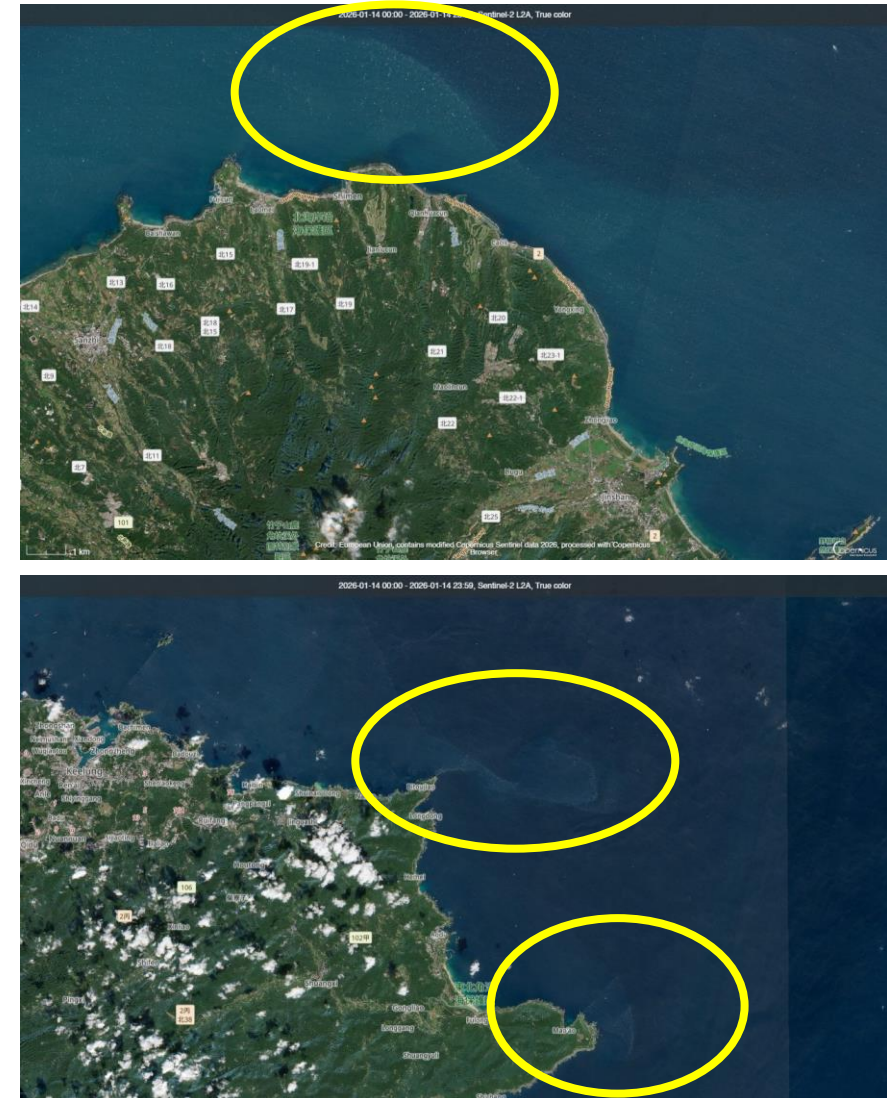
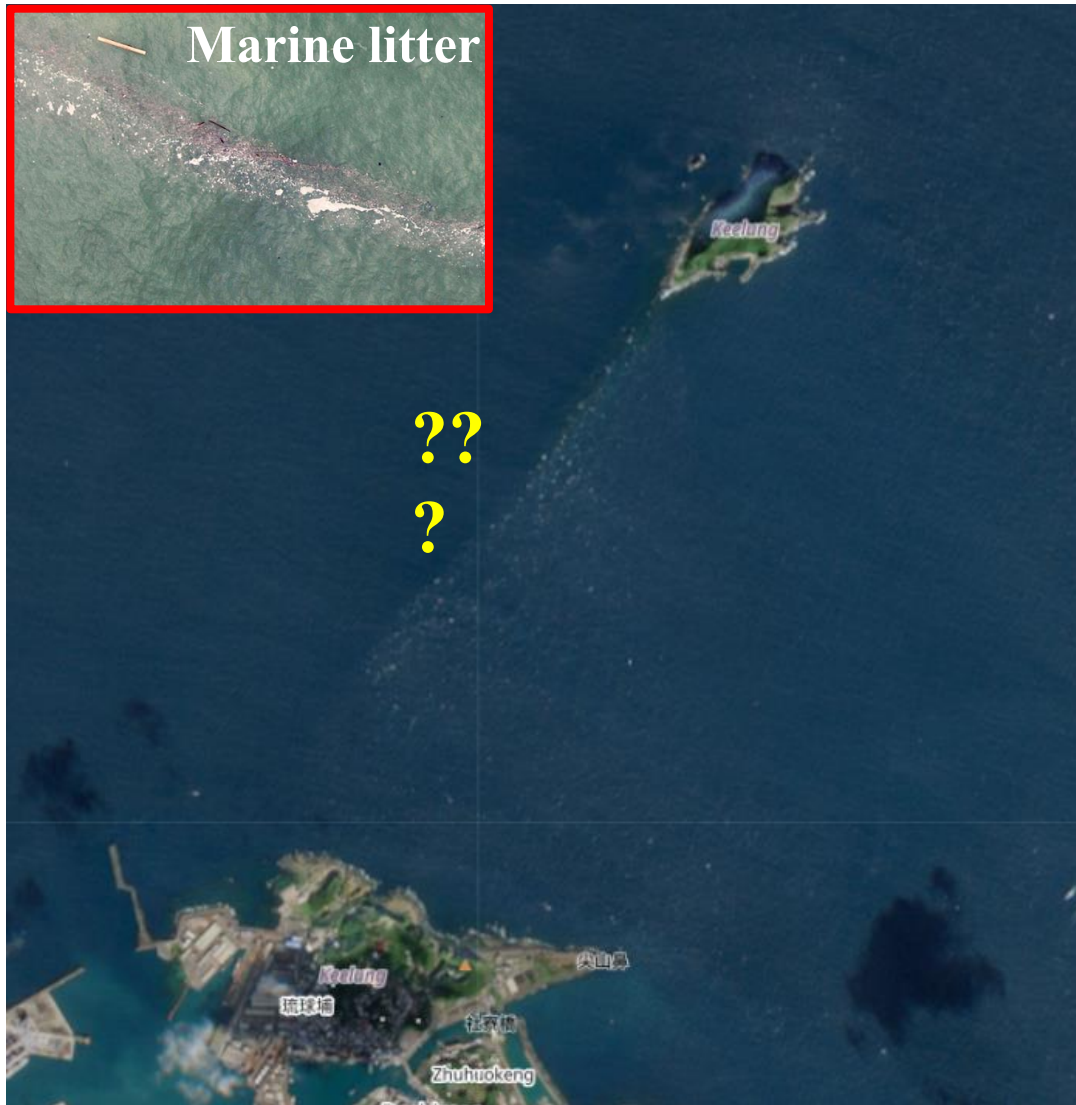


