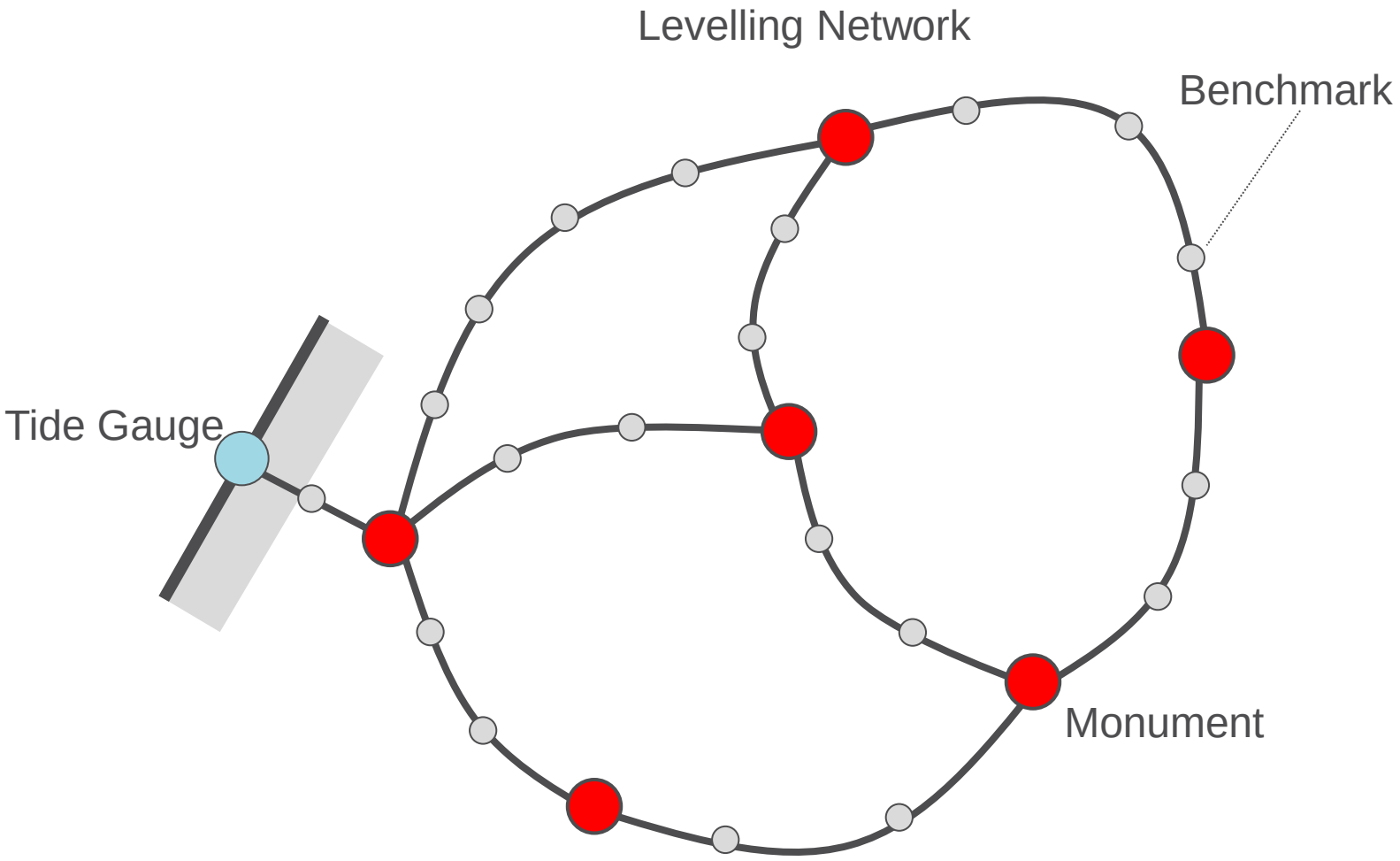
Australian Government
Geoscience Australia

The Importance of Height

Dr John Dawson

Height



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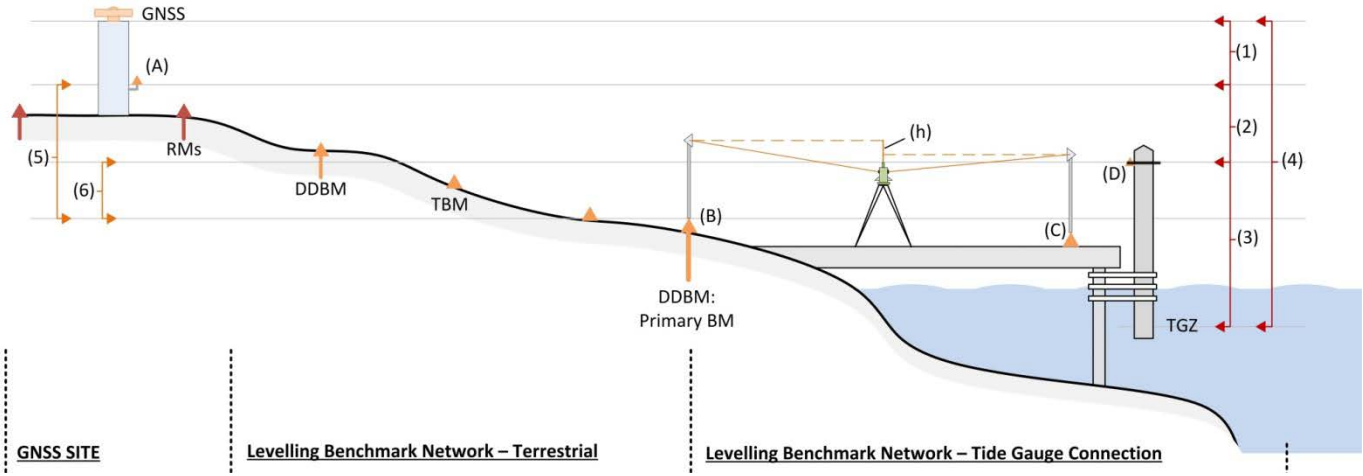

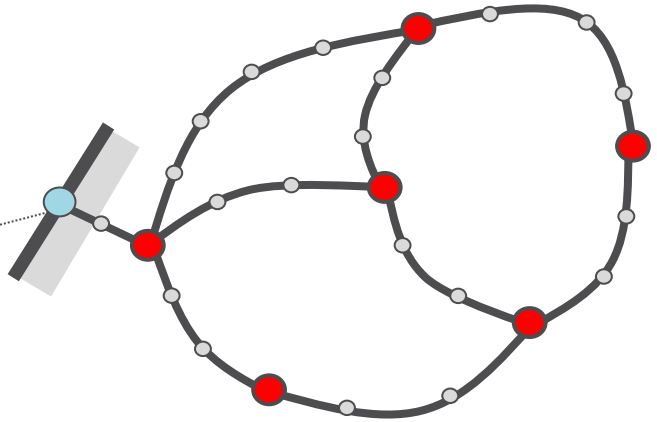

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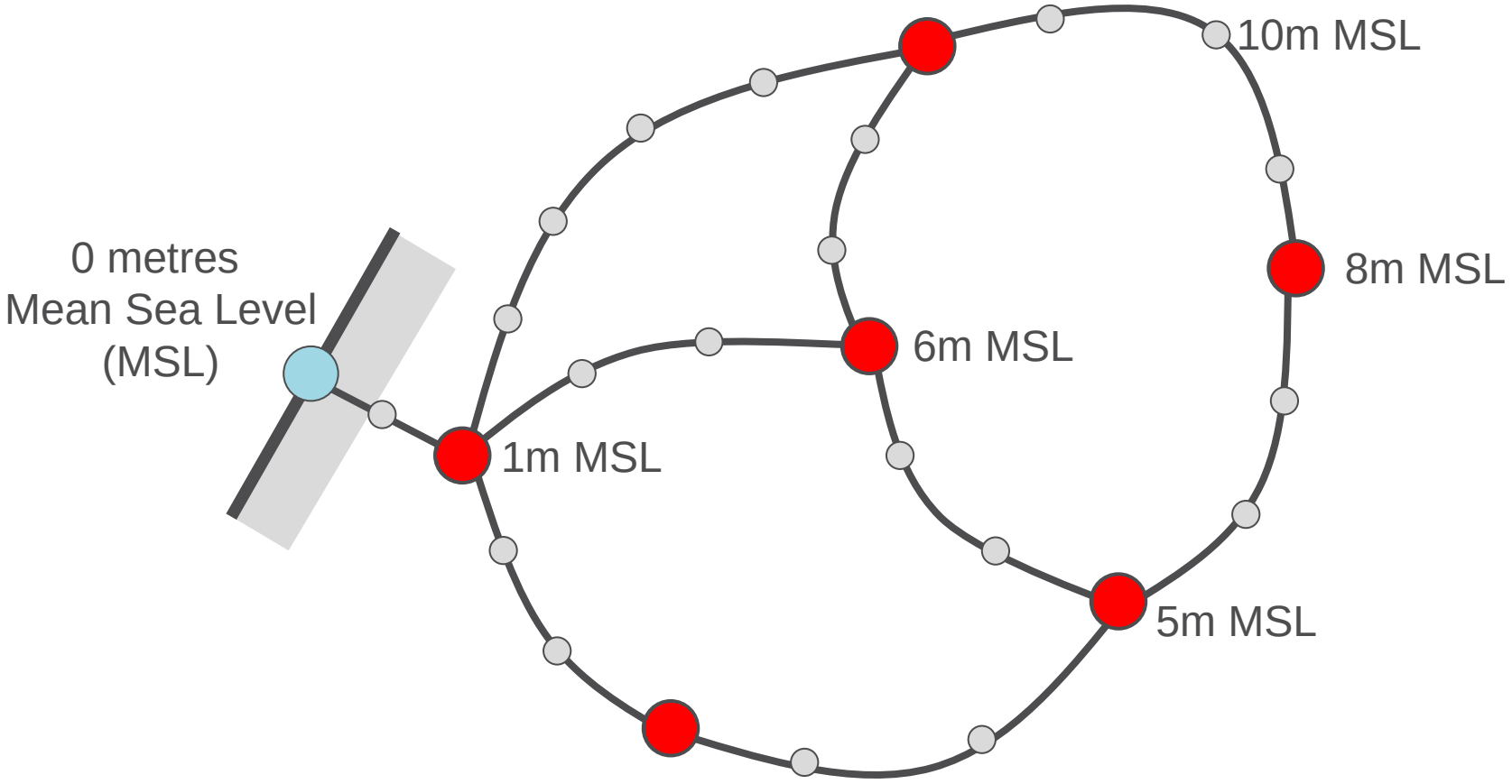

