Seasonal Ice Mass Balance Buoy (SIMB) on Meereisportal.de

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Description of autonomous platform

Seasonal Ice Mass Balance (SIMB) buoys measure temperature and thermal conductivity through air, snow, sea ice and seawater in seasonal sea ice. The main component is a thermistor string of 3.85 m length with 192 embedded thermistors. The SIMP also measures air and water temperature, barometric pressure and snow depth evolution. All data plus GPS position are transmitted via Iridium.

Property name	Property value
Manufacturer	Cryosphere Innovation, New Hampshire, USA
Manufacturer name	SIMB3
Data provider	Cryosphere Innovation, New Hampshire, USA
Weight	approx. 35 kg
Deployment type	Installation on sea ice (into 23cm diameter hole)
Power supply	battery (life time >1 year)
Data transmission interval	1 hour (user defined)

Parameters and accuracy

Parameter	Sensor	Accuracy
Air temperature (°C)	DS18B20	±0.5 °C
Barometric pressure (hPa)	Bosch BME280	±0.01 hPa
Downward looking snow rangefinder	Maxbotix MB7374	±0.001 m
Upward looking underwater rangefinder	Airmar EchoRange+	±0.01 m
High resolution digital temperature chain	Bruncin 3.85m DTC	±0.25 °C
Position (from GPS)	MTK3339 GPS	± 3 m

Data Processing

The data set has been processed and contains quality flags for different kinds for erroneous data. Flag values are the sum of individual error codes. The value of 0 refers to no error.

Quality flag, position: The geographic position is flagged +1 if the drift velocity, as derived from the GPS longitude and latitude, exceeds a threshold of 10 deg latitude or 50 deg longitude per time step; +2 if the position exceeds extreme values, such as longitude > 360 deg; +4 if the position is exactly 0.0.

How to cite

1. The reference for the (data portal of) Meereisportal.de is:

Grosfeld, K.; Treffeisen, R.; Asseng, J.; Bartsch, A.; Bräuer, B.; Fritzsch, B.; Gerdes, R.; Hendricks, S.; Hiller, W.; Heygster, G.; Krumpen, T.; Lemke, P.; Melsheimer, C.; Nicolaus, M.; Ricker, R. and Weigelt, M. (2016), Online sea-ice knowledge and data platform <www.meereisportal.de>, Polarforschung, Bremerhaven, Alfred Wegener Institute for Polar and Marine Research & German Society of Polar Research, 85 (2), 143-155, doi:10.2312/polfor.2016.011.

2. Please include the following phrase into the acknowledgment, substituting PARAMETER and DATE according to your usage:

Autonomous sea ice measurements (PARAMETER) from DATE to DATE were obtained from https://www.meereisportal.de (grant: REKLIM-2013-04).

3. Buoy data is archived at PANGAEA, a Data Publisher for Earth & Environmental Science, after the buoy has stopped sending data. Please refer to the buoys DOI.