In the very beginning



應用微波海洋雷達監測近岸海流特徵

邱冠銘

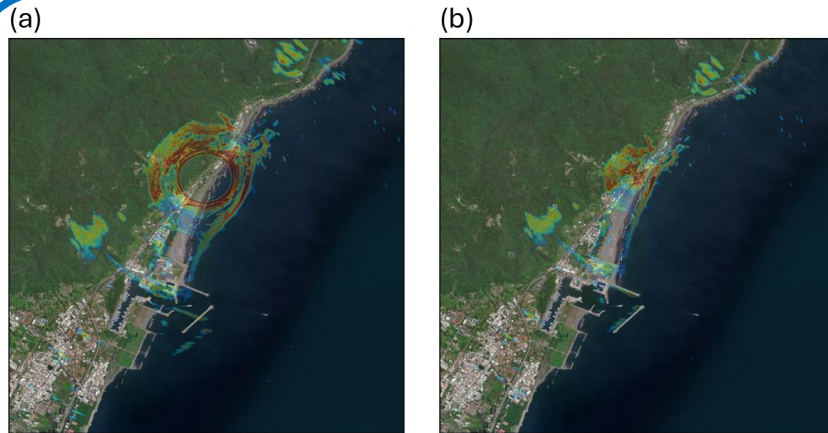
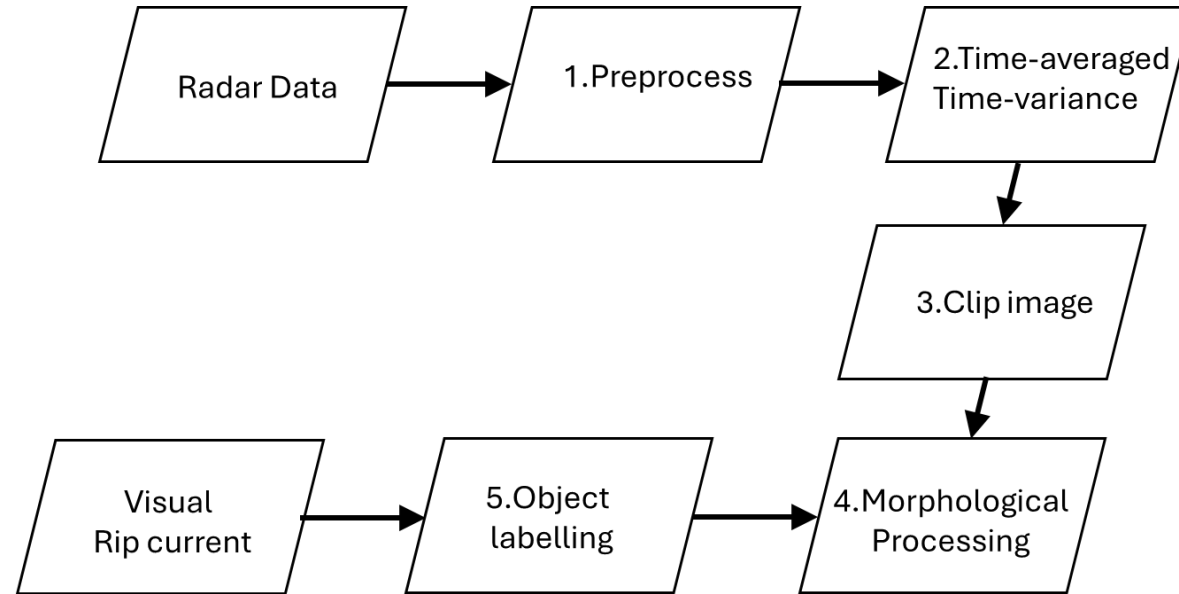
林立青、鄭皓元、尤心瑜、陳渲屏、錢樺



永續與綠能科技研究學院
S A G E - GRADUATE COLLEGE OF
SUSTAINABILITY AND GREEN ENERGY

1-3 September 2026 @ 天氣分析研討會

Data processing

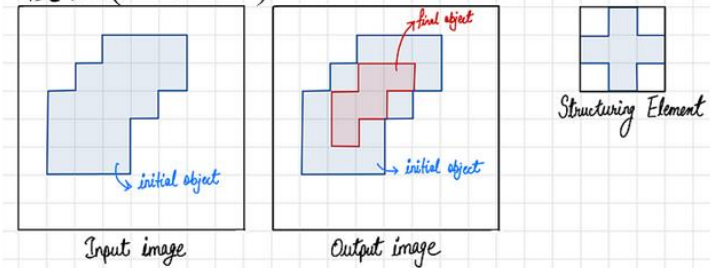


$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}, \text{ where } \mu = \frac{1}{N} \sum_{i=1}^N x_i.$$

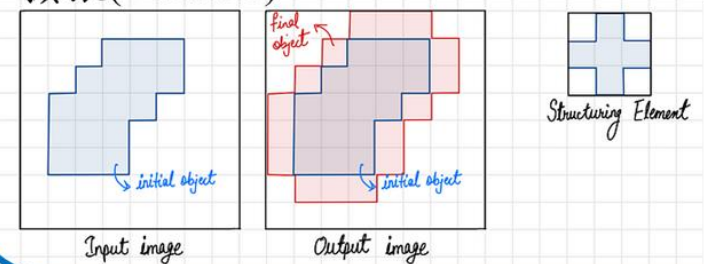
SIGMA

TIMEX

侵蝕(Erosion)

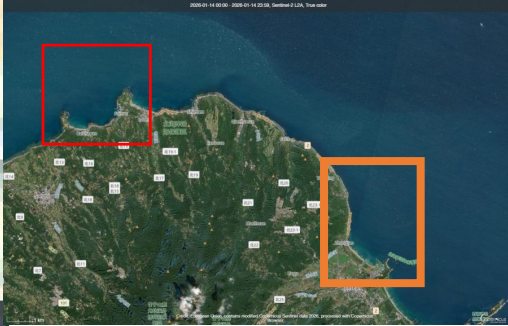


擴張(Dilation)

