

High Resolution Forecasts for an Antarctic Field Campaign.

Tom Lachlan-Cope, Victoria
Smith, Andy Elvidge, Amélie
Kirchgaessner, Russ Ladkin, Phil
Anderson, Peter Munneke



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OFCAP

- Orographic Forcing and Climate on the Antarctic Peninsula
- Intensive observing campaign
- 4 AWS across Peninsula
- Field camp (3/01/11 – 1/02/11)
- 22 flights with instrumented aircraft



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South
America

Stanley
Falkland
Islands

South Georgia
Bird Island King Edward Point
Island

Signy

Rothera

Fossil Bluff

Sky-Blu

Halley



WARM
AIR
MASS

MOUNTAIN
BARRIER
EFFECT

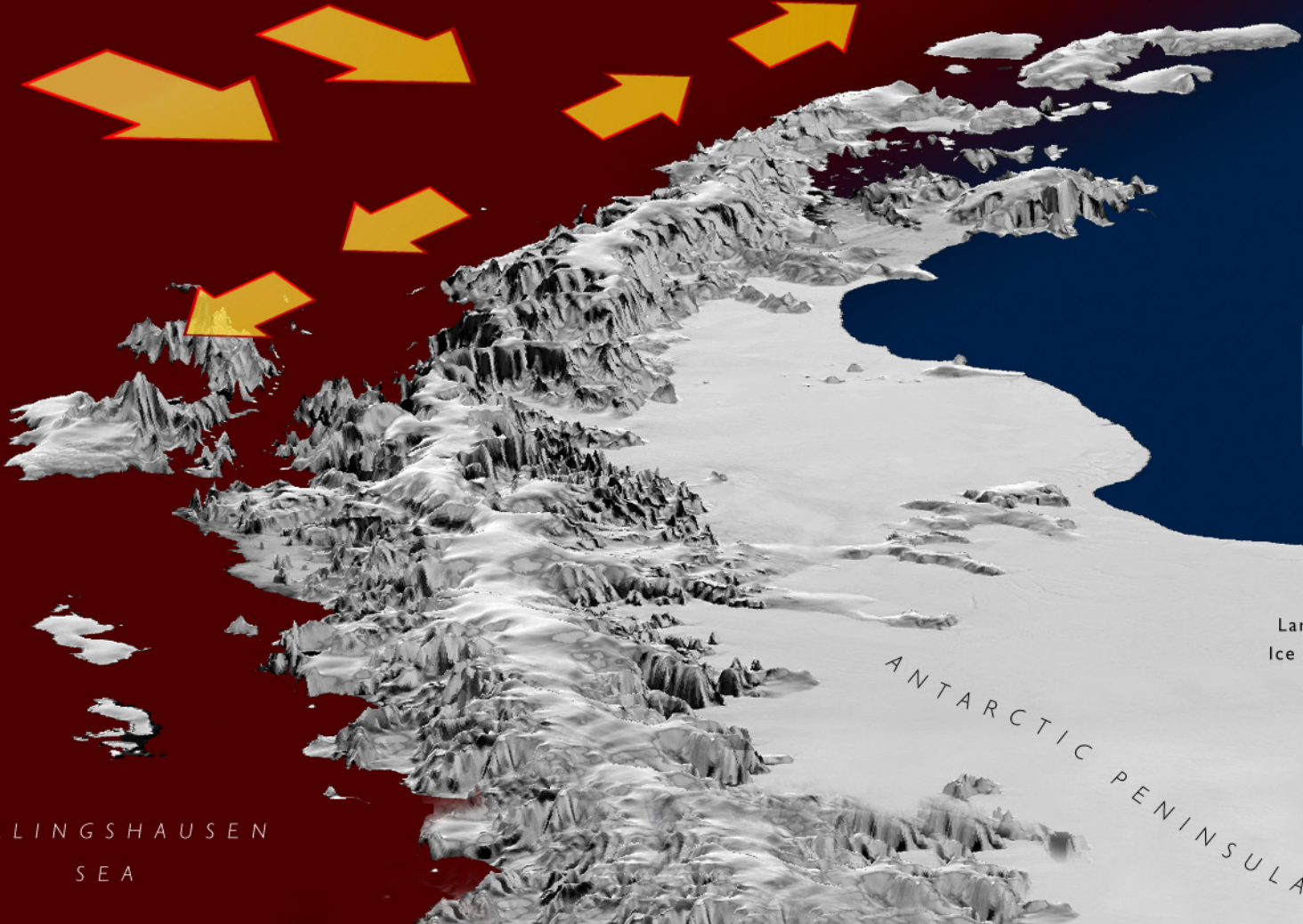
COLD
AIR
MASS

WEDDELL
SEA

Larsen
Ice Shelf

ANTARCTIC
PENINSULA

BELLINGSHAUSEN
SEA



HIGHER
AIR
TEMPS.

