Maritime DTU
Center for Maritime Activities

Sea state estimation from autonomous surface vehicles

Type of project: MSc

Project description:

Uncrewed Surface Vehicles (USVs) play a crucial role in acquiring oceanographic data from remote and data-void regions of the ocean. These autonomous platforms are well-suited for gathering meteorological data at the air-sea boundary, which is essential for modelling global weather patterns, tracking climate-related phenomena, and improving weather forecasting. Compared to traditional vessel-based observations, USVs offer cost-effectiveness, lower environmental impact, and reduced risk to human operators in hazardous environments.

This study should explore the avenue of using measurements of the wave-induced motions of a USV to estimate the directional wave spectrum, which is the fundamental quantity of wave modelling and the quantity that allows calculating the consequences of interactions between waves and marine structures. The study will analyze real-life data collected during scientific missions of a USV. It will investigate operational methods for (near) real-time sea state estimation, to eventually be implemented and executed within the onboard navigation and control systems.

The NTNU AutoNaut. Courtesy of Alberto Dallolio.

Contact persons

Ulrik Dam Nielsen
DTU Construct
udni@dtu.dk

Raphaël E.G. Mounet
DTU Construct
regmo@dtu.dk