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MICROPLASTICS DEPOSITED ON BEACHES OF THE GULF OF LIONS (NW MEDITERRANEAN SEA): STUDY OF THE SPATIAL HETEROGENEITY

Poster n°102341



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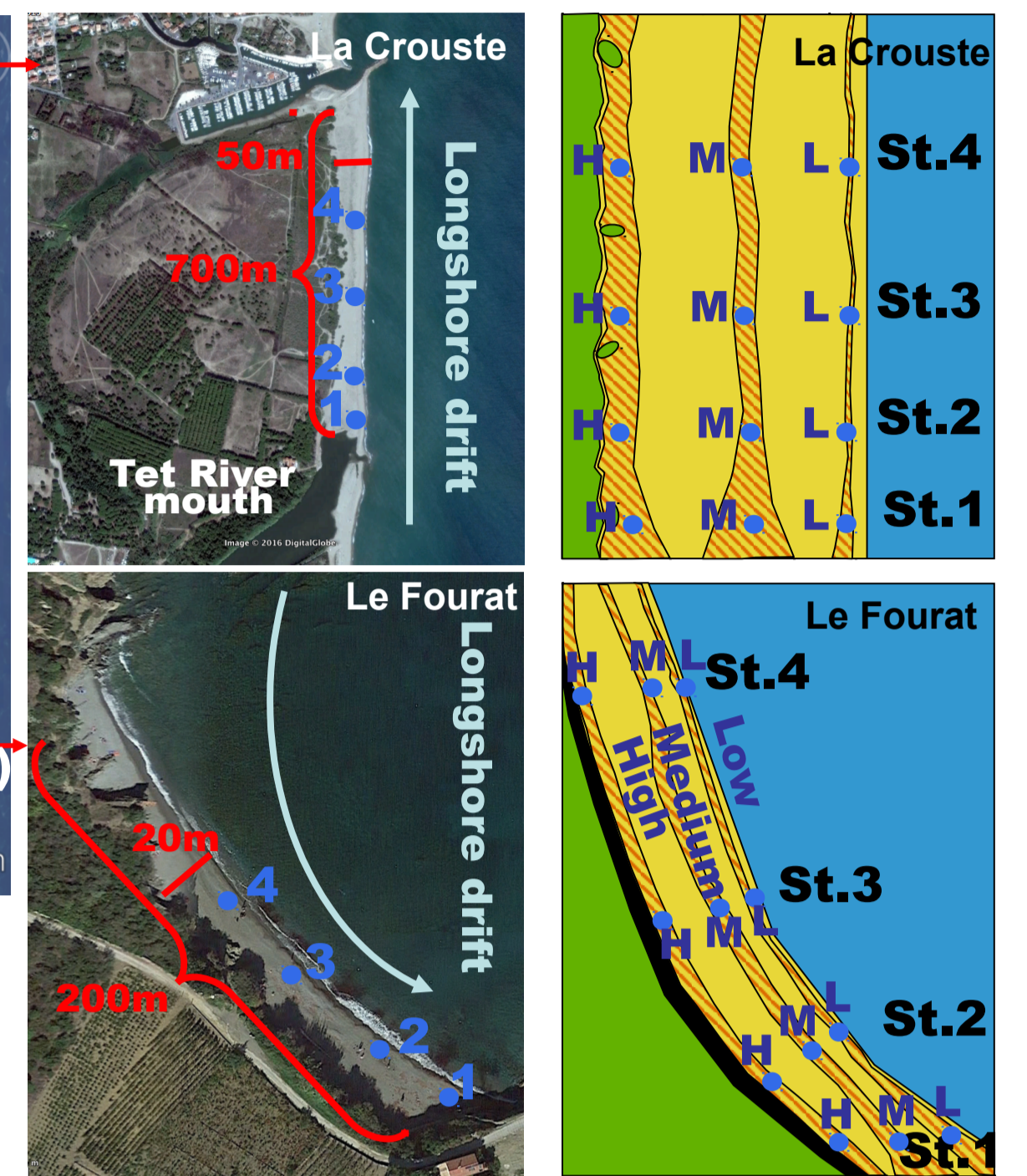
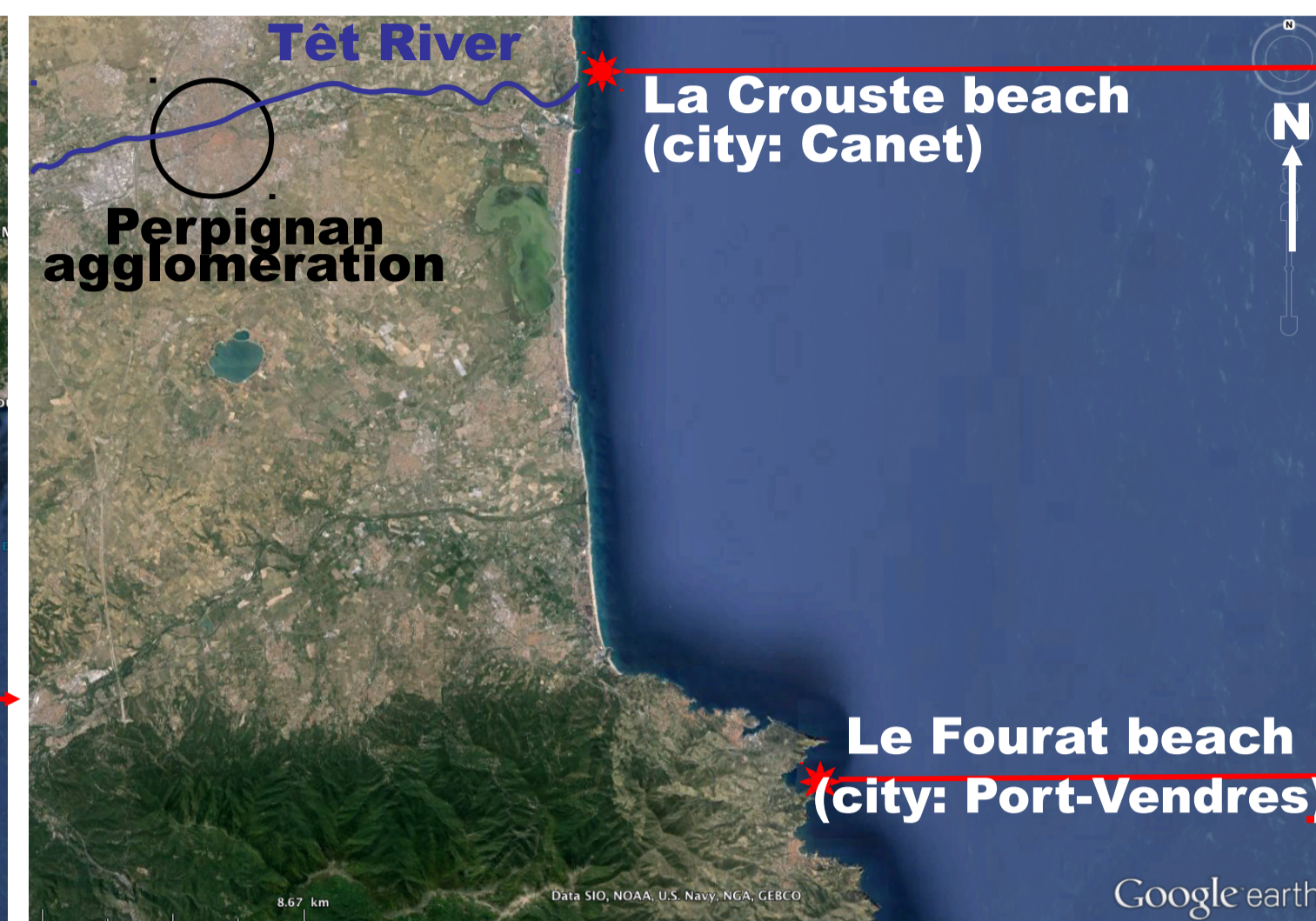
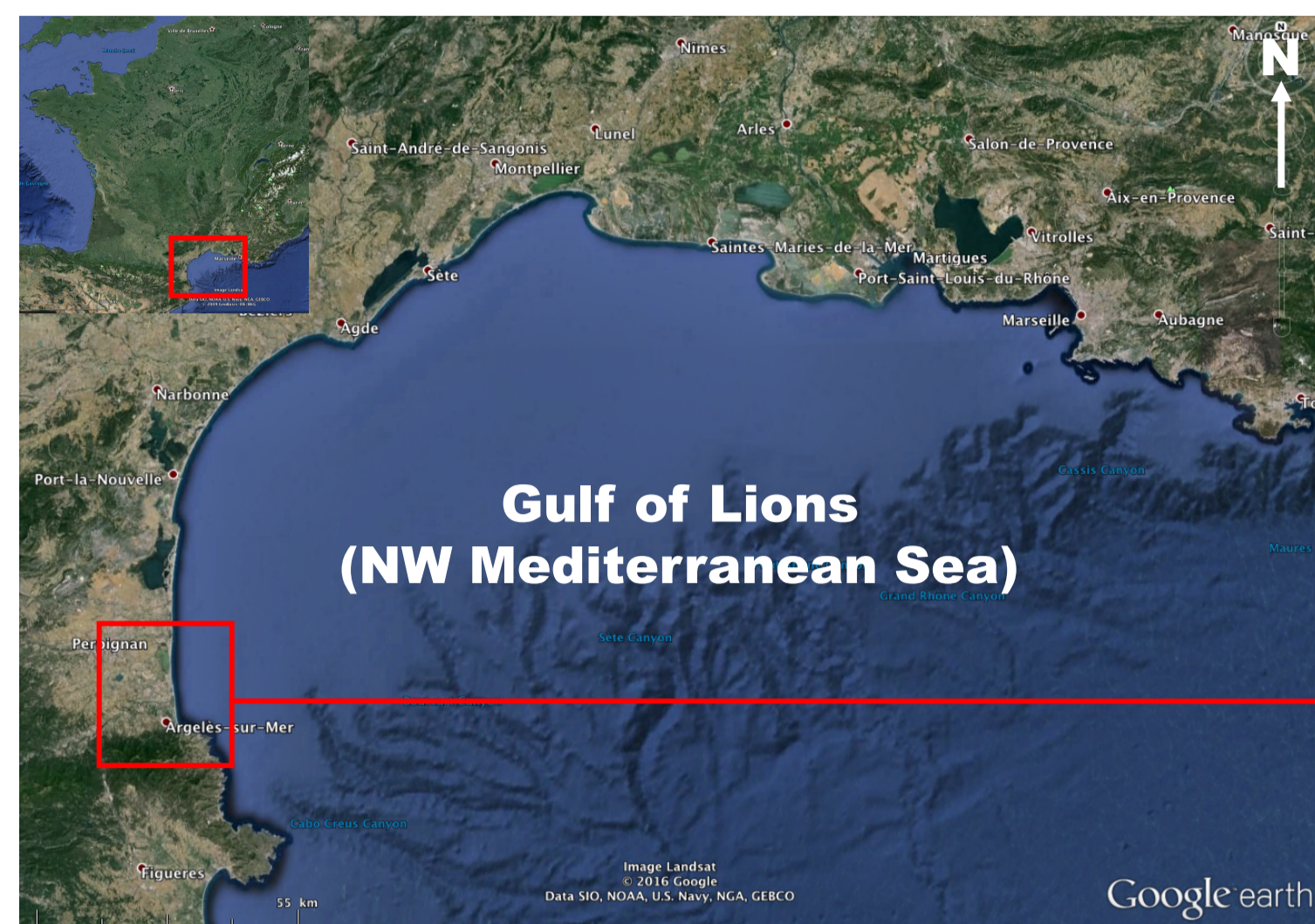
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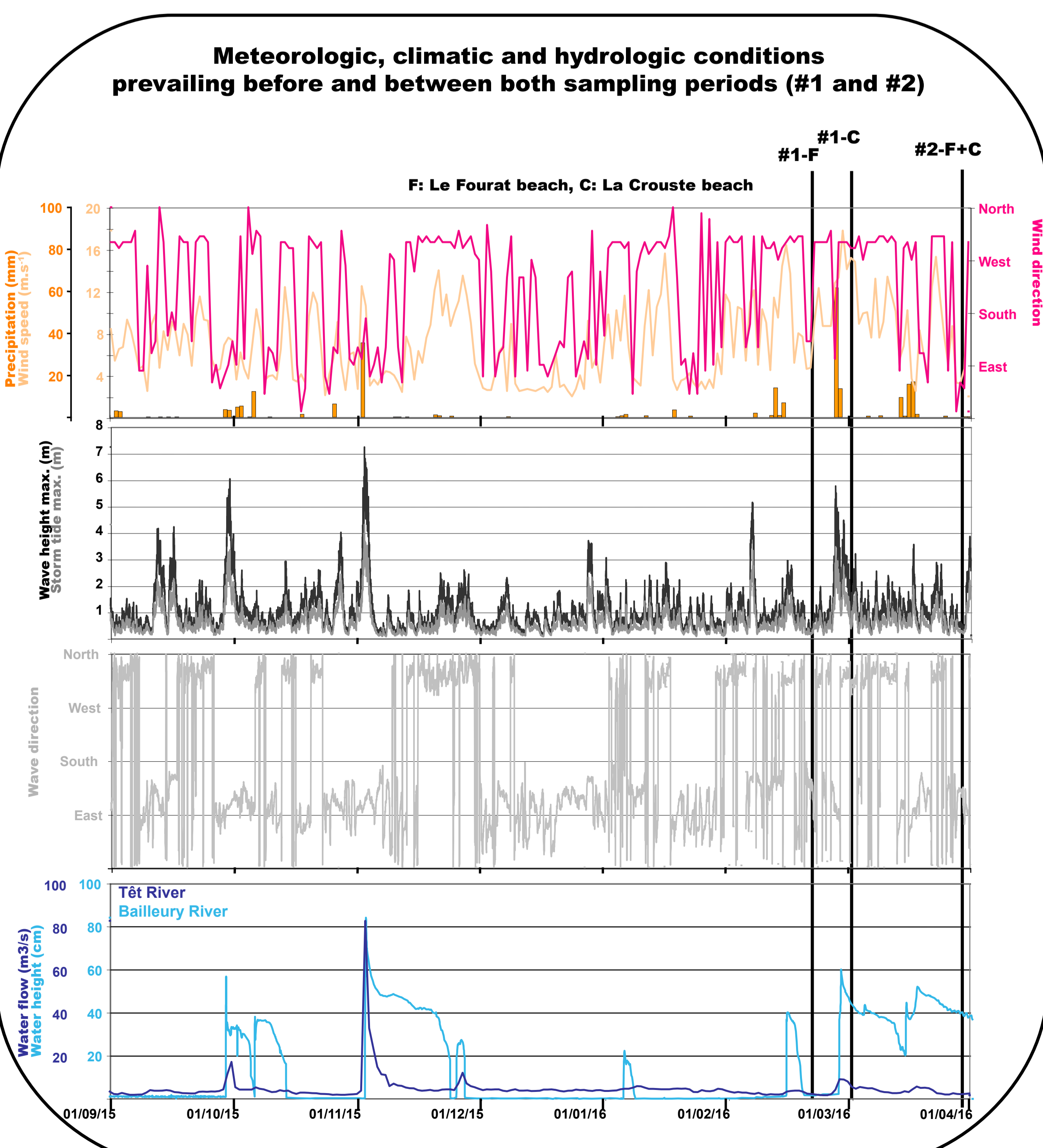
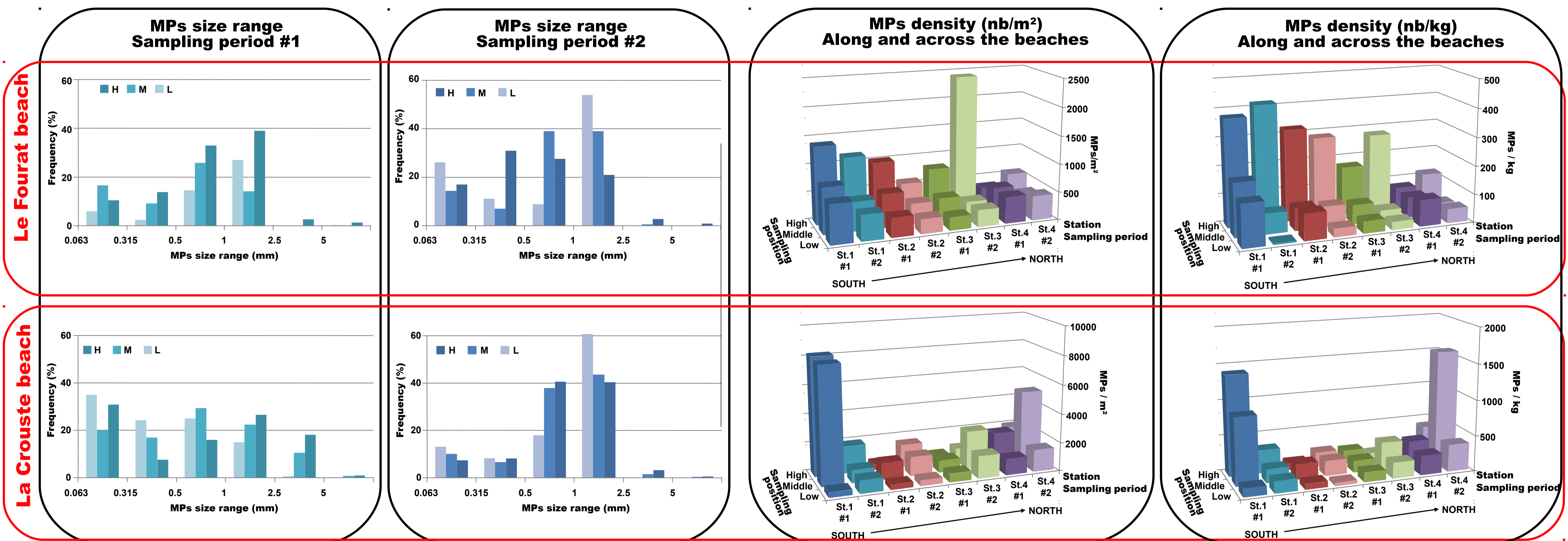
Litter is one of the criteria used to assess the ecological state of the marine environment. It is however difficult to evaluate and compare concentrations of small particles such as microplastics (MPs), an important, ubiquitous category of marine litter, due to the plethora of sampling methodologies used to estimate MP abundance on beaches for example. To define a sampling strategy suitable for a microtidal sea (Mediterranean Sea) and for a monthly monitoring by the French Marine Protected Area Agency, we studied MP distribution on two contrasted beaches from the North-Western Mediterranean Sea (Gulf of Lions)

- ➔ Two beaches along the french catalan coast: La Crouste (river influenced) and Le Fourat.
- ➔ Four stations (1,2,3,4) per beach
- ➔ Three levels (High, Medium, Low) of water marks across the beach and for each station.
- ➔ Sampling by using a quadrat (0.5m x 0.5m); 1 cm depth maximum.
- ➔ Separation of MPs with a dense saline solution after sieving each sample into 6 size ranges: 63-315µm, 215-500µm, 500-1000µm, 1000-2500µm, 2500-5000µm, >5000 µm. binocular



- ➔ Four categories of MPs were identified by using a binocular: fibers, granules, sheets, unclassified

- ➔ Two sampling periods:
#1-F: 22/02/16 for Le Fourat
#1-C: 02/03/16 for La Crouste
#2: 30/03/16 for both



- ➔ The largest MP size range varied mainly between 0.5 and 2.5 mm.
- ➔ Highest densities (MPs/m², MPs/kg) are found on La Crouste beach, which is close to the largest river.
- ➔ Highest densities of MPs are found along the upper beaches (High water marks) mainly on the Le Fourat Beach where a concrete wall has been built. High amount of old marine litters and MPs are concentrated along this wall.
- ➔ Highest densities of MPs on the Southern part of both beaches despite their opposite longshore currents. On La Crouste beach, this southern concentration is explained by the immediate vicinity of the Tet River mouth.
- ➔ Highest densities of MPs during the first sampling period at La Crouste beach can be explained by both the Têt River flooding in Nov.15 and the rainy days in Feb.16, which brought many natural and anthropogenic debris mainly on the southern part of the beach.
- ➔ Fibers are the main MPs shape, mainly at Le Fourat beach (77%) vs. La Crouste (59%). Up to 12% of polystyrene and 25% of unidentified are found to La Crouste. The urban influence through the Tet River may explain this supply of Polystyrene.

This study exhibits the large heterogeneity of the MPs distribution along and across two beaches of the Gulf of Lions. Twelve « quadrats » samples have been collected for each beach at each sampling period. Therefore, a long-term and monthly monitoring of MPs distribution by the Marine Park will request to minimize this sampling and treatment efforts by selecting only one single station per beach. The station on the middle of both beaches (St.2 or St.3) and on the lower water marks offers the best compromise.