

Dr. Gert König-Langlo



ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR-
UND MEERESFORSCHUNG

Activities at the Meteorological Observatory at Neumayer_III

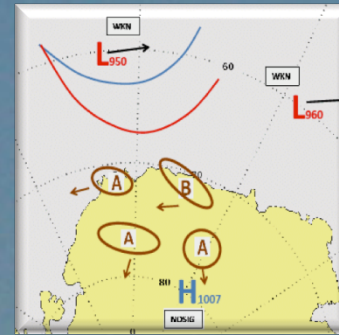
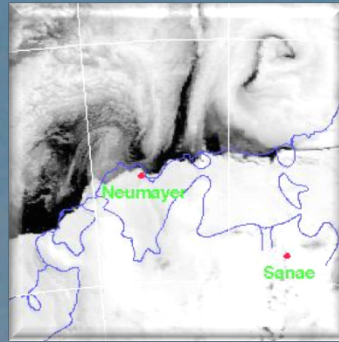


In Situ Data

Forecast

YOPP

Verification & Outlook



In Situ Data

Soundings

Synops

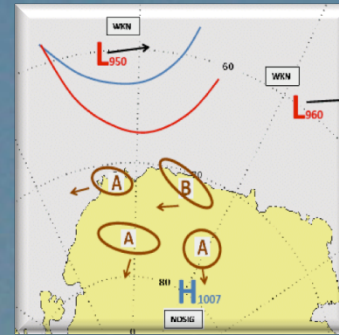
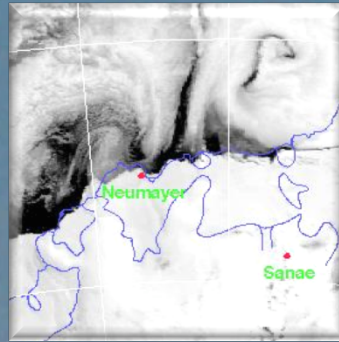
AWS

Radiation (BSRN)

Forecast

YOPP

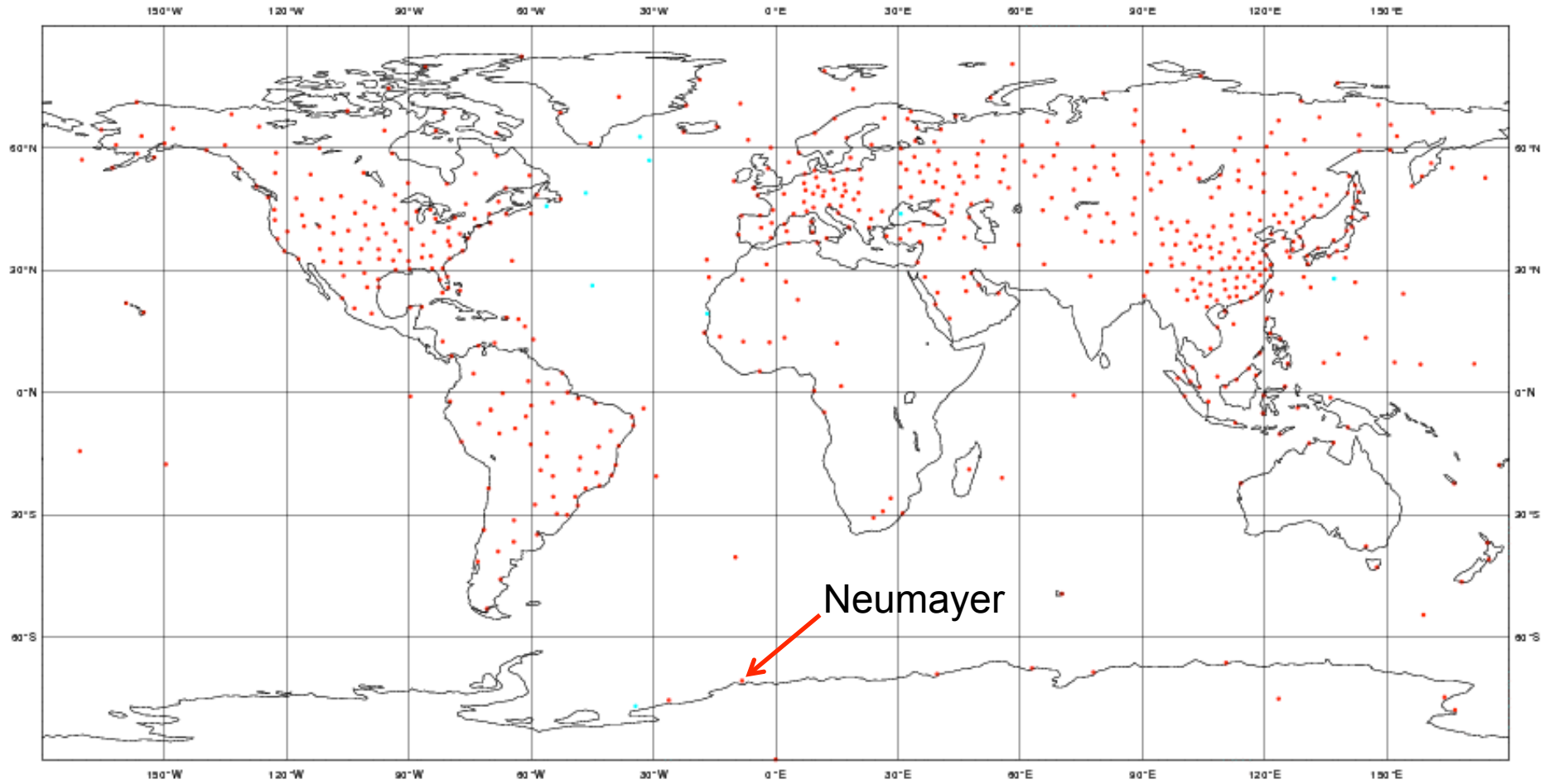
Verification & Outlook

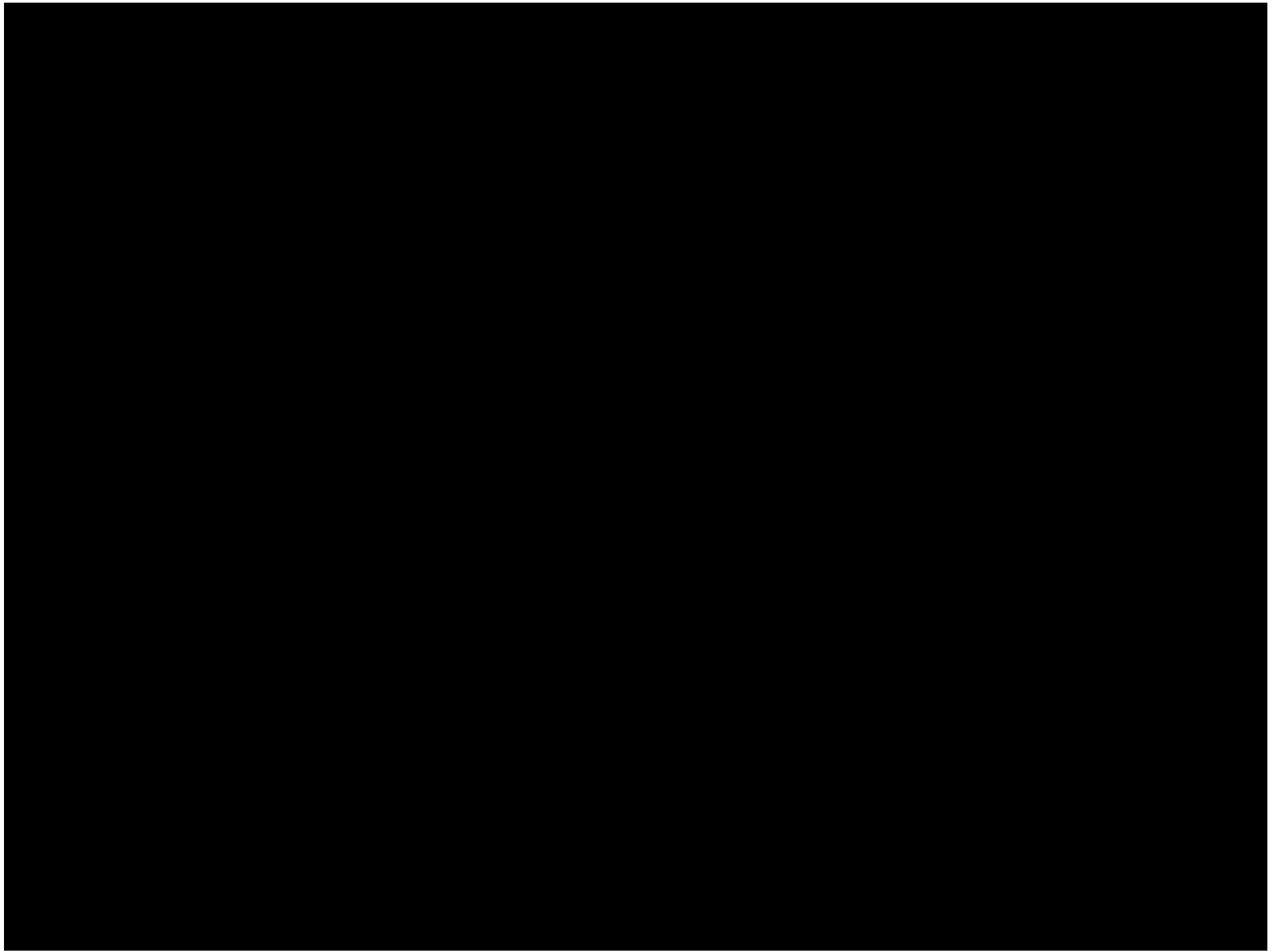


ECMWF Data Coverage (All obs DA) - Temp

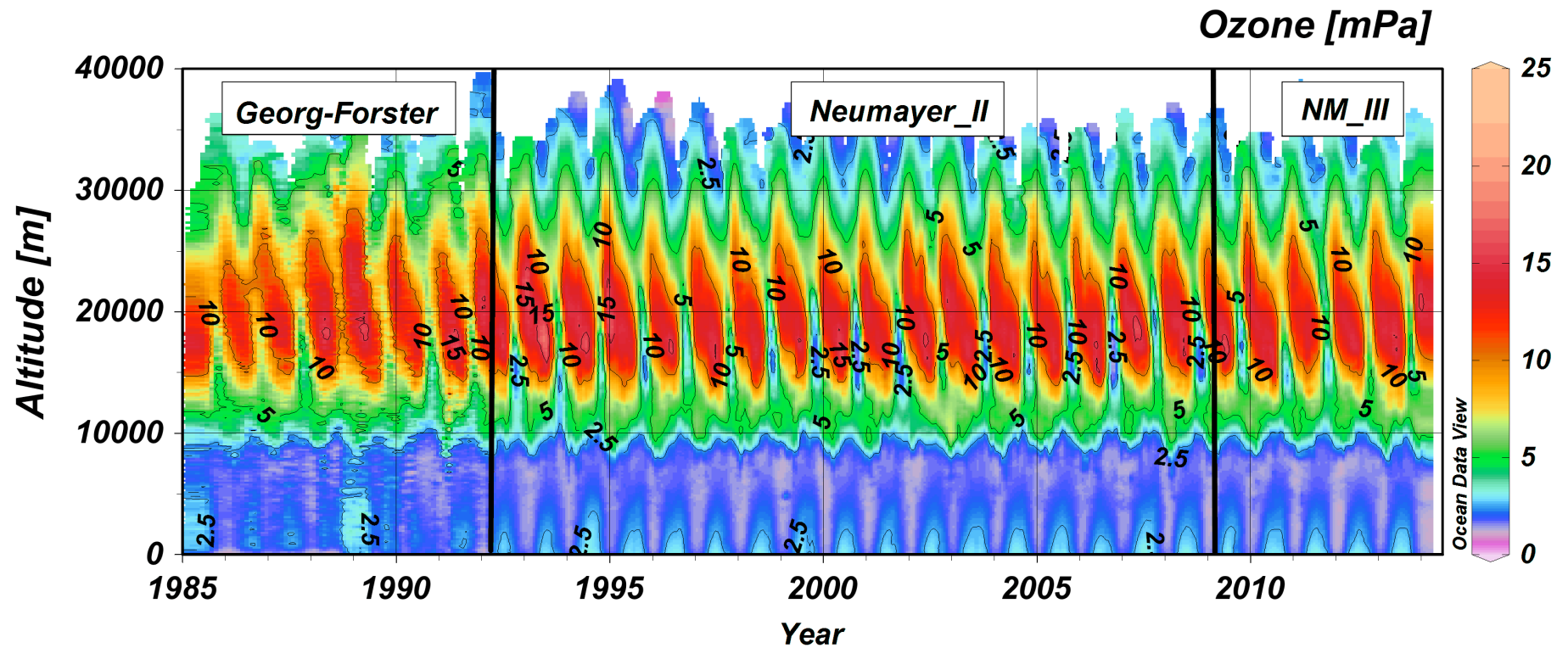
12/Jan/2014; 12 UTC
Total number of obs = 600

