

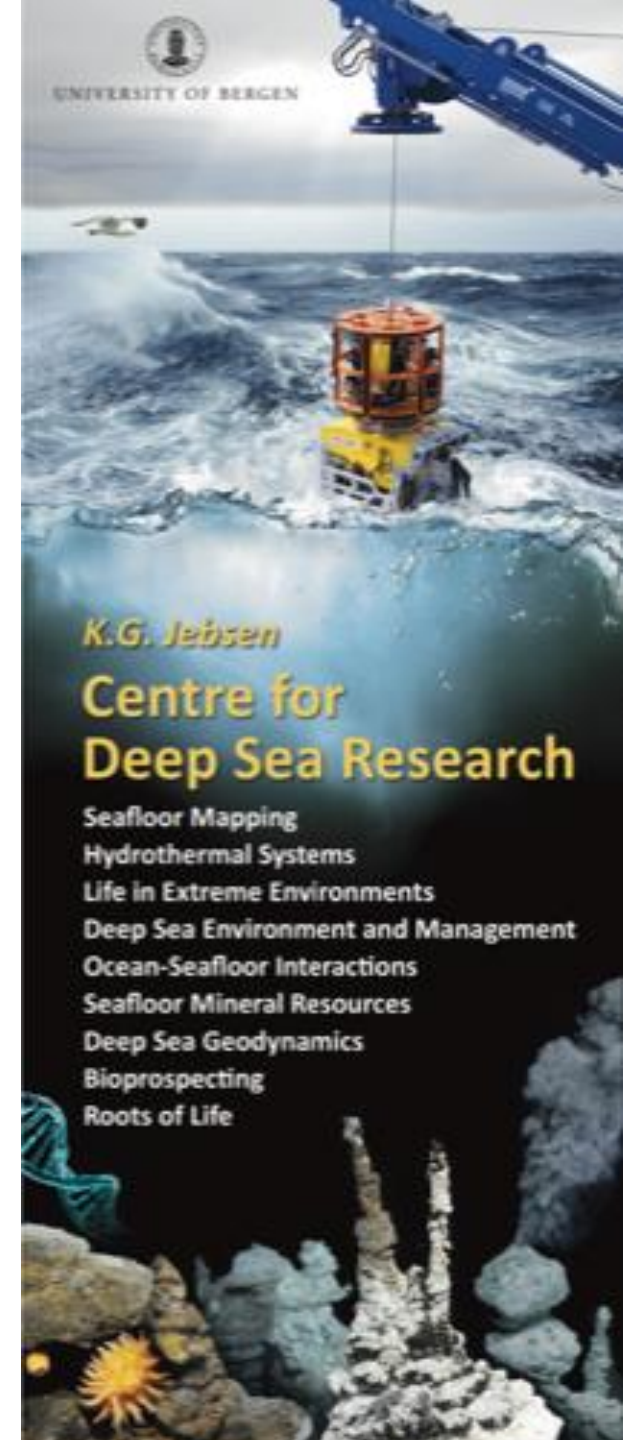
Deep Sea Exploration : Discovering Future Resources



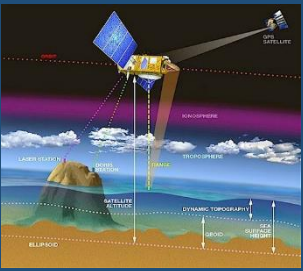
Lars-Kristian Lunde Trellevik

K.G. Jebsen Center for Deep Sea Research / Havlabben

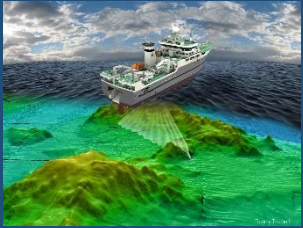
University of Bergen



Bergen – a National Centre for Ocean Observation



Remote Sensing



Research Vessels



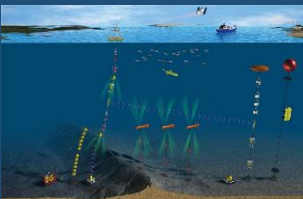
Norwegian Marine Robotics Facility (NORMAR)



