



**Cefas**

# Bedrock Geology Governs Benthic Habitat in the Central English Channel

Markus Diesing, Koen Vanstaen and Roger Coggan  
Centre for Environment, Fisheries & Aquaculture Science



# Habitats Directive

- Aim: Conservation of natural habitats and of wild fauna and flora
- Coherent network of protected areas
- Annexes to the Habitats Directive list various habitat types and species for whose conservation special efforts need to be undertaken EU-wide

# Annex I habitats

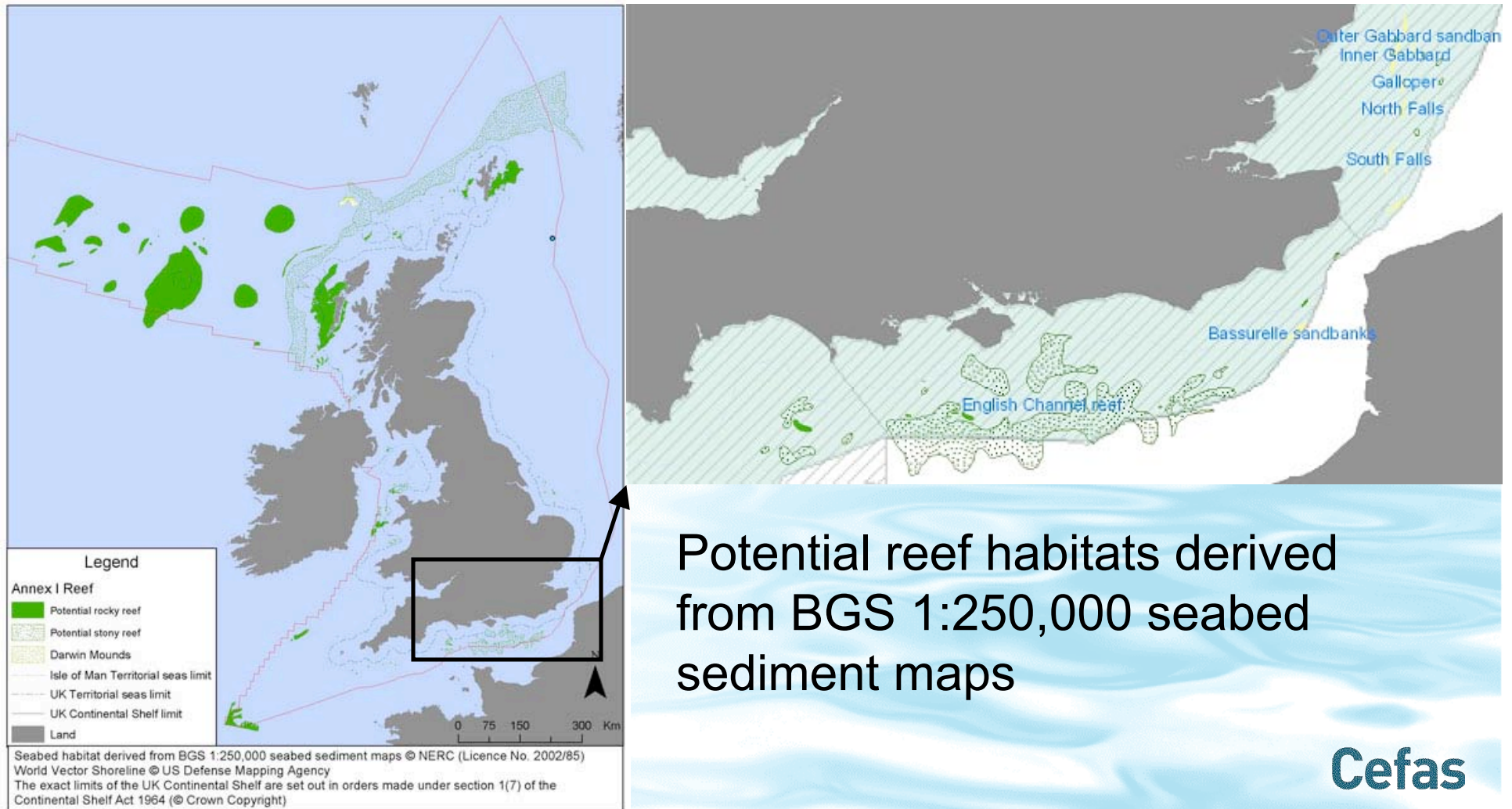
In UK offshore waters (12 – 200 nautical miles):

- Sandbanks which are slightly covered by sea water all the time
- **Reefs**
- Submarine structures made by leaking gases

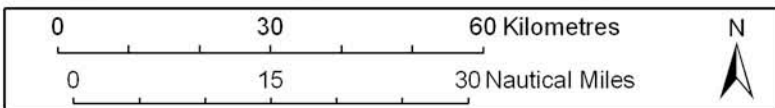
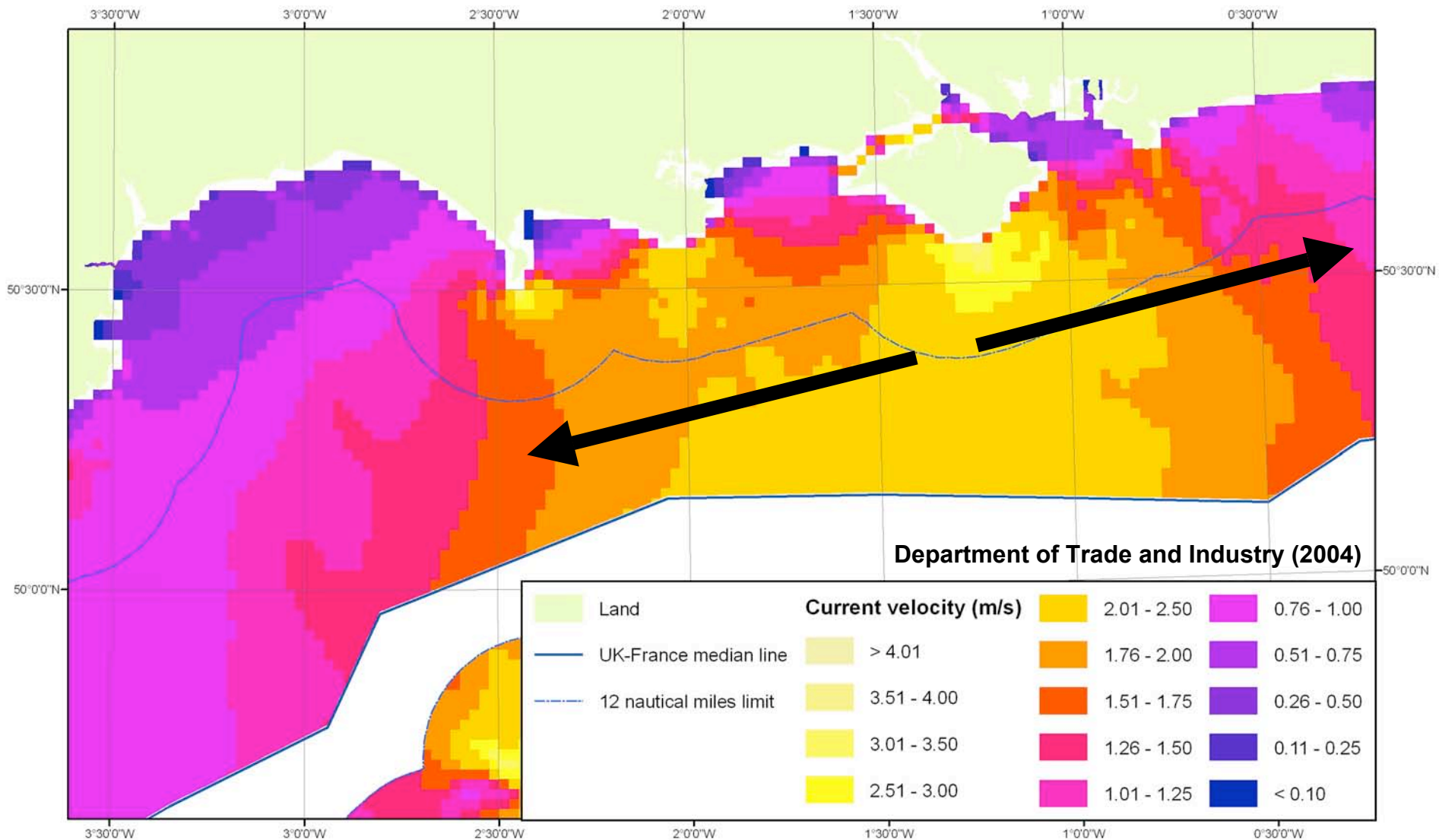
# Reefs

