

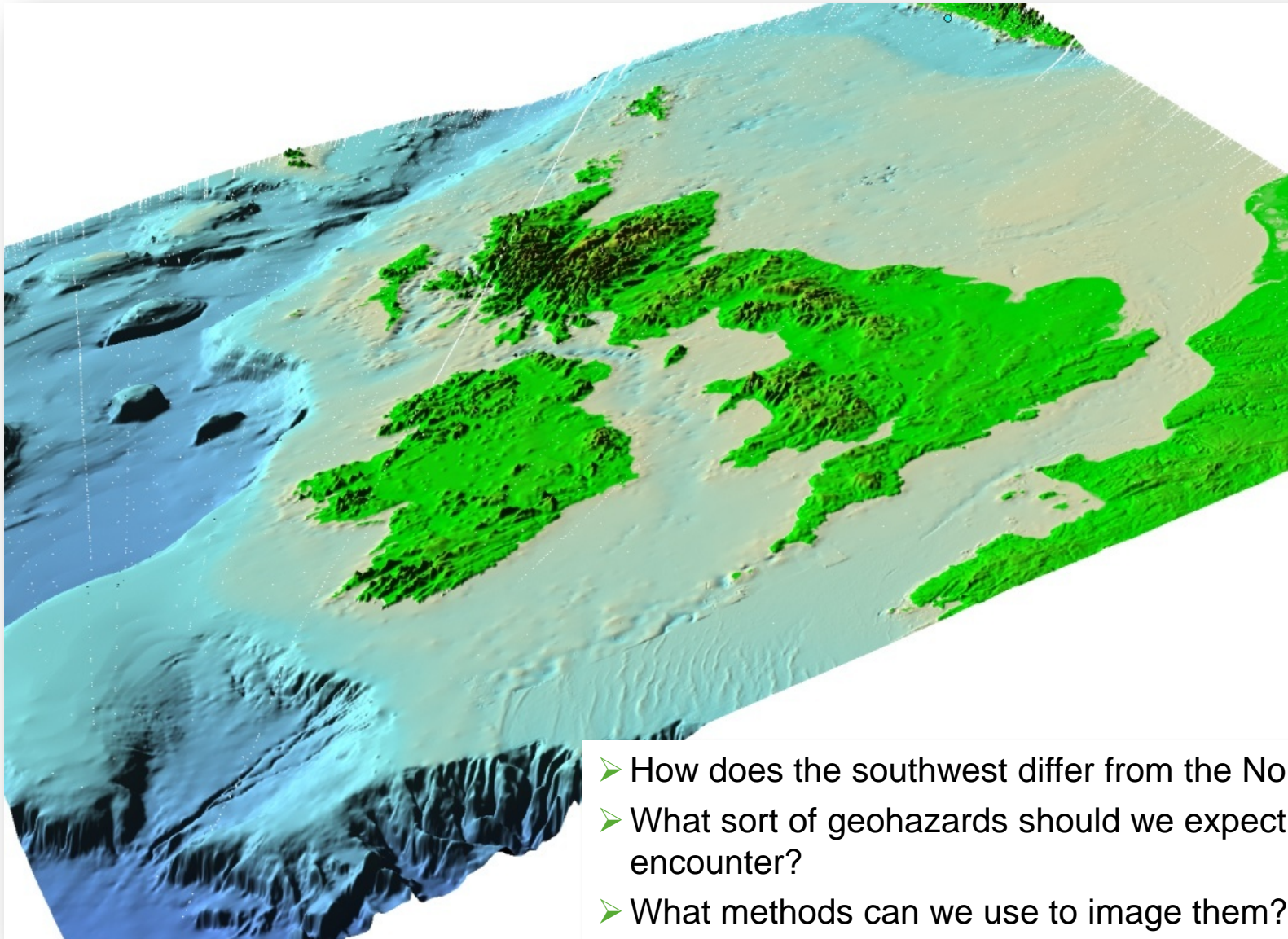


Geohazards

A southwestern perspective

Francis Buckley

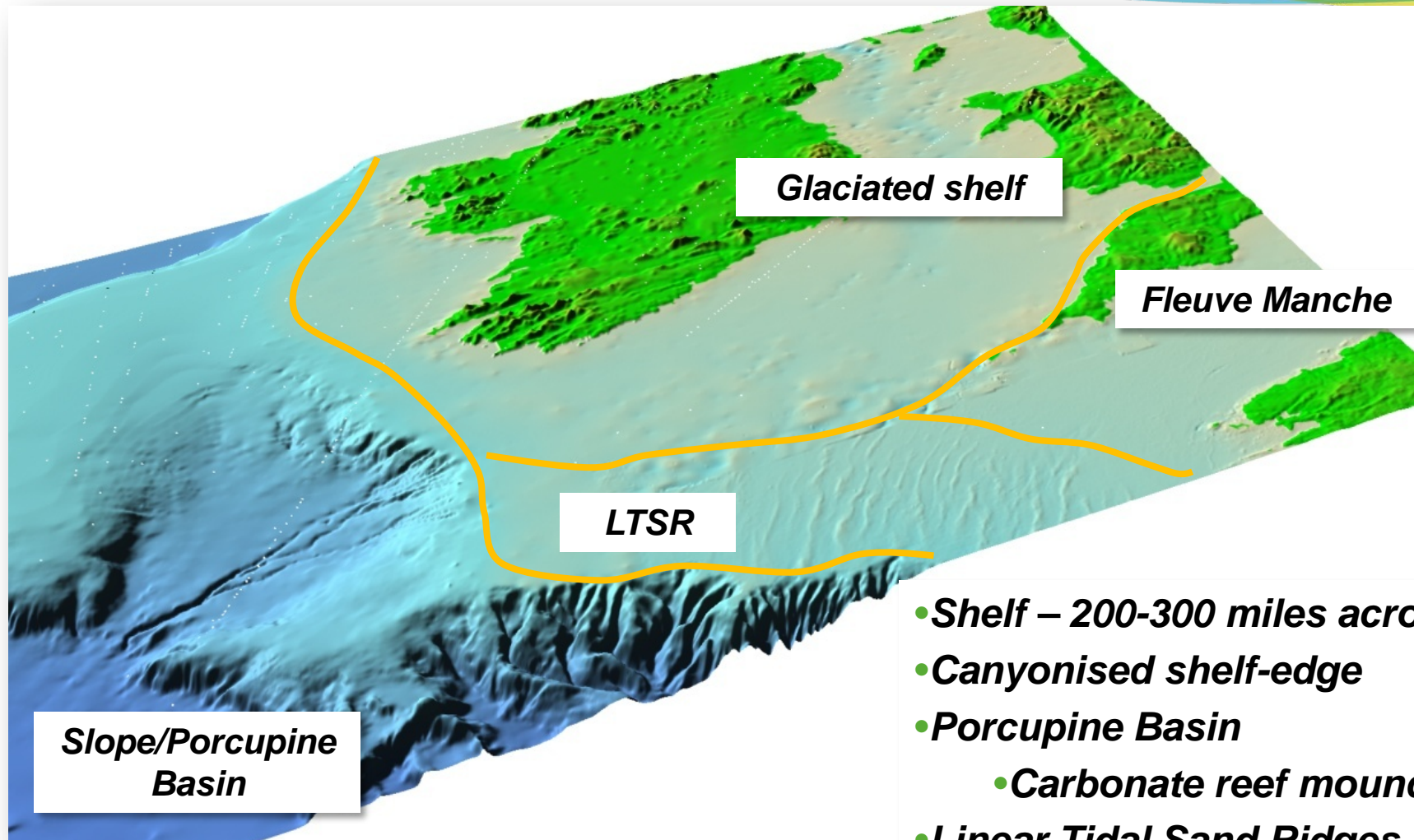
Senergy Survey & Geoengineering Ltd.