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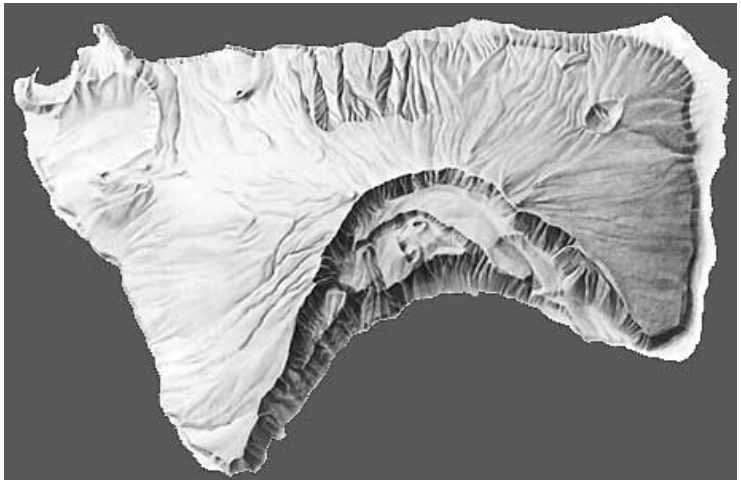
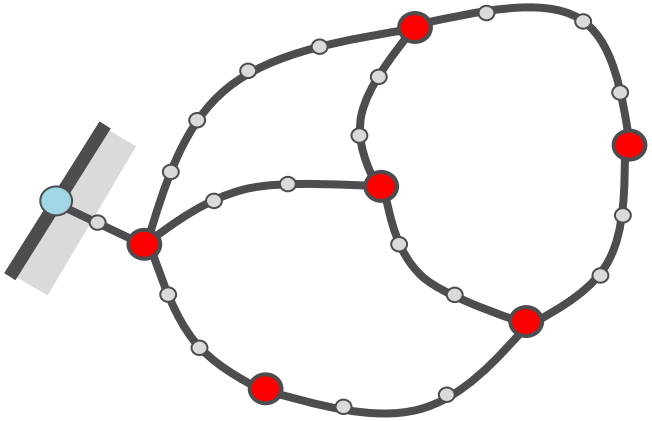
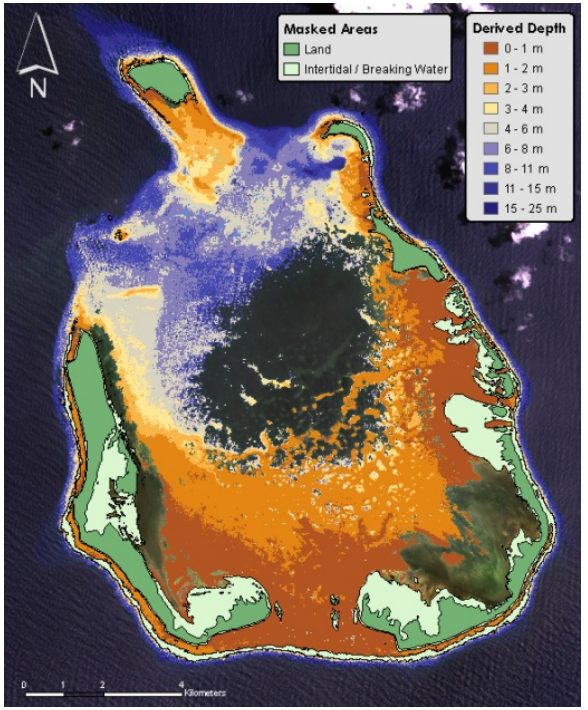
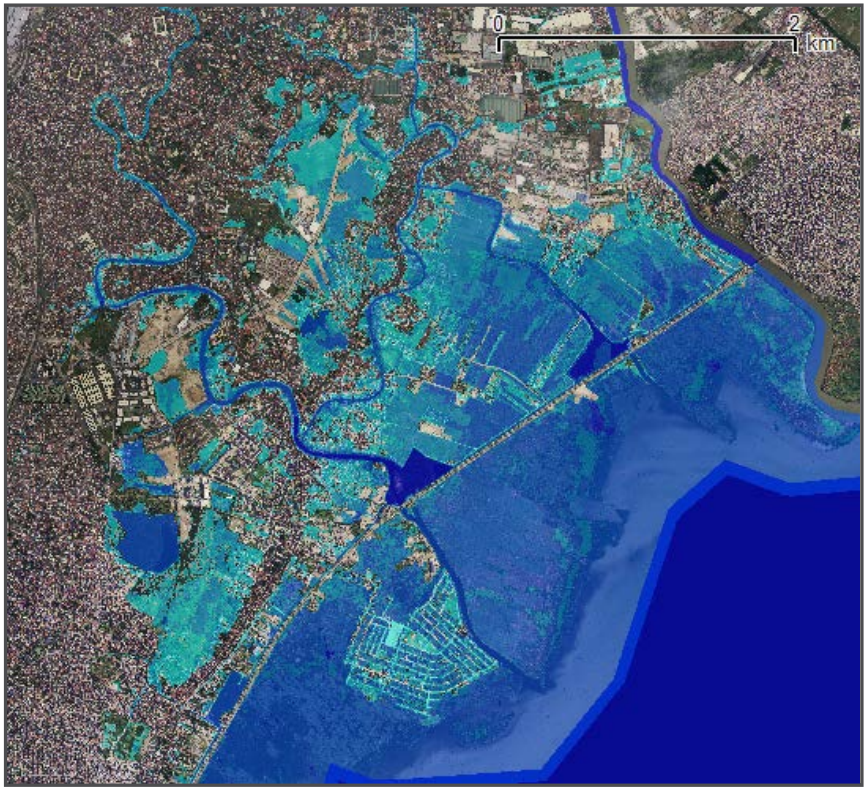


