

ROV technologies for targeted rock drilling, coring and exploration of sensitive environment

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Irish Research Vessel Fleet



RV Celtic Explorer – 65.5 m
Dynamic positioning
35 days endurance
Acoustically silent (diesel-electric)
25 T A-frame & 10T T-frame mid-ship)
dGPS, USBL, QINSY
EM1002/EM2040/EM302
CHIRP sub-bottom profiler
Outstand crew and officers



RV Celtic Voyager – 28m
Dynamic positioning
14 days endurance
Quite (diesel)
10 T A-frame & 1T mid-ship side derrick
dGPS, USBL, QINSY
EM3002
Adequate aft deck
Outstand crew and officers

Irish Research Vessel Fleet



FOR CHARTER for ROV OPS

ILV Granuaile— 79.7 m

Dynamic positioning

Shallow draft and huge aft deck

GSI inshore mapping fleet



RV Keary



RV Geo



RV Tonn



RV Lir

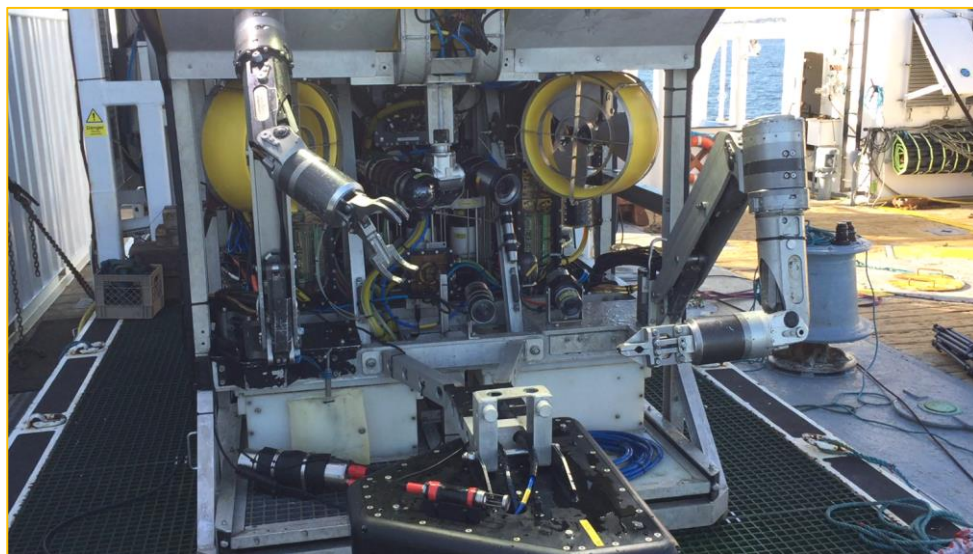
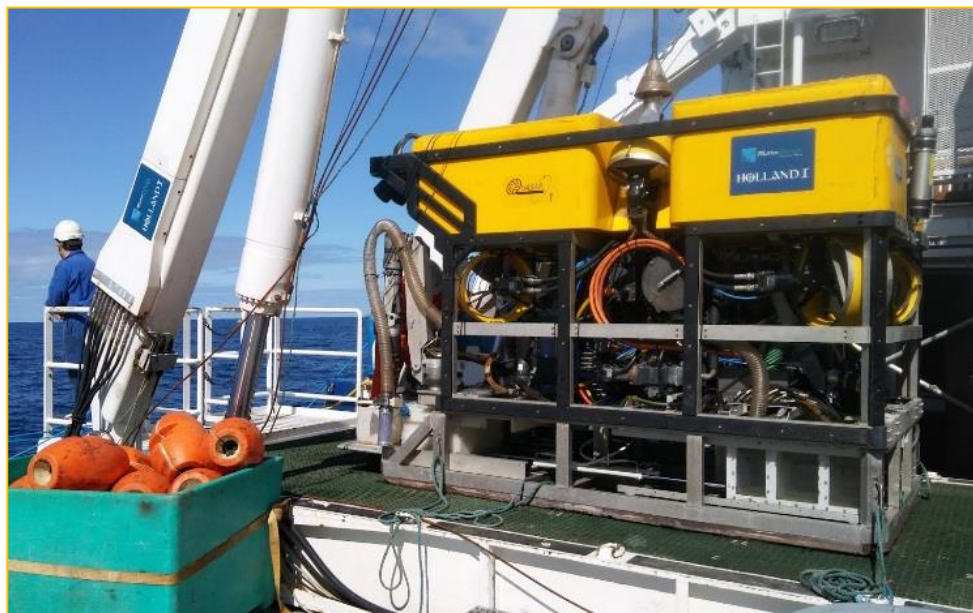