- SHIP
- LAND
- MOBILE
- DROPSONDE

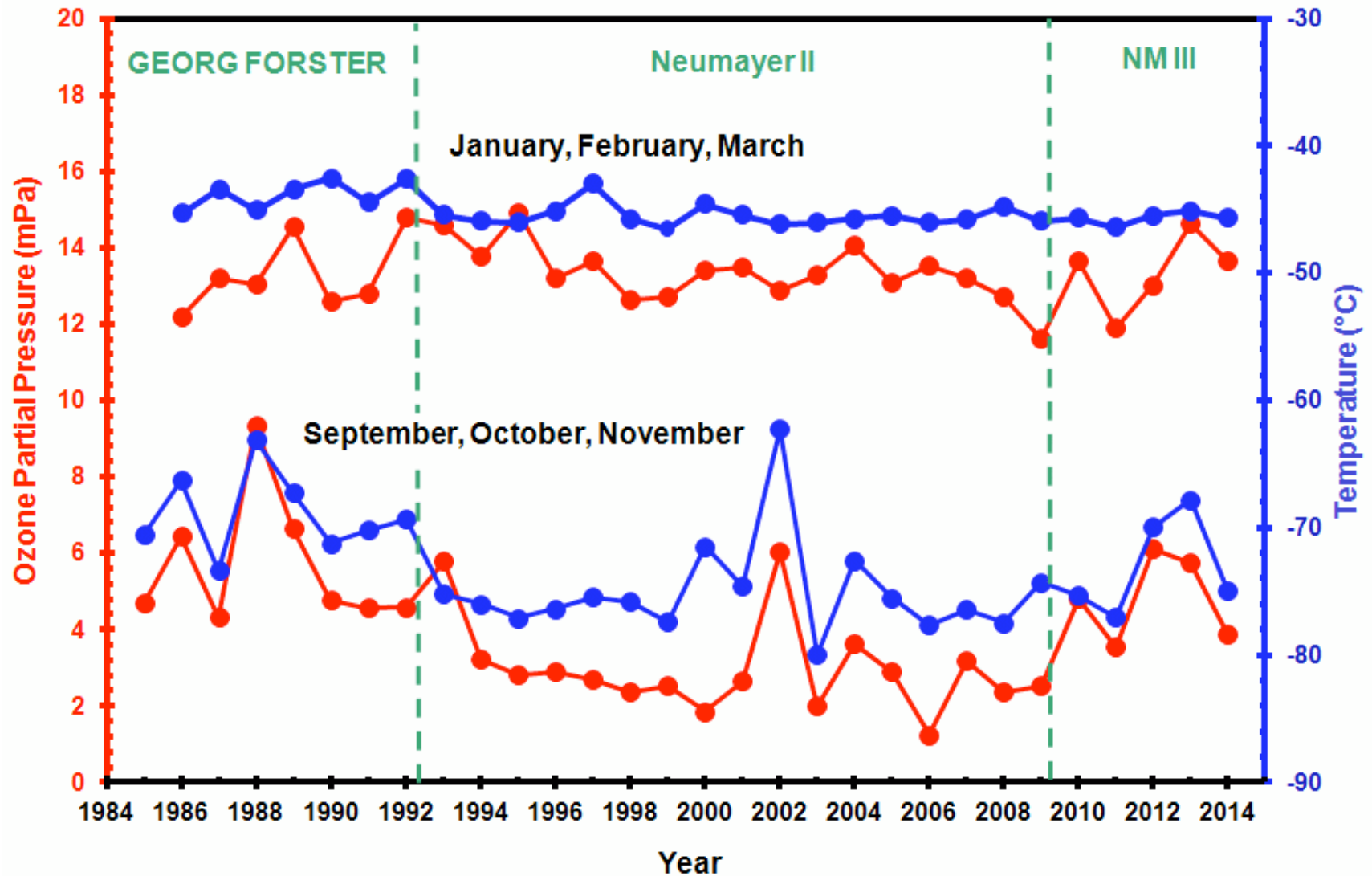




Long-Term Ozone Soundings

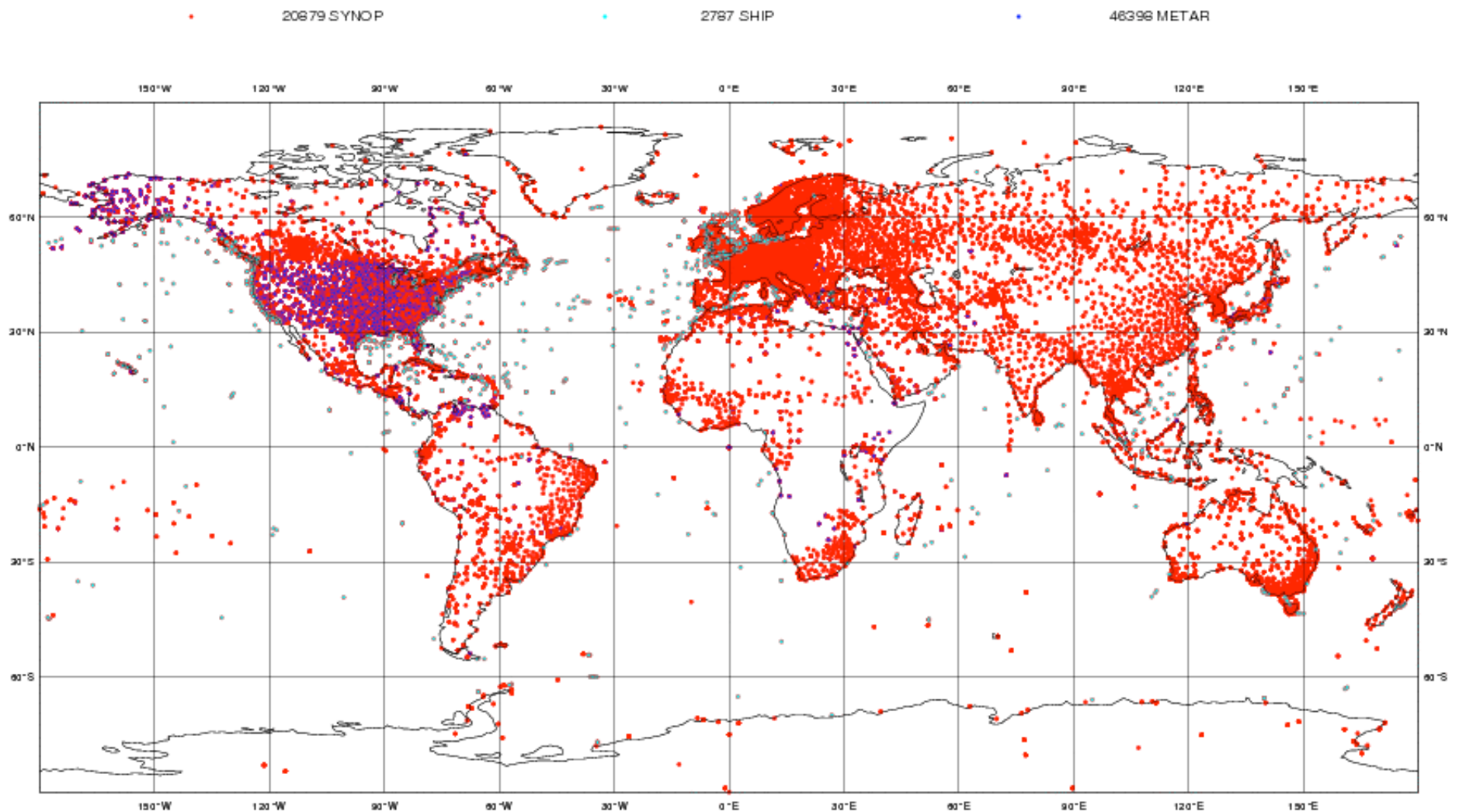


Seasonal Averaged Stratospheric Parameters

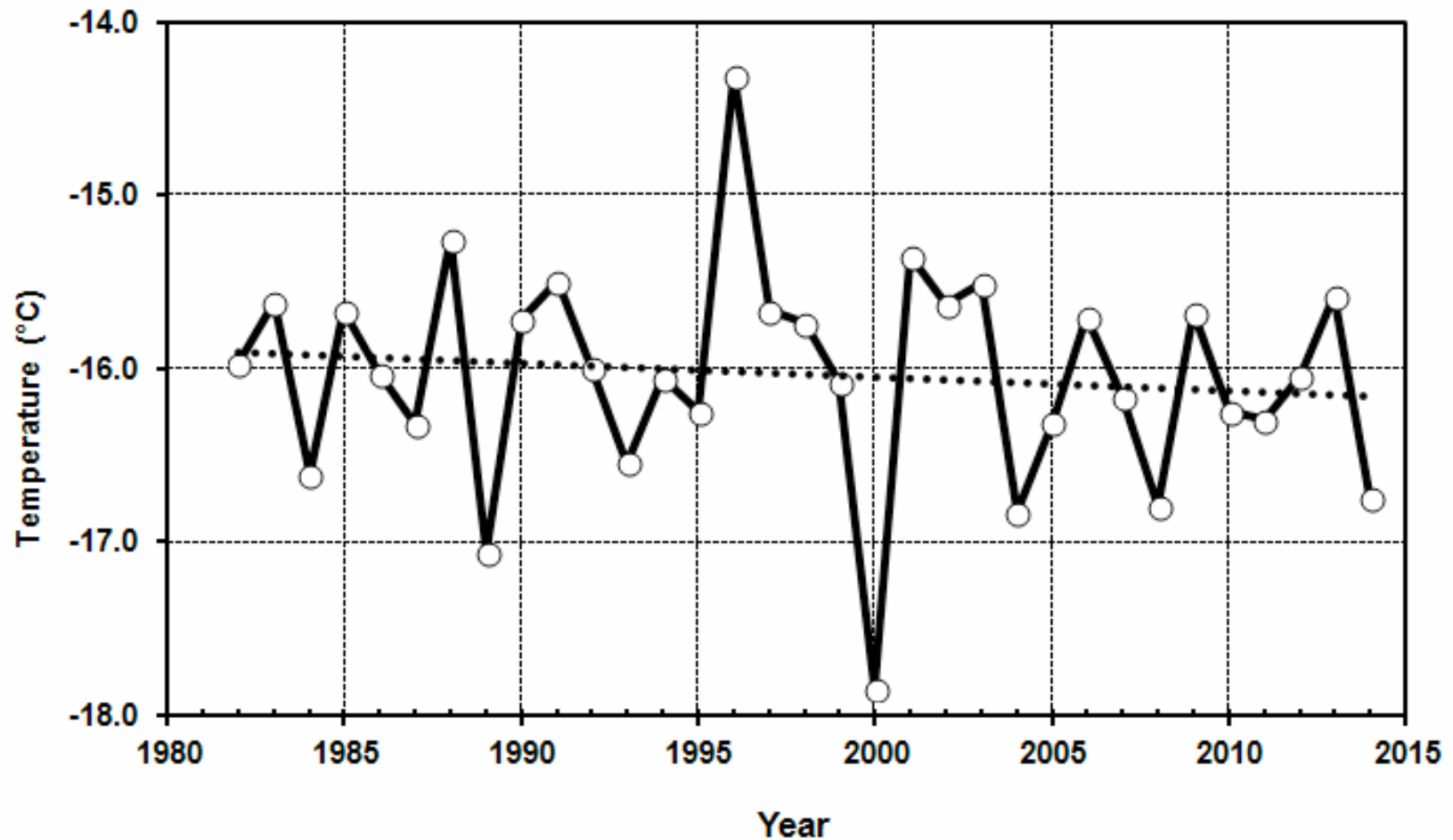


ECMWF Data Coverage (All obs DA) - Synop-Ship-Metar

12/Jan/2014; 12 UTC
Total number of obs = 70064



Yearly Averaged Air Temperature at Neumayer







Temperature and Relative Humidity Probe

HMP155 (Vaisala)

Successor of HMP45C

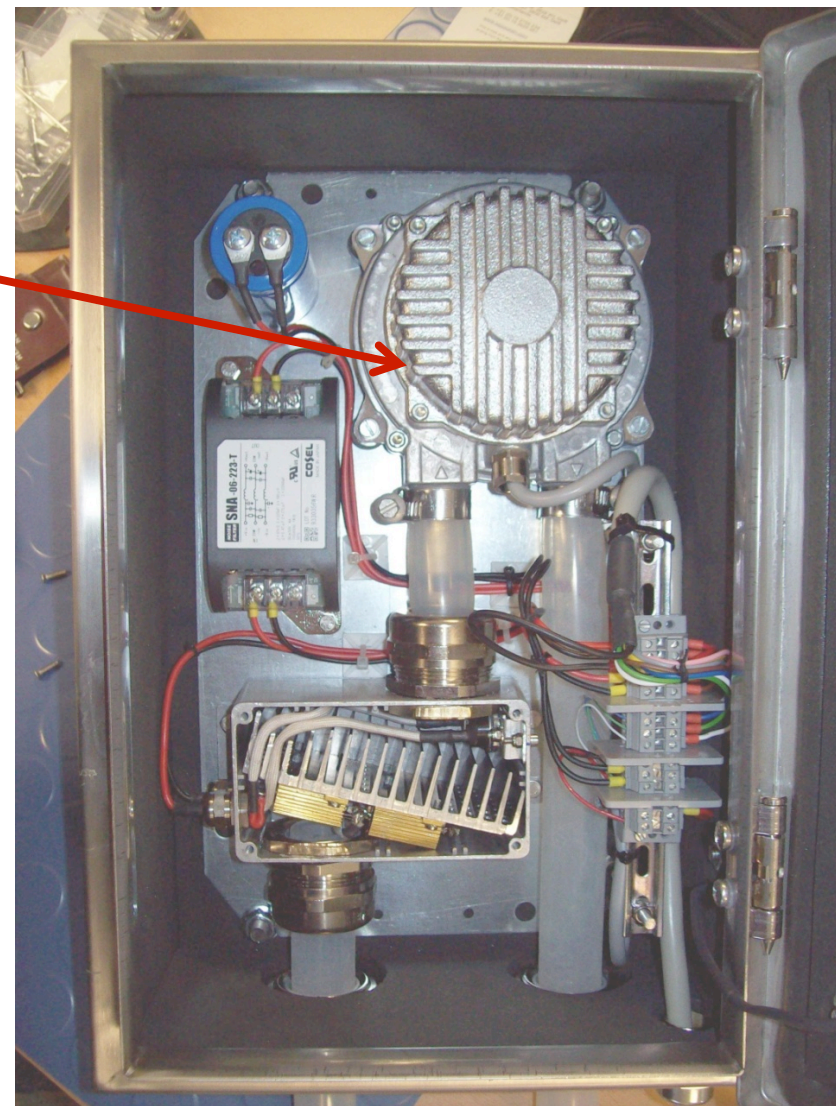
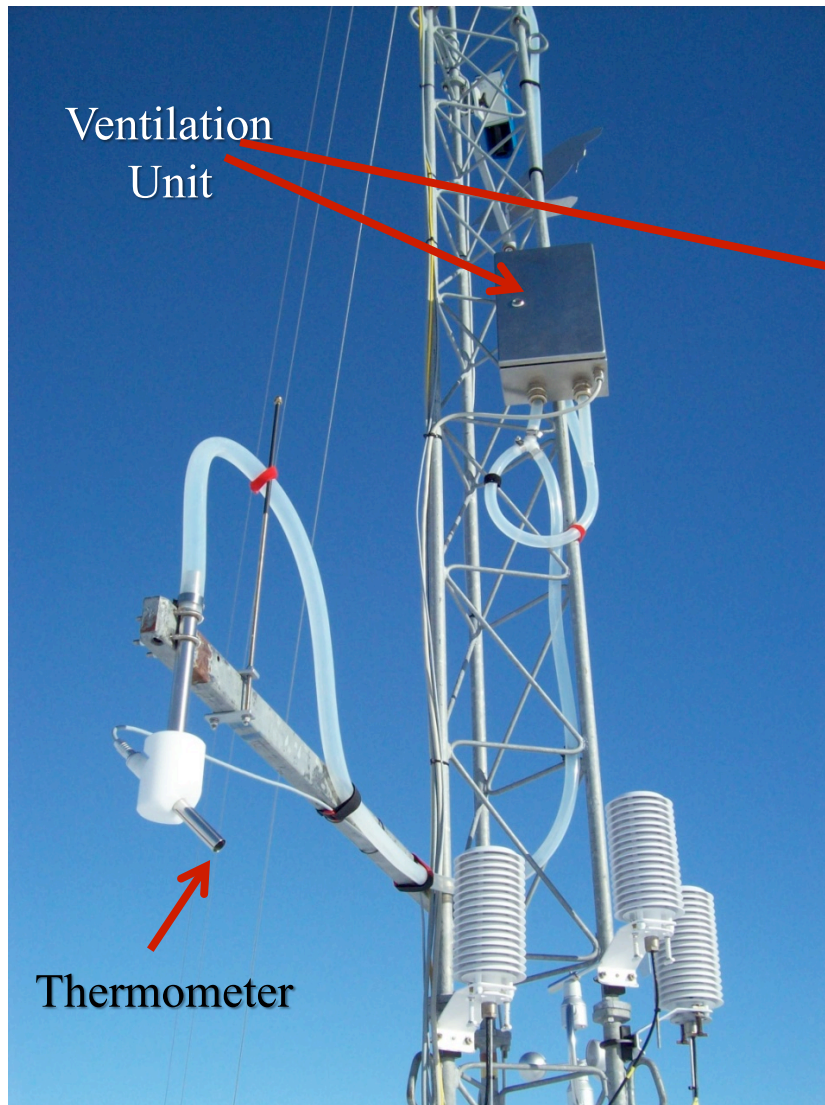
Pt100 4 - wire over half bridge 4WPB100 (Campbell Scientific)

