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Strategic Scientific Priorities for Antarctic Research of the Netherlands

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Working Paper submitted by the Netherlands

Summary

This paper represents the strategic scientific priorities for Antarctic research of the Netherlands. It is based on the four key scientific themes that are part of the Netherlands Polar Program.

Introduction

Decision 1 (2013) on the *Multi-Year Strategic Work Plan for the Antarctic Treaty Consultative Meeting* identifies, as a priority for the 37th Antarctic Treaty Consultative Meeting, sharing and discussing strategic science priorities and invites parties, experts and observers to provide information about their strategic science priorities. The Netherlands is an Antarctic Treaty Consultative Party and has committed itself to carrying out substantial scientific research on Antarctica. It carries out research under four key scientific themes that reflect current interests of our polar scientists and are relevant for our society as well as, in our view, the international community.

Recommendation

Antarctica and the Southern Ocean play a vital role in changes to the global climate and the environment. These changes have substantial physical, ecological, social and economic consequences. Polar research should be conducted to acquire fundamental knowledge about Antarctica and the polar ecosystems, and the effects of changes in Antarctica on the environment. The direction and characteristics of science driven polar research programs for Antarctica should, in our view, at least address the following four key scientific themes:

1. Ice, climate and sea level

- Modelling of the polar climate
- Observational research and remote sensing
- Ice cap models
- Palaeoclimatic reconstruction – participations in deep ice drilling
- Evolution and dynamics of the polar ice caps on geological timescales

2. Polar oceans

- Global change and the polar oceans
- Lack of iron and light for algal growth
- Uptake of CO₂, ocean acidification and methane emission

3. Polar ecosystems

- Effects of climate change on terrestrial ecosystems
- Relationship between biodiversity and functionality and the possible disruption of this
- Sea ice, polar food chains and plasticity of habitat use
- Influence of climate changes on migratory birds

4. Human sciences and changes in polar areas

- Effective protection of Antarctic values

- Consequences of exploration and exploitation of natural resources, including restoration of adverse environmental impacts
- The effective implementation of existing legal instruments of the Antarctic Treaty system

In addition to science-driven research, the Netherlands recognizes the need for specific policy-driven research to be funded by our polar program. For this purpose, we have identified several key words: fishing, nature, transport, tourism and the role of law in protecting fundamental values.

The research areas listed under the four key scientific themes are examples of research funded by the Netherlands Polar Program. They do not provide an exhaustive enumeration of research that could be conducted under these themes.

Antarctic research requires fieldwork, associated enabling facilities and logistics services, such as field stations, research vessels with icebreaking capacity, geophysical measurement platforms (e.g. satellites), etc. It is the policy of the Netherlands to realize most of its polar research through international consortia and by making optimal use of existing and (shared) facilities through international cooperation.