RV Mallet

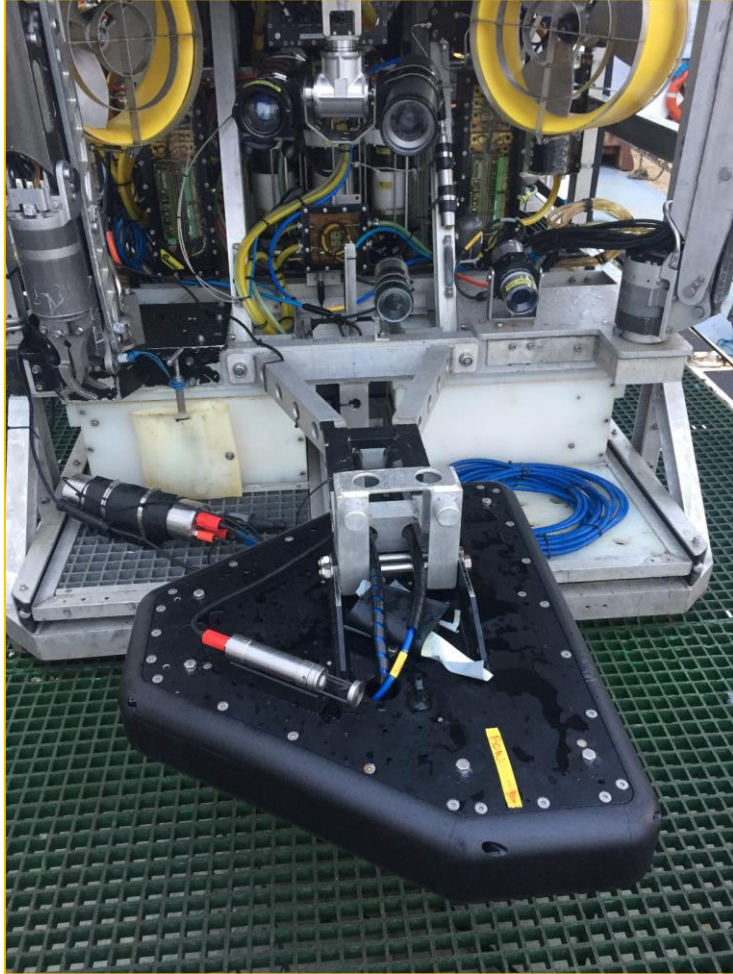


MV Cosantóir
Bradán

Holland I ROV



Holland I ROV

