

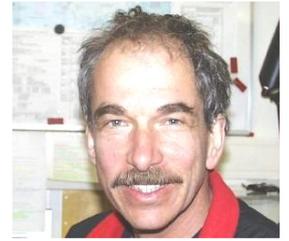
# The Meteorological Observatory at Neumayer

June 26-28, 2007

2nd Antarctic Meteorological Observation, Modeling, and Forecasting Workshop  
Rome, Italy

**König-Langlo, Gert**

Alfred-Wegener-Institute for Polar and Marine Research (AWI)



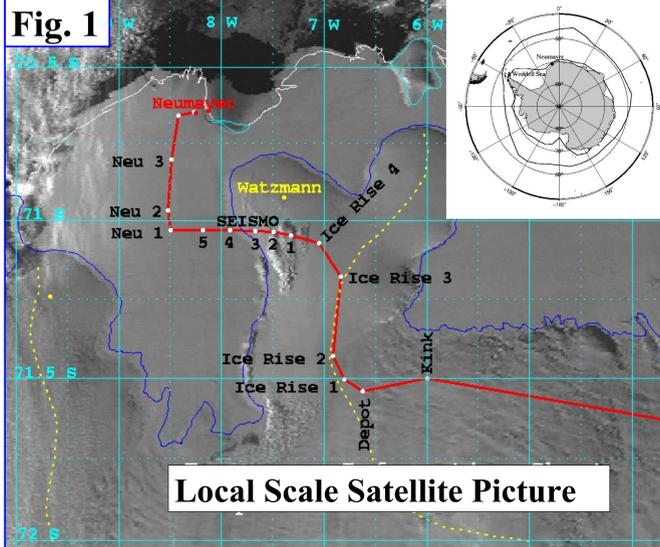
Gert.Koenig-Langlo@awi.de

## Location

Neumayer (70°S, 8°W) is situated on the Ekström Ice Shelf at about 6 km distance from the southeast part of Atka Bay, 42m above sea level (Fig. 1). The Ekström Ice Shelf has a very homogeneous, flat surface. Except for some insignificant nunataks about 100 km south of Neumayer, no ice free land surface exists. The station will be rebuilt during the summer seasons 2007/8 and 2008/9. Nevertheless, the meteorological observatory program will be continued in its full extent without significant interruptions.



Februar 2009, Ekström-Schelfeis, 70°40,8'S, 008°16,2'W



Local Scale Satellite Picture

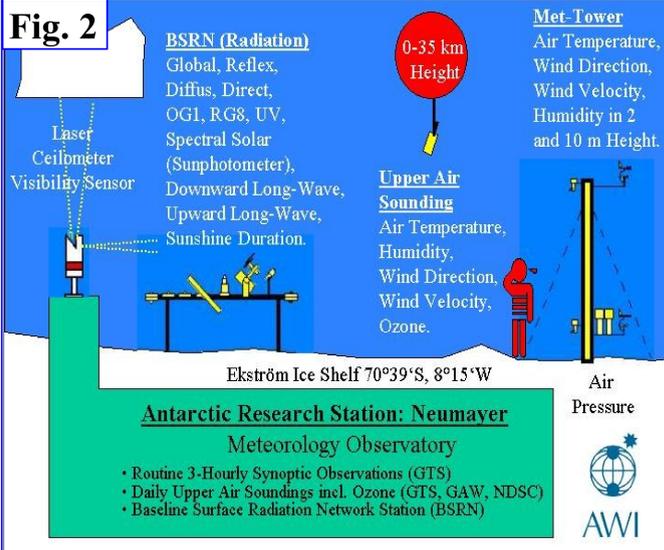
## Observatory Program

Since March 1981 a meteorological observatory program is carried out at Neumayer Station continuously (Fig.2). Neumayer takes part in

- the Global Telecommunication System (GTS),
- the Global Climate Observing System (GCOS),
- the Global Atmospheric Watch (GAW),
- the Network for the Detection of Atmospheric Composition Change (NDACC, formerly NDSC),
- and the Baseline Surface Radiation Network (BSRN).

Three-hourly synoptic observations, daily upper air soundings including weekly ozone profiling, and substantial surface radiation measurements are the main parts of the measurements.

Fig. 2



## Weather at Neumayer

Neumayer is situated south of the circumpolar trough surrounding Antarctica which its high cyclone activity. Thus, Neumayer is a rather windy site with an averaged wind speed of 18 knots. Severe easterly storms are usual (Fig. 3). They can reach wind velocities well above 50 knots. Only during summer blizzards are less frequent. Drifting and blowing snow events associated with white out phenomena and visibility below 1000m are common at Neumayer (Fig. 4).

The annual averaged temperature at Neumayer is -16.1 °C. (Fig. 5, 6). Within the last 25 years remarkable year-to-year temperature variations were measured but no significant trend can be observed. This finding is in contrast to measurements at the Antarctic Peninsular where a significant warming took place, but it is typical for the majority of all other Antarctic stations.

Precipitation events occur all year around. In very rare cases during summer, drizzle and rainfall are possible. Most of the precipitation is due to slight to moderate fall of snowflakes, while showers seldom occur. Drifting and blowing snow make the quantification of the amount of precipitation impossible. Only the annual averaged accumulation rate of about 340 mm water equivalent can be obtained.

## Ozone Soundings

In 1992 a weekly ozone sounding programme (started in 1985 at the near by Georg Forster Station) was transferred to Neumayer. Both stations are situated comparably within the area normally surrounded by the Antarctic stratospheric vortex. As can be seen in Fig. 8 the ozone layer during Antarctic spring shows remarkable inter-annual variations as well as an overall reduction of the ozone partial pressure with time.

