

Proposal 13

Submitted by:

Eigil Kaas ek@dmi.dk

Danish Meteorological Institute

Lyngbyvej 100, DK-2100 Copenhagen Ø, Denmark

IPY research themes proposed by the Danish Meteorological Institute (DMI).

It is noted that all these themes comply with the main IPY themes including

Research (new knowledge)

Polar change

Improved understanding of polar processes

The proposed research themes deal with geophysical research themes only, but it is important to note, that all the themes have a direct and strong impact – and interacts – with other areas of research, including biological/ecological, political and social sciences. It will therefore be easy to integrate the research into somewhat larger interdisciplinary research themes.

It is generally suggested that the Danish activities within the proposed areas focus to the largest possible extent on Greenland. Thus, atmospheric measurement components (including those in the upper atmosphere) should be performed at the existing Greenland stations (lidar, ozone, radar, etc).

For most of the suggested research the main focus is naturally on Greenland and the Arctic region, but some themes are also directly related to the Antarctic region.

It is noted that the list is in non-prioritised order.

Stratospheric water vapour and Polar Stratospheric Clouds

The stratosphere has an important influence on life conditions in the arctic,

and is an active player in the climate system. Several new investigations have suggested that the water vapour concentrations in the stratosphere are increasing. This leads to a considerable increase in the overall greenhouse effect and in connection with low polar night temperatures it enhances the likelihood for the formation of polar stratospheric clouds (PSC).

PSC are very important in connection with ozone depletion and subsequent

enhanced UV-radiation at ground level. Furthermore, it has been speculated that a strong increase in the amount of PSC could increase the overall greenhouse effect. Therefore observations and modelling of stratospheric

water vapour and PSC should be part of the programme. This should be complemented by measurements of ozone and UV radiation from e.g. the Greenland stations.