

OBS activities in Ireland

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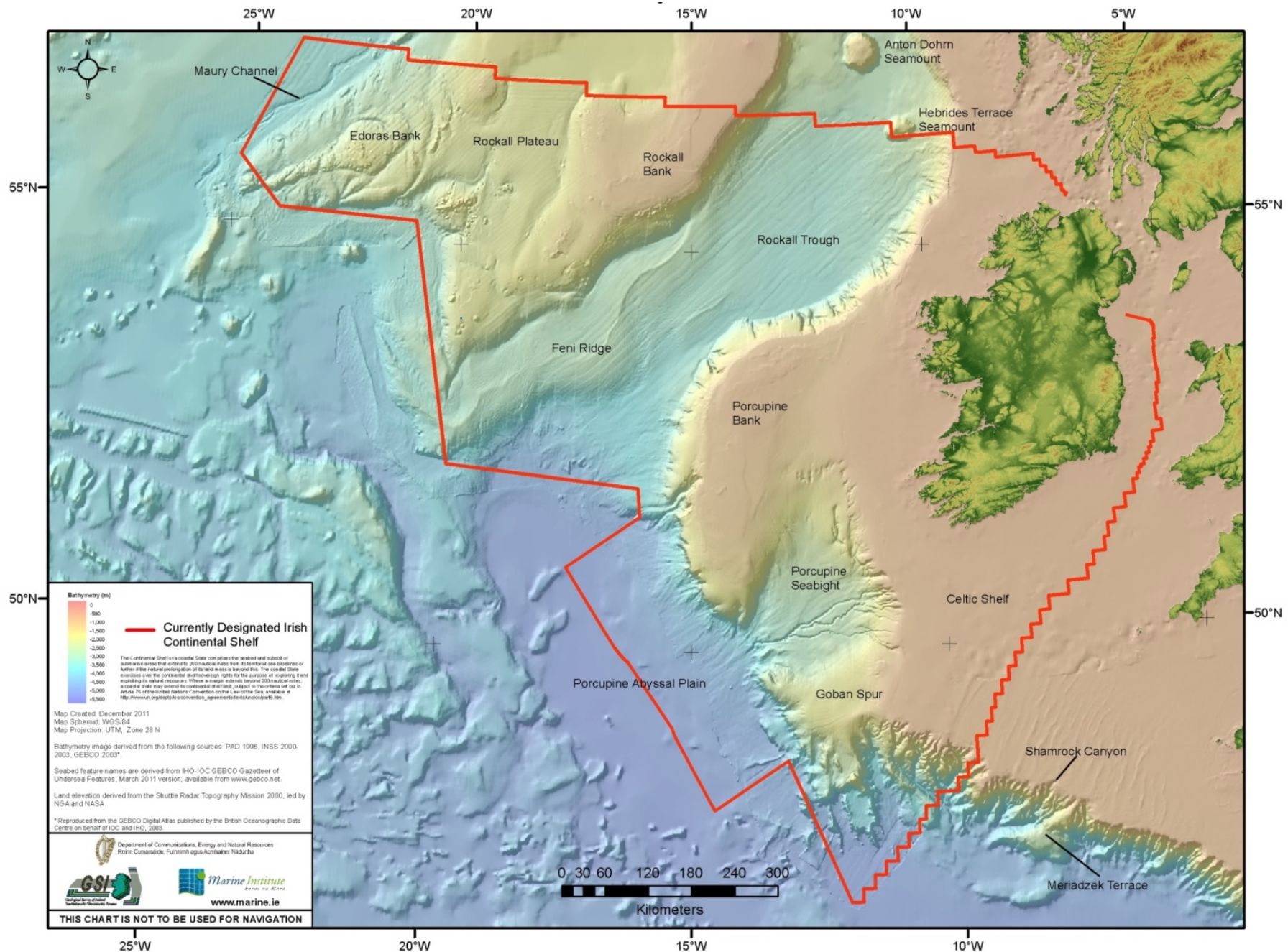
DIAS

Institiúid Ard-Léinn Bhaile Átha Cliath
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Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Ireland has a vast marine territory: size \approx land mass of France + Germany combined



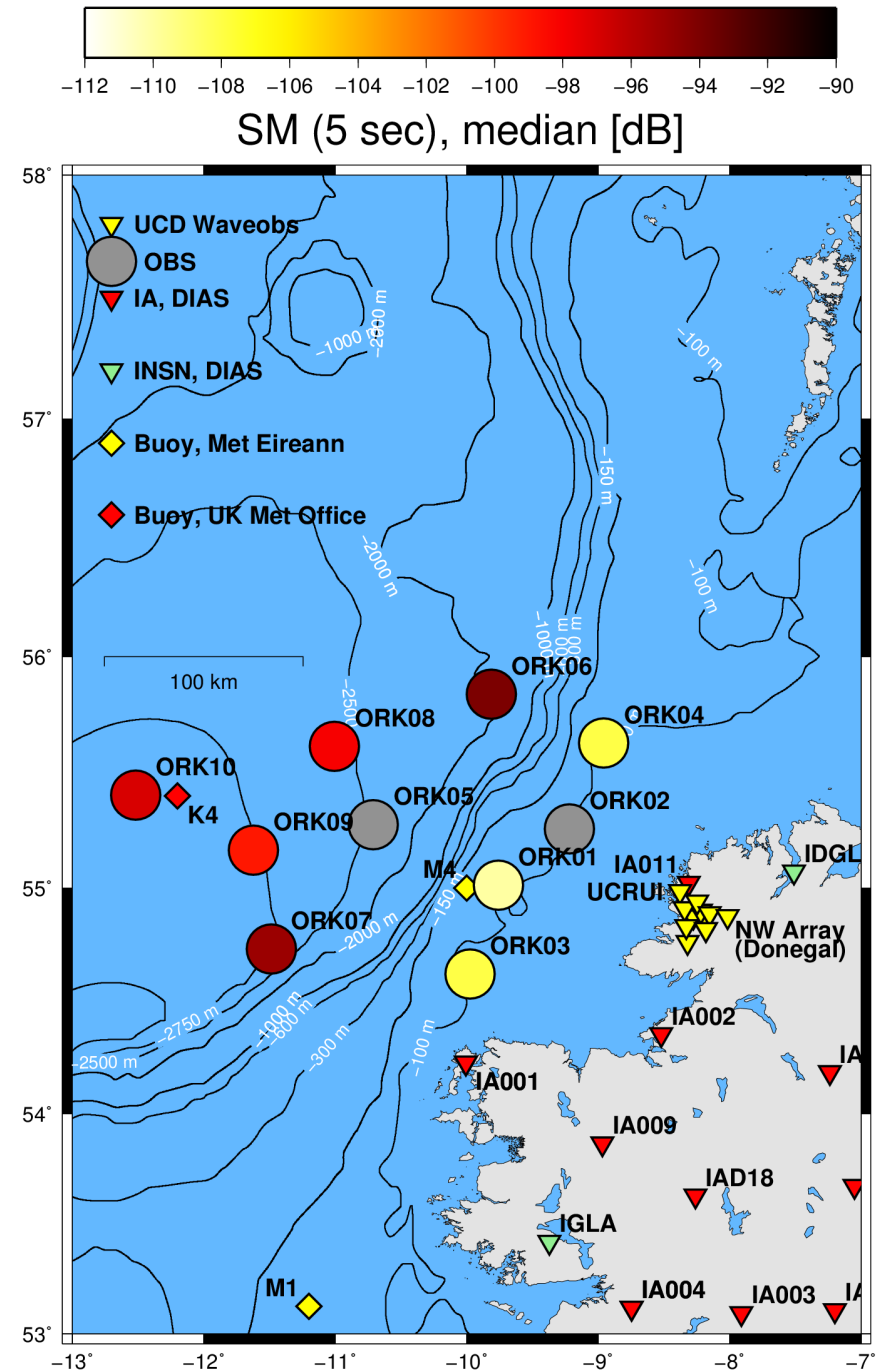
1st broadband OBS in Irish waters:

