Dataset title: ocean_dataset.mat

Principal investigator: Veronica Nieves, veronica.nieves@uv.es

Contact: Javier Martinez-Amaya, javier.martinez-amaya@uv.es

File name structure: oceans_dataset

This dataset encompasses a structured collection of oceanic attributes and variables specifically related to the Atlantic Ocean region:

Attributes and variables: This dataset contains the oceanic characteristics of Major Hurricanes (MH) and Tropical Storms (TS), emphasizing the spatial evolution of the ocean from 72 hours before reaching their maximum stage to 10 days afterward. Key details include:

1. **Spatial Features**: Derived using a Convolutional Neural Network (CNN) with a receptive field of 128 pixels. These features are generated to provide insights into the ocean characteristics related to cyclone systems and are separated into:
    - Anomalies 72 hours prior to peak intensity (*anomalies_72h_lt*),
    - Anomaly differences calculated between the 72-hour mark and the preceding 10 days (*anomalies_10d*)

    Within both variable types, there are four oceanic variables, at different depth levels:

    - OML = Oceanic Mixed Layer
    - OHC = Ocean Heat Content at 10m (OHC_10m), 25m (OHC_25m), 40m (OHC_40m), 100m (OHC_100m), 200m (OHC_200m), 300m (OHC_300m) and 500m (OHC_500m)
    - T = Temperature at Sea Surface (SST), 10m (T_10m), 25m (T_25m), 40m (T_40m), 100m (T_100m), 200m (T_200m), 300m (T_300m) and 500m (T_500m)
    - S = Salinity at Sea Surface level (SSS), 10m (S_10m), 25m (S_25m), 40m (S_40m), 100m (S_100m), 200m (S_200m), 300m (S_300m) and 500m (S_500m)
2. **Class**:

    - 0: Tropical Storm
    - 1: Major Hurricane