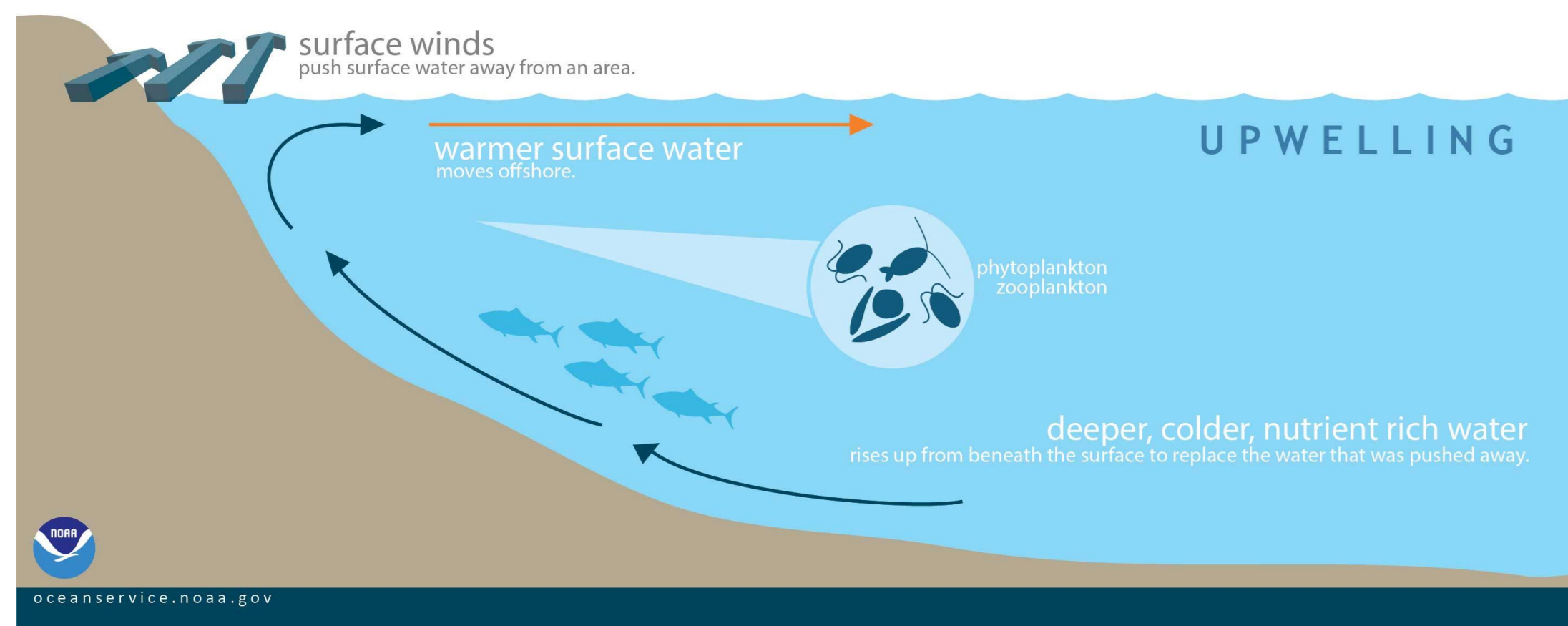


I. INTRODUCTION

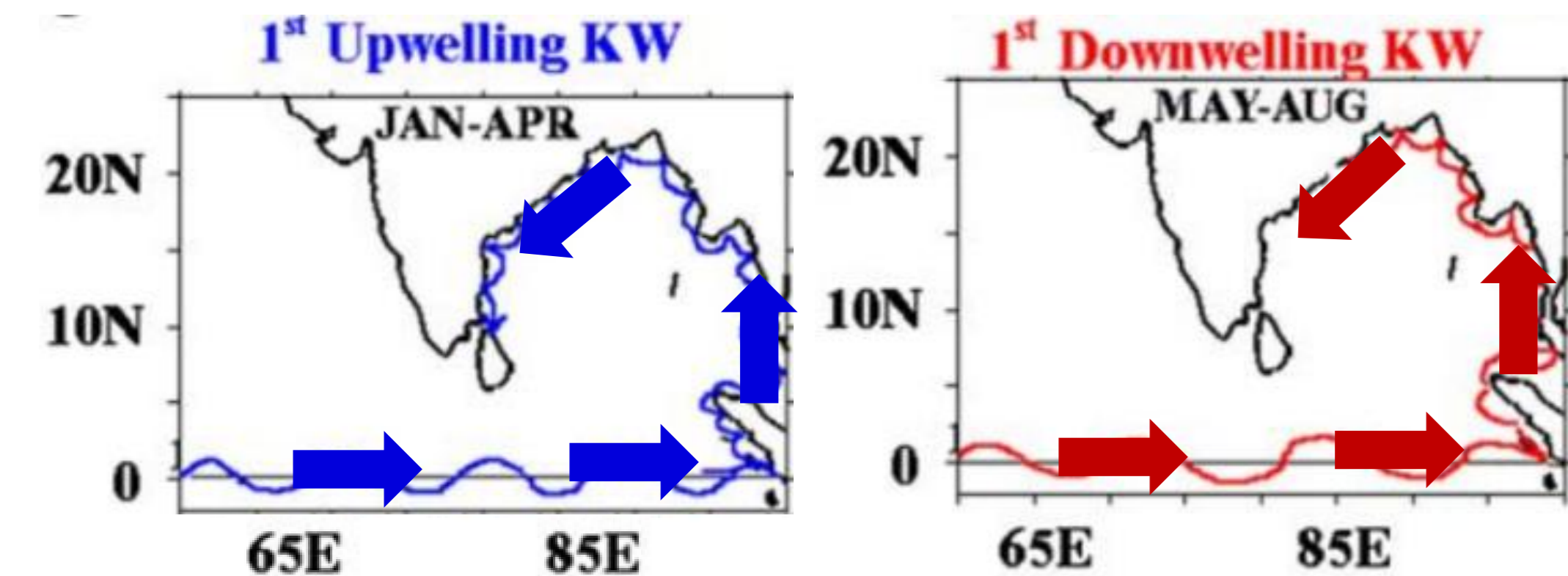
- Coastal Upwelling:** Upward flow resulting from local alongshore wind driven offshore Ekman transport (ET).



(https://oceanservice.noaa.gov/education/tutorial_currents/03coastal4.html; accessed on 27th September 2023)

- Alternatively, it can also be driven by coastally trapped internal Kelvin waves (KW), in the absence of local winds.
- Coastal upwelling is the most important physical process determining the biological productivity of coastal oceans.

Seasonal KW Cycle: Modified From Rao et al., 2010



- In the Western Bay of Bengal, both local wind-driven ET and remotely driven KW are known to drive coastal upwelling (Vinayachandran et al., 2021.)
- Research Gap:** The relative contribution of ET and KWs and its alongshore variation have not been explored, particularly in observations.

