



UNIVERSITY OF COPENHAGEN



Geoscience in Copenhagen



Lars Stemmerik

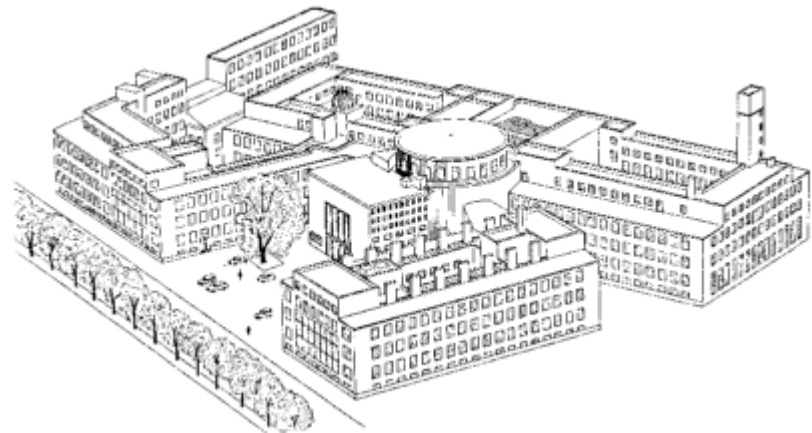
Organisation

University of Copenhagen

- Department of Geosciences and Natural Resource Management
- Natural History Museum

GEUS – Geological Survey of Denmark and Greenland

Geocenter Denmark



Geocenter Denmark

Research, education, consulting and publishing at a high international level

Formalised cooperation between:

GEUS, University of Copenhagen and Aarhus University

- IGN Department of Geoscience and Natural Resource Management
- SNM (Geological Museum)
- Department of Earth Sciences



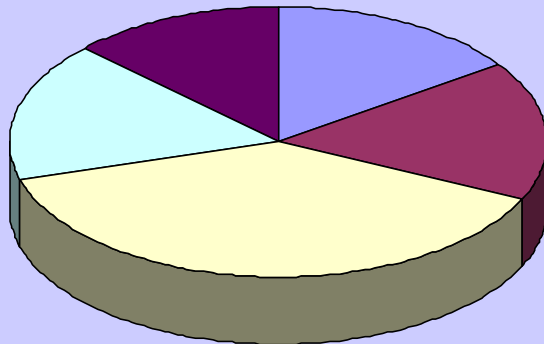
GEUS key figures 2012

Number of employees: 342

Scientific projects: 600

www.geus.dk

Expenditure in million US Dollar



- Databanks and information: 9,4
- Water resources: 10,4
- Energy resources: 24,0
- Mineral resources: 10,3
- Nature and climate: 8,0

Long-Term knowledge building

Articles in international journals	169
Other scientific publications	11
Abstracts or posters at conferences	166

Running projects, Advisory

Public reports	84
Confidential reports	90
Notes, memoranda, statements	77

General dissemination

Institutional reports	5
Popular scientific dissemination	127

Education

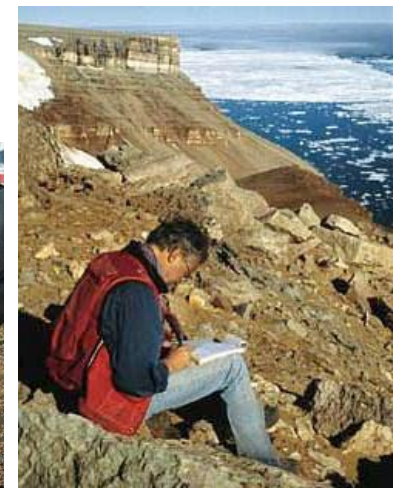
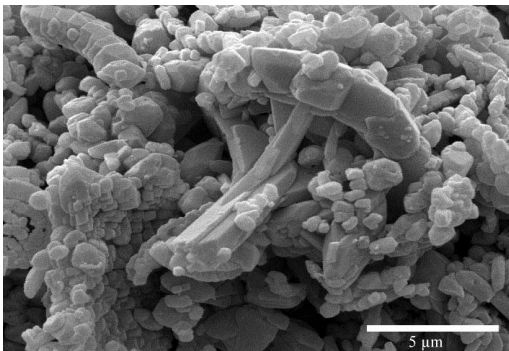
Ph.D. students with GEUS tutors	67
Completed Ph.D. degrees in 2011	17



GEUS - Energy Resources

- Mapping hydrocarbon potential in Danish sector
- **North Sea chalk reservoir research**
- Migration and accumulation of hydrocarbons
- Thickness and porosity mapping
- Simulations of chalk-field filling history

- Mapping hydrocarbon resources in Greenland
- Development and marketing of oil-exploration models
- **Stratigraphic, sedimentological og paleontological investigations**
- **Seismic surveys and data interpretation**



University of Copenhagen

Department of Geosciences and Natural Resource Management

Educations

- **Geology-Geoscience (annual uptake 40-50)**
- Geography and Geoinformatics (annual uptake 80-100)

Research Schools

- **The Research School Geology (READY) (ca 30 Phd students)**
- The Research School Geography (RESGEO) (ca 30 Phd students)

Research groups in the Geology section

- **Basin studies**
- **Geophysics**
- Geochemical, mineralogical and petrological earth processes
- Water resources



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Natural History Museum

Research groups at the Geological Museum

- **Geology and Palaeontology**
- Quaternary, including fossil-DNA
- Geochemistry and early Earth evolution