Radiation shield

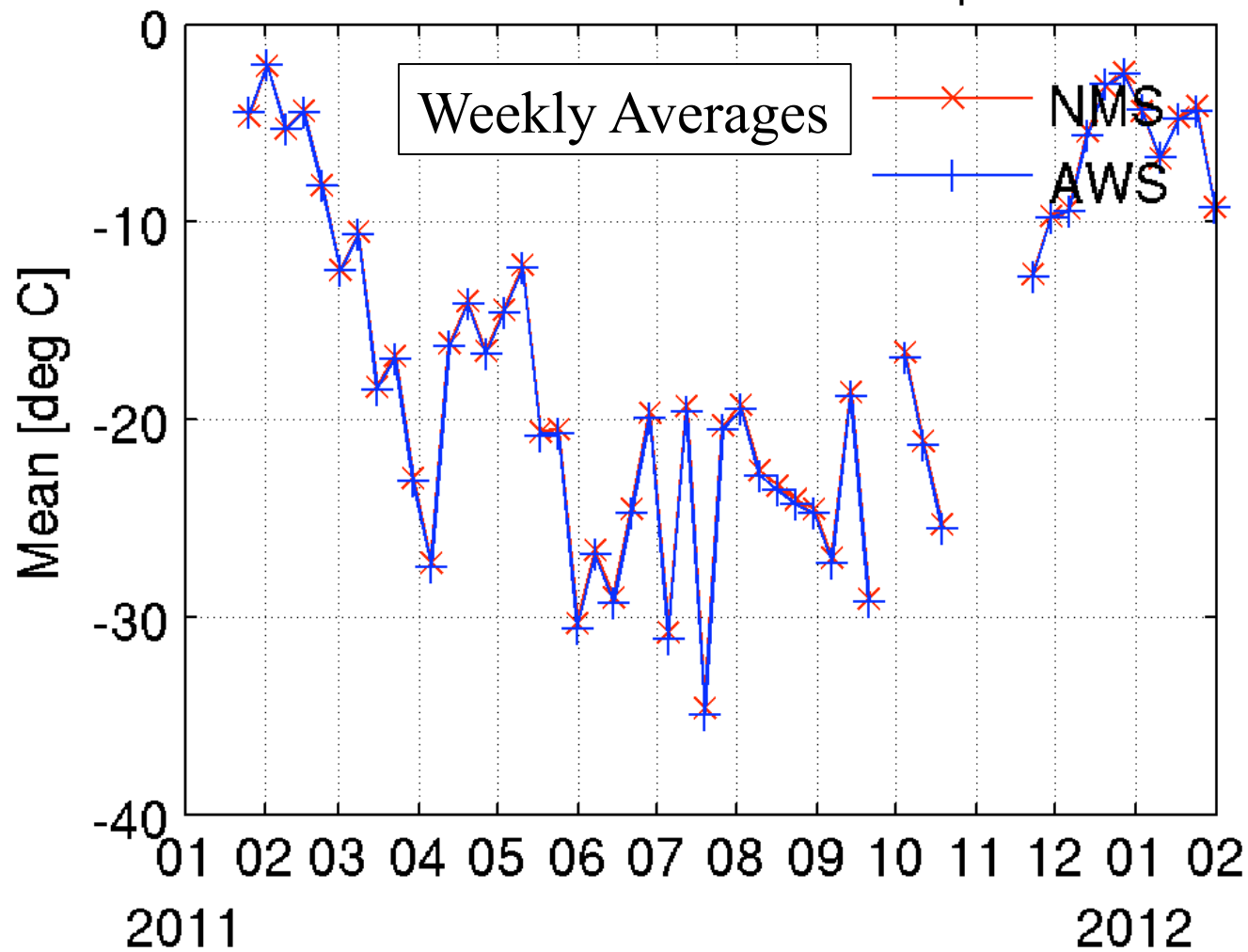
MET21 un aspirated



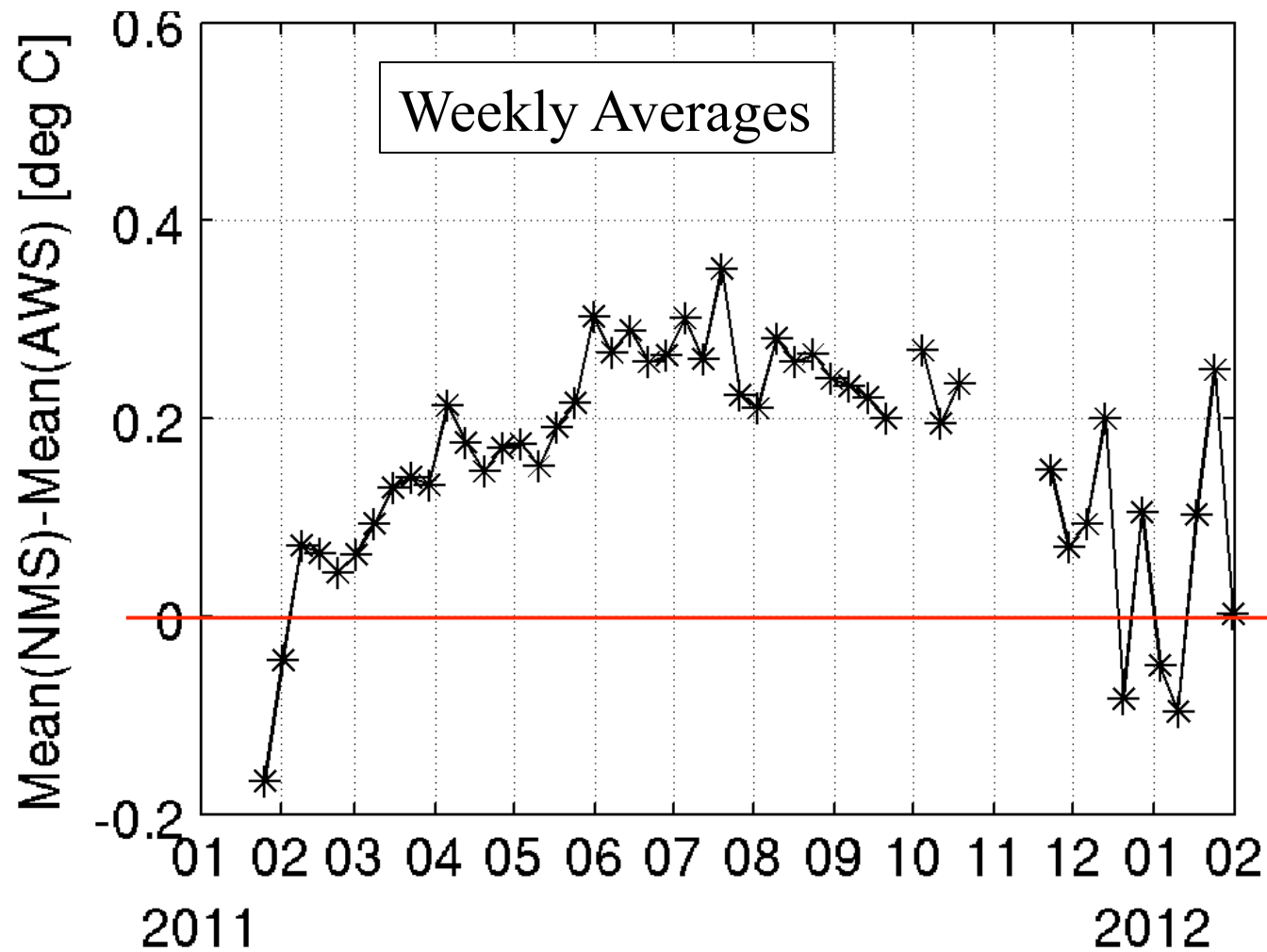
Air Temperature (Meteorological Observatory)



