Introduction to Atlantis

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Topics to be covered

- What is DNF?
- Background
  - What is Atlantis?
  - Who is involved?
  - Response to Pitt Report
- What do the datasets look like?
- Drivers and benefits
- Application of Atlantis
- The future

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What is DNF?

"The Digital National Framework (DNF) is an industry standard for integrating and sharing **business** and **geographic** information from **multiple sources**"

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Basic Principles of DNF

- The concept and methods shall be **driven by the strategic needs of the wider GI community** and the needs of the information industry.
- Data should be **collected only once and then re-used**.
- Reference information/data should be **captured at the highest resolution** whenever economically possible.
- Such information may then, where appropriate, subsequently be used to meet analysis and **multi-resolution publishing** requirements.
- DNF will **incorporate and adopt existing de facto and de jure standards**, wherever they are proven and robust.

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Background to Atlantis

- Flooding of 2007 highlighted need for better integrated information
- Climate change
- Surface water flooding
- Coastal inundation
- UKSDI requirements
- EU Directives (Floods; INSPIRE)

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What is the Atlantis Initiative?

"*Provide better integrated geographical and environmental information to support decisions on flooding and water-related environmental management*"

- Established over 3 years ago to create the definitive data standards
- Now delivering data and raising awareness

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The role of Atlantis

- Provide ‘plug and play’ datasets
- Datasets are interoperable
- Atlantis is NOT a product
- Members are responsible for their own data
- Vision of using data standards (DNF)
- Collective outputs complement each other
- Transformational Government in practice

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Who is involved?

A working collaboration of public sector agencies/bodies

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SeaZone

Minister's endorsement

- Iain Wright MP – *Parliamentary under secretary of state for Communities and Local Government stated…*

  'Atlantis is an important initiative and I welcome and support the crucial work that is being undertaken by six organisations that have formed Atlantis. I believe your work to be important in helping us to be able to better anticipate and manage flood risk and associated events'

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Pitt Report Recommendations

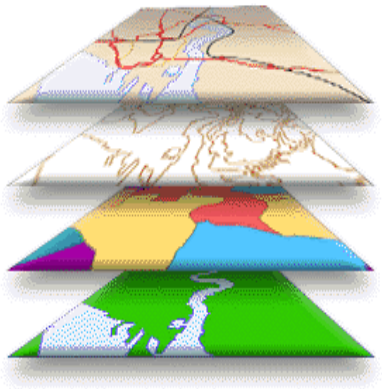
Chapter 4; Forecasting, modelling & mapping

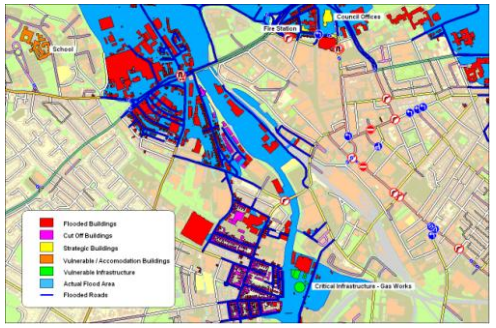
Improvements in forecasting accuracy

New mapping techniques for evaluation of modelling flood risks including surface water

Review welcomes Atlantis - a platform for more accurate modelling & scenario planning

Atlantis programme - vehicle for improving data interoperability and exchange of information





Images: courtesy Niall Watson (Defra), BBC & Ordnance Survey

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What do Atlantis Partners' datasets look like?