II. OBJECTIVES

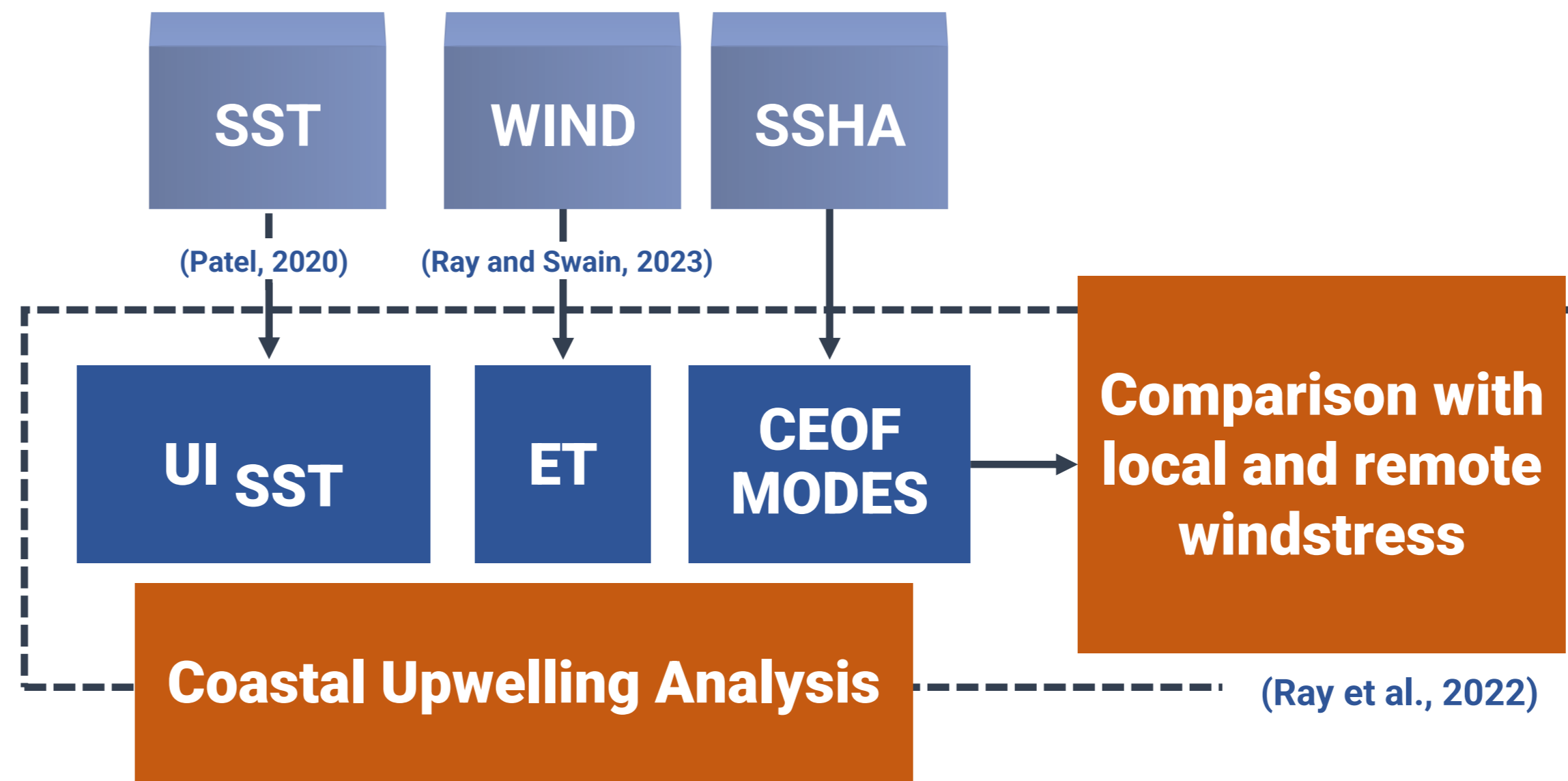
- Identify variability associated with local wind-driven ET and remote wind-driven KWs.
- Characterise their relative contributions over different parts of the coastline.

III. DATA AND METHODS

DATA

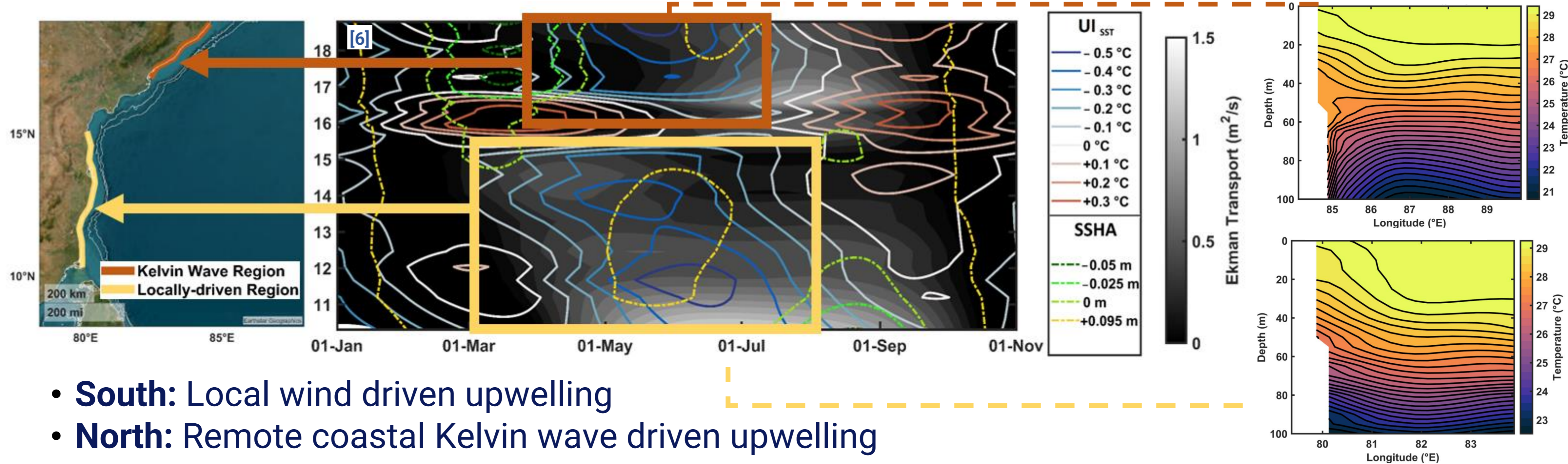
Parameter	Dataset	Grid Spacing	Temporal Resolution
Zonal and Meridional Windstress	CMEMS WIND_GLO_WIND_L4_OBSERVATIONS_012_006	0.25° × 0.25°	6 h
Sea Surface Temperature	OSTIA REP Level 4 SST	0.05° × 0.05°	Daily
Sea Surface Height Anomaly	CMEMS SEALEVEL_GLO_PHY_L4_MY_008_047	0.25° × 0.25°	Daily

