

ASPeCt

Antarctic Sea Ice Processes and Climate

<http://aspect.antarctica.gov.au/>



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Areas of contribution

Oceanic processes

Modelling and forecasting

Sea ice processes

Summary

A primary objective of SCAR's expert group Antarctic Sea ice Processes and Climate (ASPeCt: <http://aspect.antarctica.gov.au/>) is to establish the distribution of the basic physical properties of sea ice that are important to air-sea interaction and to biological processes within the Antarctic sea-ice zone. To achieve this goal, ASPeCt has established a data-acquisition strategy of maintaining an ongoing system of quantified shipboard observations that provides statistical descriptions of sea ice and snow thickness distributions. These observations of in-situ ice characteristics, made year after year, largely during the southern spring, summer and autumn, are crucial for monitoring and understanding the maritime climate system as well as for providing verification of satellite products and model output. These observations are directly relevant to the YOPP objectives outlined in the YOPP Implementation Plan. Therefore, ASPeCt proposes to contribute its acquisition strategy and the sea-ice data so acquired, to the YOPP effort to be used, for example, for model verification and improved representation of sea ice in models.

Description

ASPeCt has developed a standard ice-observation protocol for sea-ice observations made aboard ships in the Antarctic pack ice. This observation protocol provides a standardised and quantifiable method for observing sea ice that is now accepted as the international standard. Hence, ships entering the Antarctic pack-ice zone at any time of year are encouraged to record sea-ice observations (preferably using the ASPeCt digital acquisition tool IceBox (<https://data.aad.gov.au/aspect/download/>)) and send them to the Australian Antarctic Data Centre (AADC) located in Kingston, Australia. Importantly, the results from these observations can be analysed using computer software (data.aad.gov.au/aspect) that produces distributions of sea-ice properties and thickness comparable to the output of numerical models, and therefore provides a much higher detailed data set for comparison with model predictions of these parameters than is currently available from satellite products.

ASPeCt proposes to use its ice-observation protocol and analysis software (IceBox) to meet the YOPP objectives directly and indirectly. ASPeCt operation of its ice-observation protocol creation is a field programme aimed at improving our understanding of sea-ice processes, and the eventual dataset created may be used to develop improved representation of sea-ice processes in predictive models.

How will ASPeCt do this?

Normally, the ASPeCt observation protocol is used each year on research and logistical cruises representing a number of different national programmes. The contributing nations are mainly – USA, Australia, Germany, New Zealand, South Africa, UK and China. ASPeCt will continue to receive and process data from these cruises. ASPeCt will also invite other groups that are not represented here (Argentina, Brasil, etc.) to use its observation protocol in support of the YOPP objectives. Collection of new observations will focus on October 2018 – February 2019. This time frame falls directly within the YOPP Southern Hemisphere Special Observing Period.

Outcome

The data contributed will form part of the ASPeCt database stored at the AADC which is currently easily accessed publicly at <https://data.aad.gov.au/aspect/cruises/>. However, ASPeCt will also make the data directly available to the YOPP Data Portal.

Timeline

2018-10-01 - 2019-02-28

User relevant aspects

We plan to place the data and analysis in the ASPeCt database, currently archived at the Australian Antarctic Division. We also plan to place the data and analysis in the YOPP Data Portal. They will be publicly available in both places.

Regional emphasis

Northern hemisphere: No

Southern hemisphere: Yes

Key project deliverables

Expected ASPeCt observations are:

Sea ice: Sea-ice type, sea-ice thickness and sea-ice concentration along the cruise track.

Snow: Snow depth

The IceBox analytical tool produces:

Total sea-ice concentration, Average level of ice thickness, Averaged ridged ice thickness and percentage of ice with snow cover. Averages may be at the monthly level. Percentage distribution of different ice types are also obtainable from IceBox.

Data management

The primary data archive will be at the Australian Antarctic Division.

Is data provided to WMO Global Telecommunication System

Yes

Real-time provision

Data are available in real time.

Other information

With respect to timeline - The exact timing of the cruises involved is not known at this time of the project submission. These will become available when the season begins, closer to October 2018.

With respect to funding - Each national programme referred to in the project description is funded differently. The use of the ASPeCt data-acquisition protocol and software is voluntary.