Arctic as a focus area

Participate in Geology-Geoscience education

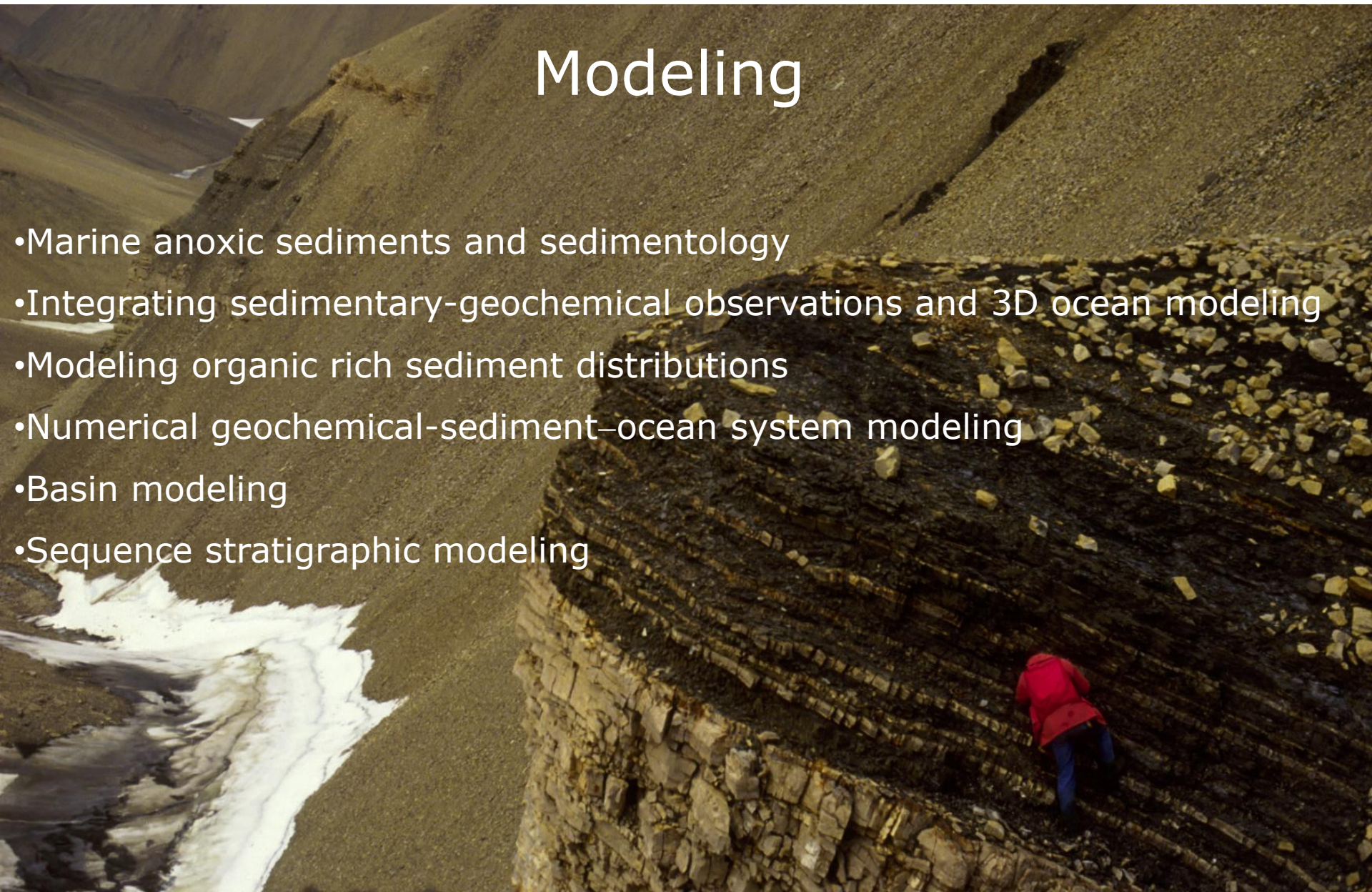
15-20 PhD and MSc students

Well equipped labs



Modeling

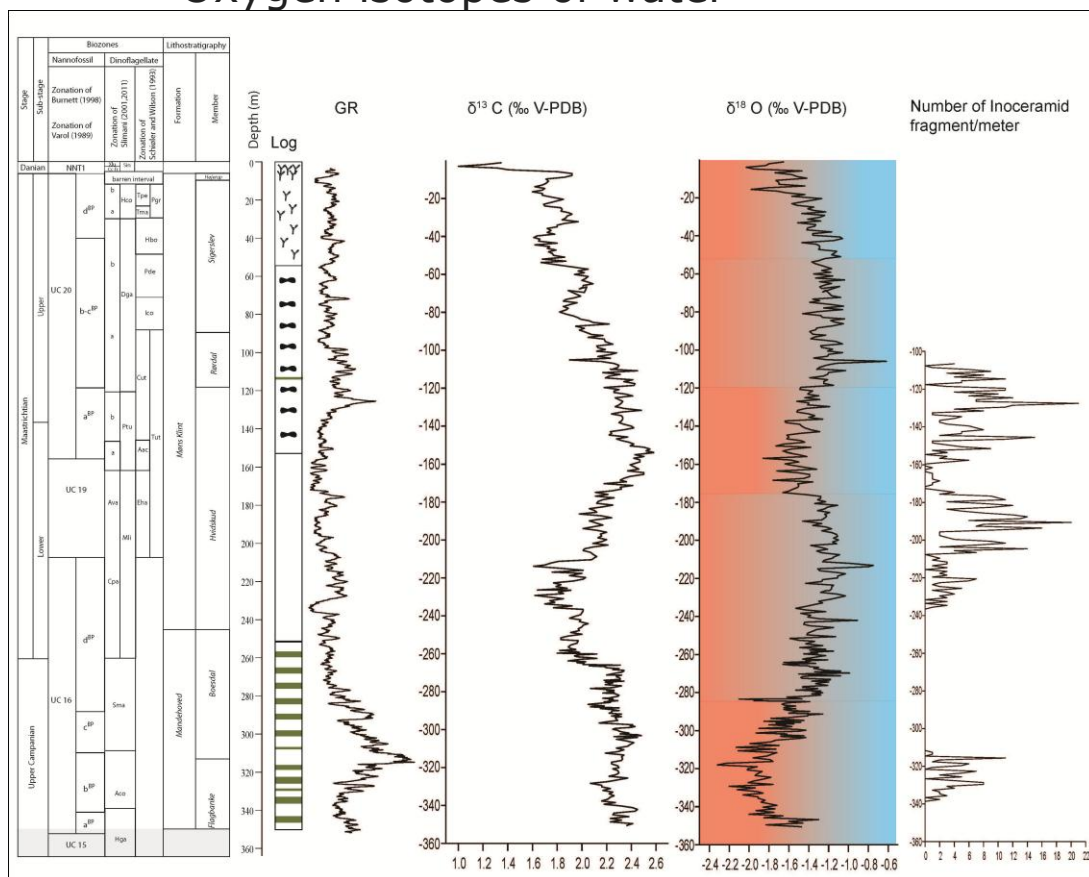
- Marine anoxic sediments and sedimentology
- Integrating sedimentary-geochemical observations and 3D ocean modeling
- Modeling organic rich sediment distributions
- Numerical geochemical-sediment-ocean system modeling
- Basin modeling
