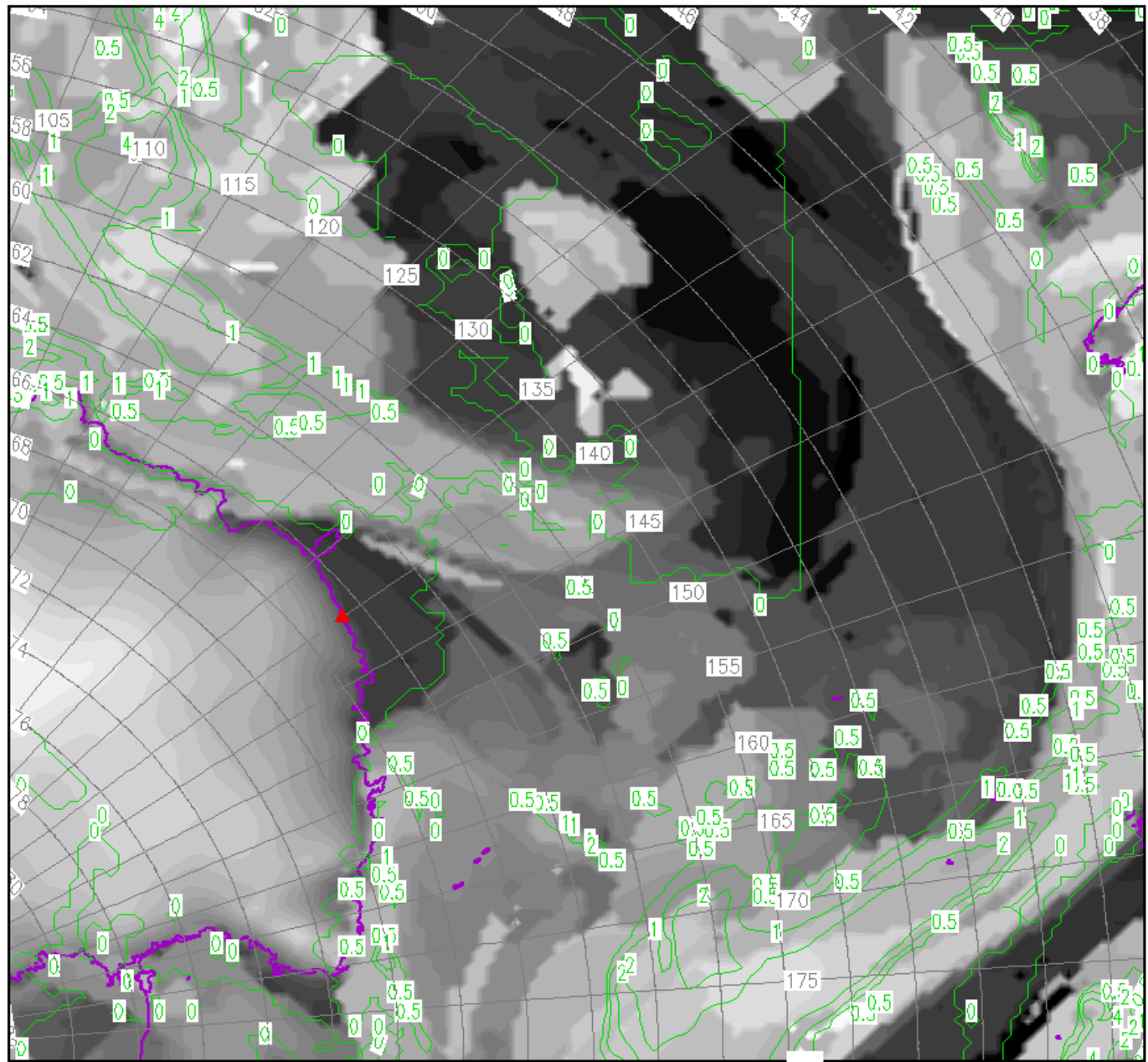
# Model Synthetic Cloud and 3 hourly precipitation



polarLAPS +012HR Prognosis valid at 0000UTC 18 NOV 2006 (base 12Z17NOV2006).