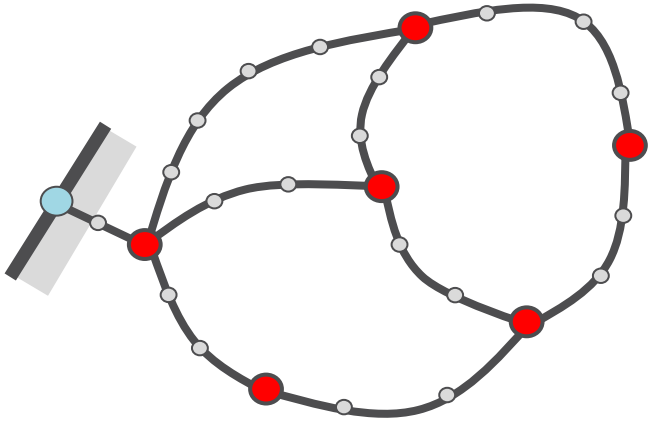




Height

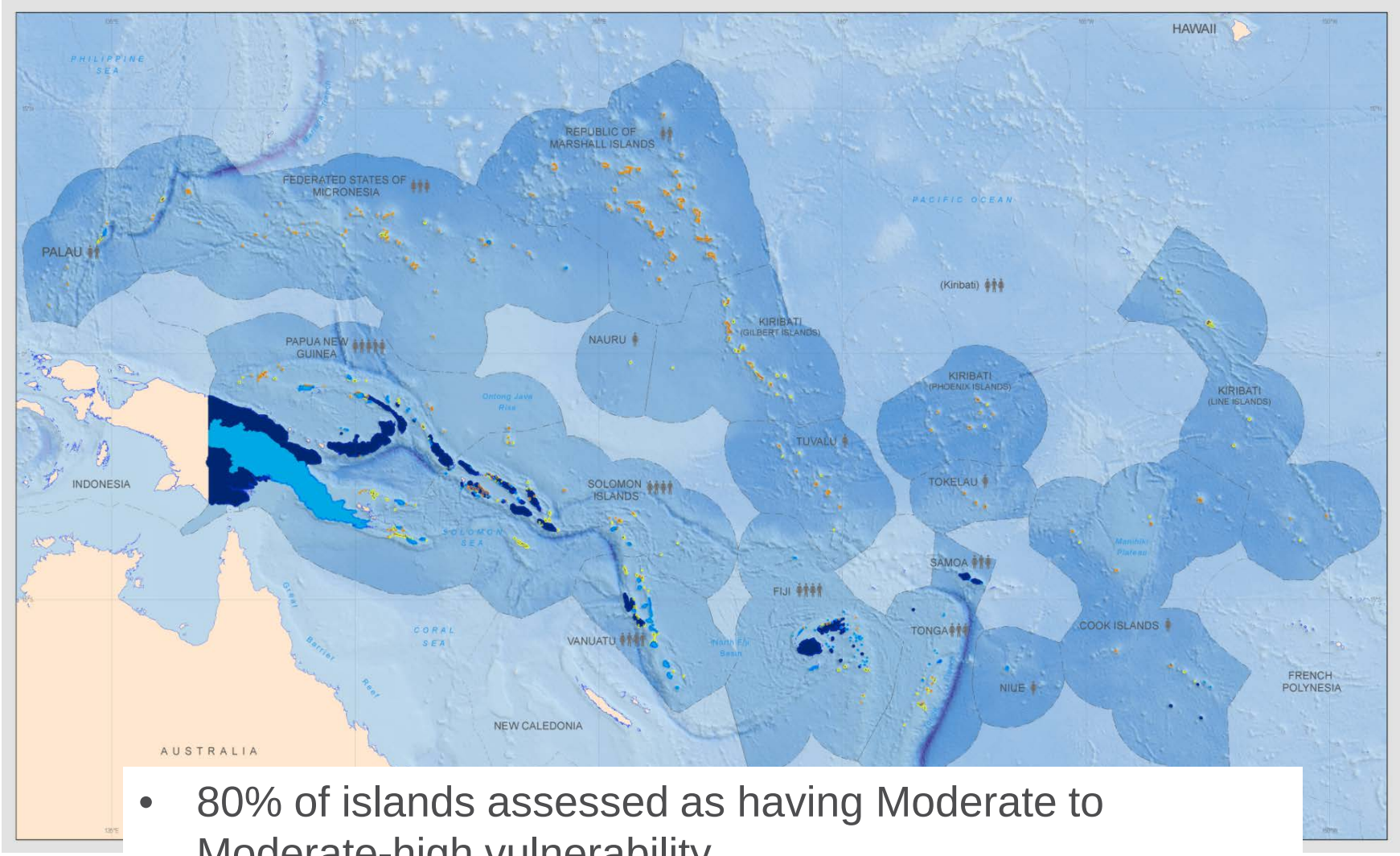
Where should I build my house?





- Developing countries need to invest $15 billion/yr needed for climate change adaptation measures - Worldbank

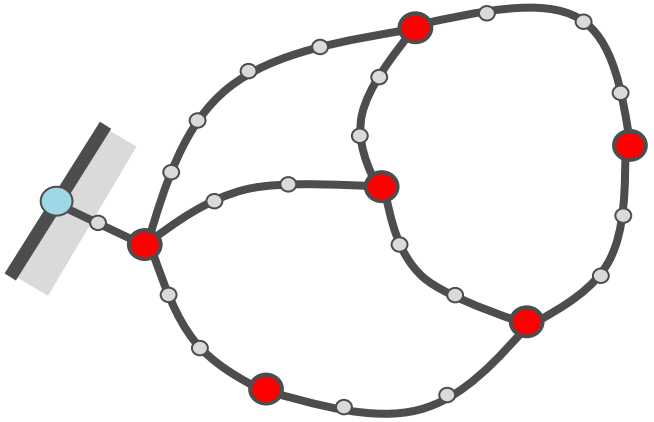
Height - Vulnerability to future sea-level rise 2050



- 80% of islands assessed as having Moderate to Moderate-high vulnerability

Height

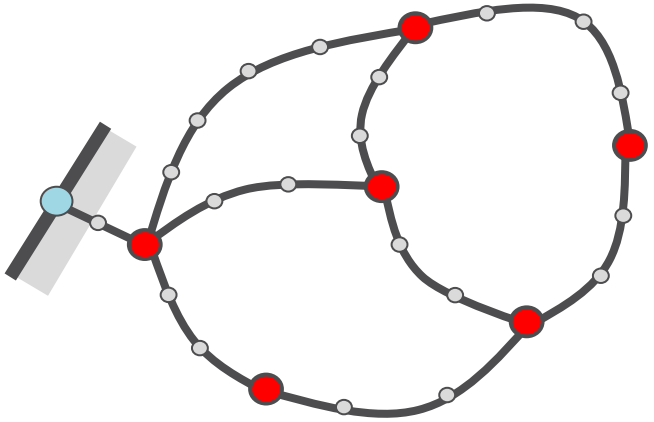
How vulnerable am I to storm surges?



- Pacific: 175-year record of cyclones from the Cook Islands indicates minimum annual probabilities of 16% for storm surges and 5% for major storm surge impacts at Rarotonga

Height

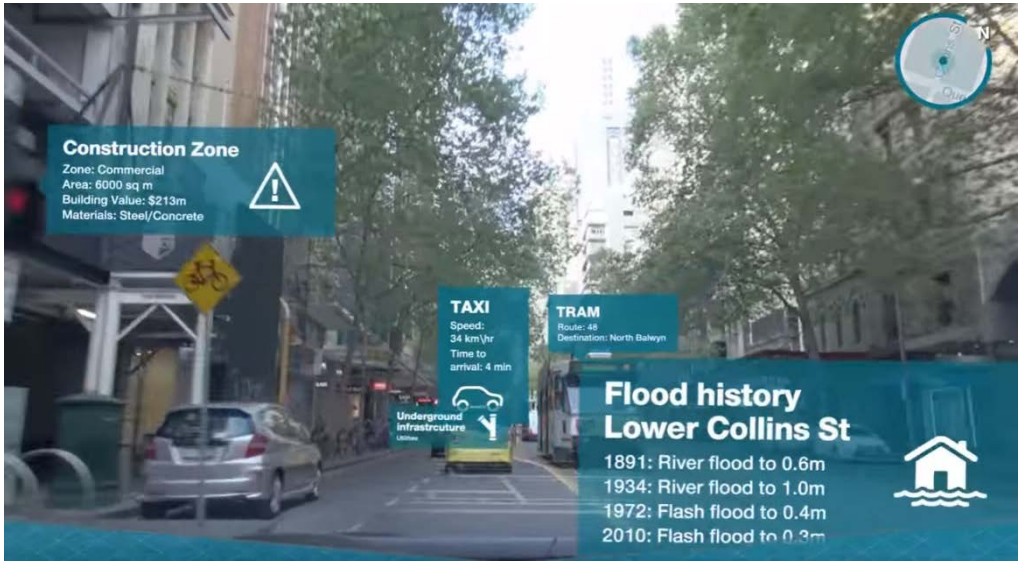
Where should I go to be safe in a natural disaster?

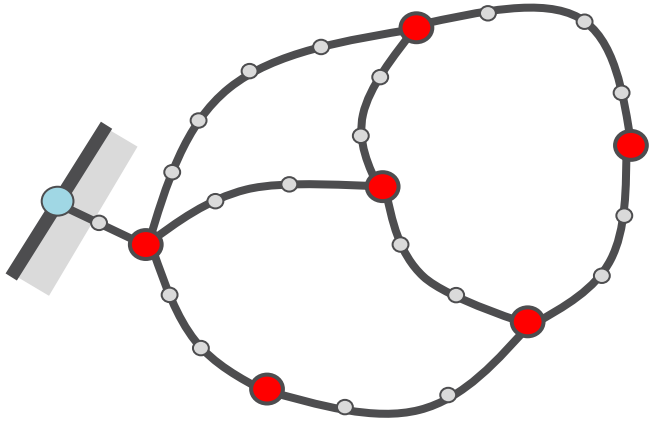


- 2009 Samoa earthquake and tsunami → 189 deaths

Height

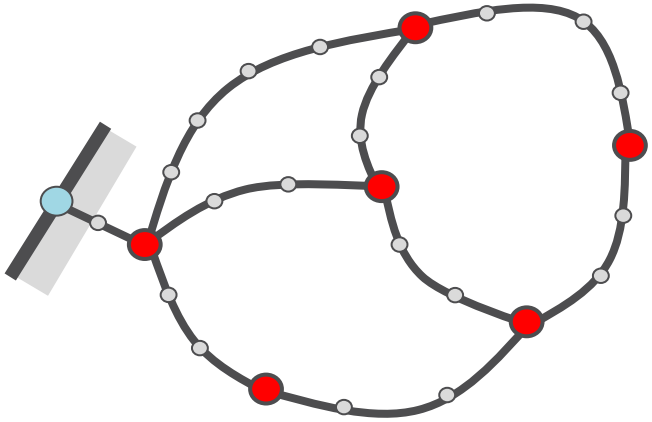
Where will it flood?





