



A New Geodetic Datum for the Northern Territory

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FIG WORKING WEEK 2012

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Presentation Content

- Background and status of the Territory's Geodetic Framework or GRS
- Motivations for modernisation and change
- Projects and actions for the OSG
- Challenges ahead

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The Territory

- The Territory covers 1,352,000 km²
- 9 operational surveyors
- 70, 000 parcels
- Responsible for the administration of the geodetic framework and cadastre, and related survey infrastructure

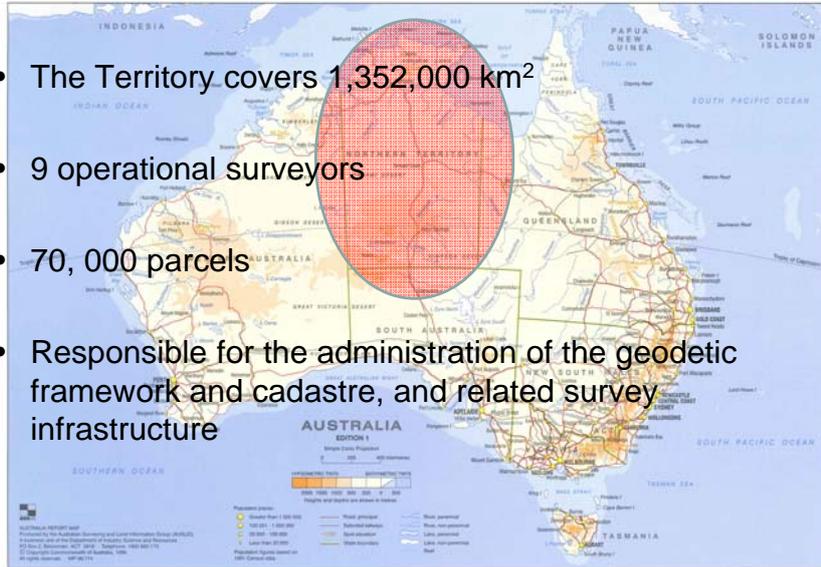


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Territory's Geodetic Framework or GRS

- Datum Geocentric Datum of Australia 1994 – GDA 94
- Constrained by AFN (2), ANN (15) and TGN(100) GNSS campaigns
- Solution based on the International Terrestrial Reference Frame 1992 (ITRF 92)
- The resulting co-ordinates mapped to a common epoch of 1994.0
- Height datum is AHD

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Territory's Geodetic Framework or GRS

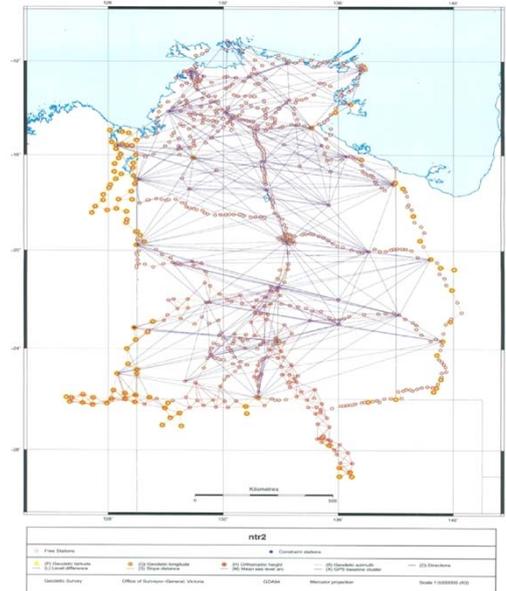


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Motivations for Modernisation and Change

So why are we modernising and considering change to our fundamental dataset that underpins land information - the geodetic framework ?

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Motivations for Modernisation and Change

**To improve GDA94 and enhance it's
mathematical relationship with ITRF**

AND

**To facilitate the pursuit of more accurate
positioning for "users"**

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Motivations for Modernisation and Change

What infrastructure did we need and why ?

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Motivations for Modernisation and Change

We are located on a dynamic continent on a
continually deforming planet !

