

Proposal 10

Submitted by:

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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.

Climate / Earth System Modelling

Development and improvements of advanced modules for Earth system models and simulations with such models should be an important element in IPY.

Such models can be used as a natural platform to force integration/ collaboration within the Danish (and other) activities in the IPY, since they are multidisciplinary per definition. In particular this regards development

of biome components, bio-geo-chemical components, ice-sheet components and atmospheric chemistry components.

Many arctic processes such as simulation of PSC formation and stratospheric

moistening cannot be simulated realistically in existing climate models and it is therefore proposed to put explicit emphasis on their parameterisation.

Furthermore, new and updated climate change scenario simulations with very high resolution should be part of the programme and they should be designed in a way which makes them optimal for use in e.g. biological, ecological and economic impact models. This activity has relationships to several of the other proposed research themes.