- Sequence stratigraphic modeling



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Stable isotope laboratory

- Oxygen and carbon isotopes of carbonates
- Carbon, nitrogen and sulphur isotopes of organic matter
- Oxygen isotopes of water



Arctic basin studies - 1

East and North Greenland (with GEUS and sponsors)

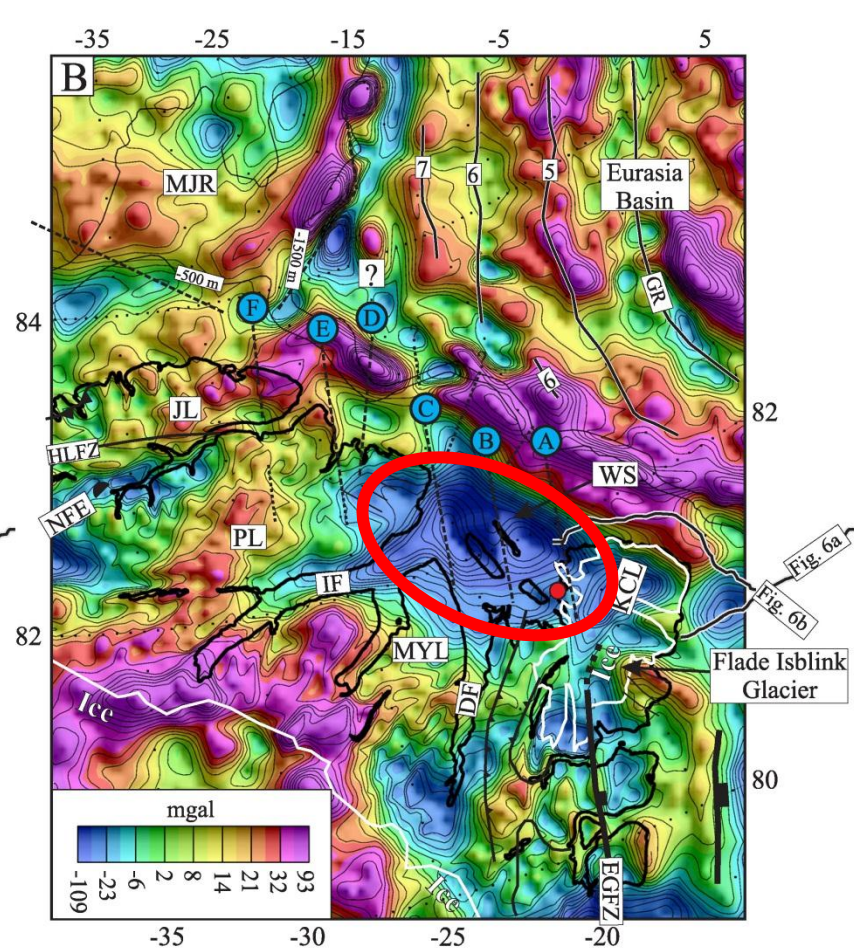
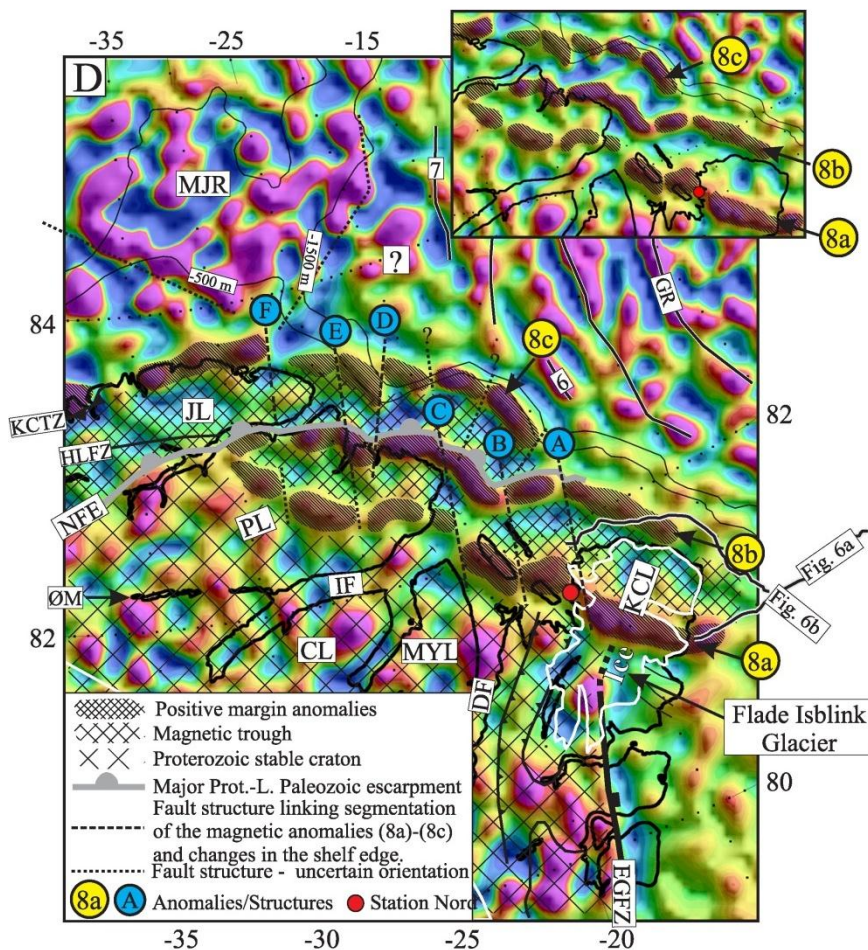
Reservoir analogs
Source rocks
Sedimentology and stratigraphy
Field trips



