

Positioning in the Pacific Islands

Andrick Lal and Salesh Kumar (Fiji)

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SUMMARY

The small islands and atolls in the Pacific are widely spread out and Secretariat of the Pacific Community (SPC) has been providing technical support with respect to accurate definition as per location of these islands and atolls. Most of the islands and atolls in the Pacific are low lying (some are 2 to 3 metres above mean sea level), therefore it is very important to have a vertical reference system established, so that the Pacific islanders are able to accurately know how high or above are their islands above sea level, whether it is chart datum or mean sea level datum. Since these islands are fairly remote and the tides are different in each location, it is very important to have an accurate vertical reference system recognised regionally and globally and above all it is quite a challenging task. One good example is the Hydrographic Project in the islands of Vanuatu funded by the Government of New Zealand and Vanuatu where by geodetic and bathymetry surveys were carried out to map the anchorage points for the cruise vessels (nearly 250 cruise ships enter into the islands of Vanuatu)

The Geoscience for Development Programme of SPC has been actively involved in the regional projects such as the Pacific Sea Level Monitoring Project and Regional Maritime Boundaries project funded by the Government of Australia.

The Pacific Sea Level Monitoring Project is a longstanding regional project and we have been closely working with the Geodesy Division of Geoscience Australia. The project has established a network of Continuous Global Positioning System Stations and Tide Gauge Stations in the thirteen participating countries.

The Regional Maritime Boundaries Project includes fourteen participating countries. As for the definition of the maritime boundaries, with good horizontal location information, vertical location

information is also very important as due to sea level implications, the tides are shifting the low water mark and thus it affects the defined territorial seas baseline; that is the reference for establishment of exclusive economic zone.

In December 2014, the Pacific Geospatial & Surveying Council was established for the region, specialist from the Pacific attended and a desk was formalised at the Geoscience Division of SPC. This council will be a platform for the development of the international reference frame for the region and will lead the way forward to develop 'one' unified reference system.

Most of the countries in the Pacific need to develop their datum from local system to international reference such as ITRF and that there is no local geoid model in place except to utilise the global geoid model such as EGM2008 in this region.

With the modern techniques available, the Pacific island countries would need financial assistance from aid agencies and expertise from the organisations such as UN-GGIM, FIG, IAG and ICG not only to develop their geodetic survey infrastructure (CORS Network) but also to establish their vertical and horizontal reference frame in terms of international standards and specifications. Development of geodetic survey capacity is a need in the region is also necessary.