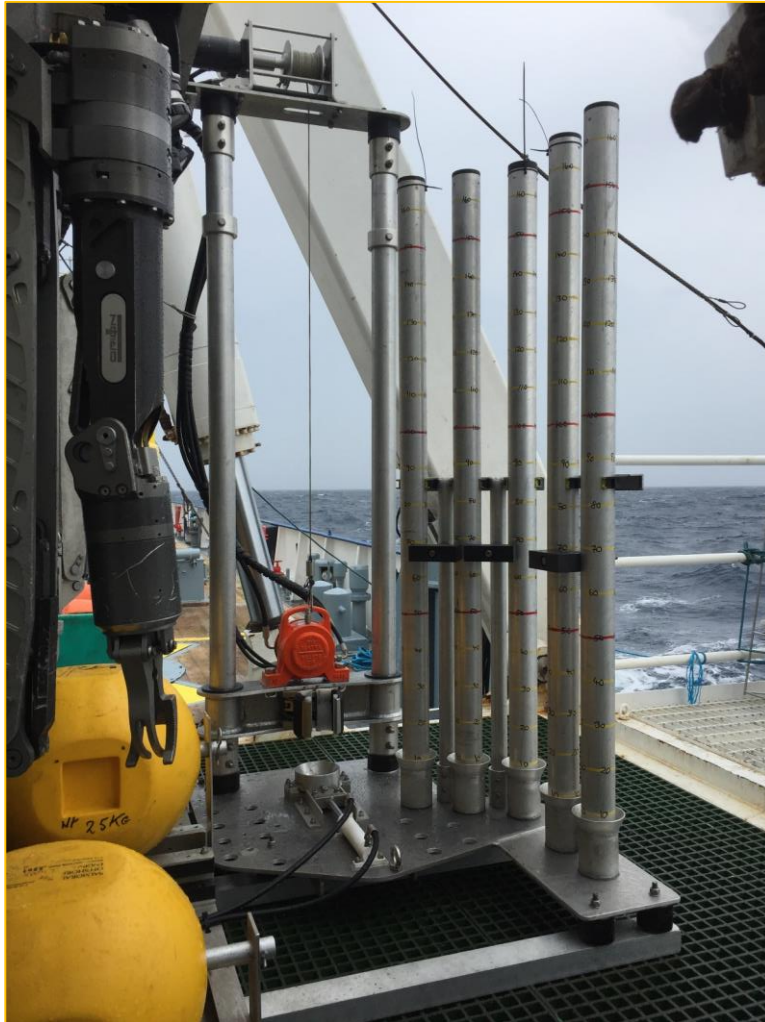


High resolution MBES

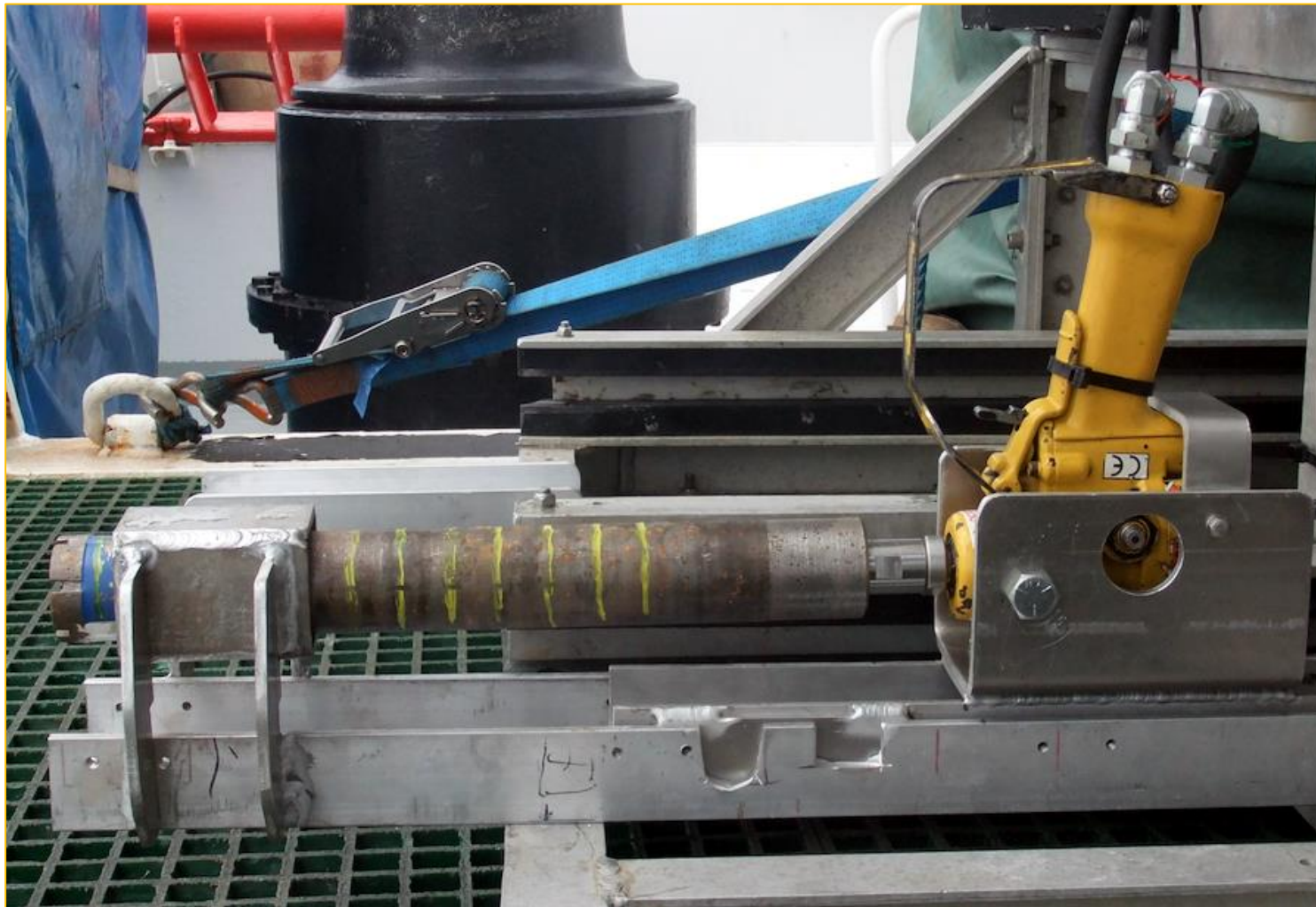


ROV equipped with vibrocorer rig

