



Making the Most of Our Investment in Coastal LiDAR

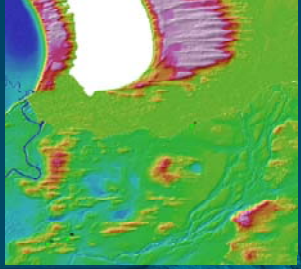
Phil Tickle
 Geoscience Australia

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NEDF Strategies (2009-2011)

access to the best available elevation data describing Australia's


- Governance structures
- Mechanisms for funding which promote cost sharing,
- Technical standards which maximise the utility and interoperability of data
- Access, distribution and use arrangements
- Industry development and capacity building



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Coasts – Issues of National Importance

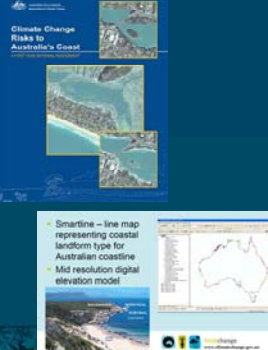
- Since 1990, observed sea level rise (SLR) of ~3mm/yr corresponds to upper limit of IPCC projections.
- 2007 IPCC report predicting SLR of 1m or more by 2100 (Church 2009)
- 80% of Australia's population lives in the coastal zone
- World heritage areas in the coastal zone – Great Barrier Reef and Kakadu.



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Coastal Adaption – Initial Focus

- First national assessment of risk to coastal assets:
 - Settlements
 - Infrastructure
 - Industry
 - Ecosystems
- Released Nov 2009



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National Coastal Risk Assessment


Table 9.3 Transport and services infrastructure and facilities within 200 m and 500m of the Australian coastline.

| | within 200m of the coastline | within 500m of the coastline |
|--|--|--|
| Regional infrastructure | 120 ports 8 power station sub-stations 3 water treatment plants 170 unidentified industrial zones 1,600 bridges | 120 ports 11 power station sub-stations 3 water treatment plants 170 unidentified industrial zones 2,765 bridges |
| Community services and facilities | 258 police, fire and ambulance stations 75 hospitals and health services 48 government administration facilities 380 universities, colleges and schools 102 retirement/nursing homes 11 emergency services facilities 41 waste disposal facilities | 702 police, fire and ambulance stations 159 hospitals and health services 107 government administration facilities 992 universities, colleges and schools 356 retirement/nursing homes 35 emergency services facilities 92 waste disposal facilities |

Source: Geoscience Australia 2008, NEDF database

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Urban DEM Project



- Phase 1 of the NEDF implementation
- Mapping key urban and industrial areas which may be subject to inundation due to the impacts of climate change or storm surge.
- Developing an online tool for government and public users to visualise the coastal inundation
- Developing an online web portal for public good data access
- Managed by the CRCSI under contract to the Department of Climate Change with significant project and technical support from GA and ANZLIC