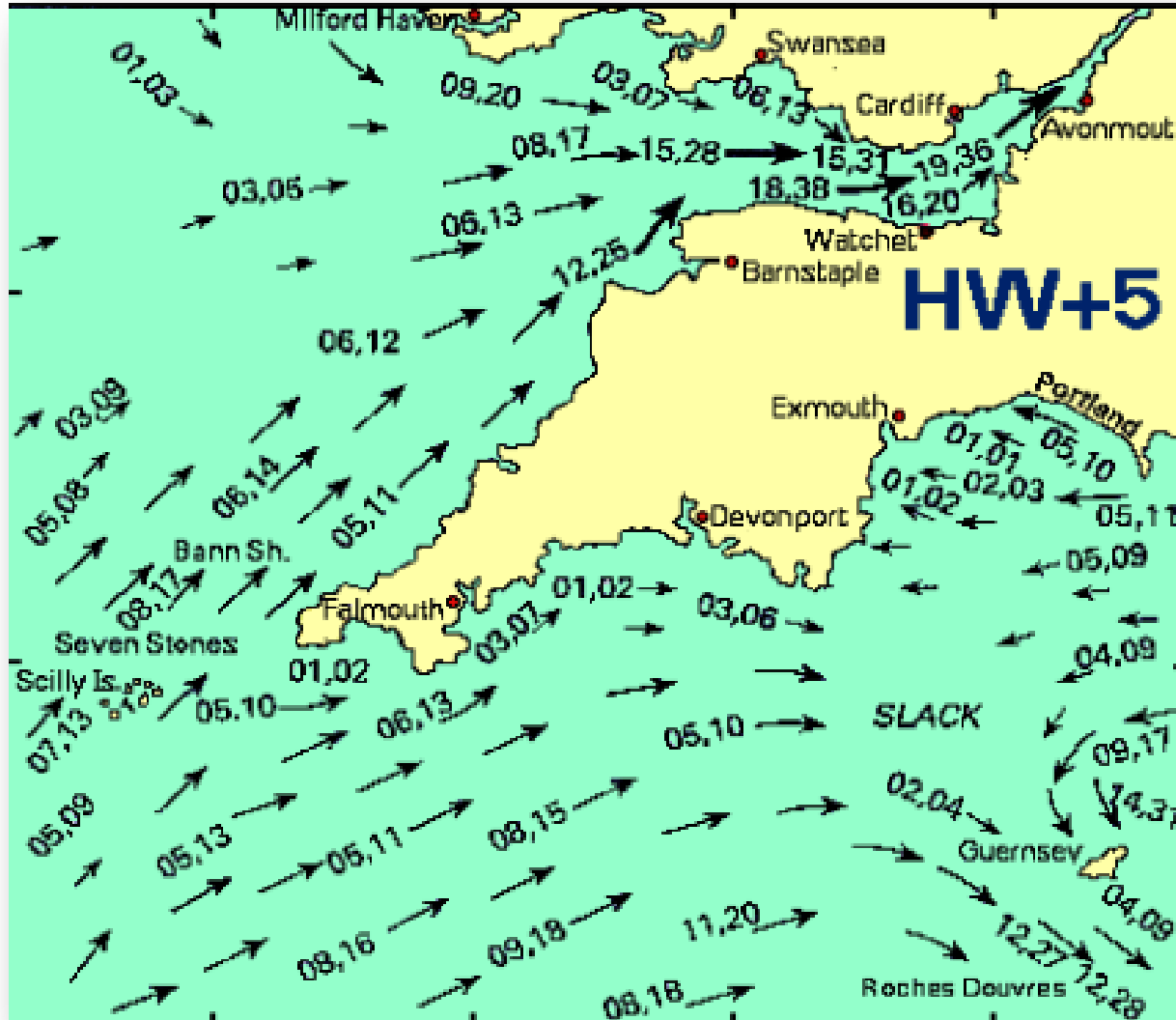
- How does the southwest differ from the North Sea?
- What sort of geohazards should we expect to encounter?
- What methods can we use to image them?

- Southern, Central, Northern North Sea
- Shelf/Norwegian channel/West Shetland slope
- Mesozoic/Tertiary sedimentary basin(s)
- Almost complete Quaternary sequence – 1000m
- Seismic imaging
- Studied since the early 1960's
- Shallow section still relatively poorly understood

- Shelf/slope
- Palaeozoic/Mesozoic/Tertiary outcrop/subcrop
- Limited glaciogenic cover
- Weather
- Tides