THUS

We need to better understand this movement
through measurement, modeling and monitoring

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Motivations for Modernisation and Change

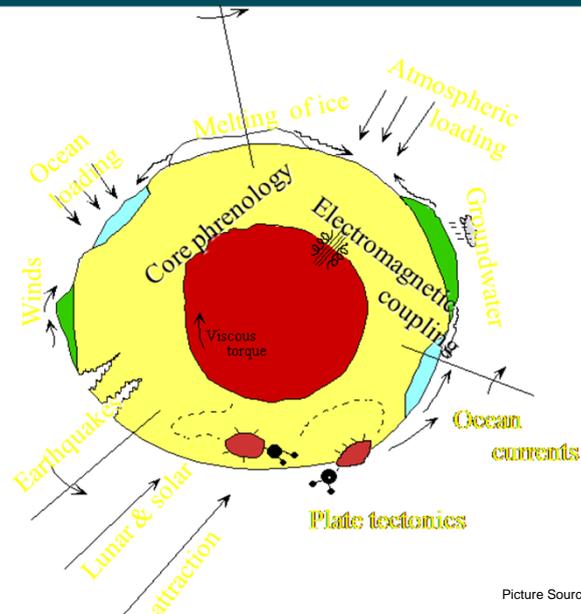


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Motivations for Modernisation and Change

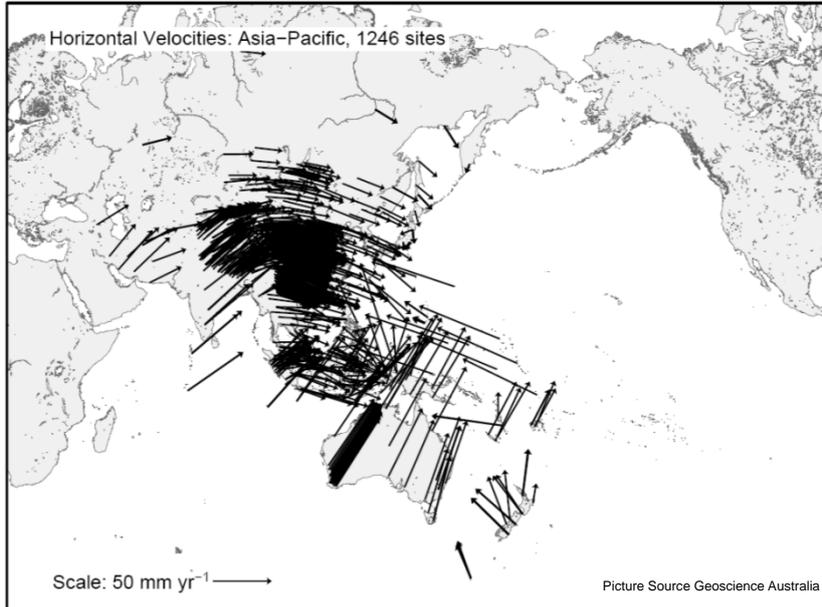


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Motivations for Modernisation and Change

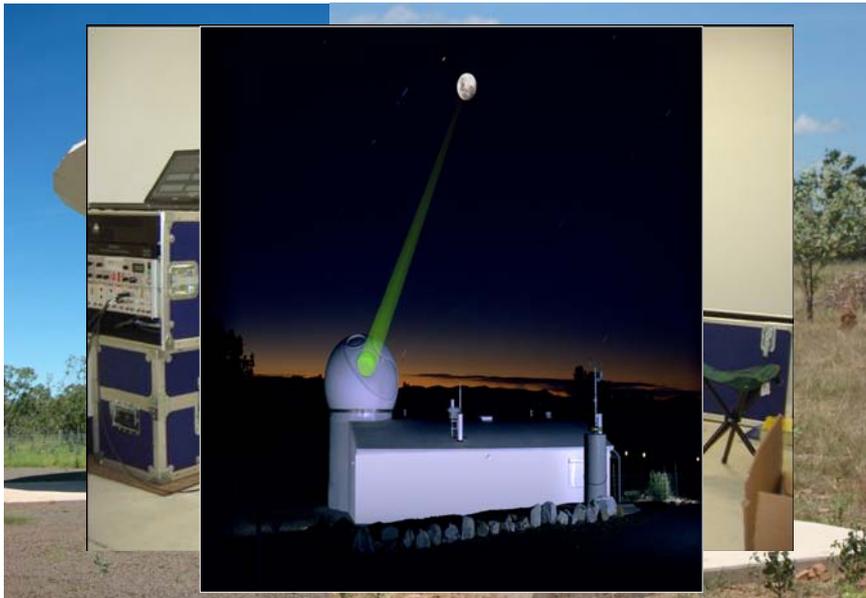


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Territory's Active Geodetic Framework

