Meteorological and oceanographic monitoring stations drifting in the oceans

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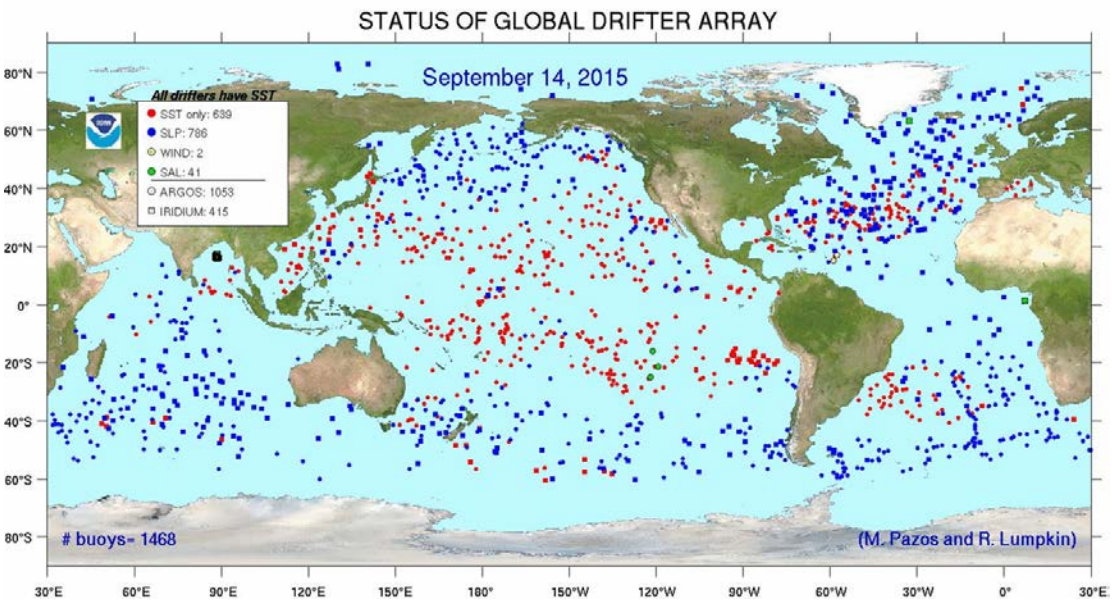
With the aim of enhancing the meteorological observations over the oceans, a number of meteorological organizations around the world have been deploying drifter buoys to collect meteorological and/or oceanographic observations in the data-sparse areas in the oceans in real-time via satellite telecommunication links. Under the Global Drifter Program (GDP) of NOAA (http://www.aoml.noaa.gov/phod/dac), one of the scientific projects of the Data Buoy Cooperation Panel (DBCP) of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology, there are on average more than 1400 buoys drifting over the oceans worldwide.



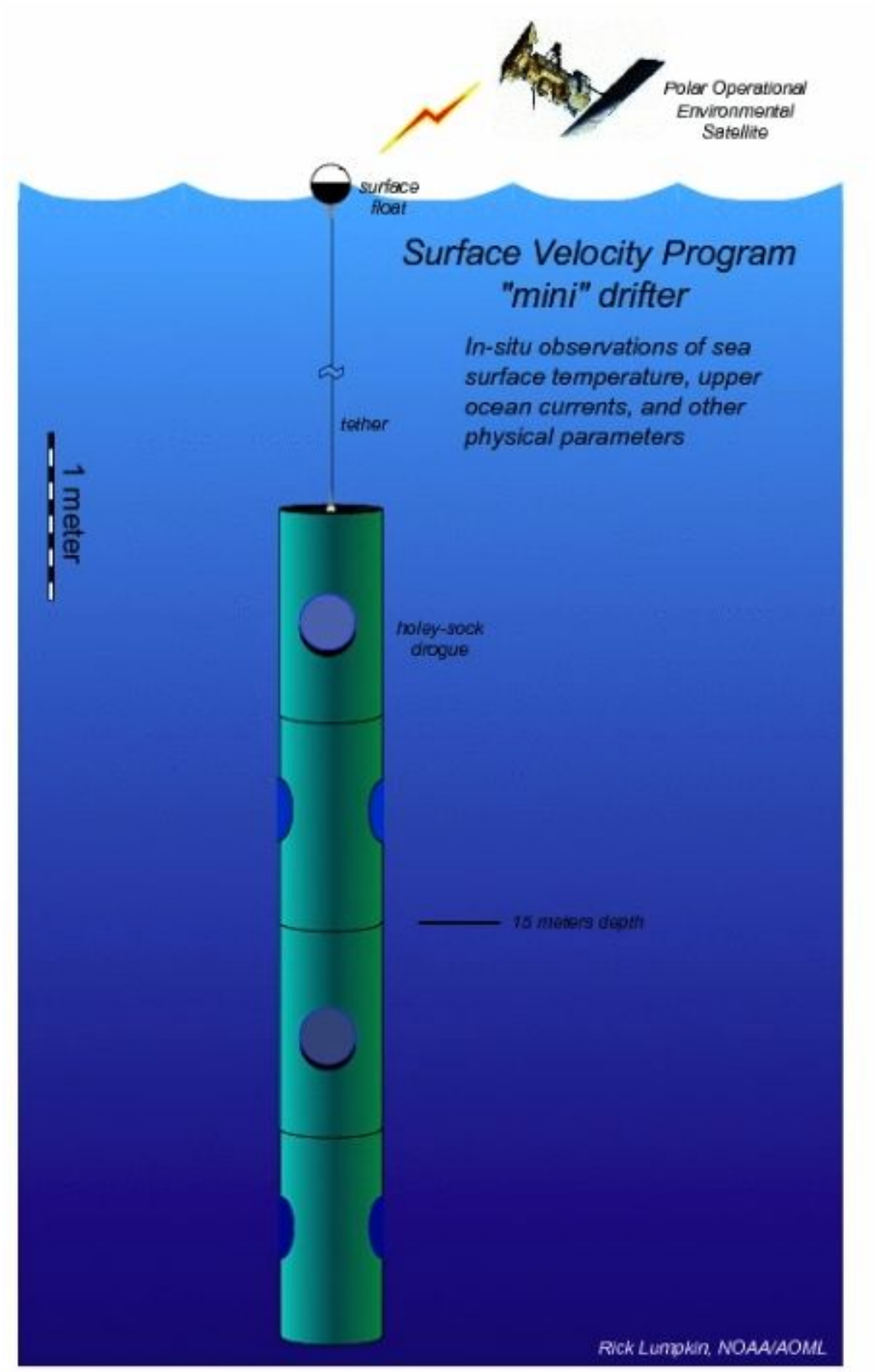
Distribution of drifter buoys in the oceans on 14 September 2015. All the drifter buoys are equipped to measure sea surface temperature (SST). Some in addition also measure sea-level pressure (SLP), wind (WND) and salinity (SAL). The data are transmitted via ARGOS or IRIDUM satellites. (Source: M. Pazos and R. Lumpkin of AOML, NOAA)