NWP Output:

# Model Synthetic Cloud and 3 hourly precipitation

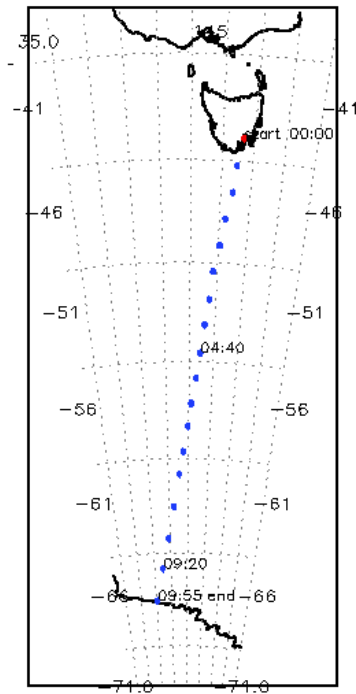


polarLAPS +024HR Prognosis valid at 1200UTC 18 NOV 2006 (base 12Z17NOV2006).

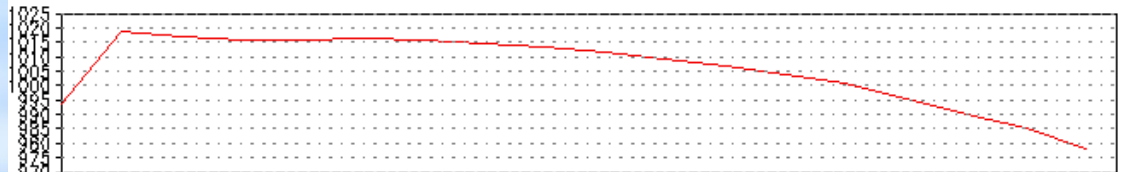
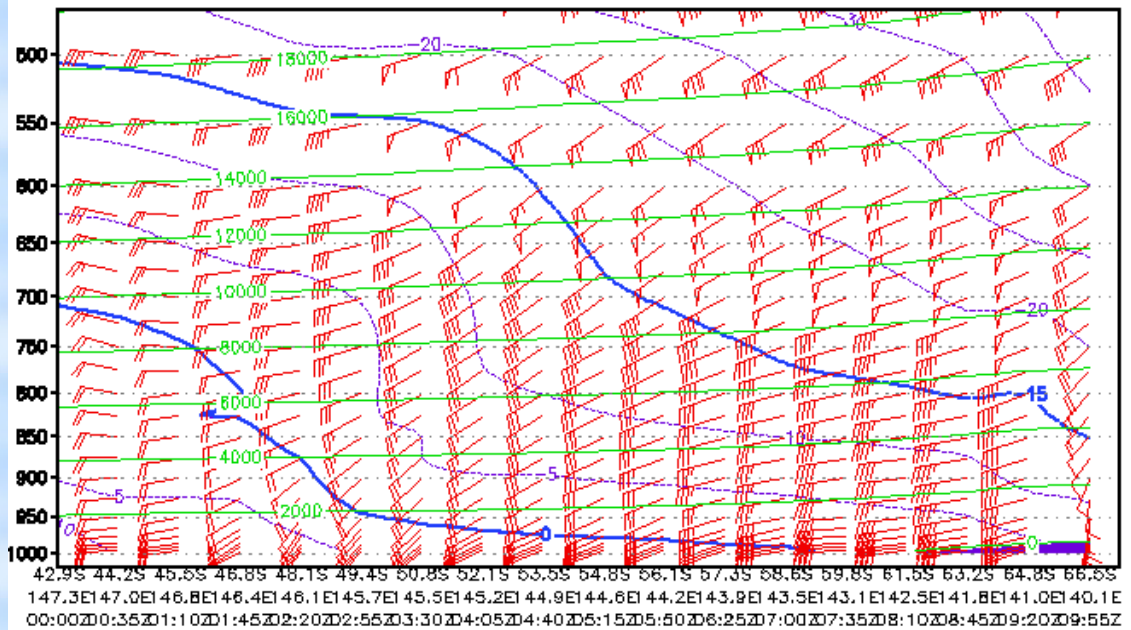


# Route Forecasting

Cross-Section 00:00Z 18/11/2006 to 09:55Z 18/11/2006



Cross-Section 00:00Z 18/11/2006 to 09:55Z 18/11/2006



Surface Level Pressure

polarLAPS

ROUTE FORECAST FOR CASA 212 FLIGHT. ISSUED FROM THE REGIONAL FORECASTING CENTRE HOBART AT 2030 UTC 17/11/2006 VALID FROM 0000UTC 18/11/2006 UNTIL 1200UTC 18/11/2006 FOR ROUTE : HOBART - DUMONT d'URVILLE.