## Forecast Services

Due to the modern infrastructure of the meteorological observatory – including a powerful high resolution satellite picture receiving station (Fig.1) - Neumayer evolved more and more into the meteorological forecast centre for the whole Dronning Maud Land. For the coming years Neumayer is one of the forecast-center for the International Polar Year.

During one summer season typically more than 1000 forecasts gets performed for about 20 different field parties, ships, stations and especially aircrafts. It is obvious, that this service contribute considerably to increase the safeness of the ambiguous projects going on in the Dronning Maud Land. Furthermore, it helps to reduce weather induced idle times of expensive flight operations to a minimum.

Fig. 3

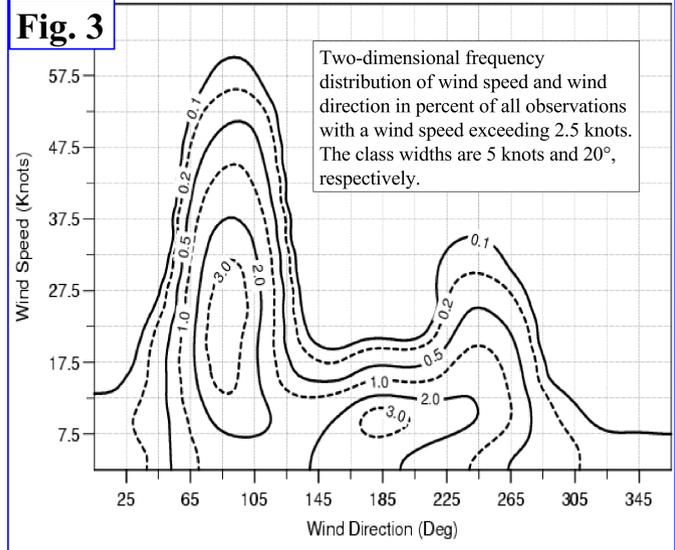


Fig. 4

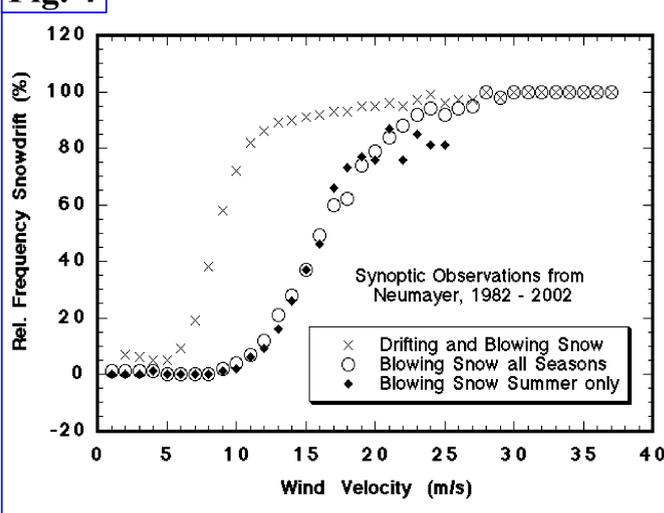


Fig. 6

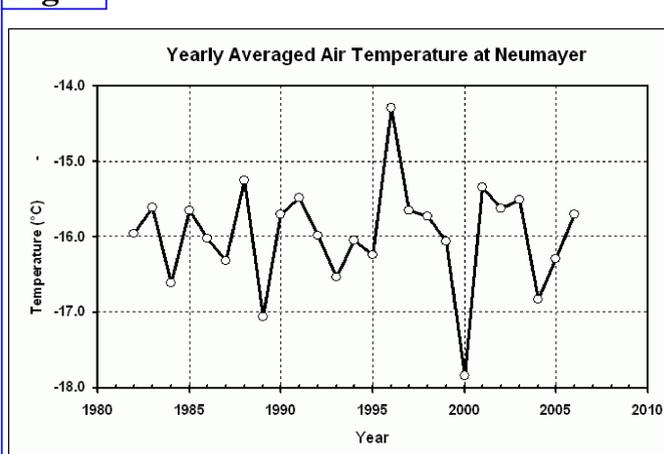


Fig. 5

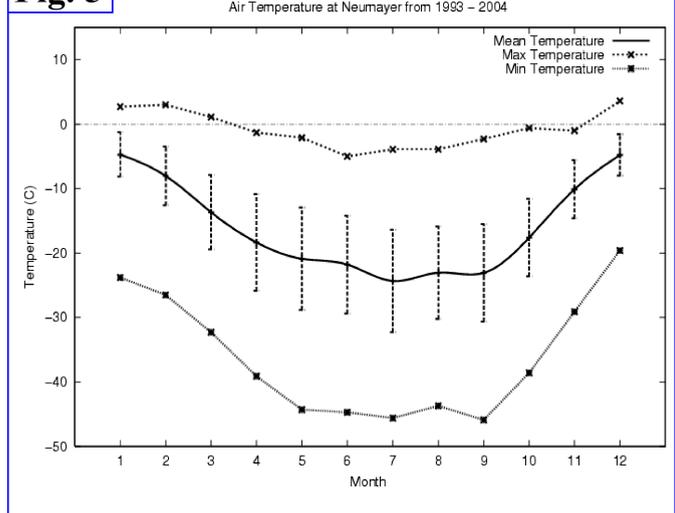


Fig. 8