Drifter buoys are easy to deploy by ships or aircraft. They reliably measure meteorological and/or oceanographic parameters including sea surface temperature, atmospheric pressure and sea surface current that are useful for weather monitoring, weather forecasts, as well as oceanography and climate research.

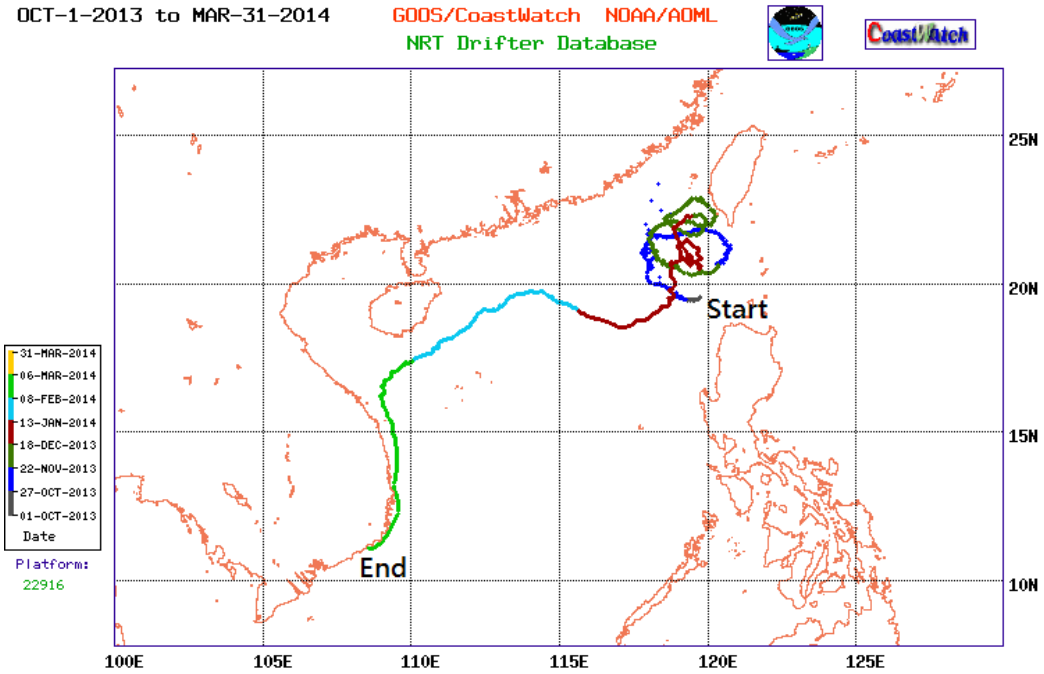
Deployment of a drifter buoy by crew members on board an ocean-going vessel.

After deployment into the ocean, the buoy will be driven by ocean currents instead of sea waves. To achieve this, a Holy Sock Drouge is designed to be attached to each buoy and is centered at a depth of 15 metres beneath the sea surface. The drogue acts like an underwater sail for the drifter buoy. Pushed along by the ocean currents, the drouge will help the drifter buoy move with the flow. Without the drogue, the buoy will drift with the winds and waves instead of the currents.

Drifter buoys powered by batteries are expected to continuously operate at sea for 18 months. However, their service life spans are often shorter than this due to various reasons. Some would beach or got picked up by ships passing by, yet still sending signals for locations as well as collecting and transmitting data. Many simply got lost in the oceans. Nevertheless, despite their relatively short life spans, they still managed to provide invaluable meteorological and/or oceanographic observations from the data-sparse oceans.



Schematic diagram of a drifter buoy at sea. (Courtesy of R. Lumpkin and P. Mayra of AOML, NOAA)



Whole track of a drifter buoy from 11 October 2013 to 16 March 2014 before it beached near Vietnam. (Courtesy of Joaquin Trinanes of AOML, NOAA)

A beached drifter buoy. (© British Crown copyright 2015, Met Office)