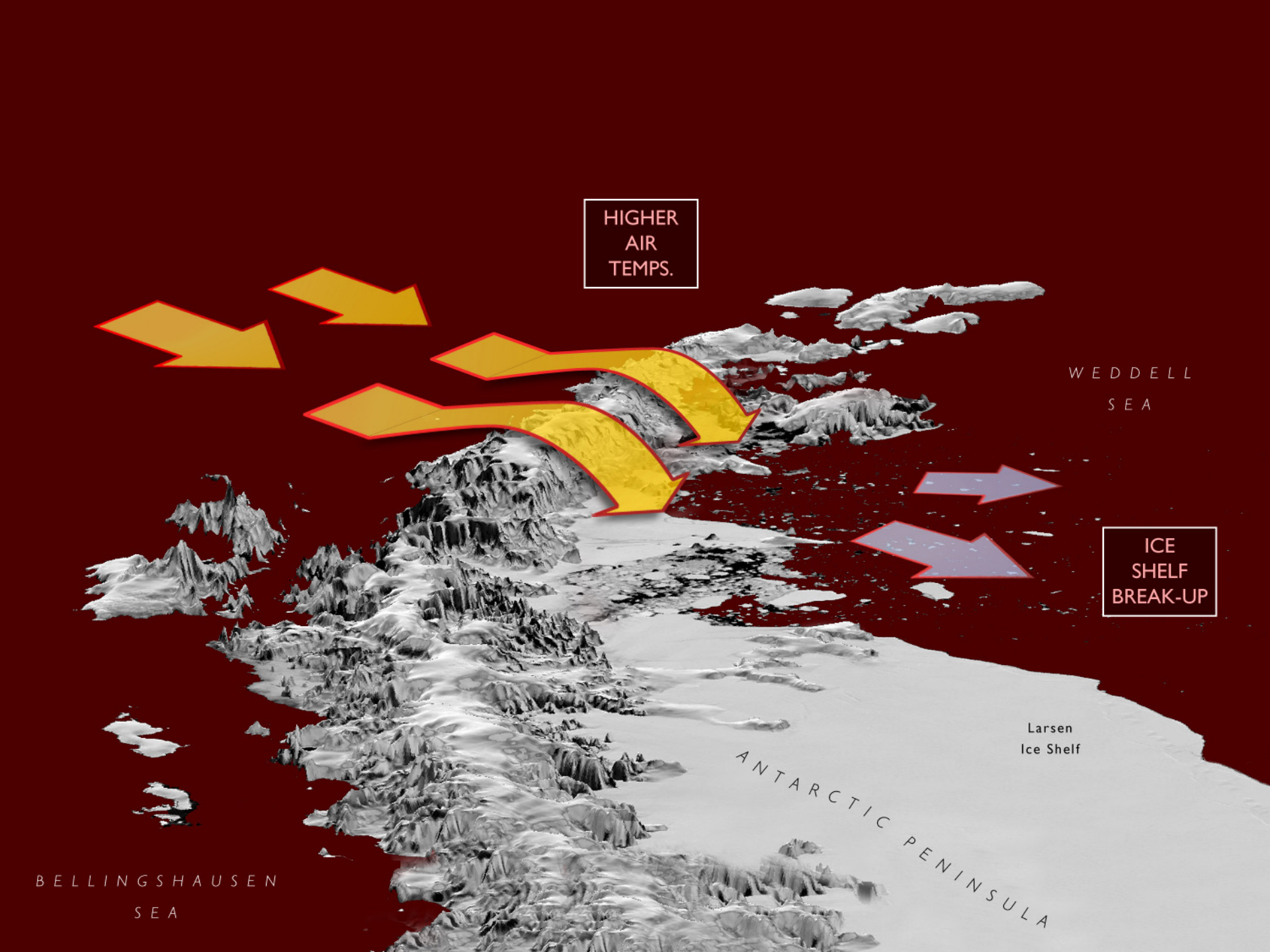
WEDDELL
SEA

ICE
SHELF
BREAK-UP

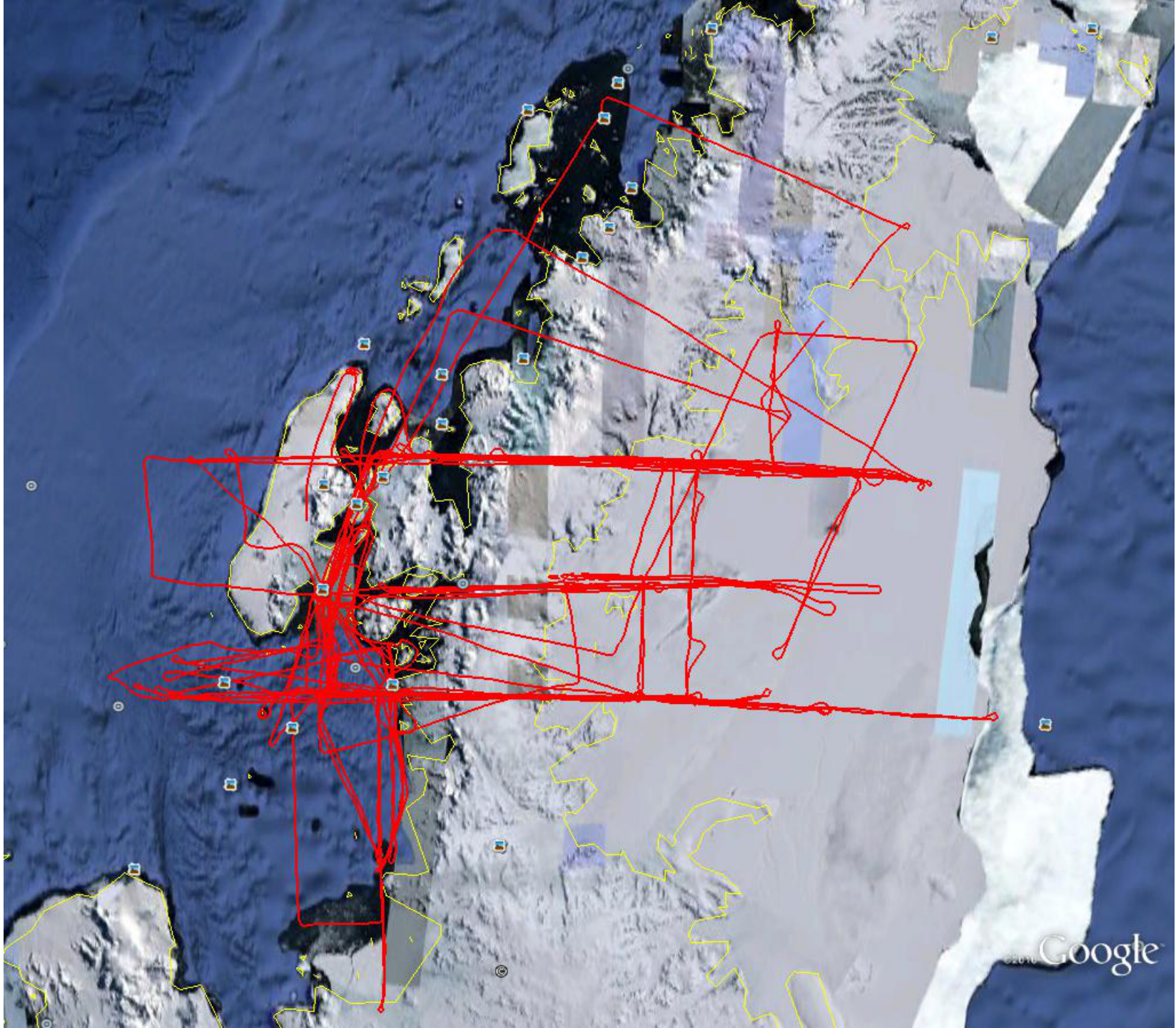
Larsen
Ice Shelf