MEDIA RELEASE
 Senator the Hon Penny Wong
 Minister for Climate Change and Water

11 June 2009

GOVERNMENT TO HELP KEY URBAN AREAS ADAPT TO CLIMATE CHANGE

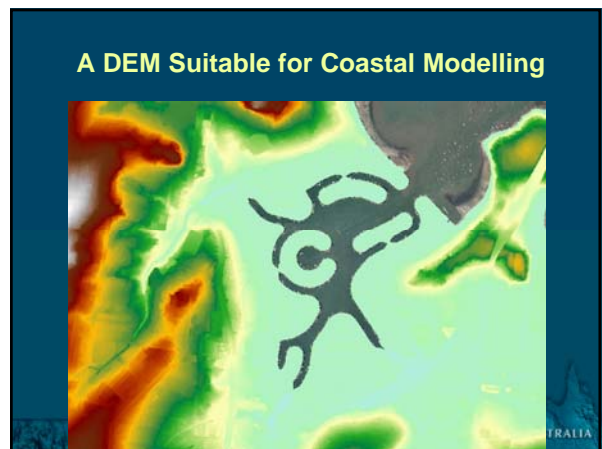
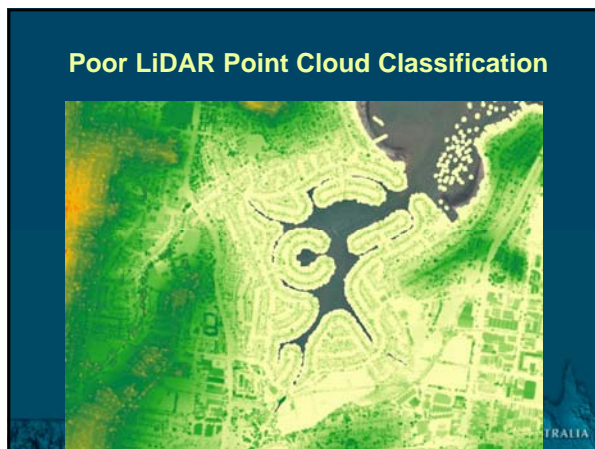
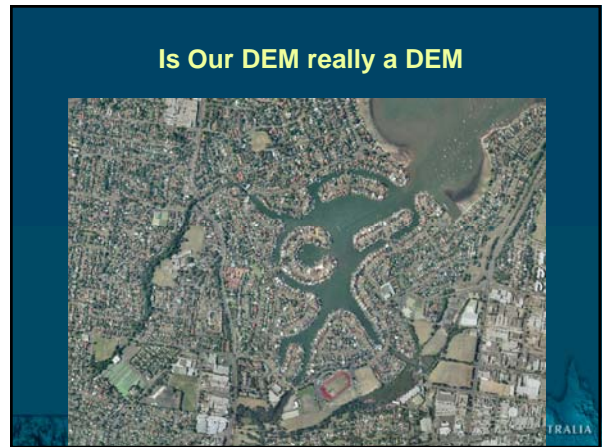
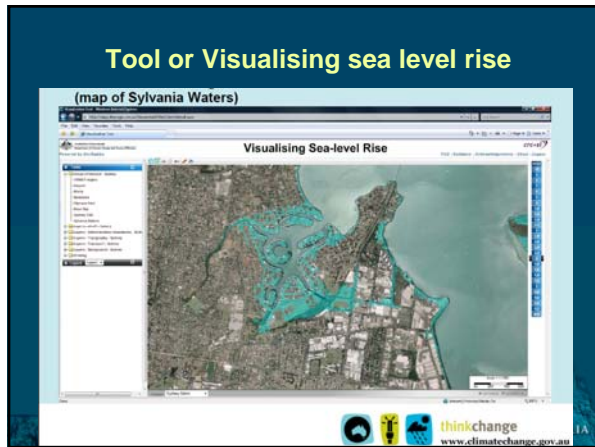
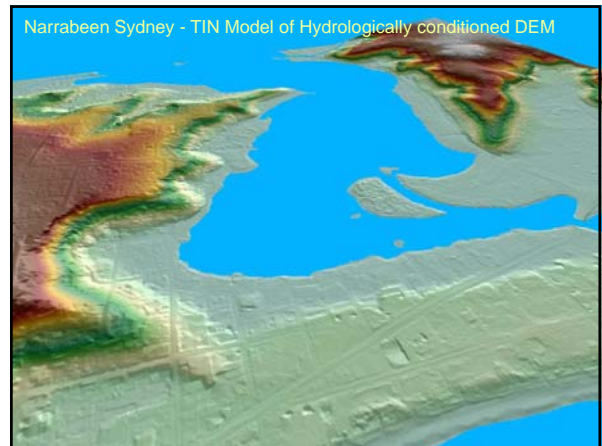
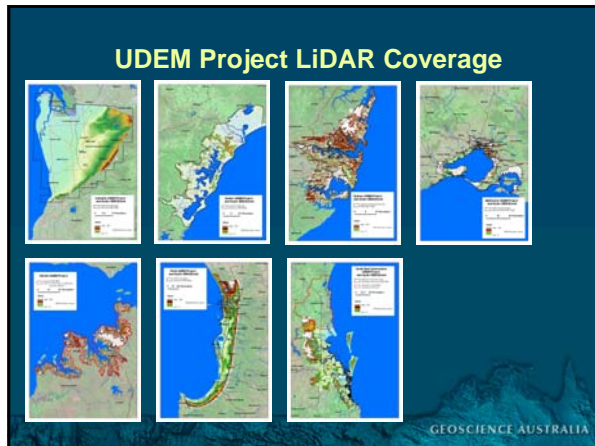
The Rudd Government is providing \$1.2 million for three new projects to help Australia's vulnerable coastal communities plan for the effects of climate change.