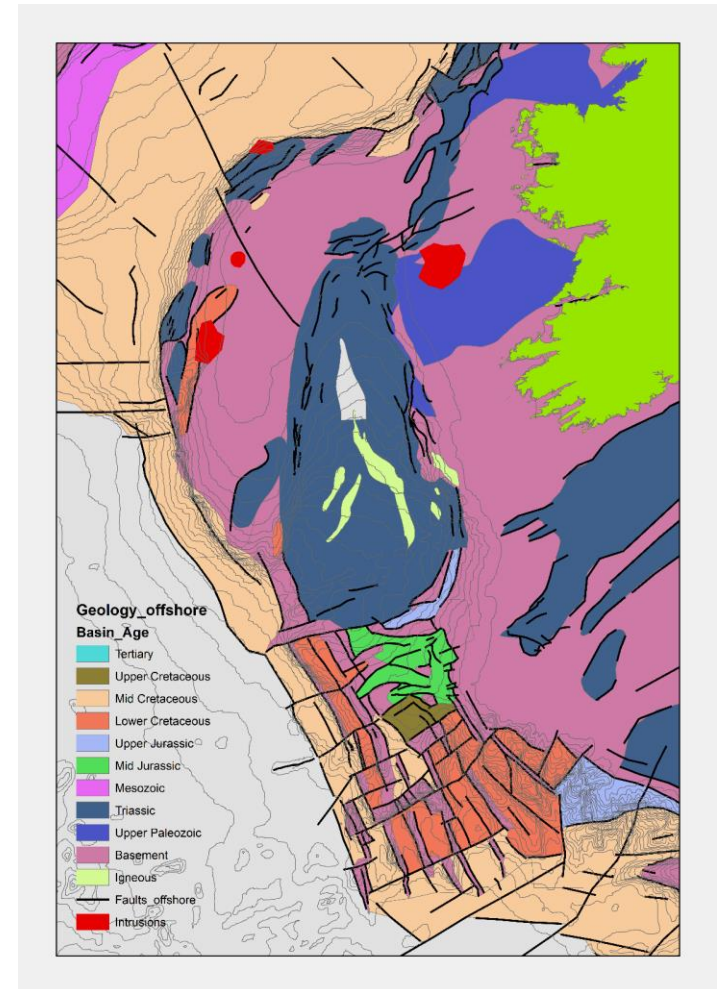
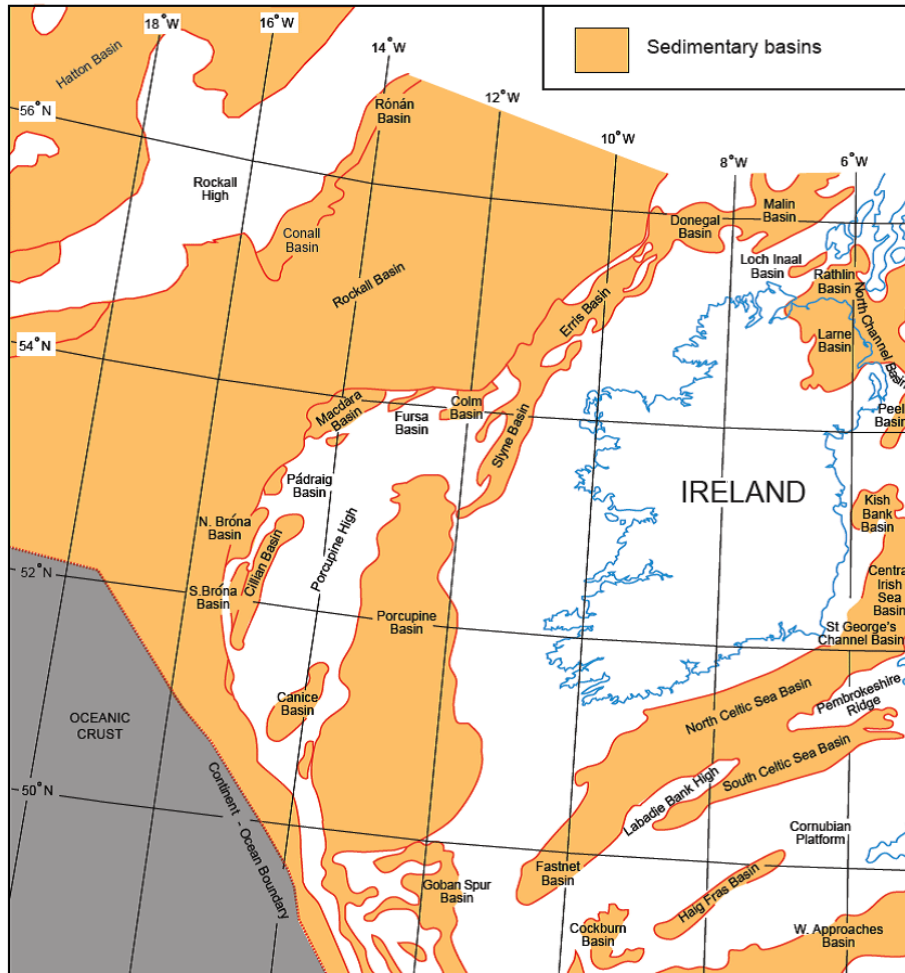
Vibrocoring capabilities