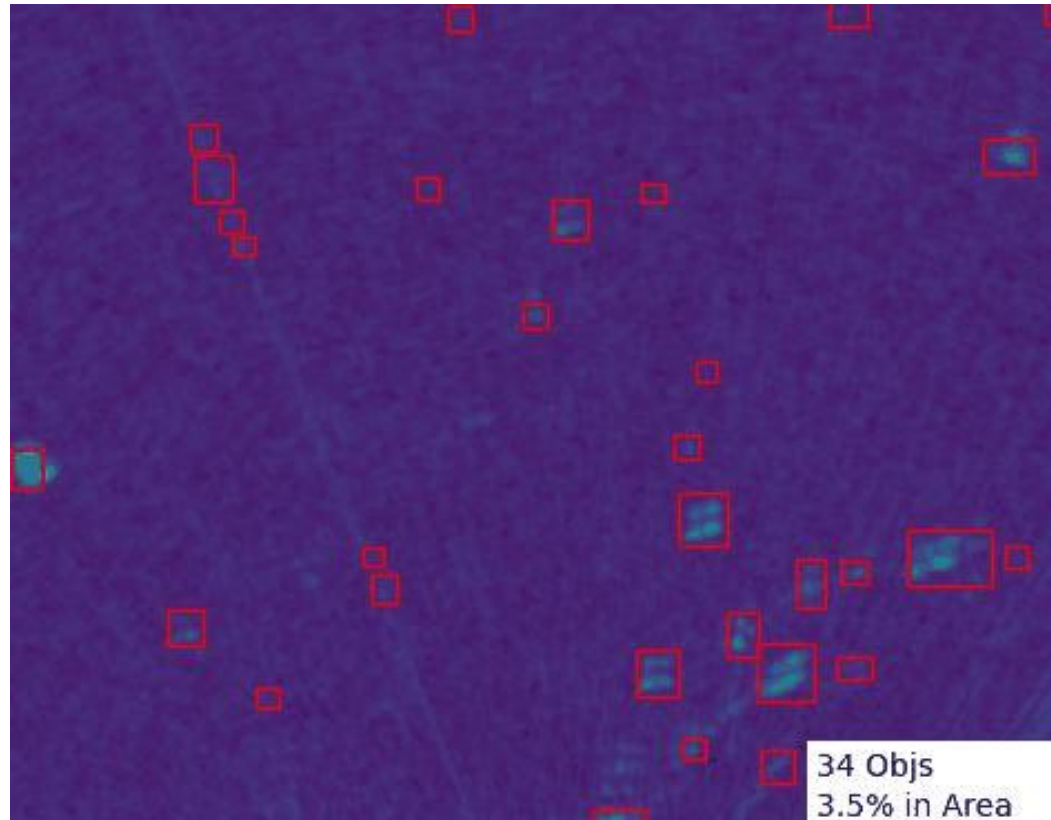


After Typhoon Gaemi (2024)

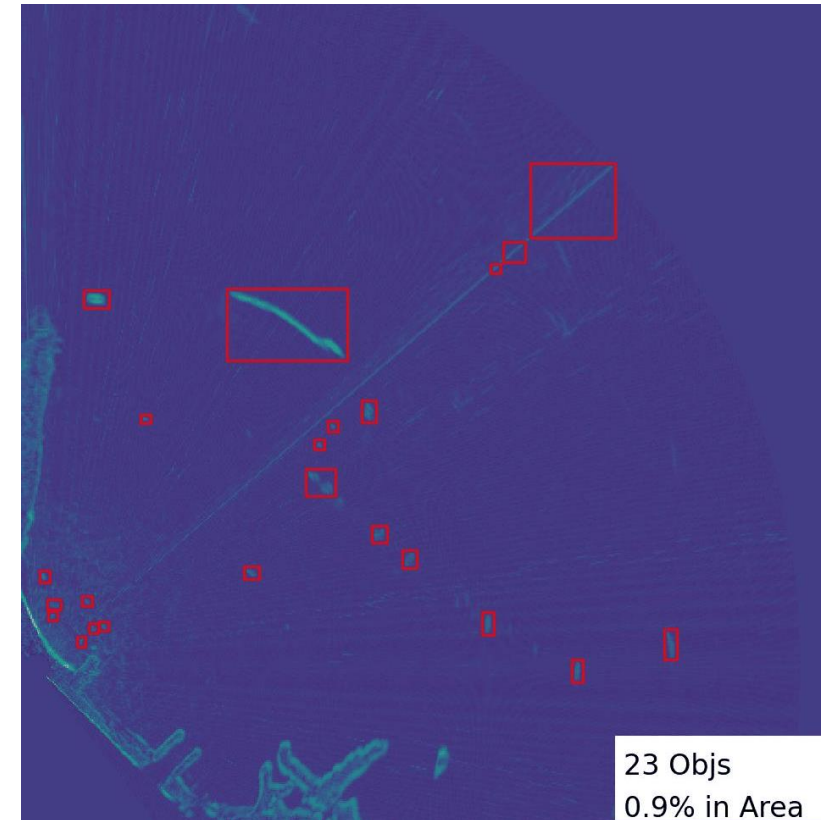
Drifting marine litter



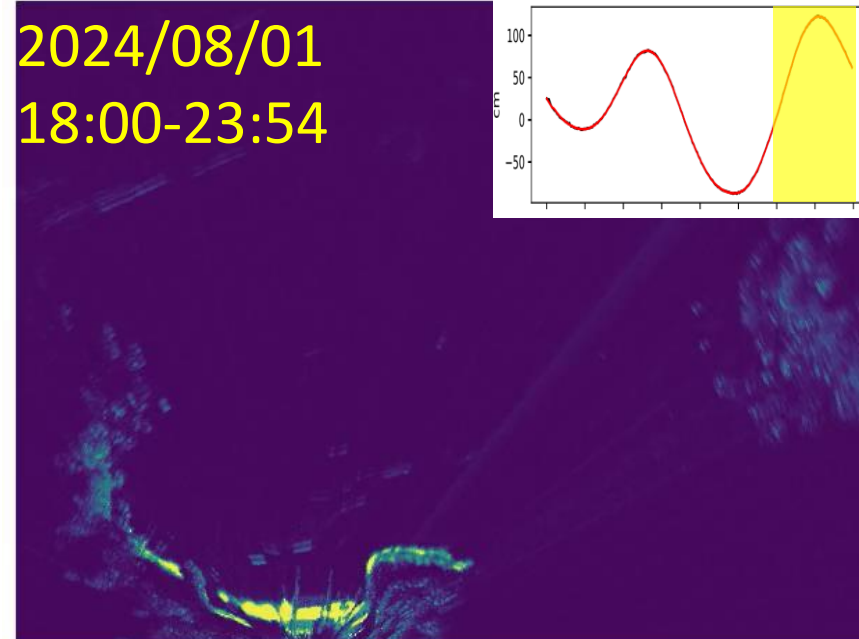
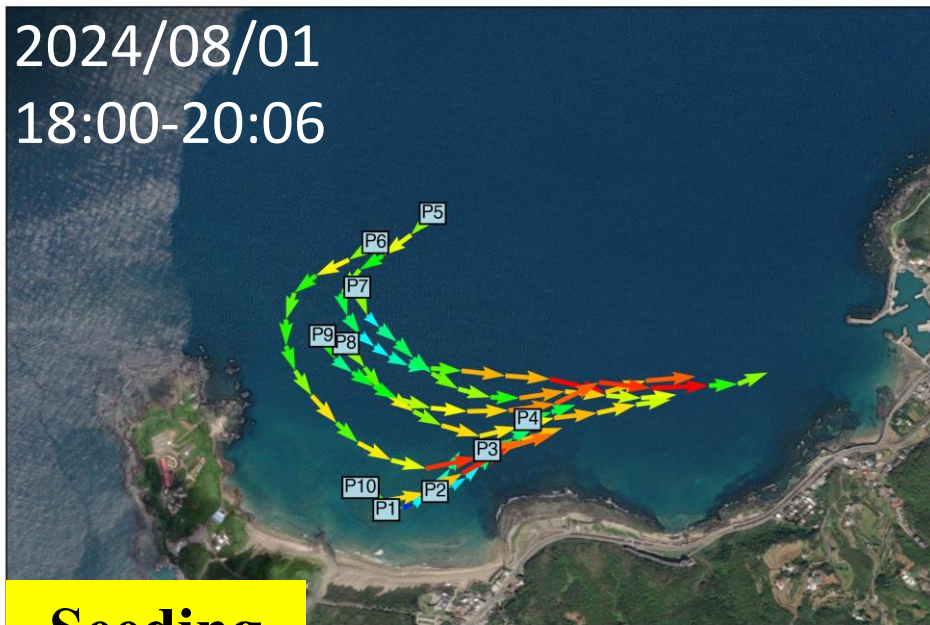
Baisha Bay