## WIND/TEMPS :

2000 .... 3000 .... 5000 .... 7000 .... 10000 .... 14000

## HOBART TO 50S

255/20 07 255/20 05 255/20 02 260/25 01 260/30 M04 260/30 M09

## 50S TO 65S

240/40 M04 240/45 M08 240/45 M10 230/50 M12 230/60 M14 230/70M21

## 65S-DUMONT D'URVILLE

185/20 M11 190/20 M13 200/20 M17 210/20 M18 225/30 M22 230/40 M25

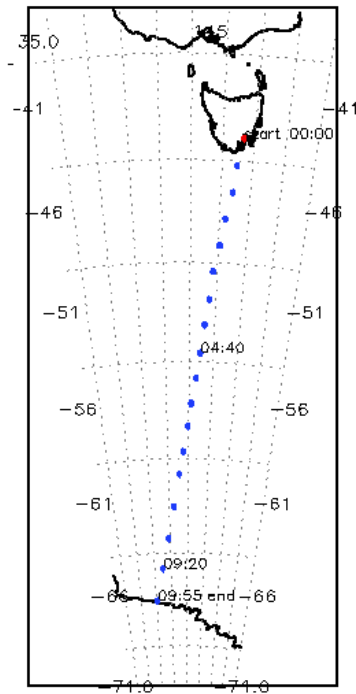
## TURBULENCE :