NEAMS project
(NorthEast Atlantic MicroSeism)

Jan – Aug 2016

collaboration with **P. Jousset (GFZ)**

10 x broadband lobster, AWI



Establishment of a mobile broadband OBS pool in Ireland:

iMARL Insitu Marine Laboratory for Geosystems Research
infrastructure fund by Science Foundation Ireland (SFI), 3 million €

18 x broadband OBS
1 x permanent OBS
2 x tsunameters
2 x 15 acoustic sensors

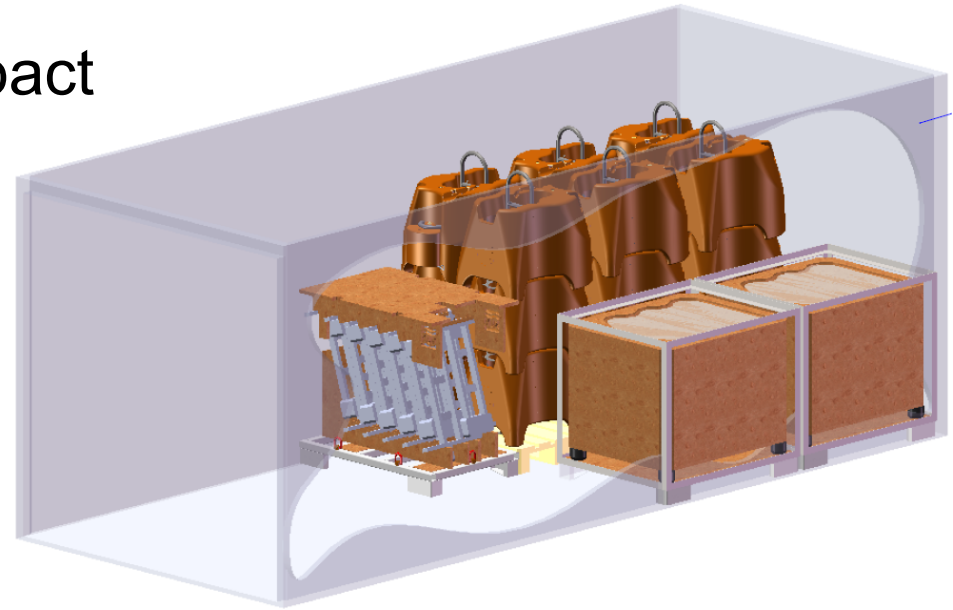
study of:

- **microseism sources**
- **sea-floor stability**
- **sub-surface imaging**
- **ocean-seafloor interactions**
- **seismicity**
- **bioacoustic sensing**



OBS pool: 18 broadband OBS from K.U.M., type NAMMU
(delivery expected Dec. 2017)

- Sensor: Nanometrics Trillium Compact
- Data Logger K.U.M. 6D6
- Hydrophone: HighTech HTI-04
- Maximum operation depth 6,000m
- Maximum operation time 14 months (80 LithCl D-cells)
- Size: 64 cm × 77 cm × 80 cm w×h×d
- Weight with anchor: 205 kg (without 155 kg)



NAMMU OBS

- Nanometrics Trilium Compact:

- 120 s – 50 Hz
- 180 mW



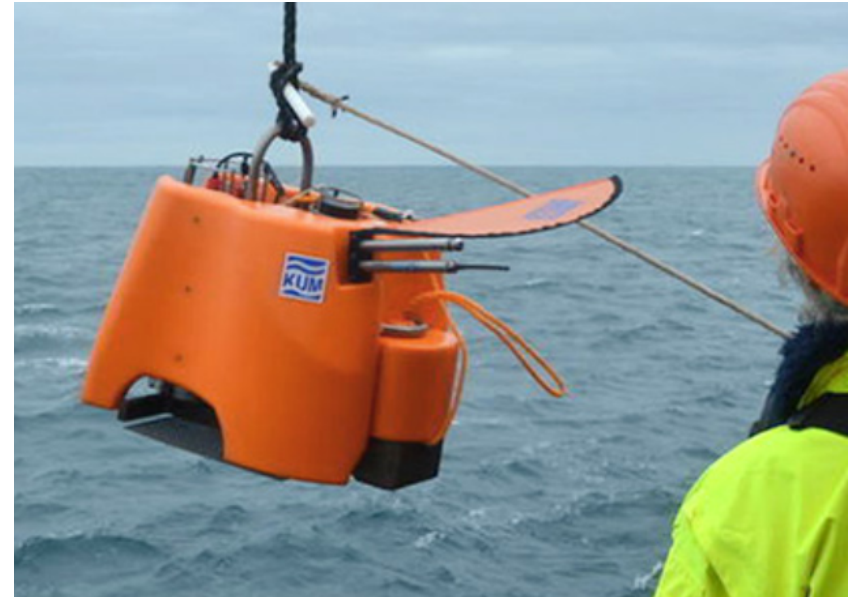
- K.U.M. recorder 6D6:

