Consiglio Nazionale delle Ricerche

A small island to be discovered … the off-shore marine laboratory

ODAS ITALIA 1

The Oceanographic Buoys

The most cost-effective way to collect data at sea over a considerable length of time in any type of weather is by deploying a network of oceanographic buoys.

Buoys must withstand even the rougher storm, hence, they are the best weather sentinels of the sea!

They are deployed in the coastal and off-shore waters in all the oceans of the world.

Measurements are recorded in the on board storage devices by instruments mounted on the buoys or inserted in the mooring lines.

Modern oceanographic telemetry systems using artificial satellites allowed both the tracking of the platform in the global oceans as well as the transmission of data in near real-time.

In addition to their use in operational forecasting, warnings, and atmospheric models, moored buoy data are used for scientific and research programs, emergency response to chemical spills, legal proceedings, and engineering design.

Depending on the type of research, oceanographic buoys are divided into two types:

Anchored buoys ***either float on the sea surface (surface buoy, autonomous weather station buoy) or at specific depths (submerged buoy).***

Drifting buoys ***freely wander at the ocean surface being their drift tracked by satellites.***

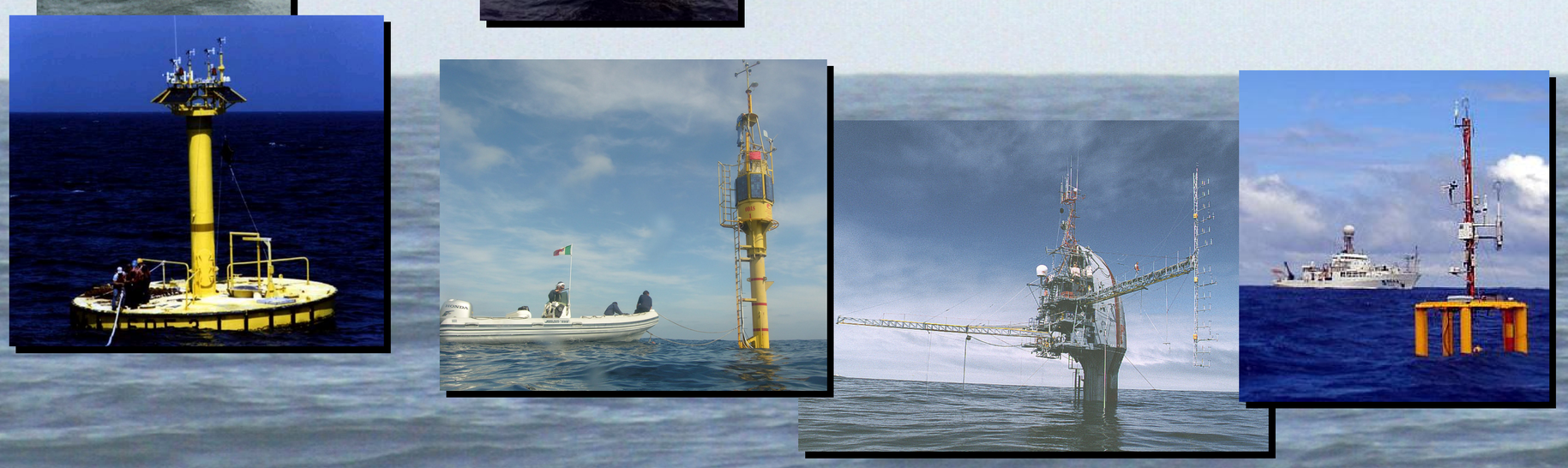
Surface buoys may have different characteristics especially depending on the hull type. The choice of hull type usually depends on its intended deployment location and measurement requirements:

Disc (toroid or flat) buoys ***have a large water plane areas but a small displacement. They tend to follow waves both in heave and slope, are easy to design, build and deploy but equipment on board may be difficult to maintain.***

Furthermore, they may capsize in rough seas and, in any case, they heave and roll forever.

Spar buoys ***have a small water plane with considerable displacement.***

These buoys tend to follow the wave amplitude but not the slope, being surface decoupled and providing an exceptional platform stability. They are often used as manned sea laboratory.



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