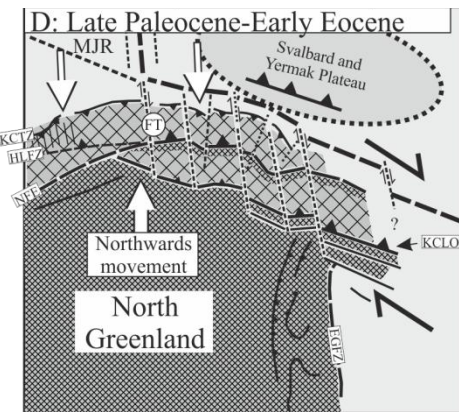
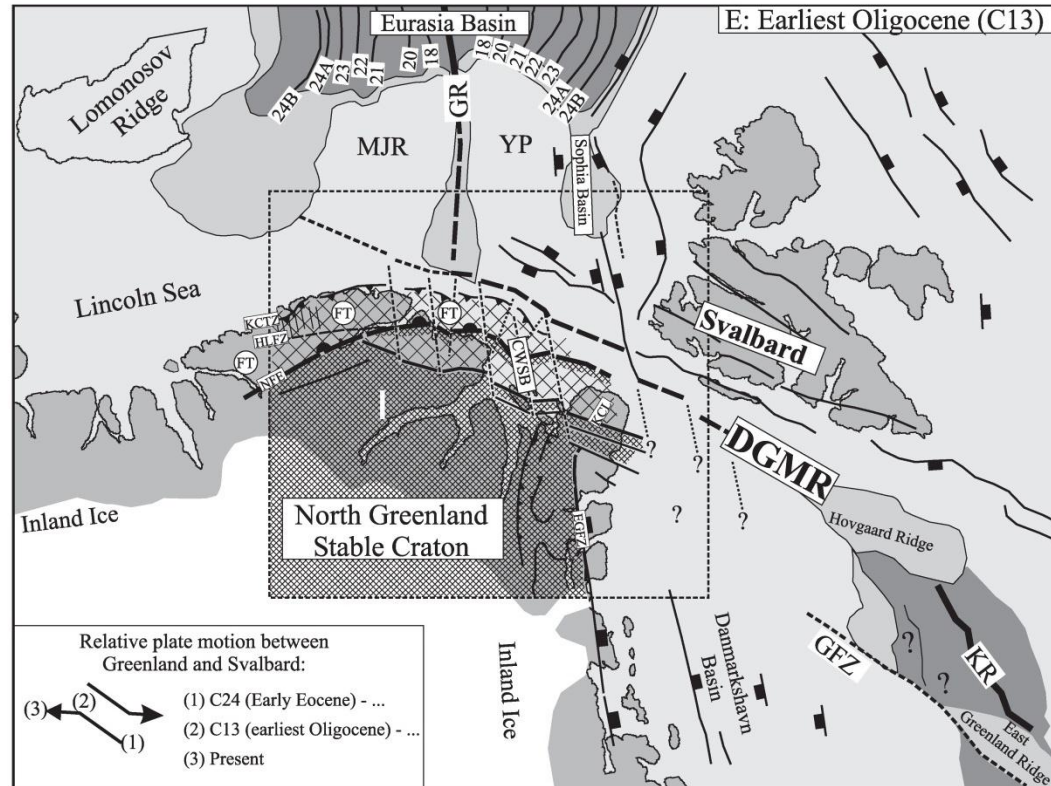
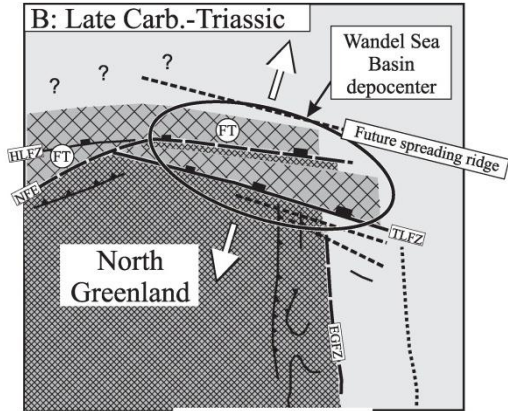
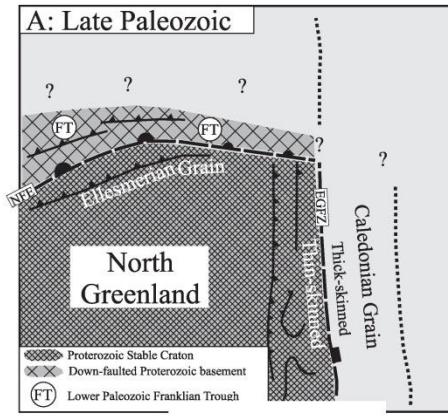
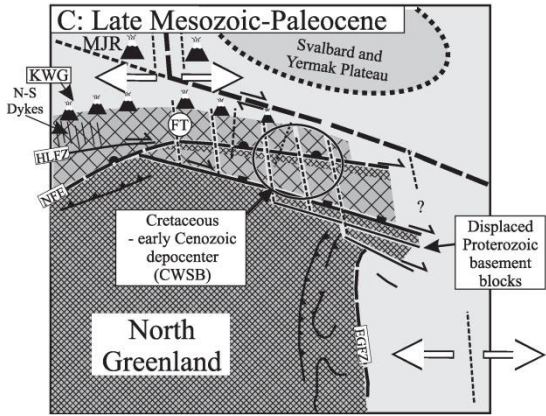
Magnetic and Gravity Signature of the Margin