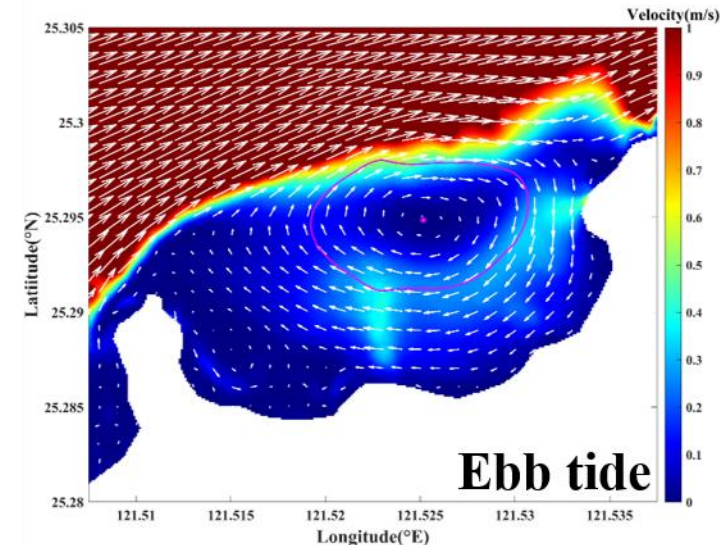
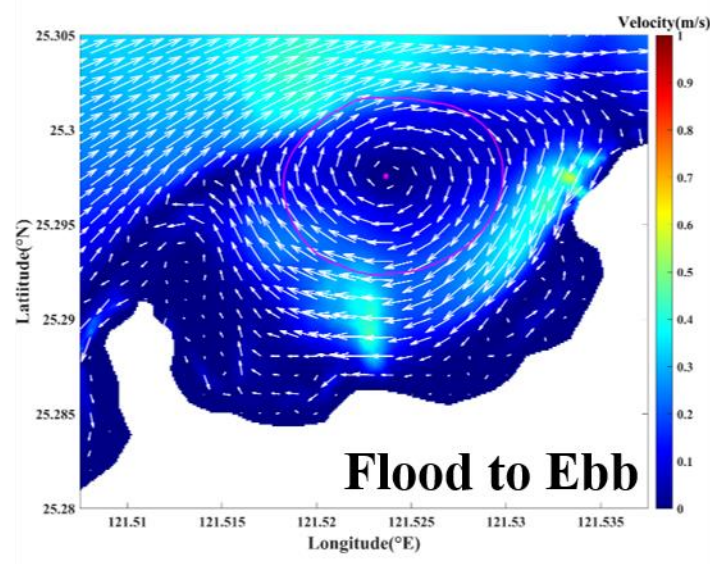
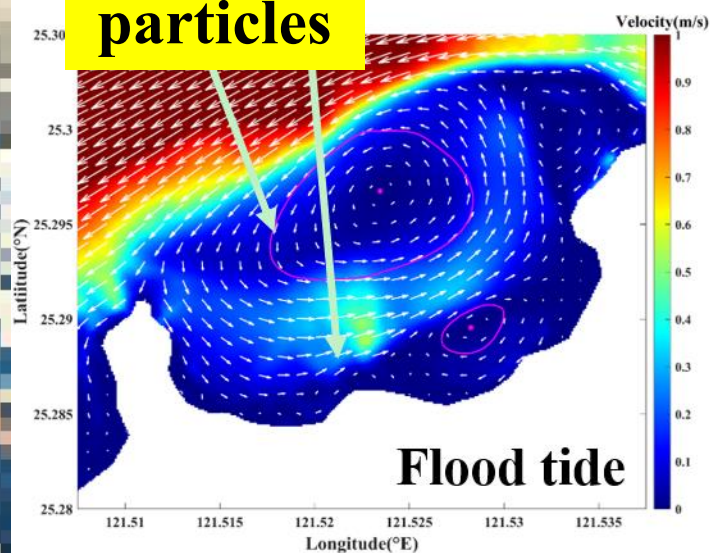
Zhongjiao Bay