Neumayer-Station versus AWS



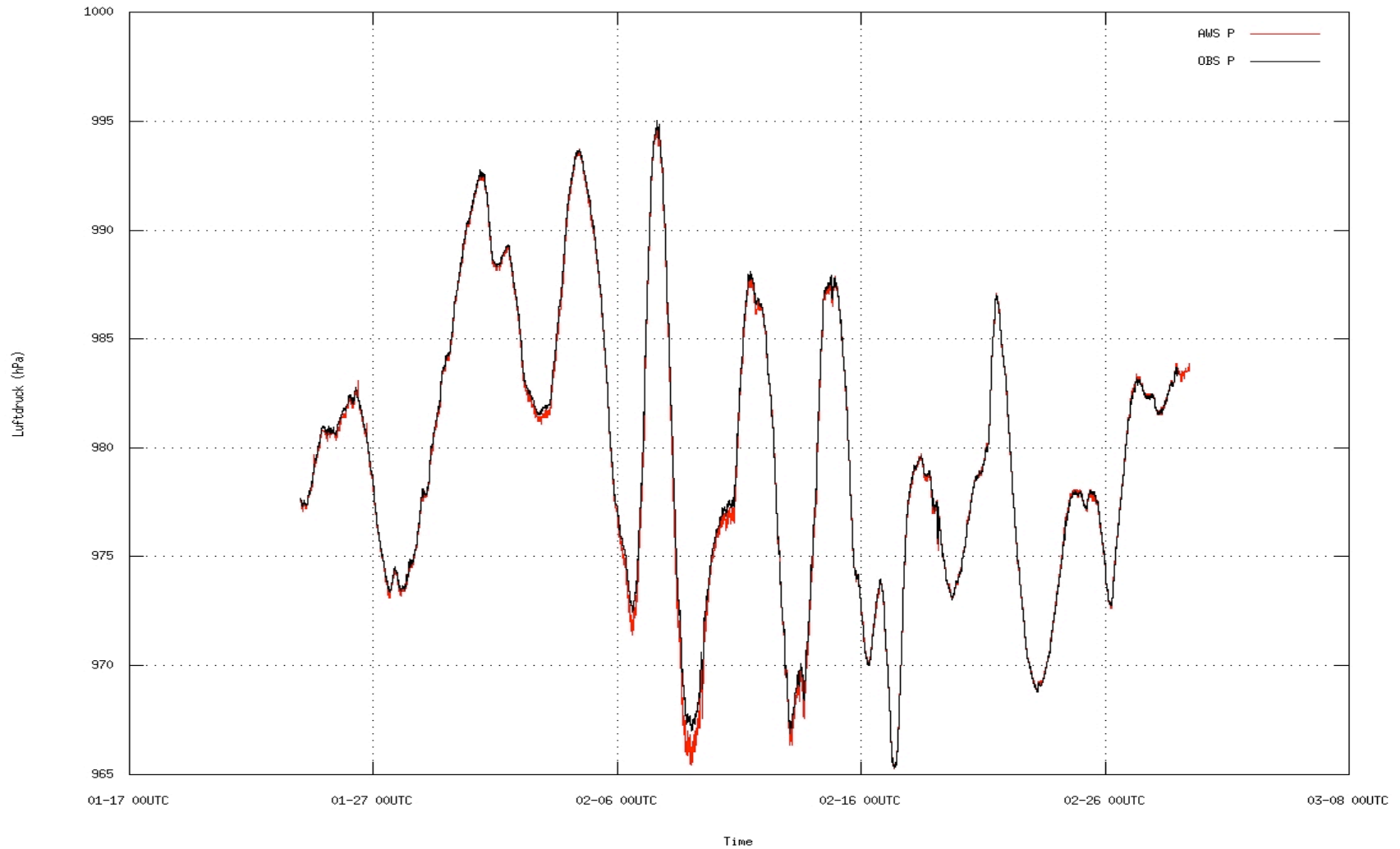
Neumayer-Station versus AWS



Holger Schmithüsen, 2013

Air Pressure

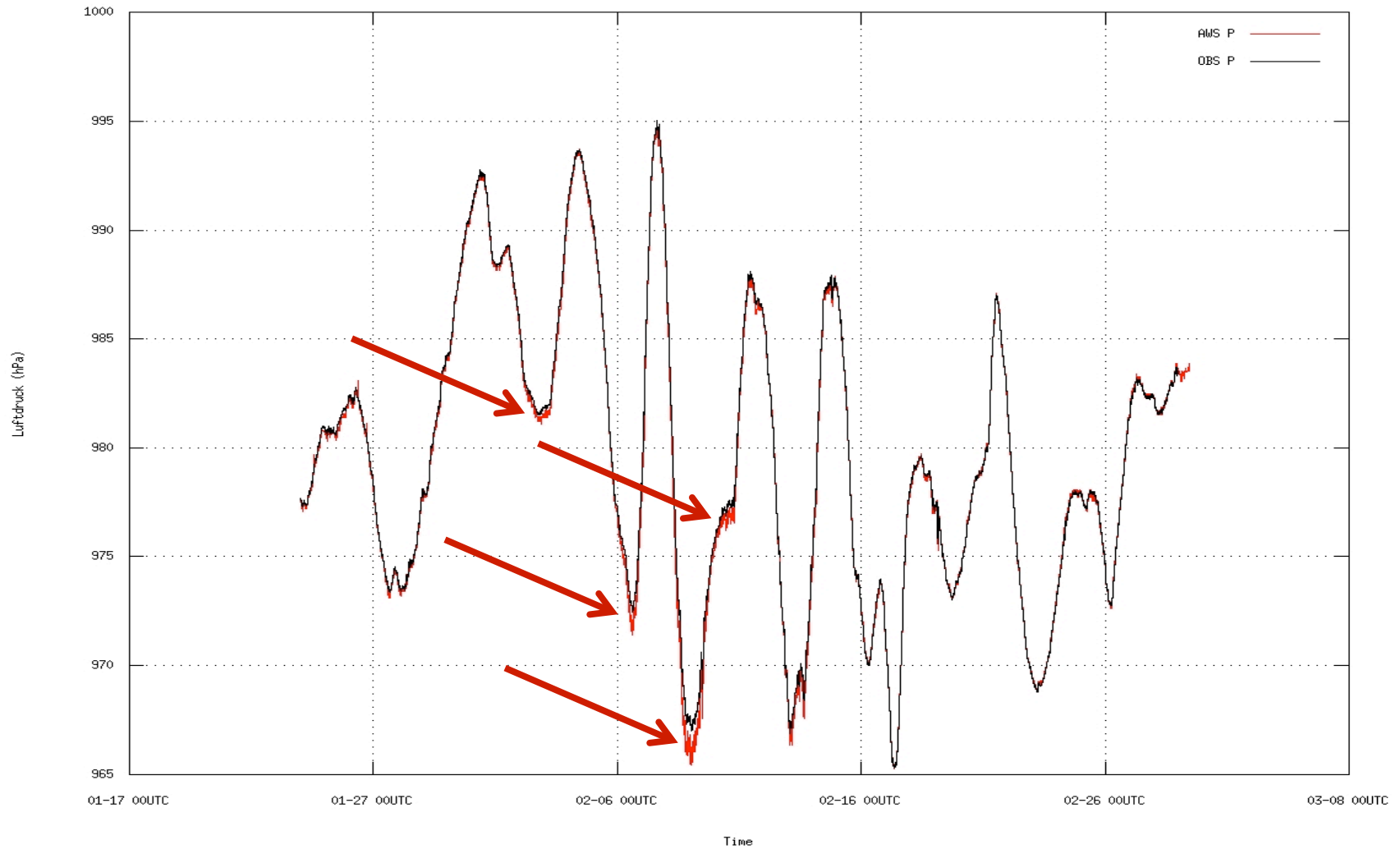
AMS versus Obs at Neumayer 2011



774555 007 775

Air Pressure

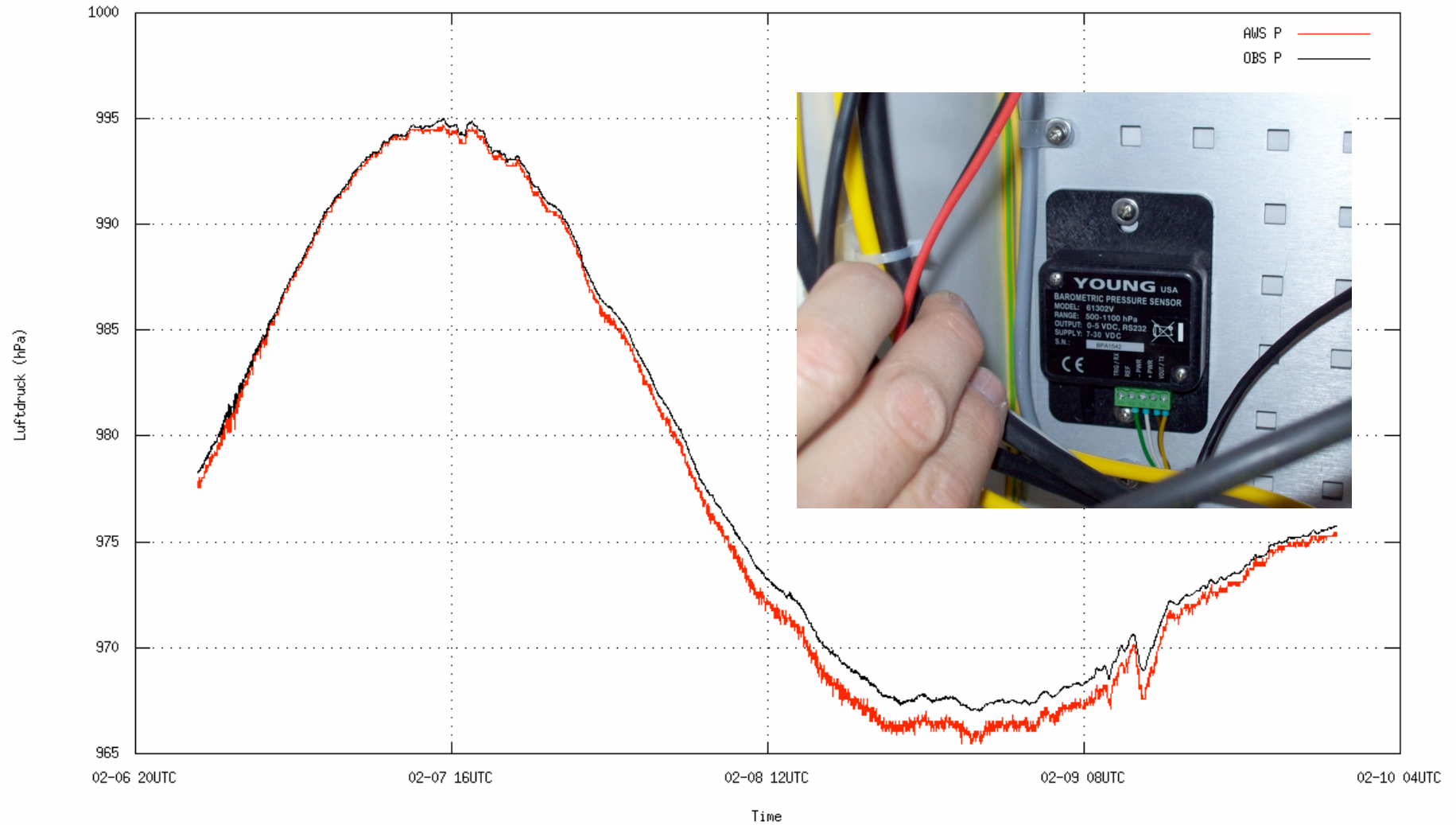
AWS versus Obs at Neumayer 2011



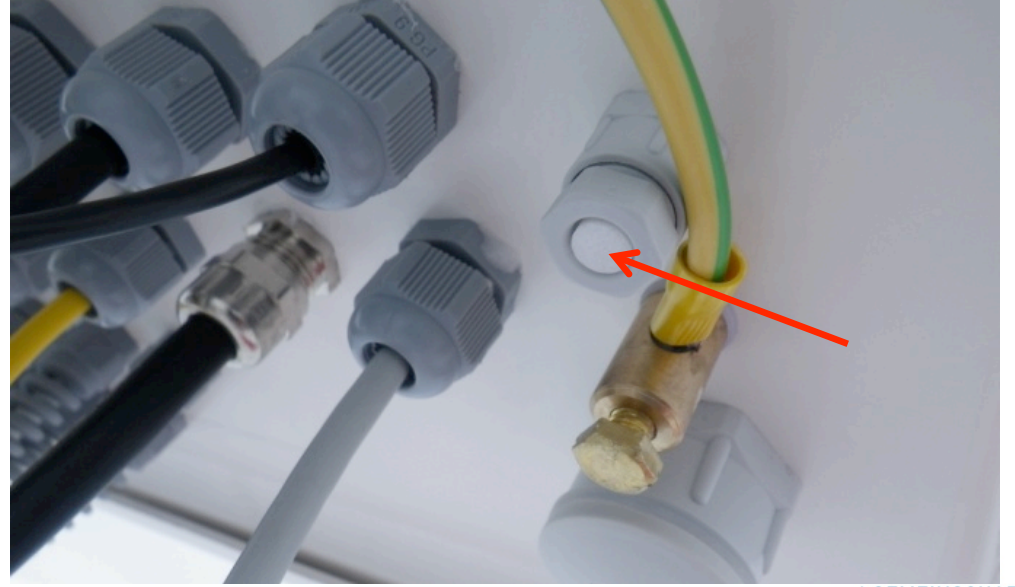
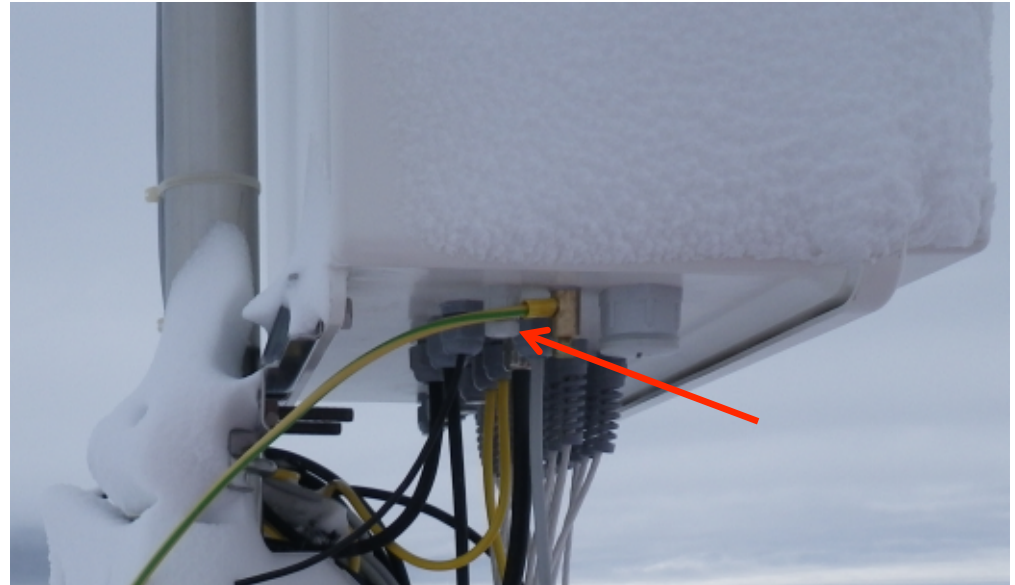
774555 007 775

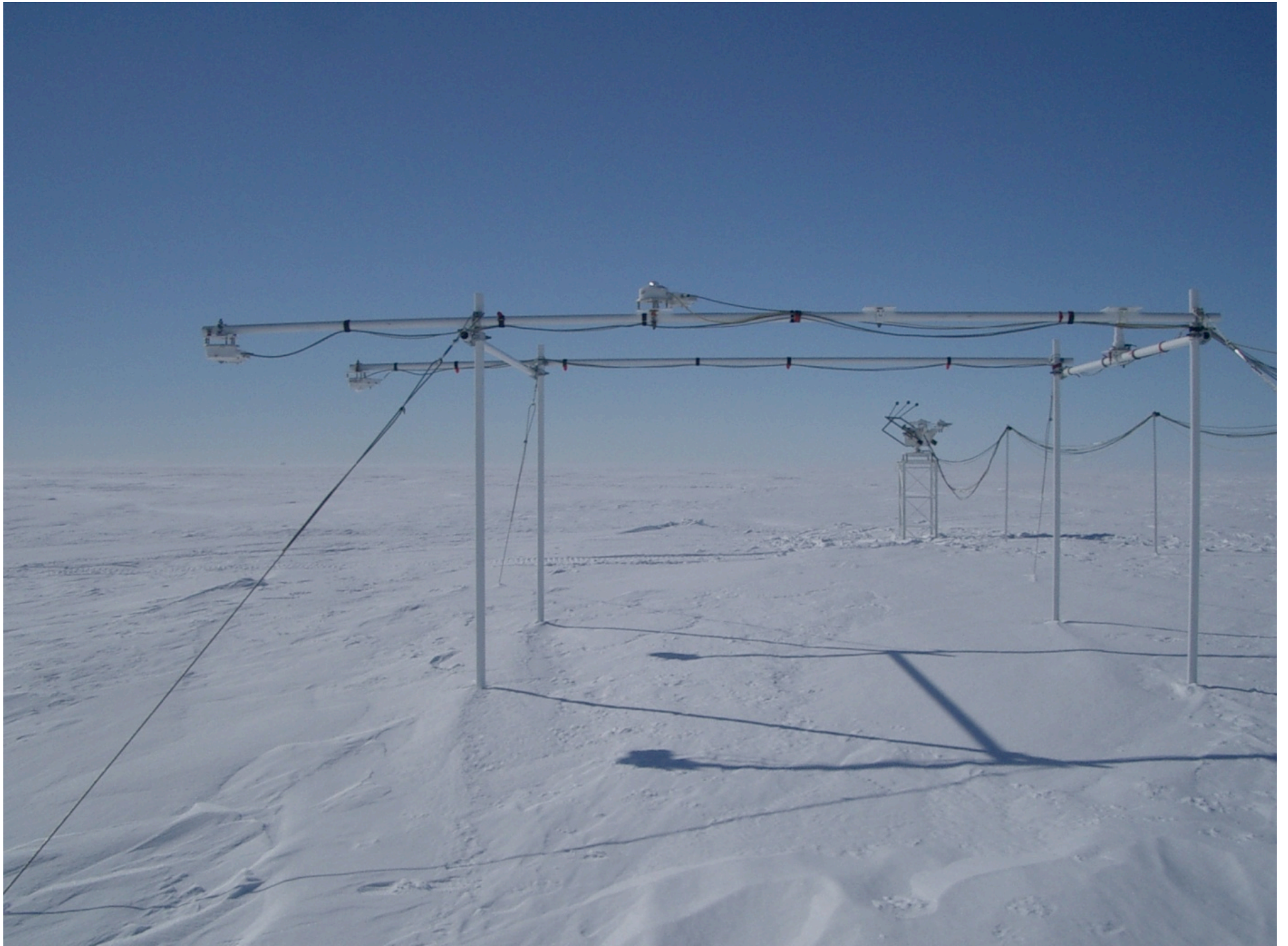
Air Pressure

AWS versus Obs at Neumayer 2011



Air Pressure





Suntracker Seriennummer 97

**CM22-050117
Diffus**

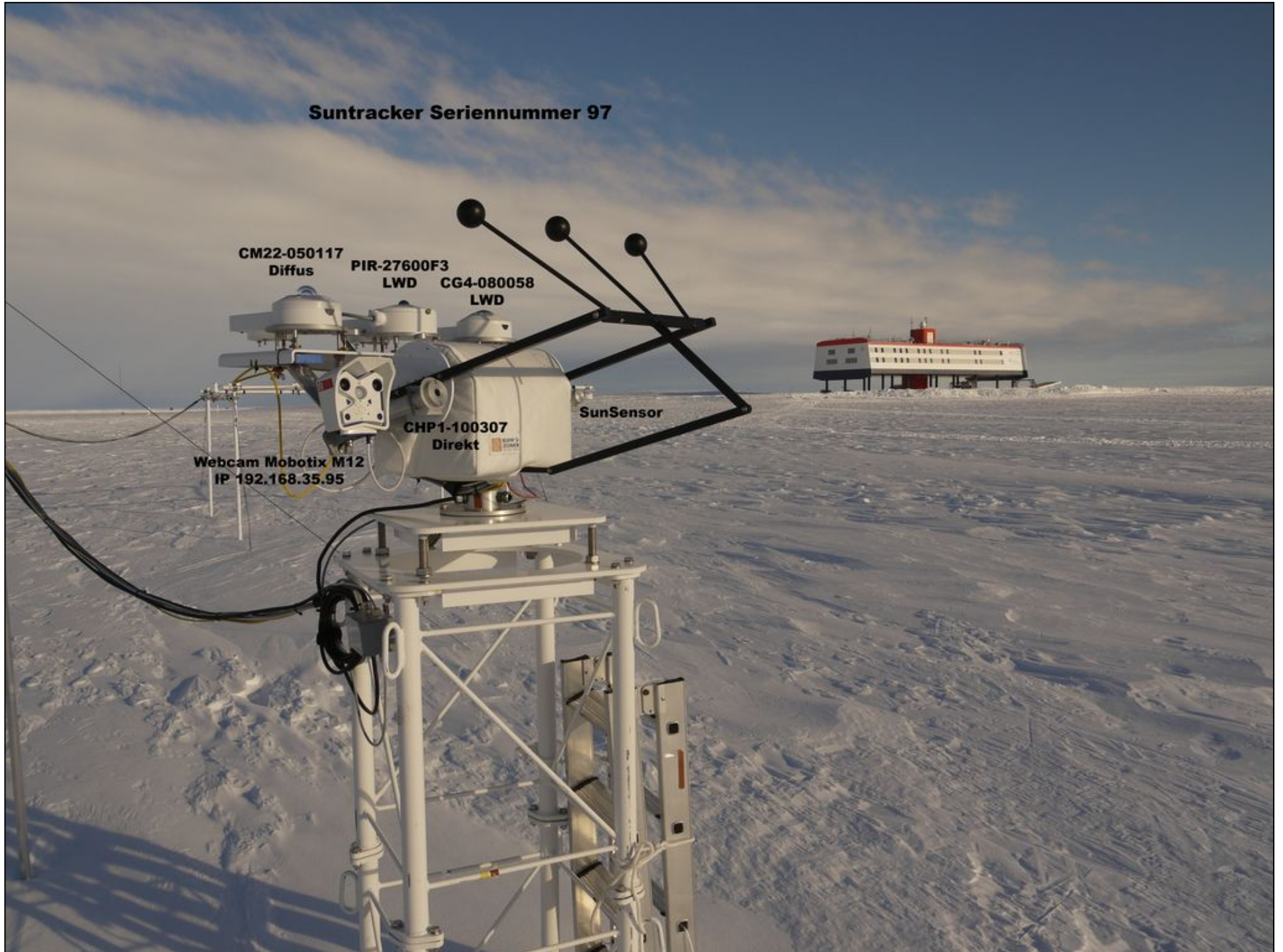
**PIR-27600F3
LWD**

**CG4-080058
LWD**

**Webcam Mobotix M12
IP 192.168.35.95**

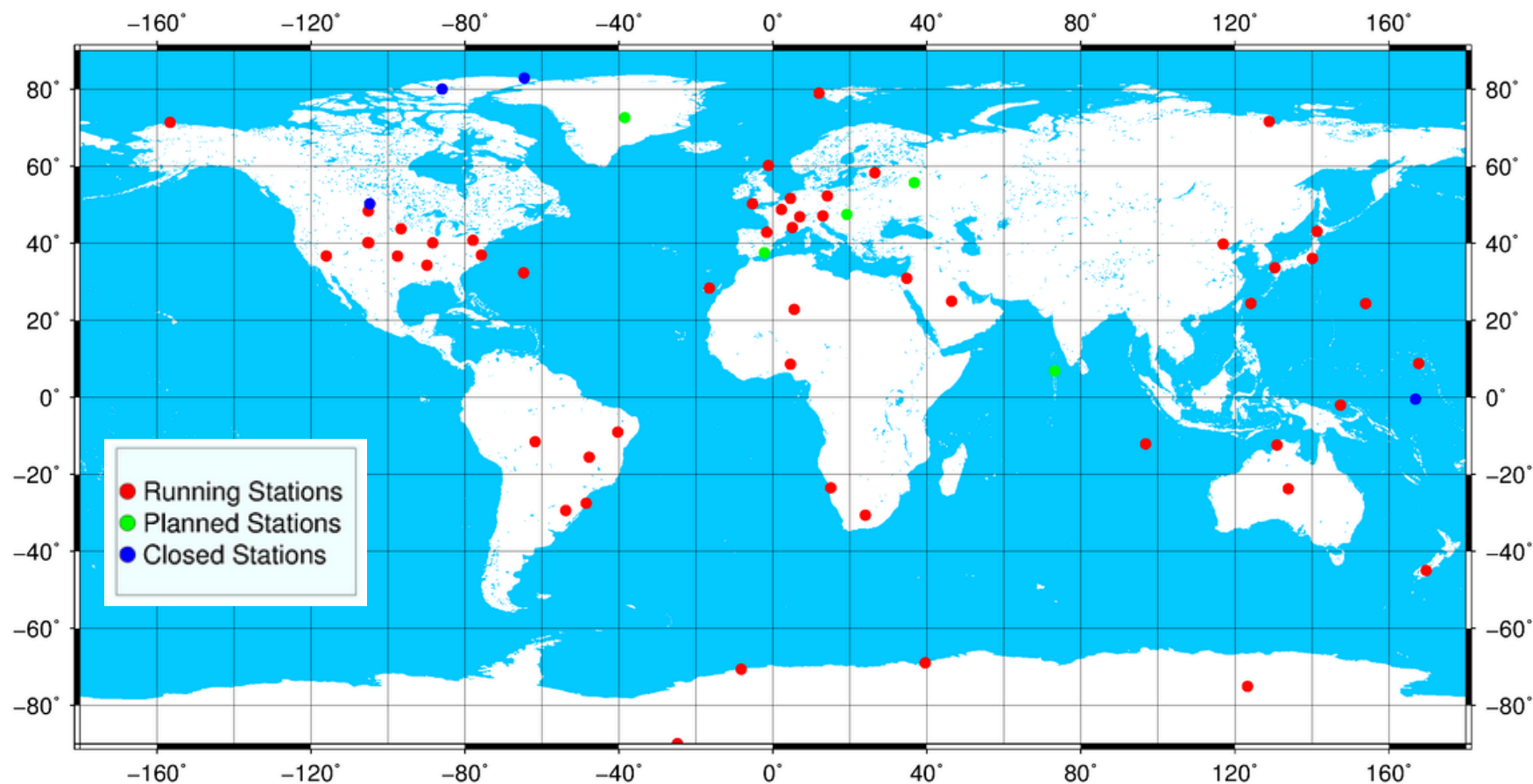
**CHP1-100307
Direkt**

SunSensor



Present State of the WRMC:

58 stations provided data



In Situ Data

Soundings

Synops

AWS

Radiation (BSRN)

Forecast

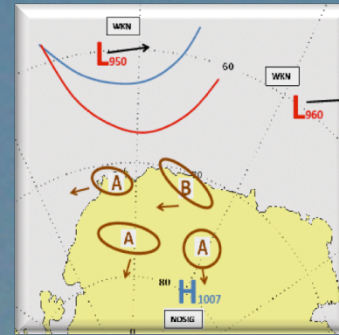
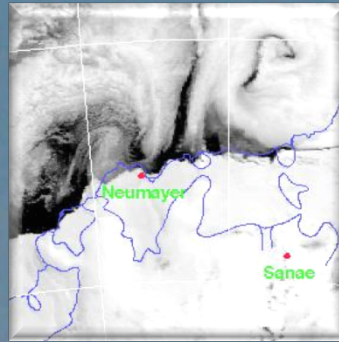
Sat-Pic Reception