- “Reefs can be either **biogenic concretions** or of **geogenic origin**. They are hard compact substrata on solid and soft bottoms, which arise from the sea floor in the sublittoral and littoral zone.”
- Reef sub-types:
  - Biogenic reef (cold-water corals, worm reefs and mussel beds)
  - Stony reef (cobble and boulder reefs)
  - **Bedrock**

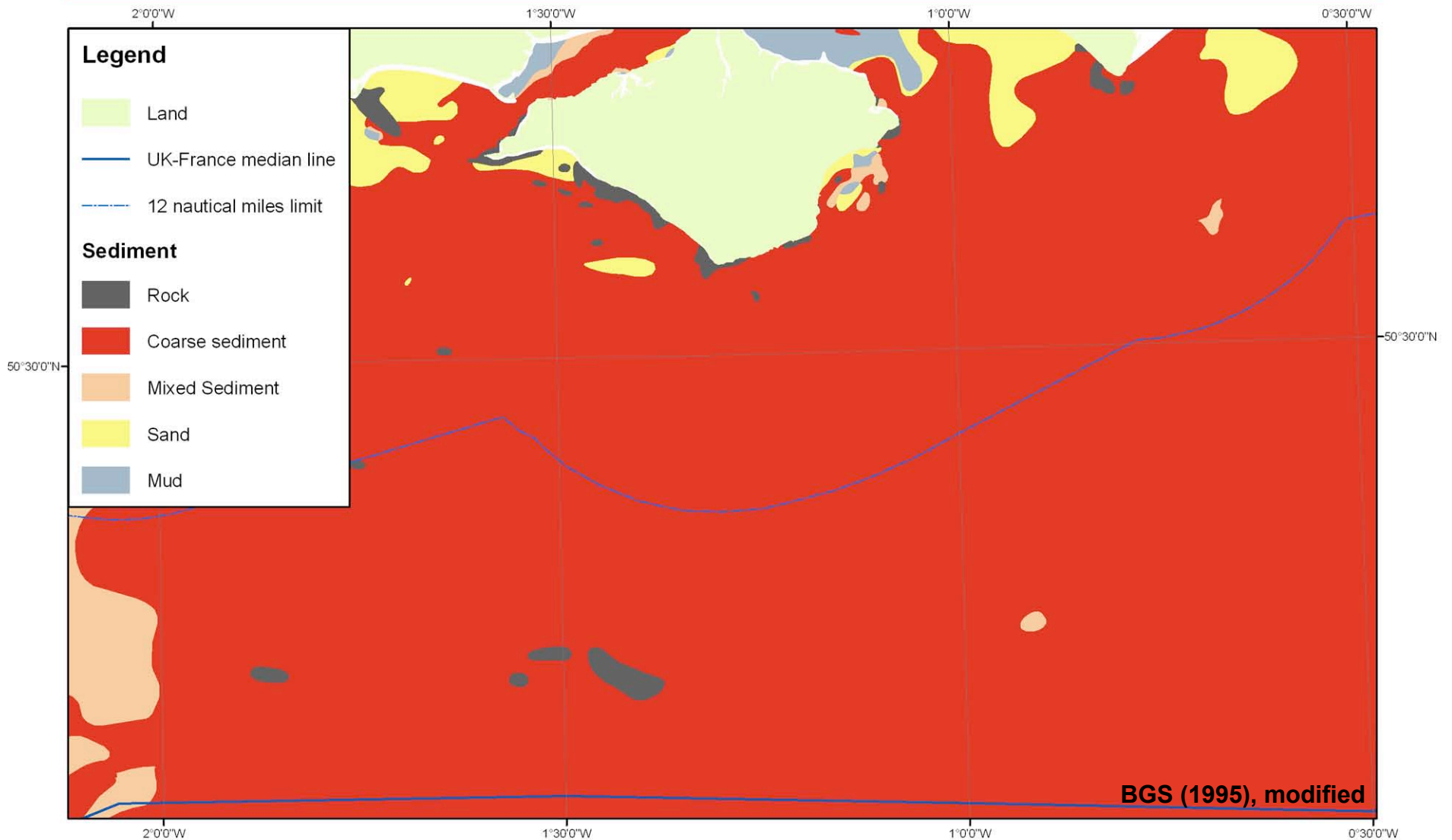
# Areas of Search



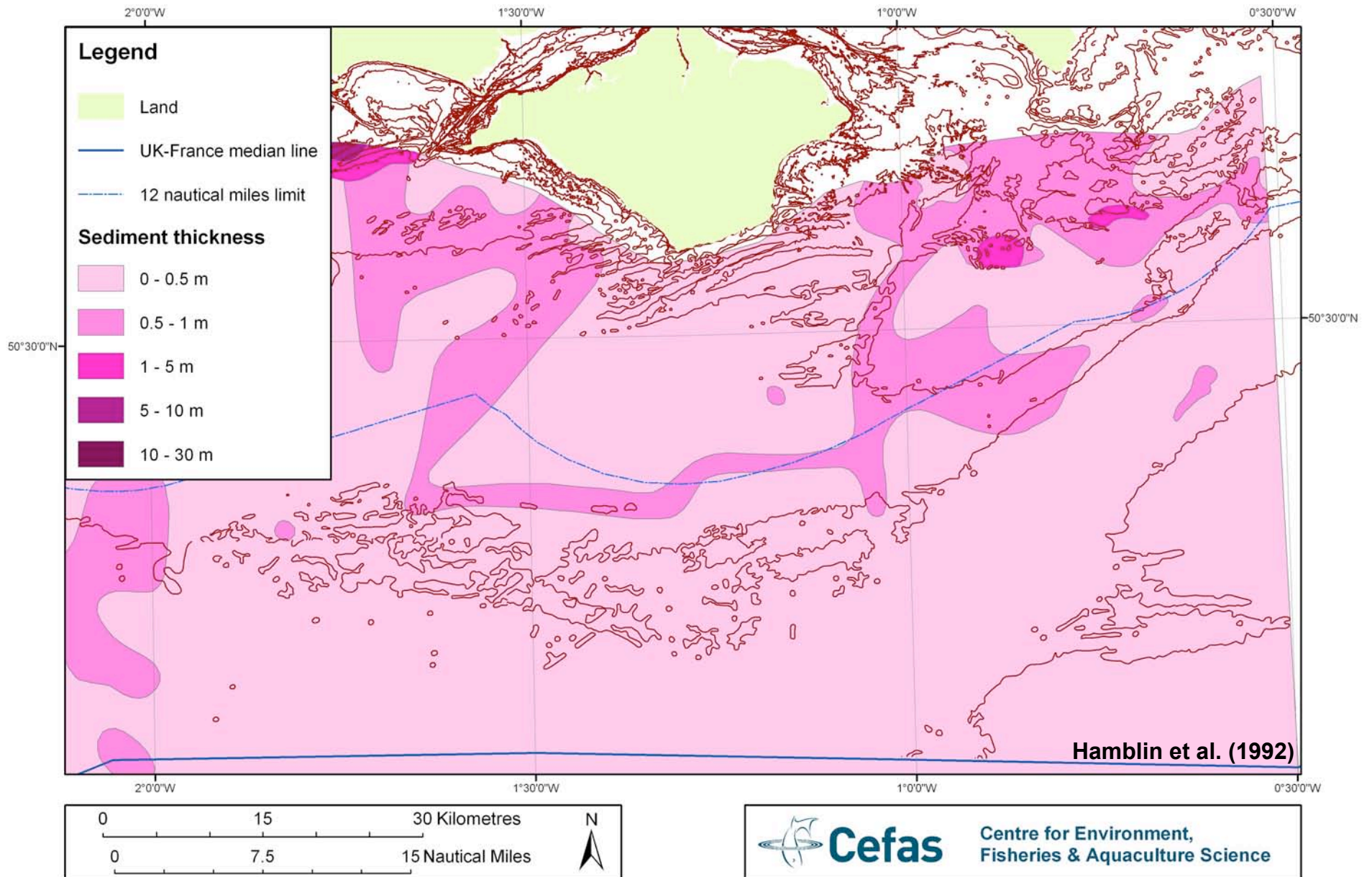
# Spring tide peak current



# Wight - Seabed sediments

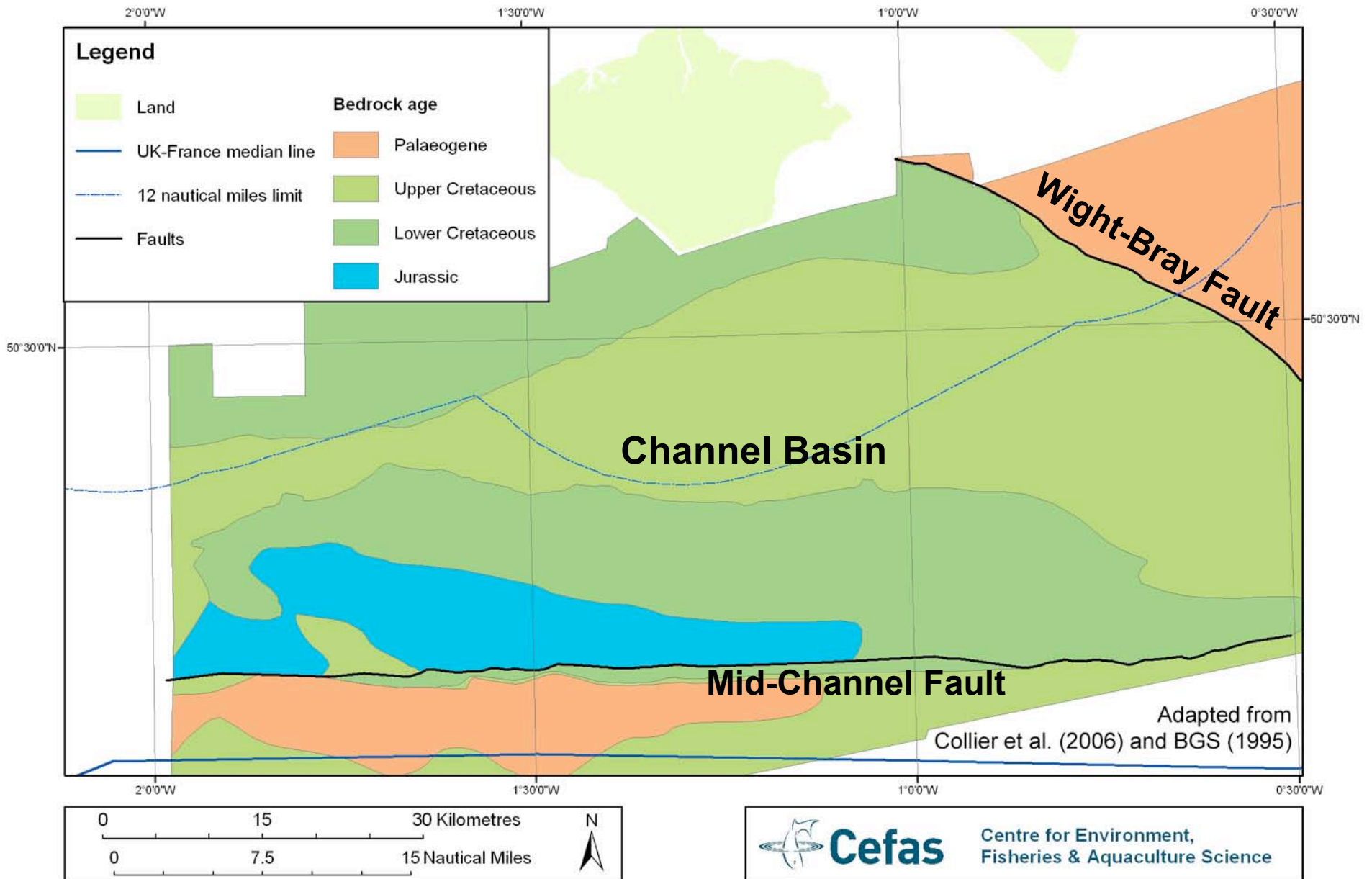


