

**Soares Ribeiro, Américo**  
University of Aveiro  
Nationality: Portuguese

Orientation: Ocean Observation and Global Change  
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Research Line: 1.8 Coastal Impact, Hydrography and Ocean Dynamics



**PhD project: Climate change impact on West Iberian coast port defenses and maritime traffic**

**Supervisors: Dr. João Miguel Dias (University of Aveiro)  
Dr. Ramón Gómez Gesteira (University of Vigo)**

**Summary:** Recent storms show that port infrastructures in the Atlantic Area and particularly in West Iberian Coast (WIC) are at risk due to climate change or anthropogenic actions. Ports are public/private assets that were built to last for many years, and consequently are exposed to long-term changes in metocean patterns, which are currently threatening these infrastructures and anticipating losses on national economies. They are often exposed to a range of climate hazards, including sea level rise, storm surges, surface waves and astronomical tidal regime. These can cause problems with berthing of ships and ship navigation, and weaken the effectiveness of port defenses. This proposal intends to assess the climate change impact on WIC port defenses and maritime traffic to anticipate and limit damage to people and property and reduce economic losses in selected ports, and evaluate their future conditions for safety operation. Innovative solutions will be developed, comprising the definition of climate change scenarios for the study area and the implementation of a novel integrated high-resolution model designed with WAVEWATCH III, SWAN and DELFT3D specifically for the WIC ports. Expected changes in the wave climate, storm surges and mean sea level will be considered. Analysis of the defense infrastructures and maritime traffic will be done at the port scale and will be proposed adaptation measures to protect the goods from the sea and assure the navigability in safe conditions.