OCNL MOD ALL LEVELS

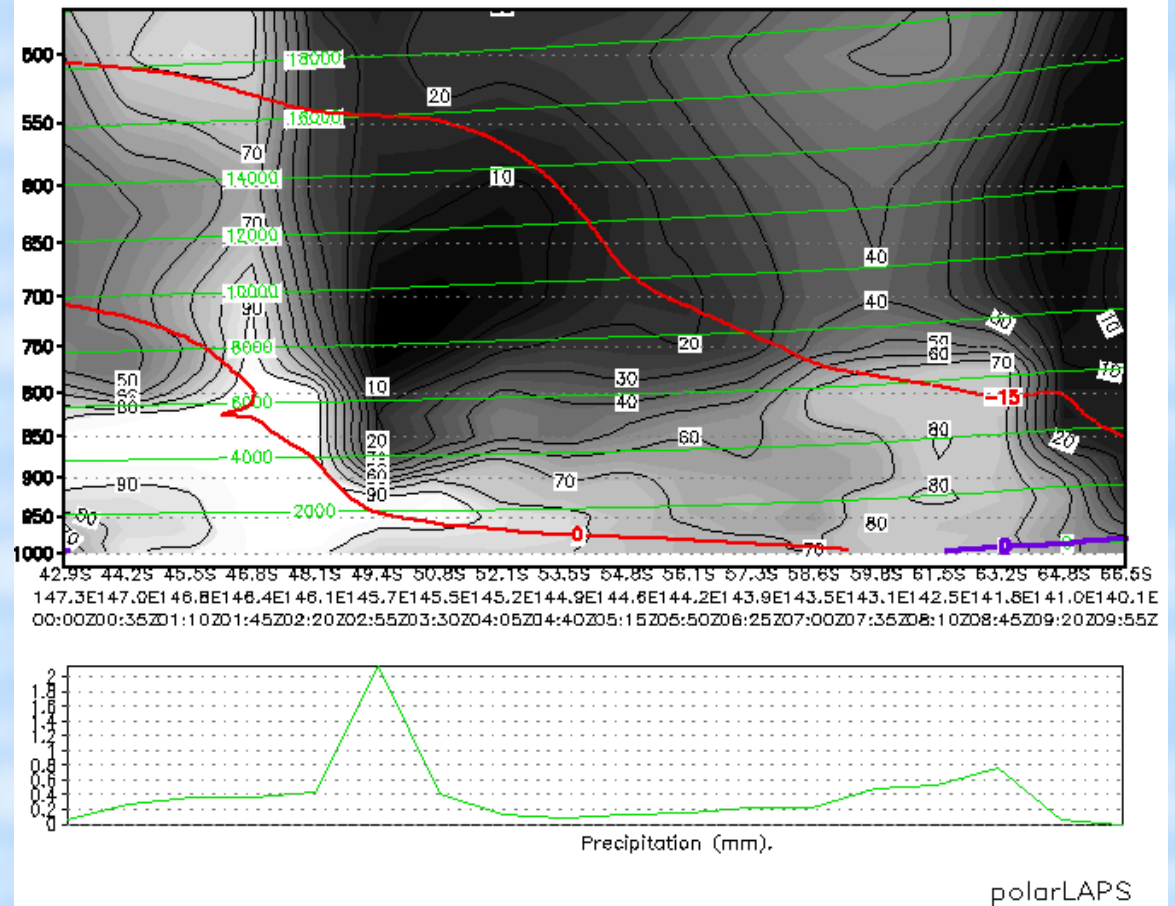


# Route Forecasting

Cross-Section 00:00Z 18/11/2006 to 09:55Z 18/11/2006

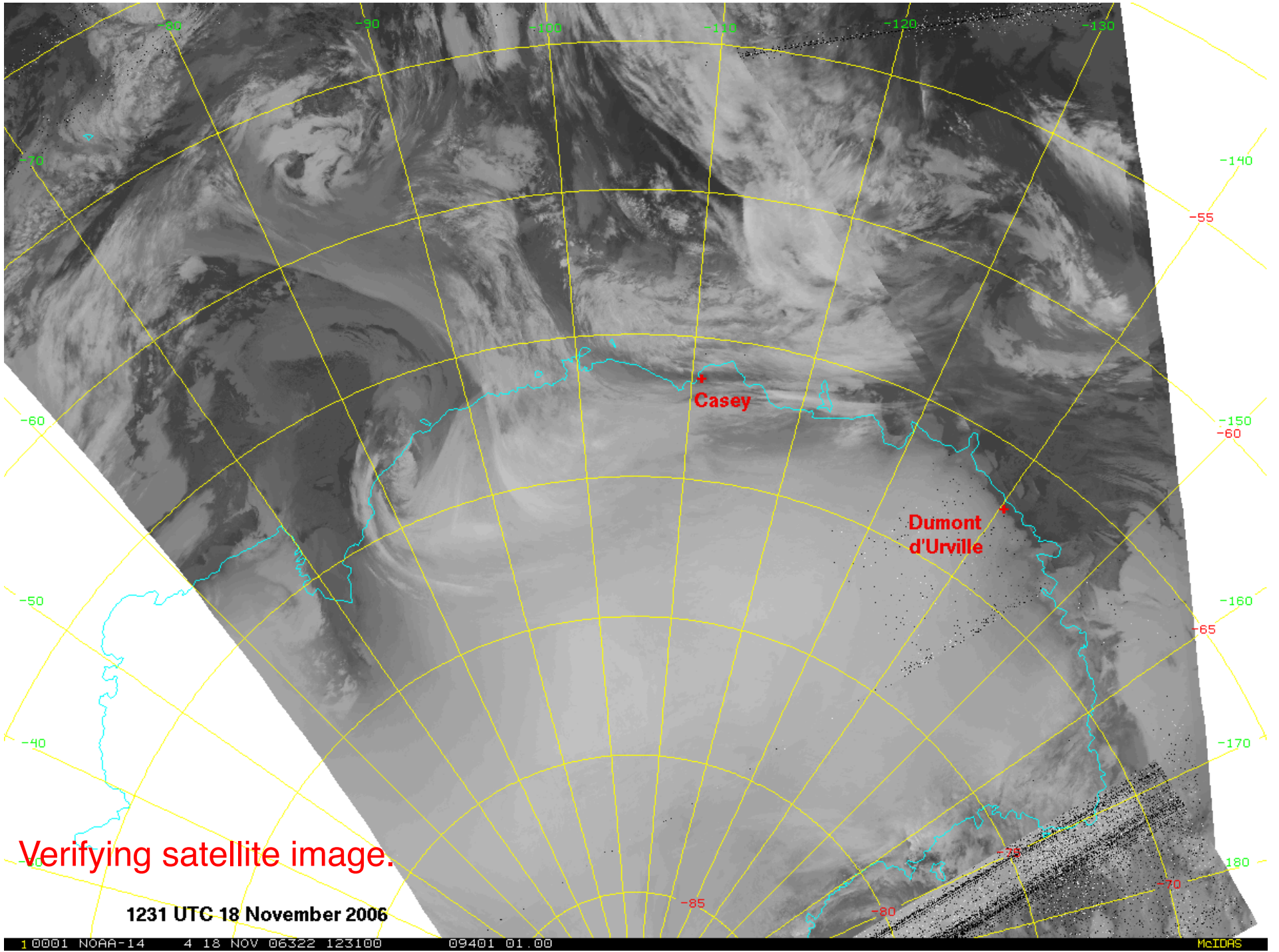


Cross-Section 00:00Z 18/11/2006 to 09:55Z 18/11/2006



SIGNIFICANT WEATHER AND ASSOCIATED CLOUD :  
 44S-48S  