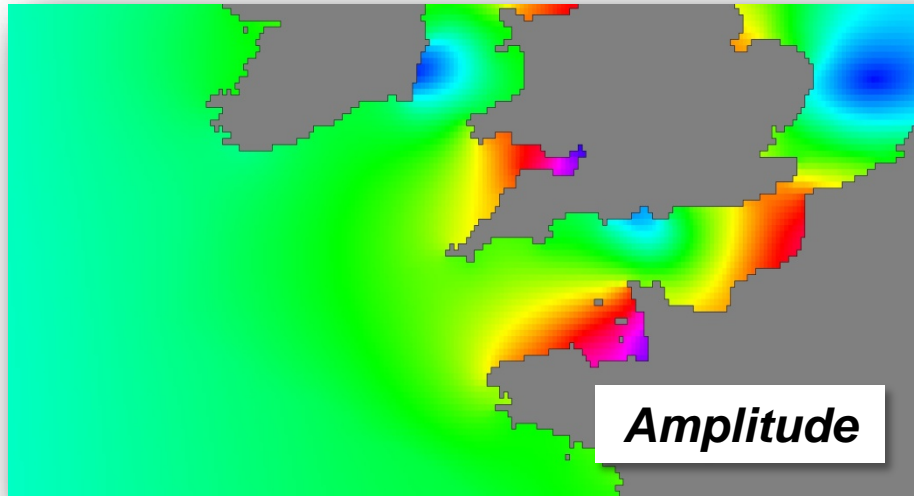


- **Shelf – 200-300 miles across**
- **Canyonised shelf-edge**
- **Porcupine Basin**
 - **Carbonate reef mounds**
- **Linear Tidal Sand Ridges**
- **Fleuve Manche**



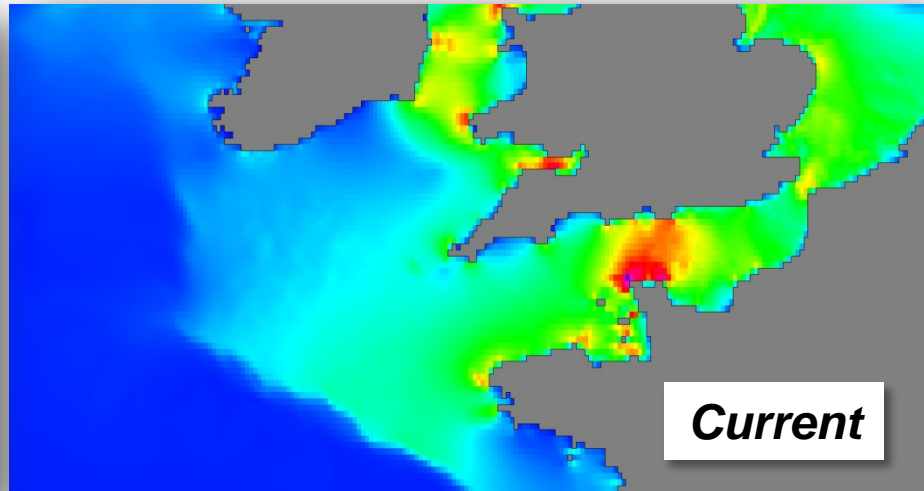
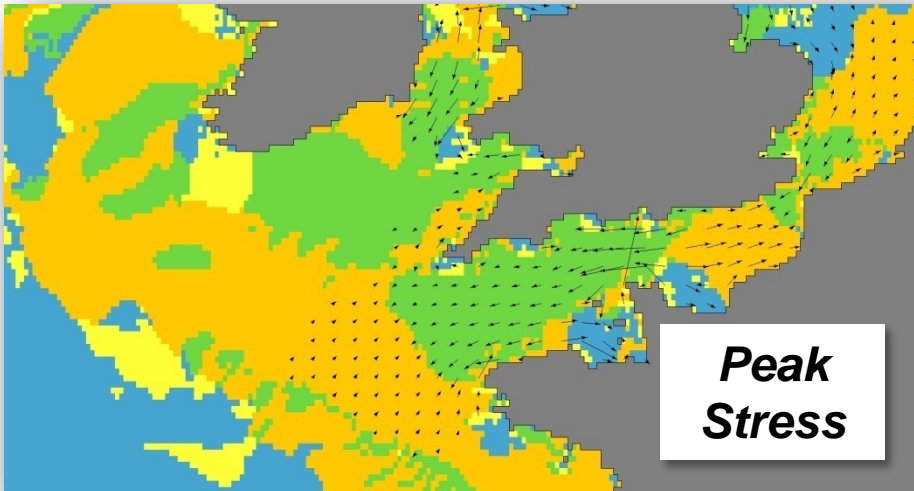
Spring tidal currents almost 4kts