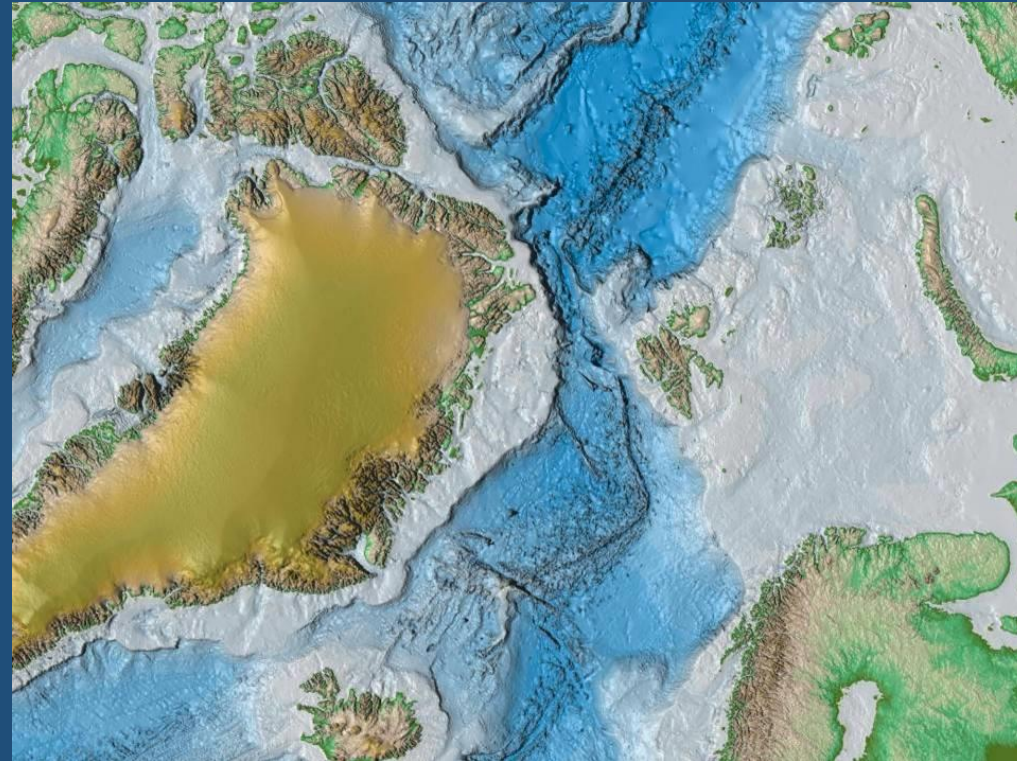
Hugin AUV collaboration NORMAR-II



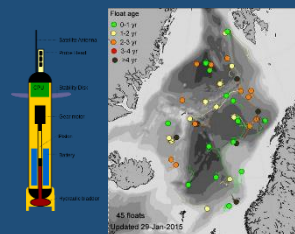
CMR-Sailbouy



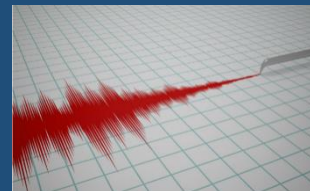
Norwegian Atlantic Current Observatory (NACO)



NorArgo



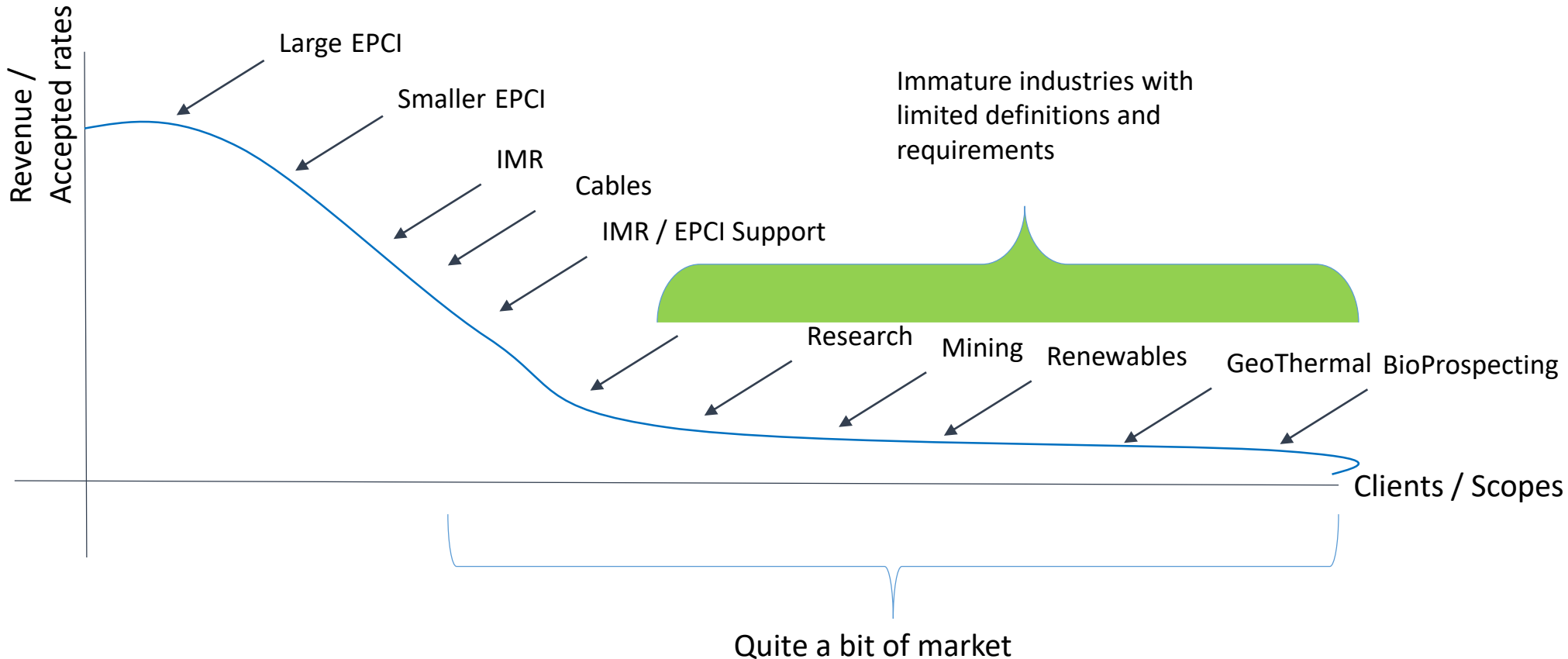
European Plate Observing System (EPOS)



