

case study | METOCEAN

Met Office Demo, Plymouth, UK

AutoNaut has completed demonstration trials with the UK Met Office to assess viability as an innovative “MetBuoy” for weather forecasting. The 3.5 metre AutoNaut “Iona”, underwent testing of mobility and station-keeping whilst gathering MetOcean data over 4 days. The data was then compared to the L4 Scientific buoy in Plymouth Marine Laboratory’s Western Channel Observatory (WCO).

MetOcean

The primary aim of AutoNaut during this Met Office demo was to acquire high quality MetOcean data. Sensors integrated into the AutoNaut allowed sensitive measurement of; air pressure, temperature and humidity, wind speed, wind direction, maximum gust and sea temperature.

The AutoNaut data was assessed for equivalence with that collected by the existing L4 MetBuoy. Wind measurements from L4 and the AutoNaut sensors showed good comparability, with speeds of 8 to 10 m/s recorded for much of the time.

The capabilities of AutoNaut to deploy and manoeuvre at sea were also assessed. Manual deployment direct



AutoNaut showing the installation of the ‘AMOS’ met sensors. Also on the mast are a camera and WiFi antenna to trial transmission of HD photos and video

from the slipway proved to be simple and safe for two personnel. The AutoNaut then transited out and could return to port independently following pre-set survey transects. Station-keeping within 50 metres was achieved in choppy sea conditions to emulate a moored buoy.

This successful assessment showed the viability of AutoNaut to replace or complement traditional MetBuoys for effective weather forecasting. The key potential lies in the cost-effectiveness of an unmanned system reducing the need for moorings and servicing by support vessel.

“From our perspective we are looking to assess whether an unmanned surface vehicle can be used to make reliable metocean measurements of the same quality as a moored weather buoy, and whether USVs could offer an alternative to operating moored buoys.”

Jon Turton, Head of Marine Observations, Met Office

AutoNaut Specification and Payload

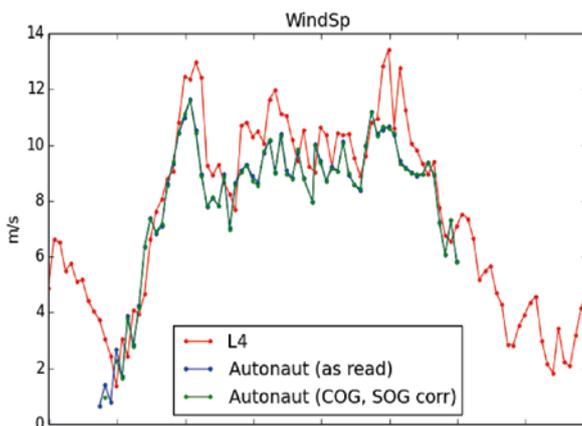
Length: 3.5m • **Beam:** 0.5m • **Displacement:** 120kg

Power Generation: 175Wp (Solar)

Mast: Woven Carbon Fibre 1.5m

Sensor Payload:

- Gill WindSonic anemometer
- Young Solarshield, housing HygroClip2 air humidity and temperature sensor
- Vaisala PTB110 barometer
- Sea water temperature probe



Wind speed measured over 4 days

Mission Summary

Distance: Station-keeping 1 to 3 km from L4

Duration: 4 days

Weather: 1-25 knots and up to 3m waves

A successful trial showing data from a small wave propelled AutoNaut, operating in station-keeping mode, correlated well with calibrated buoy data.

AutoNaut

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