 SCT/LOCALLY BKN ST 1000-2000 IN RAIN. BKN CUSC 2000-8500. BKN LYRS ACAS ABV 8500.  
 48S-65S  
 ISOL/SCT SHOWERS IN BKN CUSC 2000-5000.  
 65S - DUMONT D'URVILLE  
 FINE NIL CLOUD.

ICING :  
 MOD ICING ABOVE 8000 44S TO 48S AND BELOW 6000 56S-63S.

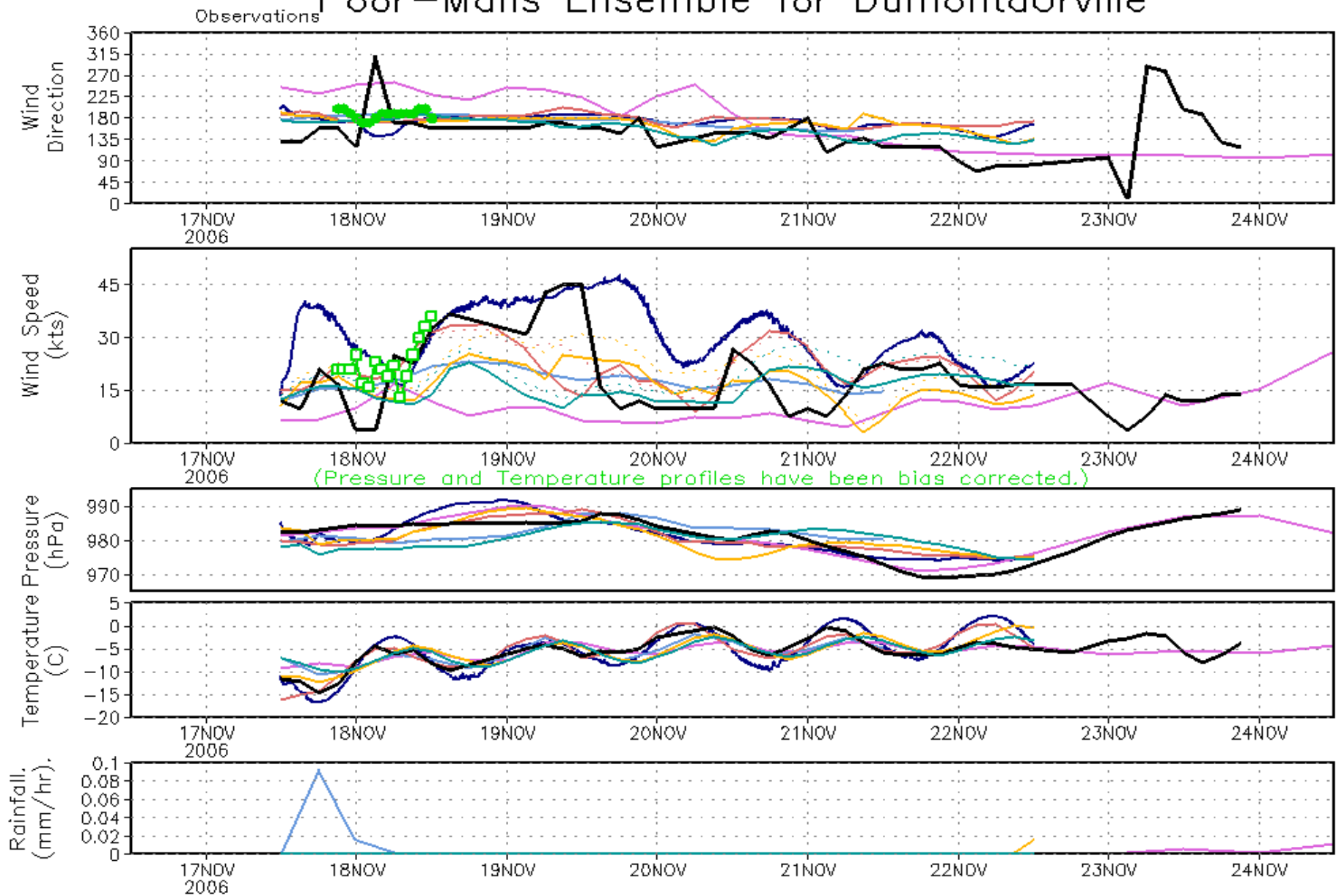


Surface weather Verification:

