Oceanographic Instruments

SIO 221B

Sarah Gille
Reversing Thermometers

http://www-ocean.tamu.edu/education/common/notes/contents.html
Water Samples: Nansen Bottles

http://www-ocean.tamu.edu/education/common/notes/contents.html
CTD and rosette

Shipboard ADCP

http://ccs.ucsd.edu/~teri
Lowered ADCP

http://ccs.ucsd.edu/~teri
Drake Passage ADCP
XBT, XSV, XCP

http://www.sippican.com/expendable_probes.html
Drake Passage XBT
Microstructure

http://hrp.whoi.edu/hrpgrp/hrp.html
Microstructure sensors

Skin
Nose Cone
Shear Probe
Mounting Bracket
Electronics Housing
Pinger
Shear Probe Sting
CTD Arm
Cable to Electronics Housing
Cable to Micro C&T Sensors
Mounting Bracket
Acoustic Current Meter Transducers
Micro-thermistor
Micro-conductivity Cell
Mounting Bracket
Shear Probe Sensor
Brazil Basin Diffusivities
Vector Averaging Current Meter

http://www-ocean.tamu.edu/education/common/notes/contents.html
Vector Measuring Current Meter

http://woodshole.er.usgs.gov/staffpages/mmartini/instrument/vmboston.htm
Ekman Spiral: Moored ADCP

ebc, daily wind on progressive vector diagram, Apr-Oct 93

S-N displacement (km)

W-E displacement (km)

25 m/s

40 m rel to 60 m
32 m rel to 60 m
24 m rel to 60 m
16 m rel to 60 m
8 m rel to 60 m
TOGA-TAO moorings

See http://hrp.whoi.edu/hrpgrp/hrp.html.
TOGA-TAO moorings

TAO Array

TAO Project Office/NOAA/PMEL
wind at 125 W

http://www.pmel.noaa.gov/tao/jsdisplay/
temperature at 140 W

http://www.pmel.noaa.gov/tao/jsdisplay/
SOLO float design

http://www.argo.ucsd.edu/solo2.html
ALACE in the Atlantic

Fig 4 ACCE PALACE Floats for Dec, 1998

http://www.argo.ucsd.edu/argoschems.html
Diagram displaying the low-cost Global Lagrangian Drifter on the left hand side, and schematics of the sensor attachments (barometer, submergence, SST, irradiance and SHACAT), on the right hand side. Hbst drifters are also equipped with drogue sensors that indicate drogue loss. Buys without drogues do not depict ocean currents accurately, because the drifter becomes susceptible to wave and wind action. Drifters transmit sensor data to satellites that determine the buoy's position and relay the data to Argos ground stations. Service Argos provides raw drifter data to the DAC where the data is processed and distributed.

http://www.aoml.noaa.gov/phod/graphics/driverfig.gif
Indian Ocean Trajectories

Indian Ocean Drifter Tracks Through August 1997
Data Assembly Center
Paleoclimate

http://www.ngdc.noaa.gov/paleo/outreach/coral/
Coral Core Growth Rings (X-ray)

http://www.ngdc.noaa.gov/paleo/outreach/coral/
Paleoclimate

Range of ENSO variability, 1940-1980

http://www.ngdc.noaa.gov/paleo/outreach/coral/
Satellite Observations: Gulf Stream SST

http://www.rsmas.miami.edu/images.html
Satellite SST Observations: Reality

ascending (day) Jan 1, 1998

descending (day) Jan 1, 1998
Microwave versus Infrared SST

Tropical Instability Waves

TMI Sea Surface Temperature: Week Ending September 21, 2002

http://www.ssmi.com/tmi/tmi_weekly.html
Salinity Measurements 29 Aug 1999, E-W line at lat=38.65
Salinity in the Chesapeake Bay

MICROWAVE SENSING OF SEA SURFACE SALINITY

This is the first image of sea surface salinity ever produced. It was generated by a joint NOAA-NRL effort during the September 1996 NRL Chesapeake Outflow Plume Experiment (COPE-II).

Contact J. Miller at NRL jmiller@nlmss.navy.mil or J. Zaitseff at NOAA izaitseff@nesdis.noaa.gov for more details.

1 psu accuracy from aircraft  http://www.esr.org/ssiwg
Ocean Color

http://seawifs.gsfc.nasa.gov/SEAWIFS.html
Ocean Color

http://seawifs.gsfc.nasa.gov/SEAWIFS.html
Ocean Color: Galapagos Upwelling

http://seawifs.gsfc.nasa.gov/SEAWIFS.html
Sea Surface Height: Altimetry

Sea Surface Height: Pacific Ocean Anomalies

Sea Surface Height: Eddy Kinetic Energy

Wind Forcing: Scatterometry

QuikScat wind vectors: 2002/08 - monthly average - Global

Wind Speed:

http://www.ssmi.com/qscat/qscat_browse.html
Tropical Storm Isidore (Sep 25 2002)

http://www.ssmi.com/hurricane/active_storms.html
Sea Breeze from Scatterometry

from Gille, Llewellyn Smith, and Lee, submitted to GRL, 2002