Holland I ROV – Rock drill



Ireland offshore basins



Drilling solutions

Very expensive

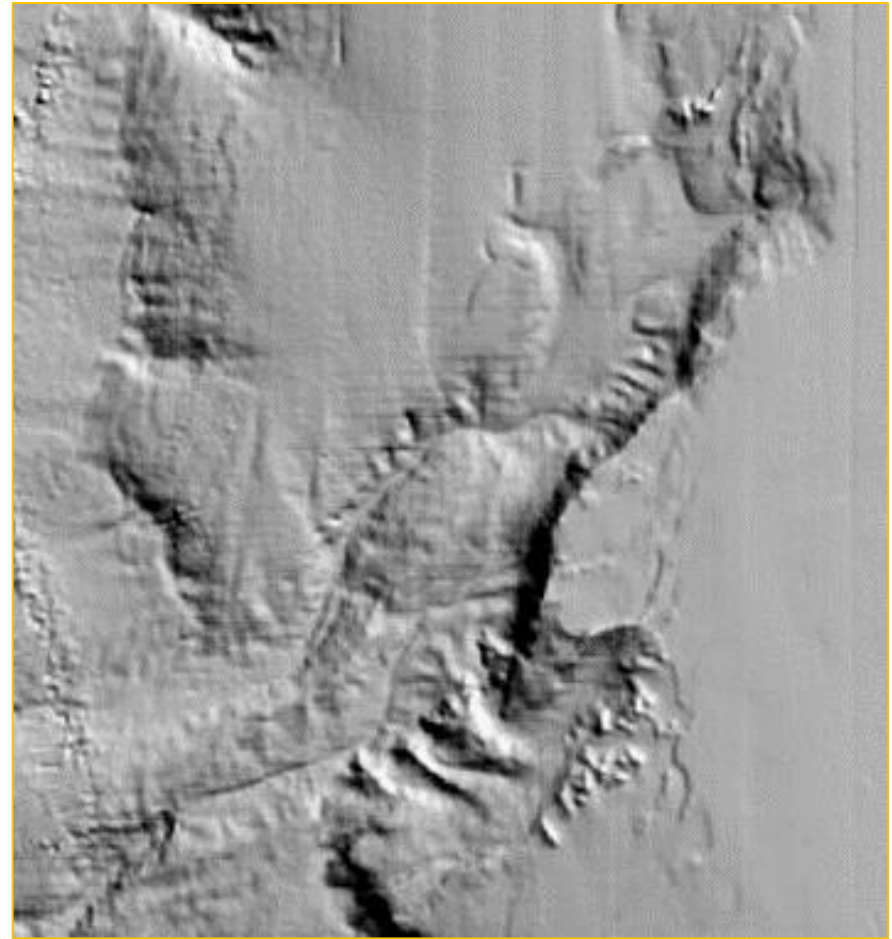
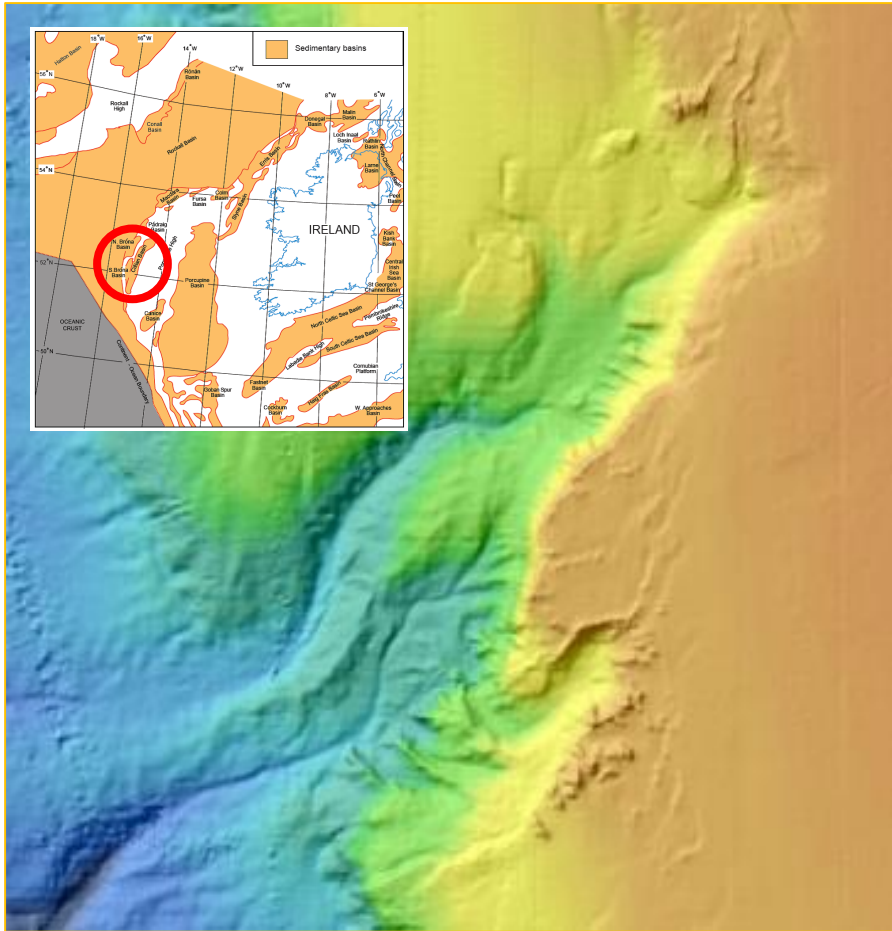


Cost effective



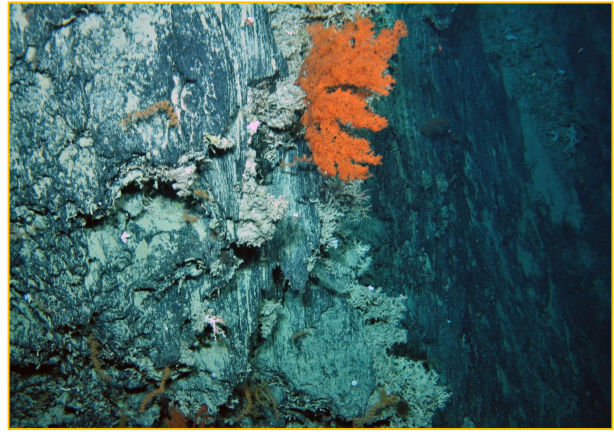
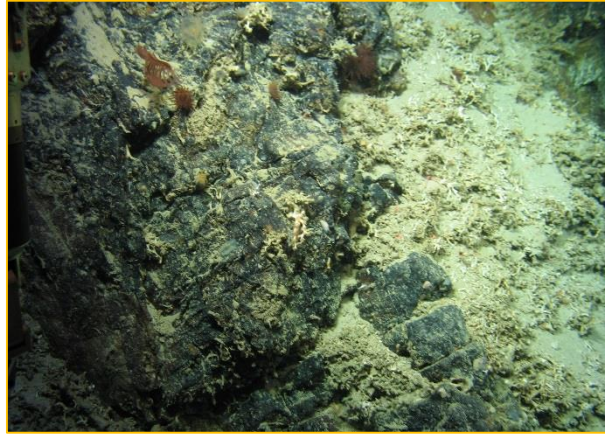
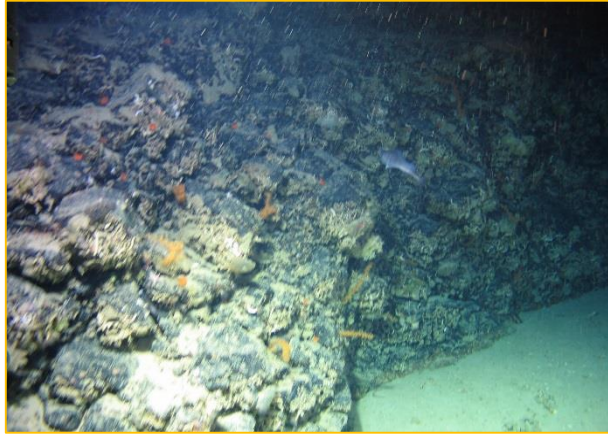
Expensive
with sea-
state and
landing
issues

