

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, h+18 were sorted and compared with measurements (forecast data taken from table or chart).

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Definition of classes

Wind speed (kt)	Wind direction
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

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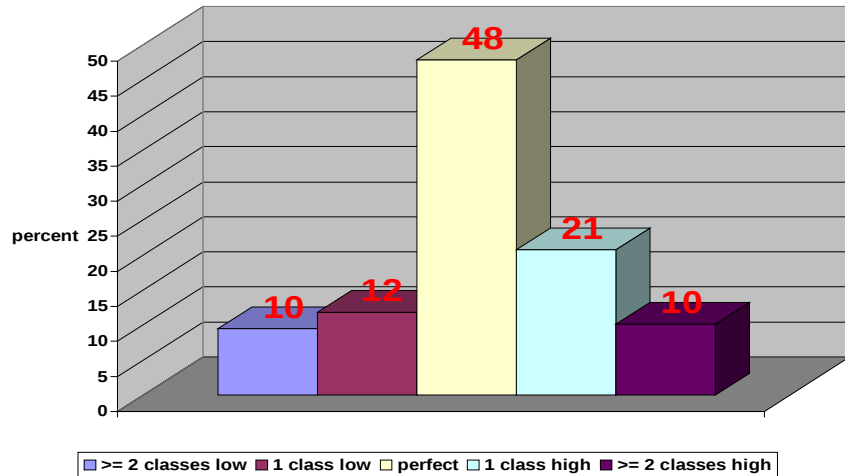
If model forecast and measurement
are in same class, forecast **perfect**,
if difference 1 class, forecast **useful**,
if difference greater, forecast **not acceptable**.

In the mean for all three times
and locations nearly
50% of wind forecasts are “perfect”
and about 30% are useful.

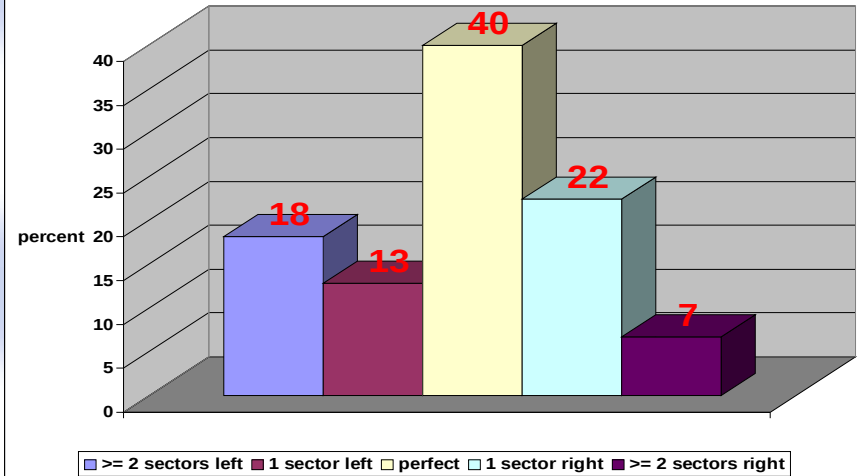
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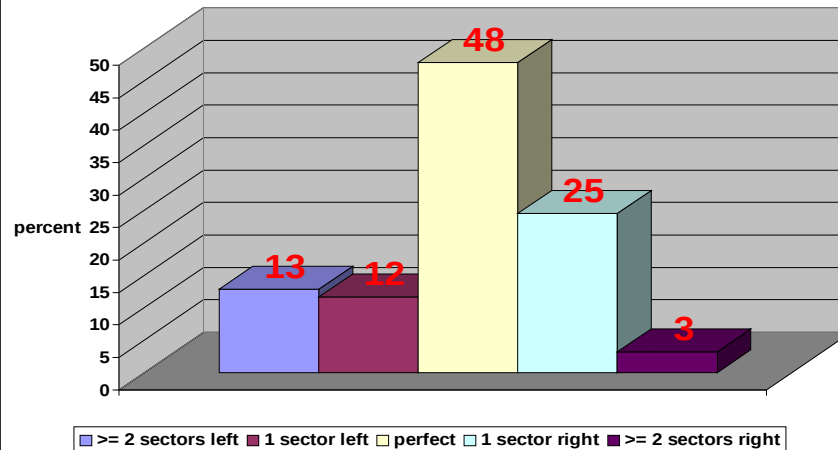
Speed 06/12/18 UTC Neumayer/Novo/Troll



Direction 06/12/18 UTC Neumayer/Novo/Troll



Direction 06/12/18 UTC Neumayer/Novo/Troll
if speed > 12.5kt



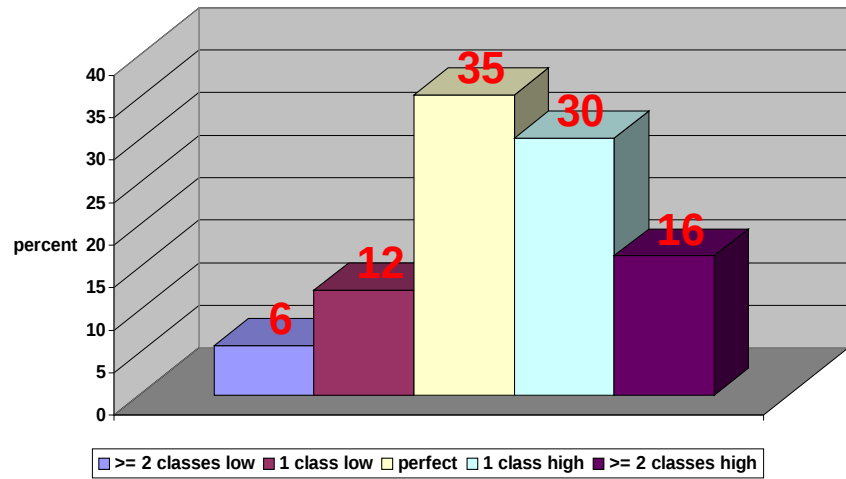
**But there are
great
differences
in details.**

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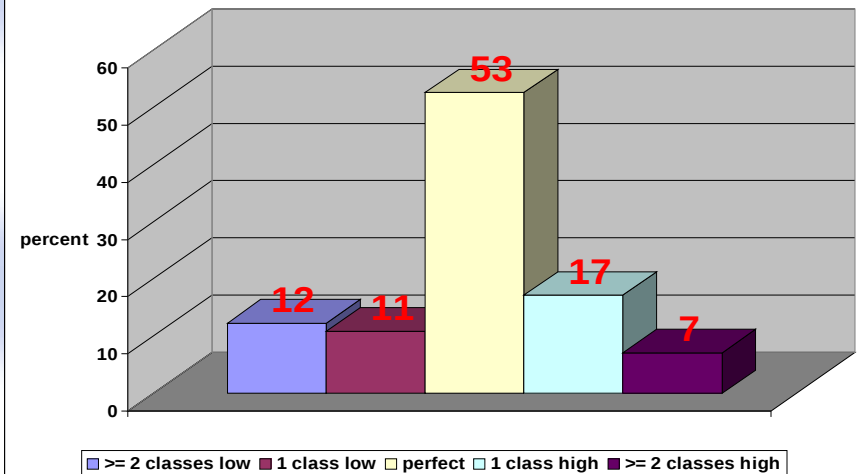
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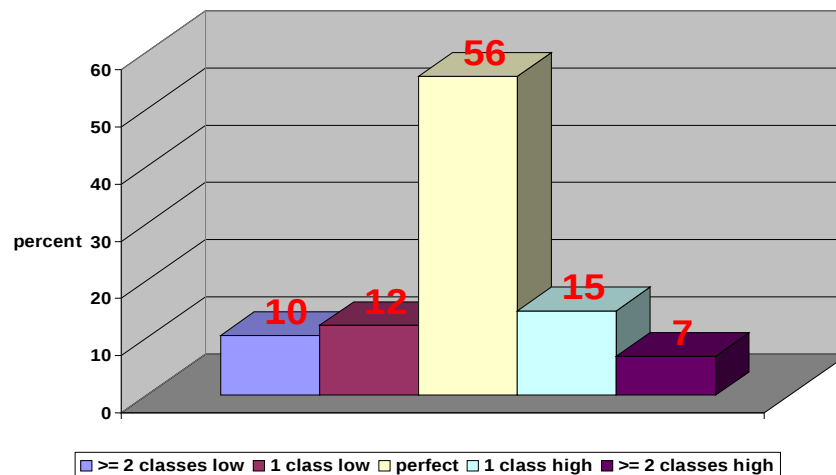
Speed 06 UTC Neumayer/Novo/Troll



