

# DICCA SEMINARS

**April 13th 2023, 4pm**  
**Location: A7 (Villa Cambiaso)**



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**University of the Balearic Islands**

## **Observations and drivers of coastal extreme sea levels**

Coastal Sea level extremes represent a serious threat for coastal environments. Extreme sea levels result from the combined effects of mean sea level and higher frequency processes including tidal oscillations, storm surges generated by atmospheric disturbances and wind-waves. Changes in the climatic conditions can alter one or more of the underlying mechanisms leading to changes in coastal exposure. One classical example is the impact of mean sea level rise that increases extreme sea levels and exacerbates their coastal impacts. In this presentation we will show how coastal sea level extremes are observed now and in the past decades using in-situ measurements and how they can be explored applying numerical models and statistical tools. We will discuss the existing evidence of temporal variability and their geographical patterns, that will shade light on the physical causes driving these changes. With a focus on the Mediterranean Sea, we will discuss the role of wind-waves, which are generally overlooked in extreme sea level studies.

### **Short bio:**

Dr Marta Marcos is an Associate Professor at the Department of Physics at the University of the Balearic Islands, where she teaches experimental physics and physical oceanography at the undergraduate and master levels. She is also a Research Fellow at the Mediterranean Institute for Advances Studies. She obtained her PhD in 2004 with a dissertation on meteorological tsunamis. Since then, she has worked as a postdoctoral researcher in the University of La Rochelle (France) and the National Oceanography Centre (UK). Her research is focused on sea level variability at different temporal scales, including studies on long-term mean sea-level changes up to high-frequency phenomena such as storm surges. Presently, her work is mostly related to extreme sea levels and coastal hazards. She is currently running research projects aimed at quantifying marine hazards and providing salient information for coastal adaptation with a focus on the Mediterranean Sea.