Porcupine Bank Canyon – Rockdrill test site



Data courtesy of INFOMAR (Geological Survey, Ireland & Marine Institute, Ireland)

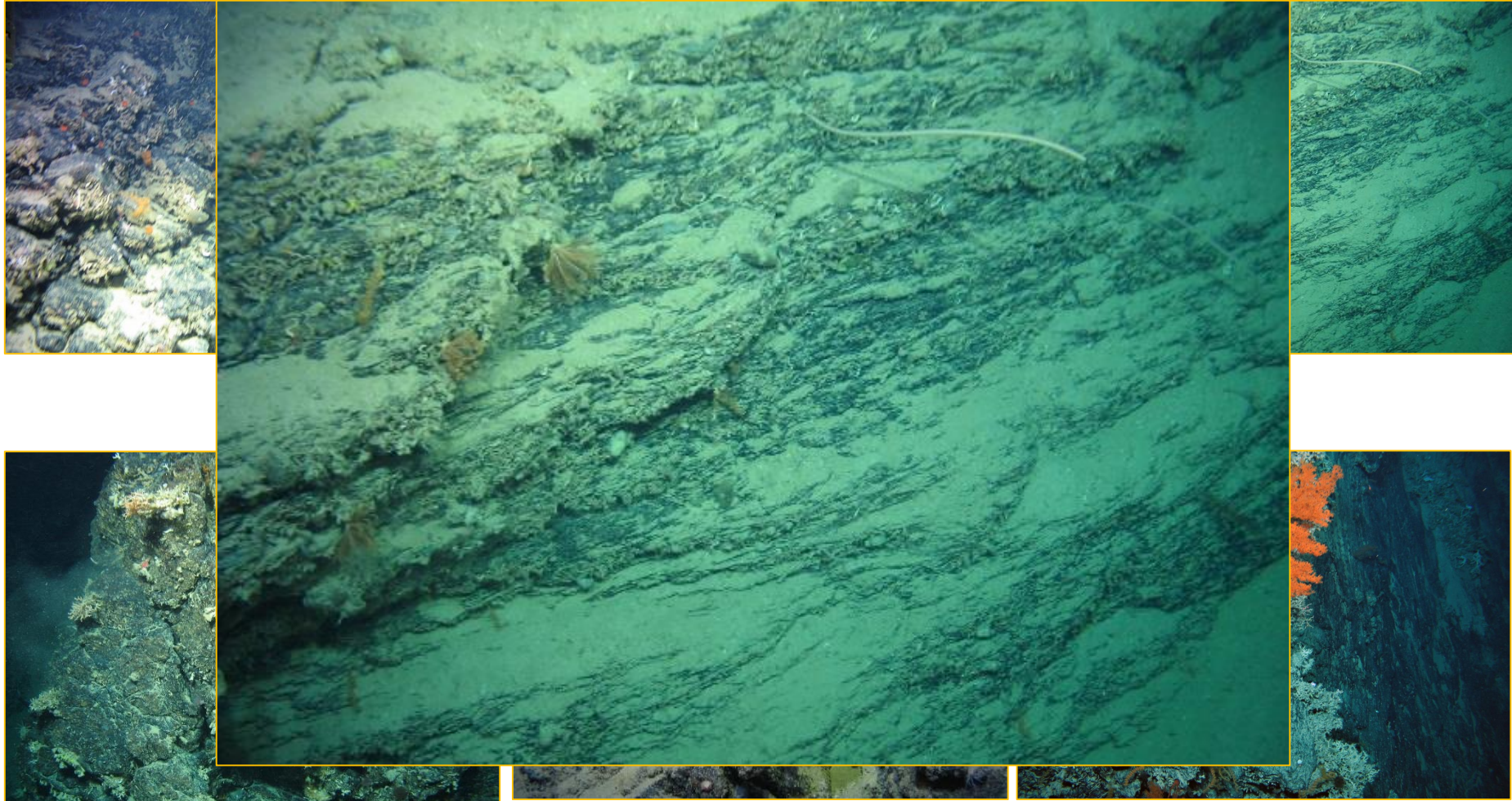
Variety of outcropping rock types