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The Atlantis Information

OS MasterMap Topography, street and address

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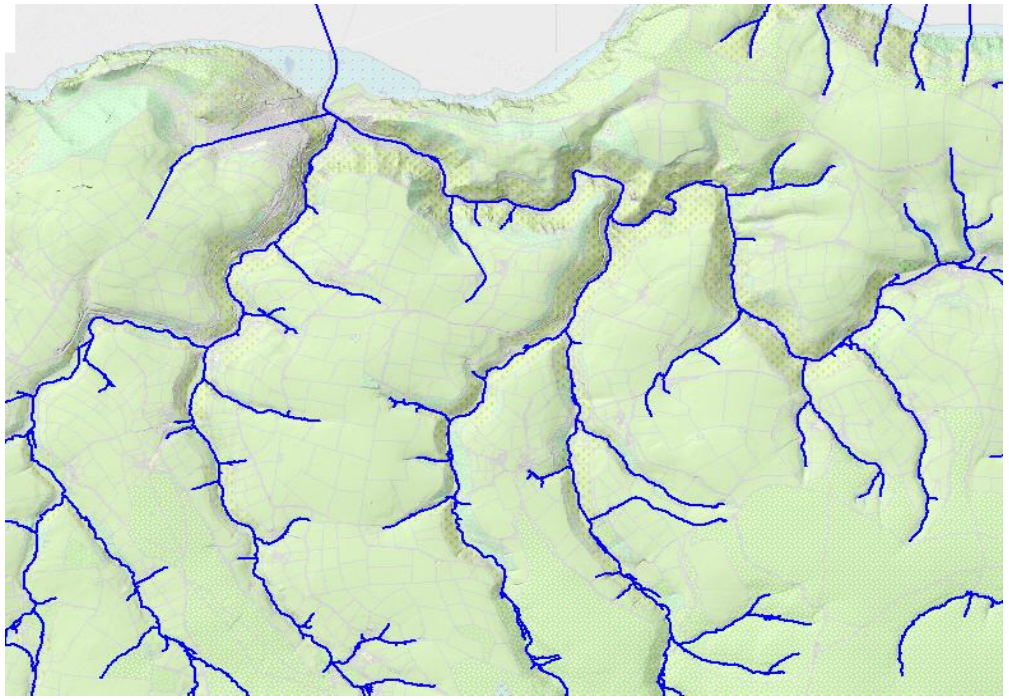
The Atlantis Information

Environment Agency Detailed River Network data (DRN)



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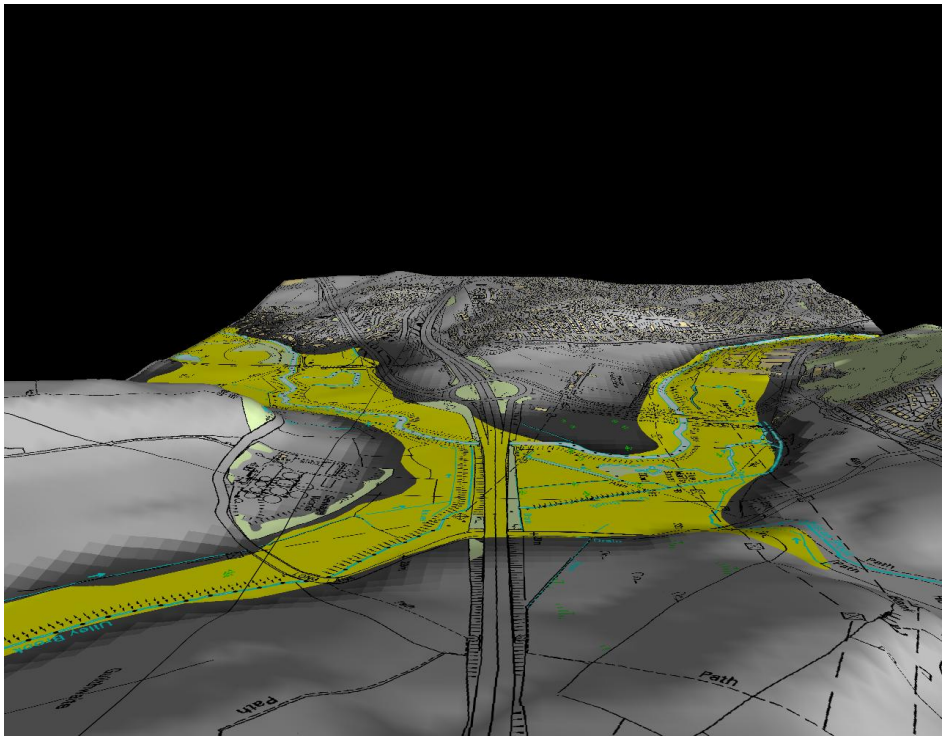
The Atlantis Information