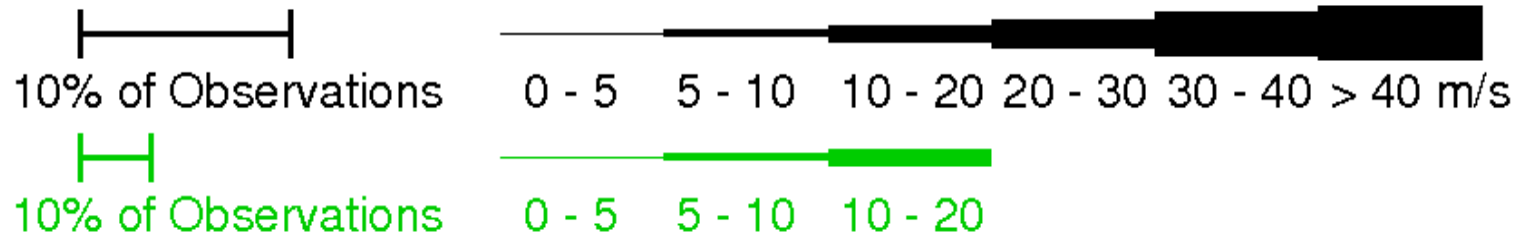
□ D10 Observations.

— Dumont d'Urville

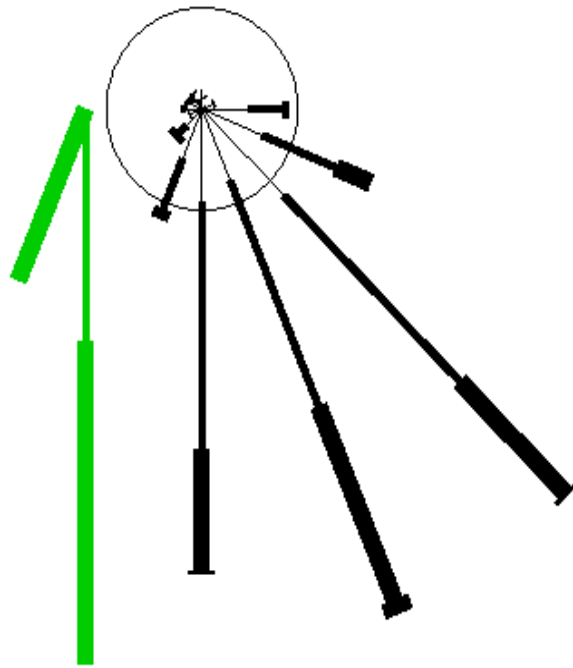
# Poor-Mans Ensemble for DumontdUrville



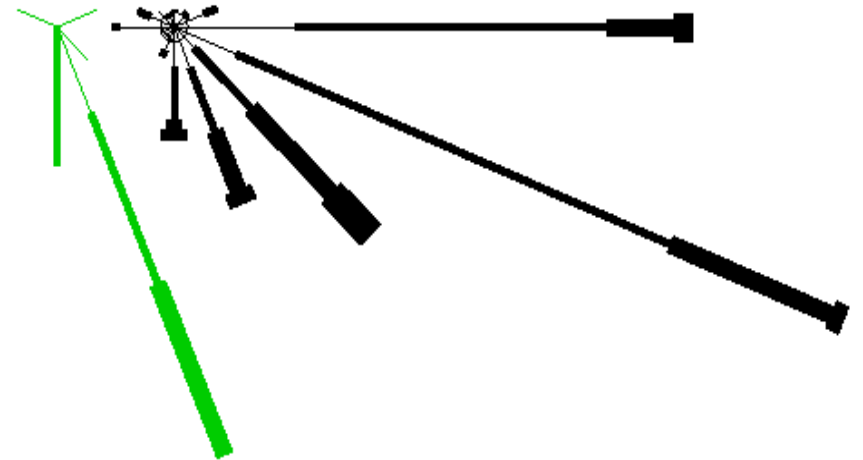
ecmwf (-66,139.5) ncep (-67,140) polarLAPS (-66.67,140.38) gasp (-66.75,140.25) amps (-66.7,139.79) gfsLAPS (-66.67,140.38)



