The Geodetic Infrastructure in Australia and New Zealand: Differences and Similarities

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Overview

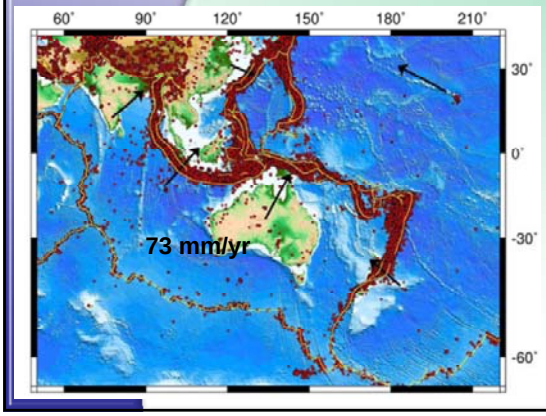
- Geographics
- Geodetic Infrastructure Overview
- Comparisons
- Joint Geodetic Strategy
- APREF
- Summary

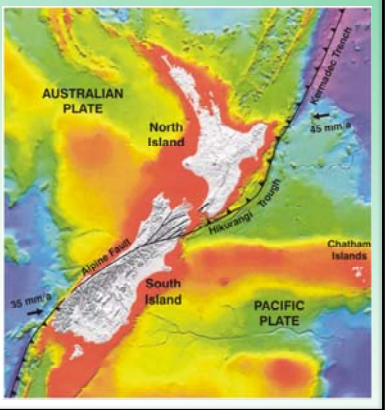
Geographics - Australia

	Australia	New Zealand
Geography	biggest island continent	2 main islands
Topography	Predominately flat, desert	Mountainous
Area	7,682,300 sq km (Aust 28x larger)	268,021 sq km
Population	22.1 m (Aust 5x larger)	4.3 million

Tectonic Setting

Australia	New Zealand
Within the Australian plate	Astride the Pacific -Australian plate boundary
Few earthquakes	Many earthquakes and volcanic activity
70 mm/yr NE movement	Australian plate – 40 mm/yr NE Pacific Plate – 50 mm/yr W

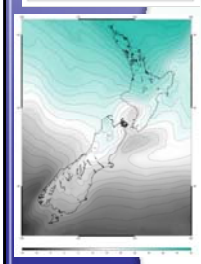


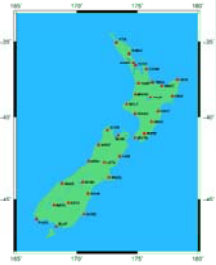


Geodetic Infrastructure Overview – Australia

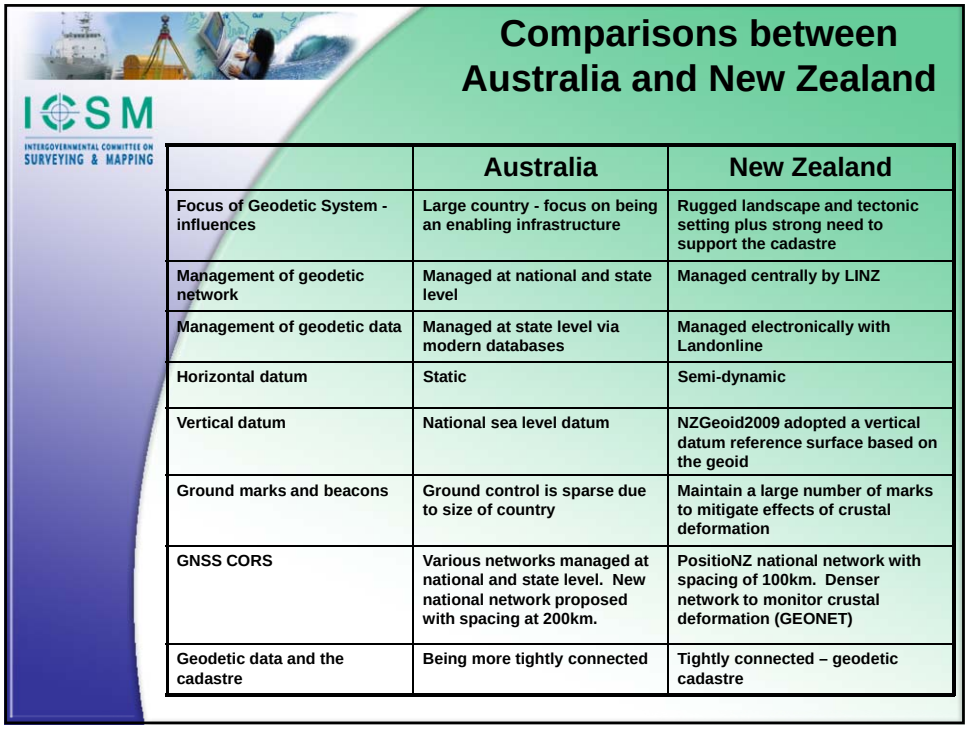
- Horizontal datum – static – GDA (ITRF)
- Vertical datum – AHD - 'MSL zero' at a number of tide gauges
- National projection - UTM
- Australian geodetic network – (AUScope) initiative - upgrading CORS networks, VLBI, SLR, and gravity infrastructure.
- CORS - national 25 plus stations, state – numerous networks
- Data management – managed by each jurisdiction
- Survey control network – managed at state/territory level