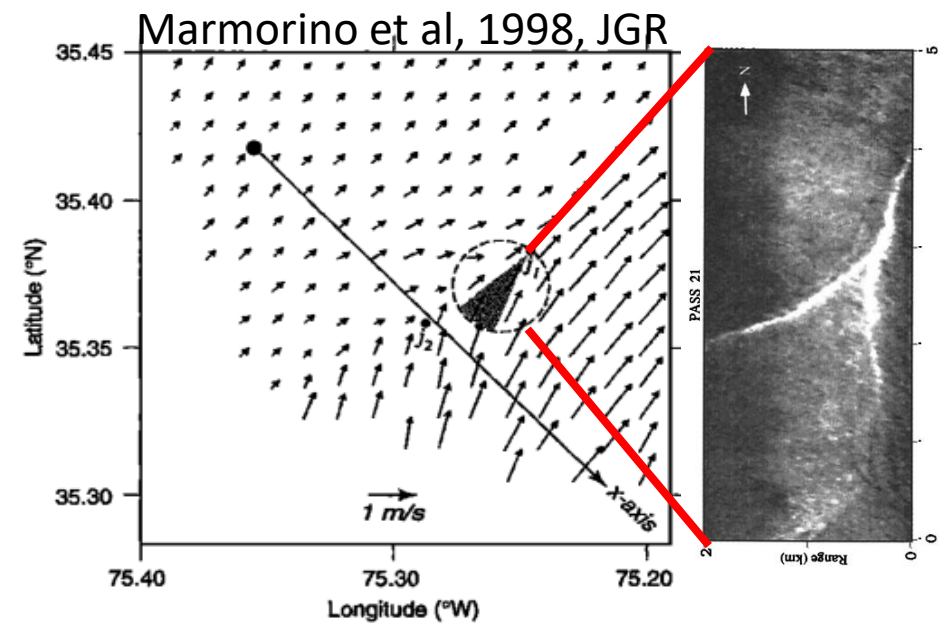
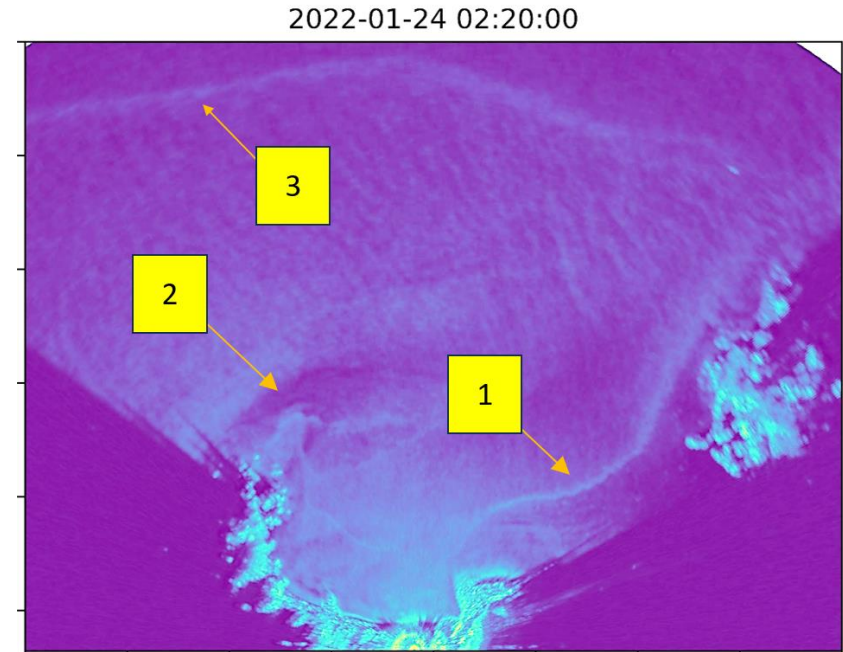
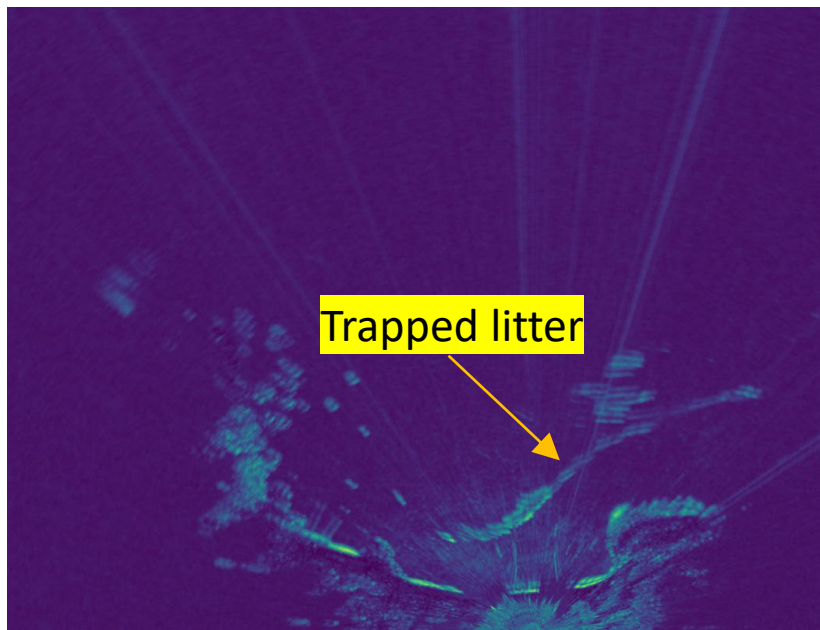
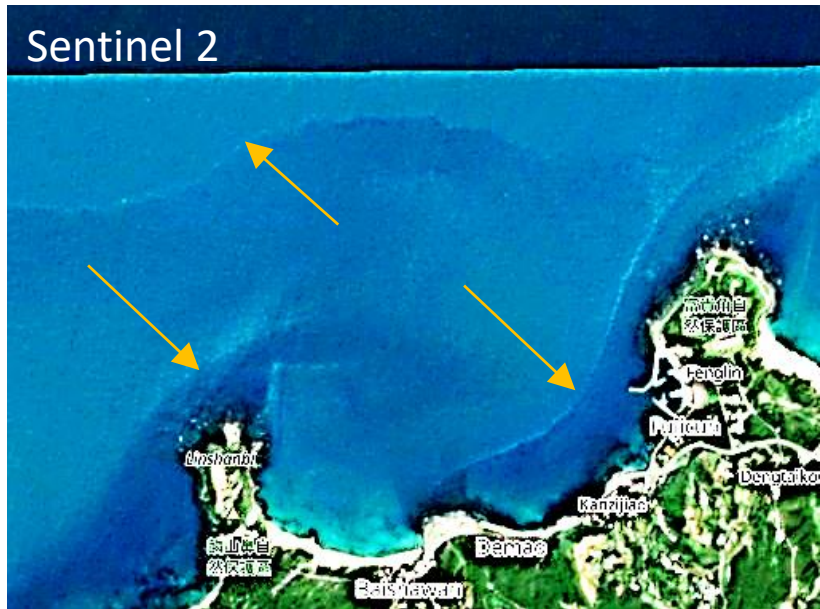
Drifting marine litter