Speed 12 UTC Neumayer/Novo/Troll



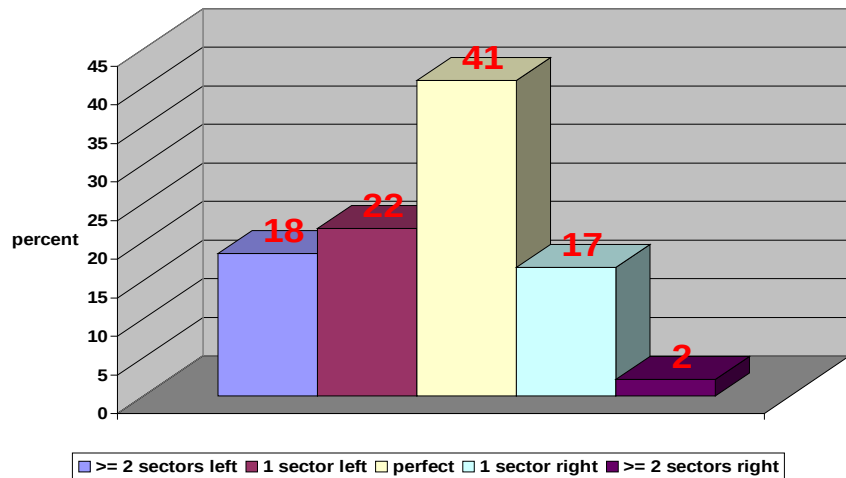
Speed 18 UTC Neumayer/Novo/Troll



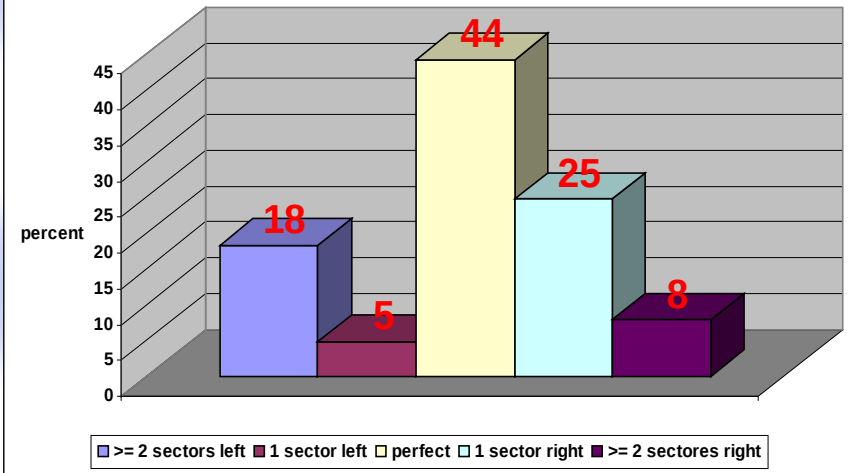
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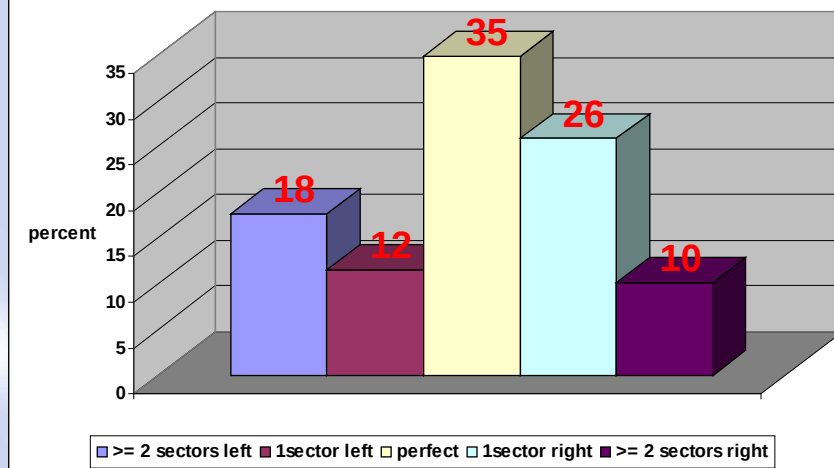
Direction 06 UTC Neumayer/Novo/Troll