British Geological Survey data of floodplain



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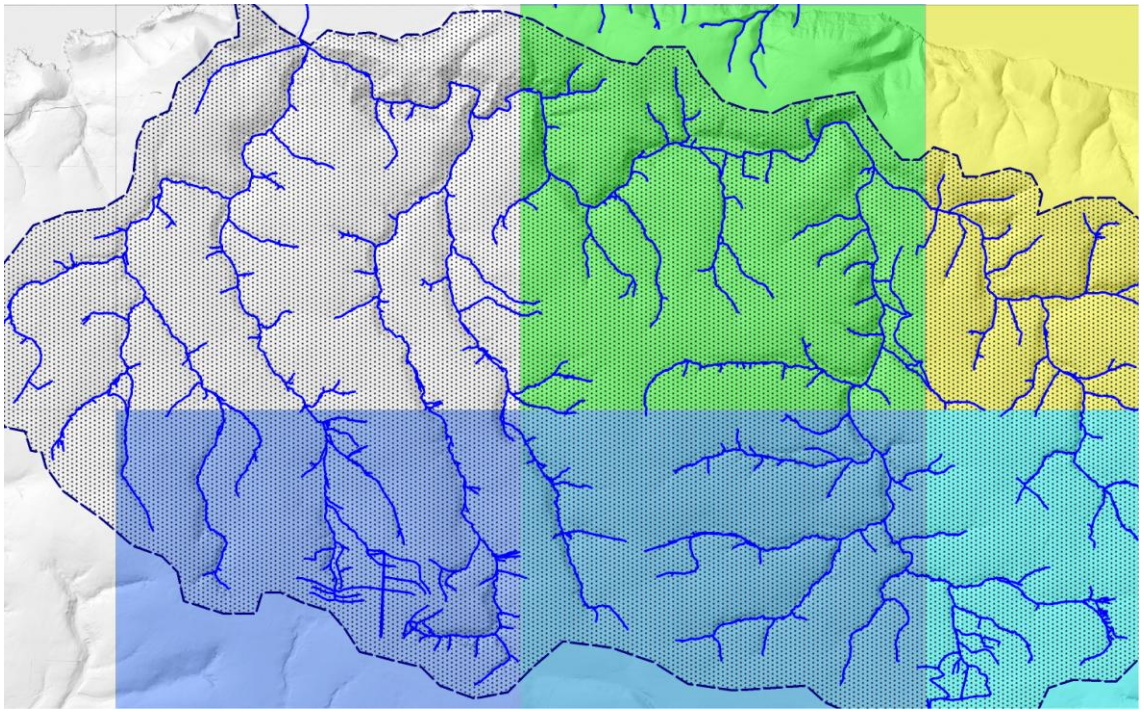
Met Office 1.5km to 4km Rainfall data and catchment models



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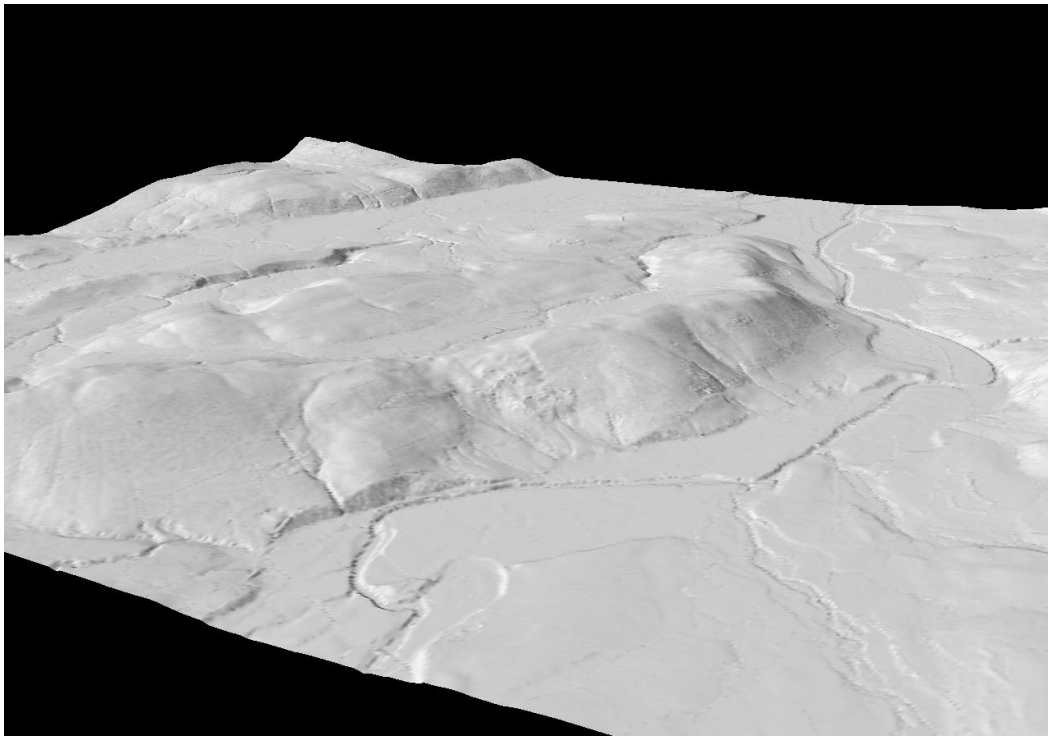
Centre for Ecology & Hydrology high resolution height data to 0.1m