Seeding
particles



Oceanic fronts



Rip currents

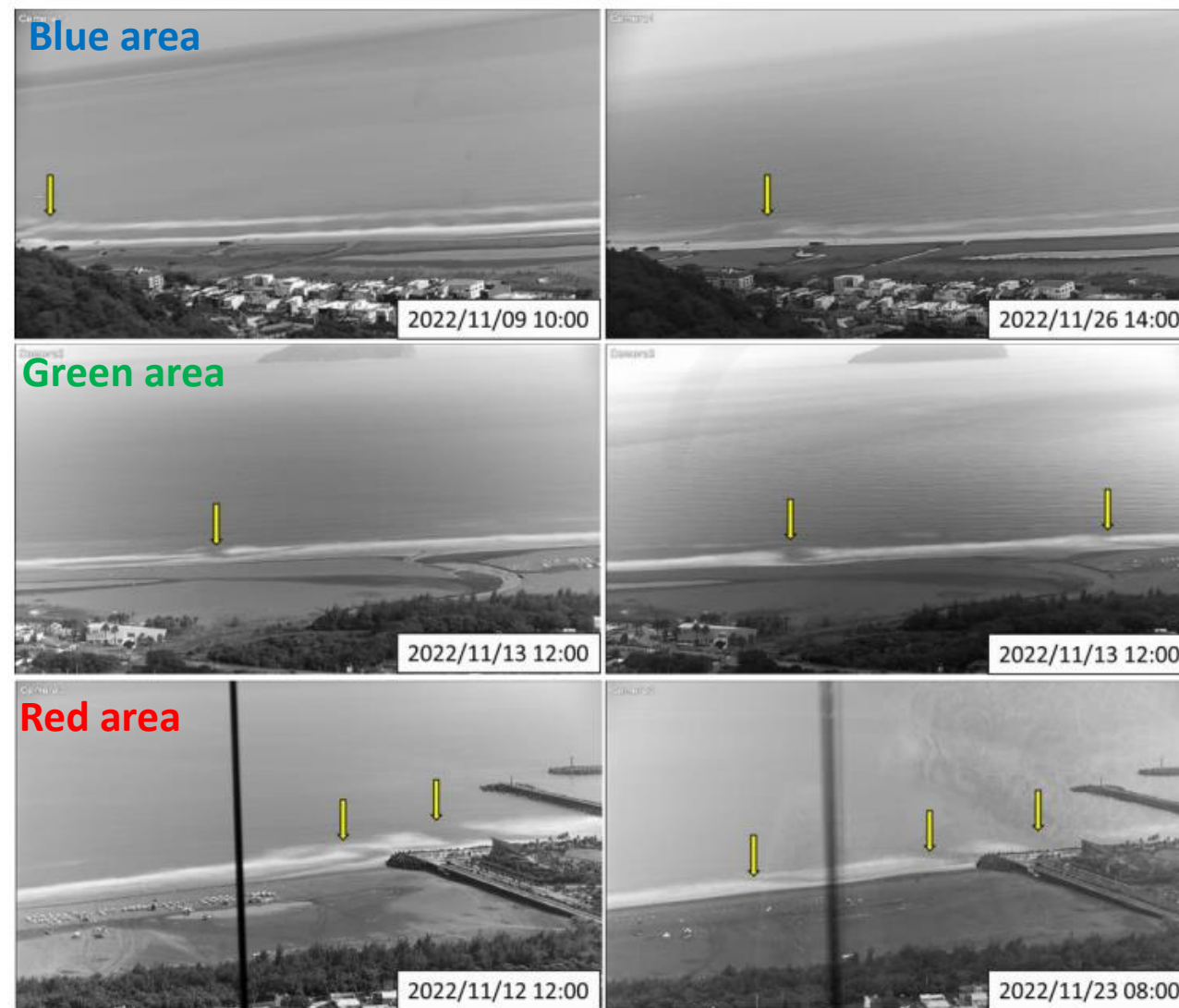
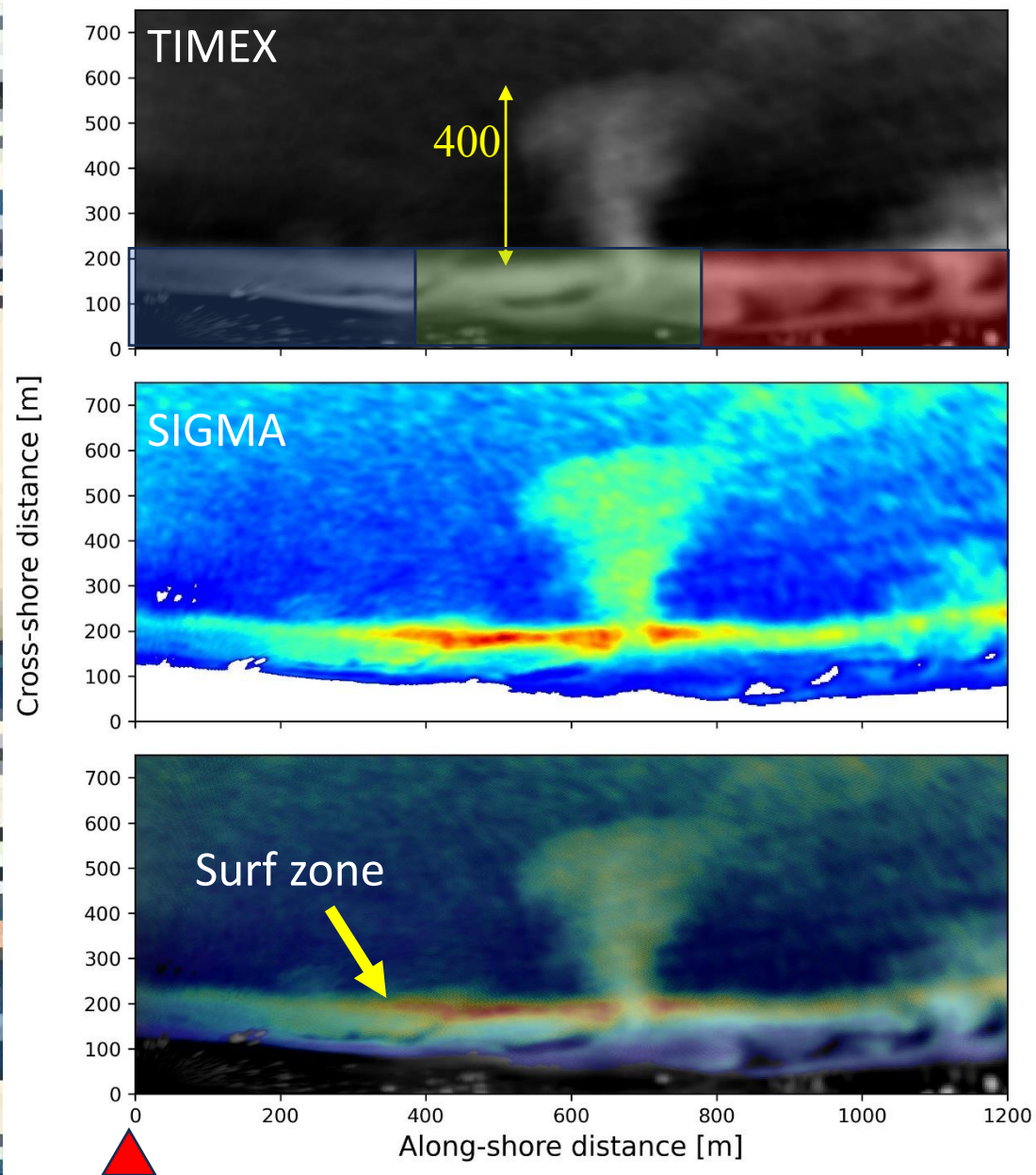
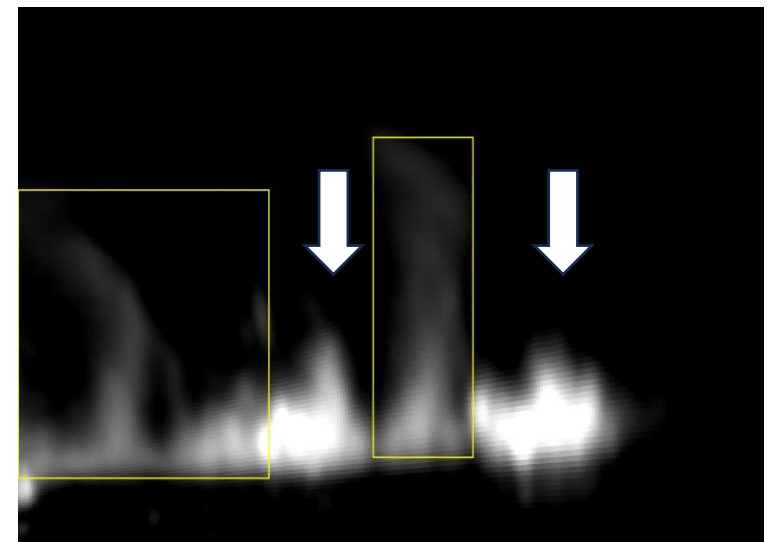
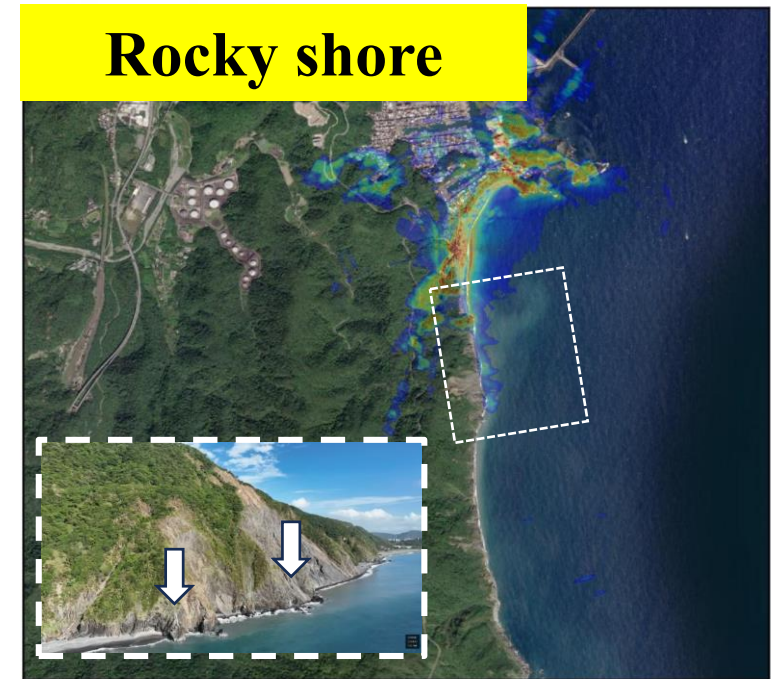