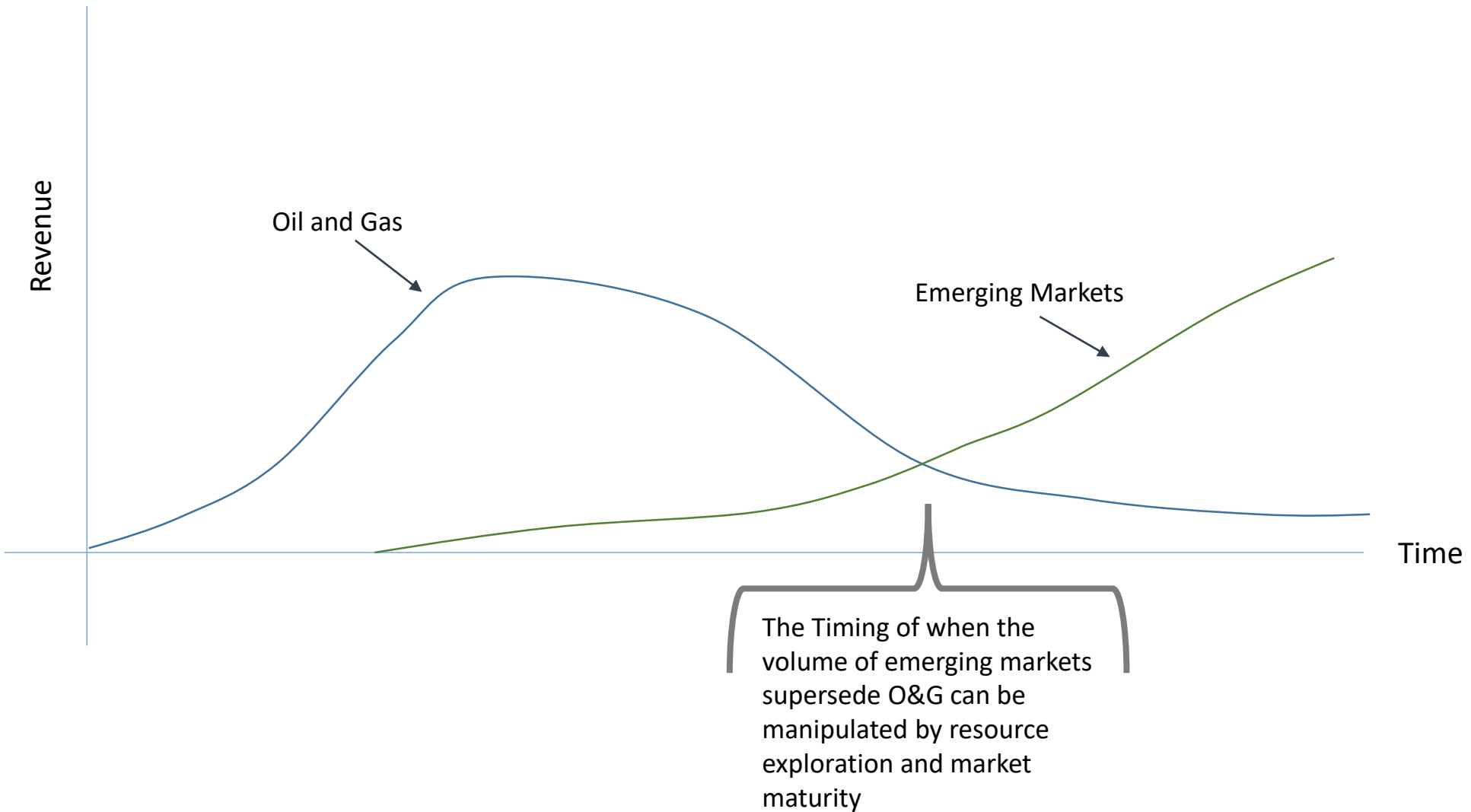
Lofoten-Vesterålen Cabled Observatory (LoVe)



Long Tail Market (Subsea-services)