- 4 seismic channels
- internal SD card
- hot-plug “StiK”
- 125mW



- Hydrophone HTI-04-PCA/ULF

- 100 s – 8 kHz

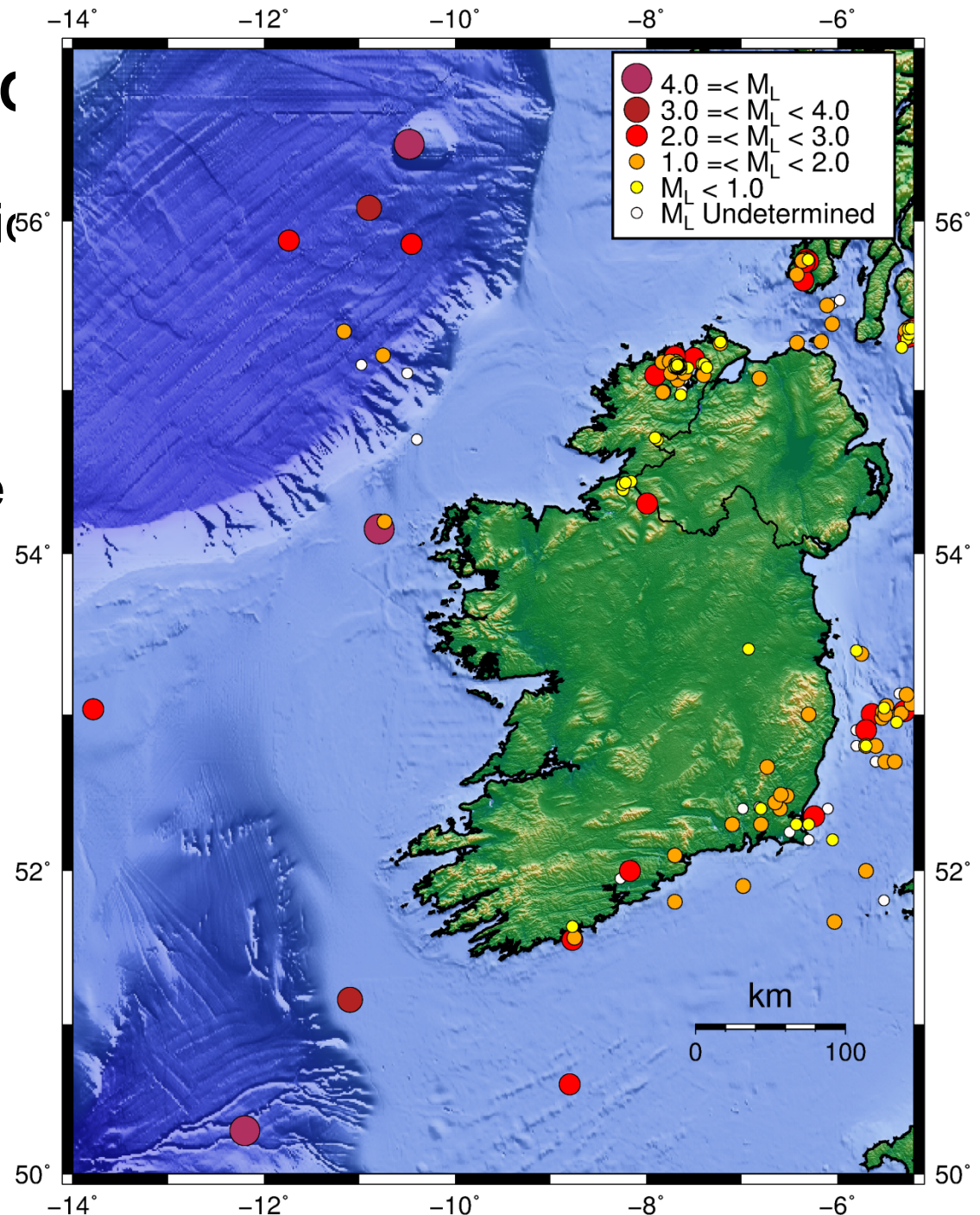


First deployment: SEA-SEIS, (

“Structure, evolution and seismicity”

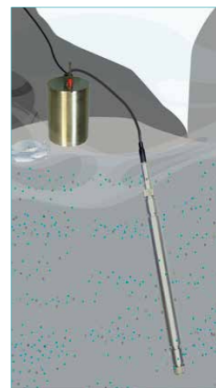
PI: *Sergei Lebedev* (DIAS)

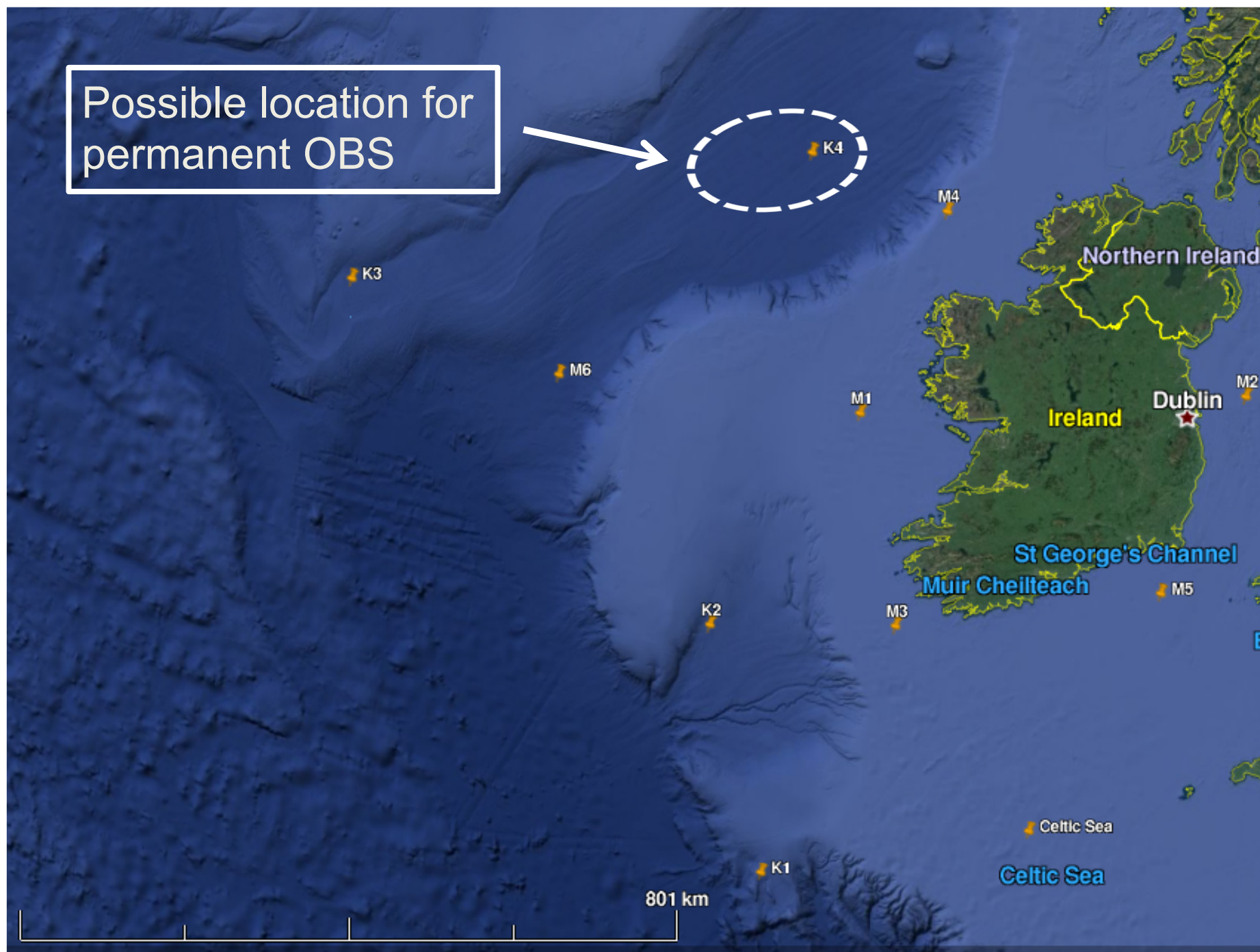
- structure and evolution of the lithosphere and underlying mantle
- lithospheric-scale evolution of resource-rich offshore basins
- detection and location of enigmatic seismicity west of Ireland



