

Image Processing Applied to Temperature Pattern Identification Oscar Papini, Gabriele Pieri, Marco Reggiannini (Signals & Images Lab.) ISTI Day(s) 2021 • 23 November 2021



Obiective Identified patterns (examples) Type: E3 Detect and classify mesoscale patterns |-Date: 20-Sep-2017 in an upwelling ecosystem by analysing Sea Surface Temperature (SST) maps coming from satellite data. E1 – cold water filament E2 – cold water filament going westwards going southwards Upwelling Upward vertical transport of cold and nutrient-rich waters by a combined ef-E3 – cold current E4 - warm counter-current fect of winds and the Earth rotation. bypassing Cape St. Vincent bypassing Cape St. Vincent 05-Sep 10-Sep 15-Sep Dynamical analysis: spaghetti plot Type: E4 Analysis of SST trend in a target area for 10–15 days before an event. Date: 30-Oct-2017 1. The area is divided in small squares. 2. For each square, its temperature is plotted against time. 3. All those plots are superimposed in a common reference system. 05-Sep 10-Sep 15-Ser

25-Oct

27-0ct

29-Oct

Colours are assigned to match each plot with the corresponding small square.

- Does the annual trend of SST influence the shape of the spaghetti plot? Little variation of the SST values, but the overall shape is mostly unchanged.
- What about the quality of the data coming from the satellites? Currently investigating the effects of "bad quality" data on our analysis.



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Reference: Marco Reggiannini, João Janeiro, Flávio Martins, Oscar Papini and Gabriele Pieri. "Mesoscale Patterns Identification through SST Image Processing". In: *Proceedings of the 2nd International Conference on Robotics, Computer Vision and Intelligent Systems*, 2021, pp. 165–172. DOI: 10.5220/0010714600003061

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