

## **The SAMOS Initiative – A Decade of Successful Data Stewardship**

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The authors will describe the successes and lessons learned from the Shipboard Automated Meteorological and Oceanographic Systems (SAMOS) initiative. Over the past decade, SAMOS has acquired, quality controlled, and distributed underway surface meteorological and oceanographic observations from nearly 40 oceanographic research vessels. Research vessels provide underway observations at high-temporal frequency (1 min. sampling interval) that include navigational (position, course, heading, and speed), meteorological (air temperature, humidity, wind, surface pressure, radiation, rainfall), and oceanographic (surface sea temperature and salinity) samples. Vessels recruited to the SAMOS initiative collect a high concentration of data within the U.S. continental shelf, around Hawaii and the islands of the tropical Pacific, and frequently operate well outside routine shipping lanes, capturing observations in extreme ocean environments (Southern, Arctic, South Atlantic, and South Pacific oceans) desired by the air-sea exchange, modeling, and satellite remote sensing communities.

This presentation will highlight the data stewardship practices of the SAMOS initiative, focusing on efforts to homogenize underway meteorological and thermosalinograph data collected using varying instrumentation and data acquisition hardware on research vessels. The authors will focus on metadata collection, standard data formats, uniform quality evaluation procedures, use of interoperable vocabularies, and finally routine distribution and archival practices. We will describe lessons learned over the past decade regarding metadata requirements and will outline plans to upgrade the SAMOS netCDF format to meet modern climate and forecast standards. Our interactions with vessel operators will be described and we will provide examples of best practices for instrument siting/exposure on research vessels and professional development activities for research vessel technicians. Finally, we will report on recent efforts to subset the SAMOS data archive for inclusion into the International Comprehensive Ocean Atmosphere Data Set (ICOADS). For ICOADS, the SAMOS team has applied the SAMOS quality control flags and used the metadata collected to ensure the highest quality SAMOS records are submitted to ICOADS.

### **Oral**

- **Data homogenization (benchmarking, bias adjustments, step change analysis, metadata)**