EGU21-8901
https://doi.org/10.5194/egusphere-egu21-8901
EGU General Assembly 2021

Using a novel combination of autonomous vehicles for air-sea interaction studies: Results from the Eurec^{4}a campaign

Elizabeth Siddle[1], Karen J. Heywood[1], Ben Webber[1], and Peter Bromley[2]
[1]Centre for Ocean and Atmospheric Sciences, School of Environmental Sciences,University of East Anglia, Norwich, United Kingdom of Great Britain – England, Scotland, Wales (E.Siddle@uea.ac.uk)
[2]AutoNaut Ltd, Unit J, Heath Place, Bognor Regis, PO22 9SL, UK

The Tropical North Atlantic region is a key driver of climate variability and extreme weather events, driven largely by heat and momentum exchanges across the air-sea boundary. Observations of these fluxes by satellites and vessels are limited in their spatial resolution and length of time series respectively. In-situ samples across long time periods are needed, which can be obtained through developing a network of in-situ flux measurement platforms. UEA and AutoNaut have worked to address this challenge with the deployment of *Caravela* - an AutoNaut uncrewed surface vessel. *Caravela* is a wave and solar powered autonomous vessel, equipped with meteorological and oceanographic sensors and the ability to transport a Seaglider. *Caravela* successfully completed its first scientific deployment as part of the Eurec^{4}a campaign.

Eurec^{4}a ran from January—March 2020 from Barbados, investigating climate change feedback in the Tropical North Atlantic and the role of cloud systems. *Caravela* spent 11 days of her 33-day deployment occupying a 10 km square, co-located with other Eurec^{4}a platforms to gather in-situ surface data on heat and momentum exchange. Preliminary results from *Caravela* give us an insight into heat exchange at the surface, downwelling radiation and wind conditions during deployment. There is an identifiable diurnal cycle during the deployment, particularly visible in temperature data, which will feed into our understanding of changes in fluxes at a local scale. Profiling ocean gliders at the study site allow us to determine a time series of upper ocean heat content changes. These data, alongside that collected by other platforms during Eurec^{4}a, should enable an upper ocean heat budget to be calculated at *Caravela's* study site.