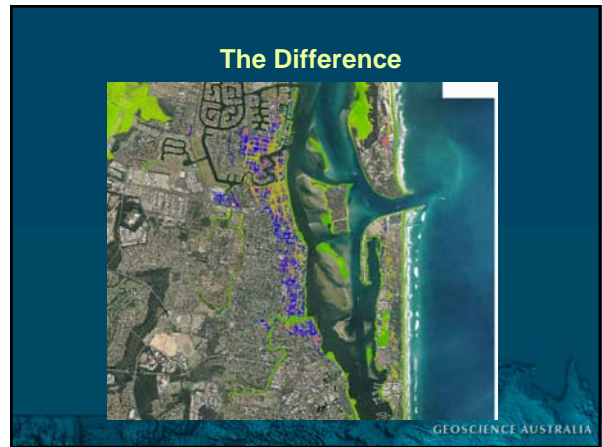
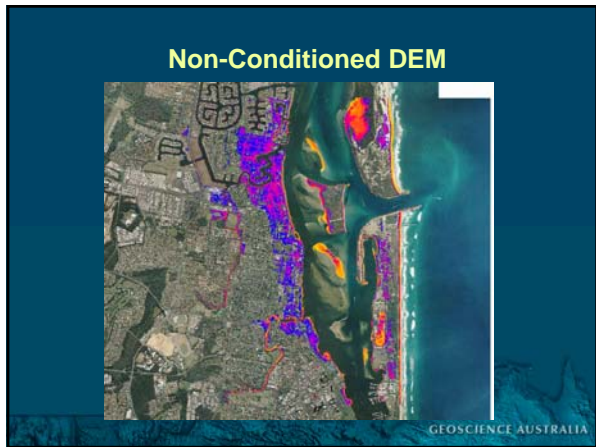
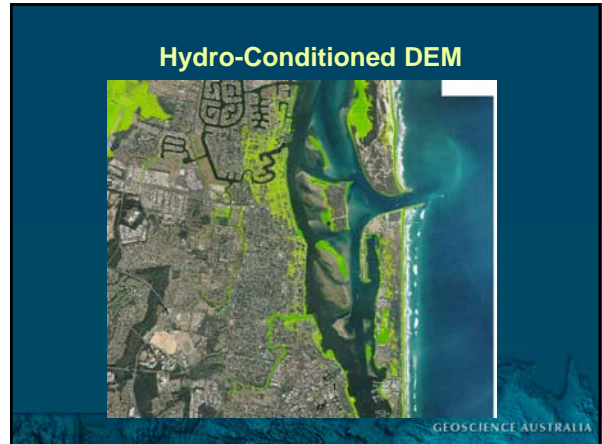
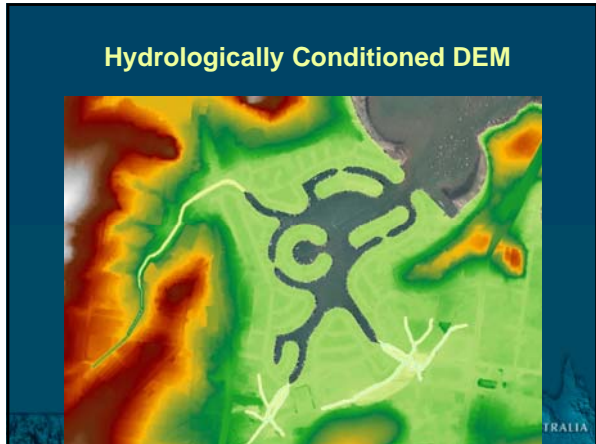
Supporting the project in Fremantle will: assess the climate change and water resource risks facing the metropolitan area of Perth; assess the climate change and water resource risks facing the metropolitan area of Perth; assess the climate change and water resource risks facing the metropolitan area of Perth.

