



## A new meteorological database to quantify the coastal upwelling in NW Africa since the 18th Century

Ricardo García-Herrera (1,2), David Gallego (3), and Esther González (1)

(1) Departamento de Física de la Tierra y Astrofísica, Universidad Complutense, Madrid, Spain, (2) IGEO, Instituto de Geociencias (CSIC, UCM), Madrid, Spain, (3) Departamento de Sistemas Físicos, Químicos y Naturales, Universidad Pablo de Olavide, Seville, Spain

The NW Africa is one of the five coastal upwelling systems of the globe and, as a result, this area possesses one of the richest fisheries in the world. According to recent research, this system is highly vulnerable to climate change. However, its long term variability is not well known because of the scarcity of the data typically used to characterise this system, mostly relying on satellite observations. Notwithstanding, since coastal upwelling is due to the equilibrium between wind stress along the coast and the Coriolis force, the upwelling can be estimated from wind observations at the surface level.

The western coast of the African continent has been very busy from a nautical point of view. Before the opening of the Suez Canal in 1869, there was an intense traffic of ships circumnavigating Africa in their routes from Europe to India and China. Even today, a large number of ships cross this area when traveling between Europe and South America. Most of these vessels took daily observations of wind, and these old records have come to the present day preserved in historical archives. Between the years 2017 and 2018 our team have worked in the project “Coastal upwelling in NW Africa from ships logbooks”, aimed to quantify the intensity of the upwelling during pre-instrumental time by locating and digitising these historical wind records.

In this work we present the database that we constructed by digitising observations from logbooks kept in The National Archives (UK). Over 65,000 new entries have been digitised for ships traveling along the NW African coast. Our preliminary analysis demonstrates that they contain a strong climatic signal significantly related with the coastal upwelling.

Acknowledges: Research funded by the Spanish Ministerio de Economía y Competitividad under grant CGL2015-72164-EXP.