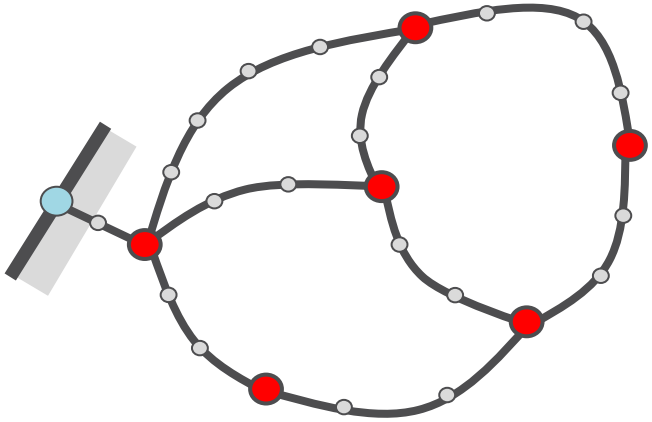
Height

How much ore can I load?



Height

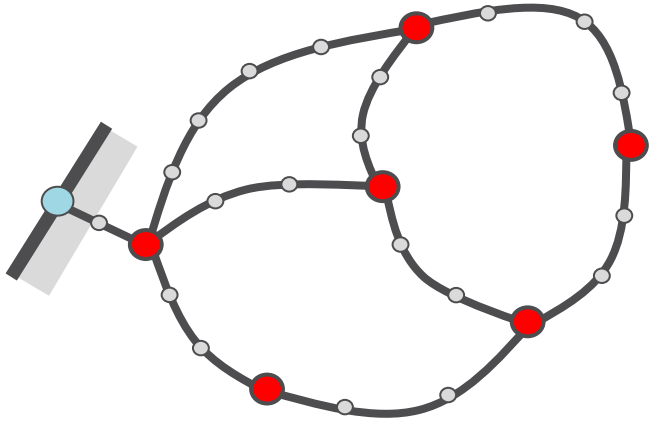
Will water flow?



- For developing countries alone, an estimated $103 billion per year is needed to finance water, sanitation, and wastewater treatment - WorldBank

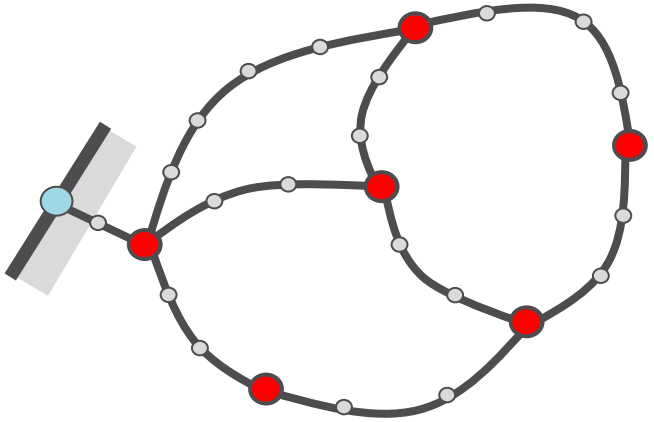
Height

Where should I build this infrastructure



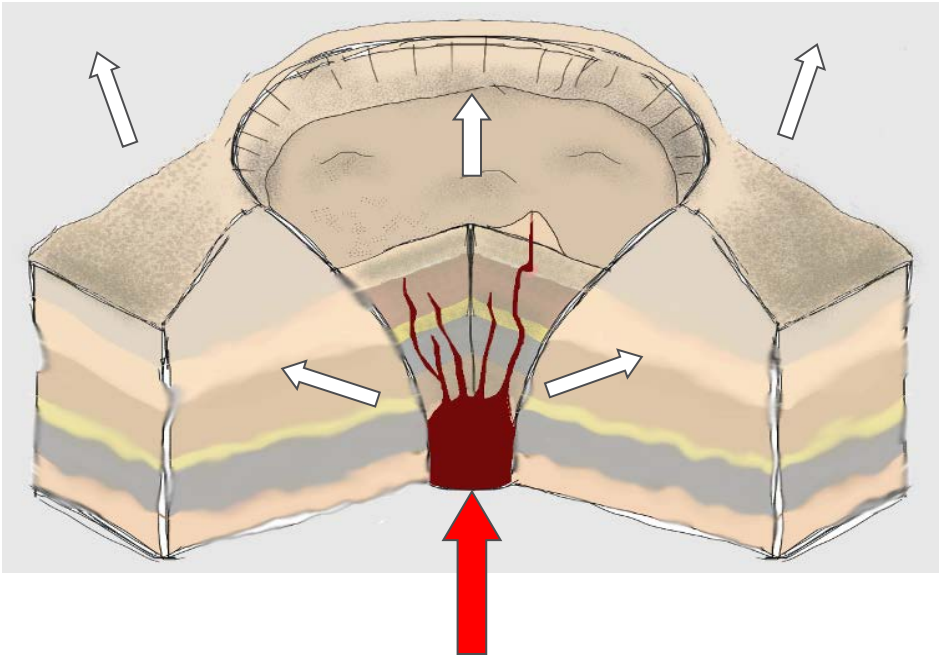
Height

Social significance of height

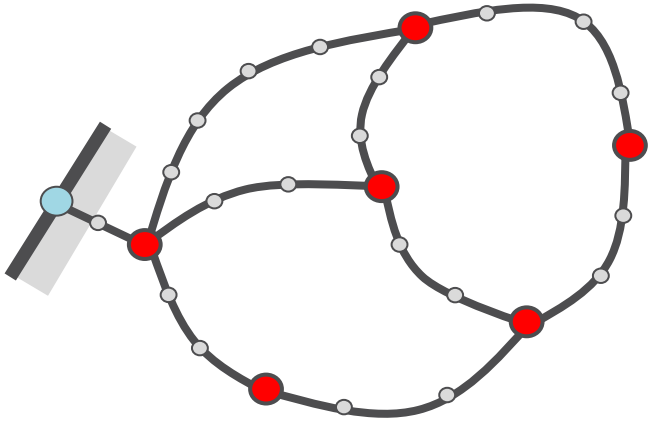


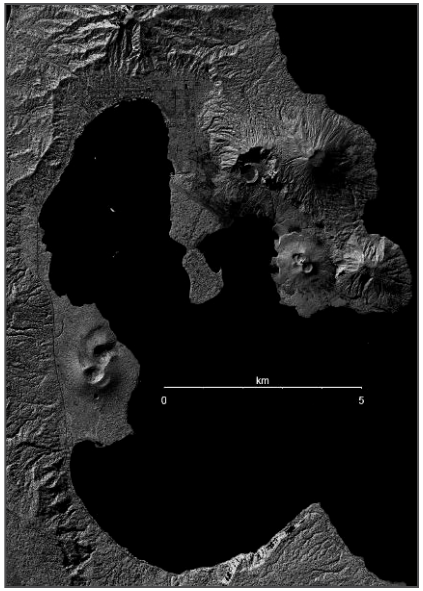
Height (changing with time)