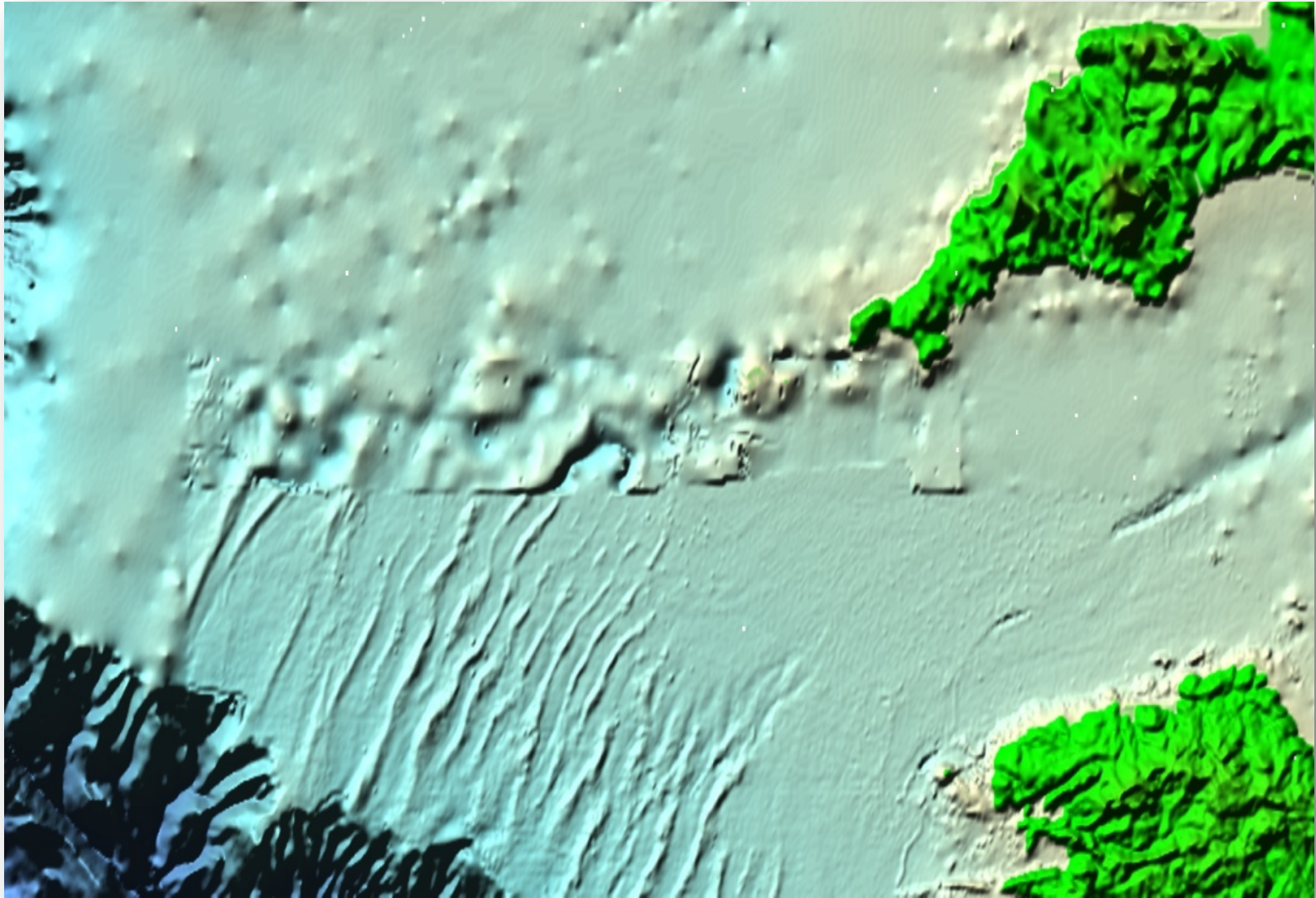
12m tidal range at Bristol



European Tidal Model
University of Bangor

Today





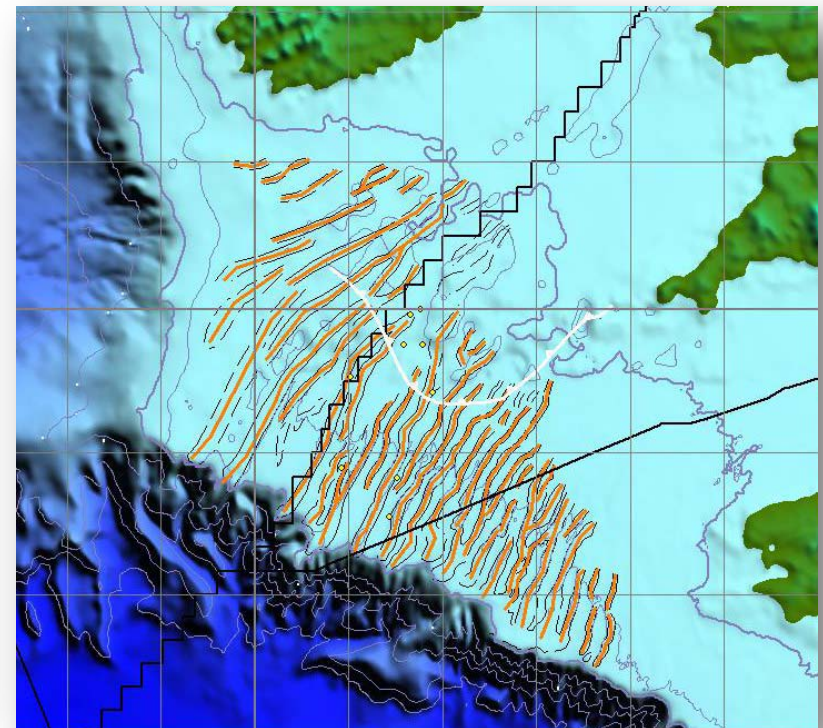
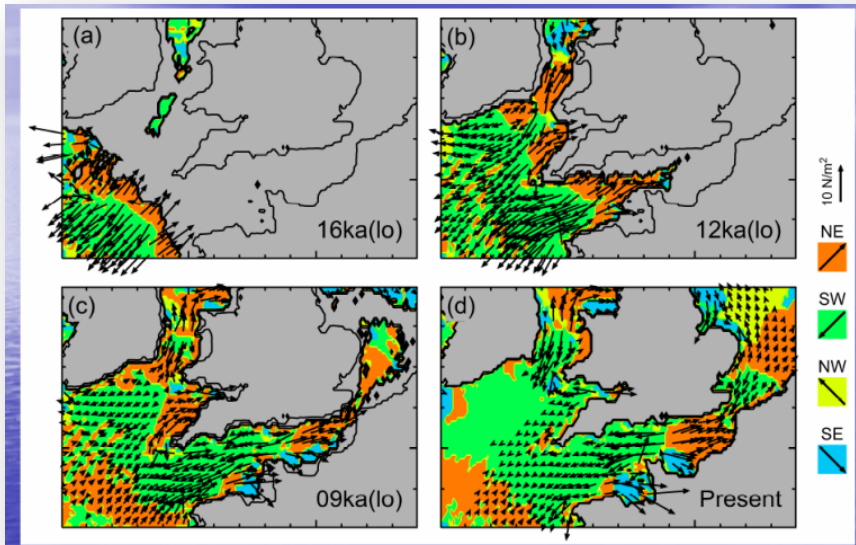
- Linear tidal sand ridges