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Improving Data Quality

ICSM Elevation Working Group

Terms of Reference.

1. Develop technical guidelines and standards for the acquisition, processing and quality assurance of elevation data.
2. Develop generic best practice 'Statements of Work' that may be used by agencies in developing project deliverables.
3. Liaise with ICSM committees and other appropriate bodies to optimise alignment of activities.
4. Facilitate national awareness of guidelines, best practice and standards.

"Future-Proofing" Our Collective Investment

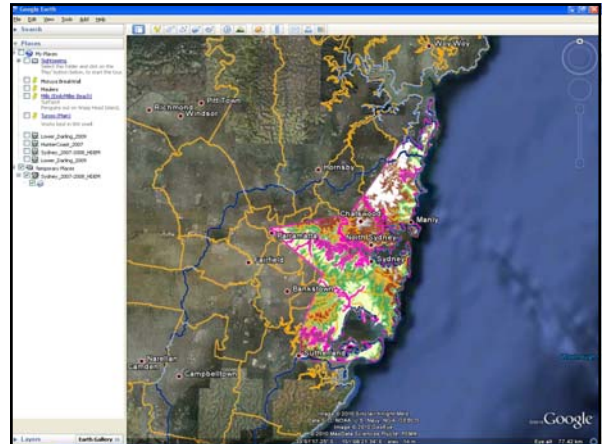
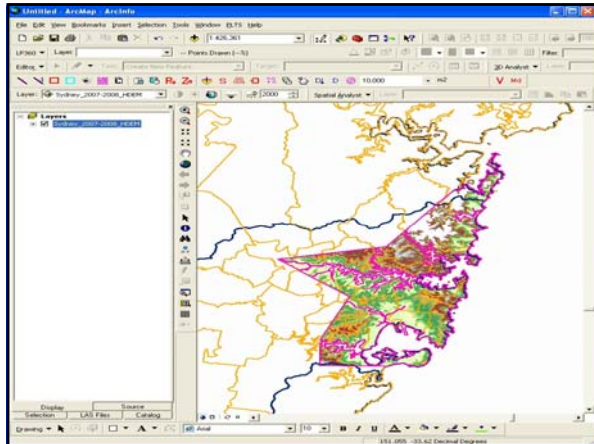
| Catchment ID | Name | Area | Other |
|--------------|--------------------------|-----------|-----------|
| 15027A | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027B | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027C | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027D | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027E | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027F | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027G | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027H | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027I | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027J | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027K | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027L | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027M | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027N | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027O | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027P | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027Q | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027R | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027S | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027T | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027U | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027V | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027W | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027X | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027Y | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |
| 15027Z | Lower Murrumbidgee River | 1,100,000 | 1,100,000 |

Improving Data Quality

ICSM LIDAR Acquisition Specifications and Tender Template

VERSION 1.0, OCTOBER 2010

| Section | Page |
|--|------|
| 1. Project Brief | 5 |
| 2. General Project Requirements | 5 |
| 3. Project Conditions | 5 |
| 4. Project Area | 5 |
| 5. General LIDAR Specifications | 5 |
| 6. LIDAR Point Cloud Specifications | 5 |
| 7. LIDAR Derivative Data Specifications | 12 |
| 8. Data Delivery Specifications | 12 |
| 9. Project Planning and Reporting Specifications | 15 |
| 10. Quality Assurance Specifications | 16 |
| Attachment A - Project Brief | 18 |
| Attachment B - The Naming Conventions | 18 |
| Attachment C - LIDAR Acquisition Specifications | 27 |
| Attachment D - The Project of Conditions | 28 |
| Attachment E - LIDAR Acquisition Specifications | 28 |
| Attachment F - Quality Assurance Specifications of Contract Milestones | 28 |
| Attachment G - Reporting Specifications | 28 |
| Attachment H - Naming Conventions of Project Deliverables | 28 |
| Attachment I - Quality Assurance Specifications | 28 |