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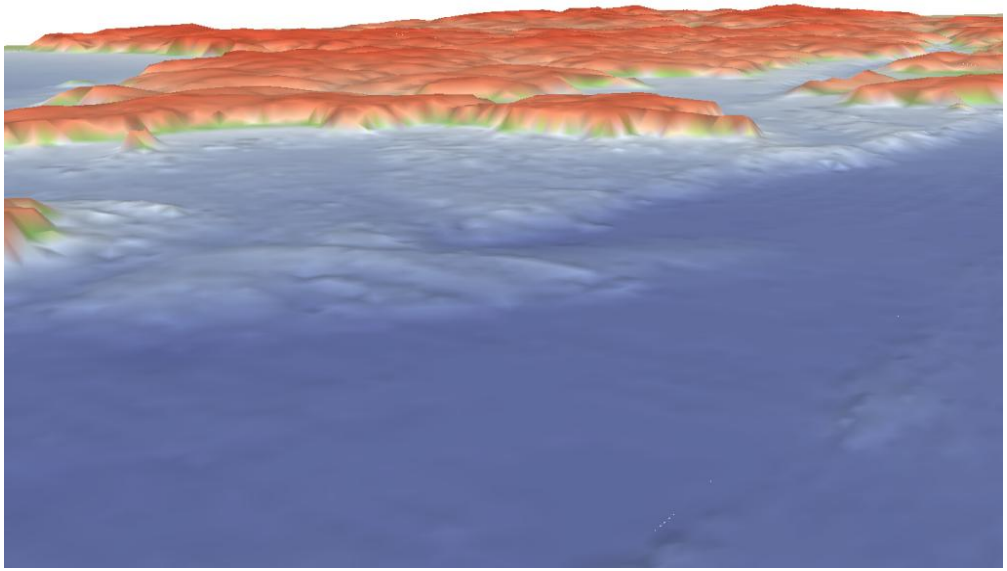
UKHO & Seazone - Survey and Bathymetry



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The Drivers and Benefits Atlantis

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Barriers to effective use

- Lack of data interoperability
- Lack of business interoperability
- Duplication of datasets
- Lack of awareness (of existing data)
- Silo world
- Duplication of costs
- Culture – too difficult!

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Market Research: Case Studies

Market Research:

A third of respondents claimed that on average they spent 50% of their project costs on preparing and cleaning up data ready to undertake their project

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Benefits through the Lifecycle

- Consistent approach to flooding
- Improve:
  - all types of flood modelling
  - flood predictions
  - capability to forecast and warnings
- Enable local planning & emergency response
- Identify and protect critical infrastructure
- Link to insurance and property industries
- Integrate with the utilities (National Underground Assets Group)