Used Models

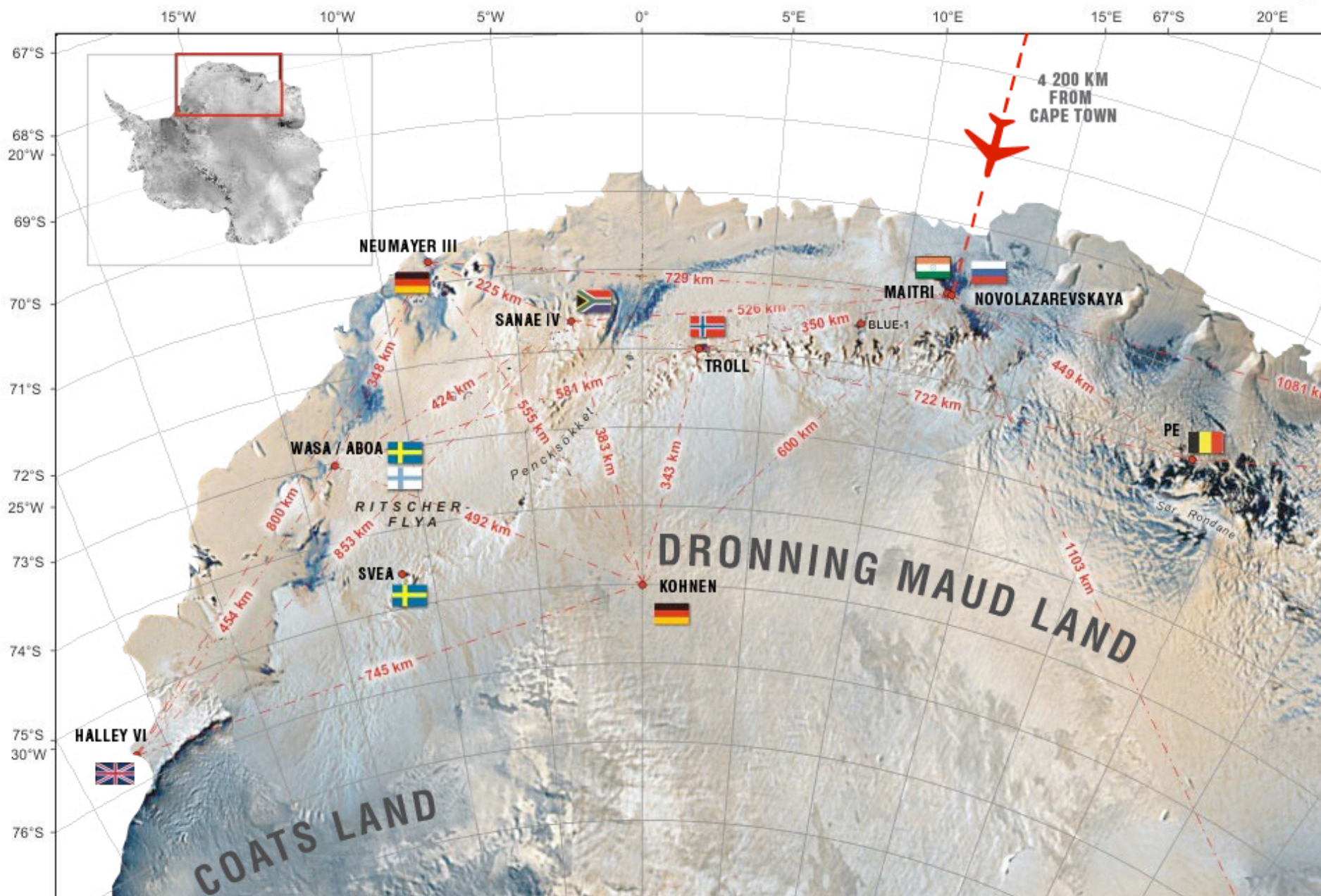
Products

YOPP

Verification & Outlook



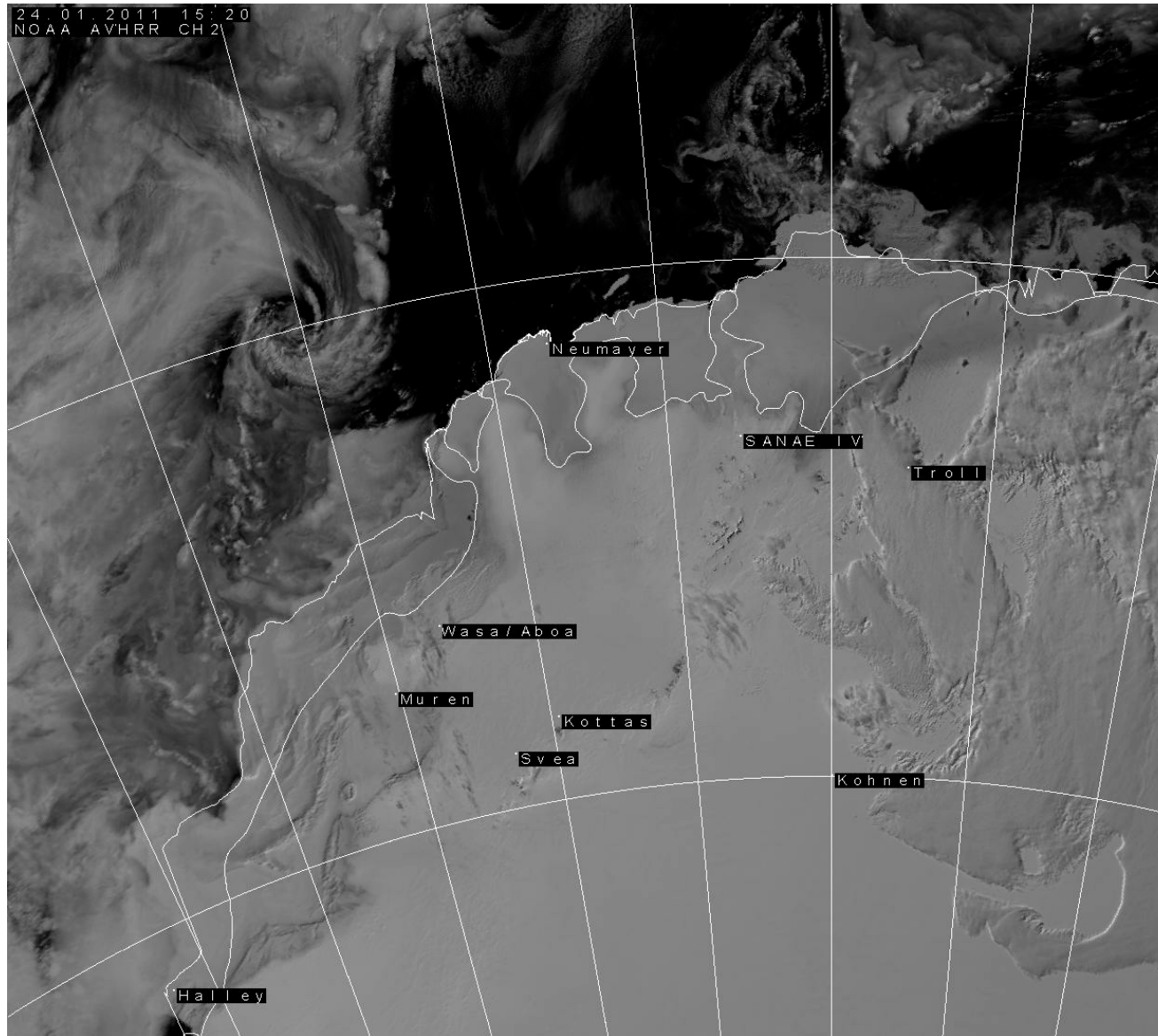
DRONNING MAUD LAND AIR NETWORK



NRT Sat-Pic Reception from the Roof at Neumayer_III



NRT Sat-Pic Reception from the Roof at Neumayer_III

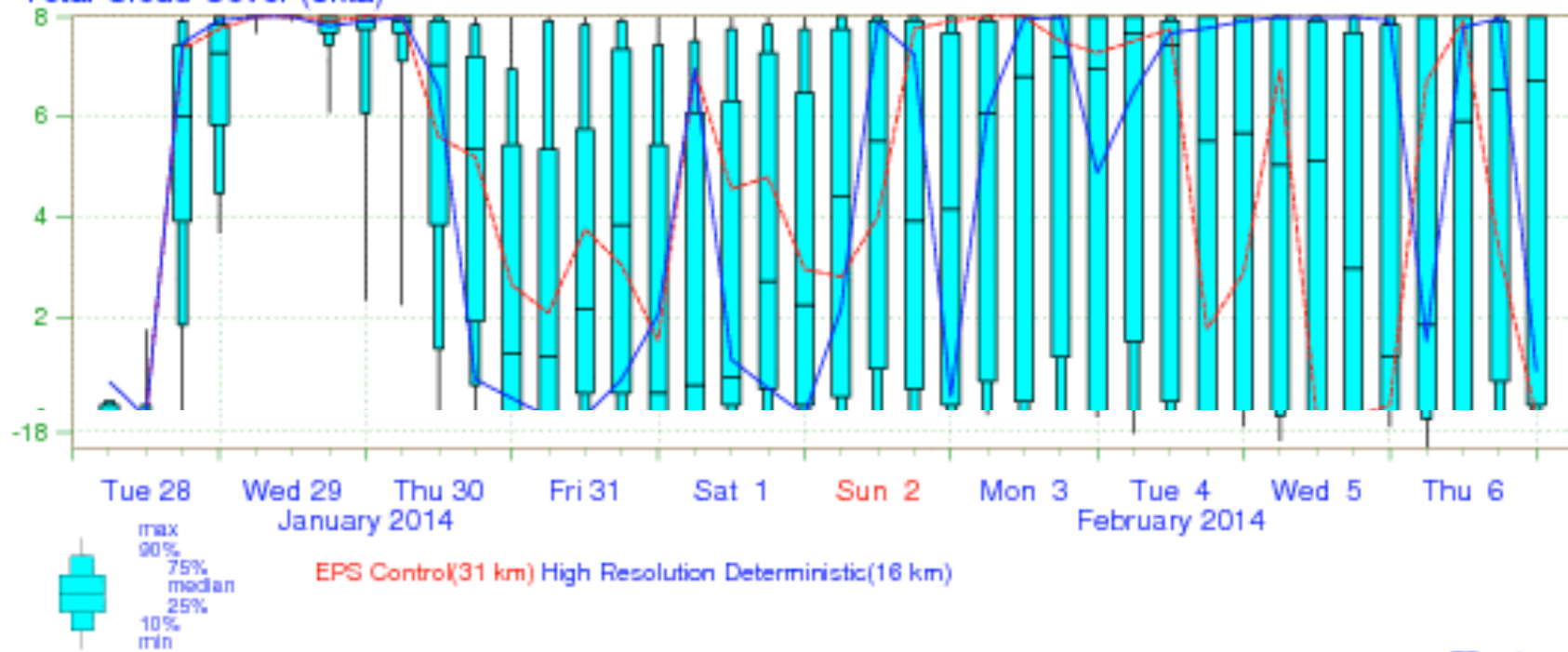


EPS Meteogram

Neumayer (SP) 70.68°S 8°W (EPS land point) -2 m (T1279)

Deterministic Forecast and EPS Distribution Tuesday 28 January 2014 00 UTC

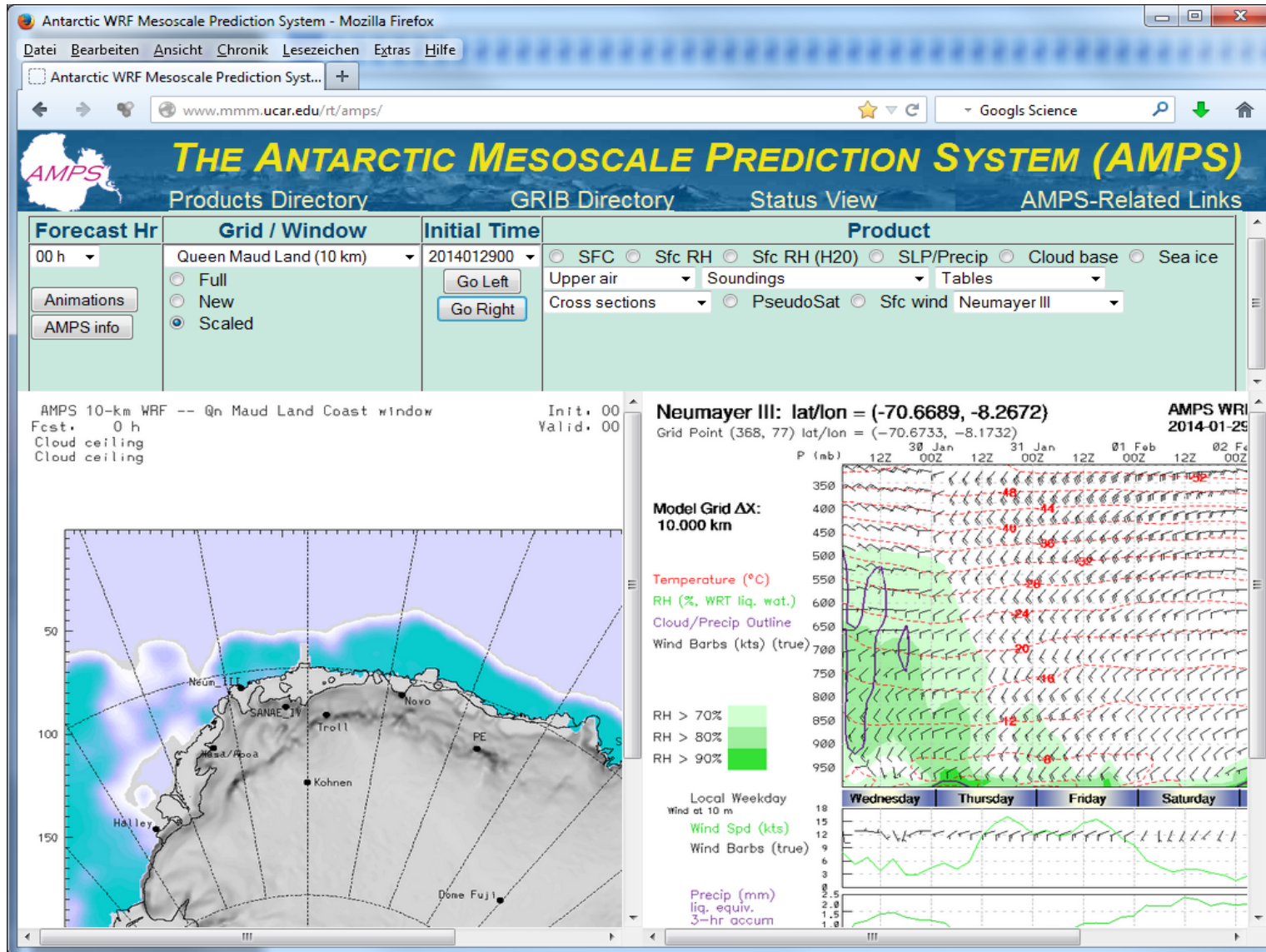
Total Cloud Cover (okta)