Direction 12 UTC Neumayer/Novo/Troll



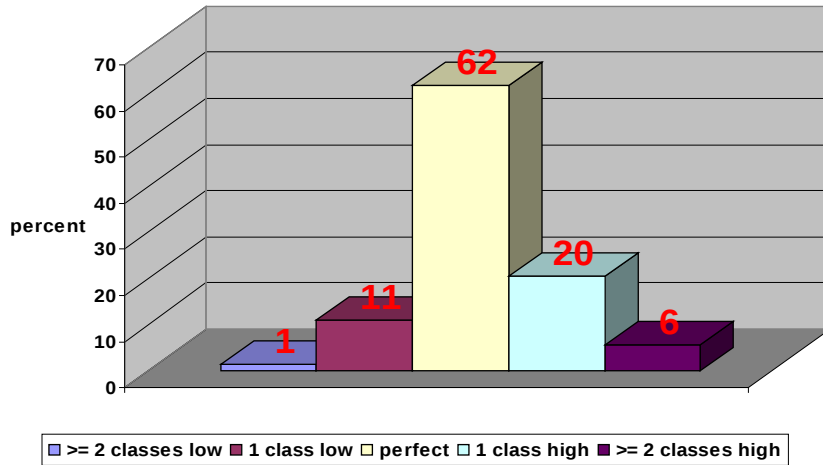
Direction 18 UTC Neumayer/Novo/Troll



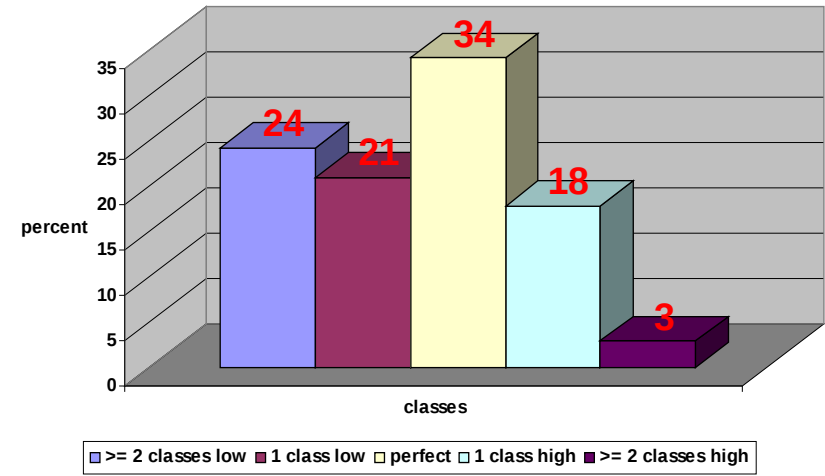
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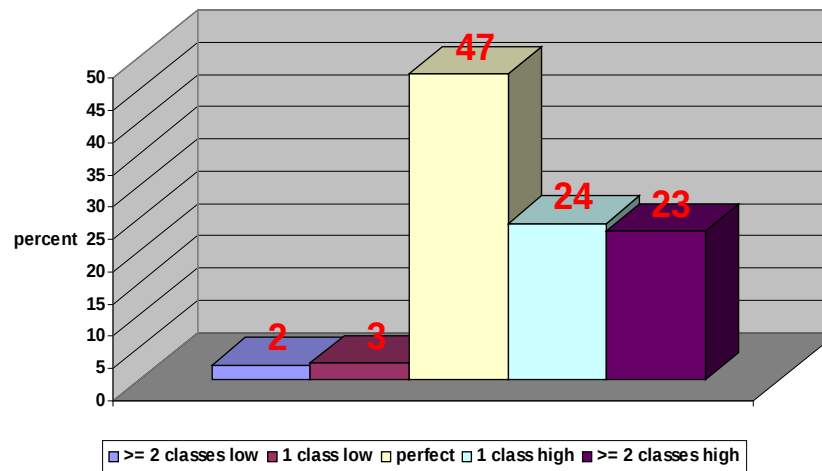
Speed 06/12/18 UTC Neumayer



Speed 06/12/18 UTC Novo



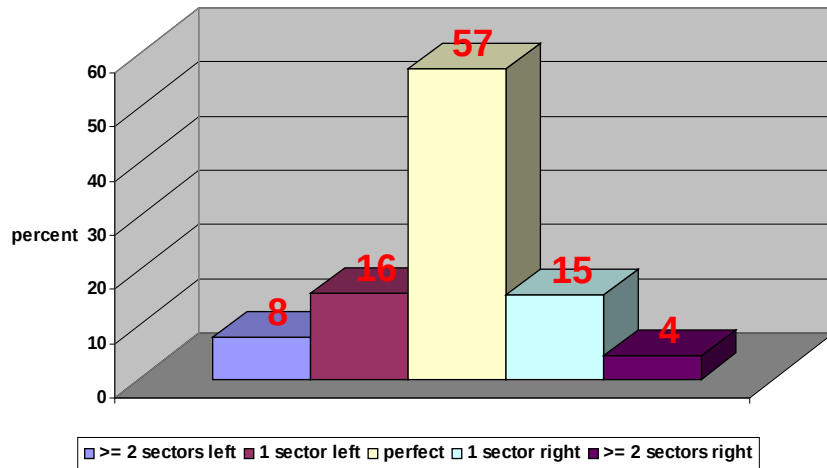
Speed 06/12/18 UTC Troll



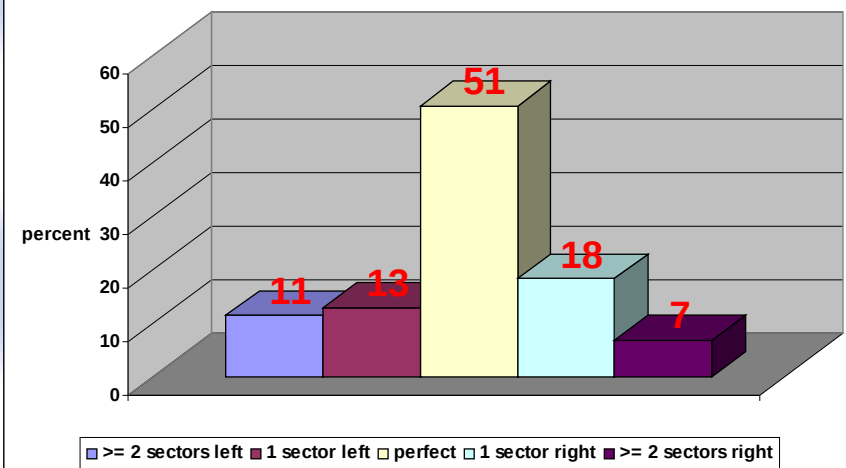
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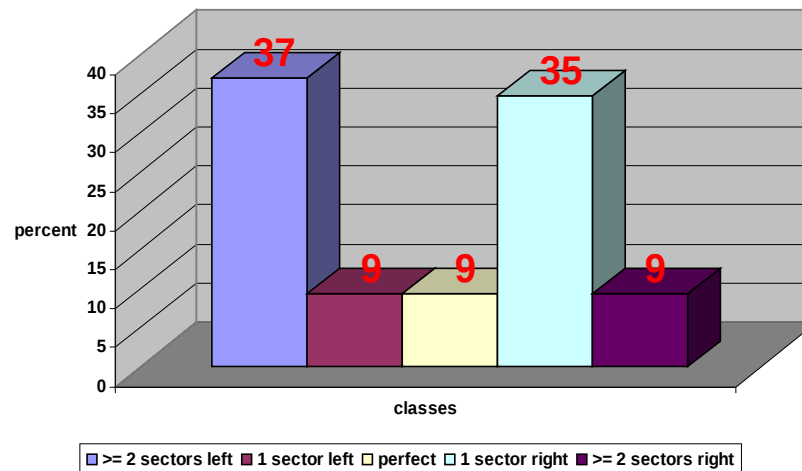
Direction 06/12/18 UTC Neumayer