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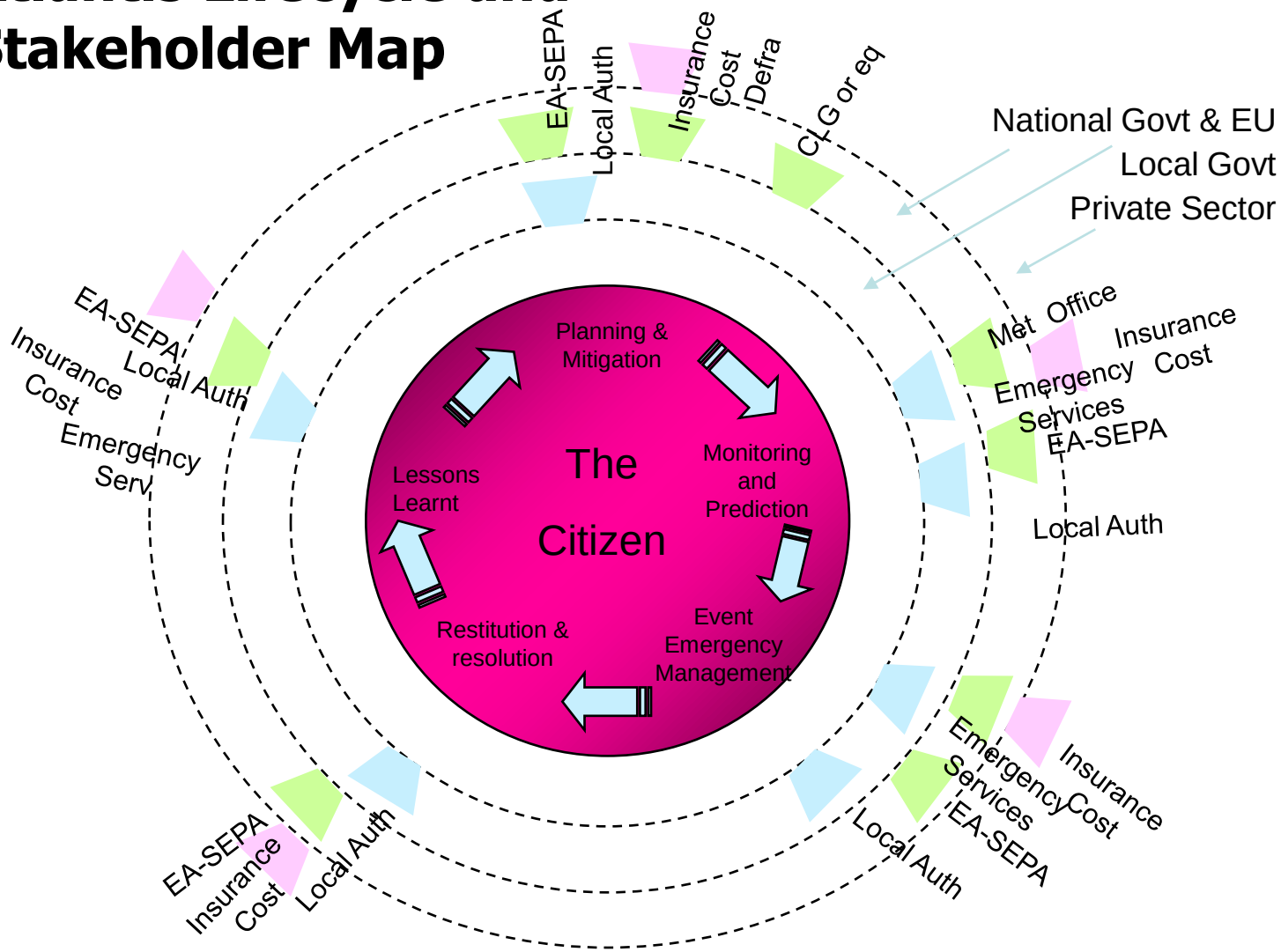
Atlantis Lifecycle and Stakeholder Map



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Key points

- Quality data ***is*** available today enabling detailed analysis to an individual building level where appropriate
- The example shows the best of breed data
  - OS MasterMap (Topography, Address, ITN)
  - EA River Network Data inc new DRN
  - OS/EA Height Data (inc LiDAR)
  - Catchments and Rainfall models from Met Office and CEH
  - Sub surface data from BGS
  - Coastal and estuary bathymetric data from Hydrographic Office / SeaZone Solutions

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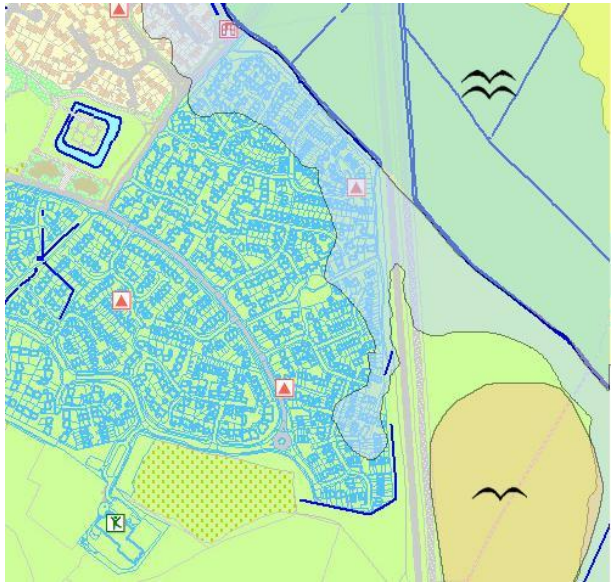
Atlantis achievements

- User definitions
  - use cases/needs
  - workshops
  - feedback
- Interoperable specifications
- Datasets development (DRN)
- Workshops and trials
- Contributed to Pitt Report
- Inter Agency Working