# Wight- Sediment thickness

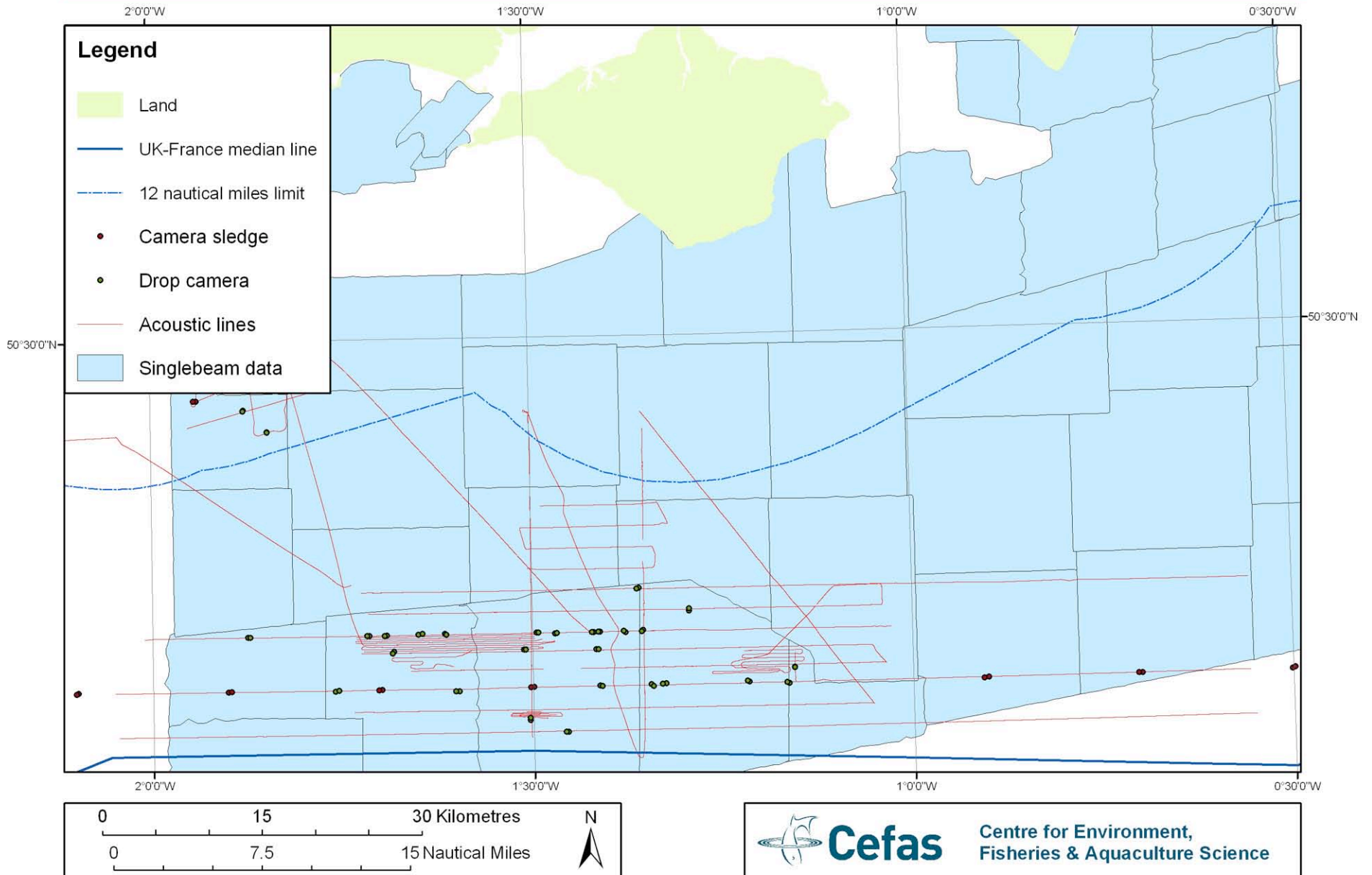




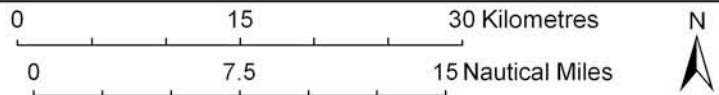
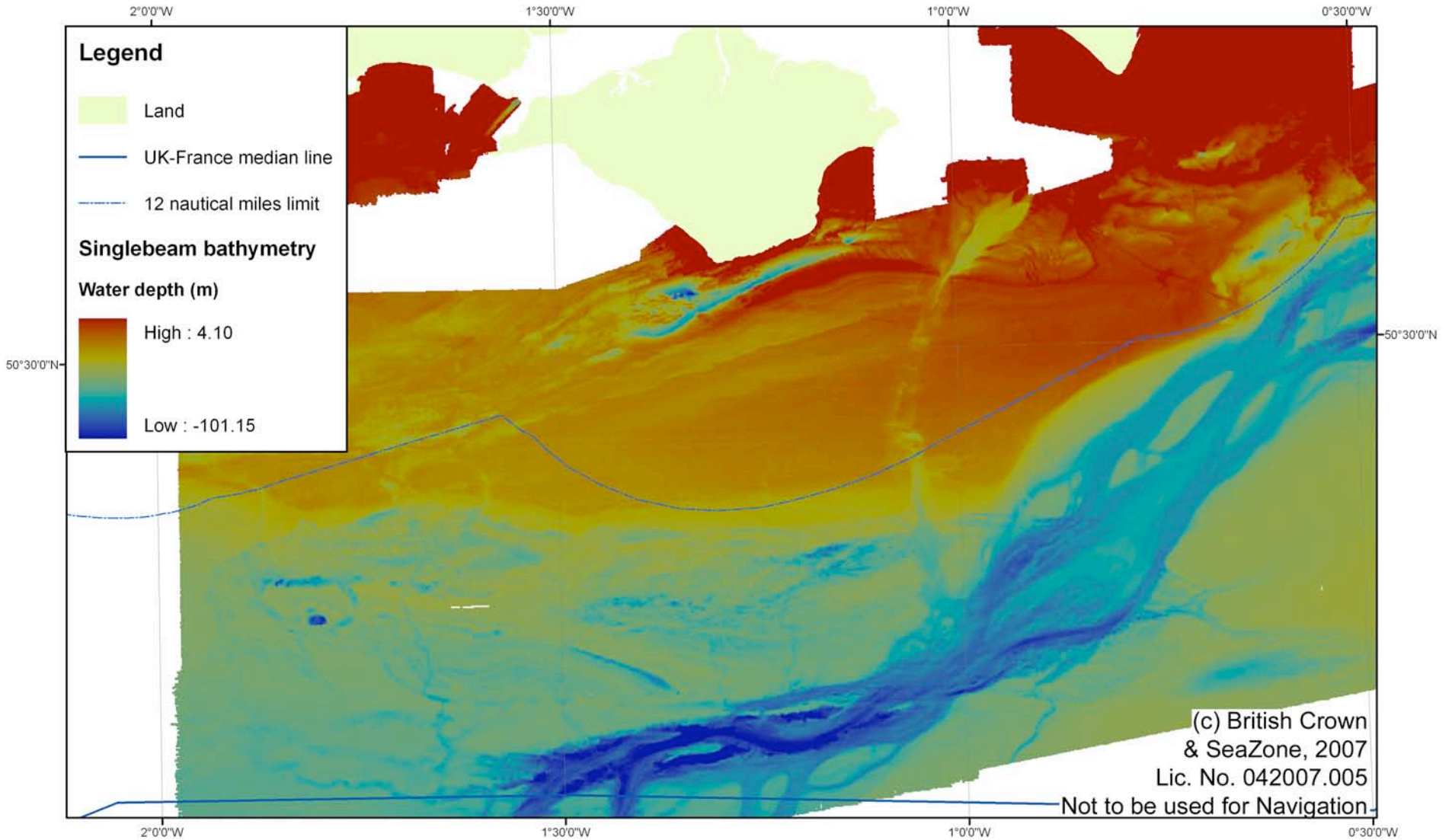
# Wight - Bedrock geology



# Wight - Available data

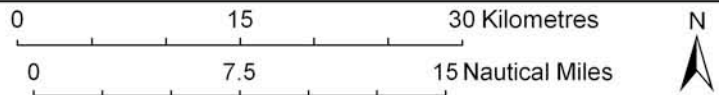
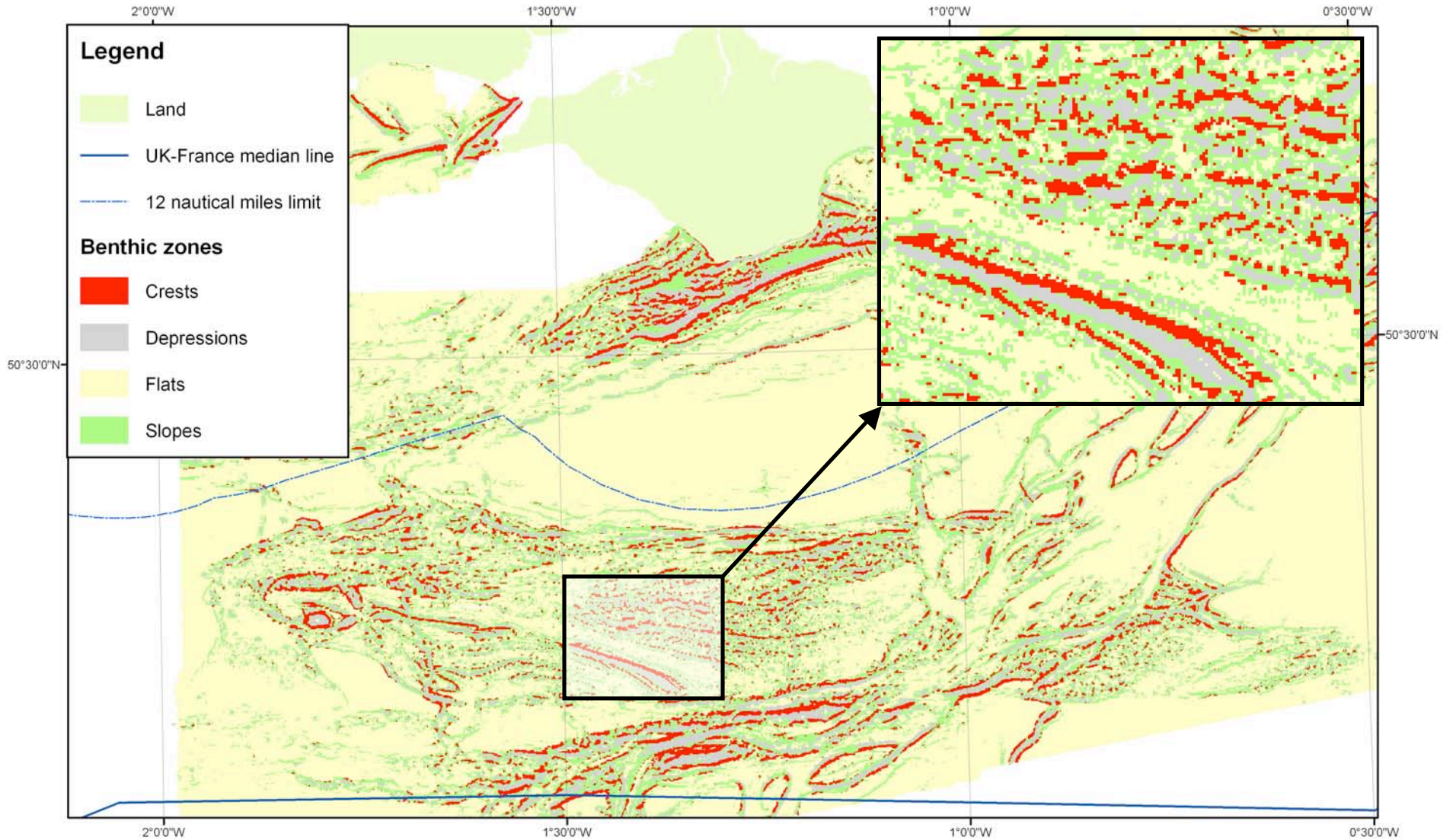


