Instrument Comparisons and Standardization of Observations

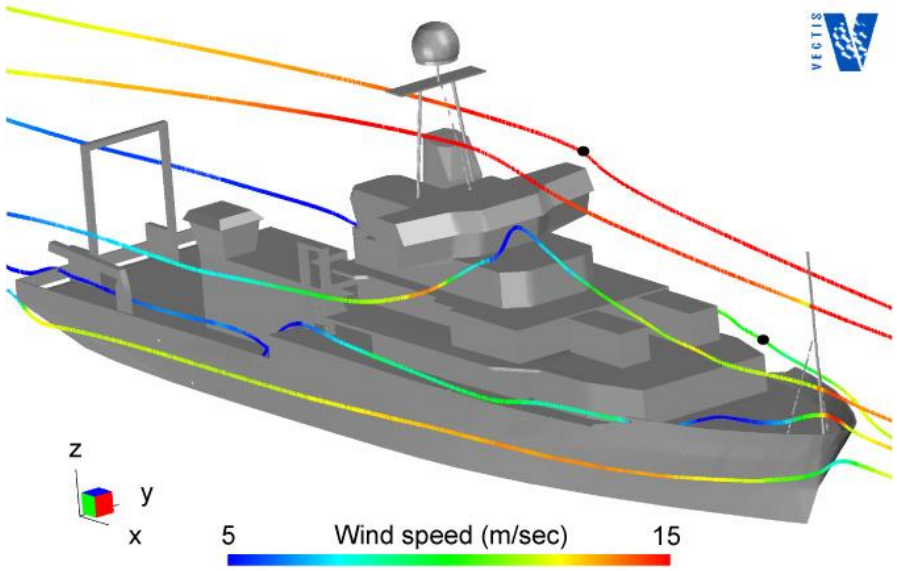
- Platforms
  - Buoy, Ship, Aircraft, Island
- Intercomparison Variables
  - Near-surface meteorology
  - Radiative fluxes
  - Radar reflectivity
- Strategy
  - Coordinate sensor methods where possible
  - Direct, side-by-side comparisons periods
  - Pre-experiment scheduling/agreement
  - Pre-/Post-experiment calibration analysis