The Dynamics of emerging markets



Ginnungagap

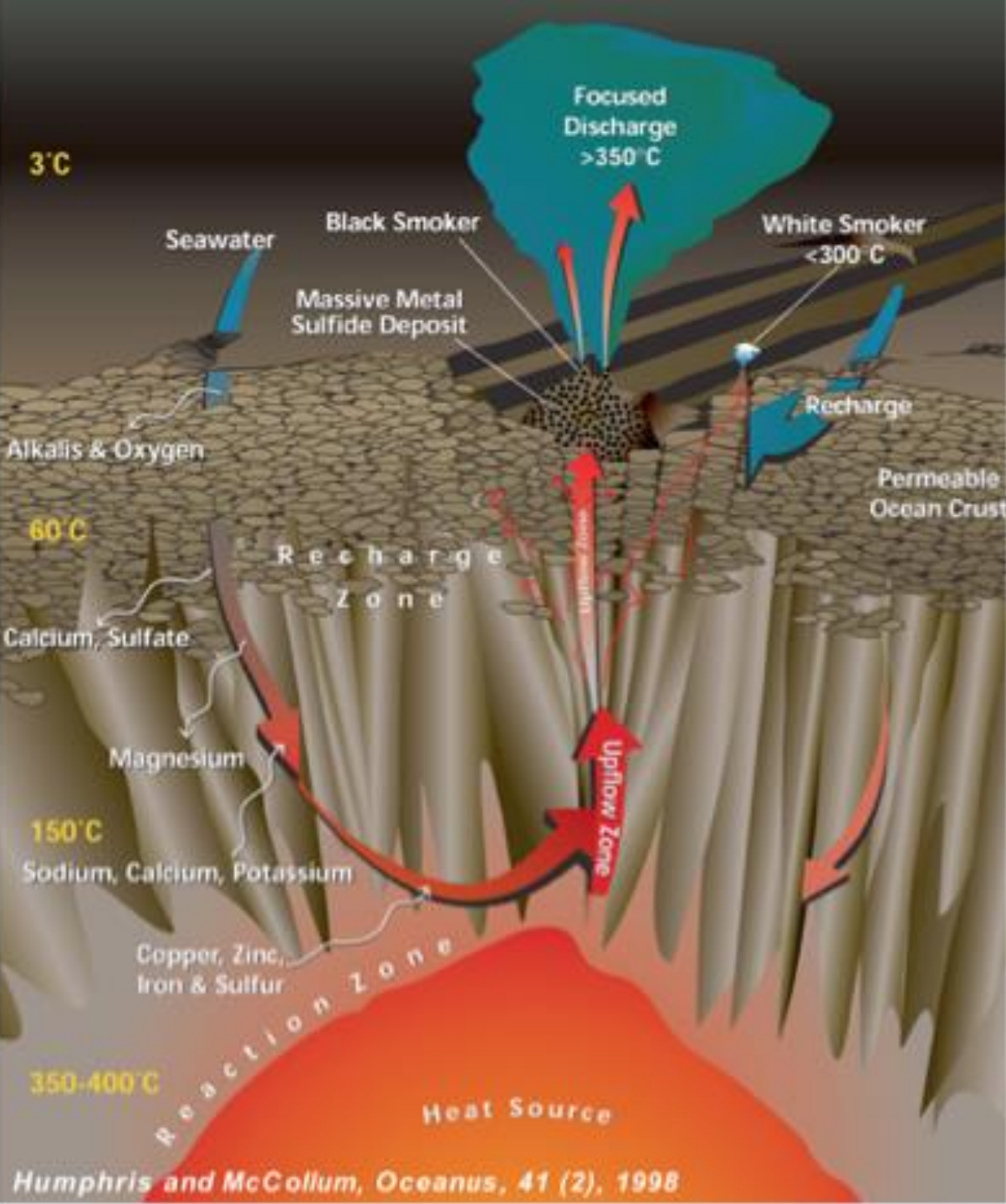


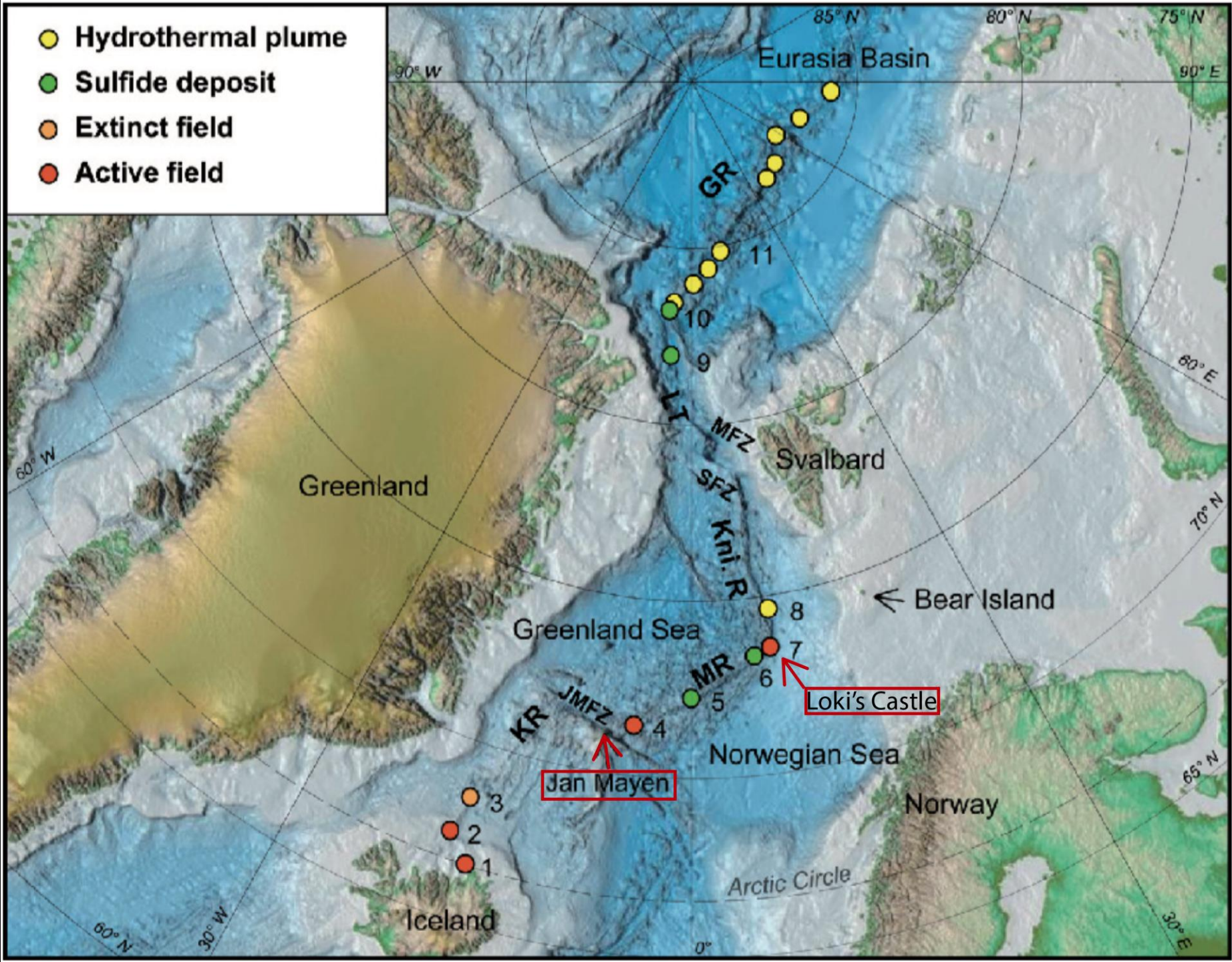
Ginnungagap, the Yawning Void ... which faced toward the northern quarter, became filled with heaviness, and masses of ice and rime, and from within, drizzling rain and gusts; but the southern part of the Yawning Void was lighted by those sparks and glowing masses which flew out of Múspellheim