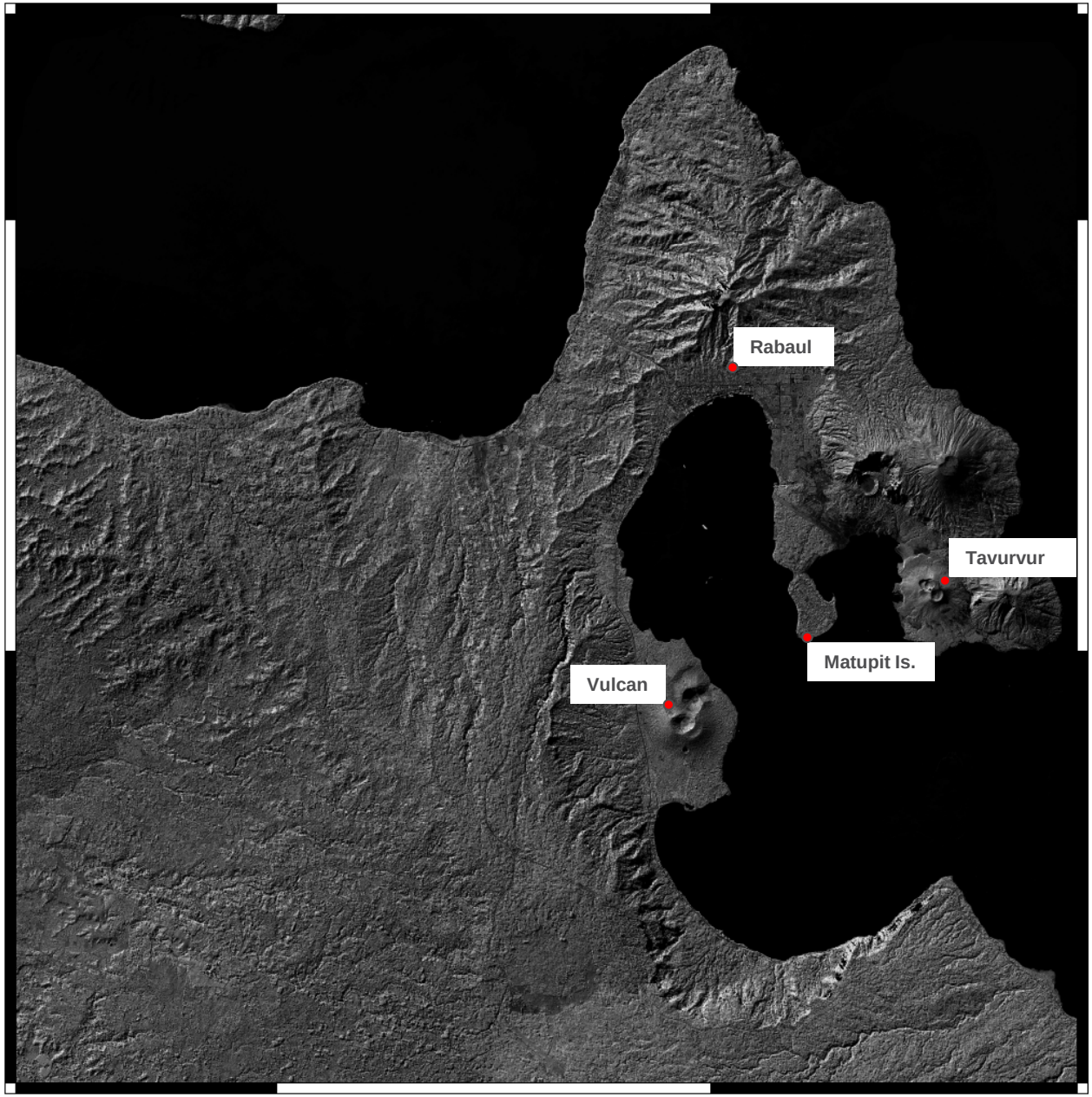
Surface deformation → volcanic plumbing

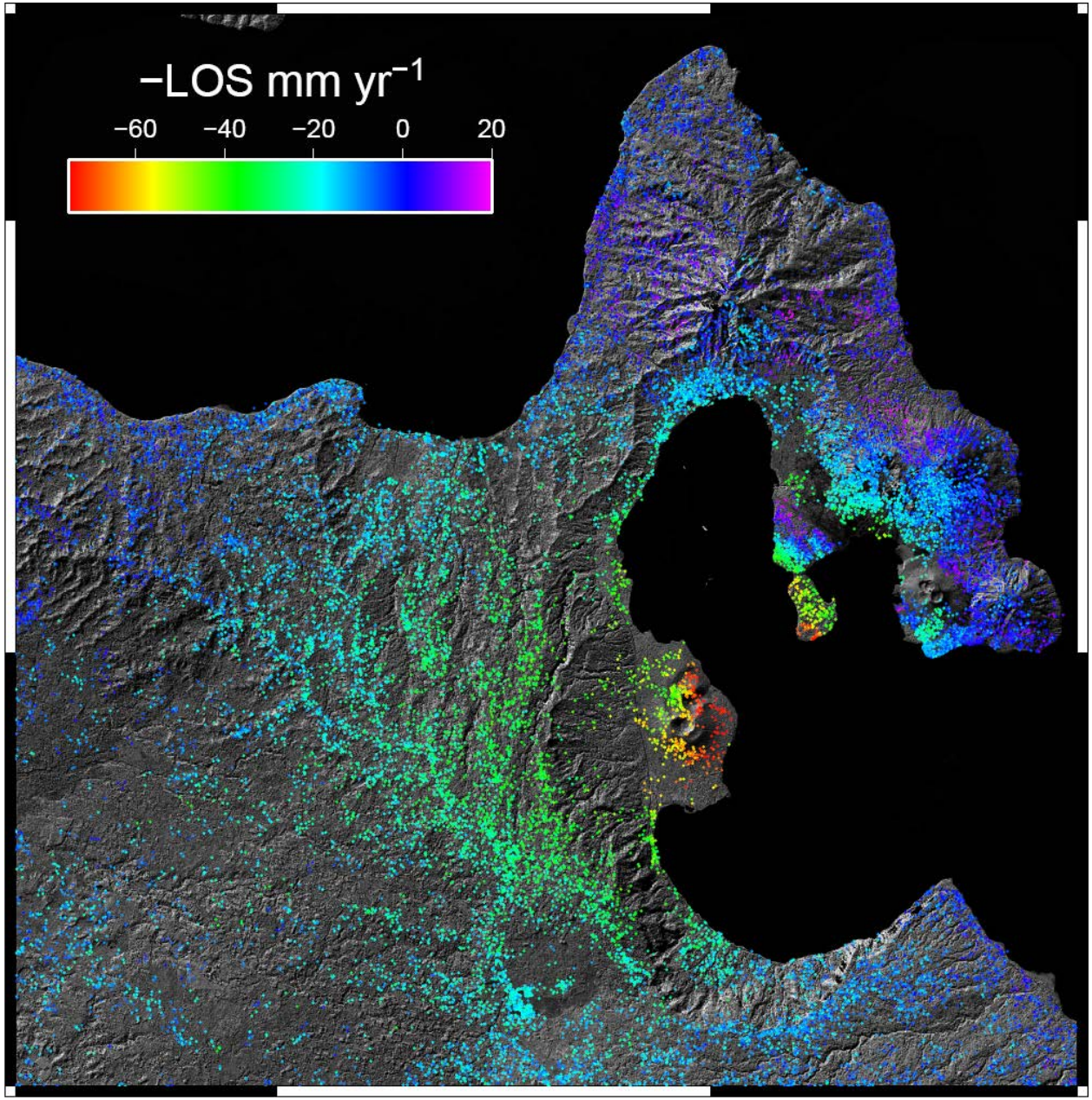


Magma Chamber Inflation/Deflation

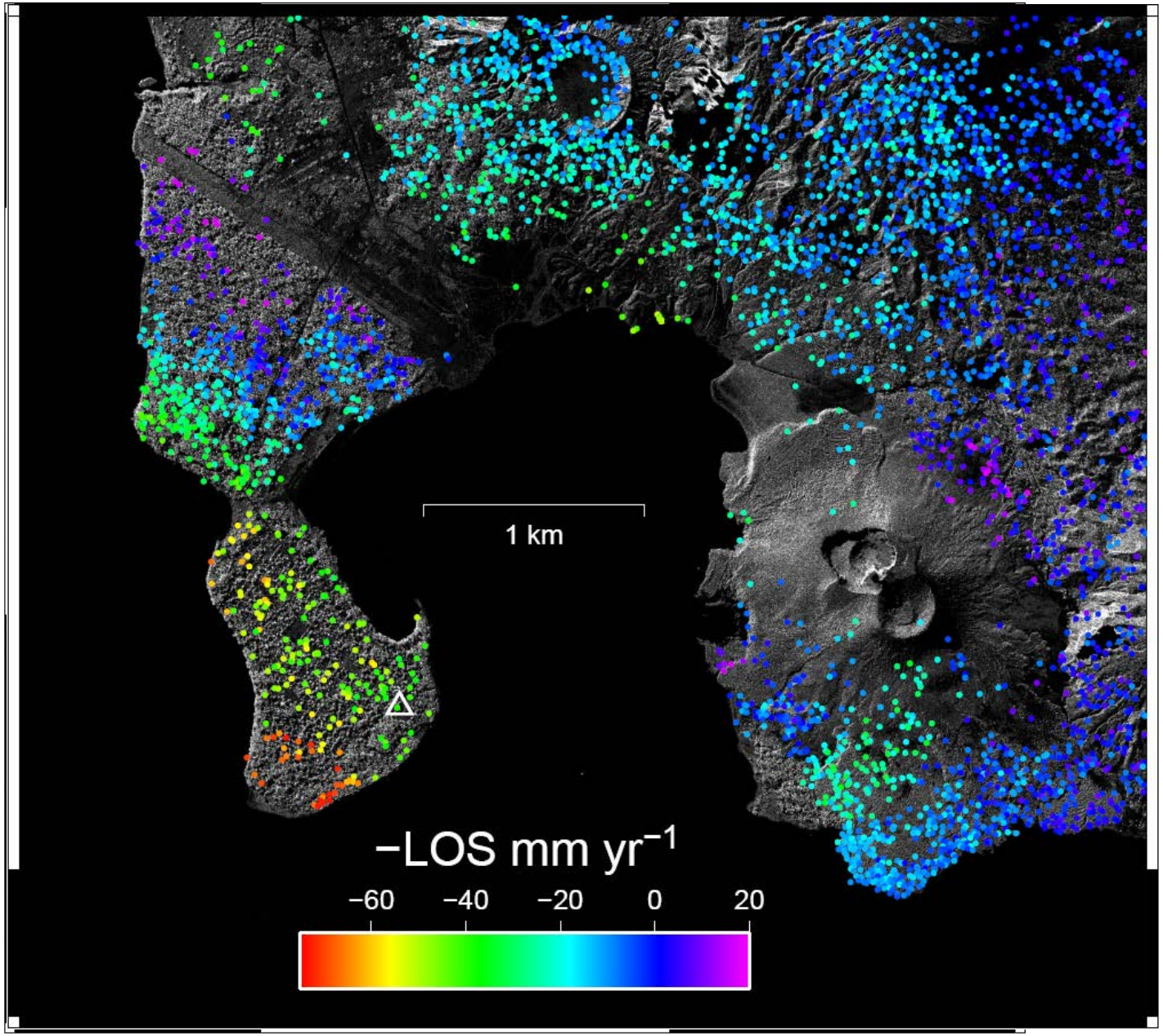








Dawson and Saunders, in preparation, 2011



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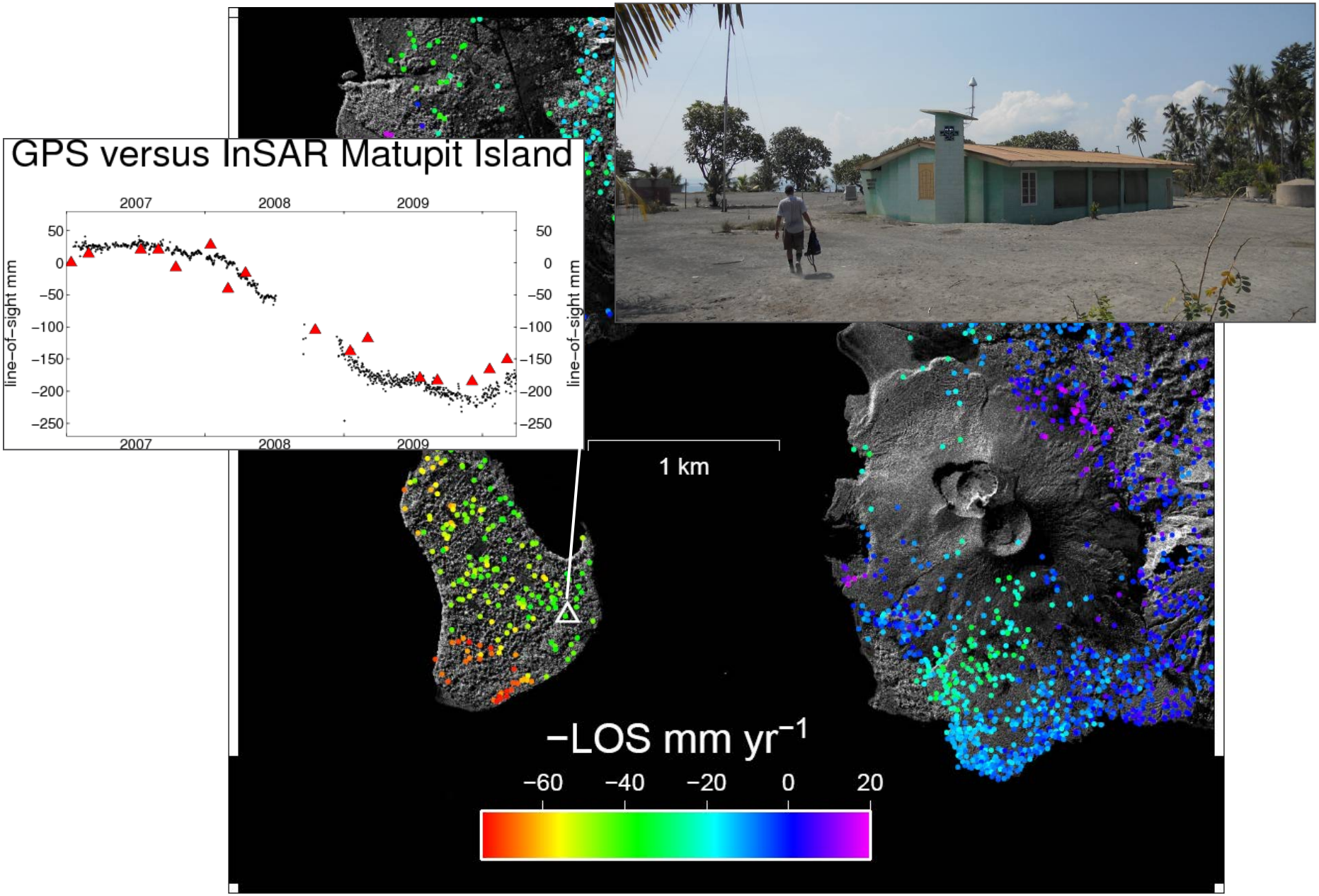
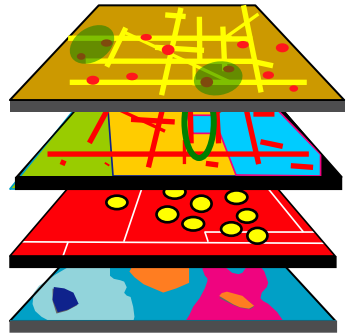


Dawson and Saunders, in preparation, 2011

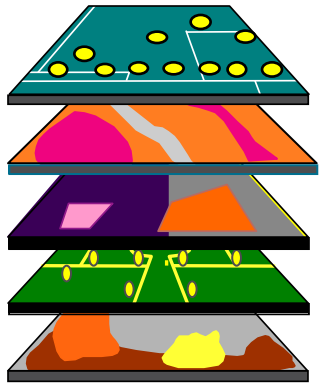