Guralp “new Libor” with re-packaged Maris seismometer (to be ordered soon)

- Maris
 - 120 s to 100 Hz
 - better performance than 40T
(-165dB at 10 s)
 - can operate at any angle
- Libor:
 - free-fall
 - Minimus recorder with event detector
 - APG: Paroscientific Digiquartz
 - acoustic modem for sending event data to buoy
- Buoy infrastructure:
 - satellite terminal with tracking motor
 - Minimus recorder/PC





tender just published for:

- **~15 x broadband hydrophones**
 - equivalent to HTI-04
- **5 x absolute pressure sensor**
 - equivalent to Paroscientific Digiquartz
- **1 x tsunameter**
 - equivalent to Paroscientific Digiquartz incl. comms capability
- **~15 x high-frequency hydrophones, for cetacean studies**
 - eg. Wildlife Acoustics “Song Meter”
 - up to 48kHz



Platforms to be designed in cooperation with
National University of Ireland, Galway (NUIG)

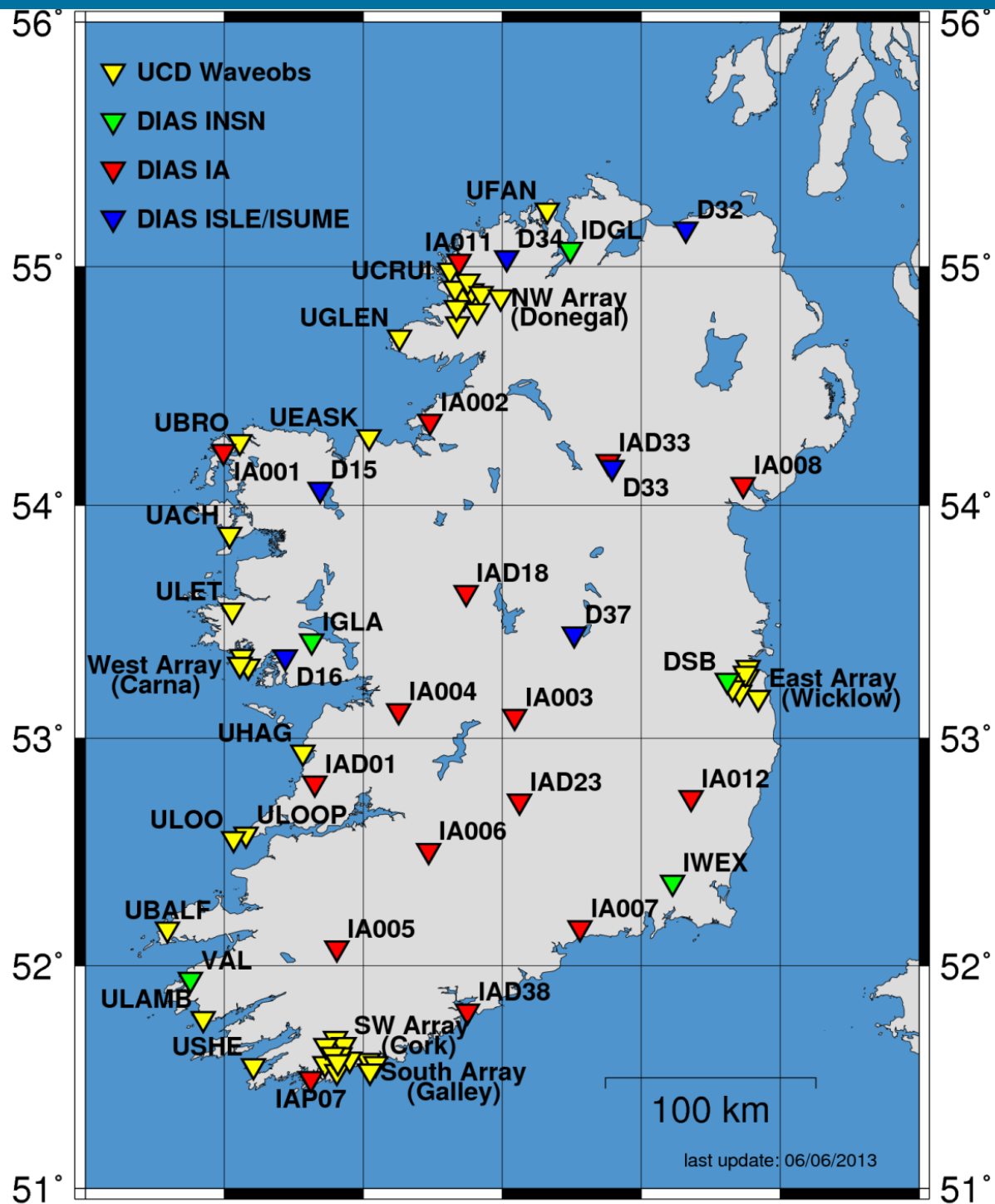


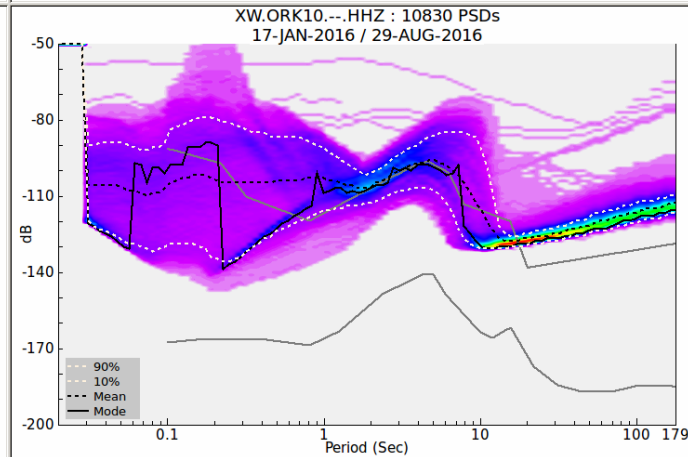
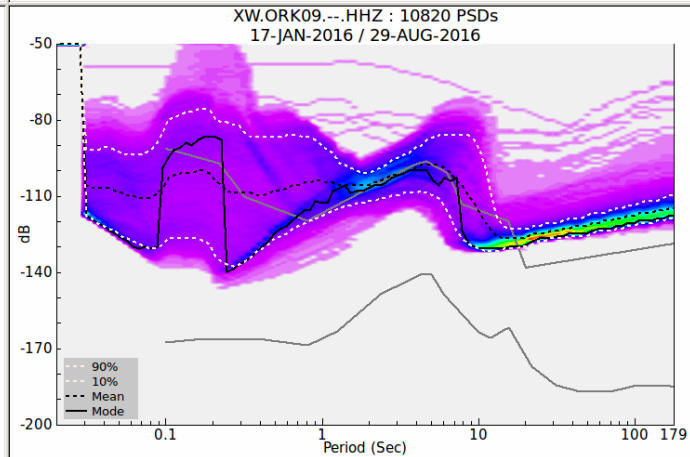
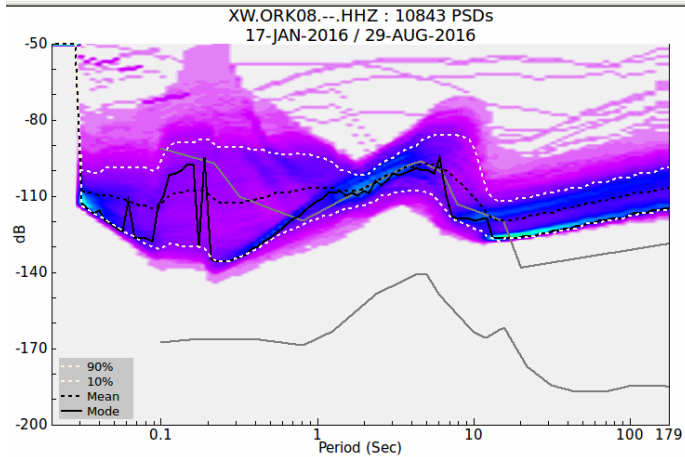
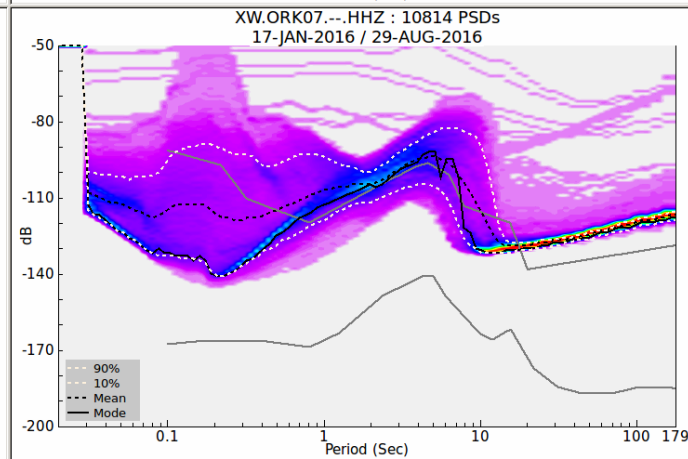
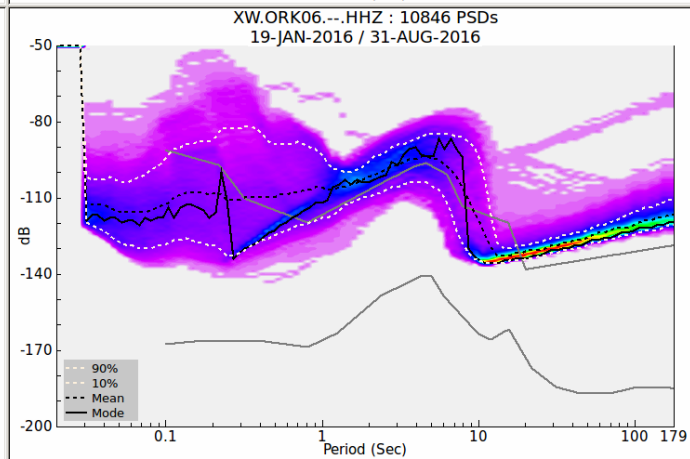
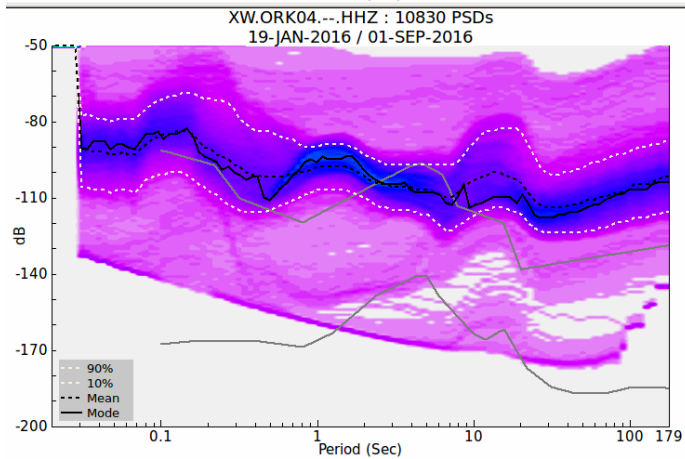
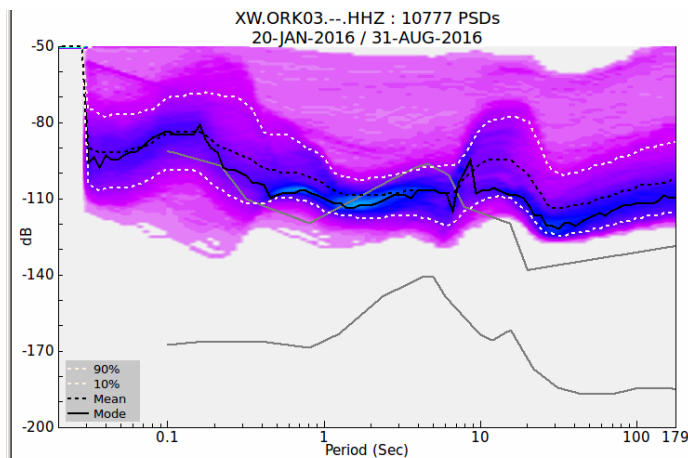
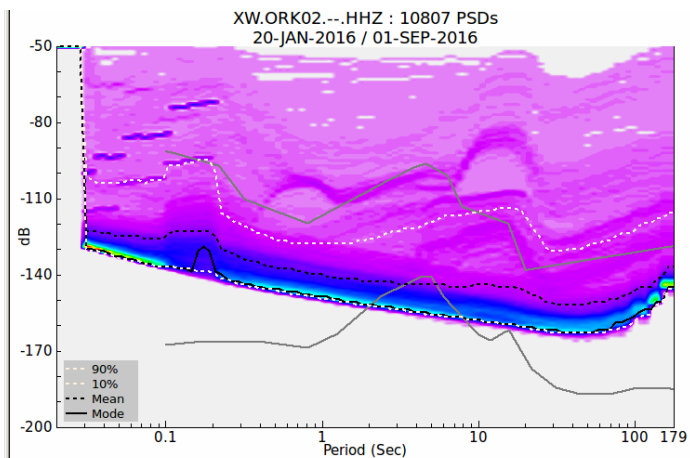
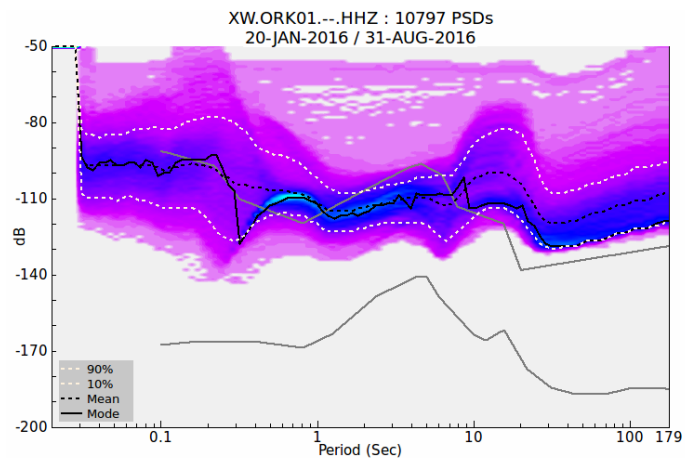
Thanks for your attention!