Direction 06/12/18 UTC Novo

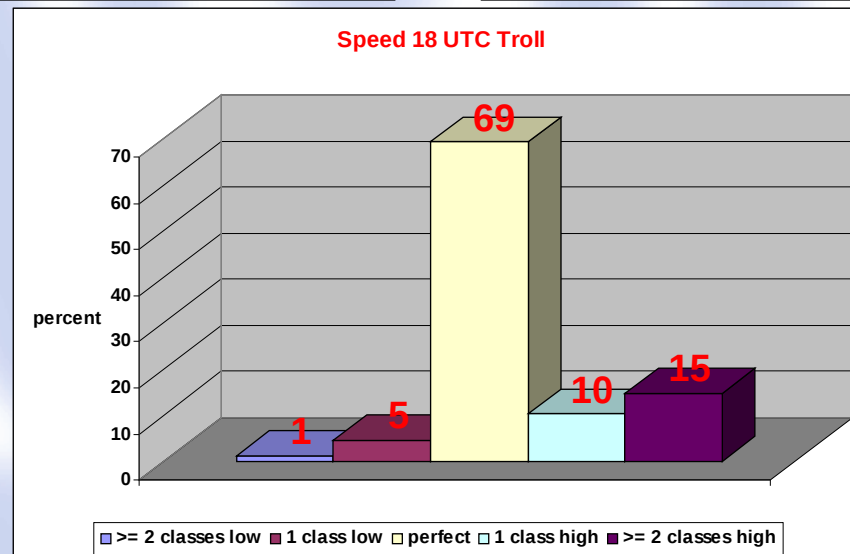
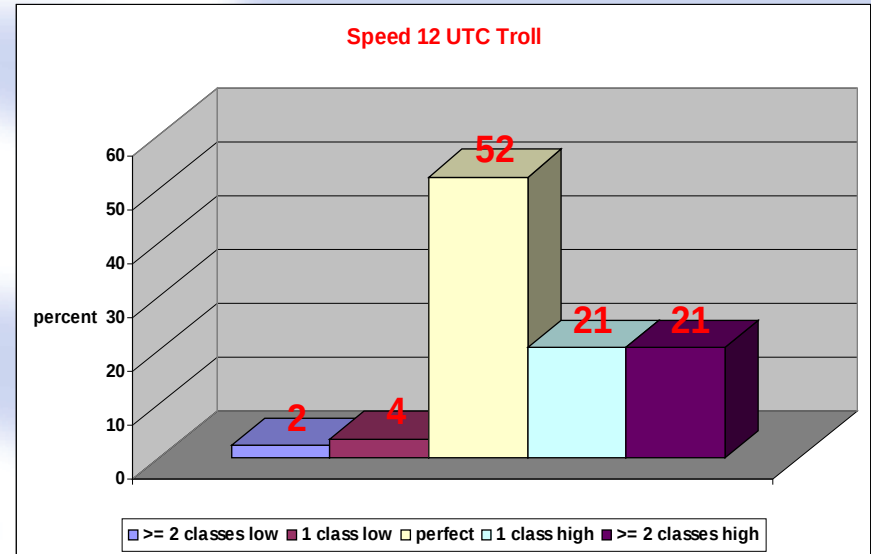
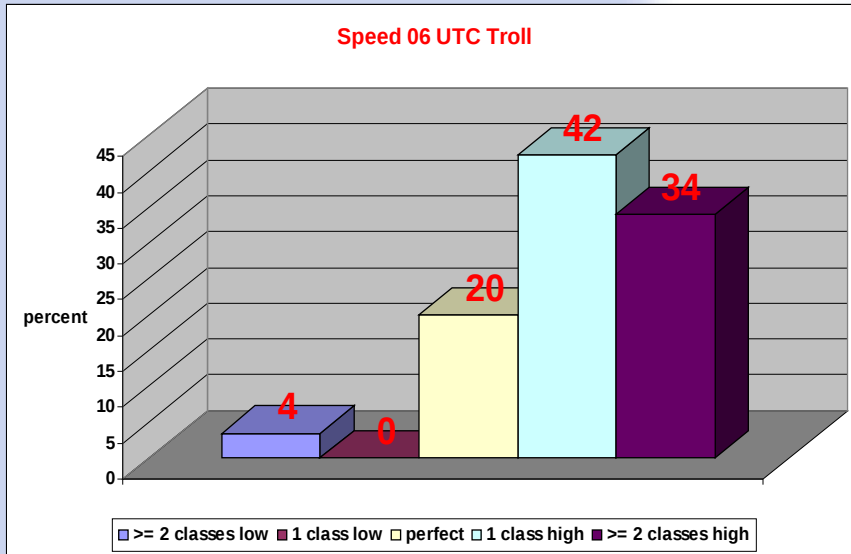


Direction 06/12/18 UTC Troll



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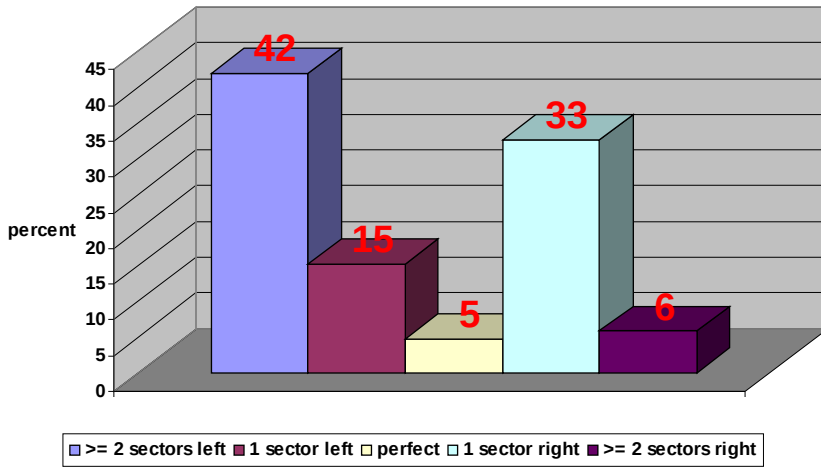
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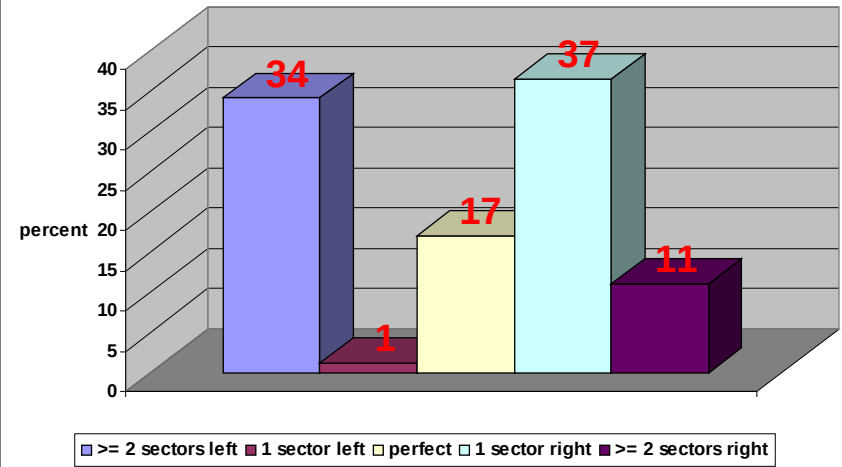
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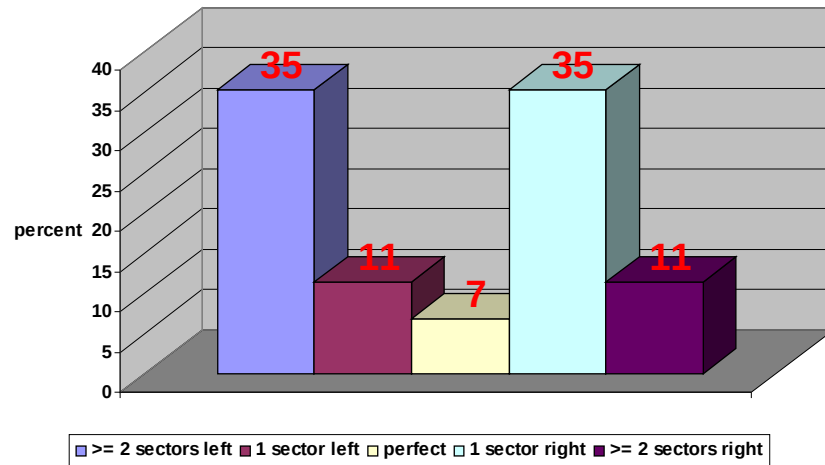
Direction 06 UTC Troll



