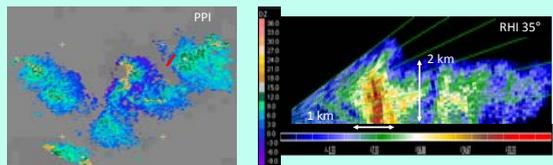


Doppler C-band scanning weather radar (5.6 GHz)



Composite of radar data at 1100 GMT on November 20, 2008. Upper left panel is PPI (planar scan around the ship) of radar scattering intensity as a function of horizontal range (0-60 km). Upper right panel is an RHI scan along the red line shown in the PPI.



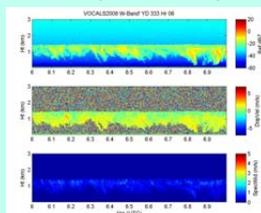
- Provides high-quality sets of marine meteorological observations, which are of great value for operational weather forecasting, climate studies, and for checking the models and calibrating the satellites.

- Relevant Measurements:
Air and sea temperatures, humidity, atmospheric pressure, wind, rainfall, radiative fluxes, turbulent fluxes, cloud properties...

Instrument specifications

Sensor	Measurement	Sampling Rate	System	Measurement
Sonic anemometer (GILL instruments Ltd)	Wind speed, direction, Direct covariance turbulent fluxes	10 or 20Hz	Motion/navigation package	Motion correction for turbulence
Cellometer	Cloud-base height		Cellometer	Cloud-base height
Rawinsonde	ABL wind, temperature, humidity profiles		Rawinsonde	ABL wind, temperature, humidity profiles
Open Path CO ₂ / H ₂ O Analyzer (LI-COR Inc.)	Direct covariance moisture/CO ₂ fluxes	10 or 20Hz	23, 31 GHz microwave radiometer (ARM type)	Integrated cloud liquid water integrated total water vapor
Laser Distance Sensor (RIEGL)	Ocean Surface Wave Height/Period	10 Hz	RIEGL Laser wave sensor	Ocean surface wave height/period
XYZ Motion Sensor (Systron and Donner)	Angular Velocity, Linear Acceleration	10 or 20Hz	Wband Doppler cloud radar	Cloud microphysical properties
GPS receiver (Crescent VS100)	Ship's heading, altitude	10 or 20Hz	Ronald H. Brown C-band radar	Precipitation spatial structure
GPS Smart Antenna (GARMIN)	Latitude, Longitude, Speed-over-ground, Course-over-ground	10 Hz		
Air TRH (Vaisala)	Air Temperature, Relative Humidity	0.1Hz, average to 1 sample / min	SolarIR radiometers	
Precision Rain gauge (Optical Scientific, Inc.)	Rainrate	0.1Hz, average to 1 sample / min	Microwave radiometers	
Precision Infrared Radiometer (Eppley PSP)	Solar Radiative Flux	0.1Hz, average to 1 sample / min	Seascope SST	
Precision Spectral Pyrometer (Eppley PIR)	Longwave Radiative Flux	0.1Hz, average to 1 sample / min		
Surface water Sensor (YSI Incorporated)	Sea Surface Temperature	0.1Hz, average to 1 sample / min		
Air pressure sensor (Vaisala)	Atmospheric Pressure	0.1Hz, average to 1 sample / min		

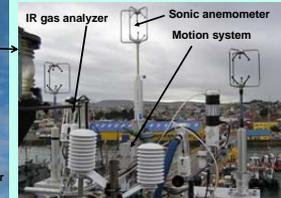
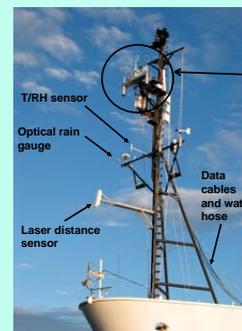
W-Band Doppler cloud radar (94.56 GHz)



Time-height cross section beginning at 0600 GMT on November 28, 2008. The top panel is the radar reflectivity (dBZ); the middle panel is the mean Doppler velocity (m/s, positive down); the bottom panel is the Doppler width (m/s) of the return.

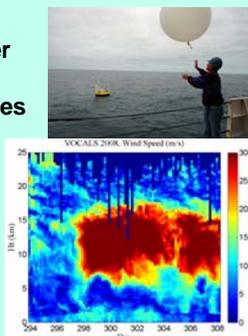
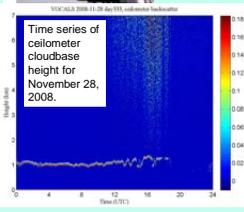


Flux instrumentation on the foremast



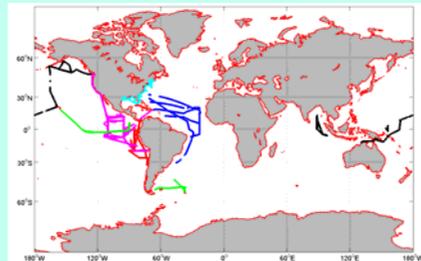
Close-up view of the sensors on the foremast during the 2008 Southern Ocean Gas Exchange experiment

Ceillometer and Rawinsondes



Time-height contour plots of wind speed from radiosondes launched during the 2008 VOCALS cruise.

R/V Ronald H. Brown cruise track since 1991



Black – Indian and Western Pacific Ocean NAURU/JASMINE cruises
Pink – Eastern Pacific Ocean STRATUS/VOCALS cruises
Blue – Atlantic Ocean AEROSE cruises
Green – Gas Exchange experiments - GASEX
Light blue – Air quality studies GOMECC/TaxAQs/NEAQS

Project data available at: <http://www.esrl.noaa.gov/psd3/cruises/>

STRATUS 2010 Meteorological and Flux data