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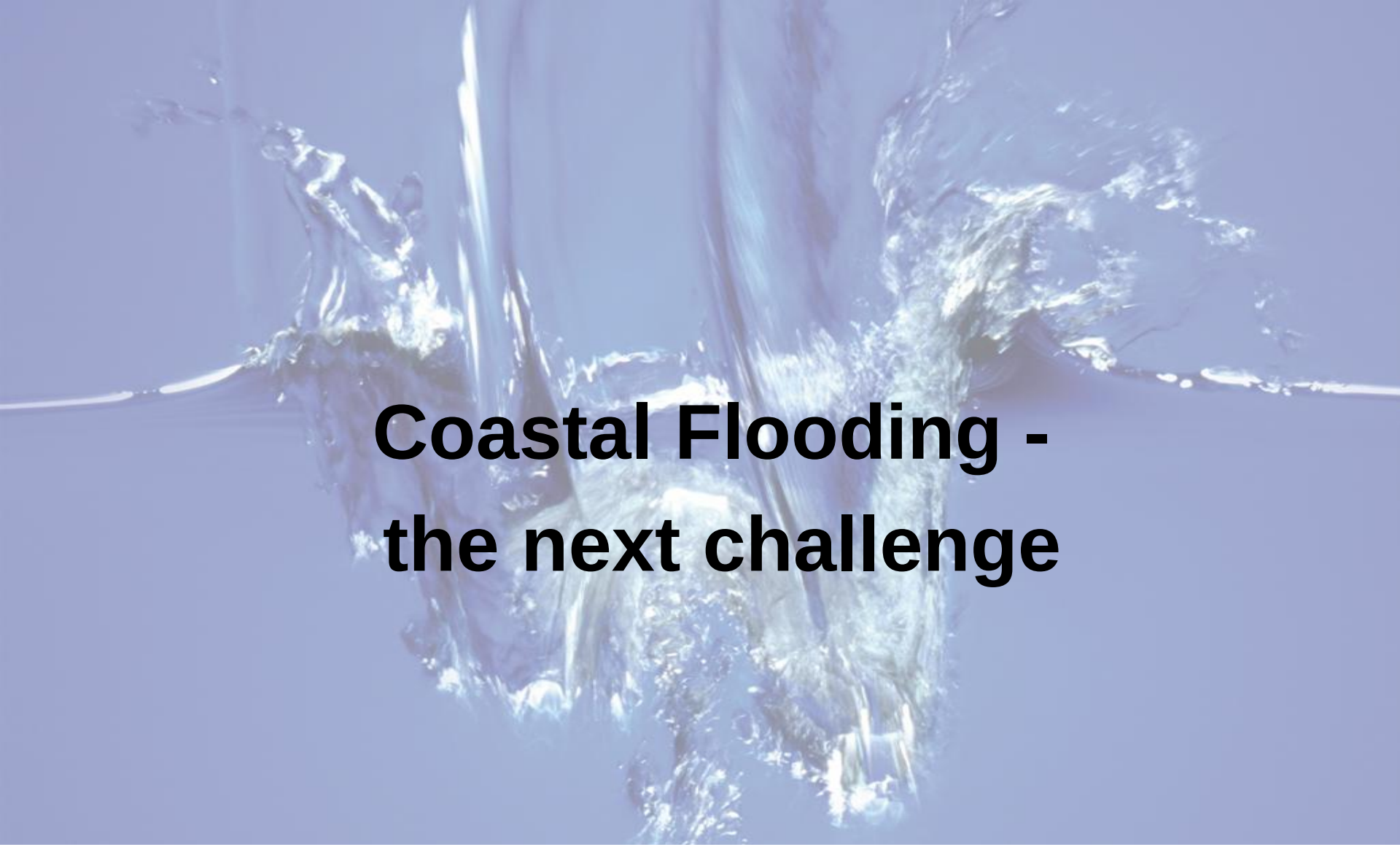

Coastal Flooding - the next challenge

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The risks - coastal

Shading shows likely extent of flooding from overflowing rivers and exceptionally high seas if there were no flood defences (Environment Agency)

Most coastal flood defences should be able to cope unless they coincide with particularly severe weather but…