Height – UN SDG

UNITED NATIONS SUSTAINABLE DEVELOPMENT SUMMIT 2015
25 - 27 SEPTEMBER

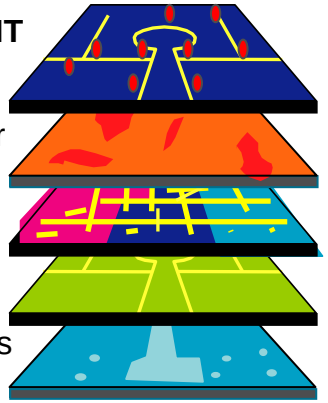
ECONOMIC
Well-being
Cities
Water
Energy
Infrastructure
Industry
Sanitation
Economy



SOCIAL
Society
Poverty
Education
Health
Population
Employment
Water
Sanitation
Equality
Gender
Governance



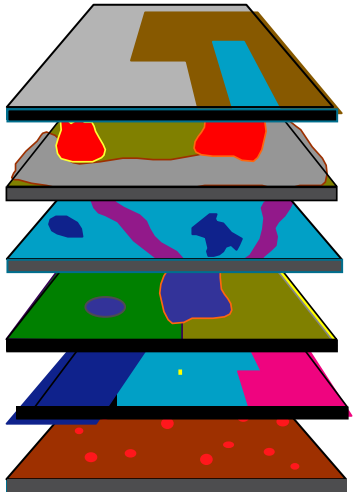
ENVIRONMENT
Water
Seas/oceans
Land use/cover
Ecosystems
Forests
Agriculture
Climate
Biodiversity
Natural hazards
Pollution