METHODS



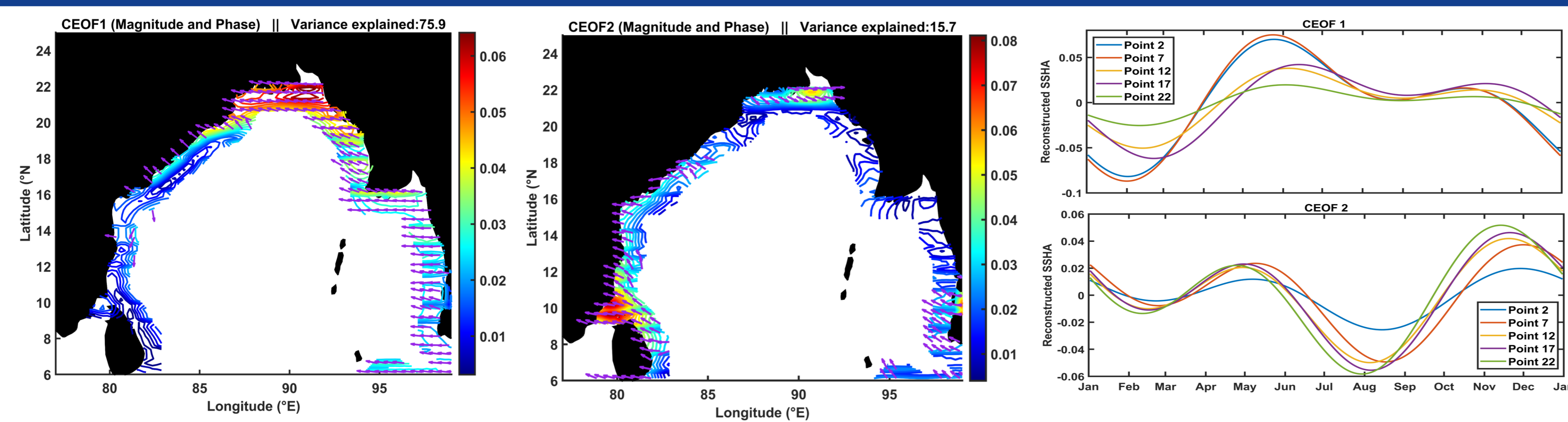
IV. THE BAY OF BENGAL COASTAL UPWELLING SYSTEM

DECADAL CLIMATOLOGY OF UPWELLING INDICES (2009-18)