Magics++ 2.9.6

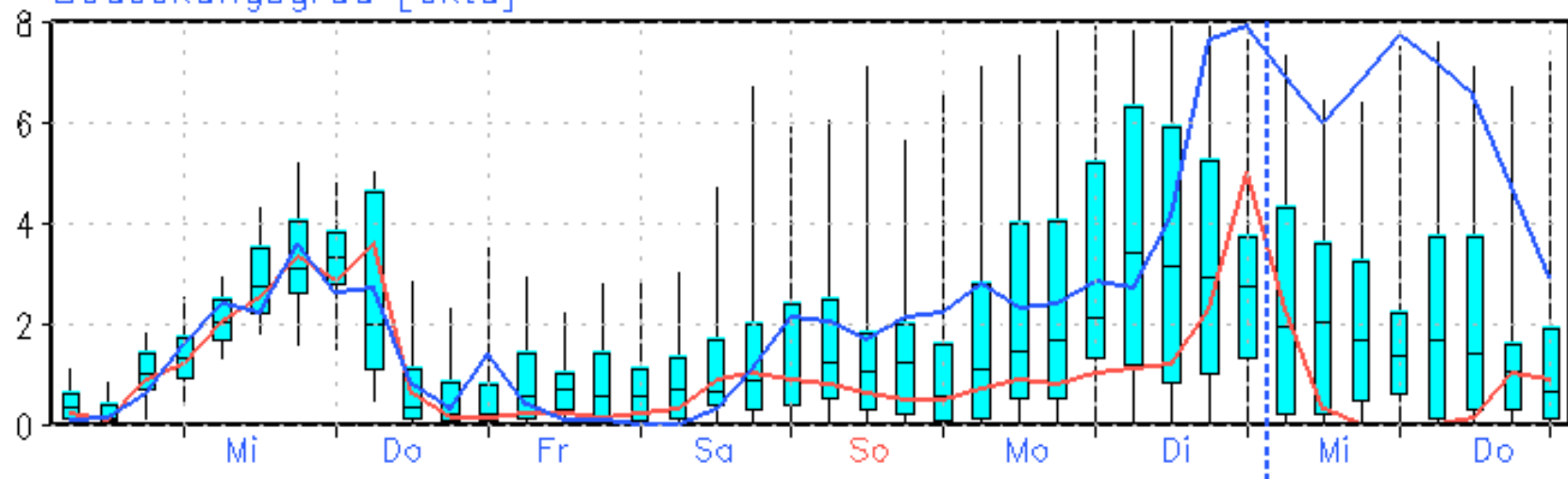


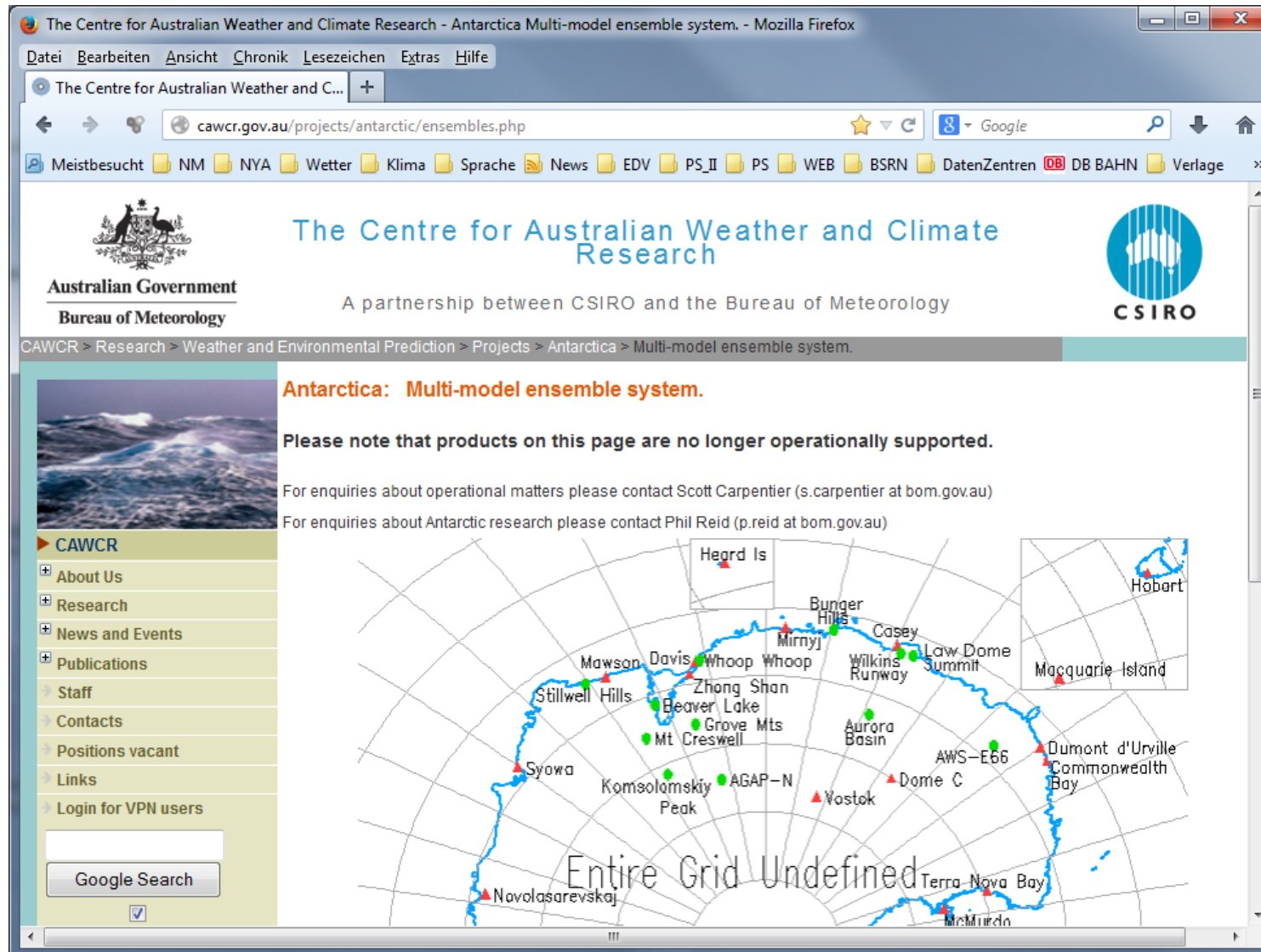
Antarctic Mesoscale Prediction System



GFS-Ensemble-Meteogramm
vom Dienstag, den 28.01.2014 [00 UTC]
für Gitterpunkt -71°N -8°O : "Neumayer 25m"

Bedeckungsgrad [okta]





The Centre for Australian Weather and Climate Research - Antarctica Multi-model ensemble system. - Mozilla Firefox

File Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

The Centre for Australian Weather and Climate Research

cawcr.gov.au/projects/antarctic/ensembles.php

Meistbesucht NM NYA Wetter Klima Sprache News EDV PS_II PS WEB BSRN DatenZentren DB DB BAHN Verlage

Australian Government
Bureau of Meteorology

The Centre for Australian Weather and Climate Research

A partnership between CSIRO and the Bureau of Meteorology

CSIRO

CAWCR > Research > Weather and Environmental Prediction > Projects > Antarctica > Multi-model ensemble system.

Antarctica: Multi-model ensemble system.

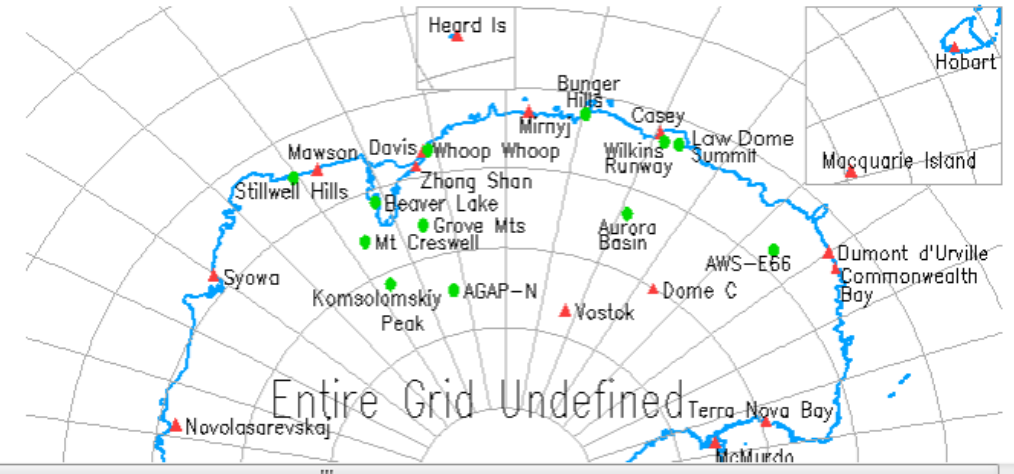
Please note that products on this page are no longer operationally supported.

For enquiries about operational matters please contact Scott Carpentier (s.carpentier at bom.gov.au)
For enquiries about Antarctic research please contact Phil Reid (p.reid at bom.gov.au)

CAWCR

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- Publications
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- Positions vacant
- Links
- Login for VPN users

Google Search



Entire Grid Undefined

Summer Forecast Service via WEB:

http://www.awi.de/en/infrastructure/stations/neumayer_station/dromlan_service/



AWI ALFRED-WEGENER-INSTITUT HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

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Overview Infrastructure **Infrastructure** Overview Stations **Stations** Overview Neumayer Station **Neumayer Station** Meteorological information from Neumayer **DROMLAN-Service**

- Forecast Products
 - General (Text)
 - Chart (Map)
 - Aerodrome (Table)
 - Aviation (Text)
- Real Time Data from Neumayer
- Landing Conditions at Neumayer
- Information from other Stations

Home > Infrastructure > Stations > Neumayer Station > DROMLAN-Service > Forecast Products > Chart (Map)

Click on diagram to download and enlarge. Downloaded document includes the legend.

DROMLAN Weather Chart (DWC)

issued by weather forecasting service at station Neumayer III

issued for SFC – FL100 no ICAO-area VALID: 12 UTC 14.01.14 including trend of development for next 24h

A OVC HP CP CN	B OVC HN CN	C	I	II
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WIKI 950 WIKI 965

H 1008 NOSIG

Contact:
Michael Knobelsdorf
German Weather Service

Summer Forecast Service via WEB:

http://www.awi.de/en/infrastructure/stations/neumayer_station/dromlan_service/



Overview Stations

☐ Stations

Overview Neumayer Station

☐ Neumayer Station

Meteorological Information from Neumayer

☐ DROMLAN-Service

☰ Forecast Products

☰ Real Time Data from Neumayer

☰ Landing Conditions at Neumayer

☰ Information from other Stations

Direct Links for customers with low bandwidth

Stations/camps with reasonable bandwidth are recommended to use the internet pages directly. Stations/camps with low bandwidth are recommended to bookmark distinct products of interest to obtain current information on demand with a minimum of data transfer. If desired these products can be automatically downloaded using e.g. [wget](#).

Below you will find a list of recommended short links. We try to keep these addresses unchanged as long as possible. In case of necessary changes from our side you should update your bookmarks using the following tables.

Forecast Products

- General (Text): www.awi.de/fileadmin/user_upload/MET/neumayer-II/genfcst.txt
- Chart (Map): www.awi.de/fileadmin/user_upload/MET/neumayer-II/dwcfst.pdf
- Aerodrome (Table): www.awi.de/fileadmin/user_upload/MET/neumayer-II/DAF.gif
- Aviation (Text): www.awi.de/fileadmin/user_upload/MET/neumayer-II/avfcst.html

Real Time Data from Neumayer

- SatPic www.awi.de/fileadmin/user_upload/MET/neumayer-II/DML_CH2_01.jpeg (older pics: _02,..., _05)
- SatPic www.awi.de/fileadmin/user_upload/MET/neumayer-II/DML_CH4_01.jpeg (older pics: _02,..., _05)
- SatPic www.awi.de/fileadmin/user_upload/MET/neumayer-II/Neumayer_CH2_01.jpeg (older pics: _02,..., _05)
- SatPic www.awi.de/fileadmin/user_upload/MET/neumayer-II/Neumayer_CH4_01.jpeg (older pics: _02,..., _05)
- Weather of Today: www.awi.de/fileadmin/user_upload/MET/neumayer-II/nrt_weather.gif
- Weather of Yesterday: www.awi.de/fileadmin/user_upload/MET/neumayer-II/yesterday_weather.gif
- Latest Data: www.awi.de/fileadmin/user_upload/MET/neumayer-II/latest_data.html
- Synoptic Observations: www.awi.de/fileadmin/user_upload/MET/neumayer-II/latest_obse.html
- Ceilometer Profile: www.awi.de/fileadmin/user_upload/MET/neumayer-II/cview.png
- WebCam: www.awi.de/NM_WebCam/neumayerW.last.jpg
- Latest Radiosonde (Diagram): www.awi.de/fileadmin/user_upload/MET/neumayer-II/nrt_raso.gif
- Latest Radiosonde (TEMP-Code): www.awi.de/fileadmin/user_upload/MET/neumayer-II/nrt_temp

Landing Conditions at Neumayer

- www.awi.de/fileadmin/user_upload/MET/neumayer-II/METAR-NM.html

Neumayer, Germany

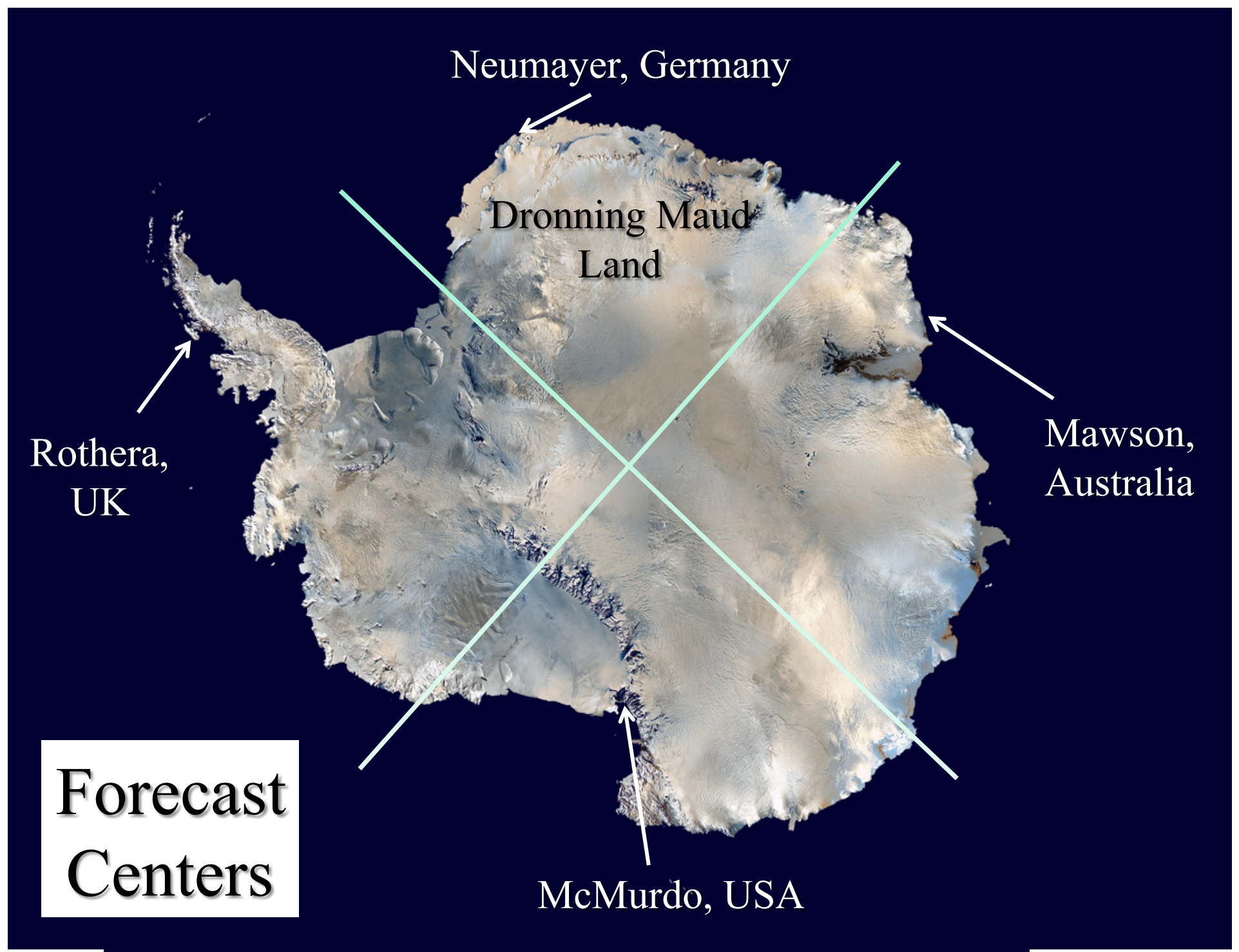
Dronning Maud
Land

Rothera,
UK

Mawson,
Australia

Forecast
Centers

McMurdo, USA



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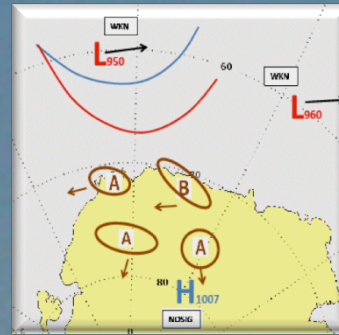
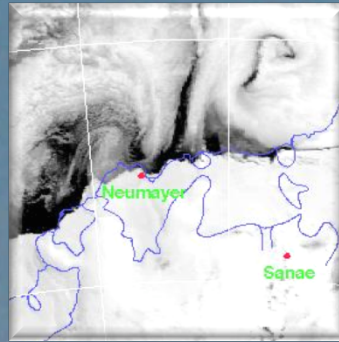
YOPP

Goals

More Soundings

More AWS

Verification & Outlook



The Year of Polar Prediction (YOPP)