# Wight - Bathymetry



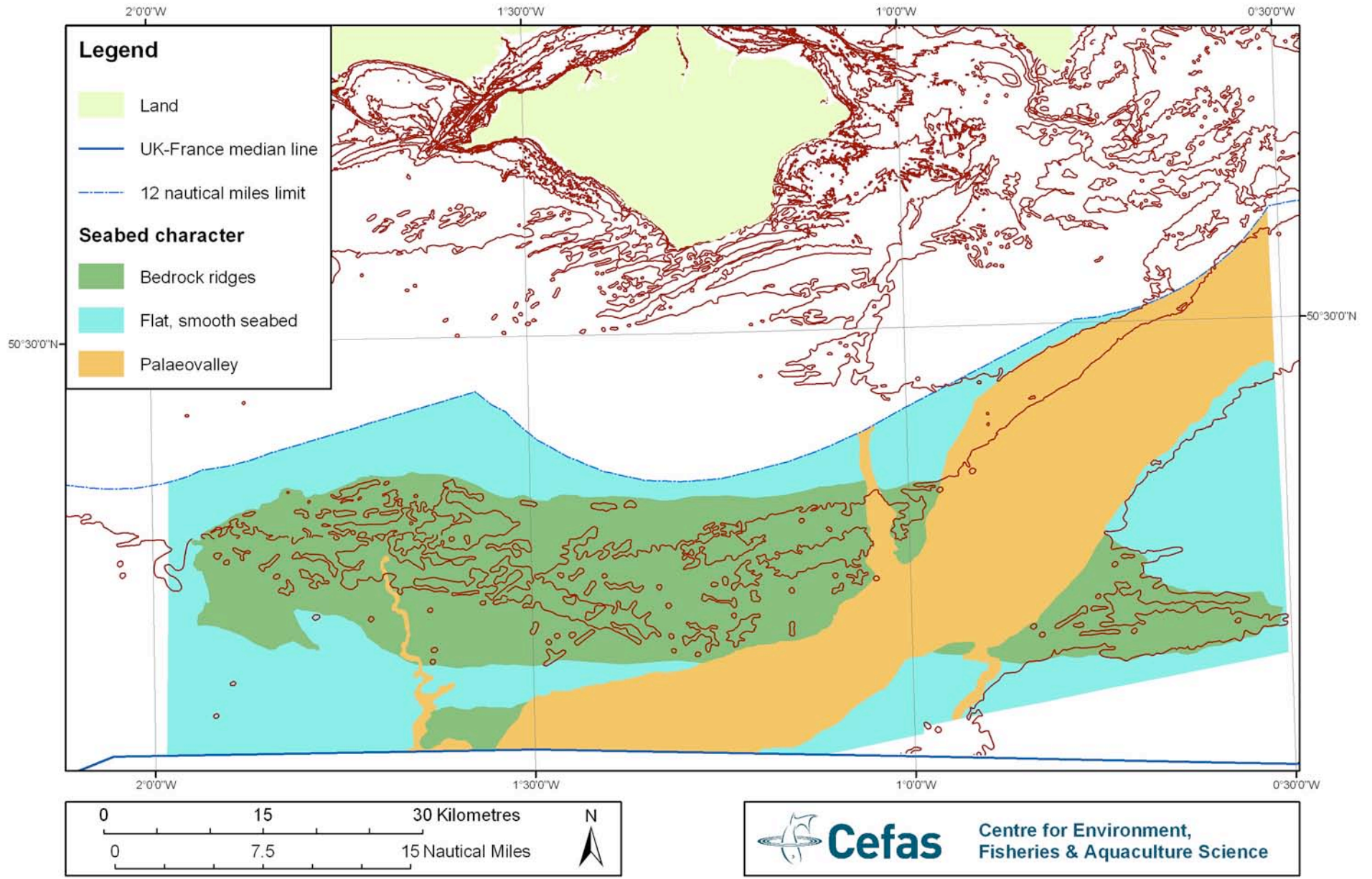
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# Wight - Benthic zones