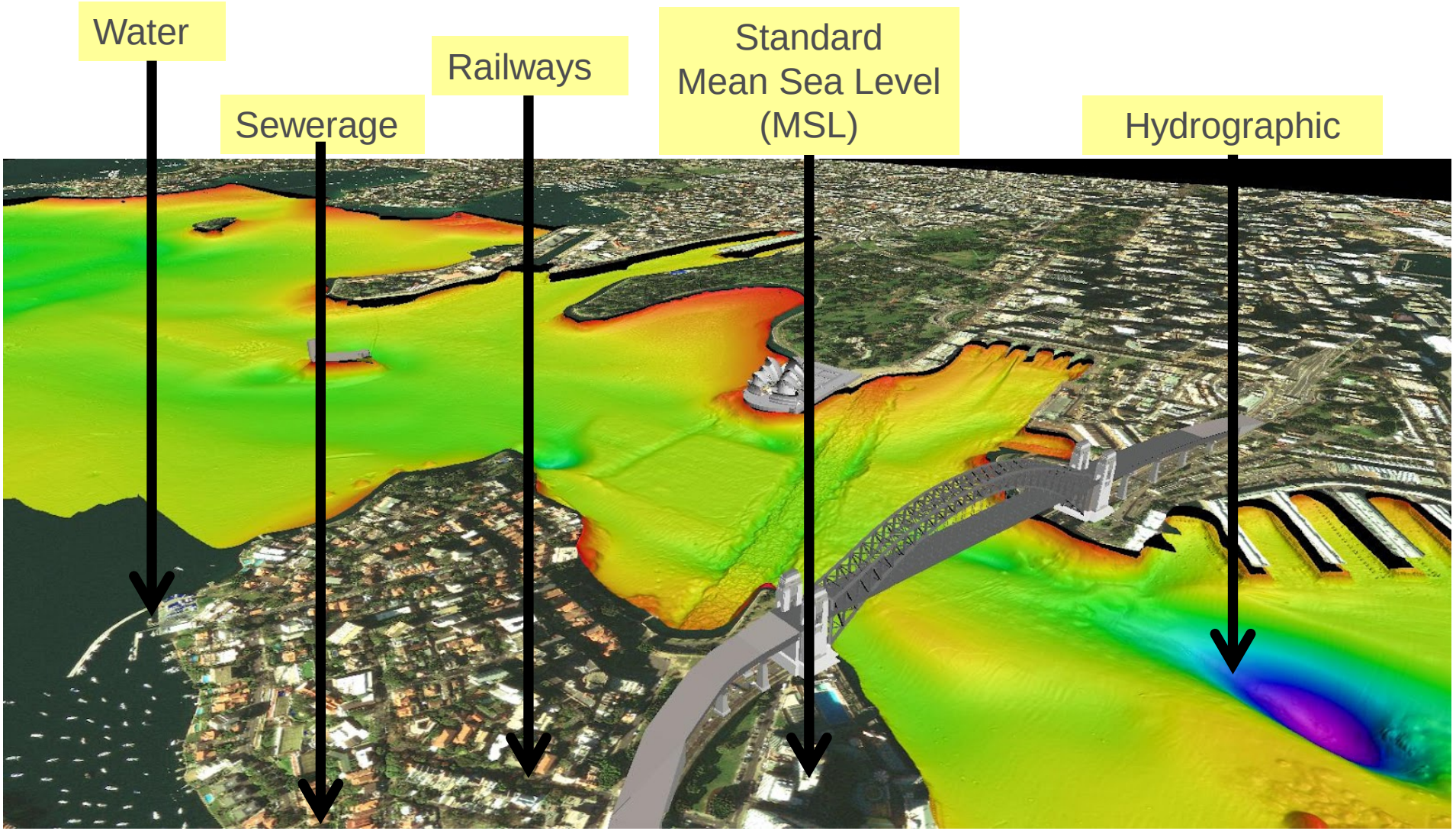
Height – UN SDG

High quality, timely and reliable data

Geodetic
Elevation
Water/Ocean
Land use/cover
Transport
Cadastre
Population
Infrastructure
Settlements
Admin. Bdys.
Imagery
Geology/soils
Observations
etc.



Height – Complications – Sydney example



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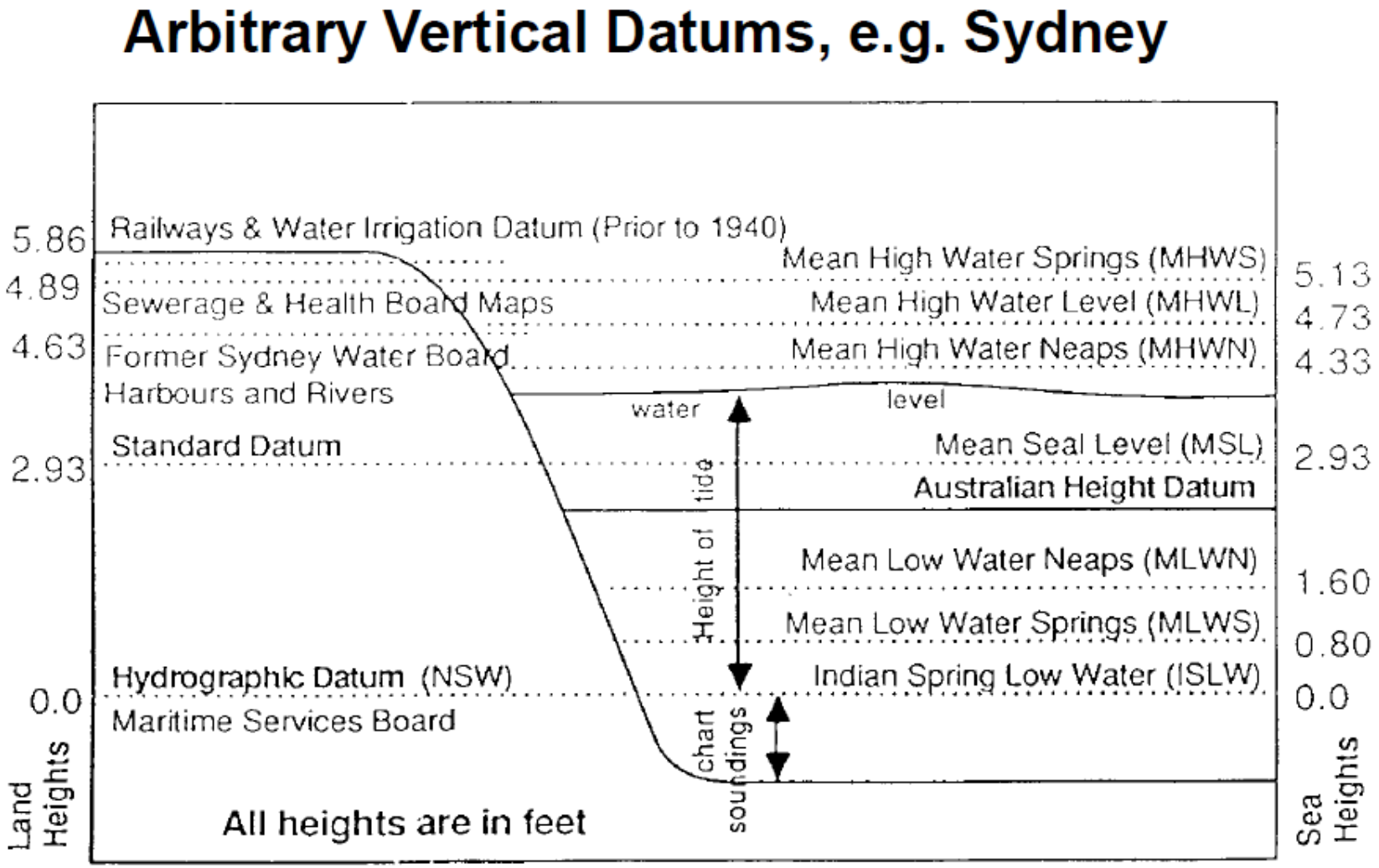
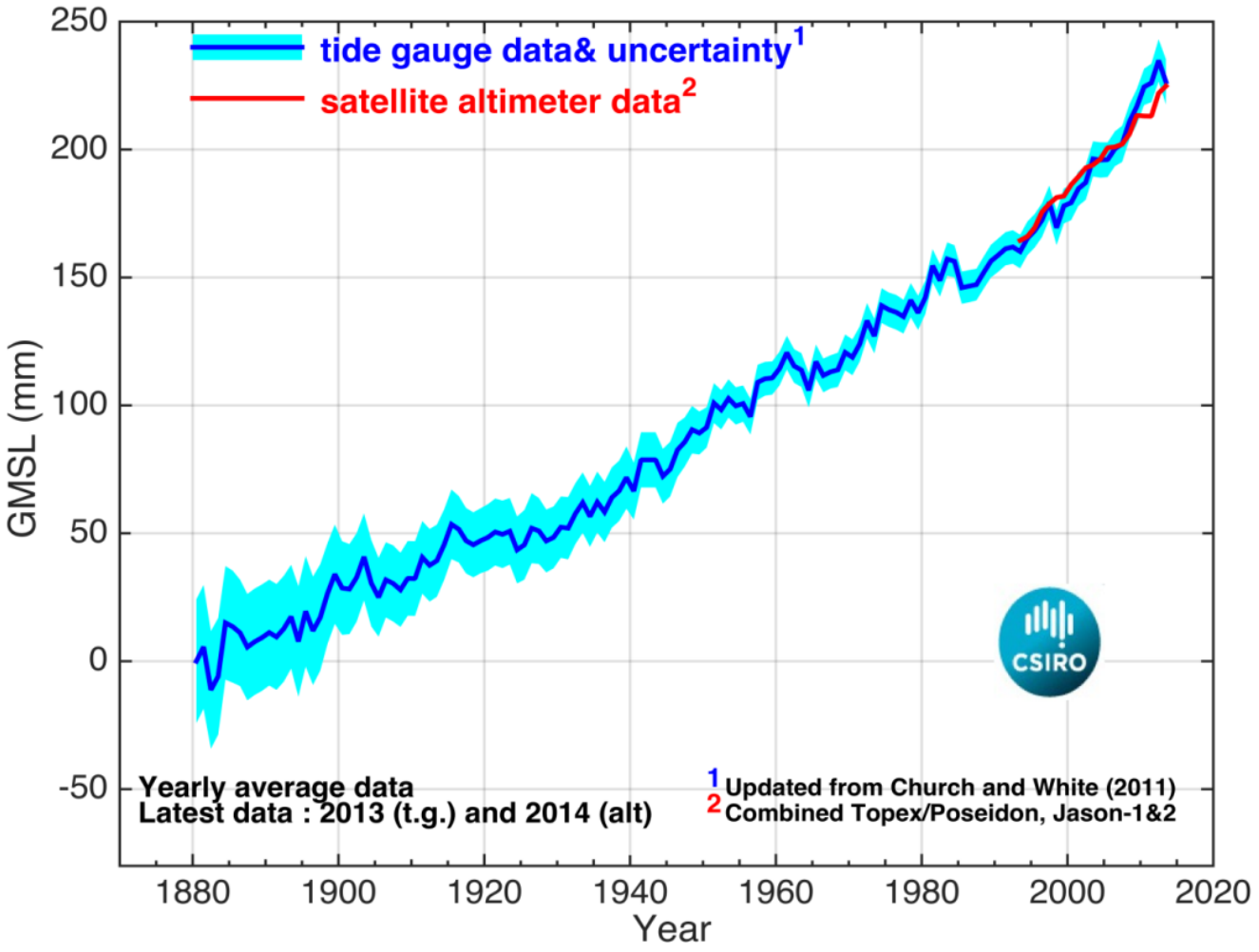


