## Salinity and water cycle: Observations of sea surface salinity in the global ocean from ships of opportunity

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Sea Surface Salinity (SSS) observations are needed to improve our understanding of the earth's water cycle and climate variability. SSS has proven to be valuable for describing and understanding climate variability at seasonal to decadal time scales, improving estimates of long-term trends in the context of climate change, testing ocean dynamical processes, assessing numerical model performances, quantifying the relative role of salinity on sea level change, improving El Niño prediction lead time, etc.. The importance of SSS in the climate system has further motivated the development by European and USA/Argentina space agencies of the dedicated SMOS (see Boutin et al. poster) and Aquarius satellite missions which (will) enhance global observations. This poster presents the French SSS Observation Service (http://www.legos.obs-mip.fr/observations/sss). This Observation Service is a nationally certified 'Observatory for Research in Environment' since 2002, and it represents the main contribution to the international Global Ocean Surface Underway Data (GOSUD: http://www.gosud.org) program. It aims at collecting, validating, archiving and distributing in situ SSS measurements derived from thermosalinographs installed on a dozen of Voluntary Observing Ships (VOS), for the benefit of climate research and operational ocenanography. Details will be given about technical issues, instruments and softwares used, management of real time data transmission, validation processes for both real time and delayed mode data, and some derived scientific products. Comparison between VOS-derived and SMOS-derived SSS records will be presented and discussed. A selection of recent scientific results obtained from SSS measurements will also be presented. including an assessment of the ability of CMIP3 coupled models to reproduce the seasonal and ENSO-related variability in the tropical Pacific.