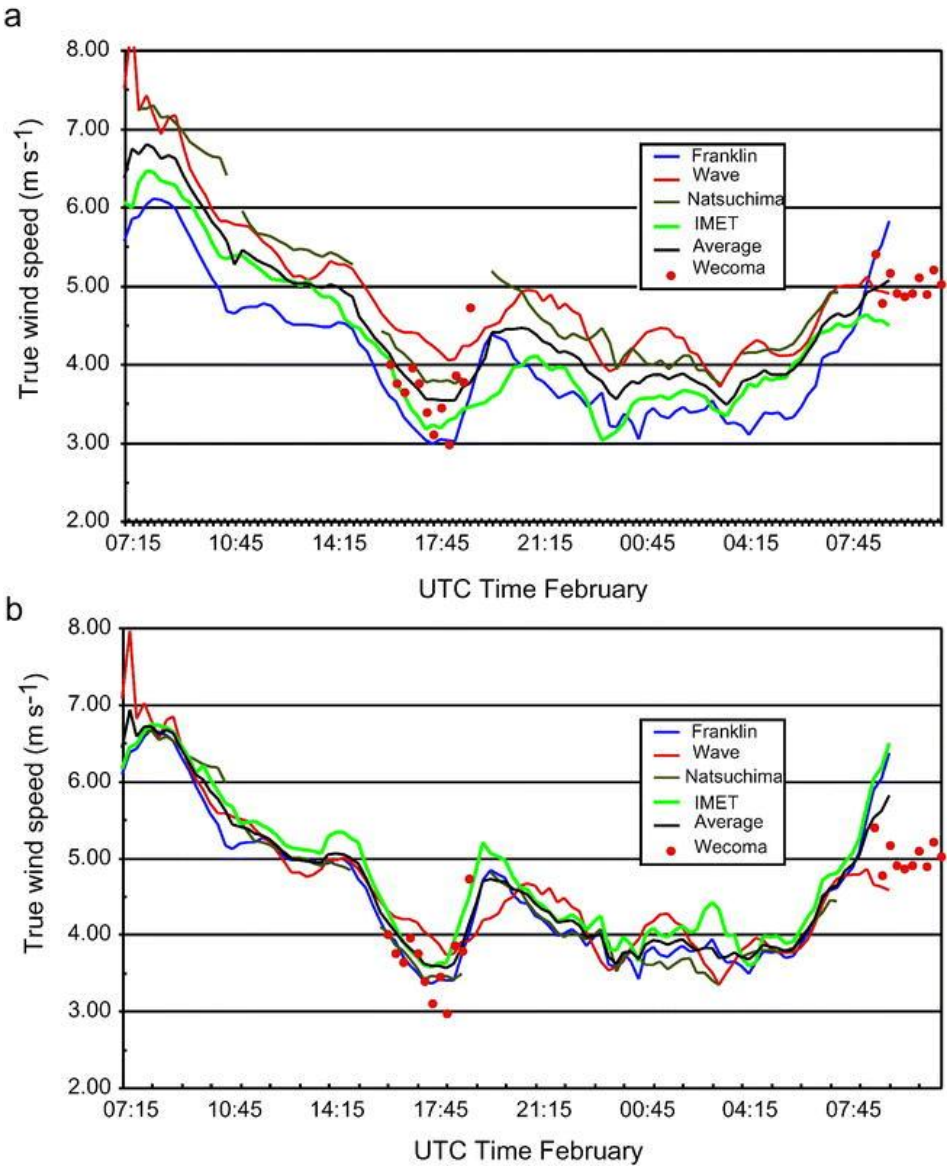
Example: Near Surface

Table 1: Accuracy, precision and random error targets for SAMOS.

Parameter	Accuracy of Mean (bias)	Data Precision	Random Error (uncertainty)
Latitude and Longitude	0.001°	0.001°	
Heading	2°	0.1°	
Course over ground	2°	0.1°	
Speed over ground	Larger of 2% or 0.2 m/s	0.1 m/s	Greater of 10% or 0.5 m/s
Speed over water	Larger of 2% or 0.2 m/s	0.1 m/s	Greater of 10% or 0.5 m/s
Wind direction	3°	1°	
Wind speed	Larger of 2% or 0.2 m/s	0.1 m/s	Greater of 10% or 0.5 m/s
Atmospheric Pressure	0.1 hPa (mb)	0.01 hPa (mb)	
Air Temperature	0.2°C	0.05°C	
Dewpoint Temperature	0.2°C	0.1°C	
Wet-bulb Temperature	0.2°C	0.1°C	
Relative Humidity	2%	0.5 %	
Specific Humidity	0.3 g/kg	0.1 g/kg	
Precipitation	~0.4 mm/day	0.25 mm	
Radiation (SW in, LW in)	5 W/m^2	1 W/m^2	
Near surface:			
Sea Temperature	0.1°C	0.05°C	
Salinity	0.1 psu	0.05 psu	
Current	0.1 m/s	0.05 m/s	

Example: TOGA COARE Wind comparisons





NOAA ftp Site Material

ftp://ftp1.esrl.noaa.gov/users/cfairall/DYNAMO/

- Fairall, C. W., O.P.G. Persson, R. E. Payne, and E. F. Bradley, 1998: A new look at calibration and use of Eppley precision infrared radiometers. *J. Atmos. Oceanic Tech.*, **15**, 1230-1243.
- Burns, Sean P. and 13 coauthors, 1999: Comparisons of aircraft, ship, and buoy meteorological measurements from TOGA COARE. *J. Geophys. Res.*, **104**, 30853-30884.
- Burns, Sean P. and 14 coauthors, 2000: Comparisons of aircraft, ship, and buoy radiation and SST measurements from TOGA COARE. *J. Geophys. Res.*, **105**, 15627-15652.
- **Bradley, F. & Fairall, C., (2007). *A Guide to Making Climate Quality Meteorological and Flux Measurements at Sea*. NOAA Technical Memorandum OAR PSD-311, NOAA/ESRL/PSD, Boulder, CO, 108 pp.**

Data Quality Assurance Working Group

- Representatives from relevant platforms and observations systems
- Quality assurance plan (chapter in ops plan)
- Design a strategy for intercomparions, pre- and post-exp calibrations

Thoughts

- Schedule 1-2 day overlap of Mirai, Revelle, etc
- Plan on low level pass by A/C near ships
- Forget about ship-island (use A/C as transfer)