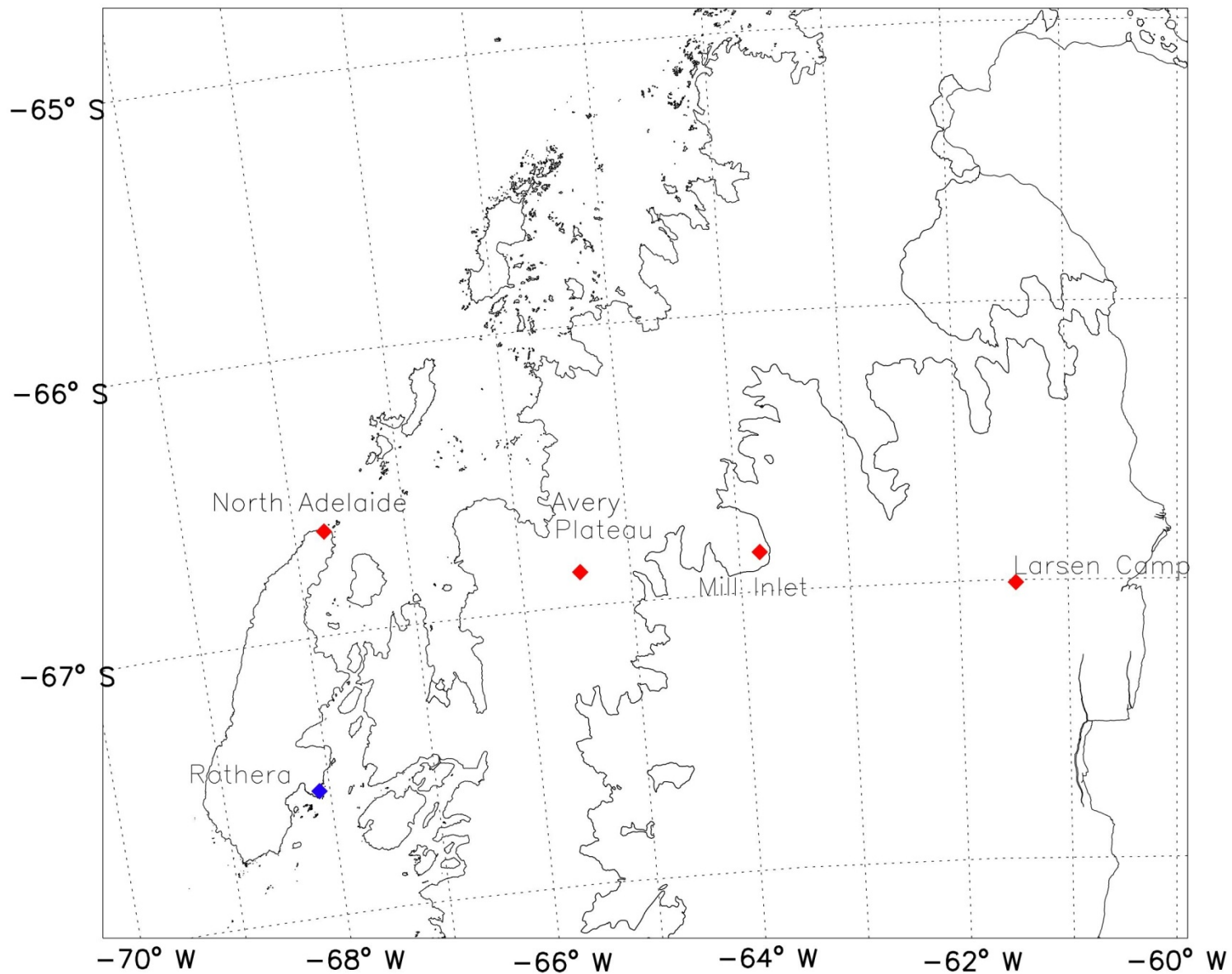
ANTARCTIC
PENINSULA

BELLINGSHAUSEN
SEA



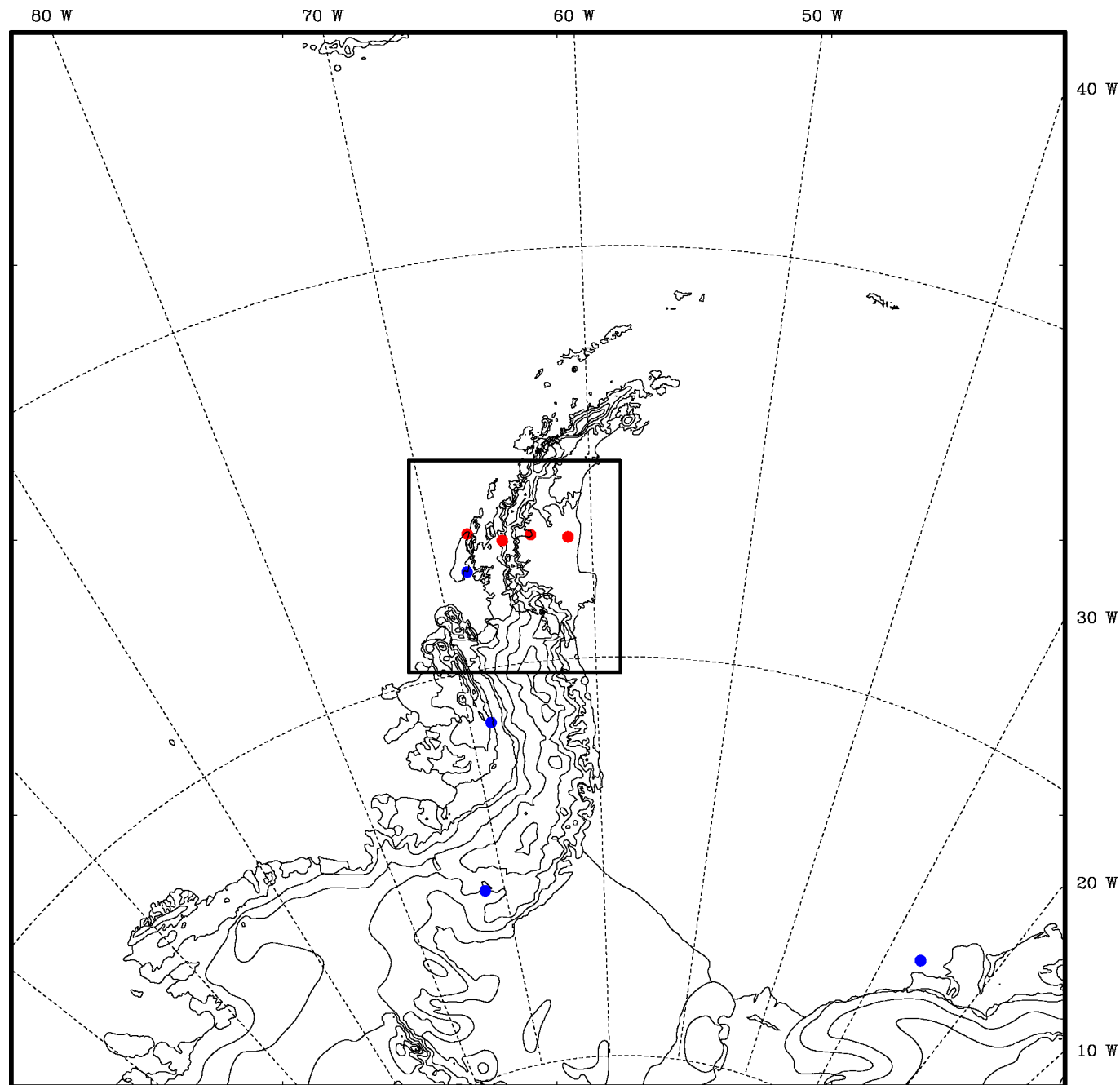








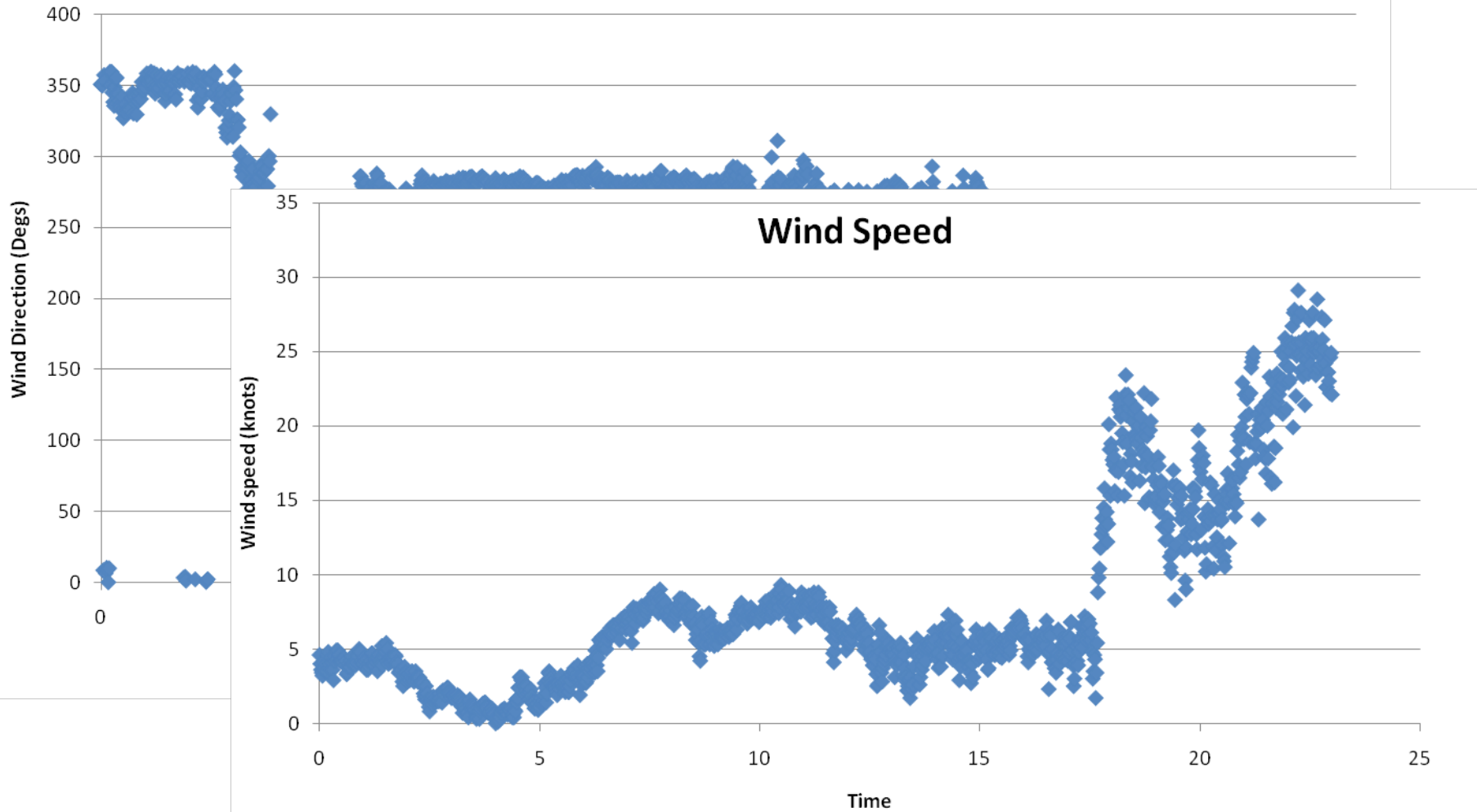




- 2 Domains
- d01 – 7.5 km resolution
- 2 hourly output
- D02 – 1.5 km resolution
- hourly output
- 90 vertical levels