A Flagship Activity
of the WWRP Polar Prediction
Project



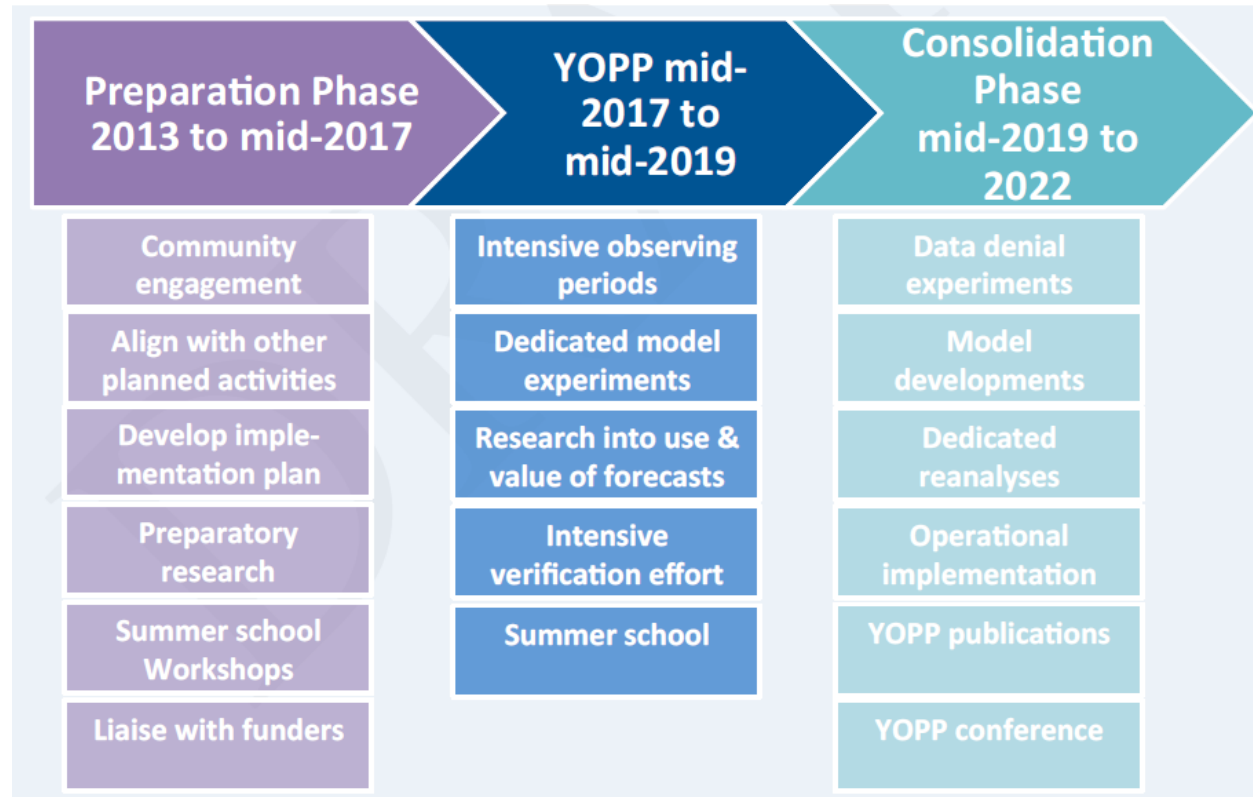
YOPP MISSION

Enable a significant improvement in environmental prediction capabilities for the polar regions and beyond, by coordinating a period of intensive observing, modelling, verification, user-engagement and education activities.

YOPP is a contribution to the hourly to seasonal research component of the WMO Global Integrated Polar Prediction System (GIPPS).

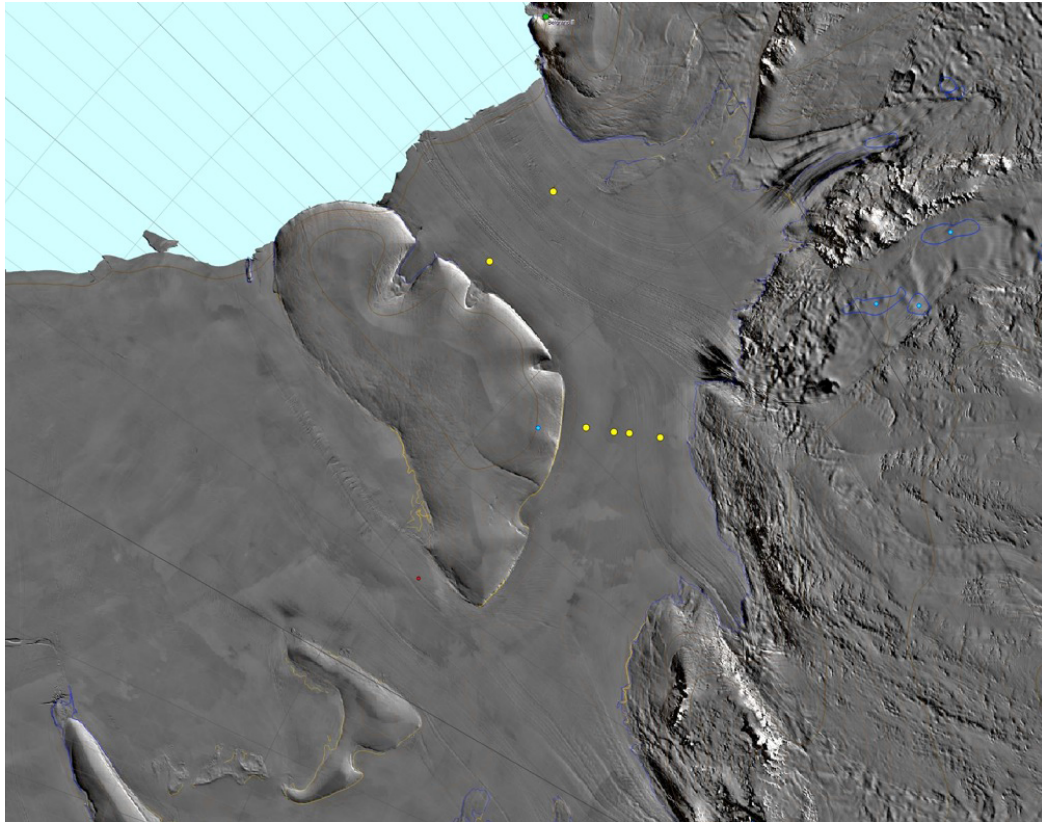
Details see:
YOPP session on Thursday

Intensive Observing Period



Plan for Neumayer_III:

Increasing the upper air soundings from 1 to 4 per day during summer in the intensive observing periods.



Plan for Neumayer_III:
Running 2 AWS with near real time minutely averaged
IRIDIUM data transfer. Location? Still unclear.
Details see: Poster from Holger Schmithüsen

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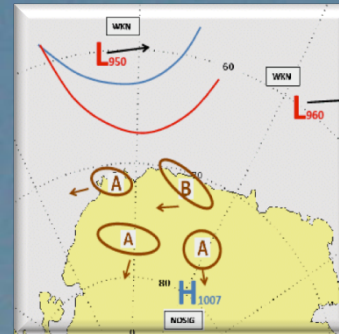
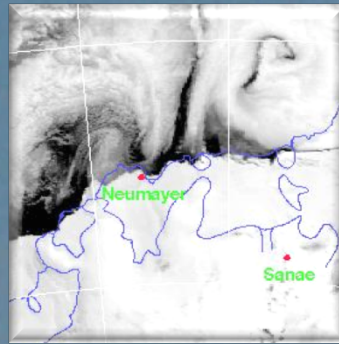
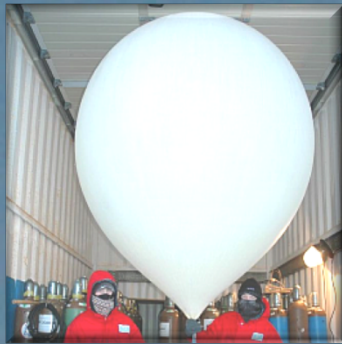
More AWS

Verification & Outlook

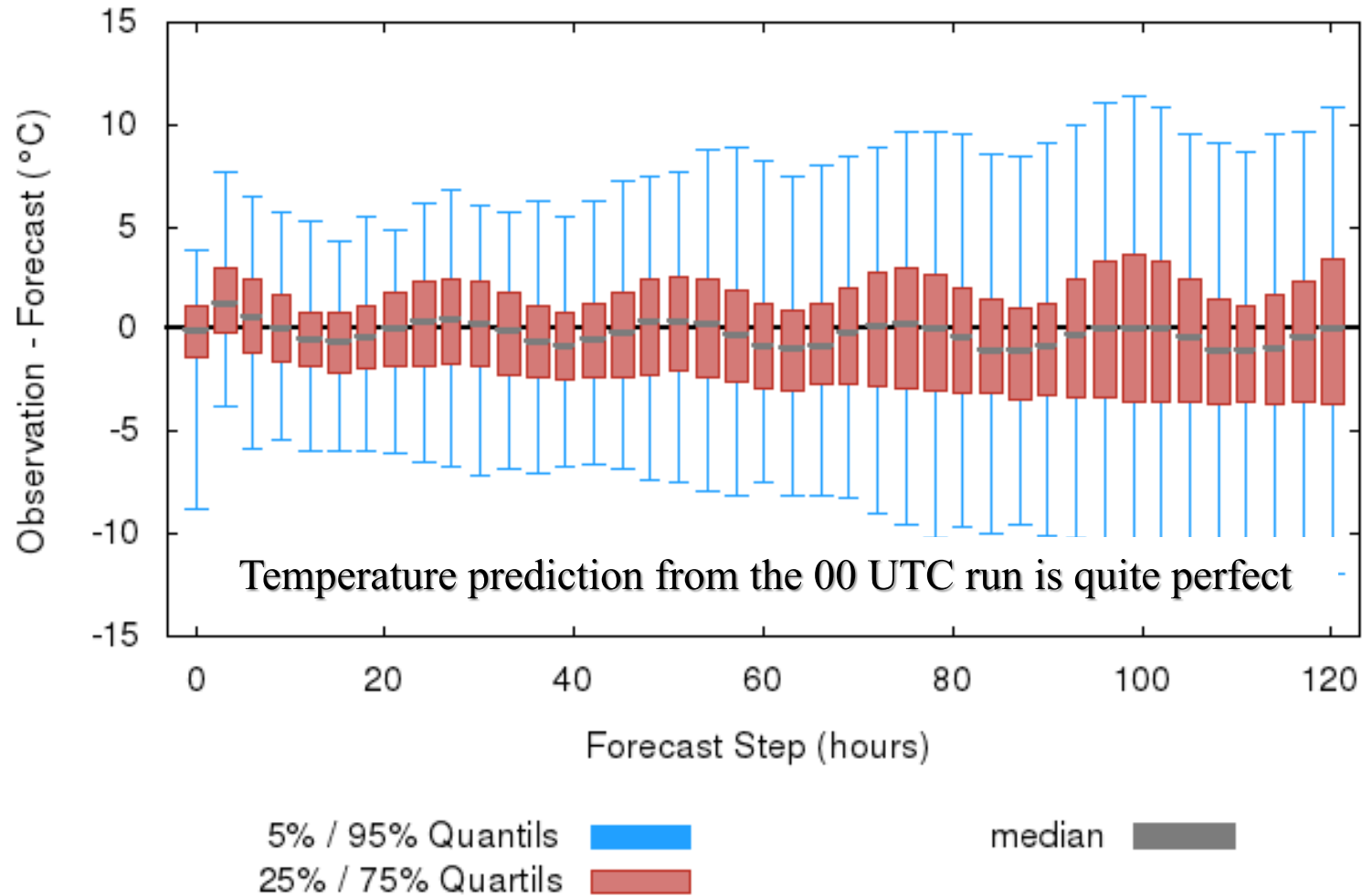
AMPS

ERA-Interim

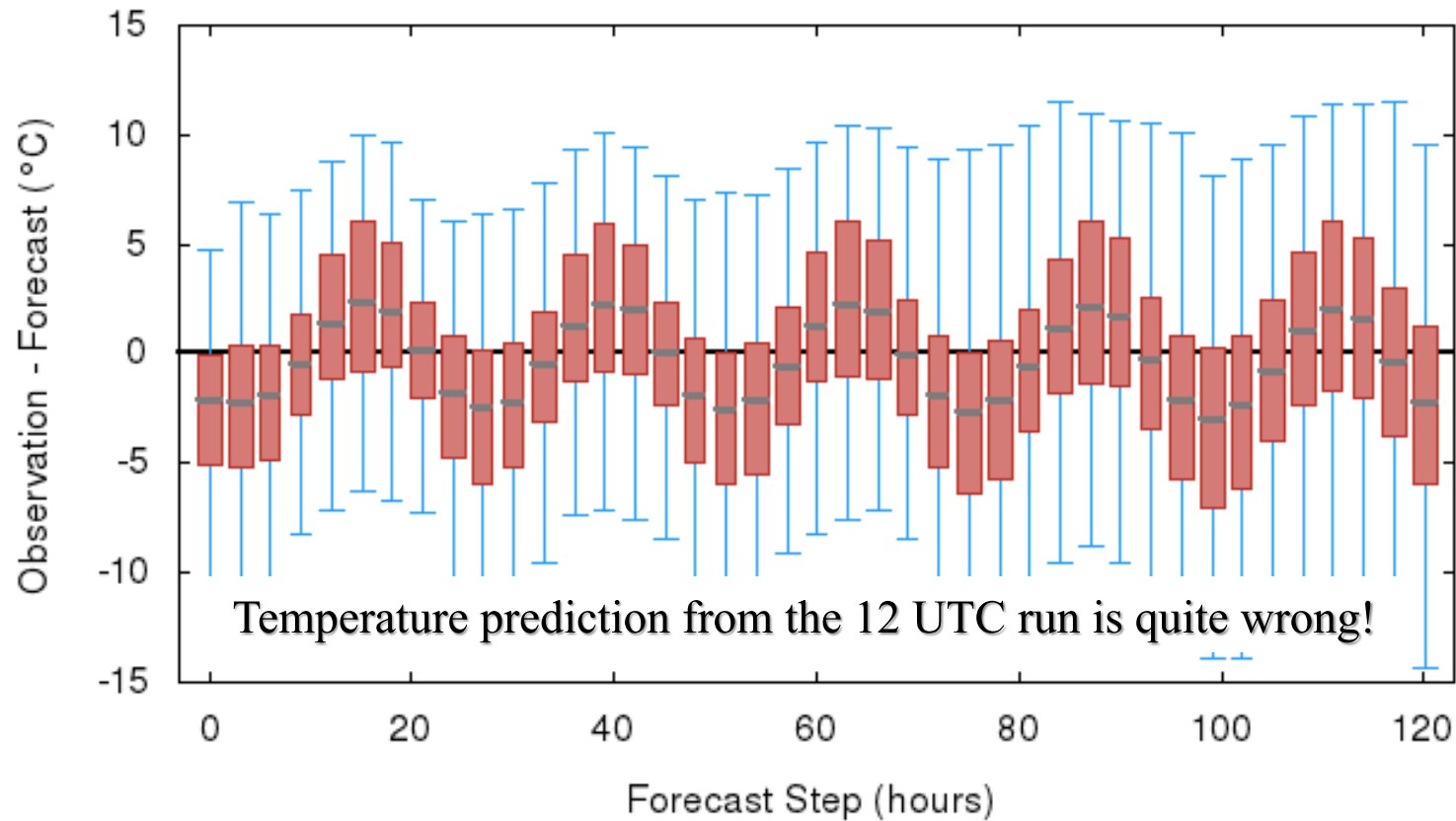
Warming of Antarctica?