- James Scourse – Bangor

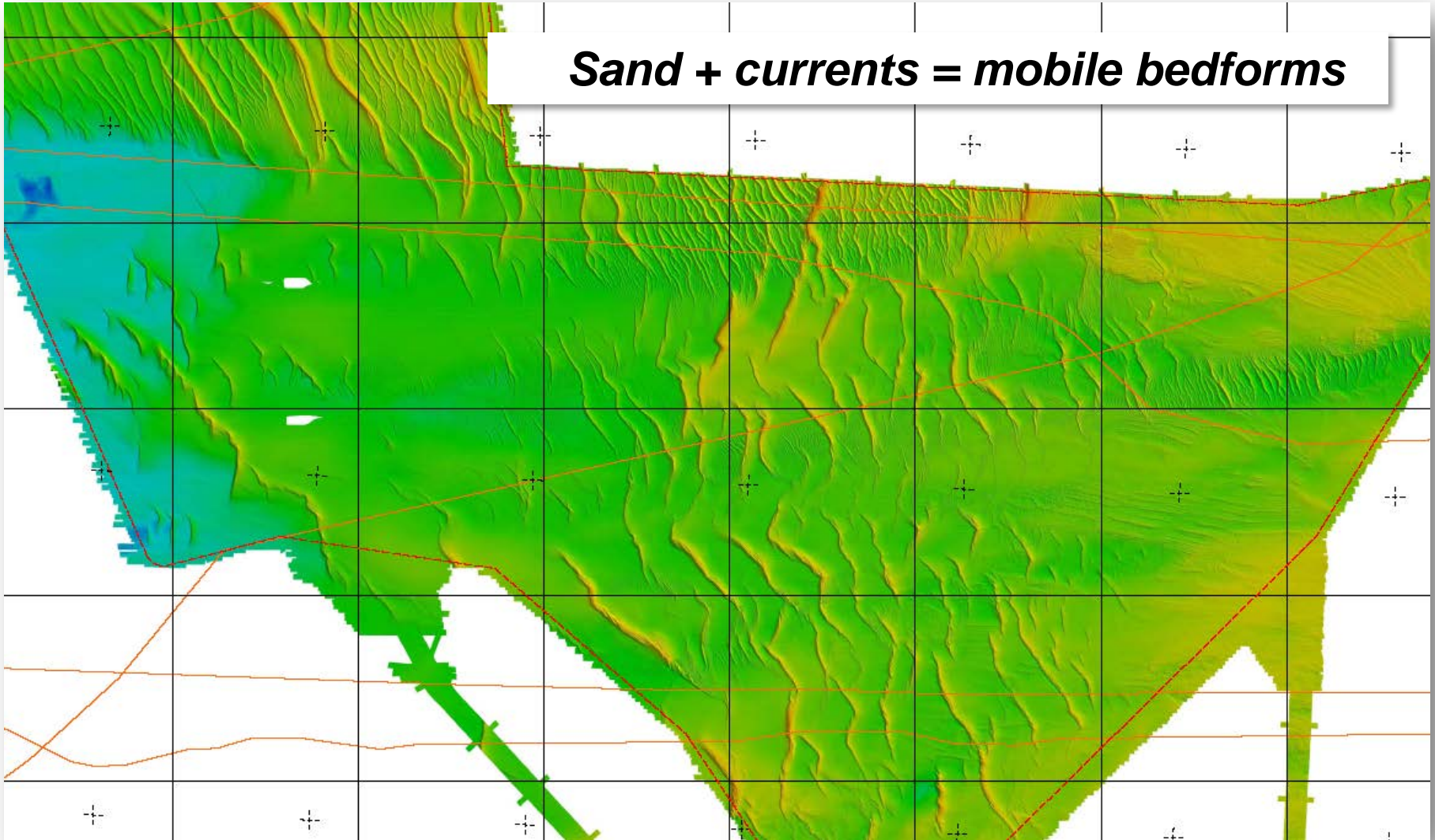
- Tidal forcing of bed stress vectors during post-glacial transgression of SW shelf – cf S N Sea sand banks