Wind Direction



6th February 2011



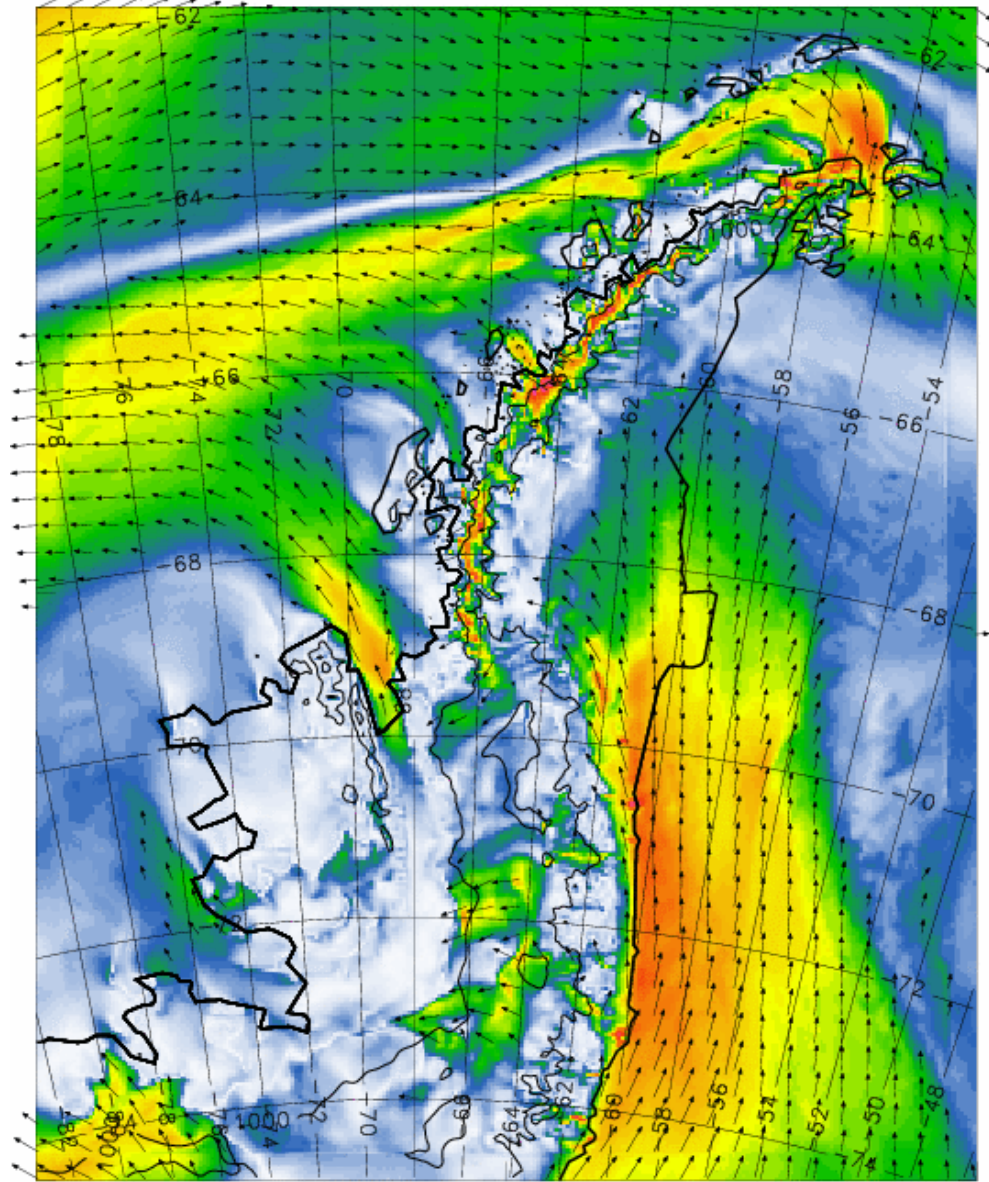
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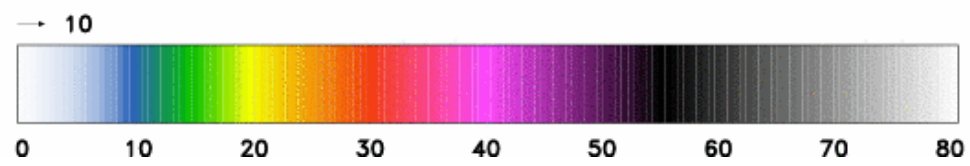


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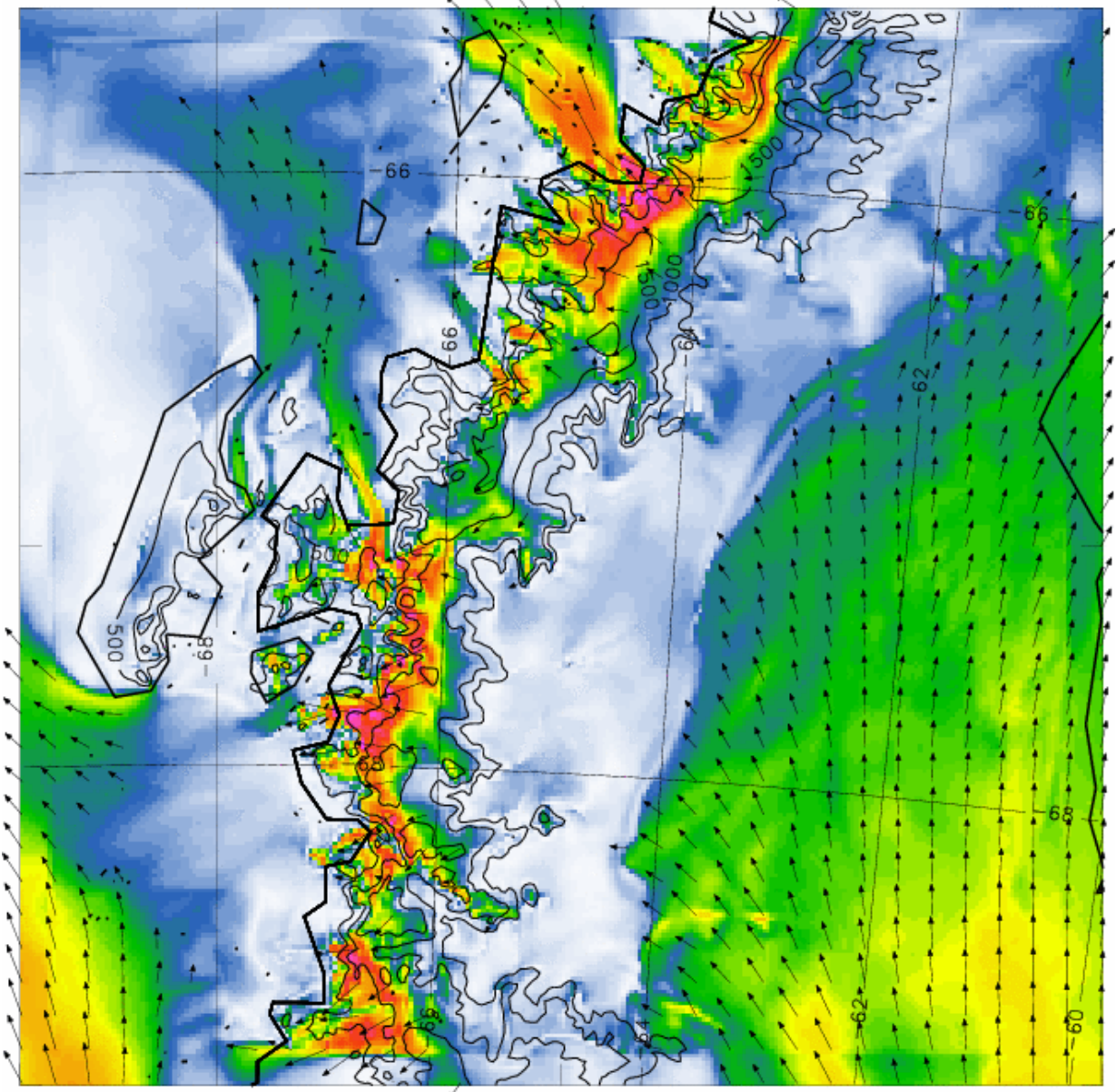
ant4 10m wind speed [knts]
Sunday 1800Z 06/02/2011 (+6h)



