

## **README – Ocean Dataset for “AI-driven insights beneath the surface: deeper ocean layers at play in severe hurricane forecasting”**

**Reference:** Nieves, V. & Martinez-Amaya, J. (2025), *Environ. Res. Lett.*, 20, 114026. <https://doi.org/10.1088/1748-9326/ae0e87>

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**Dataset description:** This dataset (ocean\_dataset.mat) contains the pre-processed oceanic variables and derived features used in the study above. It focuses on Atlantic tropical cyclones and provides the ocean conditions relevant to hurricane intensification, spanning 72 hours before the peak intensity and 10 days prior to that period.

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**Principal investigator:** Veronica Nieves, [veronica.nieves@uv.es](mailto:veronica.nieves@uv.es)

**Contact:** Javier Martinez-Amaya, [javier.martinez-amaya@uv.es](mailto:javier.martinez-amaya@uv.es)

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**Contents:** Each record represents a storm-centered spatiotemporal snapshot of ocean anomalies derived from reanalysis data (GLORYS12V1) and processed following the methodology described in the article.

### **Variables:**

- OML — Ocean Mixed Layer
- OHC\_xx — Ocean Heat Content integrated to 10, 25, 40, 100, 200, 300 and 500 m
- T\_xx — Vertically averaged Temperature between layers (zi–zi-1) from surface to 500 m
- S\_xx — Vertically averaged Salinity between layers (zi–zi-1) from surface to 500 m

Each record also contains a **class label**:

- 0: Tropical Storm
- 1: Major Hurricane

**Citation:** If you use this dataset, please cite:

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