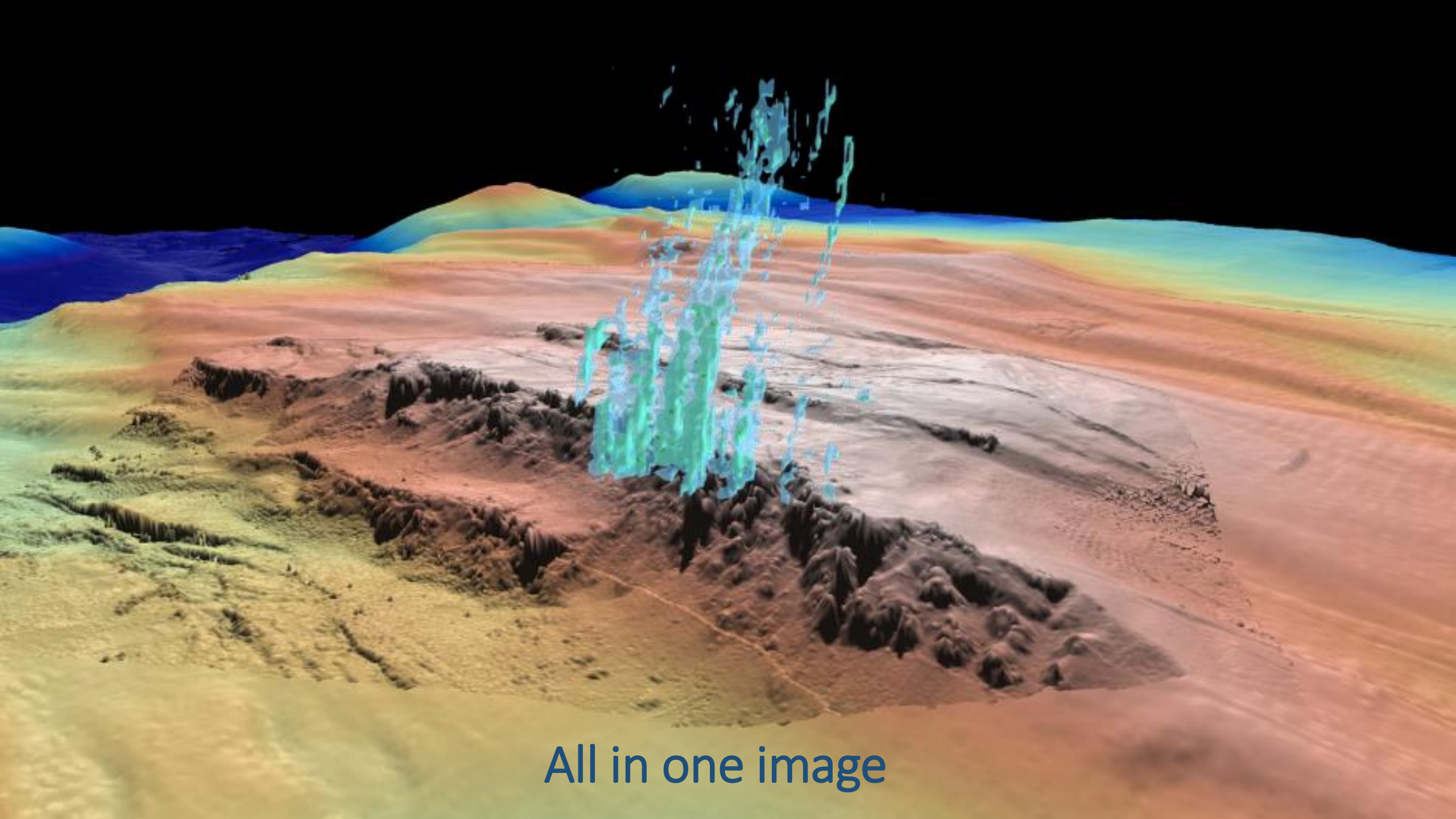
Resources

- Minerals
- Bioprospecting
- Geothermal Energy





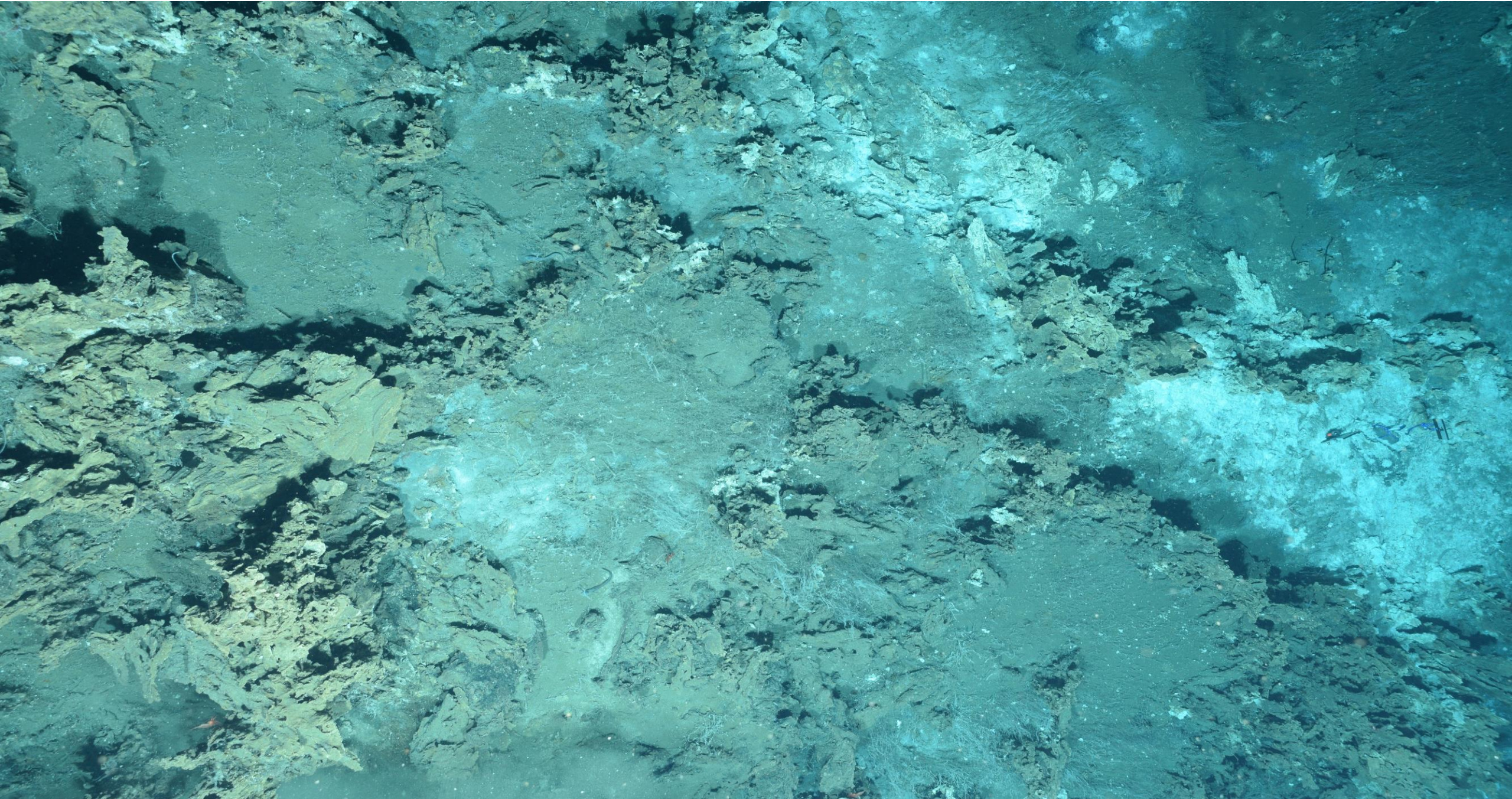