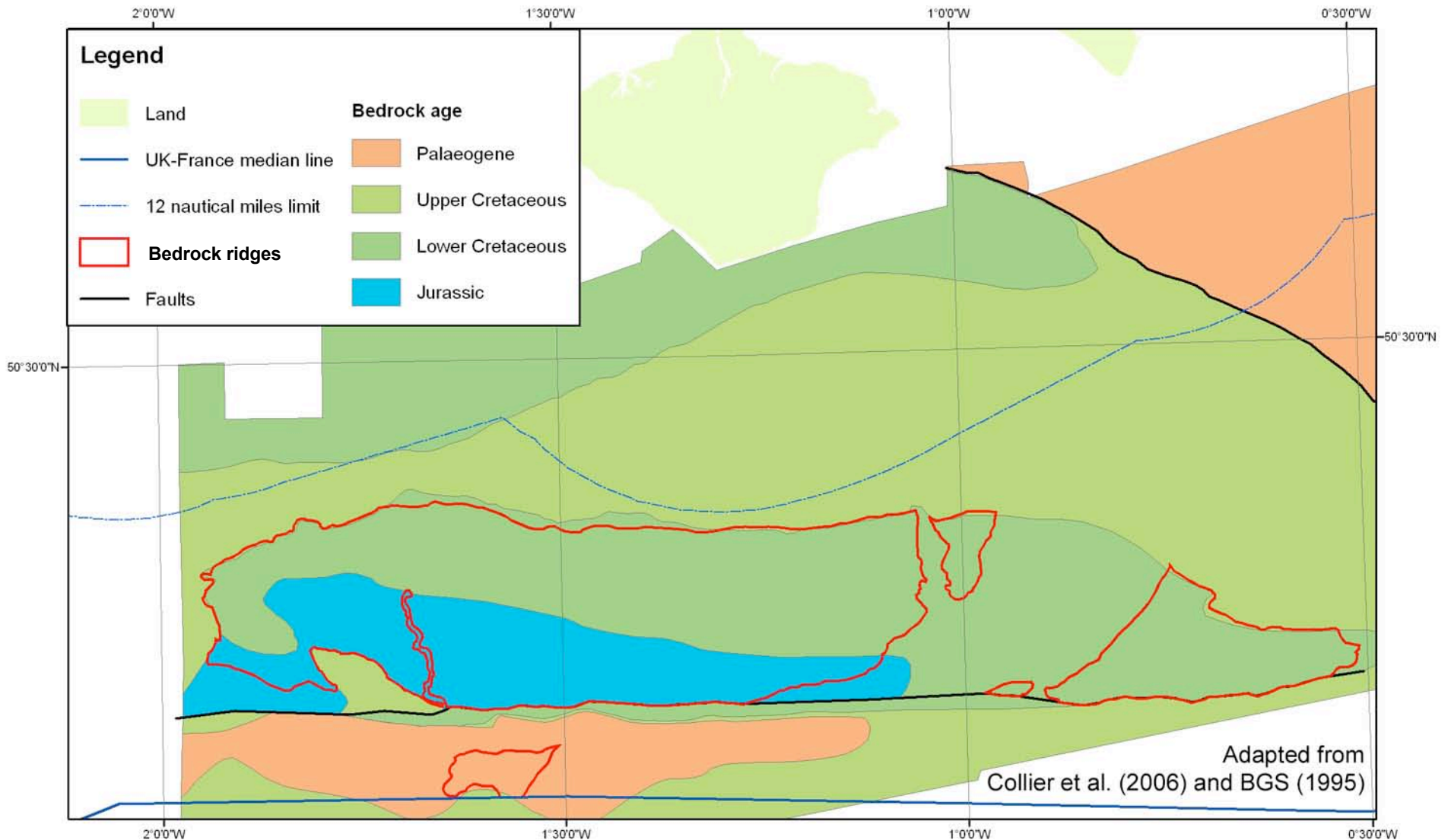


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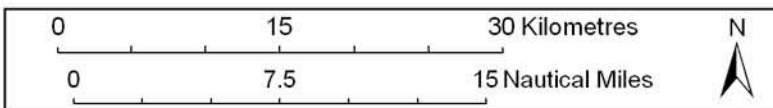
# Wight - Seabed character



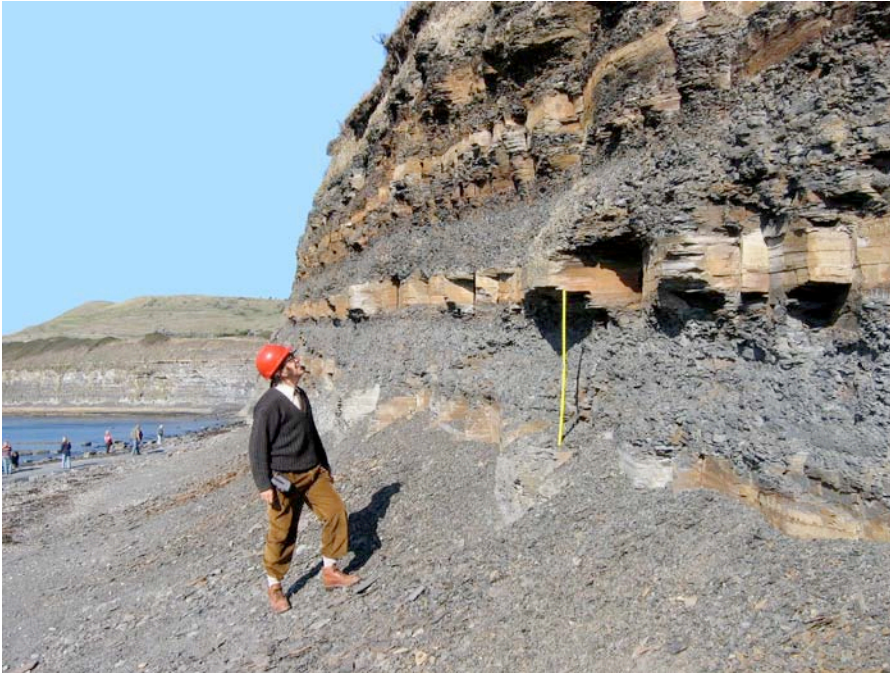
# Wight - Bedrock geology



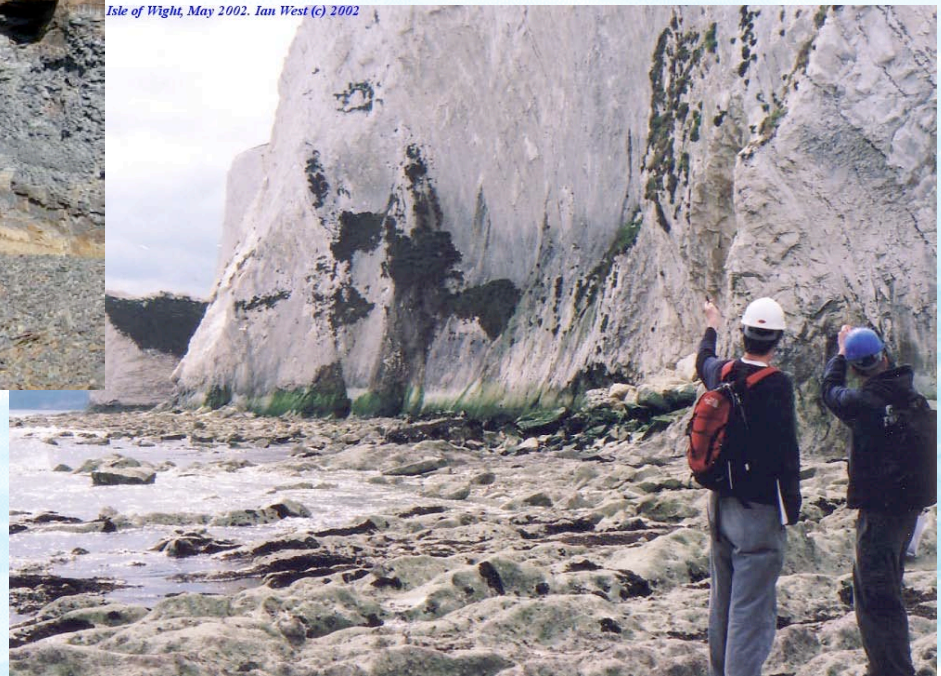
Adapted from Collier et al. (2006) and BGS (1995)