<https://www.dias.ie/geophysics>

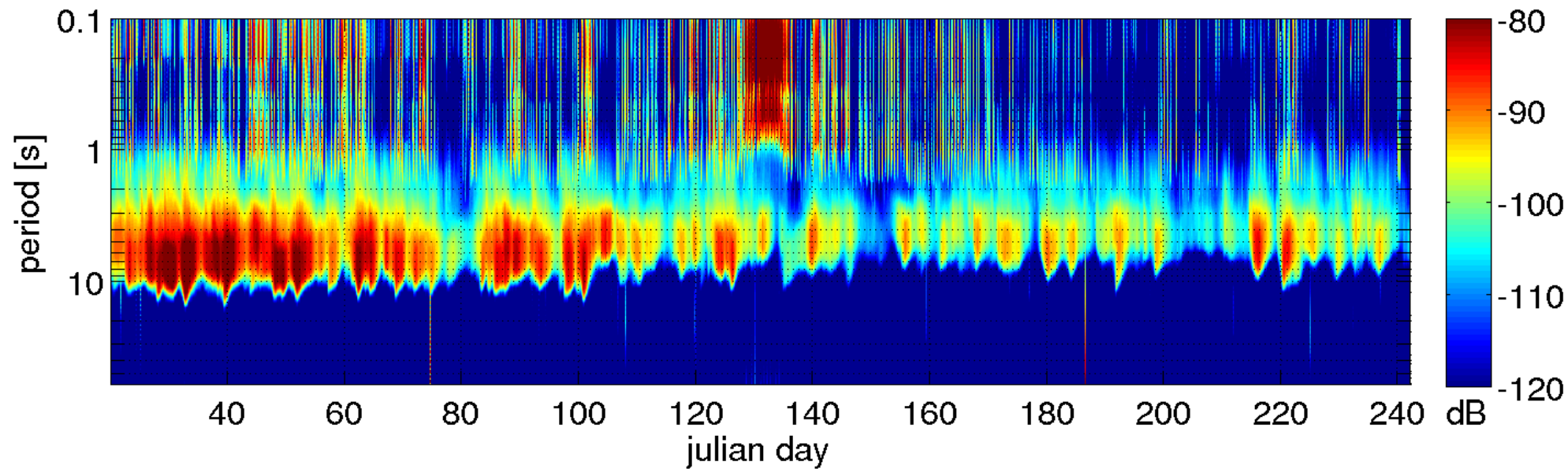
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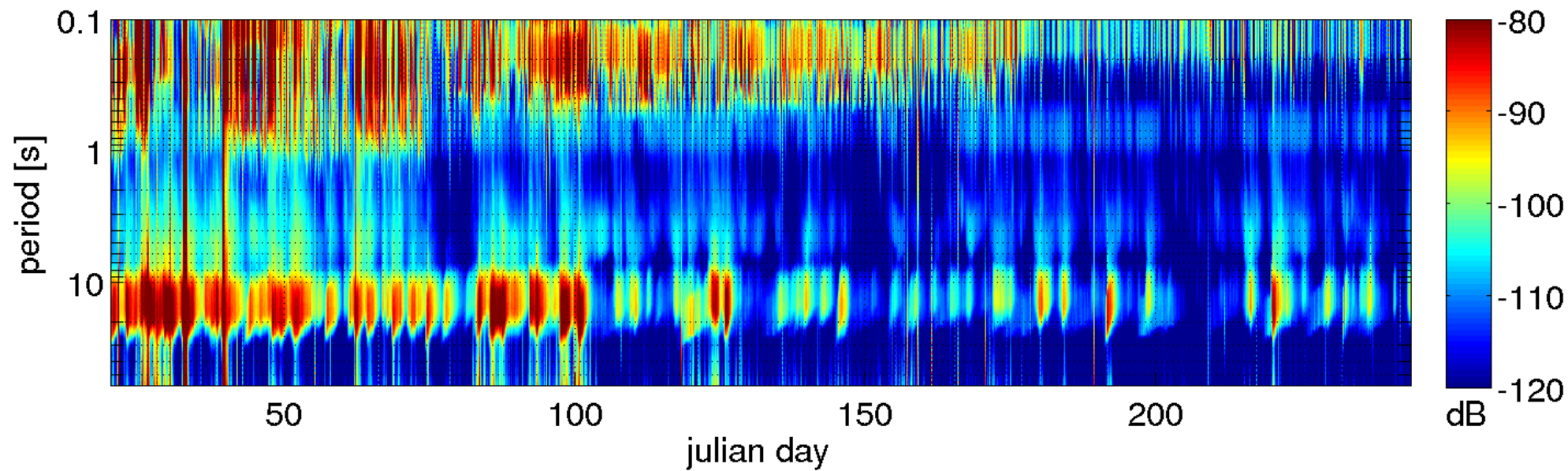