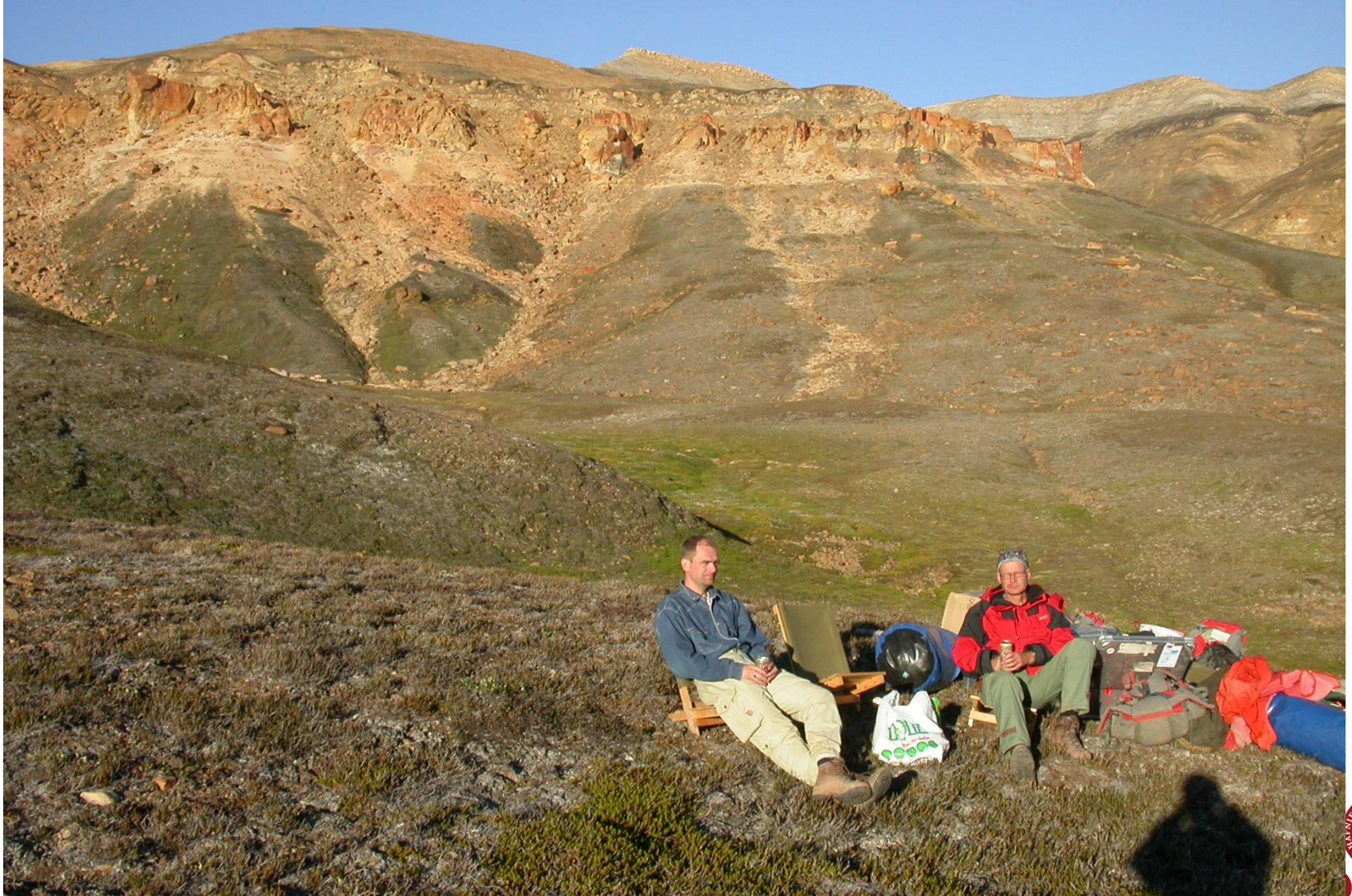
Tentative Interpretation of Structures

Isostatic Residual Gravity



Tectonic evolution and segmentation of the margin

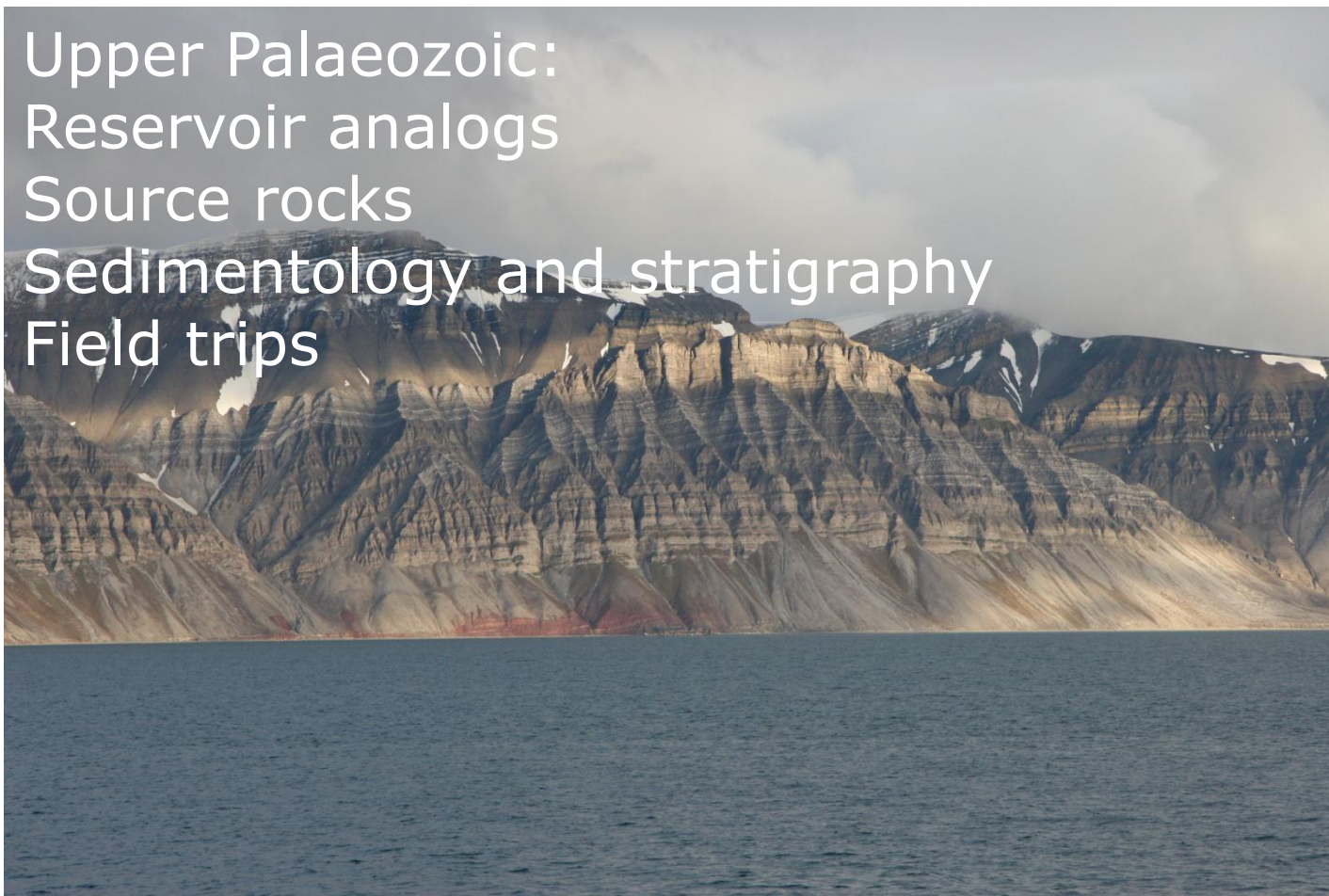




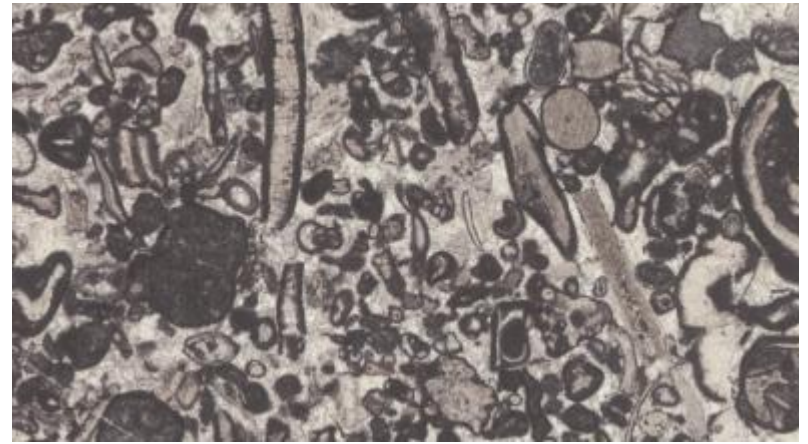
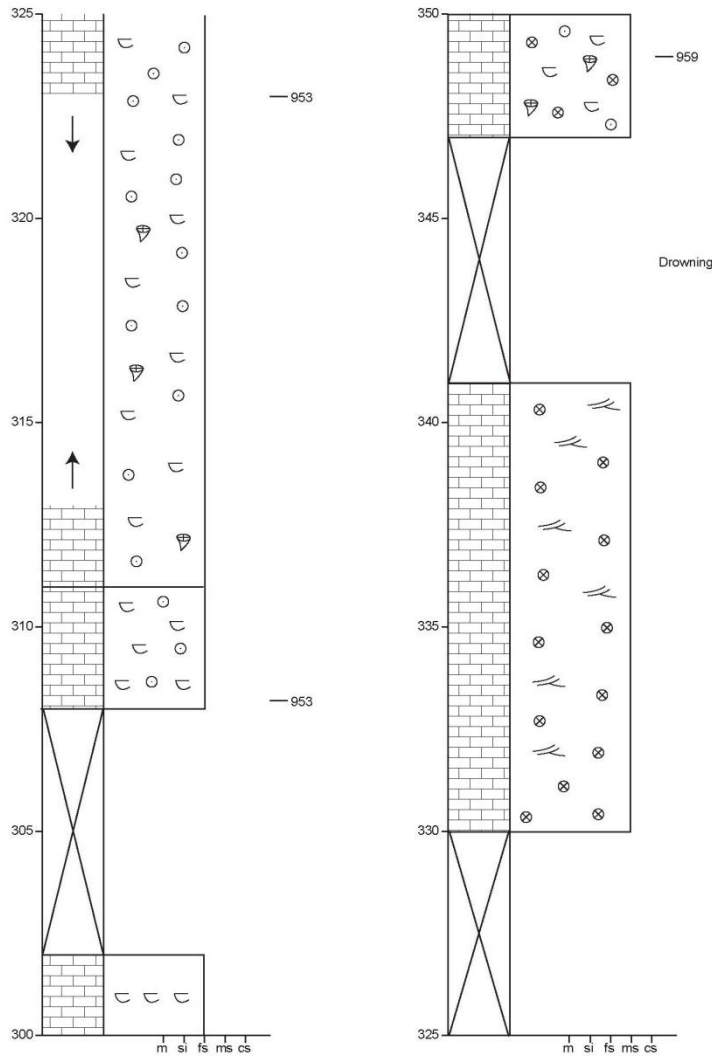
Arctic basin studies - 2