Source –Environment Agency

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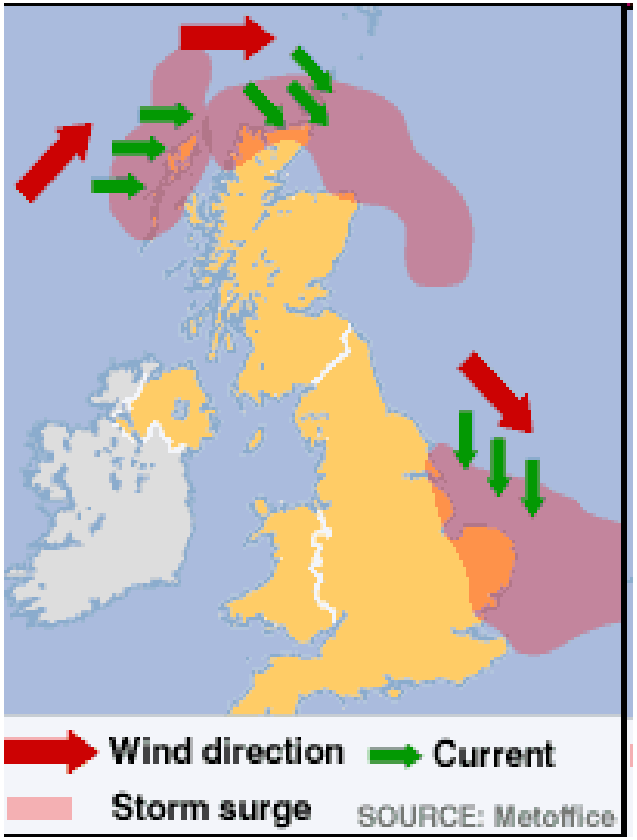
Storm Surge [1]



- In UK prevailing SW winds carry depression to NW Scotland
- "Mean" current forces surge to East of wind direction
- If low pressure also moves east, surge is forced southwards
- Shallower seabed means surge elevations higher in southern part of North Sea

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Storm Surge [2]

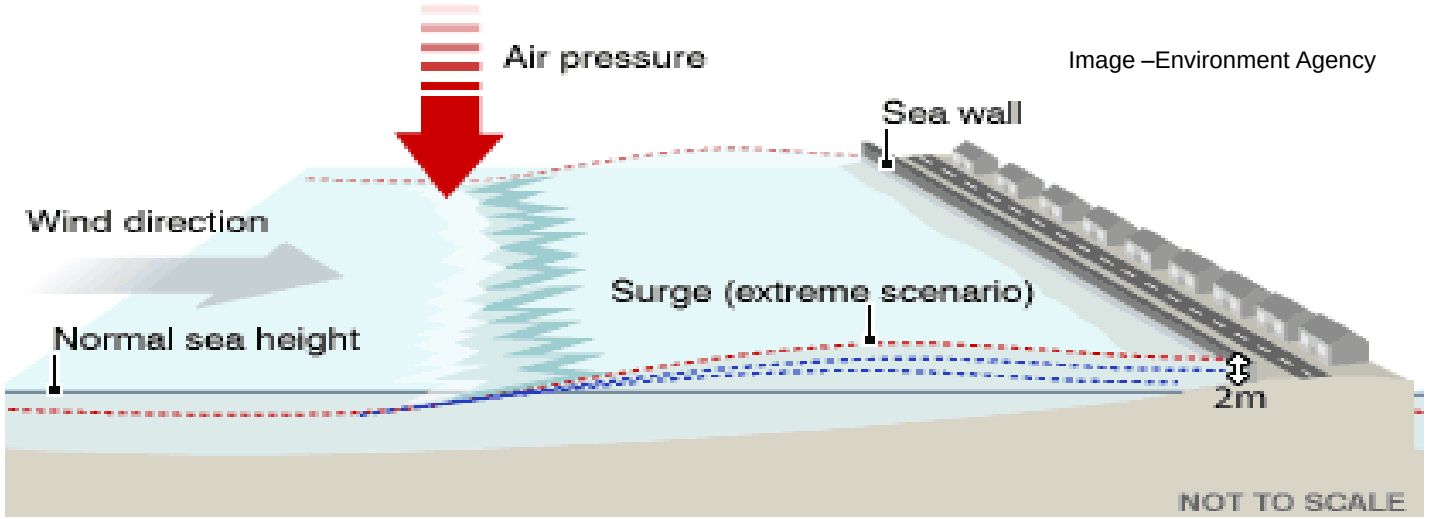

Image –Environment Agency

- Powerful winds push water towards coast
- Low pressure forces bulge in sea surface, which creates a surge when fanned by the winds
- Sea levels will rise by about 1cm for every 1 millibar decrease in pressure

For example…a depression of about 960mb (about 50mb less than average barometric pressure) would raise sea levels by about 0.5 metre. If there is a high tide at the time the resulting waves could breach even sound coastal defences

