

High-quality surface meteorological and oceanographic observations from research vessels to support flux applications

Shawn R. Smith¹, Mark A. Bourassa^{1,2}, Jeremy Rolph¹, and Kristen Briggs¹

¹Center for Ocean-Atmospheric Prediction Studies, The Florida State University,
Tallahassee, FL 32306-2840, USA

²Department of Meteorology, The Florida State University, Tallahassee, FL 32306-
2840, USA

Shipboard observations of bulk meteorological parameters provide a key source of in-situ turbulent flux measurements in the Southern Ocean. Since 2005, the Shipboard Automated Meteorological and Oceanographic System (SAMOS) initiative has been collecting, quality controlling, and distributing underway bulk meteorological parameters collected on research vessels. Observations are routinely collected in the Southern Ocean from the U.S. operated *Nathaniel Palmer* and *Lawrence M. Gould* and the Australian operated *Southern Surveyor*. Additional Southern Ocean data are available for select cruises from other research vessels. The authors will present the status of SAMOS data collection in the Southern Ocean and seek input from workshop attendees on priorities for expanding underway sampling in the Southern Ocean. Issues include ensuring routine access to SAMOS observations from international research vessels, recommending key sensors to deploy on vessels operating in the Southern Ocean, and the development, testing, and deployment of direct flux sensors on vessels.

A SAMOS is a computerized data logging system that continuously records navigational (ship's position, course, speed, and heading), meteorological (winds, air temperature, pressure, moisture, rainfall, and radiation), and near-surface oceanographic (sea temperature, salinity, conductivity, fluorescence) parameters while the vessel is at sea. The SAMOS initiative relies on the high-quality instrumentation purchased and deployed by the research vessel operators and does not provide instrumentation to the vessels. Currently, the SAMOS initiative receives measurements recorded at 1-min intervals and derived from higher frequency samples (on the order of 1 Hz). The data management system automatically tracks progress of the daily data acquisition and quality processing, stores metadata on instrumentation and ships, and provides the capability to monitor data flow and quality via a user-friendly web interface. An SQL database stores essential parameters to support tracking, data quality control, and version control for each file throughout the process. SAMOS data are available via web, ftp, and THREDDS data services.

The SAMOS initiative anticipates recruiting additional research vessels from the University National Oceanographic Laboratory System (UNOLS) fleet over the next few years. The addition of international research vessels operating in the Southern Ocean is desired, but international partnerships and funding mechanisms are required.