D10 AWS (All Novembers)  
D10 AWS (CASA Flight)



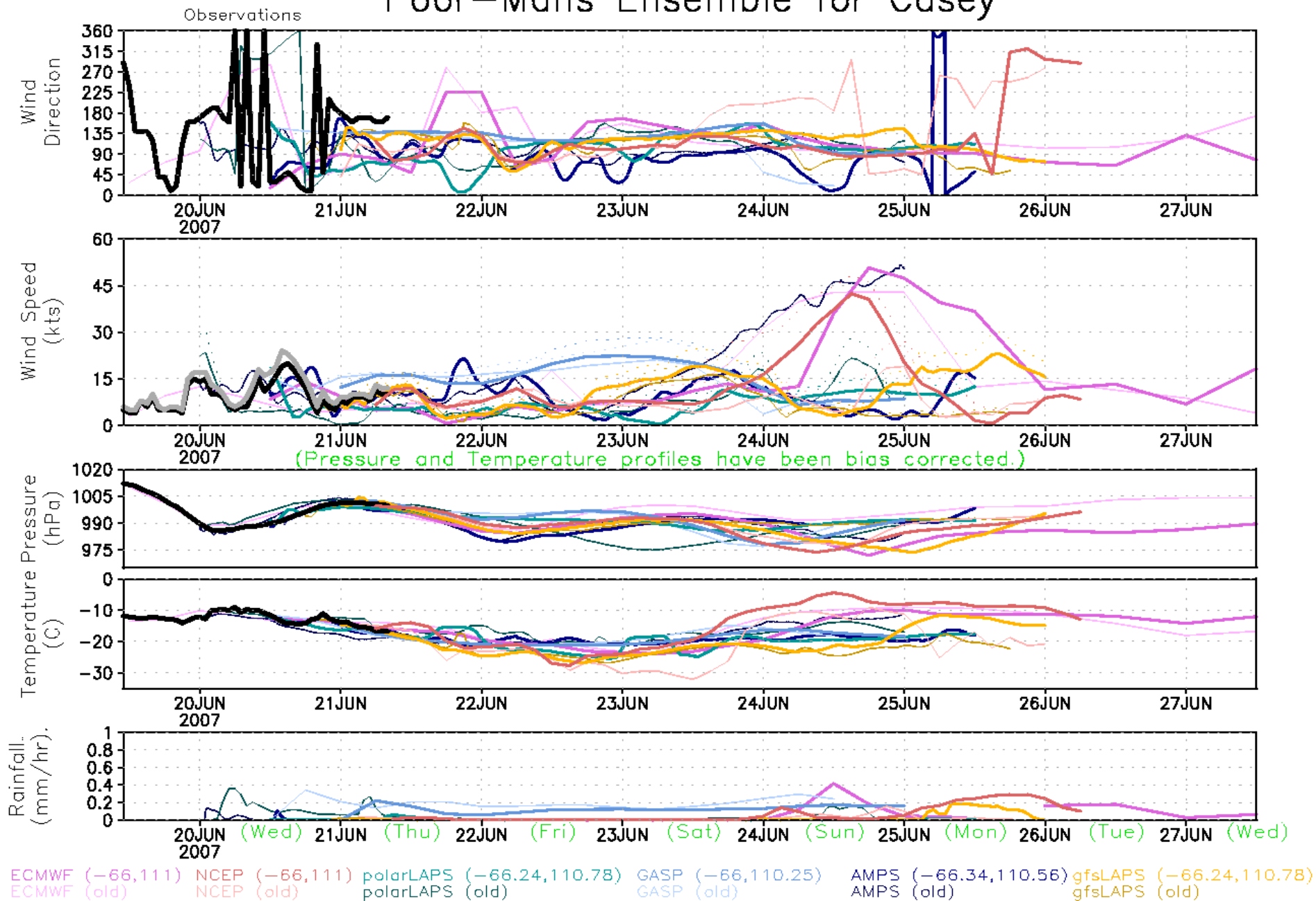
Dumont d'Urville (All Novembers)  
Dumont d'Urville (CASA Flight)