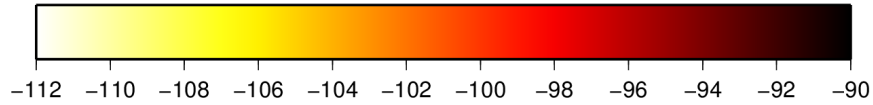


PSD ORK07 HHZ 20.01.2016 - 30.08.2016

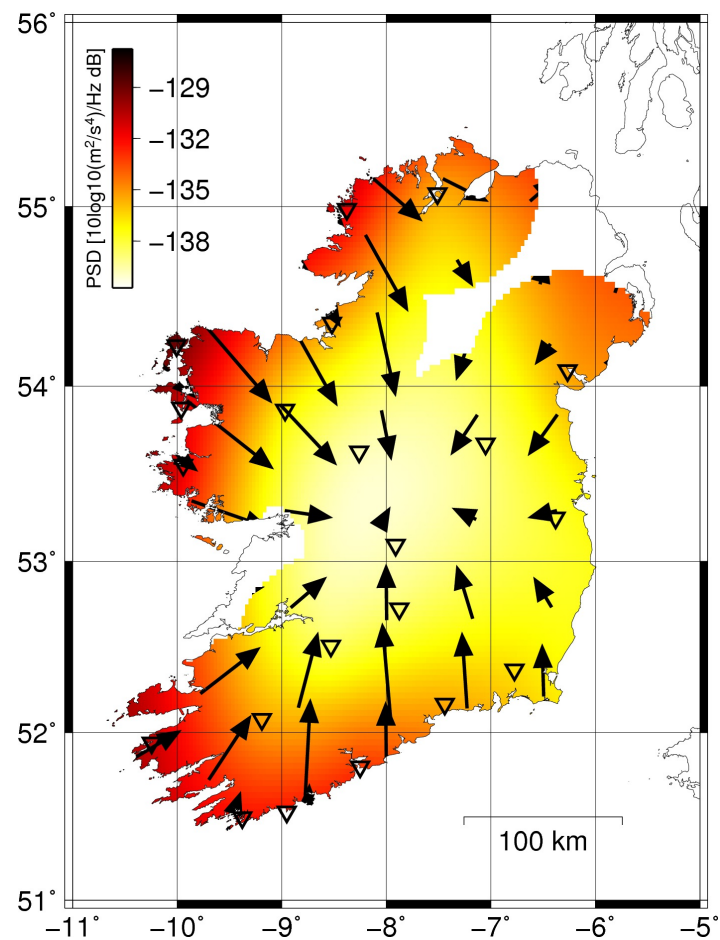
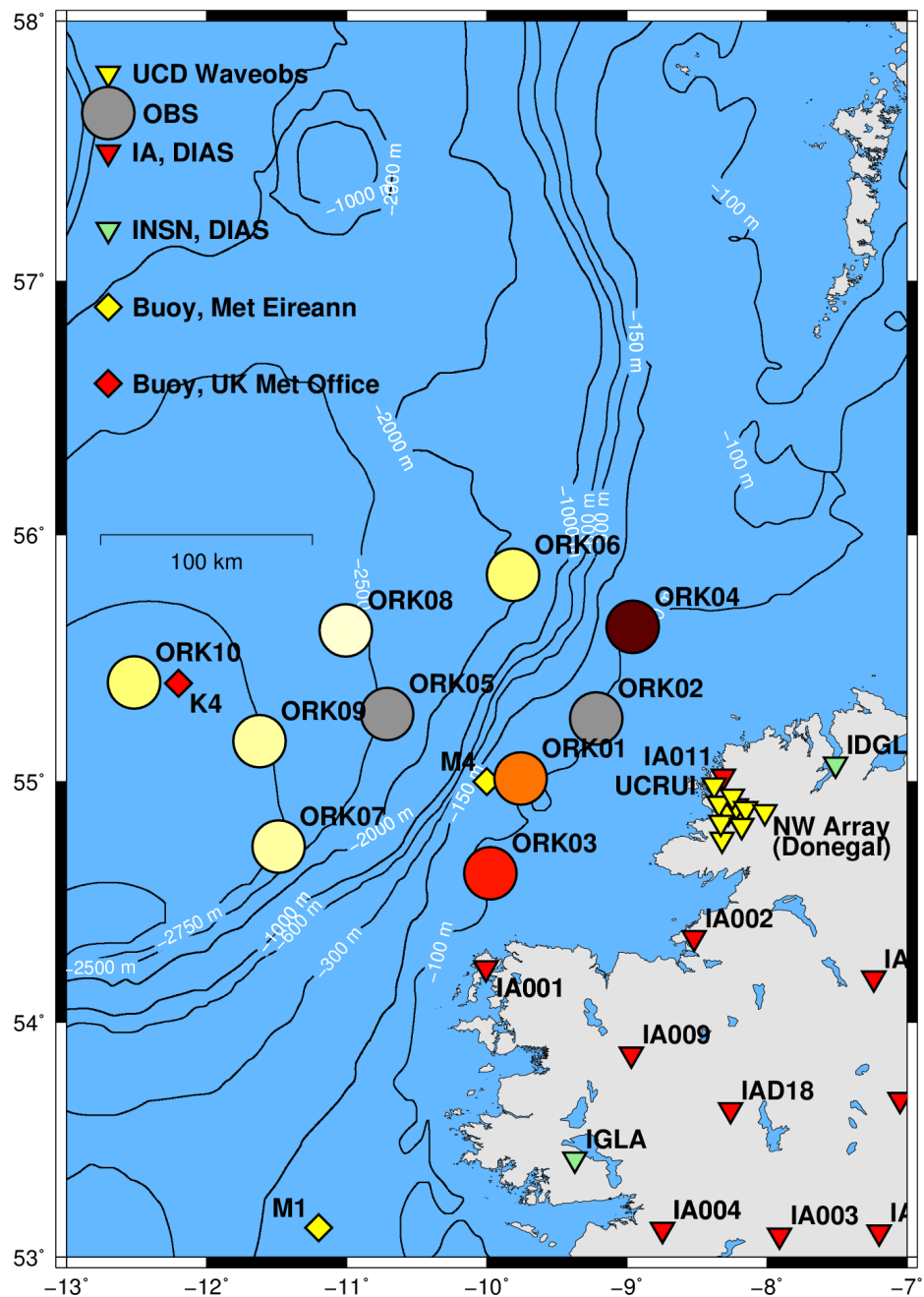


