

Improving the Geodetic Infrastructure of the Asia-Pacific Region

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SUMMARY

Increasingly, positioning applications in hazard assessment, mining, agriculture, construction, emergency, land, utility and asset management have a demonstrated need for centimetre level or better geodetic infrastructure. However, the geodetic infrastructure in the Asia-Pacific, when compared to other geographical regions, can be generally assessed as being sparse, inhomogeneous in accuracy, infrequently realised and difficult to access. Correspondingly, it has become increasingly clear that the Asia-Pacific infrastructure is below the standard that is now available in other regions, such as Europe and the Americas, and it represents a loss in competitive advantage. The Permanent Committee for GIS Infrastructure Asia-Pacific (PCGIAP) and the International Association of Geodesy (IAG) have made some progress in developing the Asia-Pacific geodetic infrastructure; however, it can still be characterised as being a work in progress. In this presentation, we review recent efforts to improve the region's geodetic infrastructure. Specifically, we focus on crustal deformation and show results from the Asia-Pacific component of the International Association of Geodesy (IAG) working group on regional velocity fields, which includes crustal velocity estimates for over 1200 stations. This velocity field incorporates solutions derived from Continuous GPS (CGPS) data, episodic campaign based data and also velocity-only information where precise coordinates are not available. Our combination method, including our approach of incorporating velocity-only information expressed in a variety of reference frames, such as plate-fixed frames, will be overviewed. Finally, we will review the key elements of the Asia-Pacific Reference Frame (APREF) initiative, which will create and maintain a modern regional geodetic framework based on continuous GNSS data.

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