

Oden Arctic Technology Research Cruise (OATRC 2015) - Meteorological, Oceanographic and Ship Data Collected Onboard Icebreaker Oden during 18 September to 1 October 2015

SND-ID: ecds0208-1. **Version:** 1.0. **DOI:** <https://doi.org/10.5879/ecds/2016-07-07.2/1>

Is part of collection at SND: [Icebreaker Oden](#)

This data description and associated data have been migrated from the ECDS portal to SND's research data catalogue. The level of documentation may therefore differ from other data descriptions in the catalogue. For more information about the migration of data from ECDS to SND click [here](#).

Download data

ECDS 0208-001 oatrc2015.zip (8.15 MB)

Citation

(2017) Oden Arctic Technology Research Cruise (OATRC 2015) - Meteorological, Oceanographic and Ship Data Collected Onboard Icebreaker Oden during 18 September to 1 October 2015 (Version 1.0) [Data set]. Swedish Polar Research Secretariat. Available at: <https://doi.org/10.5879/ecds/2016-07-07.2/1>

Creator/Principal investigator(s)

Swedish Polar Research Secretariat

Research principal

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Description

In September 2015, the research expedition Oden Arctic Technology Research Cruise (OATRC 2015) was carried out in the Arctic Ocean north of Svalbard with the Swedish icebreakers Oden and Frej.

The expedition was carried out by the Norwegian University of Science and Technology (NTNU) in collaboration with the Swedish Polar Research Secretariat. Two similar expeditions was carried out in 2012 and 2013.

OATRC 2015 was a project associated with Sustainable Arctic Marine and Coastal Technology (SAMCoT), which is a centre for research-based innovation, initiated by the Research Council of Norway and hosted by NTNU.

The main scientific scope of the research expedition was:

Collection of full-scale data necessary to build, calibrate and validate models for floaters in ice.

Collection of full-scale data necessary to build, calibrate and validate models for Ice Management operations.

Collection of data relevant for health, safety and environmental research.

Investigation of exposure to whole body vibration for icebreaker crew.

Whole body vibration denotes that the entire body is exposed to vibrations. Studies show that the risk for pain in the lower back is doubled when people are exposed to whole body vibrations.

Few investigations have been conducted regarding exposure to whole body vibration for icebreaker crews. Previous studies have focused on other types of vessels, not icebreakers. The main purpose of the study was to measure level of exposure to whole body vibrations for icebreaker crew during Arctic icebreaking conditions. The levels of exposure will be compared to levels of acceptance as published by the Swedish Work Environment Authority and international standards.

Depending on the results of the measurements, researchers may also investigate whether problems with the lower back are more common among icebreaker crews.

The project was a test of the ability to use an ice radar to make continuous measurements of sea ice thickness from the icebreaker Oden. Different antenna types and different frequency ranges was tested and the software was adapted for use on a ship. An intermediate goal was to be able to read the measurements in real-time. The radar system has previously been used for snow and ice measurements in Antarctica and in Swedish fells.

The researchers used CTD (Conductivity, Temperature, Depth), an oceanography instrument used to determine the salinity, temperature, and depth of the ocean, to quantify the water masses in a transect going from the shallow shelf out into deeper waters and through the ice front.

Water samples was also collected to answer these questions:

Can the differences in phytoplankton and bacterial communities found in a transect towards the ice front be explained by changes in physical/hydrographical factors?

Does the ice and its microflora , direct or indirect, influence the plankton communities through shading or seeding the water with organisms and organic matter?

The data will add to other chemical, biological, and physical data to give a better understanding of the biological functions at the ice edges, which are important for understanding of production, biodiversity and carbon circulation in Arctic waters.

The researchers retrieved SAR data from Sentinel-1 and a number of other satellites during the expedition. The images was processed in near-real-time to create products of ice drift and ice convergence/divergence.

This data set contains meteorological, oceanographic and ship data collected during the expedition Oden Arctic Technology Research Cruise 2015 (OATRC 2015), which was an international research cruise using the icebreaker Oden in the Arctic Ocean.

Data includes meteorological variables: Air temperature, Humidity, Wind direction/speed, Atmospheric pressure, Cloud height/cloudiness, Photosynthetic Active Radiation (PAR).

Oceanographic variables: Sea water temperature, Conductivity, Salinity and Sound velocity.

Ship data: Position, Speed, Course, Water depth.

Further metadata on instrumentation and the individual variables can be found in the info file.

Graphics and files describing the route are included in the package.

Quality Information:

Obviously erroneous data (e.g. negative air pressure) have been omitted. No other processing or quality check of the data has been undertaken. Users should be aware of this in further data handling and analysis.

Data contains personal data

No

Language

[English](#)

Time period(s) investigated

2015-09-18 – 2015-10-01

Data format / data structure

[Numeric](#)

[Geospatial](#)

Data collection 1

- Mode of collection: Physical measurements and tests
- Time period(s) for data collection: 2015-09-18 – 2015-10-01

Geographic spread

Geographic location: [Arctic Ocean](#)

Geographic description: North of Svalbard

Research area

[Engineering and technology](#) (Standard för svensk indelning av forskningsämnen 2011)

[Environmental sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Meteorology and atmospheric sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Oceanography, hydrology and water resources](#) (Standard för svensk indelning av forskningsämnen 2011)

[Climatology / meteorology / atmosphere](#) (INSPIRE topic categories)

[Oceans](#) (INSPIRE topic categories)

[Environment](#) (INSPIRE topic categories)

Keywords

[Back pain](#), [Industrial injuries](#), [Meteorology](#), [Atmosphere](#), [Atmospheric winds](#), [Atmospheric temperature](#), [Air temperature](#), [Atmospheric water vapor](#), [Humidity](#), [Clouds](#), [Atmospheric pressure](#), [Surface pressure](#), [Oceans](#), [Salinity](#), [Density](#), [Photosynthetically active radiation](#), [Ocean temperature](#), [Water temperature](#), [Water depth](#), [Seafloor topography](#), [Bathymetry](#), [Surface winds](#), [Biosphere](#), [Vegetation](#), [Conductivity](#), [The icebreaker oden](#)

Publications

Link to publication list:

[Publications and data](#)

If you have published anything based on these data, [please notify us](#) with a reference to your publication(s). If you are responsible for the catalogue entry, you can update the metadata/data description in DORIS.

Polygon (Lon/Lat)

-0.35, 82.6

-0.35, 76

36.2, 76

36.2, 82.6

-0.35, 82.6

Accessibility level

Access to data through SND

Data are freely accessible

Use of data

[Things to consider when using data shared through SND](#)

License

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Versions

Version 1.0. 2017-06-28

Homepage

[Study homepage](#)

Is part of collection at SND

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[DDI 3.3](#)

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Published: 2017-06-28

Last updated: 2022-12-05