Svalbard and the Barents Sea (with UNIS and sponsors)

Upper Palaeozoic:
Reservoir analogs
Source rocks
Sedimentology and stratigraphy
Field trips







Ledianogavanskaya Fm



C³ – Centre for Cross-disciplinary Chalk Research

(with Maersk Oil)

Linking Chalk sedimentology, reservoir properties and seismic attributes

Developing a process-based understanding of chalk deposition, chalk facies and architecture

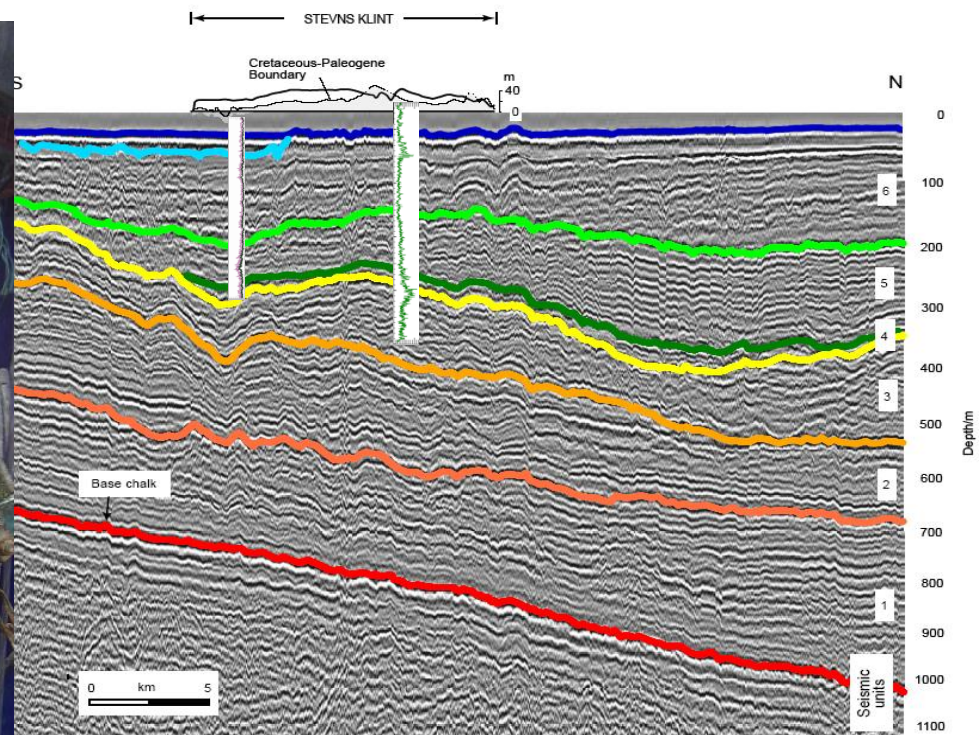
- Core and outcrop studies, physical experiments and numerical models
- Relating chalk facies and microtexture to reservoir properties
- Petrography and backscatter SEM
- Paleontology/Biostratigraphy