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The Future

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Exploiting Atlantis resources to…

- Improve surface water modelling & management plans
- Provide Better Forecasting
- Support Mitigation plans [e.g.Coastal Zone]
- Provide Emergency response plans
- Support Restitution improvements
- Improve stakeholder knowledge
- Be interoperable as part of UKSDI

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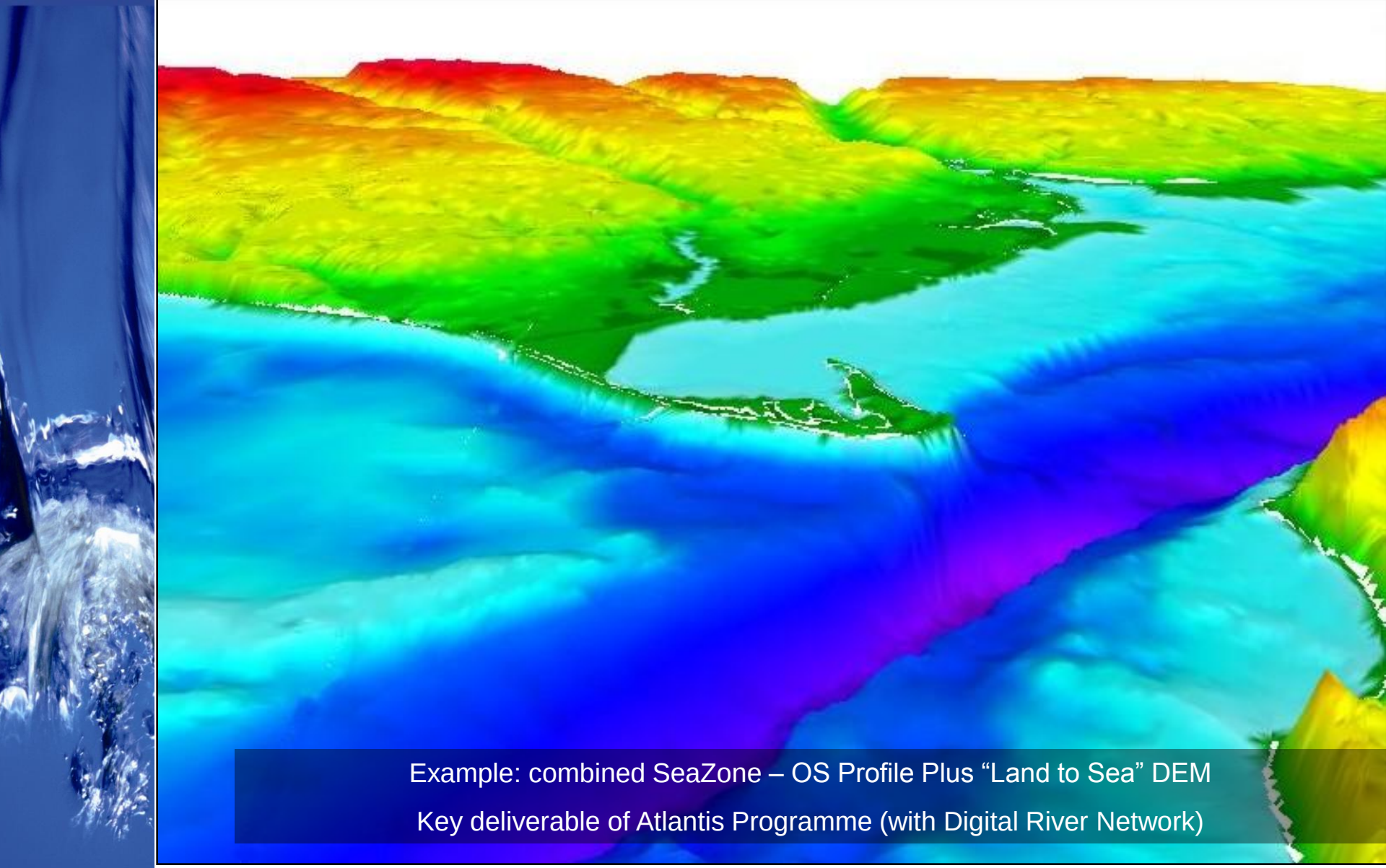

Example: combined SeaZone – OS Profile Plus “Land to Sea” DEM

Key deliverable of Atlantis Programme (with Digital River Network)

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www.projectatlantis.net

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