Direction 12 UTC Troll

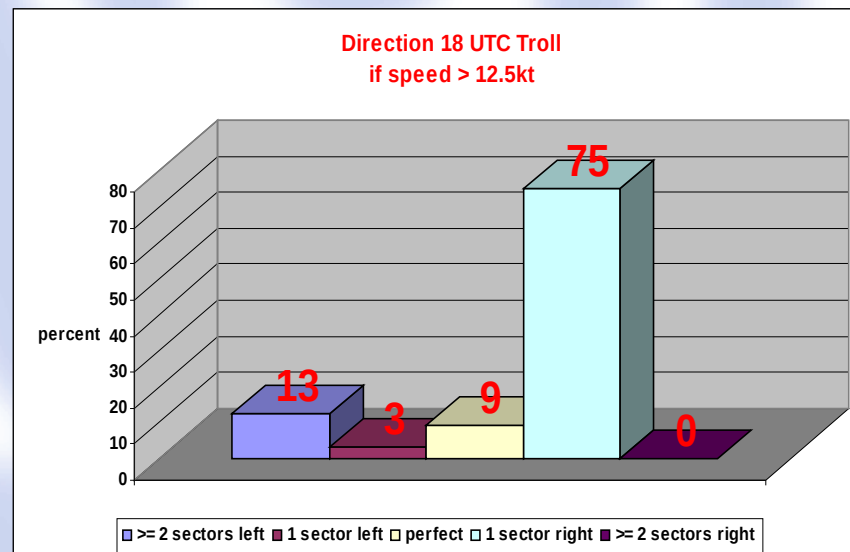
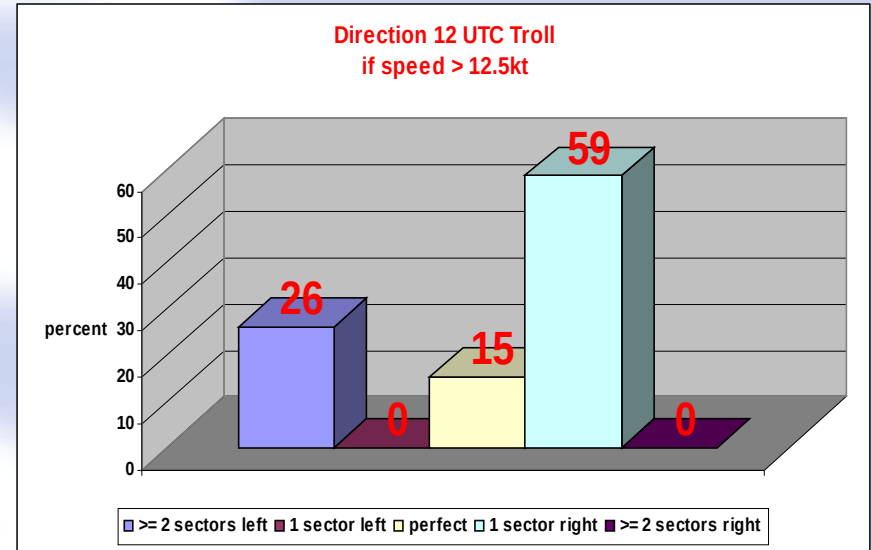
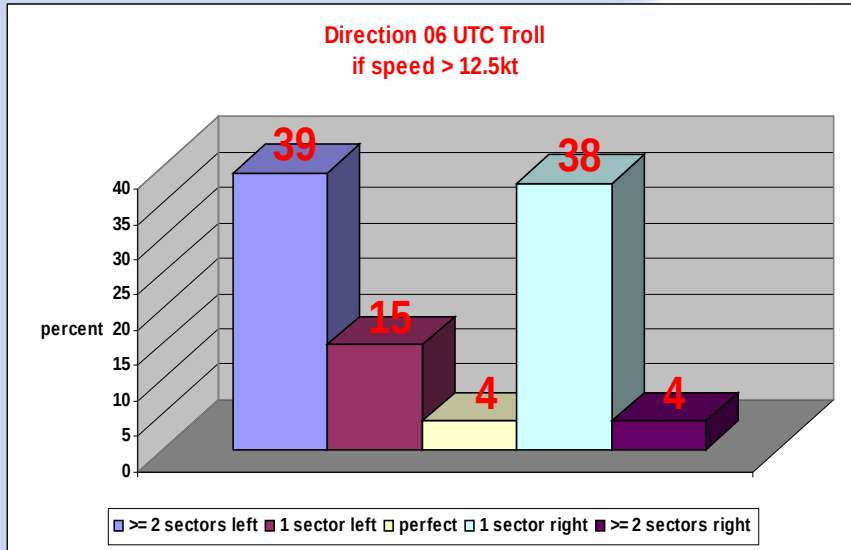