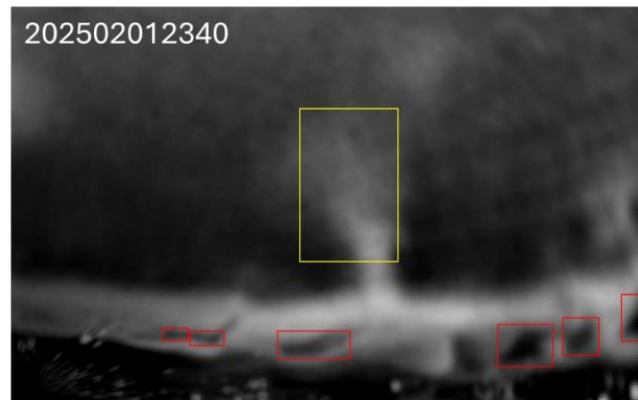
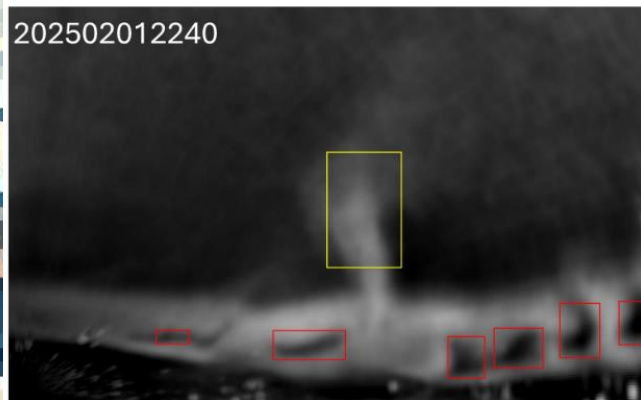
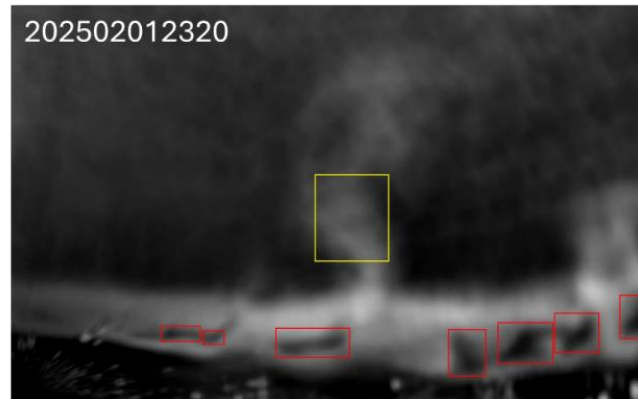
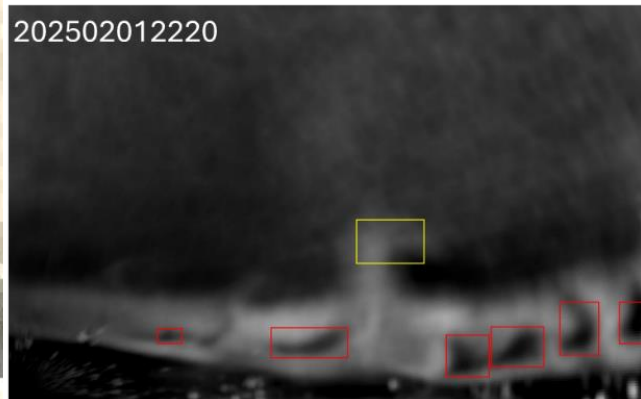
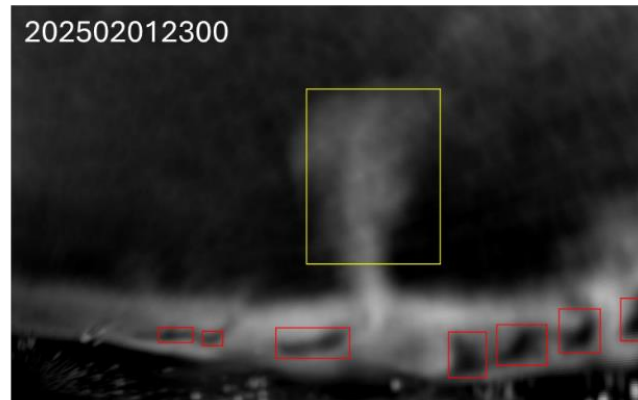
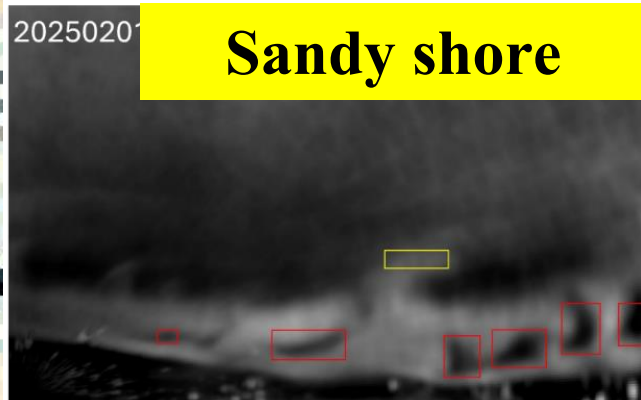