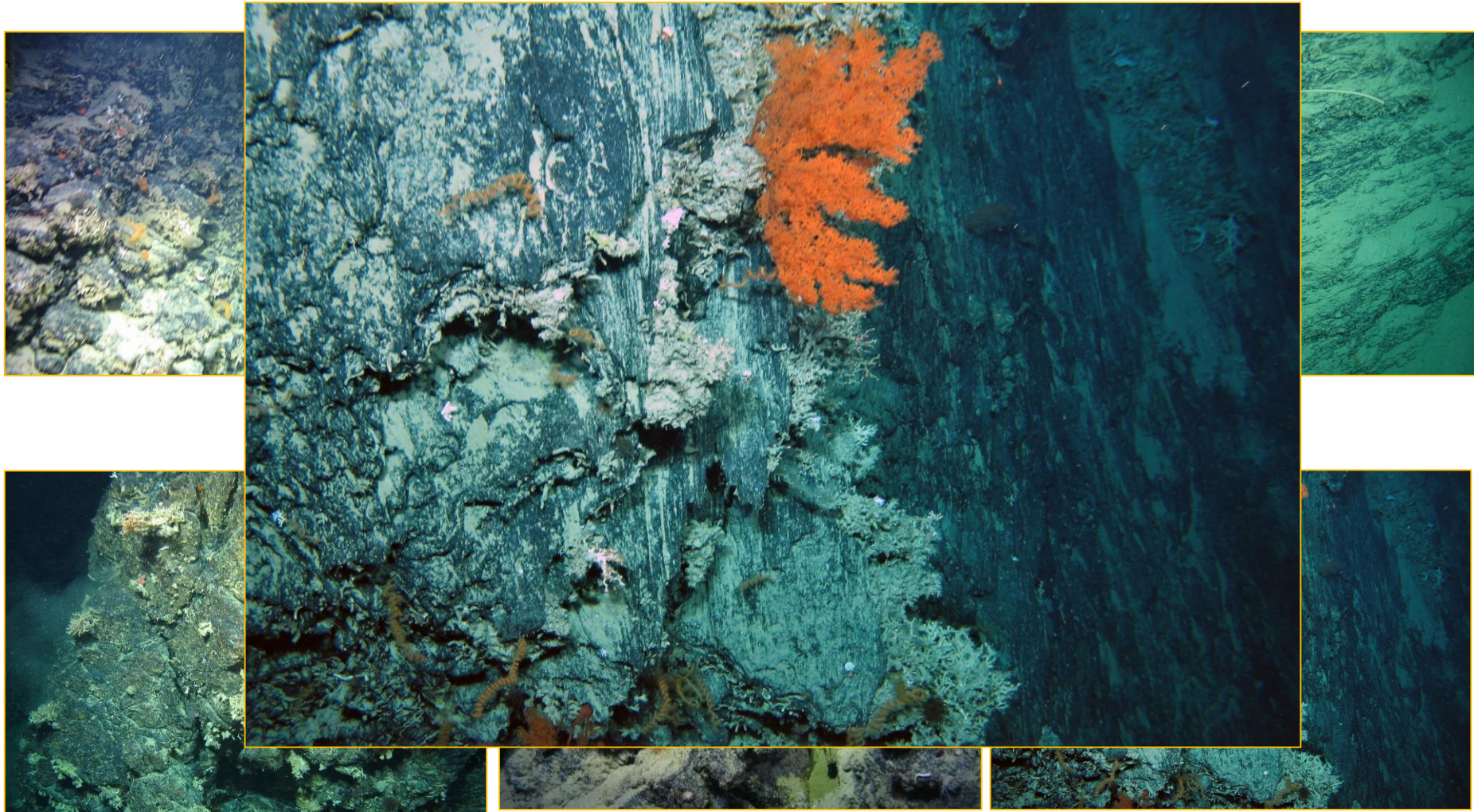
Variety of outcropping rock types



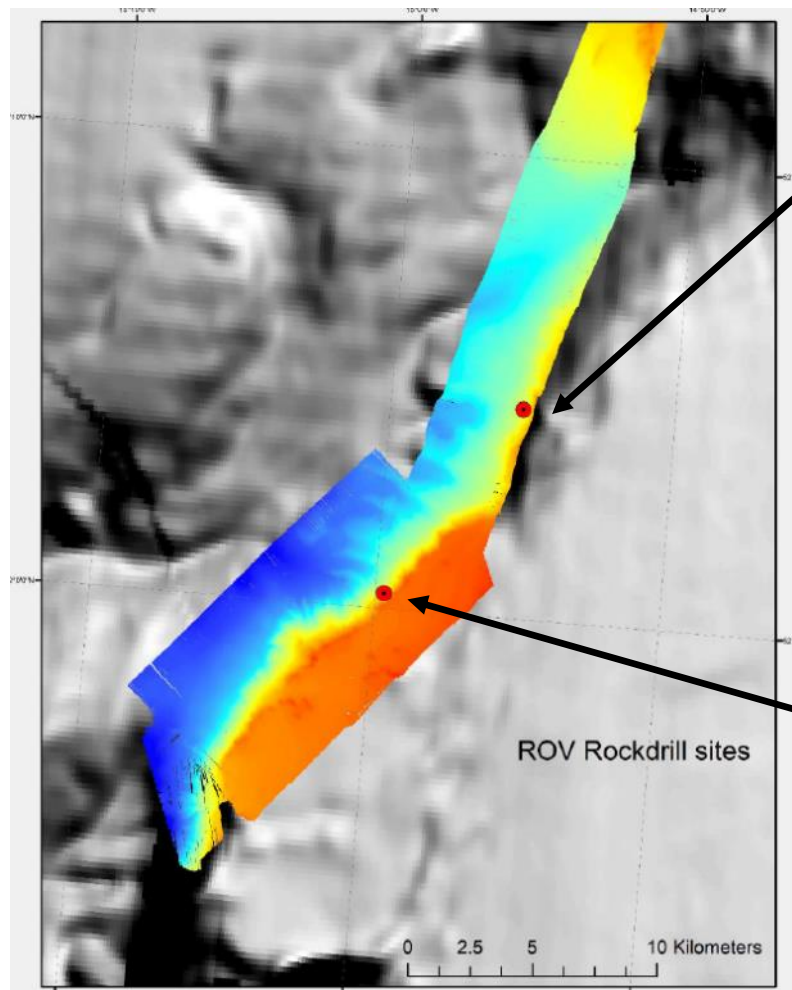
Variety of outcropping rock types



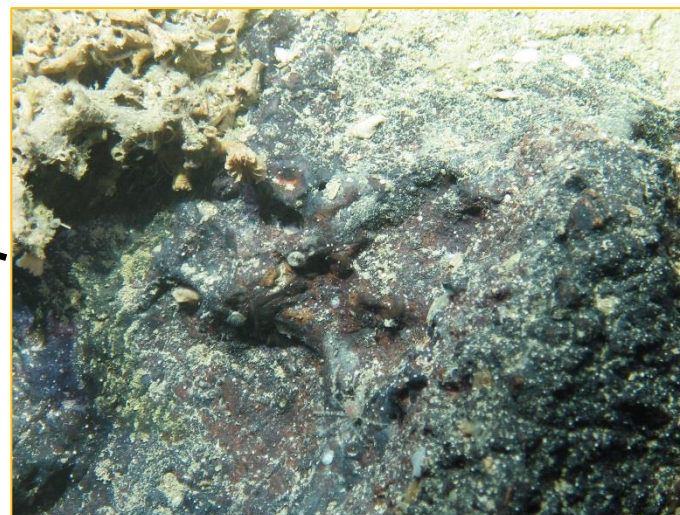