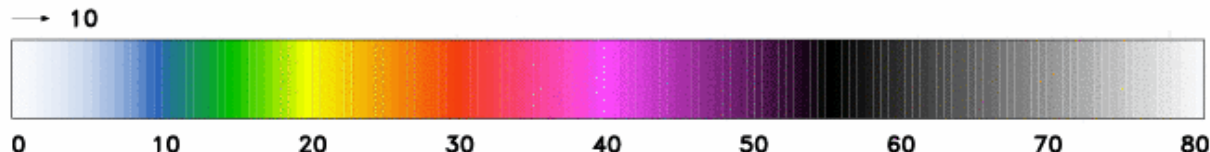
4km UKMO



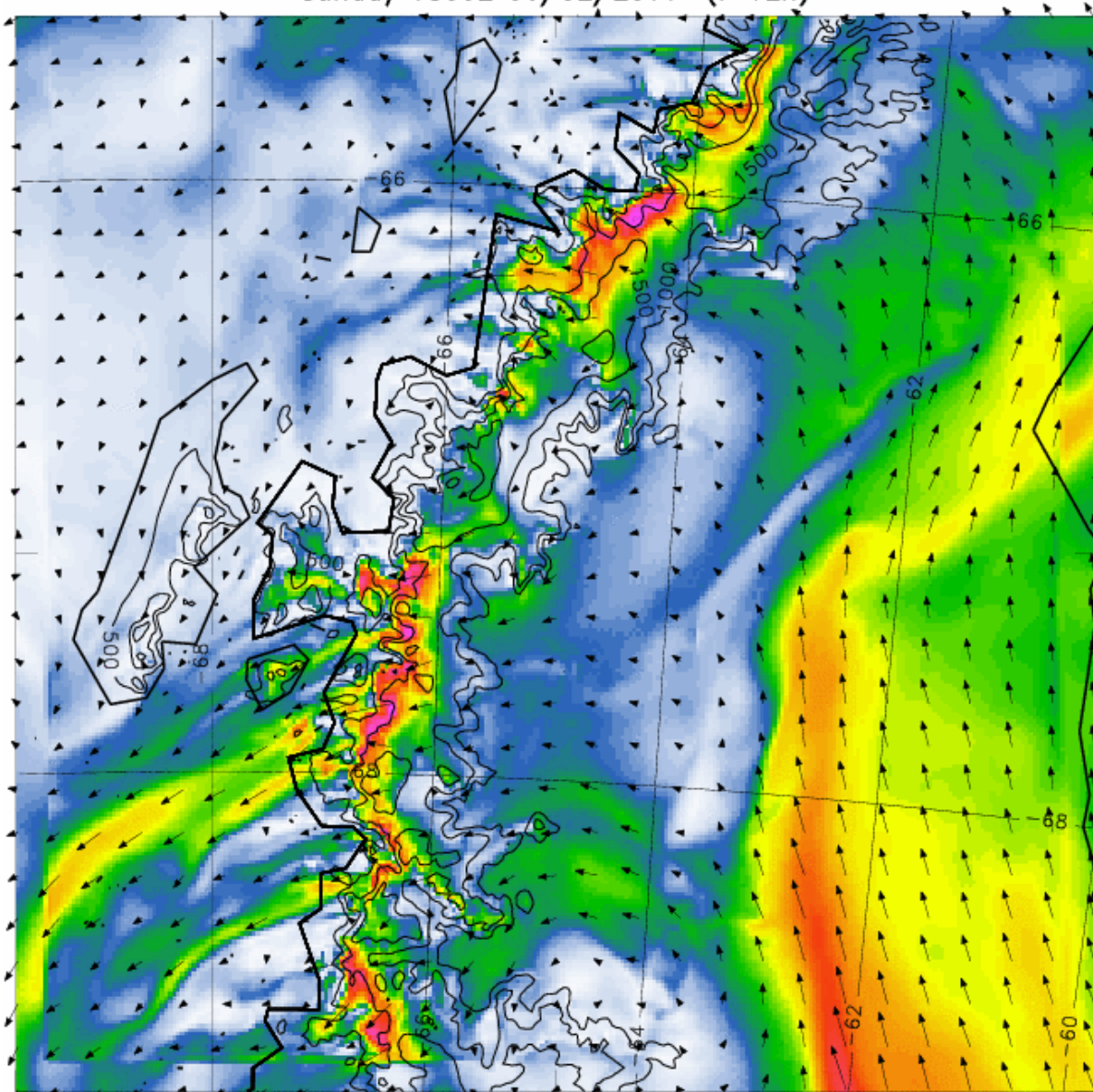
ant1 10m wind speed [knts]
Sunday 1900Z 06/02/2011 (+13h)



