



A Regional Geodetic Reference Frame for Asia and the Pacific

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In 1994, the United Nations Regional Cartographic Conference for Asia and the Pacific resolved to establish a Permanent Committee comprising of national surveying and mapping agencies to address the concept of establishing a common geographic information infrastructure for the region. This resolution subsequently led to the establishment of the Permanent Committee for GIS Infrastructure for the Asia and Pacific (PCGIAP). One of the goals of the PCGIAP was to establish and maintain a precise understanding of the relationship between permanent geodetic stations across the region. To this end, campaign-style geodetic-GPS observations, coordinated by Geoscience Australia, have been undertaken throughout the region since 1997. In this presentation, we discuss the development of an Asia Pacific regional reference frame based on the PCGIAP GPS campaign data, which now includes data from 417 non-IGS GPS stations and provides long term crustal deformation estimates for over 200 GPS stations throughout the region. We overview and evaluate: our combination strategy with particular emphasis on the alignment of the solution onto the International Terrestrial Reference Frame (ITRF); the sensitivity of the solution to reference frame site selection; the treatment of regional co-seismic and post-seismic deformation; and the Asia-Pacific contribution to the International Association of Geodesy (IAG) Working Group on "Regional Dense Velocity Fields". The level of consistency of the coordinate estimates with respect to ITRF2005 is 6, 5, 15 mm, in the east, north and up components, respectively, while the velocity estimates are consistent at 2, 2, 6 mm/yr in the east, north and up components, respectively.