

A DYNAMIC DATUM FOR PNG - IMPROVING PNG94

Richard Stanaway

Quickclose, PO Box 1364, Carlton, Victoria, Australia.

Abstract

Surveyors often assume that a geodetic datum is stable and "accurate" to the extent that coordinates do not change. PNG, like its Pacific neighbours Indonesia and New Zealand, lies in one of the most tectonically active regions on the planet. Since 1990, high precision GPS measurements have shown that parts of PNG lying on different tectonic plates are moving at up to two metres every decade with respect to each other. This has major implications for geodetic surveys where the base station and roving stations are located on different tectonic plates. Which baseline measurement and reference coordinate should a surveyor use? This paper presents an outline of the different tectonic regions in PNG and discusses how surveyors can deal with tectonic motion across the network using reference epochs and site velocities. Practical examples are presented. The paper also introduces significant improvements to the densification and accuracy of PNG94 that have been made since it was introduced.