1km UKMO



ant1 850hPa wind speed [knots] and wind vectors [m/s]
Sunday 1800Z 06/02/2011 (+12h)



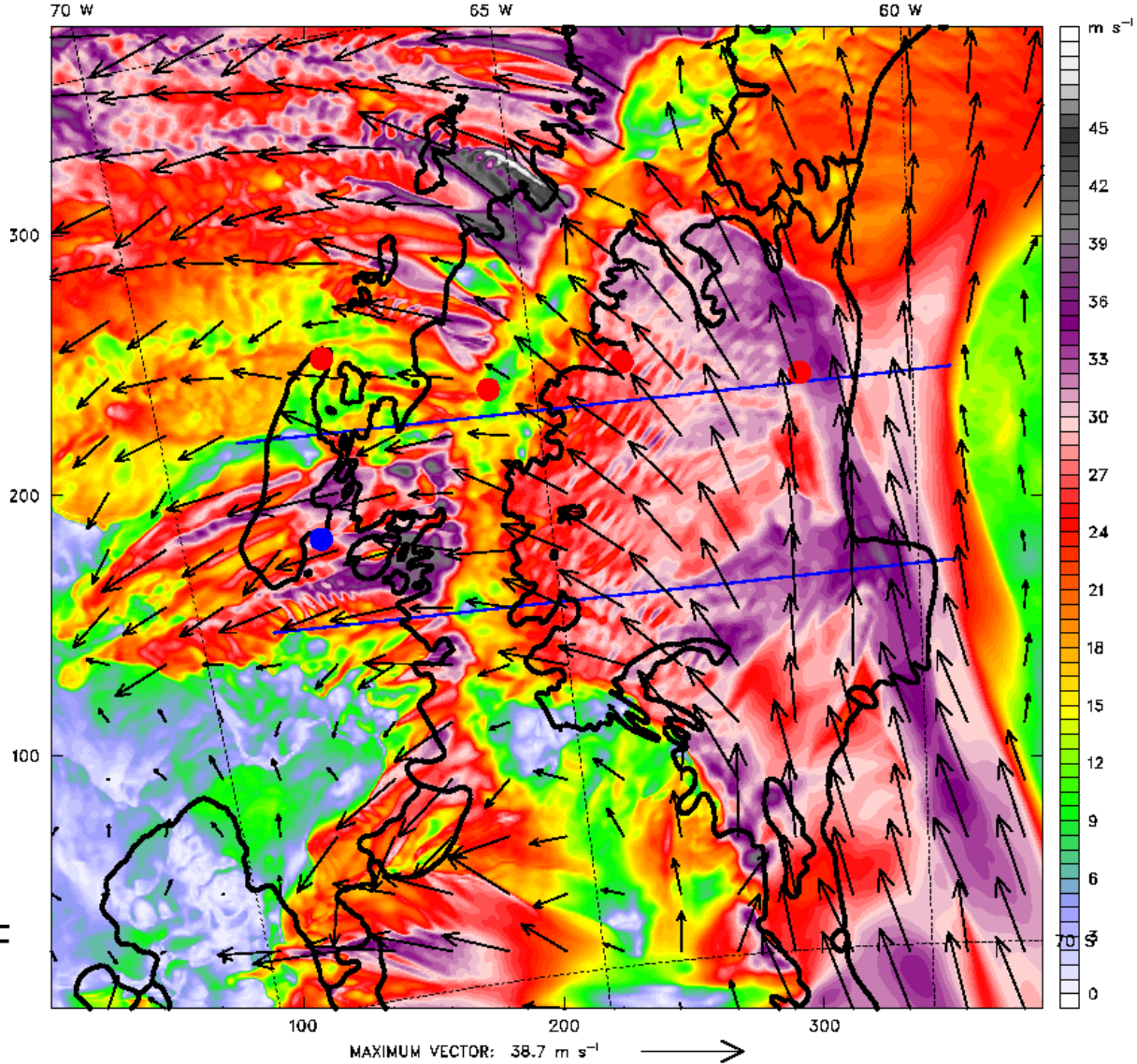
→ 15

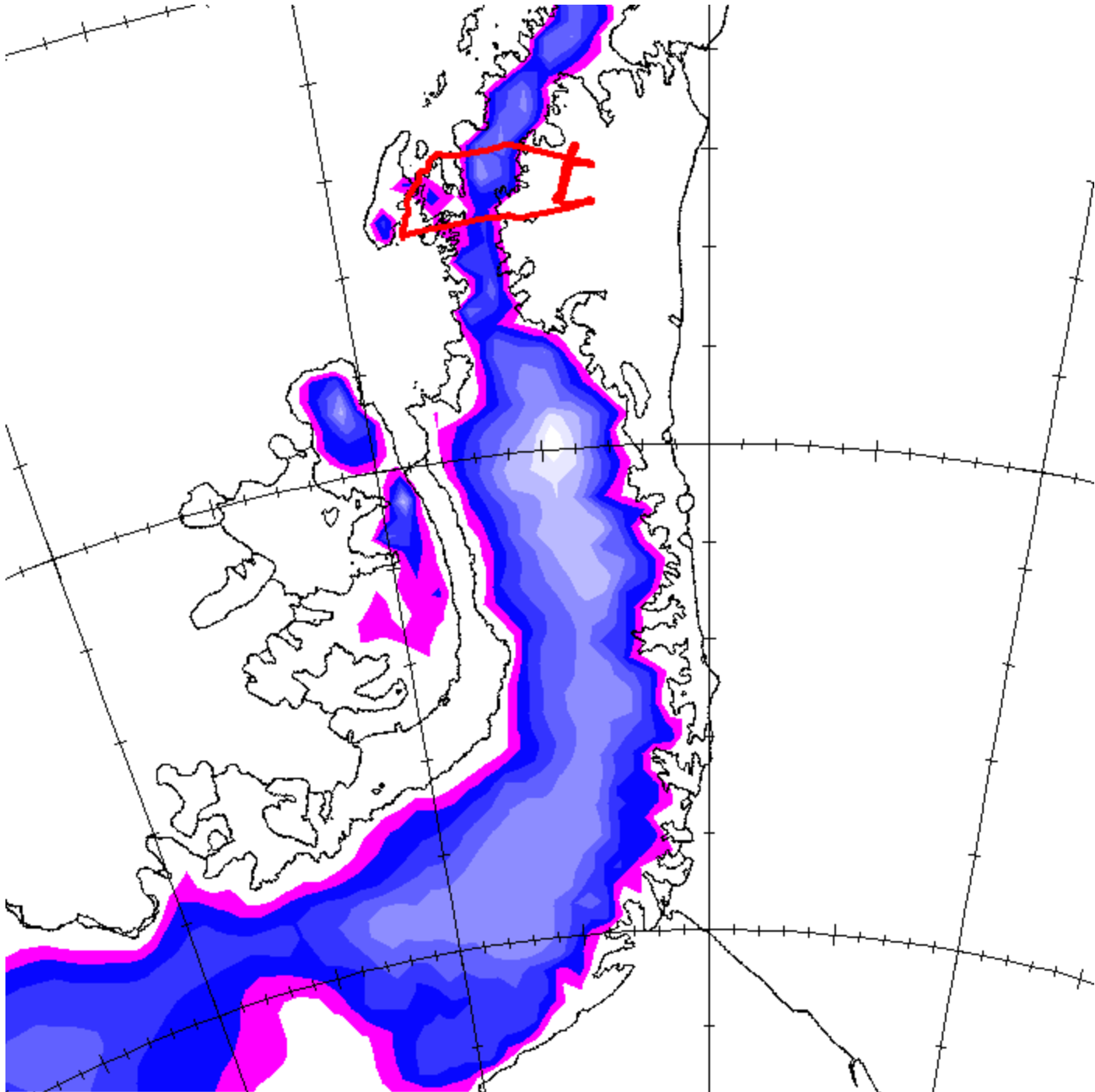


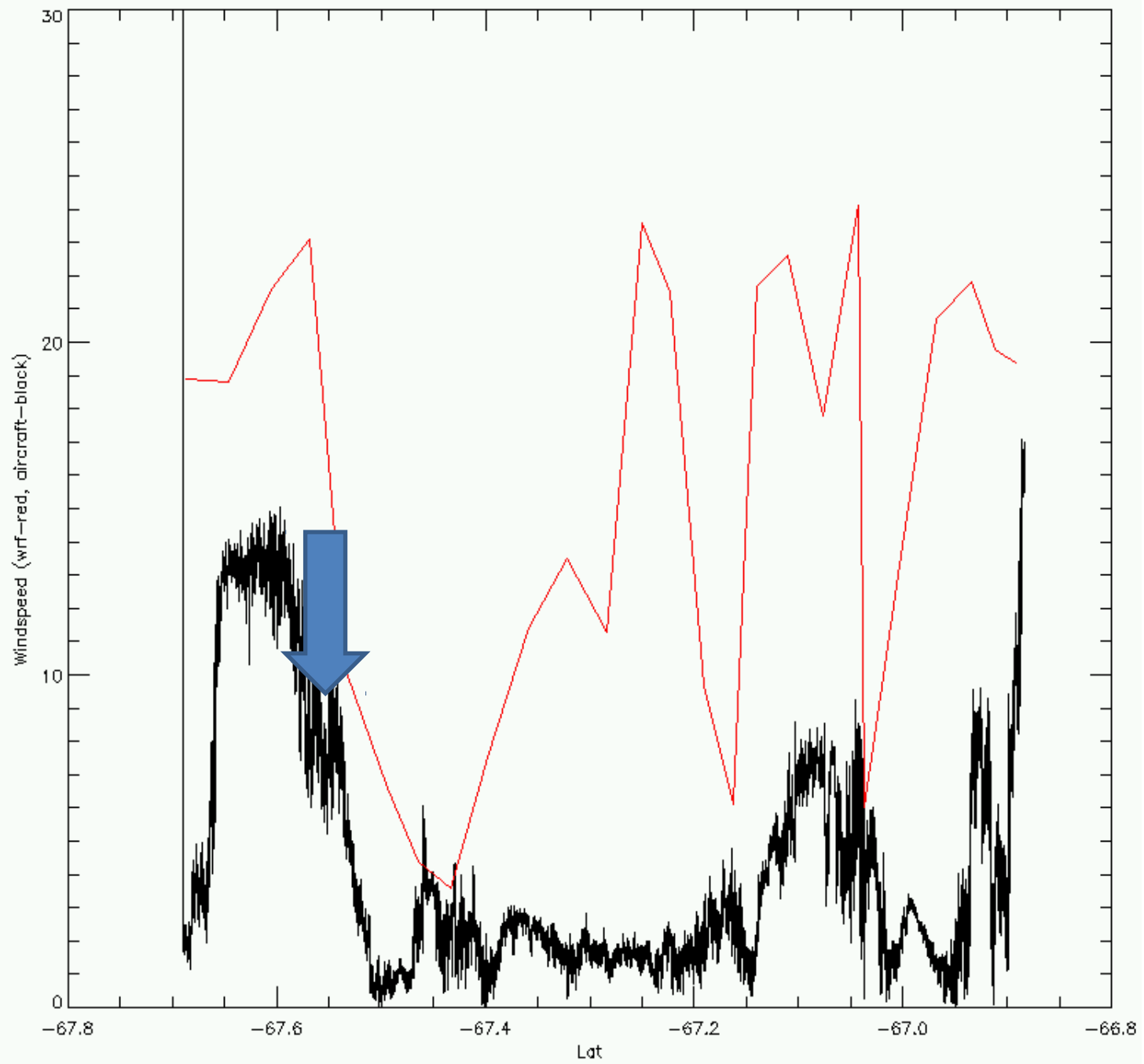
0 10 20 30 40 50 60 70 80

d02 Near surface wind
Fcst: 30.00 h

Init: 1200 UTC Sat 05 Feb 11
Valid: 1800 UTC Sun 06 Feb 11 (1500 LST Sun 06 Feb 11)







Conclusions

- Cross Peninsula flow is strongly influenced by the detailed topography
- Jets not resolved by low resolution models (4km and above)
- 1.5km models do resolve the jets, but there are still problems.



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