

# Pacific Sea Level & Climate Monitoring Project (SPSLCMP) data help Pacific Island Countries develop their maritime boundaries



Andrick Lal - CGPS Station, Cook Islands.

The data and facilities provided by the South Pacific Sea Level and Climate Monitoring Project (SPSLCMP) is well known for its use in tracking sealevel change and variability over time and is even used to track sealevel changes which occur due to storms and tsunamis in the Pacific Islands Region. However, it is not generally known that SPSLCMP data and facilities also provide a critical service and information which supports work by the Ocean & Islands Programme's Maritime Boundary Sector. Given these two work Sectors both lay within the Ocean & Islands Programme, it's easy to overlook the close and complementary interaction but it's a story worth telling. Maritime Boundaries (often just thought of as EEZs – Exclusive Economic Zones) have to be very accurately measured from the shores of each Island State or Territory. That shoreline starting point is called a "baseline" and in the Tropical Pacific these usually correspond to a line "drawn" using GIS techniques around the outer reef edges of an island or island group at Lowest Astronomical Tide (LAT). To do this accurately it is obviously necessary to have high quality sealevel data and precise map reference points, the SPSLCMP provides both of these in 12 locations across the Pacific Island Region.

The SPSLCMP is an Australian Government funded programme of work which is managed by the Australian Bureau of Meteorology and spans 12 Pacific Island Countries (PICs). The SPSLCMP has been recording high quality sealevel, temperature, wind and atmospheric pressure data for 20 years. The SPSLCMP gauge on each island is also associated with a CGPS (Continuous Global Positioning System) to determine

possible vertical movement of the island due to regional tectonic activity. Because the CGPS analysis is extremely precise it can measure changes in position in the order of 1mm in any direction over time. Obviously this is an important consideration when measuring total sea level change on an island. However, the CGPS also provides an excellent "reference point" which can be used to improve the positional accuracy of island maps, charts and even satellite imagery. Many older charts and maps in the Pacific are outdated and inaccurate and they can show the position of islands and sometimes whole island groups to be hundreds of meters and sometime kilometres away from their true position on the surface of the globe. Chart and map positional error is a major problem for Maritime Boundaries development as the lines drawn to measure PIC EEZs and shared boundaries need to be as accurate as possible. This is where the SPSLCMP CGPS facility becomes invaluable to the high precision work of the Maritime Boundaries Sector in determining the correct position of PIC baselines and then the measurement of maritime zones and limits (e.g. territorial seas, contiguous zones and EEZs).

There remains much maritime boundaries work to be completed in PICs however the Ocean & Islands Programme in collaboration with our many technical partners (Geoscience Australia, UNEP Shelf Programme, Commonwealth Secretariat, Forum Fisheries Agency and Australia Attorney General's Department) and using high quality data from the SPSLCMP has earned a name for producing excellent "state of the art" maritime boundary solutions which are on a par with work anywhere in the world.



Maritime Boundaries Pacific Island Participants and discussions between country representatives and technical experts.