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Impact of intra-seasonal coastal Kelvin waves on SST in the Canary upwelling system: composite analysis in Spring

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The impact of intra-seasonal coastally trapped waves on SST in the Canary upwelling system is studied in satellite estimates of sea surface height, wind, and temperature, using a composite analysis of propagating upwelling and downwelling events. We focus on Spring, the season of strongest SST variability at this frequency. The results obtained show that the average wave reaches an amplitude at sea level of ± 2 cm and is associated with an SST signal of ± 0.4 °C in the vicinity of the upwelling front, located off Senegal. Strikingly, this composite wave is reinforced by a constructive meridional wind anomaly when it reaches the upwelling front, the wind signal is likely as important as the wave in terms of SST impacts. We discuss the possible cause of this synchronicity in terms of basin-scale atmosphere and ocean waves.

Keywords:

- Impact
- Coastal Kelvin waves
- Intra-seasonal
- Boundary upwelling systems
- Composite analysis of spring
- Tropical Atlantic