Direction 18 UTC Troll



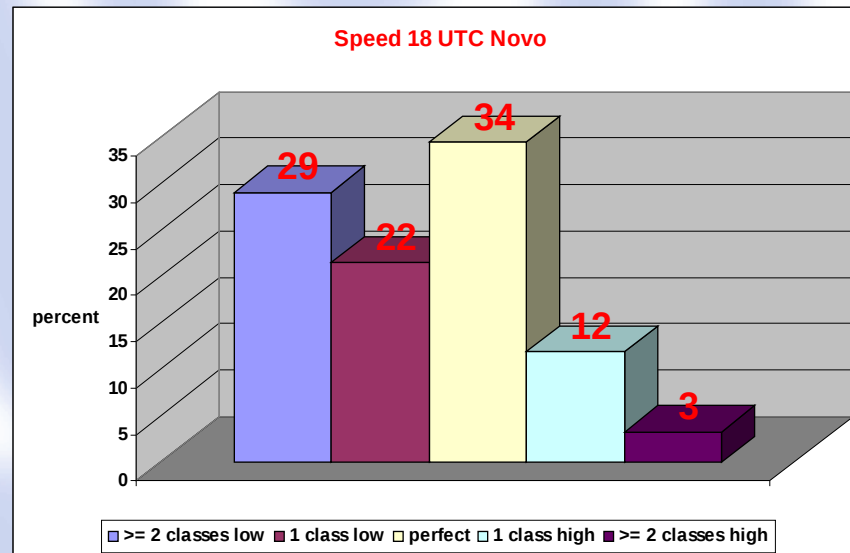
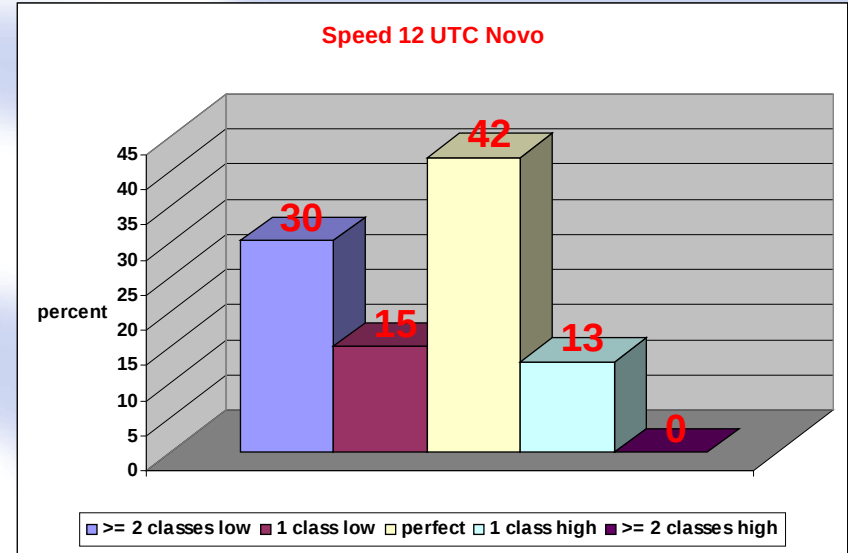
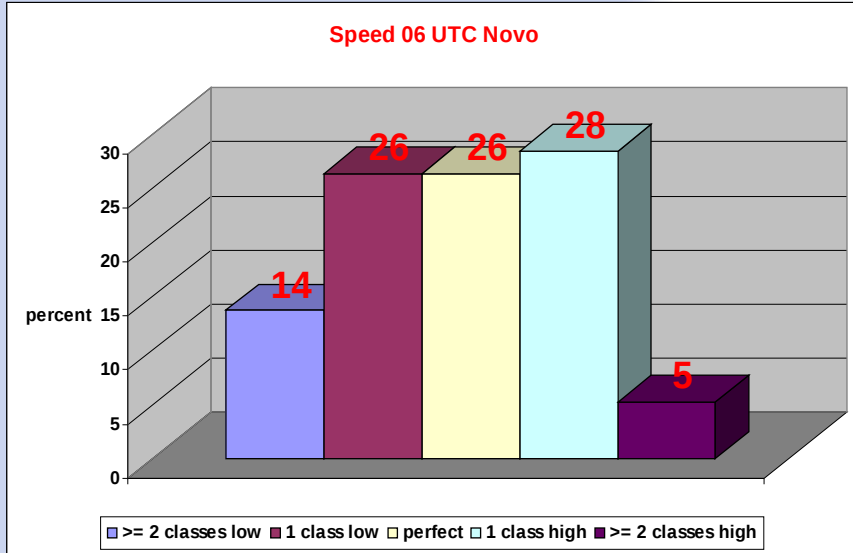
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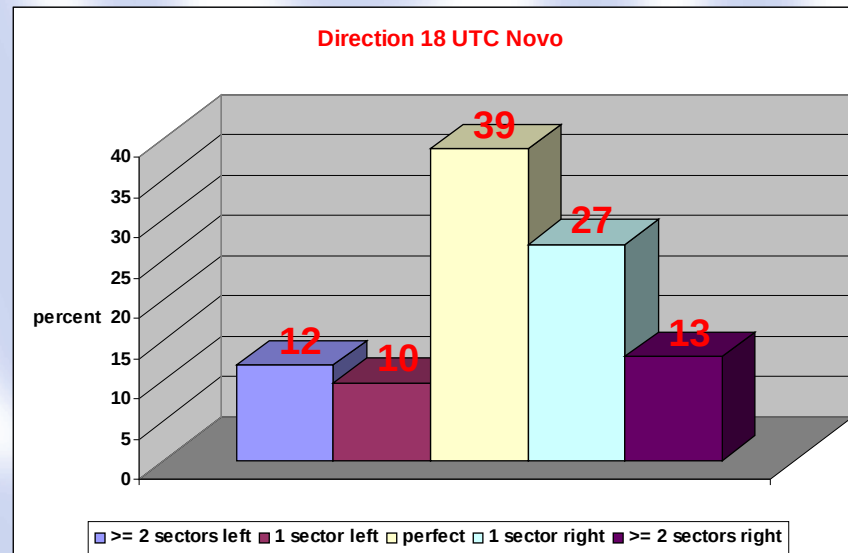
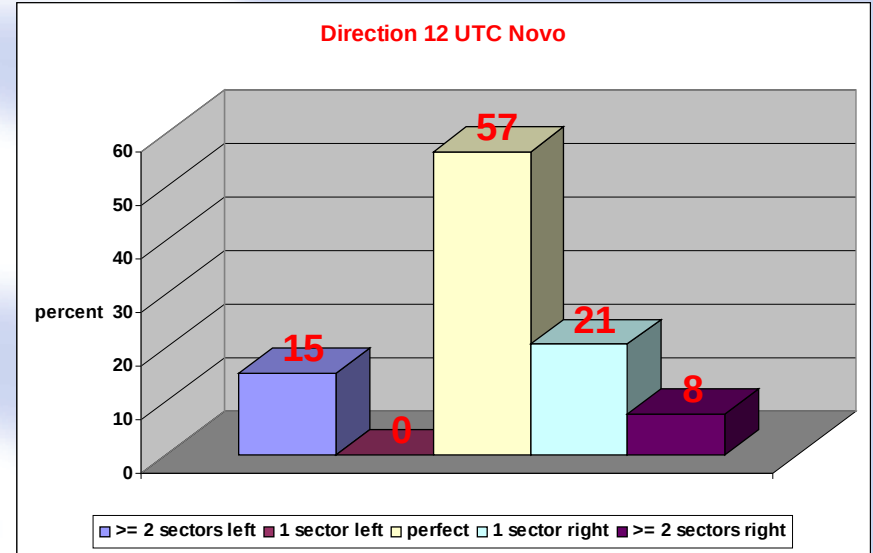
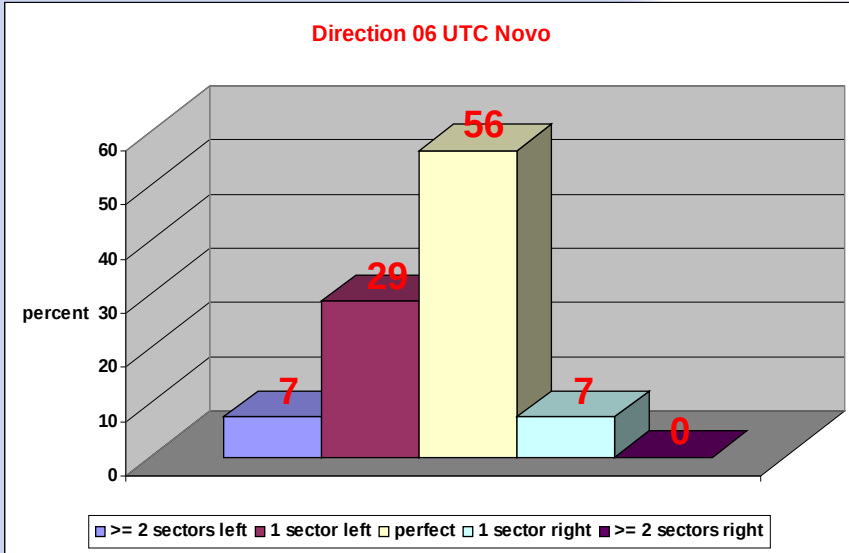
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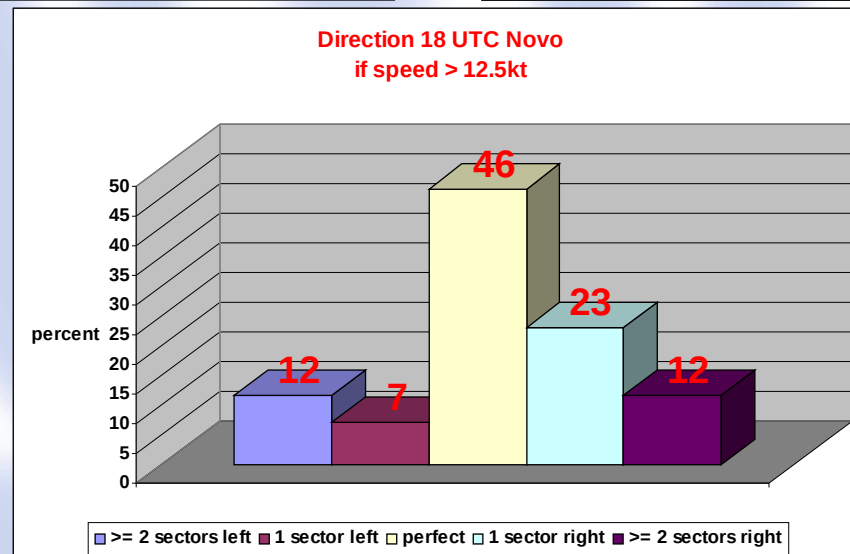