- Daniel Praeg – Trieste

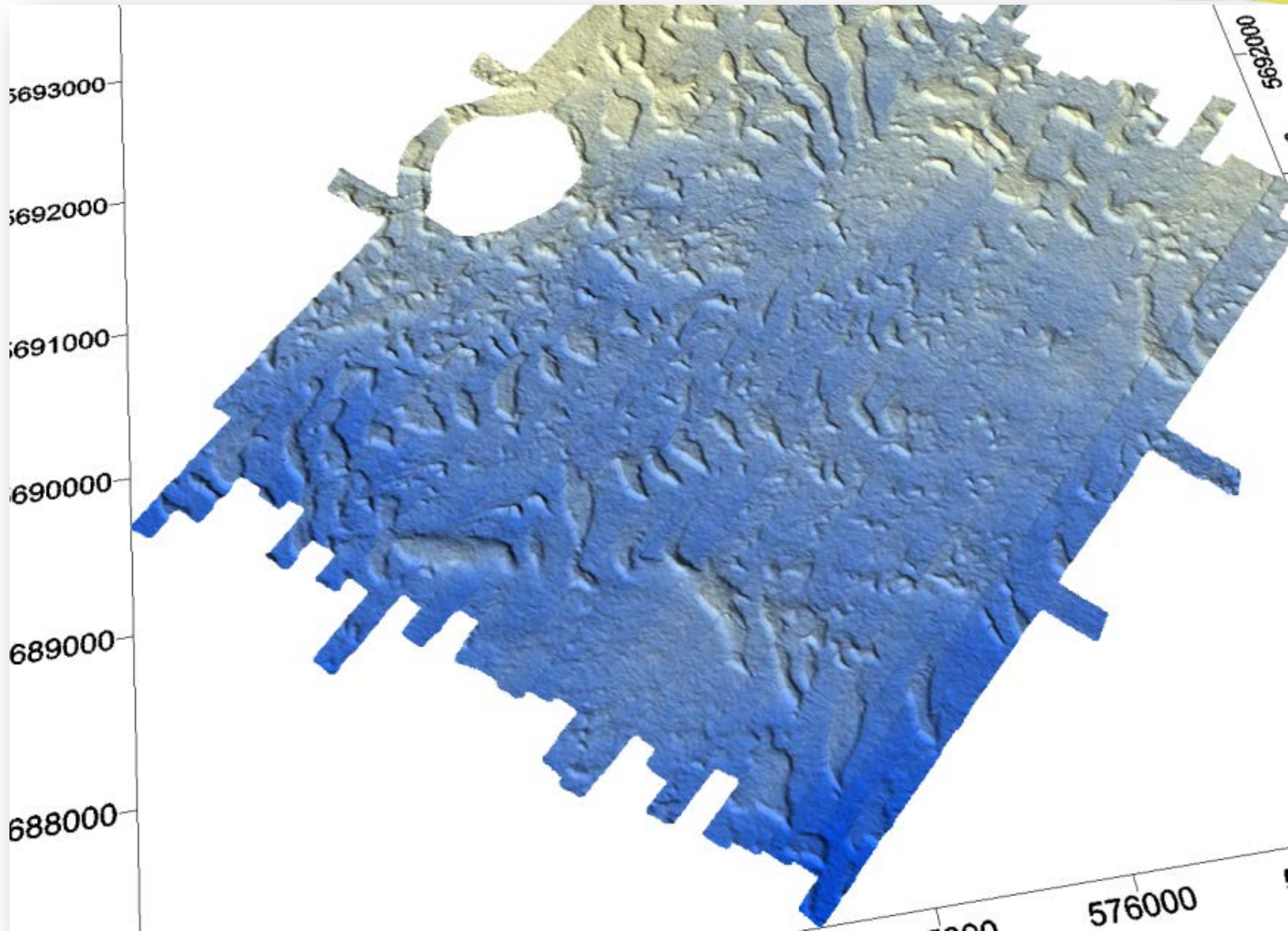
- Meltwater drainage system



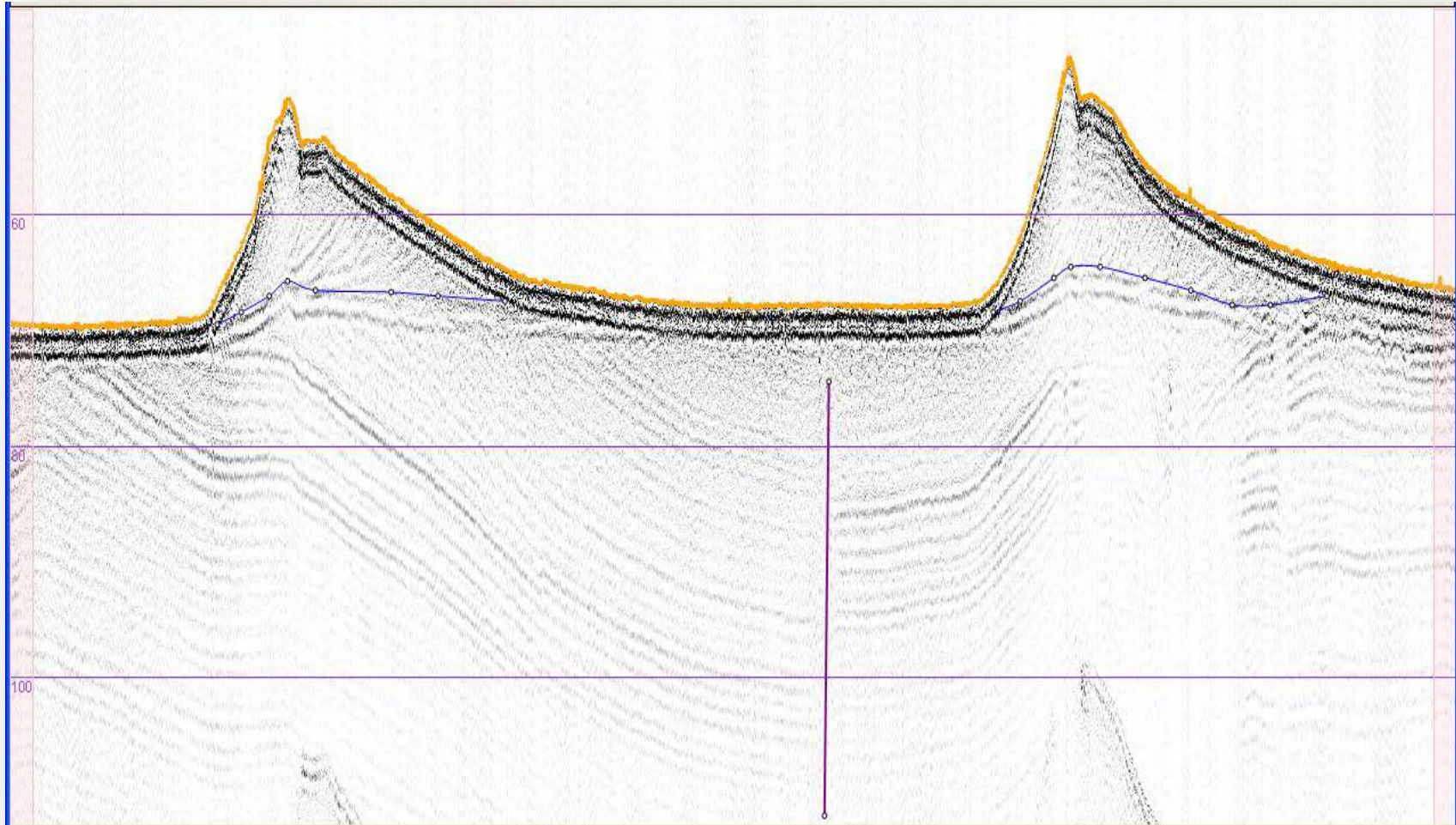
Sand + currents = mobile bedforms



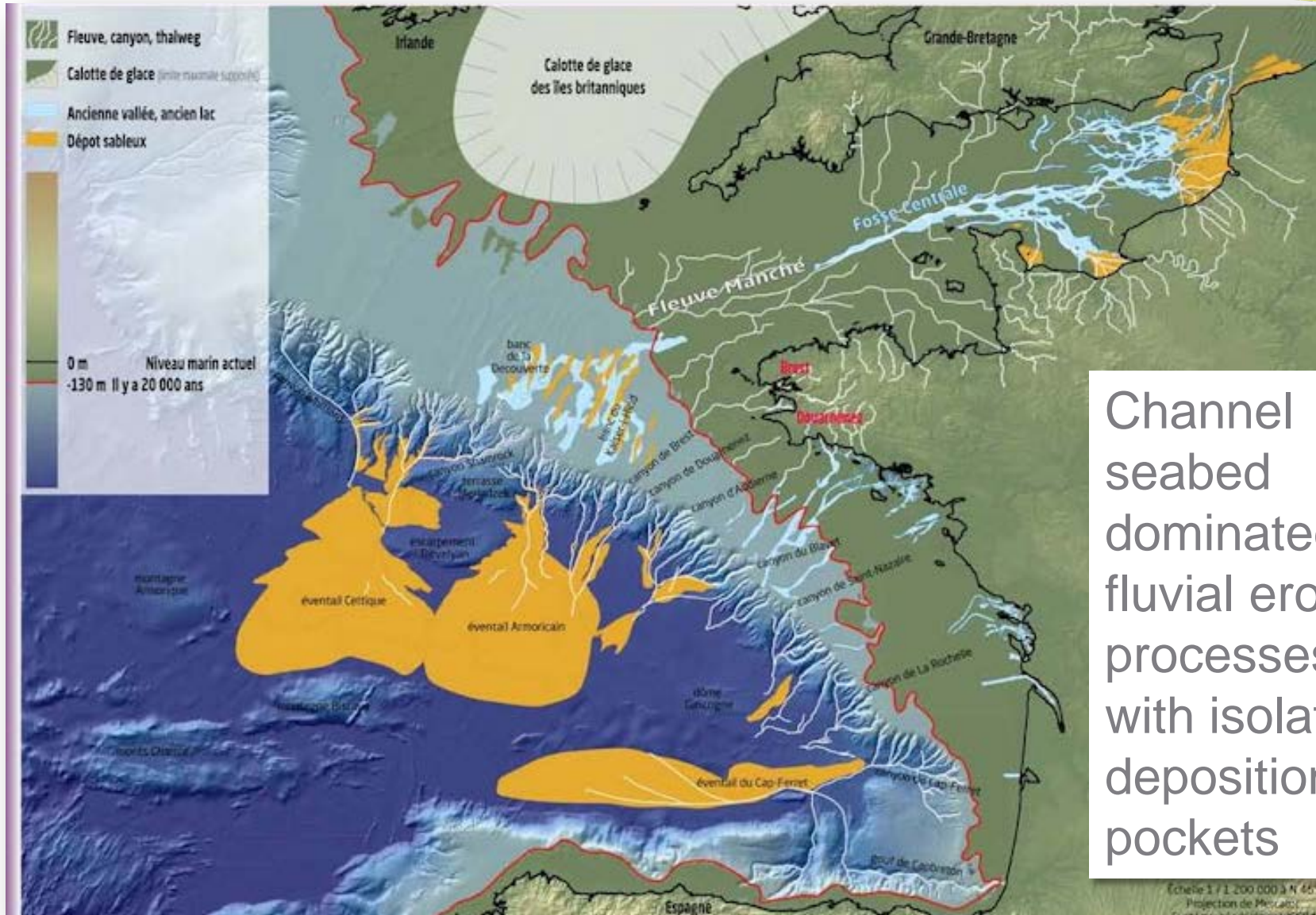