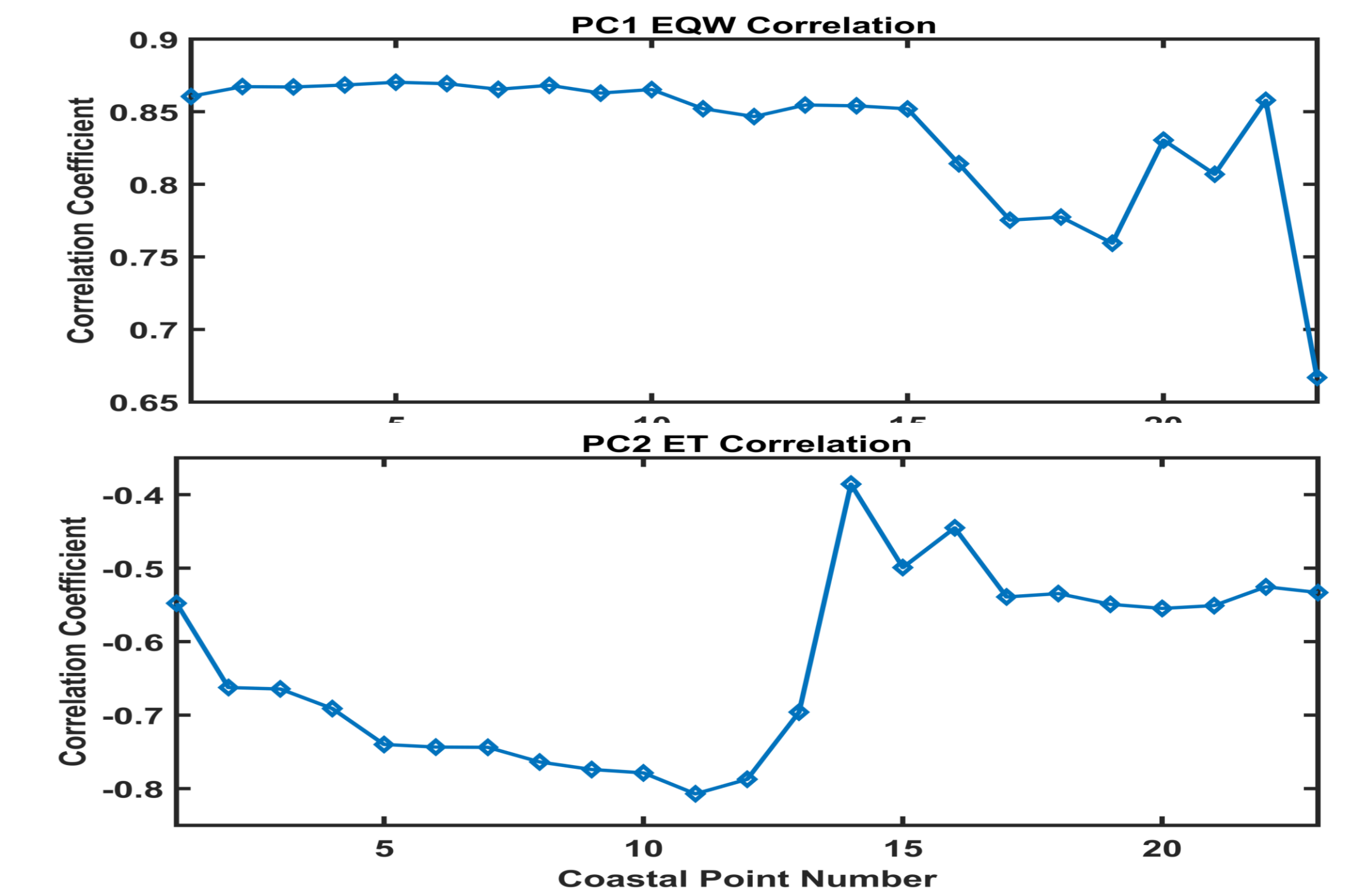


- South:** Local wind driven upwelling
- North:** Remote coastal Kelvin wave driven upwelling

V. SEPARATION OF MODES



VI. COMPARISON WITH LOCAL & REMOTE WINDS



VI. CONCLUSIONS

- Coastal SST cooling coincides with alongshore winds in the south, while the cooling precedes the winds in the north.
- SSHA along the northern section is influenced by Mode 1 which is correlated with equatorial zonal winds.
- SSHA along the south is driven by Mode 2 which is correlated with local winds.
- Coastal upwelling south of the KGD is local-wind driven, while the upwelling to the north is remote wind-driven.

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