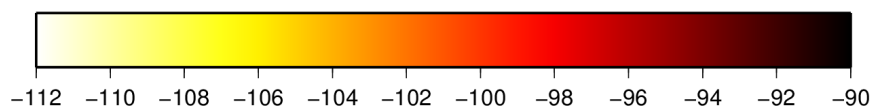
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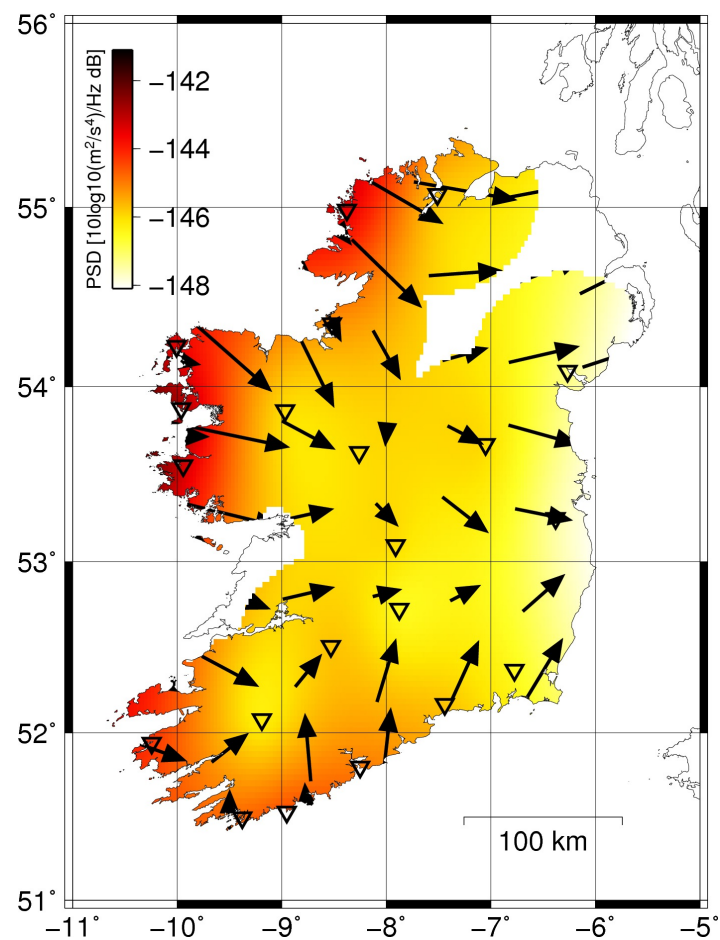
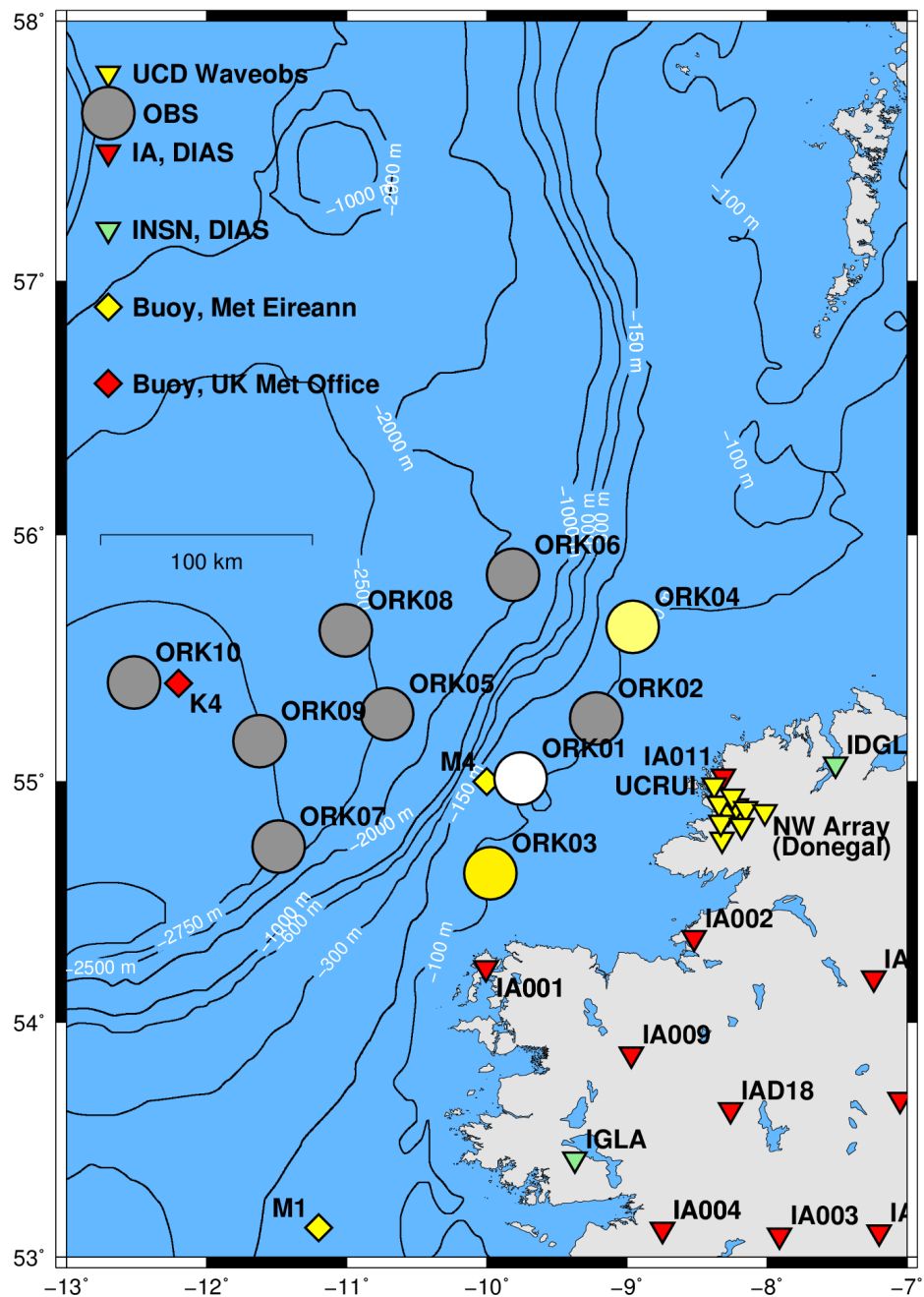


VSPM (1.5 Hz), mode [dB]

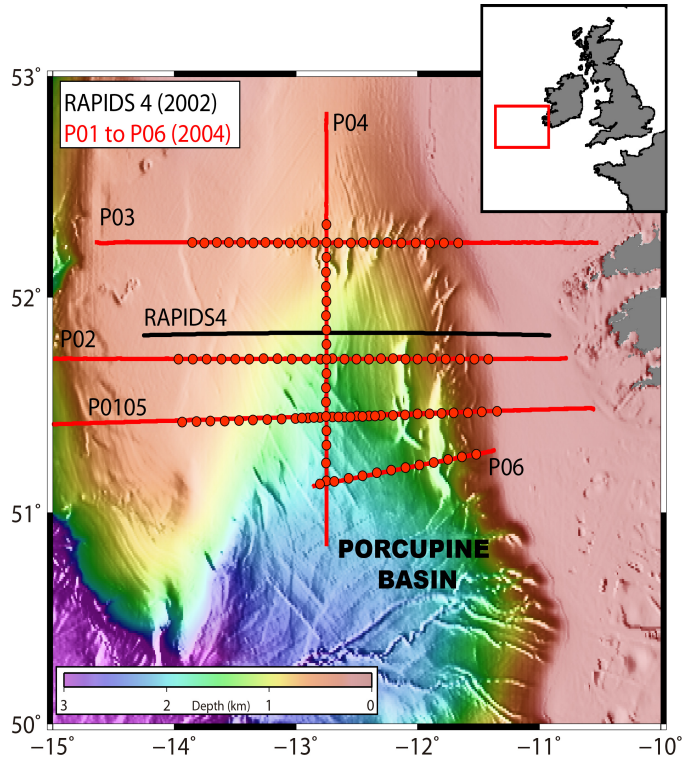
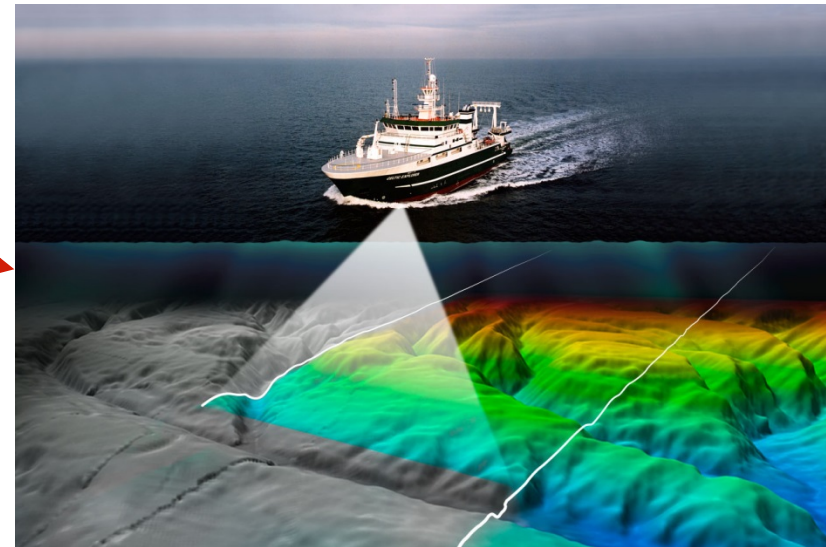




PM (14 sec), mode [dB]



Irish National Seabed Survey (now INFOMAR)



short period OBS refraction lines
(and commercial reflection seismic lines)

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(10 x broadband lobster, AWI)