Rig site – Irish CS



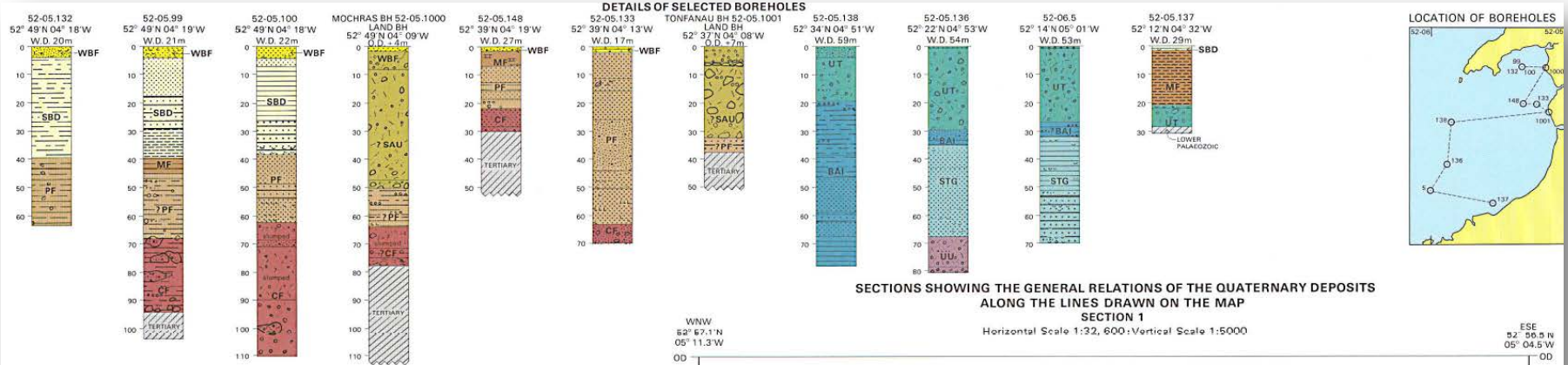
Sadwaves over bedrock – sparker data



Fleuve Manche



Channel seabed dominated by fluvial erosion processes with isolated depositional pockets