Geodetic Infrastructure Overview – New Zealand





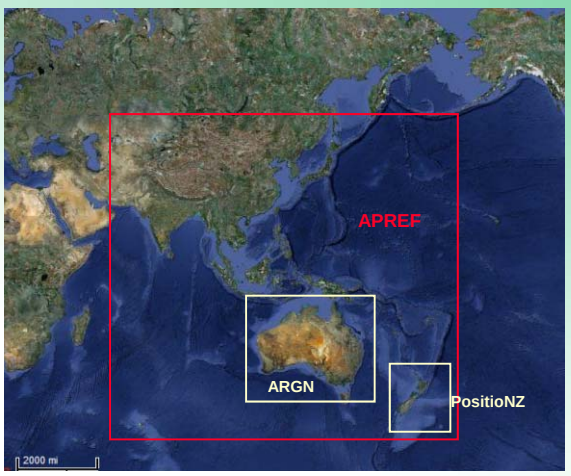
- Horizontal datum – semi dynamic – NZGD2000
- Vertical datum – NZVD2009 using normal orthometric heights (geoid based datum)
- New national mapping projection – NZTM2000.
- Survey control network – strong emphasis on geodetic marks 75,000
- CORS – PositioNZ – 36 stations, GEONET
- Data management – electronic in LoL
- Geodetic system and the cadastre – strong connection



	Australia	New Zealand
Focus of Geodetic System - influences	Large country - focus on being an enabling infrastructure	Rugged landscape and tectonic setting plus strong need to support the cadastre
Management of geodetic network	Managed at national and state level	Managed centrally by LINZ
Management of geodetic data	Managed at state level via modern databases	Managed electronically with Landonline
Horizontal datum	Static	Semi-dynamic
Vertical datum	National sea level datum	NZGeoid2009 adopted a vertical datum reference surface based on the geoid
Ground marks and beacons	Ground control is sparse due to size of country	Maintain a large number of marks to mitigate effects of crustal deformation
GNSS CORS	Various networks managed at national and state level. New national network proposed with spacing at 200km.	PositioNZ national network with spacing of 100km. Denser network to monitor crustal deformation (GEONET)
Geodetic data and the cadastre	Being more tightly connected	Tightly connected – geodetic cadastre

APREF

Asia Pacific Reference Frame (APREF) – create and maintain an accurate and densely realized geodetic framework, based on continuously observed GNSS that will support many geospatial application across the Asia/Pacific region



APREF

APREF will assist with the following joint strategy objectives

- **Provision of semi – dynamic National 3 dimensional datums**
- **Development of a National Geodetic Data Archive**
- **A Unified CORS network across Australasia**
- **Implementation of a modern automated web-based GNSS post processing system (AUSPOS, PositioNZ PP)**
- **Development of a Geodetic GNSS Data Analysis or Central Bureau for the Asia Pacific Region**
- **Development of internationally accepted geodetic standards across Australasia**
- **Establishment of a modernized Vertical Reference Frame for Australasia**
- **Development of a strategy to assist with monitoring and measurement of global change** (eg geodetic component of sea level monitoring)

Summary

- Both Australia and New Zealand provide geodetic infrastructures that support a wide range of uses and users.
- Many similarities between systems but also some significant differences.
- Through ICSM GTSC developing a strategy to coordinate resources and to maximise outcomes.
- A strong focus will be to develop and foster APREF

Questions