Oil Spill Detection Dataset UoH – Technical Overview

This dataset includes oil spill detection products derived from multiple case studies conducted throughout the ILIAD project. Detection maps were generated using a fusion of Sentinel-1 (SAR) and Sentinel-2 (multispectral) satellite imagery. A machine learning-based framework was applied to enhance spatial and temporal resolution, enabling the identification of marine anomalies. Oil spills were detected as spatial anomalies, while known non-spill anomalies (e.g., wind patterns, algal blooms) were excluded to reduce false detections.

Main Dataset – Case Summary

The file OilSpillsCases.xlsx lists all detection cases included in the dataset. Each row corresponds to a specific test case and includes the following fields:

- **File Name**: Name of the GeoTIFF output file containing the detection map.
- **File Type**: Format of the detection output (e.g., GeoTIFF).
- **Spatial Resolution (m)**: The resolution of the output detection map in meters.
- **Data Sources**: Satellite platforms used for detection (e.g., Sentinel-1; Sentinel-2).
- **Raw Images**: Number of raw satellite images used in the detection process.
- **Centroid Coordinates**: Geographic center of the area analyzed (latitude, longitude).
- **Month / Year**: Temporal reference of the event or detection case.

Metadata CSV Files (Per-Case)

Each GeoTIFF map is accompanied by a metadata CSV file with the same file prefix. These metadata files include structured information describing the detection and input features for the corresponding event. The fields are similar to the ones described in the case summary.

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