Mapping of fine-scale chalk heterogeneity (2D and 3D)

- Characterization of fluid and gas flow (time-lapse)
- Development of inversion algorithms
- Upscaling of fine-scale models to reservoir scale
- Test of models by seismic full waveform modelling and integration with log data

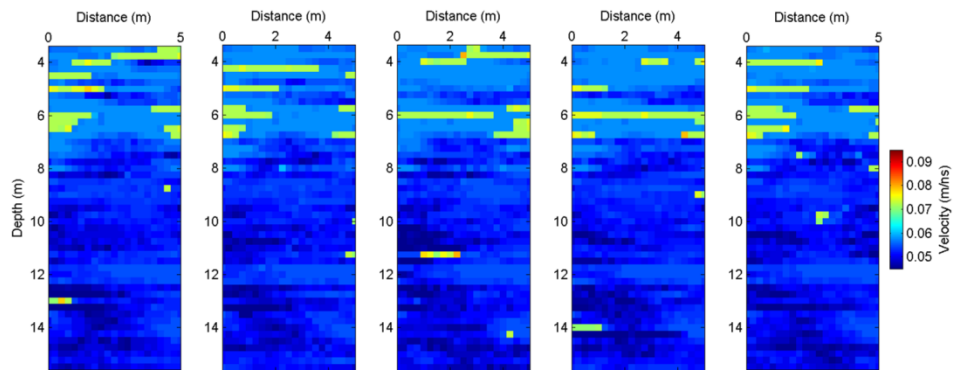






To kerneboringer med 100% recovery: Stevns-1: 456.10 m, Stevns-2: 350.00 m Danien - Øvre Campanien





BOREHOLE 1

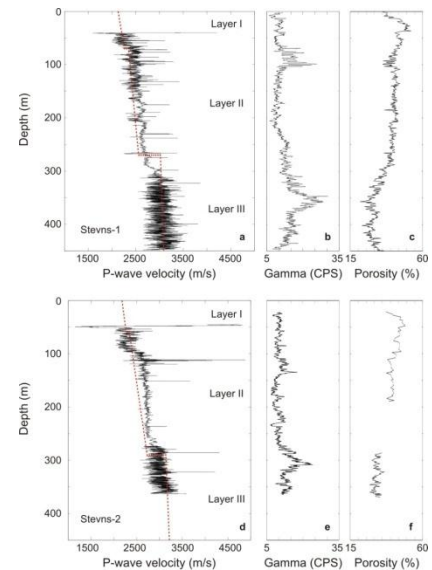
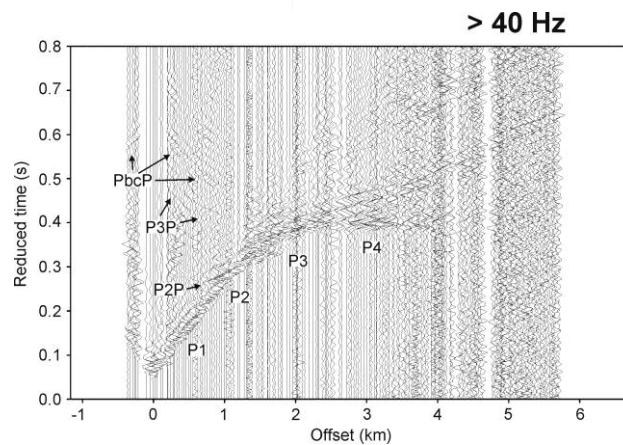
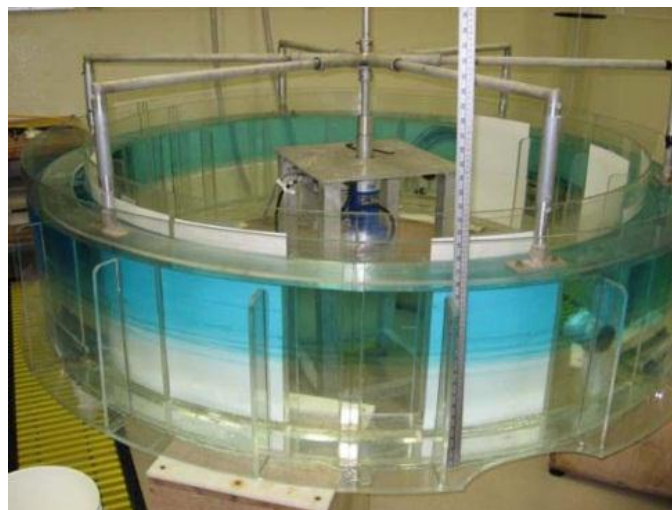
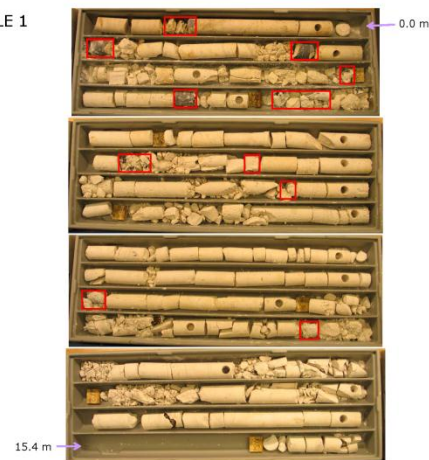


Fig. 7