All in one image



Barite Field



Barite Field





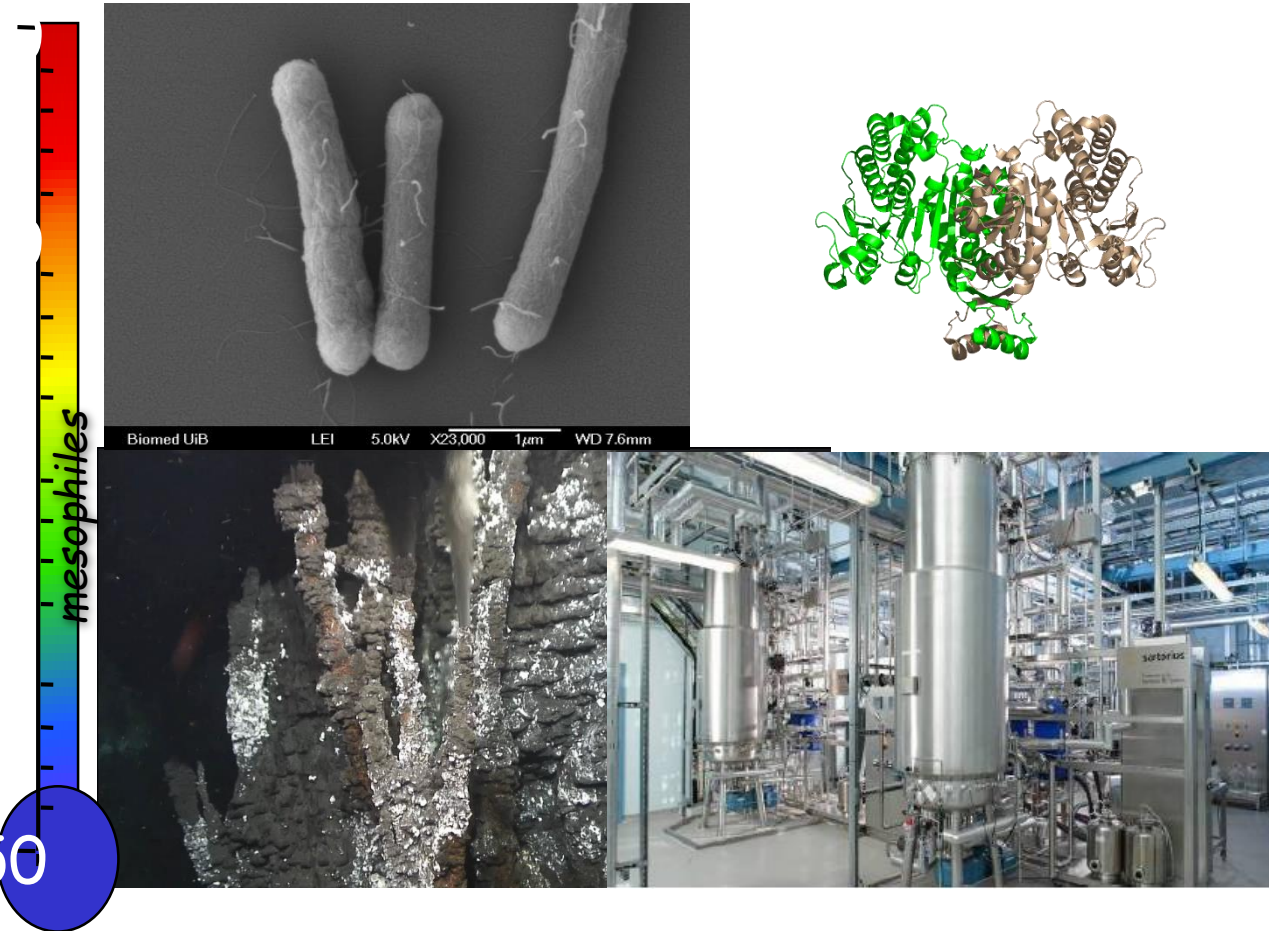
K.G. Jebsen Centre for Deep Sea Research



