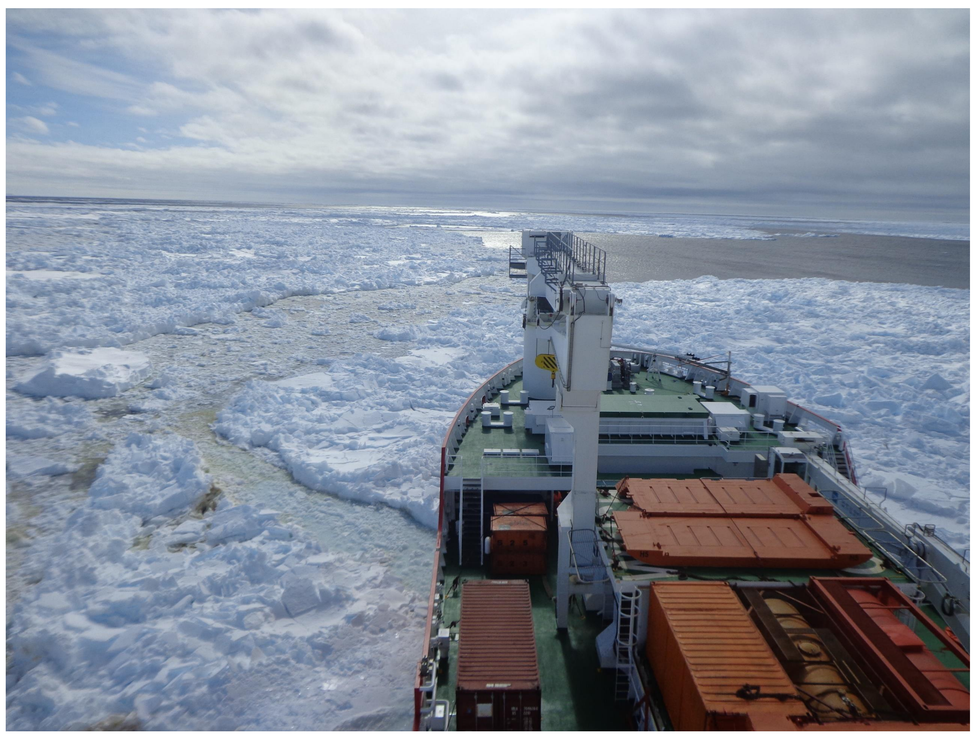
ANTLOAD

Variation of Antarctic sea ice thickness and its effect on the load level of ice navigating

ANTLOAD is a project funded by the Academy of Finland. The project was launched on 1 Jan 2013 and it last till 31 Dec 2016. The aim of the project is to develop a multidisciplinary approach to analyse the effects of ice thickness variation and shipping activities on ice covered waters. The crucial topics are the determination of ice concentration and ice thickness and linking of these on the ice induced loads and vibrations onboard ships.

The consortium consists of geophysical researchers (FMI and collaborators) and marine traffic and mechanical researchers (AALTO and collaborators). The shipborne measurements are conducted on board the Antarctic supply and research vessel S.A. Agulhas II owned by the South African Department of Environmental Affairs during the annual expeditions. She was instrumented for ice load measurements within a Tekes project (NB1369 PSRV full scale ice trial) while she was under construction in Rauma, Finland.



The objectives of the multidisciplinary approach are:
1) Extend the Antarctic sea ice thickness data pool by shipborne measurements and to develop altimetry methods to classify ice cover with respect to navigational difficulty
2) Develop methods for retrieving thickness variation from the ship speed records
3) Implement a high-resolution sea ice – ocean model with an enhanced thickness description and study the effect of ice dynamics to the observed variation and trends of Antarctic ice thickness
4) Link stochastic properties of ice loads with ice conditions
5) Analysis of the effect of changing ice load level on the vibration level and comfort onboard ice-going ships

Combining the project results with earlier work it is expected that an universal approach applicable to all ice-covered sea areas can be developed.

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