# Bedrock geology

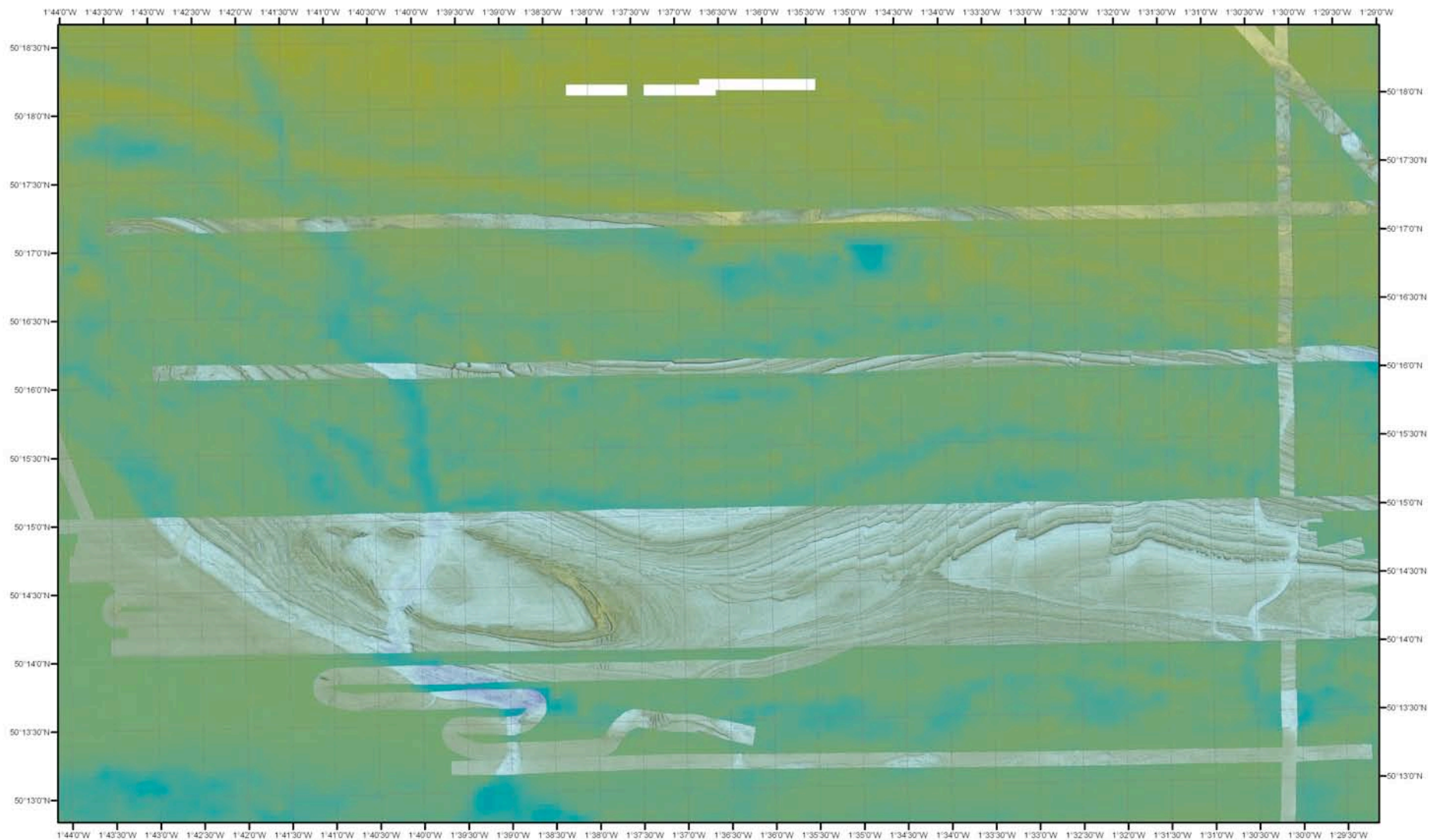


*Isle of Wight, May 2002. Ian West (c) 2002*



Ian West (2007) <http://www.soton.ac.uk/~imw/index.htm>

# X2Y2 Infill - Bathymetry



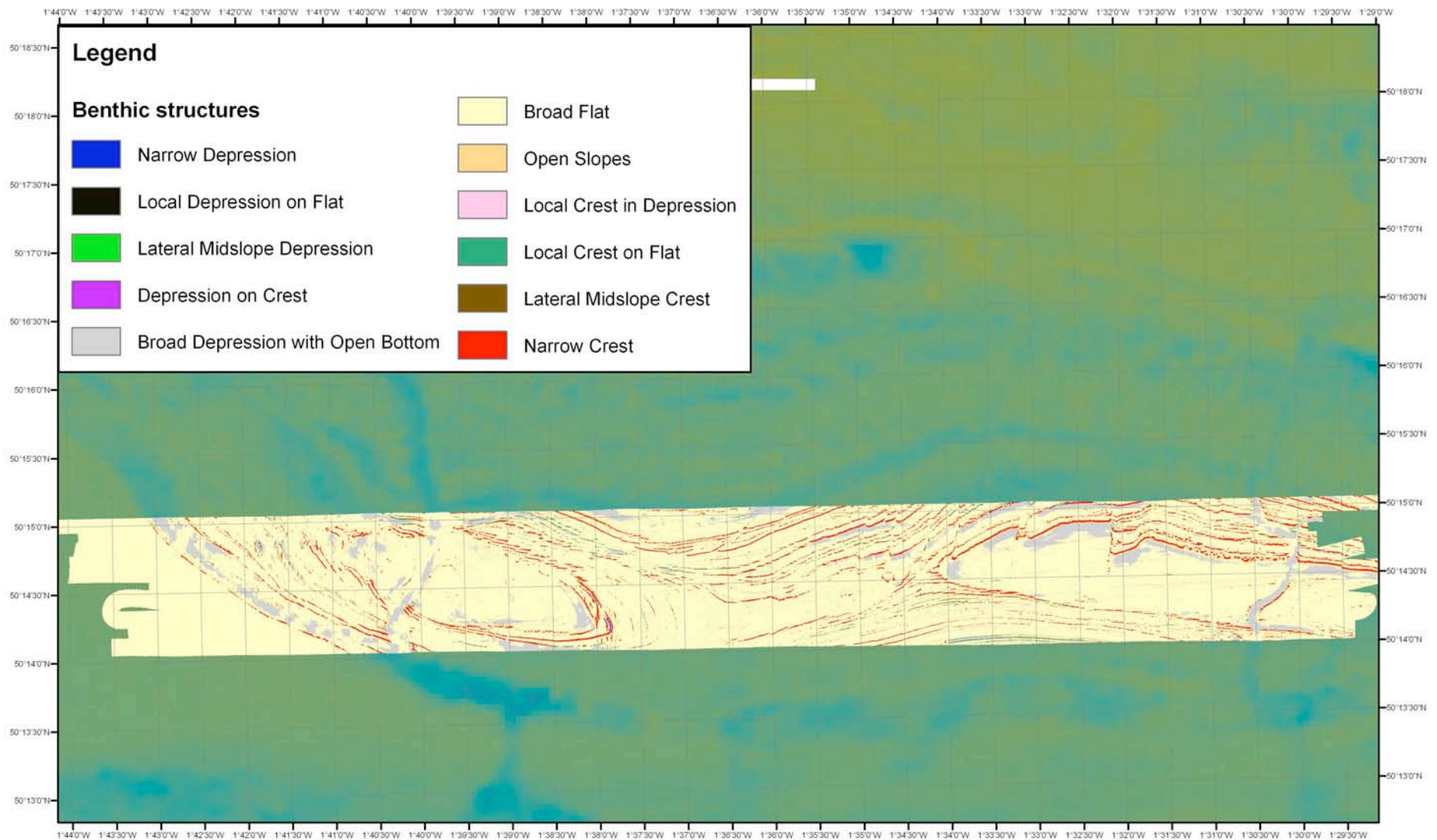
0 2 4 Kilometres  
0 1 2 Nautical Miles



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# X2Y2 Infill - Benthic structures