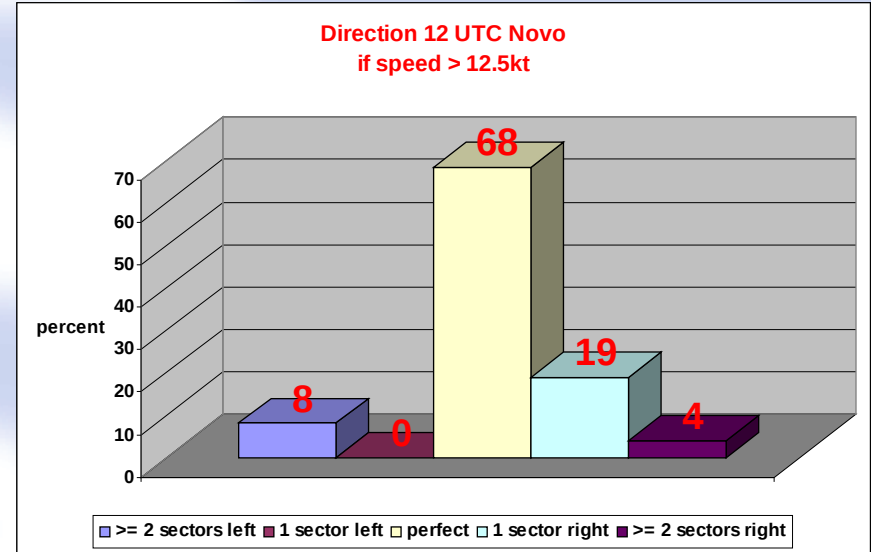
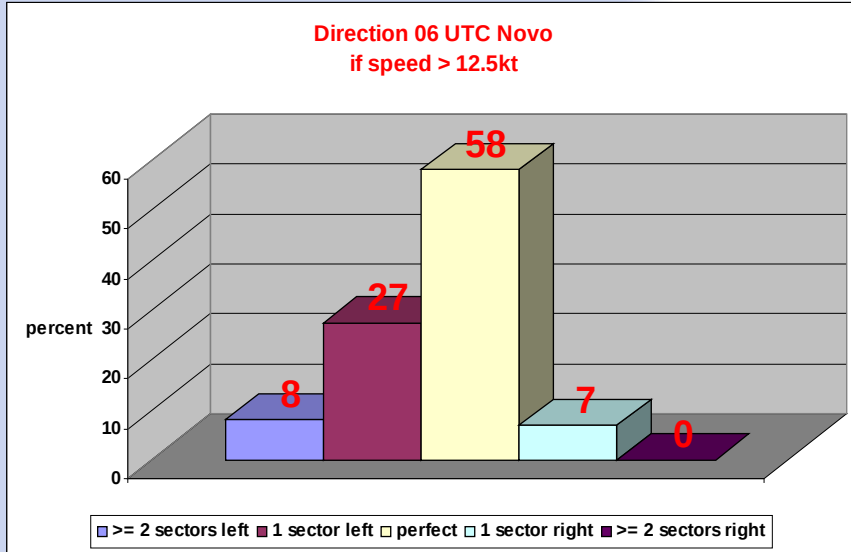
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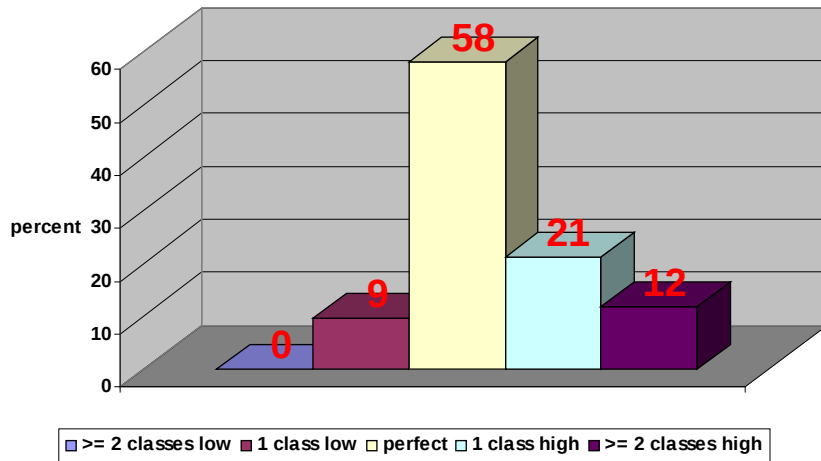
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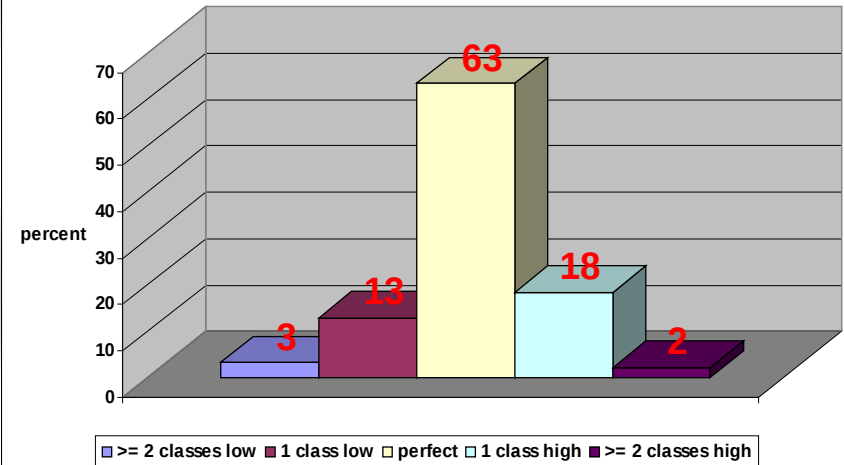
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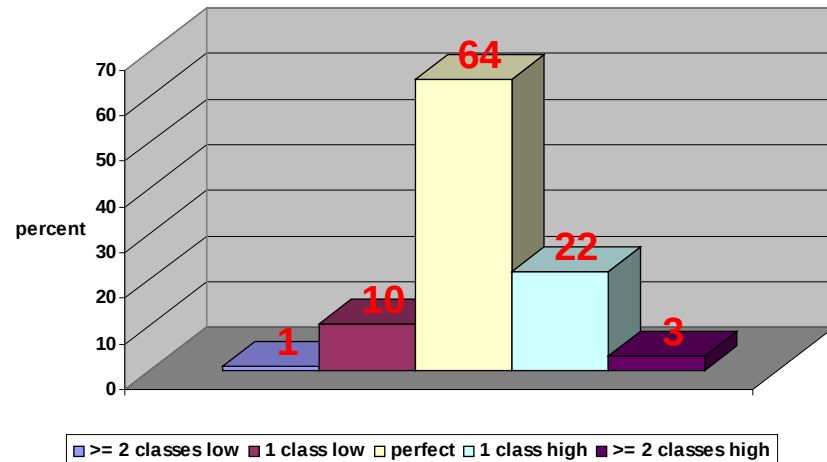
Speed 06UTC Neumayer