Sea Level Trend



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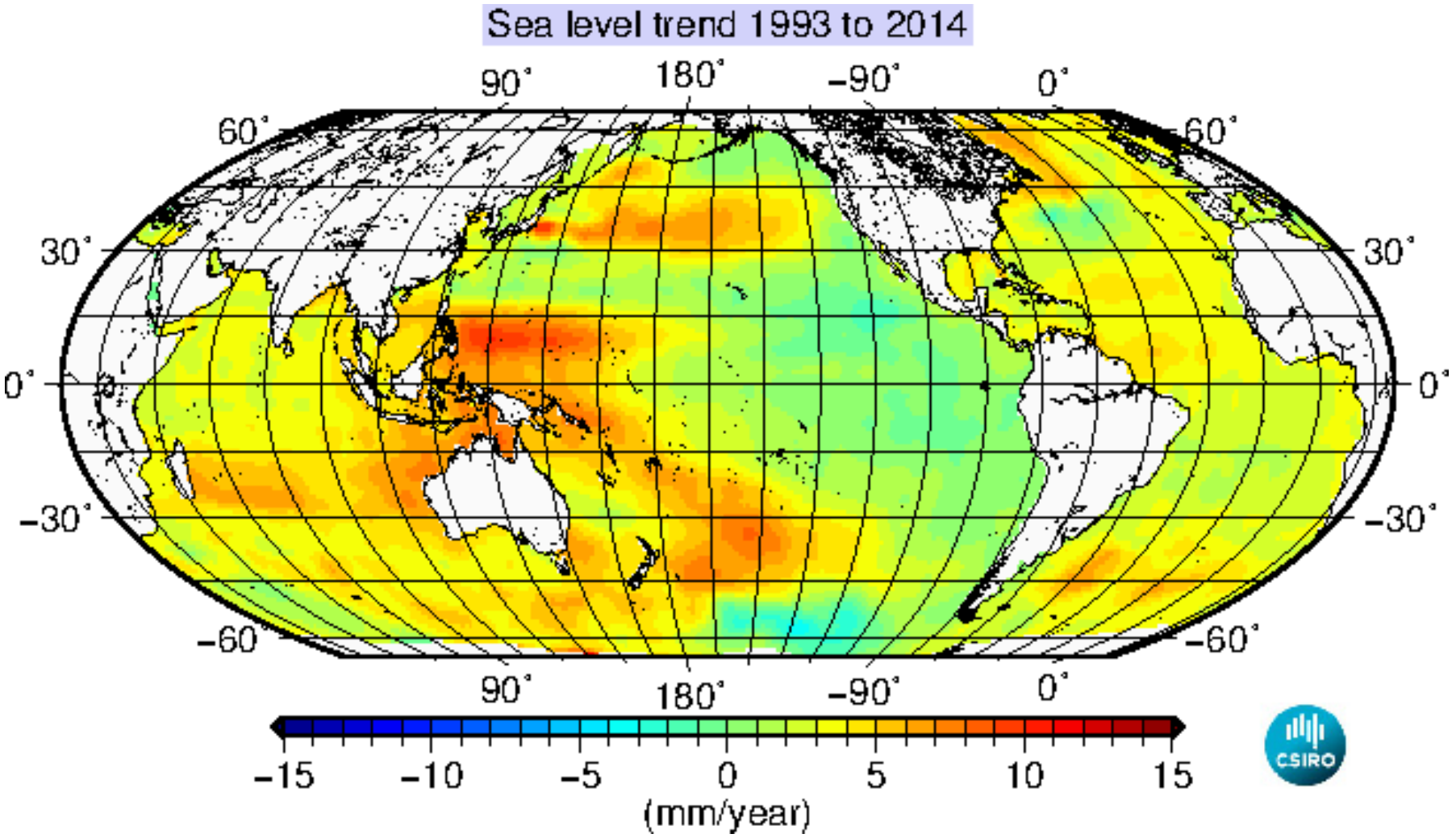
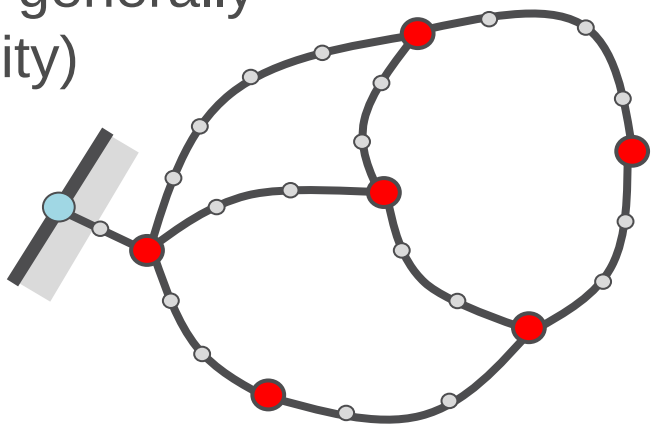
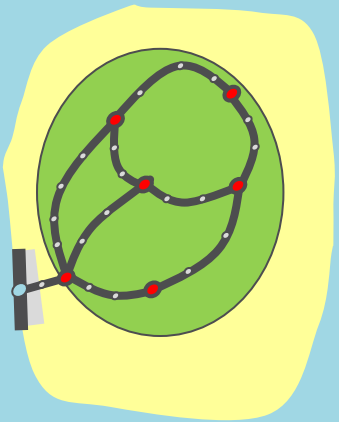


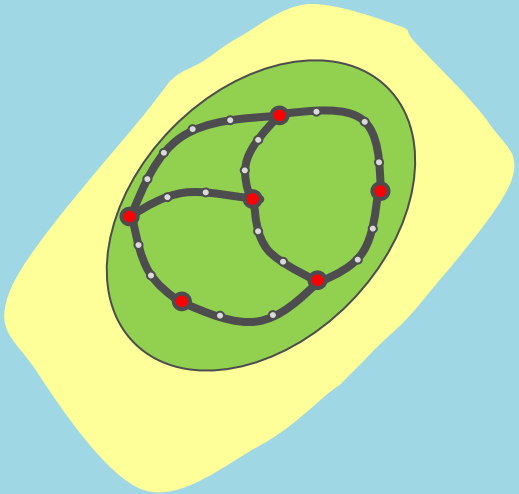
Concluding remarks

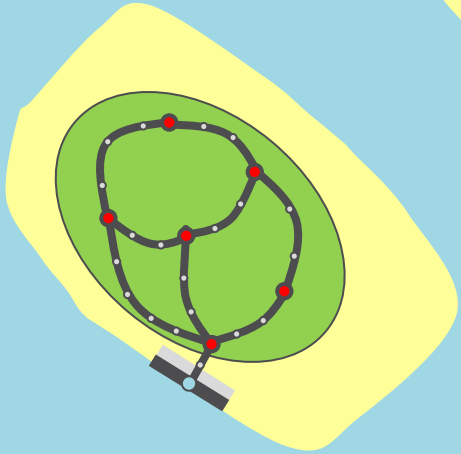
- Consistent, authoritative heights are really important for all governments and society
- The determination of national/regional height datum is complex (technical and implementation)
- Pacific Countries
  - Nationally consistent height datums generally lacking (weakness and an opportunity)



Height – Challenges of Island States







- Tide gauge infrastructure
- Linking islands
- Opportunity to utilise global satellite products?

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