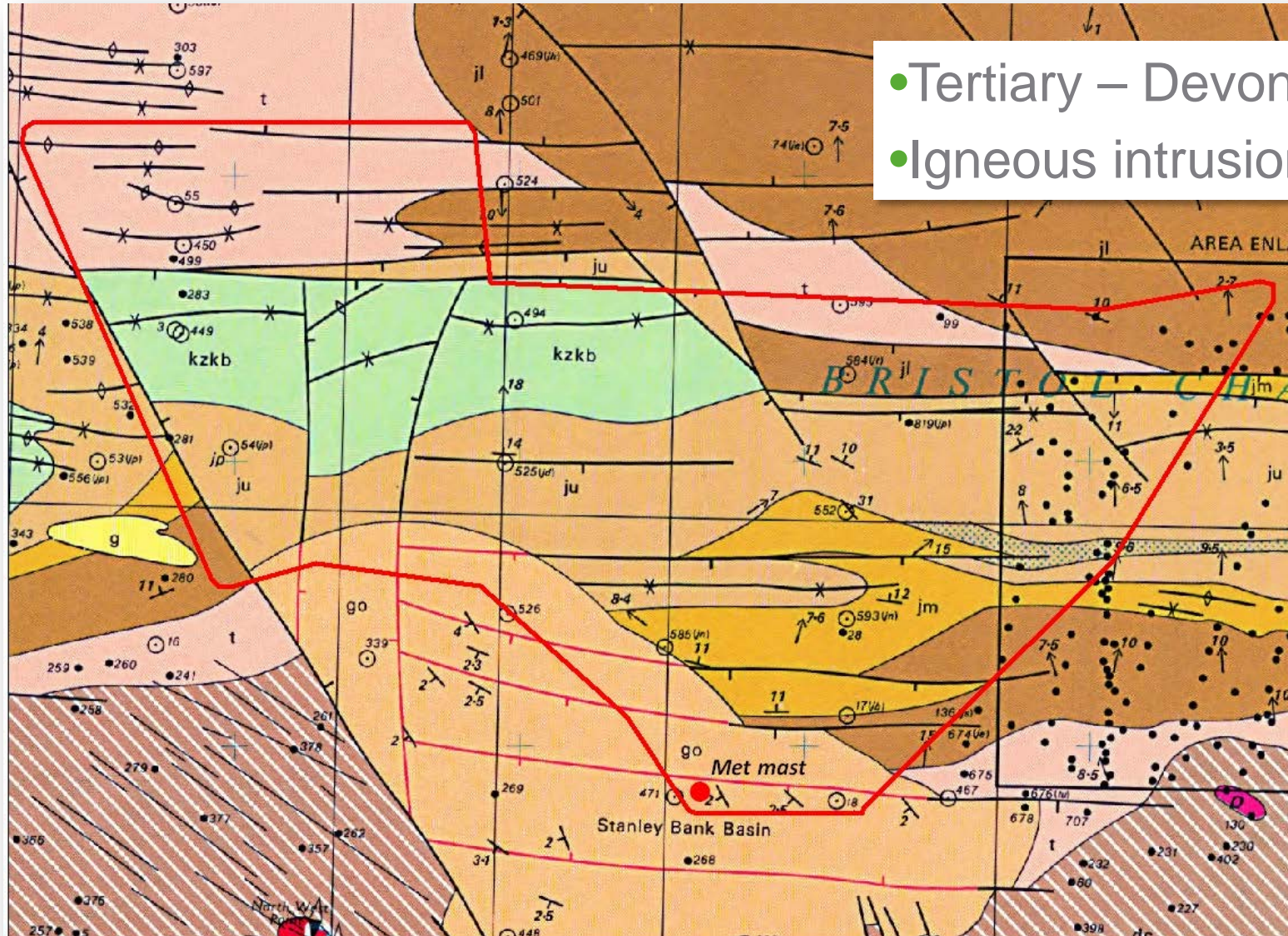


TENTATIVE CORRELATION TABLE OF PLEISTOCENE STAGES BETWEEN IRELAND, GREAT BRITAIN AND THE NORTH SEA. After WEST (1977).

	Ireland stage	Irish Sea stage	Great Britain and North Sea stage	Climate
Recent	Littletonian	Holocene	Flandrian	Interglacial
Upper Pleistocene	Mullianian	Weichselian	Devensian	Glacial
	'Last Interglacial'	Eemian	Ipswichian	Interglacial
	?Munsterian	Saalian	Wolstonian	Glacial
Middle Pleistocene	Gortian	Holsteian	Hoxnian	Interglacial
	pre-Gortian	Elsterian	Anglian	Glacial
Lower Pleistocene		Pre-Elsterian	Cromerian Beestonian Pastonian	variable
			(HIATUS)	
			4-5 stages	variable

Anglian (Elsterian) ice sheet reached southern shore of Bristol Channel
 Last (late Devensian = Weichselian) ice sheet reached Scilly Isles

- Pleistocene & Tertiary clay lithologies
- Very stiff – hard
 - Anhydrites



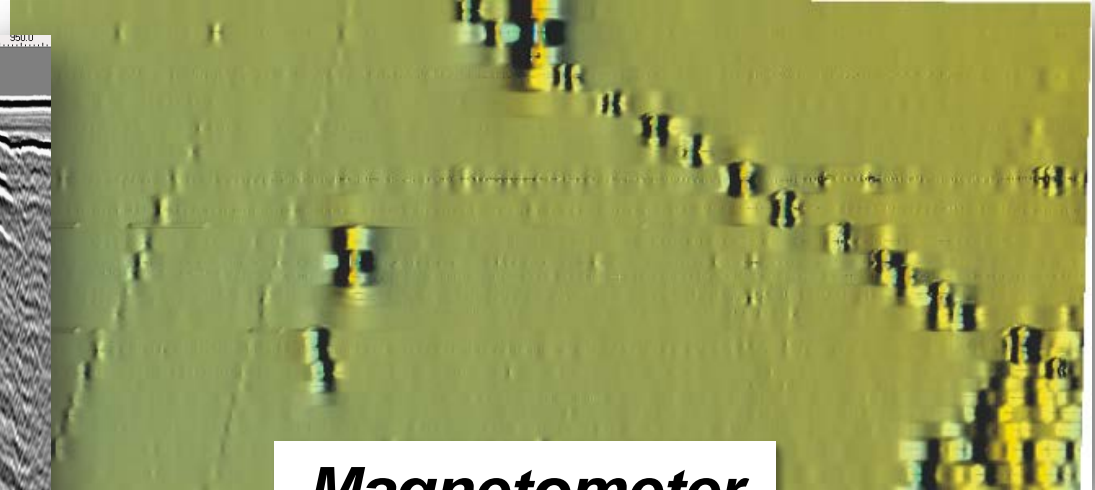
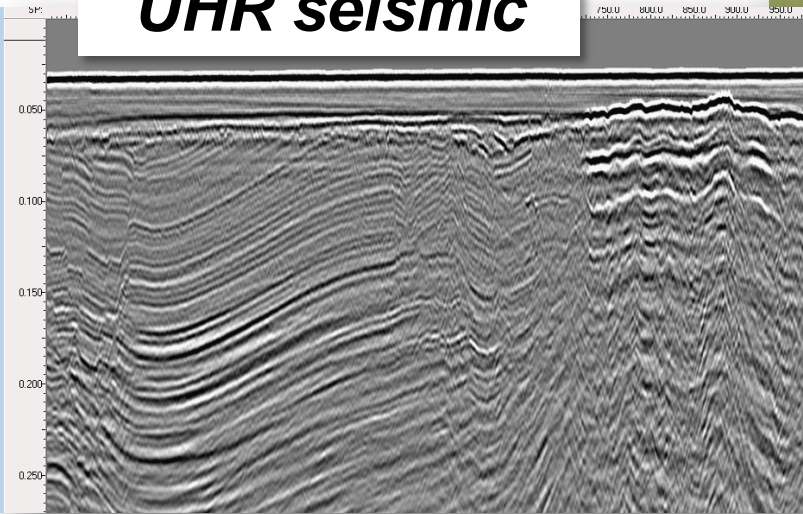
- Tertiary – Devonian
- Igneous intrusions

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- Hard seabed
 - Problems for seismic imaging

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UHR seismic



Magnetometer

Interpretation

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- Shelf

- Tides (currents)
- Mobile sands
- Hard seabed

➤ Careful choice of source/receiver configurations

➤ Tailored processing algorithms

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- Deep water
 - 3D
 - SO3D
 - Coring
 - UHR?
 - Conductor installation

- The SW marine sector...
...is not the North Sea
- All surveys in whatever area should be approached on an individual basis – beware the production line!
- Academics & industry



senergy
survey & geoengineering



senergy

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