GOALS of the TPOS-2020 Pilot Study
- Determine the scales of variability needed for a sampling strategy to resolve the mass, heat and freshwater transports within the Low Latitude Western Boundary Currents (LLWBCs).
- Multi-platform approach needed with combination of line-mode transects (XBT; gliders, moorings etc.) and broad-scale (Argo; drifters, remotely-sensed etc.).
- Determine key observational sites in the LLWBCs, decide on the variables to be observed in terms of priority and readiness of technology, and determine the time and space scales that must be resolved in order to develop a sustained boundary observing system.
- Build on existing relationships: The pilot array would explore potential opportunities to collaborate between international institutions for the implementation and maintenance of TPOS, to determine ways to share costs such as through ship time, instrument input and logistical capabilities.
- ITP, SPICE and NPOCE programs provide starting point to a coordinated pilot array and a sustained system.

The SOLOMON SEA: A Case Study for Assessing a LLWBC Observing System?
- The New Guinea Coastal Current System, the LLWBC of the South Pacific, transits the Solomon Sea on the way to the equator.
- Complicated narrow pathways that bifurcate.
- Intense and deep reaching flows encounter complex and steep topography.
- High mixing induces water mass transformation.
- Enrichment of water masses (land-sea exchanges) mean significant micro-nutrient input.
- Three narrow exit passages: Vitiaz, St Georges and Solomon St.
- Each exit pathway has different transit time to equator and carries different water masses and different biogeochemical properties.
- The South Pacific Circulation Experiment (SPICE) program focused a number of different observational programs in the Solomon Sea.

An International Ocean Obs 19 Effort:
An OO19 white paper will review all these complementary approaches in the Solomon Sea, as well as discuss the requirements and strategies for observing the transports, properties and the micro-nutrient input variability. Integration across networks is key to meet the challenges posed by the complex western boundary regions and to define a regional sustained observing system for the LLWBCs for the next decade. At present this is a primary missing element of the global ocean observing system.