



**Calhoun: The NPS Institutional Archive**  
**DSpace Repository**

---

Faculty and Researchers

Faculty and Researchers' Publications

---

1998

**Surface Heat Budget of the Arctic Ocean  
(SHEBA) 1997-1998**

Stanton, Timothy P.

---

<http://hdl.handle.net/10945/41616>

---

*Downloaded from NPS Archive: Calhoun*



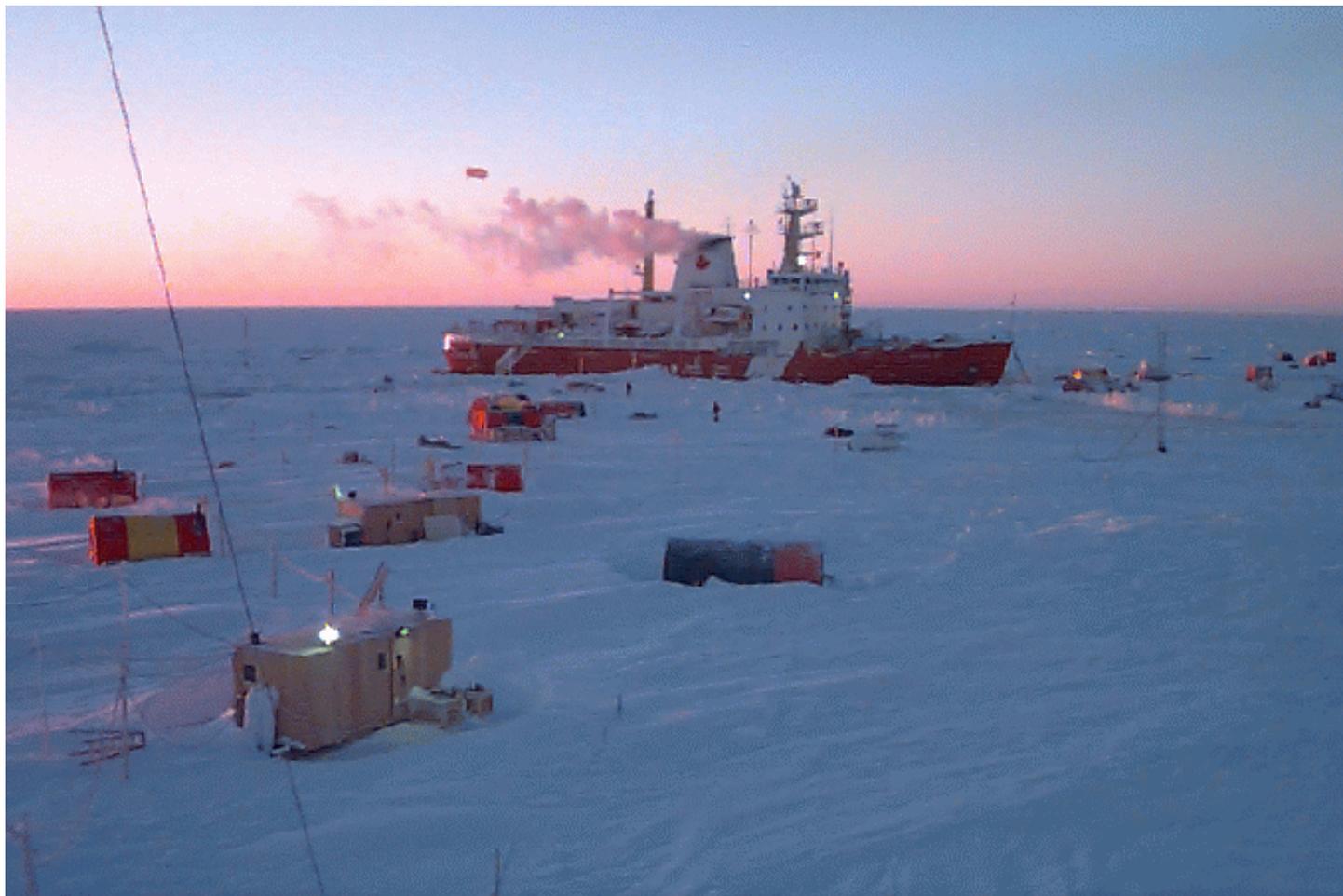
Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

**Dudley Knox Library / Naval Postgraduate School**  
**411 Dyer Road / 1 University Circle**  
**Monterey, California USA 93943**

<http://www.nps.edu/library>

# Surface Heat Budget of the Arctic Ocean (SHEBA) 1997-1998

The Des Groseilliers and SHEBA ice camp, Nov. 97



## SHEBA Continuous Ocean Flux Measurement

The Surface Heat Budget of the Arctic Ocean ([SHEBA](#)) program is a coordinated program to address the interaction of the atmosphere, clouds, ice cover and upper ocean in determining the energy balance in the Arctic. A year-long ice camp has been established in the Arctic Ocean in October 1997 to allow a range of observation systems to be deployed to address these issues.

Our participation in the SHEBA program uses a thermal microstructure package attached to an automated CTD profiler to determine vertical heat fluxes in the ocean mixed layer and upper pycnocline.

A new dual micro thermistor instrument package and automated computer data acquisition system was successfully deployed on 12 October and continues to produce high quality thermal structure dissipation rates and very high resolution thermal gradients from which vertical heat fluxes are being determined. This project is being executed in collaboration with Miles McPhee, Jamie Morison and Doug Martinson.

## SHEBA Ocean Flux Intensive Observation Period

During March 1998 a study of km-scale variations in ocean mixed heat fluxes was made in collaboration with Miles McPhee. While ocean mixed layer fluxes generally represent horizontal means over 100-1000m scales, this study focused on local anomalies in mixed layer fluxes caused by ice keels left by ice deformation events. A new self-contained momentum, heat and salt flux measurement instrument was deployed at a site 2km from the main ice camp near a small ice rubble ridge for a 7 day period which spanned a strong wind storm with winds exceeding 40 knots. Simultaneous measurements of the sub-ice topography were made with a rotating side scan sonar and a unique precision scanned altimeter deployed under the ice. The local ocean fluxes were compared with those measured at the main ice camp. While two hour mean fluxes typically agreed to within 10% at the two locations, up to a 3 fold increase was seen during measurements 100m downstream from the large, new ice ridge seen in the photograph below.

### Snowmobile garage ice levitation, Ocean Flux IOP, March 98



Last Reviewed: February 2003

[stanton@nps.edu](mailto:stanton@nps.edu)

[Disclaimer](#)

[Privacy and Security Notice](#)

[Disclaimer for External Links](#)

*Material contained herein is made available for the purpose of peer review and discussion and does not necessarily reflect the views of the Department of the Navy or the Department of Defense.*