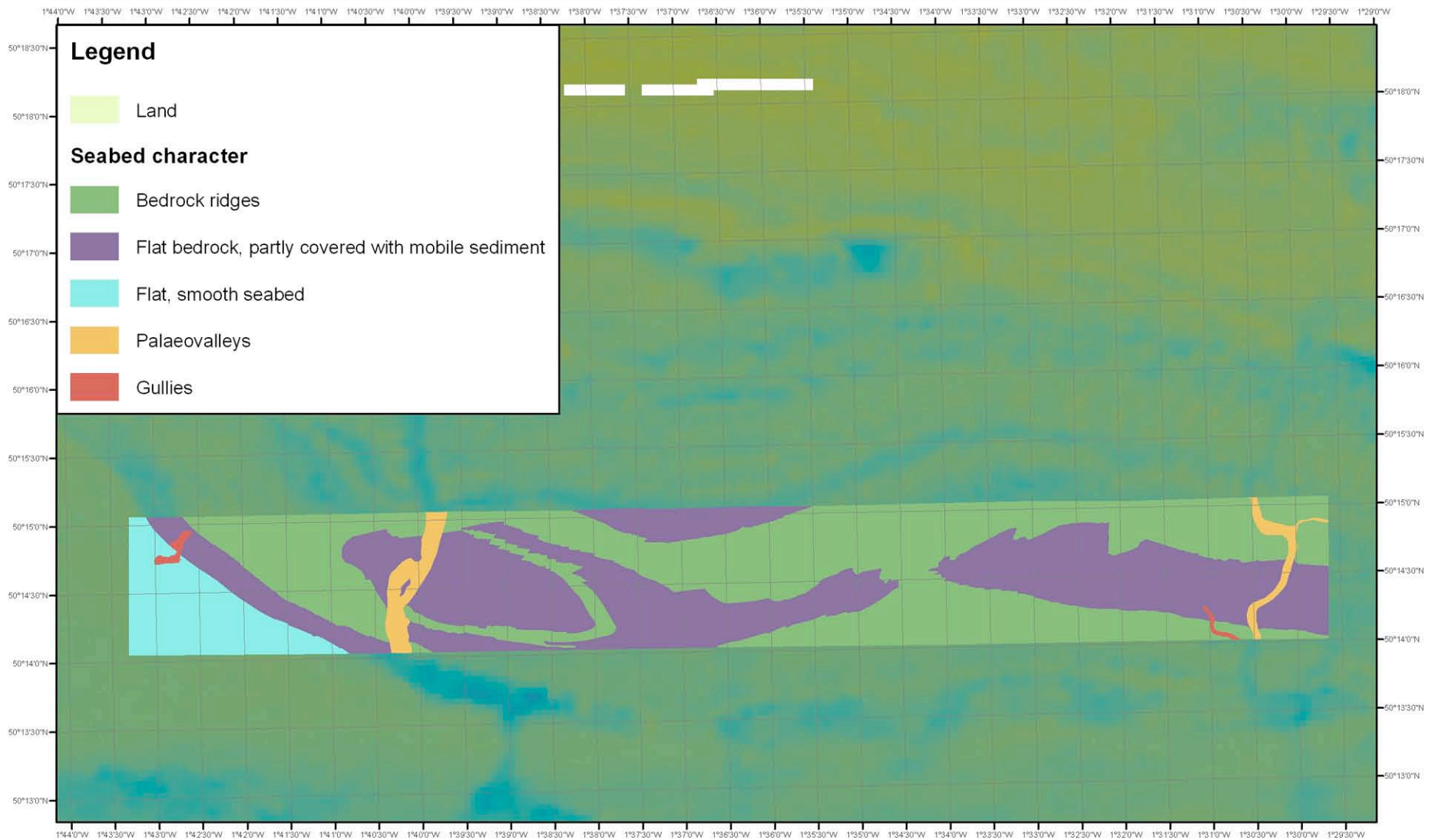


0 2 4 Kilometres  
0 1 2 Nautical Miles



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# X2Y2 Infill - Seabed character



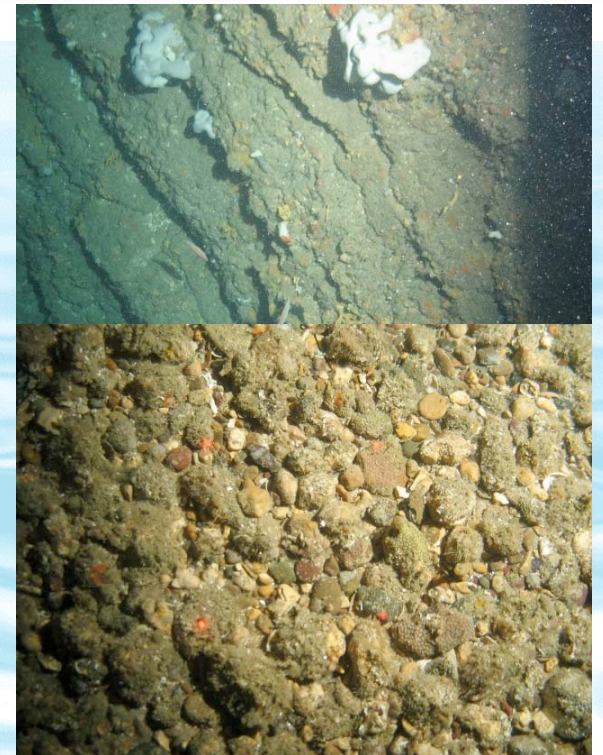
0 2 4 Kilometres  
0 1 2 Nautical Miles



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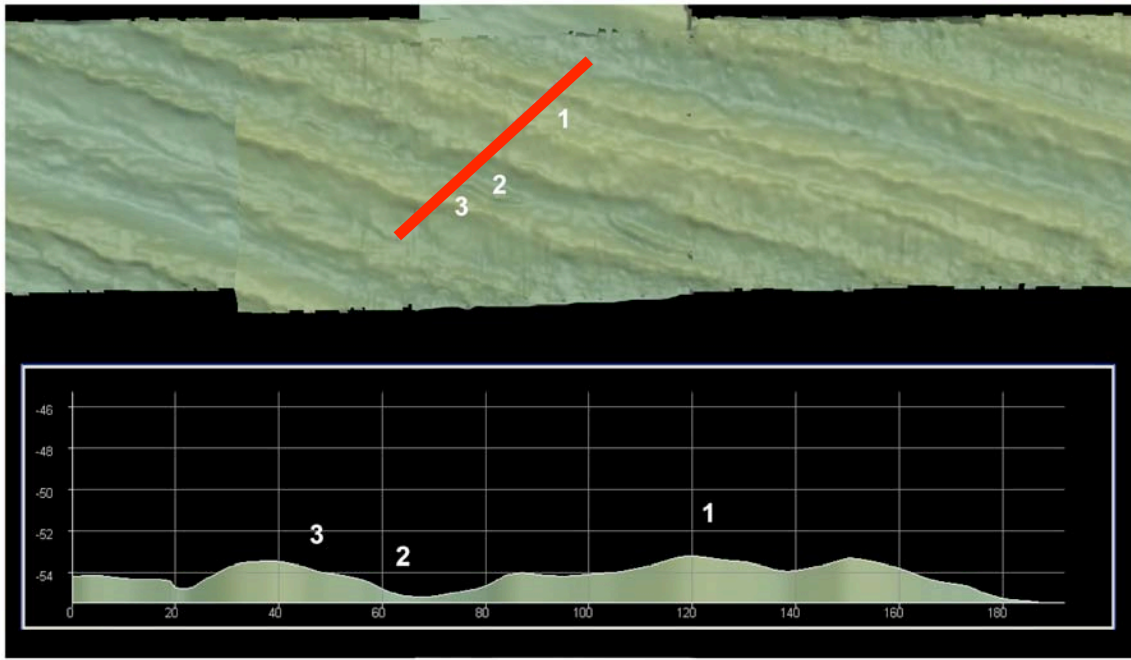
# Seabed character and biotopes

<i>Bedrock ridges</i>	<i>Flat, smooth seabed</i>	<i>Palaeovalley</i>
Very tide-swept faunal communities Deep sponge communities <b>Mixed faunal turf communities</b> Echinoderms and crustose communities		Very tide-swept faunal communities <b>Deep sponge communities</b> <b>Mixed faunal turf communities</b>
<b>Circalittoral coarse sediment</b> Deep circalittoral coarse sediment Deep circalittoral sand	<b>Deep circalittoral coarse sediment</b>  <b>Circalittoral mixed sediments</b>	<b>Deep circalittoral coarse sediment</b>  Circalittoral mixed sediments Deep mixed sediments



# Fine-scale habitat variations

Alternating pattern of bedrock ridges with bands of coarse sediment lying in the troughs



1. Mixed faunal turf comm.

2. Circalittoral coarse sed.

3. Mixed faunal turf comm.



# Summary

- Lithology of the bedrock strongly influences the seabed character
- Link between seabed character and biotopes
- Works at different scales
- Importance of strong currents in keeping bedrock sediment-free
- Seabed character maps can be used as proxies to predict the distribution and extent of habitats at scales relevant to management and planning