UDEM Phase 2 (2010-2012)

- Expanding the coverage of elevation data available for public good use to support the communication of inundation risk areas.
- Promoting a consistent approach to developing risk profiles for coastal communities, through developing products and tools communicating inundation risk.
- Providing additional capacity for local governments and other coastal decision makers to identify risk.
- Increasing information in the public domain to assist in raising community awareness.
- Supporting the development of a nationally coordinated, distributed approach to manage elevation data underpinned by standards and guidelines to ensure quality of elevation products.
- Addressing priority research issues to improve the technical capacity and usage of elevation data.

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UDEM Phase 2 (2010-2012)

Next Steps

- Increasing engagement with State and Local Government
- New data acquisition and/or processing over priority areas
- Technical Review of hydrological conditioning methods and investment framework.
 - Hydrological conditioning of acquired data in selected areas to underpin accurate modelling
- Expansion of NEDF-Portal capacity and capabilities
- Extending the coverage and enhancement of the visualisation tool and static maps
- Further research to address key technical capacity constraints.

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UDEM Phase 2 (2010-2012)

Proposed Research Projects

- How well do different technology derived DEMs perform in a range of coastal environments? What is the distribution of their respective vertical errors? (Project 1)
- What are the user needs for differing resolution DEMs and what is the optimal process for developing DEMs of differing resolutions? (Project 2)
- What is the best method to integrate multi-resolution land-based (topographic) DEMs with near shore bathymetric DEMs (Project 3)
- How useful is the near shore DEM derived from bathymetric LiDAR to modelers and what are the alternatives for collection of near shore bathymetry to meet the defined needs? (Project 4)

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<http://www.ga.gov.au/topographic-mapping/elevation/index.jsp>
 Email: elevation@ga.gov.au

Digital Elevation Data
 Australia's future safety, prosperity and sustainability depends on making informed price and investment decisions that meet the needs of today, and the decades ahead. Digital elevation data which describes Australia's landforms and seabed is crucial for addressing issues relating to the impacts of climate change, disaster management, water security, environmental management, urban planning and infrastructure design. Geoscience Australia is working collaboratively across all levels of government, industry and academia to ensure decision makers, investors and communities have access to the best available elevation data to meet local, regional and national needs.

National Elevation Data Framework (NEDF)
 National Elevation Data Framework (NEDF)
 Ensuring decision makers, investors and the community have access to the best available elevation data describing Australia's landforms and sea bed to address the needs of today and the decades ahead.

2009 National Data Audit Map
 What is the current extent and accuracy of elevation mapping across Australia?

Online data
 National Elevation Data Framework (NEDF) Portal (coming soon)
 Search, discover and access elevation data for Australia. Become part of the elevation data community. Contact us if you are planning to feed in elevation data.

Geophysical Archive Data Delivery System
 This system provides regional, hydrographic, gravity and digital elevation data from Australian National, State and Territory Government geophysical data archives.

Packaged data
 GEODATA 8 Second DEM and DR Flow Direction Grid 2008 Version 3.0
 The national 8 second (~10m) national DEM and flow direction grid describing the principal directions of surface drainage across the whole of Australia.

SRTM-derived 1 Second Digital Surface Model (DSM) Version 1.0
 The national 1 second (~30m) digital surface model produced from the SRTM-derived 1 second DEM.

Related Products
 Data and Applications
 [view all]

- Geophysical Archive Data Delivery System
- GEODATA 8 Second DEM v3.0
- Second DEM v1.0
- SRTM-derived 1 Second DEM v1.0

 Maps [view all]

- 2009 National Data Audit Map

 Publications [view all]

- NEDF Strategic Plan (PDF 104KB)
- 1 Second DEM Technical Data Sheet (PDF 104KB)

 Multimedia [view all]

- Urban DEM Project
- Elevation Data Specifications and Guidelines
- DEMs101