Senter for Dyphavsforskning, Bergen

Challenges / conflicts / required research

- Co-Location → Conflict
 - Limited Ecological Understanding
 - Technoological Maturity
- vs
- Resource potential



Benefits; keeping us busy as the oil ends


- Tapping into resources

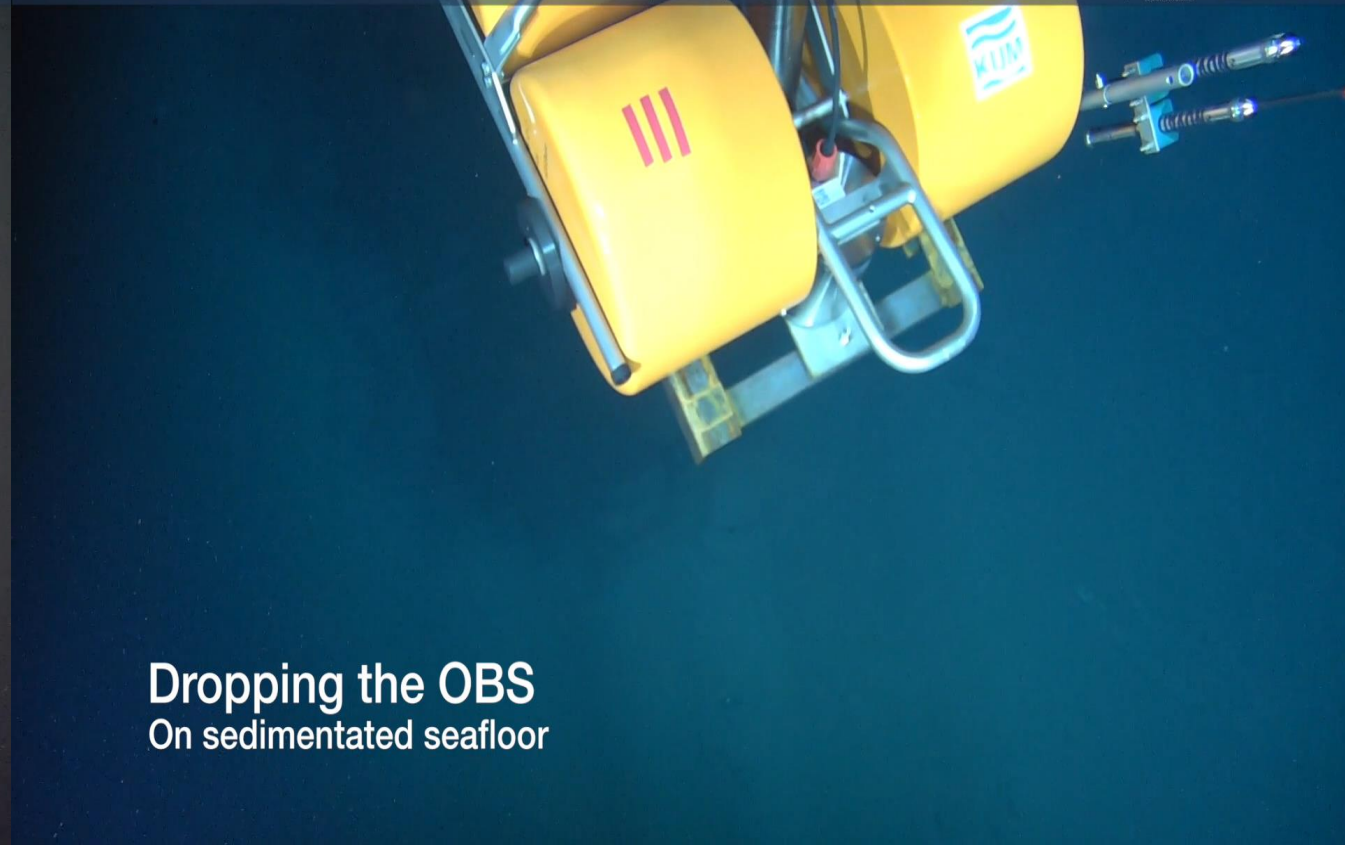
- Developing technology

University of Bergen, G.O.Sars
NORMAR ÆGIR 6k KGJ-CDS Dive: 03
Date/Time: 25:06:2017 19:15:19
Position: 73.5657; 8.1556;
Depth: 2349.80;
Heading: 327.96;
Altitude: 4.98;
Pitch: -2.24;
Roll: 0.94;




Deploying a Current Meter
Next to an OBS

University of Bergen, G.O.Sars
NORMAR ÆGIR 6k KGJ-CDS Dive: 03
Date/Time: 25:06:2017 19:14:53
Position: 73.5658; 8.1555;
Depth: 2349.40;
Heading: 326.69;
Altitude: 5.91;
Pitch: -4.05;
Roll: -1.08;




Dropping the OBS
On sedimentated seafloor

Questions?

