

# The quality of AMPS-Wind-Forecasts with regards to flight operations at Dronning Maud Land Season 2010/2011

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For aviation weather forecasts the results of numerical models are “sine qua non” as actual weather observations and satellite images in high resolution.

Ensemble forecasts of ECMWF, GFS etc are unfit for the first 36h (information from ECMWF) as well global deterministic models (resolution to low).

Are high resolute AMPS-products suitable to help?

The aviation at Droning Maud Land is primarily interested in wind, cloud base (very low), visibility, horizon and contrast.

Last 3 elements are not directly model output and must deduce from other parameters (forecaster job).

Low cloud base is not verified because number of AMPS forecasts over land and ice shelf is - contrary to observations - very rare.

For checking the quality of morning AMPS-wind-forecasts at Neumayer, Troll and Novo Air Base last season, the predicted elements for h+6, h+12 and h+ 18 were sorted and compared with measurements (forecast data taken from table or chart).

Definition of classes

Wind Speed (kt)	Wind Direktion
0	Calm
1 to 12.5	N
12.5 to 17.5	NE
17.6 to 22.5	E
22.6 to 27.5	SE
27.6 to 32.5	S
32.6 to 37.5	SW
37.6 to 42.5	W
>42.5	NW

If model forecast and measurement are in same class, forecast **perfect**.

If difference 1 class, forecast **useful**.

If difference greater, forecast **not acceptable**.

For all three times and locations nearly 50% of wind forecasts are “perfect” and about 30% are useful (fig 1). But there are great differences in details.

Some examples (for details see presentation):

- speed and direction at Neumayer nearly 60% perfect and 30% useful
- but direction 75% perfect if eliminated speed < 12.6 kt
- direction at Troll only about 10% perfect and 45 % useful
- speed at Troll h+6 20% perfect and 40% useful
- but 70% perfect and 15% useful h+18
- speed at Novo nearly 35% perfect, 40% useful but often to low
- direction at Novo nearly 55% perfect and 25% useful
- but h+18 40% perfect and 35% useful

Resume:

In “smooth” areas (Neumayer) wind speed and direction forecasts of AMPS are remarkable good.

In topographical structured areas like Novo or Troll model wind forecasts are often not acceptable and local effects may prevail.

A better orographic/topographic resolution and/or an exact positioning of grid points would probably decrease the error.