AMPS Forecast Validation Neumayer-Station
Data: 2010-2012 Run: 00UTC Parameter: Temperature

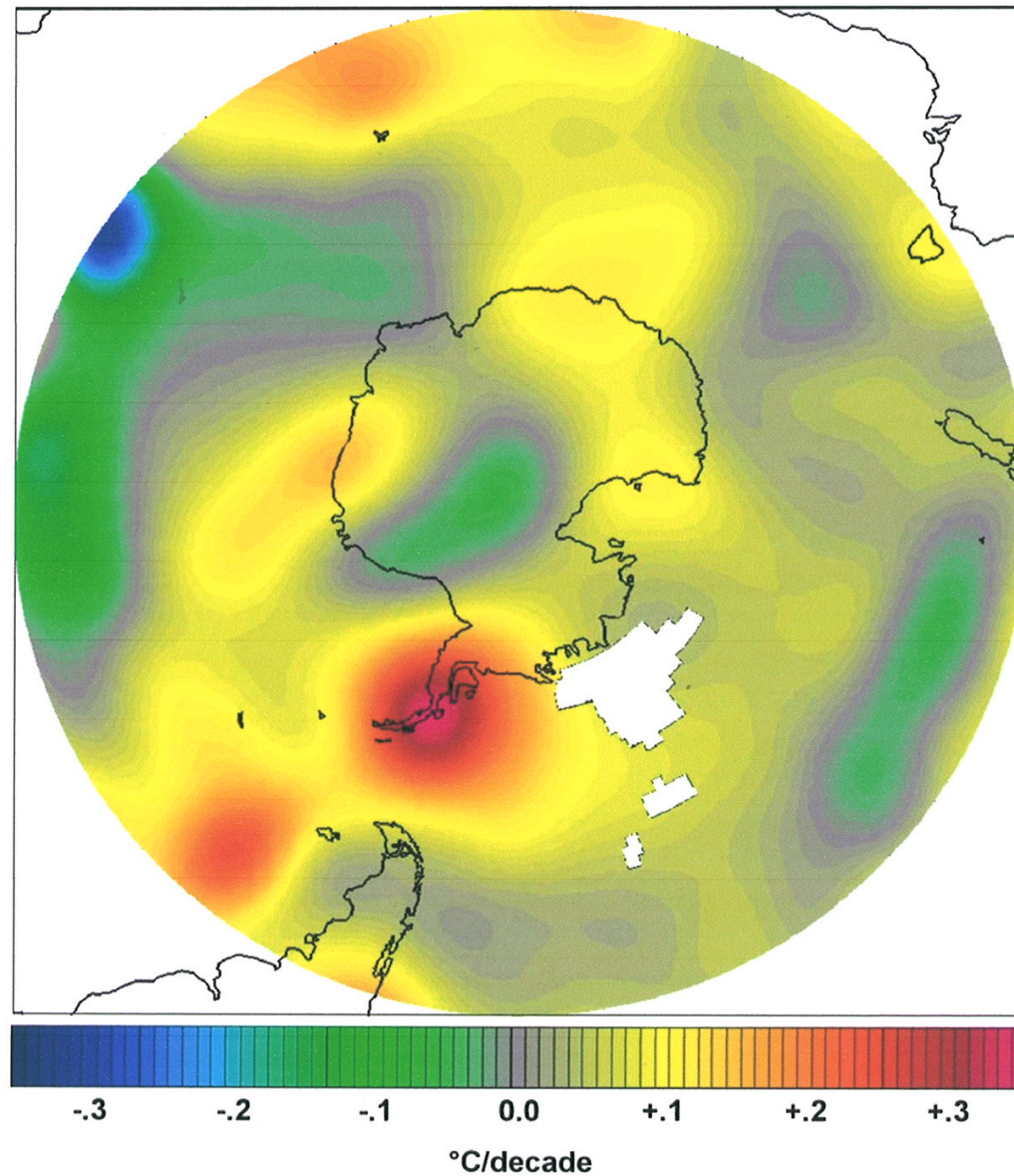


AMPS Forecast Validation Neumayer-Station
Data: 2010-2012 Run: 12UTC Parameter: Temperature



5% / 95% Quantils  median 
25% / 75% Quartils 

A
Synthesis of
Antarctic
Temperatures
(CHAPMAN
et al., 2006)



Temperature Trend

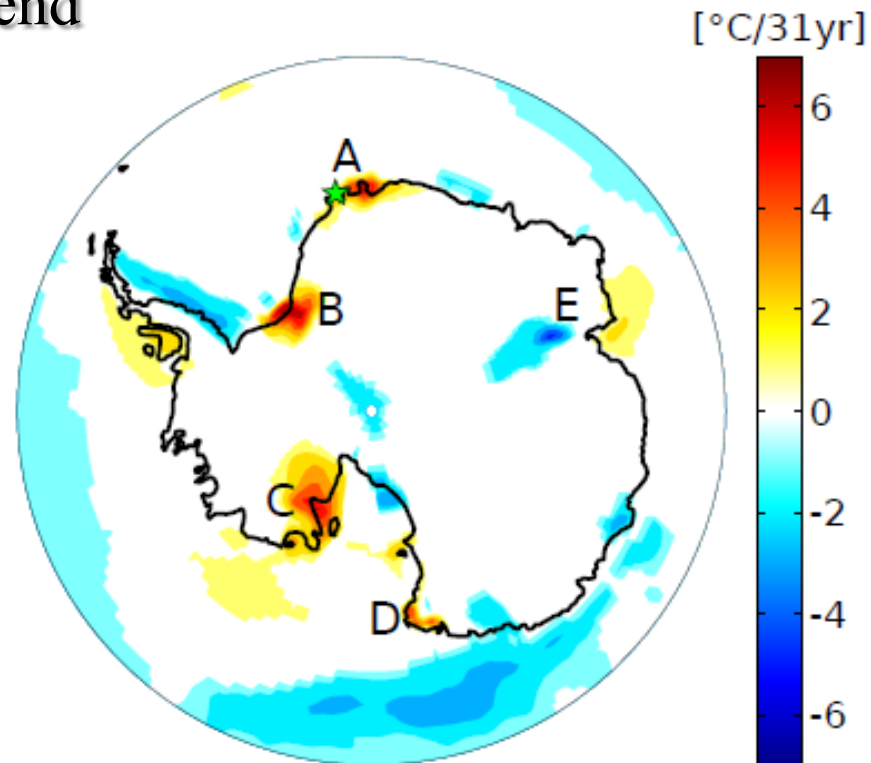
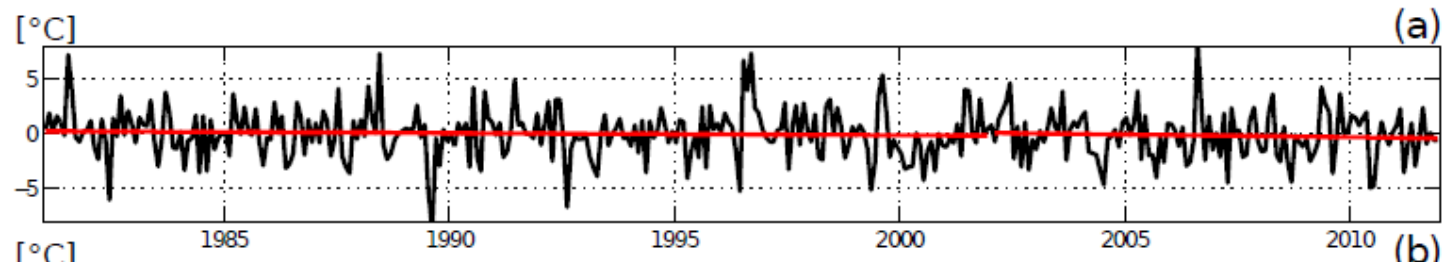
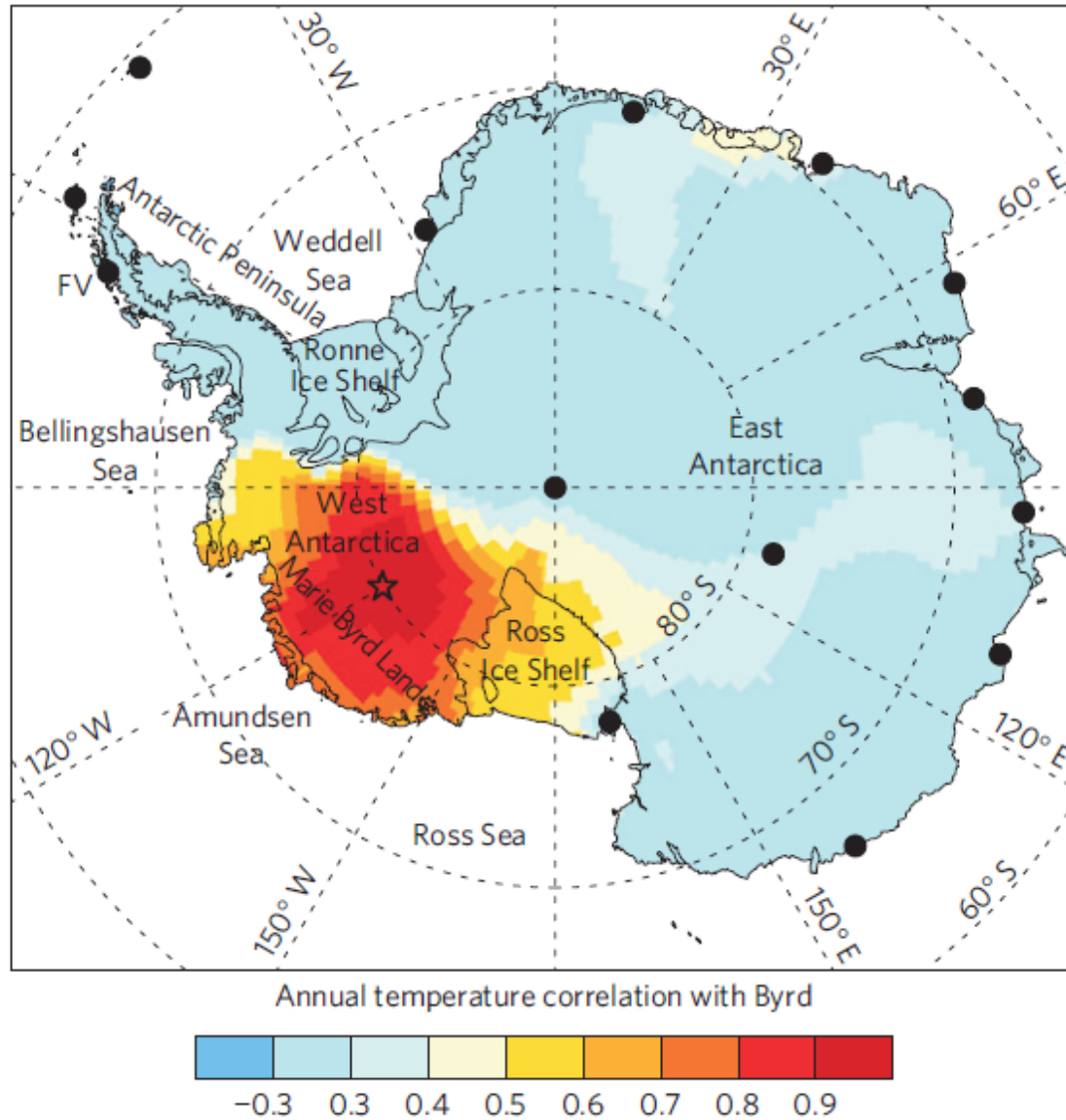


Figure 2: Linear trend of 2m-temperatures [$^{\circ}\text{C}/31\text{yr}$] of monthly anomalies in ERA-Interim over the period of 31 years from 1981 to 2011. The area where the trend is insignificant at the 99%-level (two sided t -test) has been left blank. Positions A to E each refer to the local extrema. The Neumayer station is denoted with a green star symbol.



Neumayer
Observations

Future of West Antarctica?

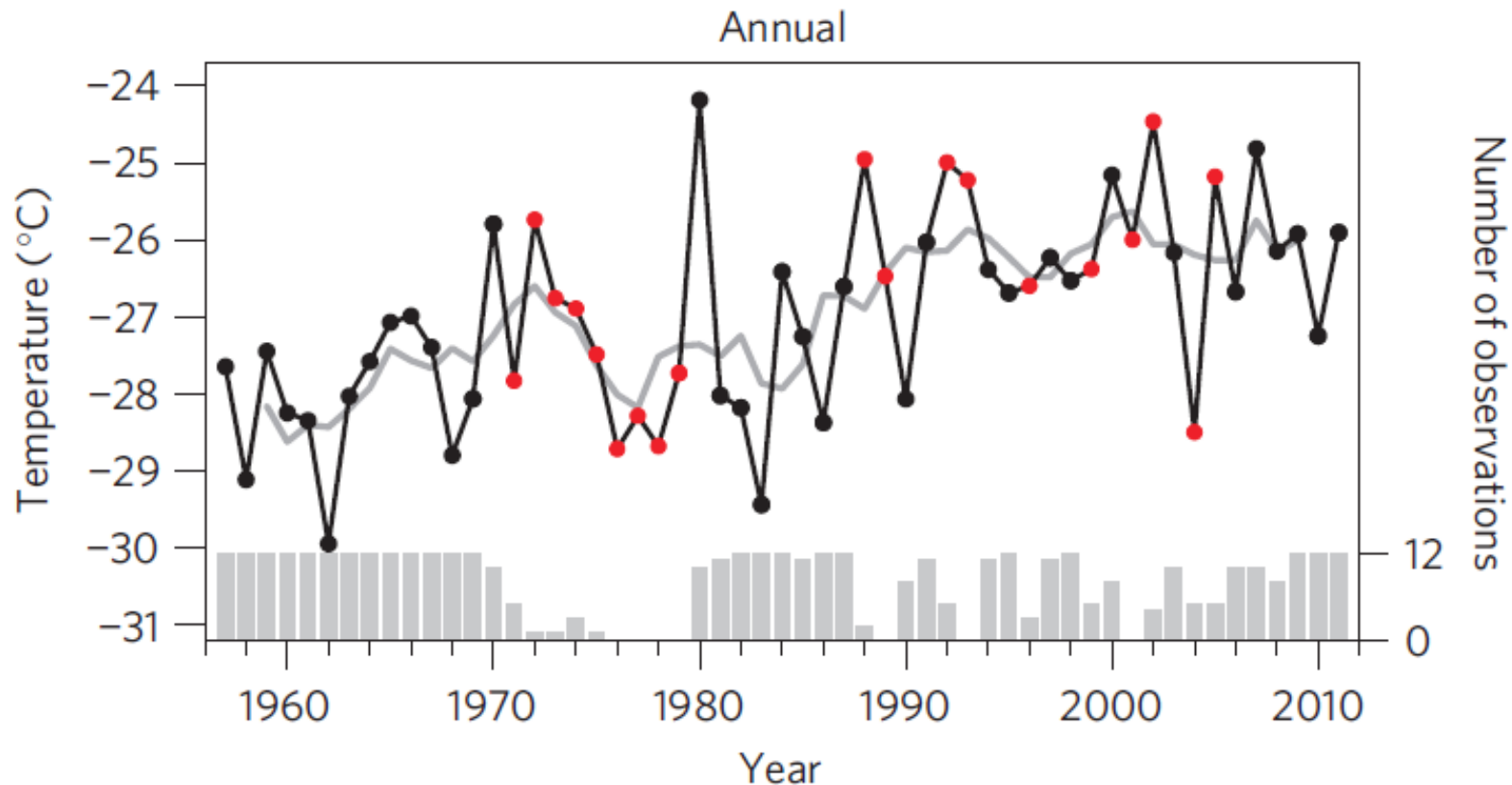


Black dots denote permanent stations with long-term temperature records.

Warming of the Antarctic Peninsular is well monitored by measurements.

Long-term observations in West Antarctica are missing.

Future of West Antarctica?



Time series from Byrd Station is a composite of man made measurements (1957-1975), AWS data, reanalyses and spatial interpolations. Red markers denote the portions of the record for which $>1/3$ of the observations are missing

Central West Antarctica among the most rapidly warming regions on Earth

David H. Bromwich^{1*†}, Julien P. Nicolas^{1†}, Andrew J. Monaghan², Matthew A. Lazzara³, Linda M. Keller⁴, George A. Weidner⁴ and Aaron B. Wilson¹

There is clear evidence that the West Antarctic Ice Sheet is contributing to sea-level rise. In contrast, West Antarctic temperature changes in recent decades remain uncertain. West Antarctica has probably warmed since the 1950s, but there is disagreement regarding the magnitude, seasonality and spatial extent of this warming. This is primarily because long-term near-surface temperature observations are restricted to Byrd Station in central West Antarctica, a data set with substantial gaps. Here, we present a complete temperature record for Byrd Station, in which observations have been corrected, and gaps have been filled using global reanalysis data and spatial interpolation. The record reveals a linear increase in annual temperature between 1958 and 2010 by 2.4 ± 1.2 °C, establishing central West Antarctica as one of the fastest-warming regions globally. We confirm previous reports of West Antarctic warming, in annual average and in austral spring and winter, but find substantially larger temperature increases. In contrast to previous studies, we report statistically significant warming during austral summer, particularly in December–January, the peak of the melting season. A continued rise in summer temperatures could lead to more frequent and extensive episodes of surface melting of the West Antarctic Ice Sheet. These results argue for a robust long-term meteorological observation network in the region.

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Summary:

- In situ data are strongly needed from nowcasting till climate monitoring.
- Permanently occupied stations are extremely rare but most important.
- Well maintained AWS can be useful to close in situ data gaps.
- West Antarctic temperature changes are still uncertain.
- Do not take products from reanalysis's as reality!
- Models need to be verified using in situ data (not reanalysis's).
- Further model improvements are needed.

Polar prediction stays challenging