圖 2-24 宜蘭縣外澳裂流監測站觀測之裂流案例示意圖

Rip currents



Rip currents

Rip Currents Off Rocky-Shore Surge Channels

Jamie MacMahan¹ , Ed Thornton¹ , Nick Patria², Casey Gon², and Mark Denny³

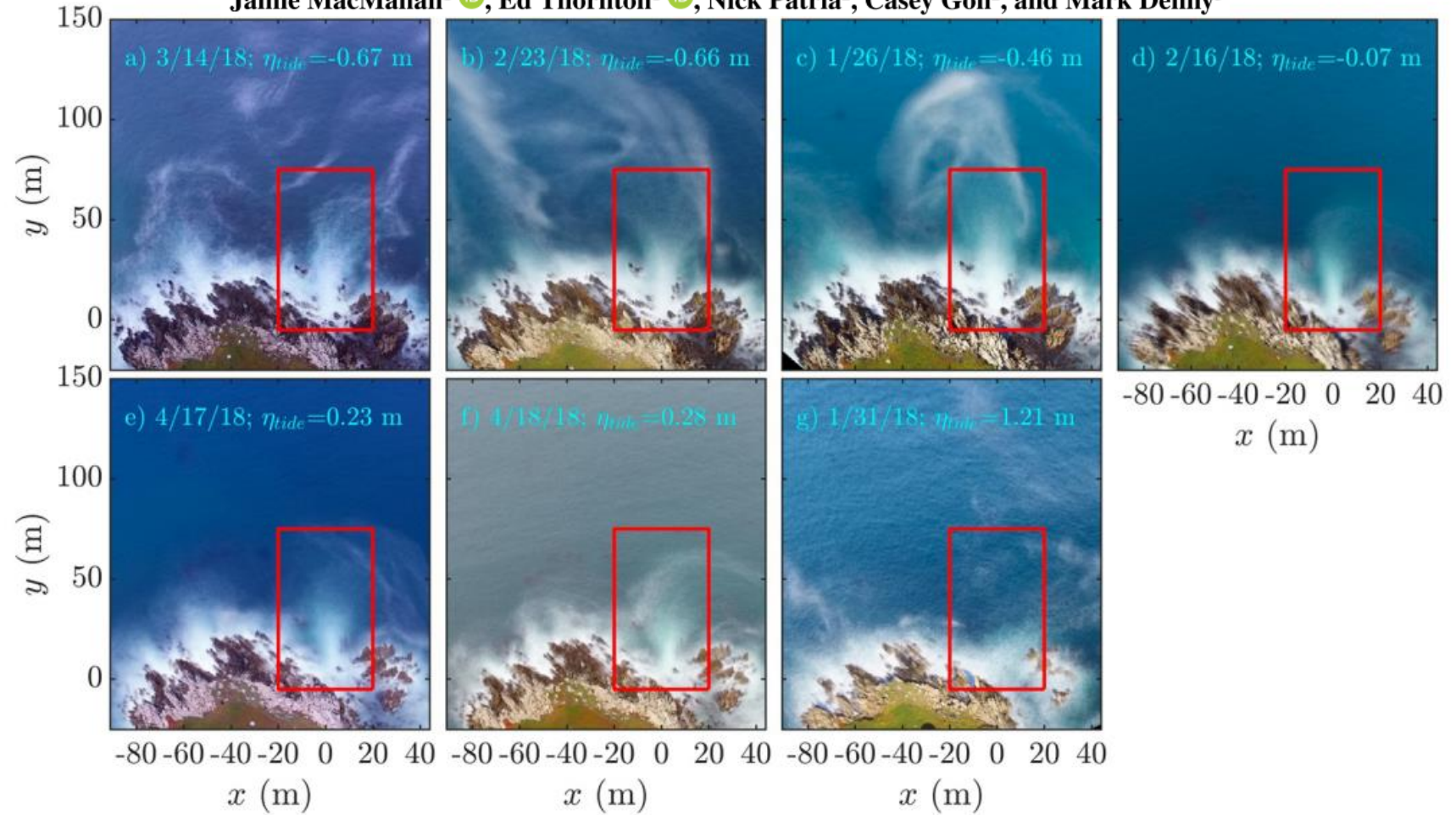


Figure 2. Time-mean, georectified Unmanned Aerial System video image for the seven flights (see Table 1 for conditions). The red box highlights the rip current from surge channel 1.

守護藍色國土：近岸海象雷達智慧監測系統

海岸線的雙重嚴峻挑戰

海洋廢棄物每年造成全球高達 2.5 兆美元損失



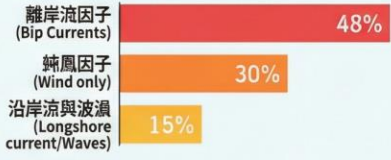
台灣 70% 海廢為漁業相關，熱區集中在西部至東北部海域。

離岸流是致命的「隱形殺手」



高達 82% 的溺水歸因於離岸流，且多發生於波高低於 1.5 公尺的平穩海況。

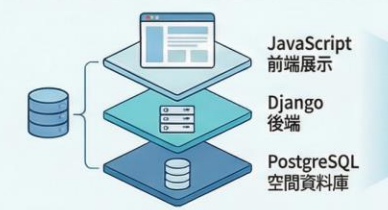
溺水成因分類



台灣溺水事故熱區：新北市佔總量 31%，高度集中於貢寮與金山等東北角岬灣地形。

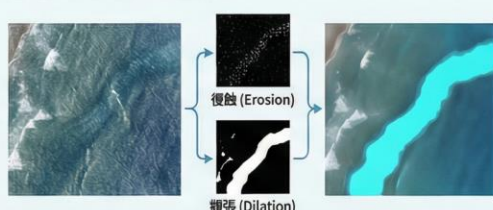
智慧化監測與作業平台

階層化系統架構：從數據到視覺化



結合 PostgreSQL 空間資料庫、Django 後端及 JavaScript 前端展示。

影像形態學辨識技術



利用「侵蝕」與「擴張」運算，自動過濾雜訊並精確標定離岸流通道。

全天候作業化預警



透過 5 座微波雷達監測離岸流