Speed 12 UTC Neumayer



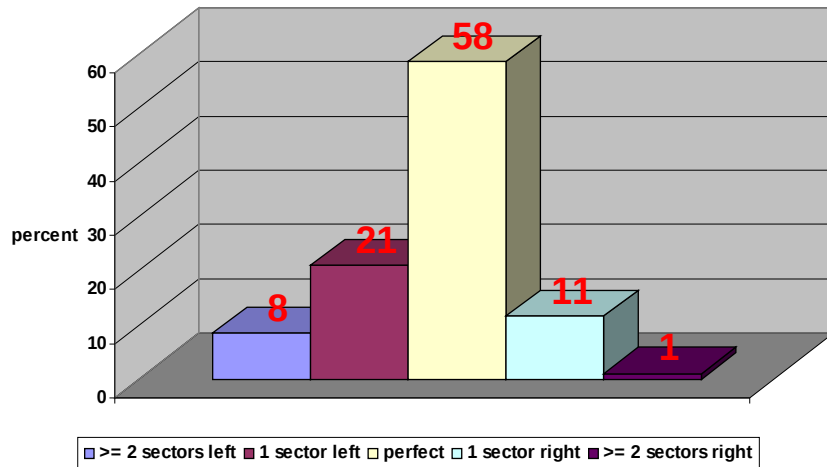
Speed 18 UTC Neumayer



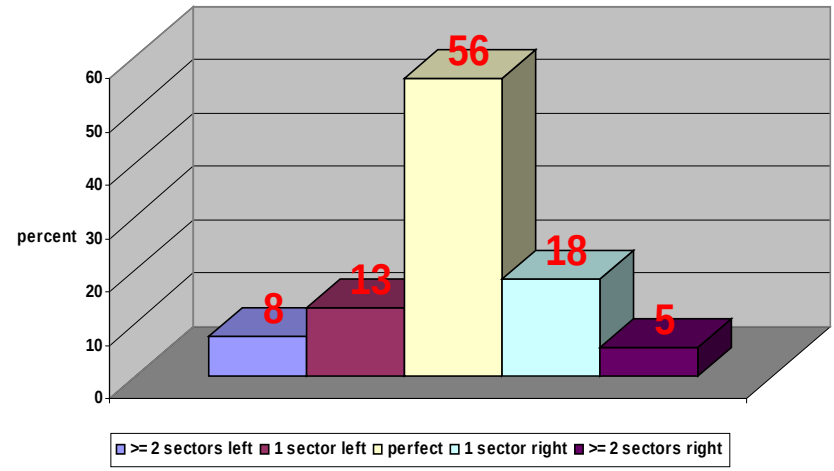
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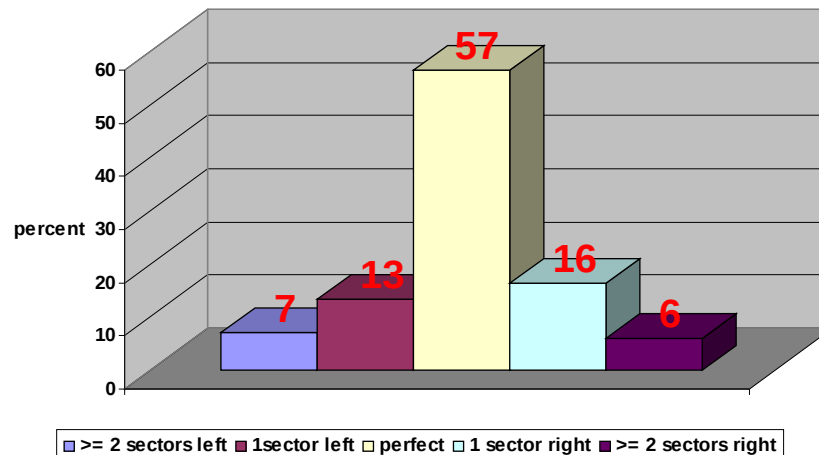
Direction 06 UTC Neumayer



Direction 12 UTC Neumayer



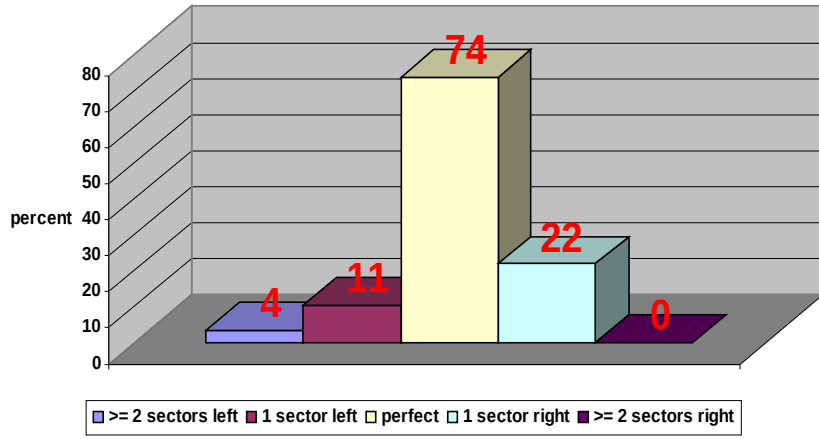
Direction 18 UTC Neumayer



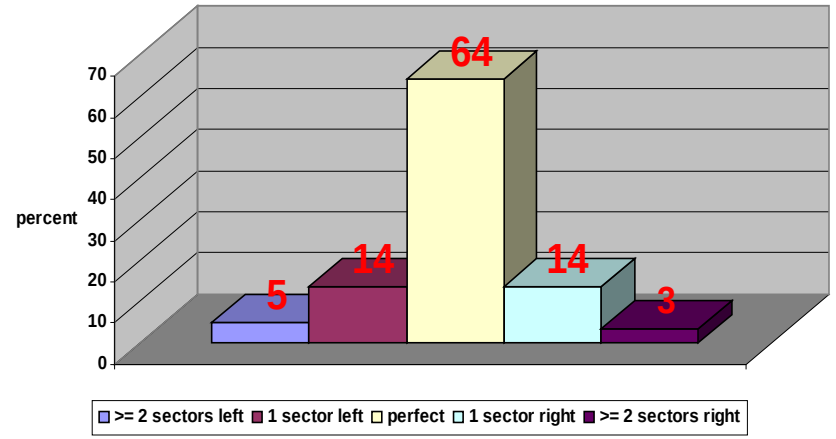
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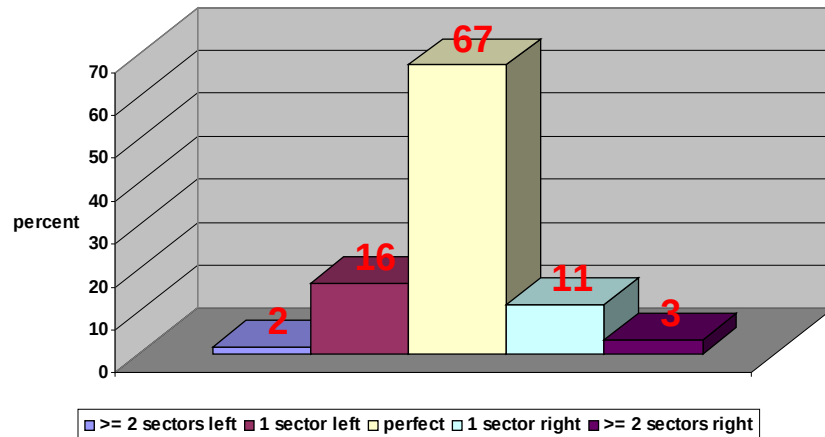
Direction 06 UTC Neumayer
if speed > 12.5kt



Direction 12 UTC Neumayer
if speed > 12.5kt



Direction 18 UTC Neumayer
if speed > 12.5kt



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.

Many thanks