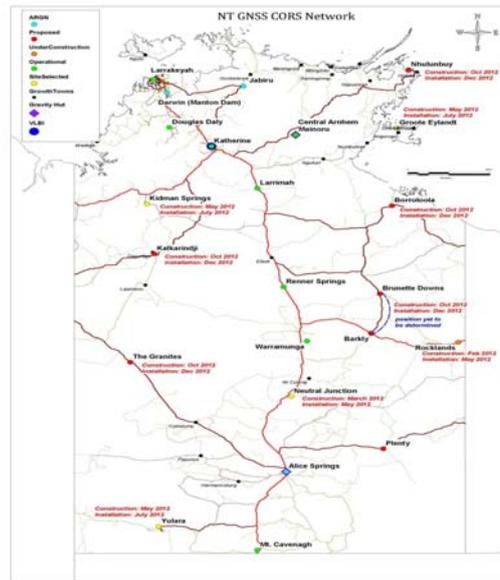


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Motivations for Modernisation and Change

- Results indicate the AFN needs to be refined !
- From a geodetic survey perspective, a modernised datum means:
 - a datum with out the inconsistencies from the original propagation of GDA
 - new “AFN” co-ordinates with more realistic uncertainties
 - a more accurate definition of GDA ... an increase in survey “order”

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Motivations for Modernisation and Change

- A modernised datum means:
 - alignment with ITRF realisations
 - alignment with new mass-market wide area positioning technology i.e. regional and global real time positioning services delivered by satellite, digital communications, and the Internet
 - more consistent derivation of co-ordinates (position) and uncertainties across the nation

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Motivations for Modernisation and Change

- A modernised datum means:
 - expansion of the recognised value standard of position thus enabling more opportunity to achieve legally traceable GNSS measurements
 - high accuracy scientific research modeling such as intraplate deformation will be supported, sea level monitoring
 - consideration of new the geodetic datum....static / semi dynamic / dynamic !

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Projects and Actions of the OSG

What else does the OSG have to do to modernise
our geodetic framework ?

for a new STATIC, SEMI-DYNAMIC, or DYNAMIC
DATUM

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Projects and Actions of the OSG

- Complete the GNSS CORS network !
- Perform more GNSS field observations to connect the old GDA94 datasets to the new 'active' framework
- Cleanse and validate existing datasets
- Convert datasets into DynaNet format.
- Readjust survey control datasets
- Propagate positional uncertainties for survey control and subsequent datasets

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Projects and Actions of the OSG

- NTGESS operational and facilitating the new attributes of the modernised datum
- Refinement and adoption new survey control standards for the modernised datum
- Maintenance of “working surfaces” (i.e. AHD) and on going development of tools / utilities to support these surfaces and datasets
- Expand recognised value standards of position – densification of Regulation 13 certificates

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Projects and Actions of the OSG

- Support and actively participate in national, regional initiatives that facilitate the development and maintenance of our geodetic framework.

TIMEFRAME ?

BY 2015 !

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Challenges

- Promoting, marketing, “selling” the concepts and change!
- Tools and education of users to assist implementation!
- Justification of activities – RESOURCING!
- Working surfaces
- Quality and integrity of datasets

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Challenges

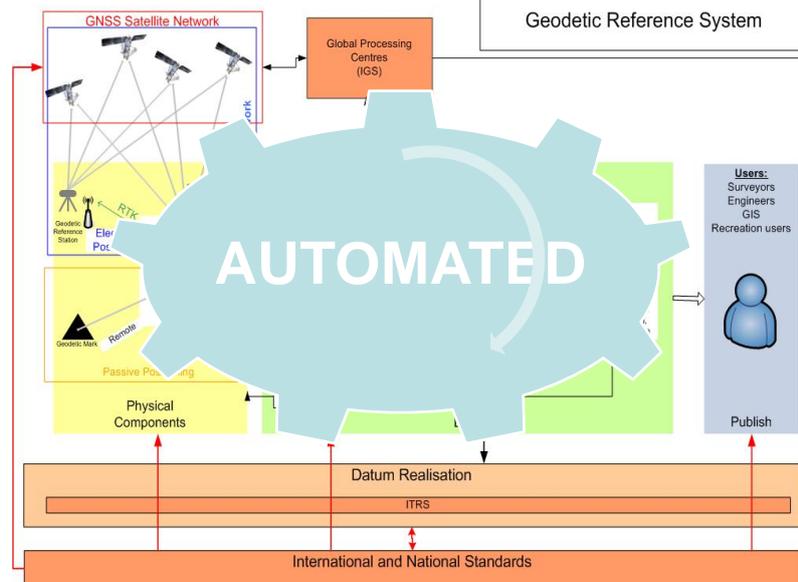


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Summary

OSG is modernising the Territory's geodetic framework !

To upgrade the accuracy of our geospatial reference system, geodetic framework ...and... GDA !

To cater for the users demand for high accuracy positioning !

There is genuine discussion about a datum change !

GDA XXXX is imminent !

Implementing Change = substantial work and challenges

THANK YOU FOR LISTENING !