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PROPOSITION DE SUJET DE THESE (Abstract for english version)

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PhD project title

Long term blended analysis of sea **S**urface **S**alinity in the northern **I**ndian Ocean from multi sensor **SA**tellite and **I**n situ data (SSISAI)

Abstract of the PhD topic

By changing the physical properties (density, vertical stratification, dynamics) of the oceanic surface layer that interacts with the atmosphere, Sea Surface Salinity (SSS) plays a key role in the evolution of water masses and climate, especially in the tropics. The North Indian Ocean, is a basin with special characteristics. Its surface temperature is relatively high and homogeneous compared to other tropical basins while its SSS has strong contrasts between the west (Arabian Sea) and east (Bay of Bengal). These sharp east-west contrasts, combined with intense dynamics of monsoon ocean currents, give rise to complex and yet poorly understood variations of SSS. This thesis proposes to use the synergy between all the existing datasets in SSS to analyze over a longer period than previously the mechanisms of interannual variability of the SSS in the zone. In addition to the current satellite data (SMOS, AQUARIUS, SMAP, 2010-present period) a maximum of in situ data will be integrated, as well as two new types of satellite data from which SSS will be restored by innovative methodologies implemented within the LOPS/SIAM team during previous works. This unprecedented SSS product (2003- 2018) will make it possible to double the existing time series as well as to improve the spatial resolution in zones of strong SSS gradients as at the exit of major rivers. The use of this new dataset, together with other climatic data (ocean currents by satellites, flow of large rivers...) will allow to study the mechanisms of the interannual variability of the SSS at basin level and its links with the major climatic phenomena of the area (river plumes, monsoon dynamics, Indian dipole, cyclones).

Contact for more details :

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