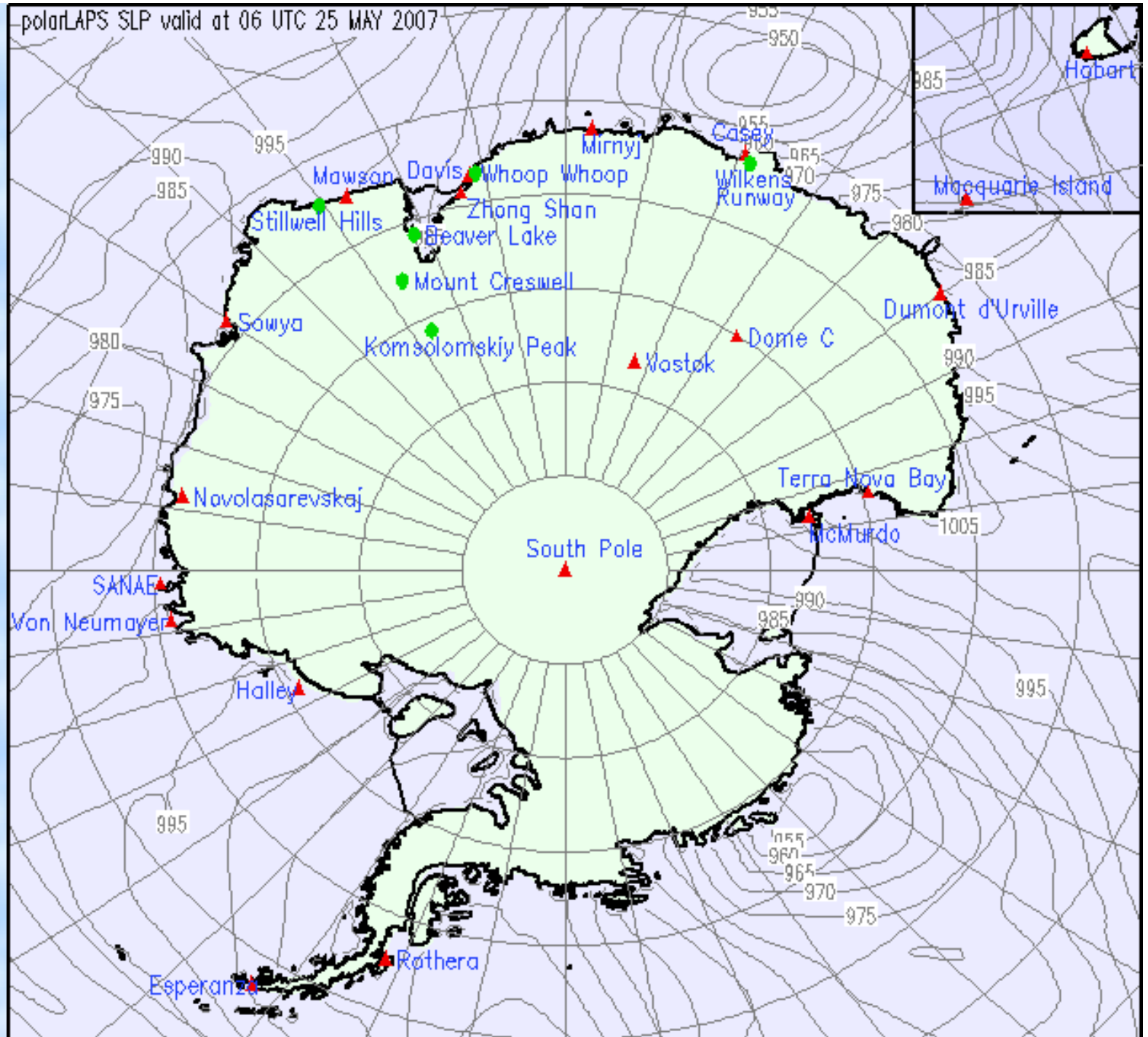


# Experimental Ensemble System.

## Poor-Mans Ensemble for Casey



Experimental Ensemble System.



The ensemble system may be found at:

<http://www.bom.gov.au/bmrc/mdev/expt/antarctic/antarctica.shtml>

Thank you.