Variety of outcropping rock types



Rock drill sites



R2 – 1132m

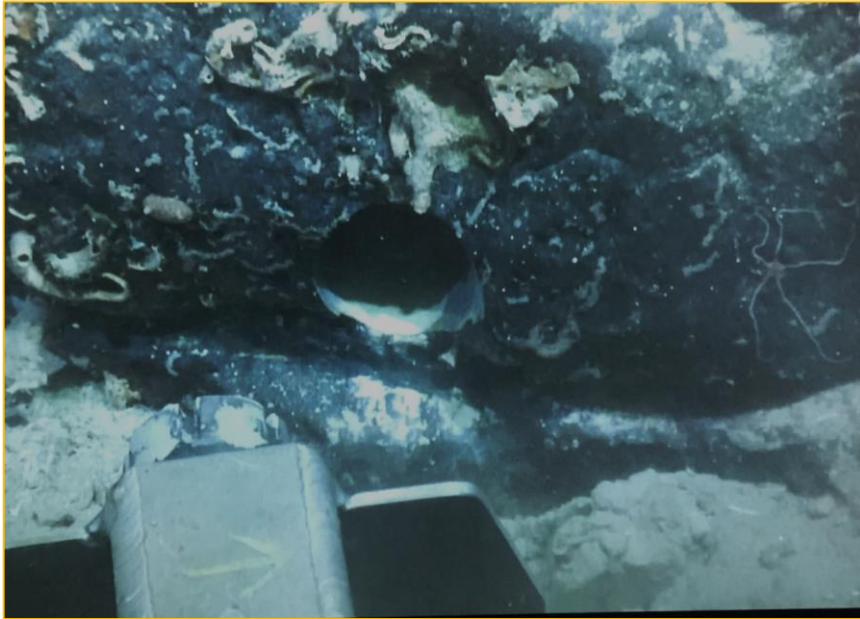


R1 – 970m

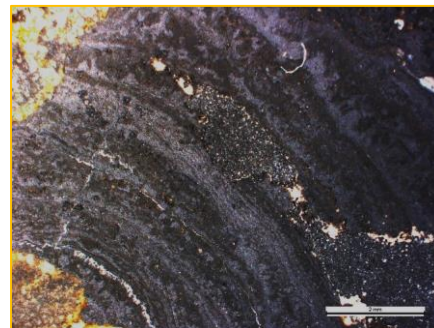
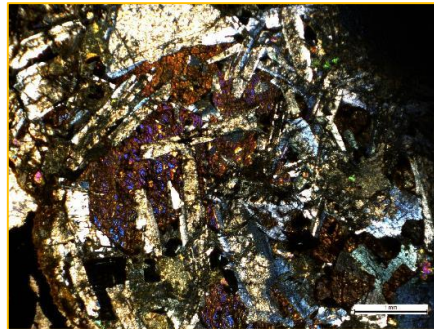
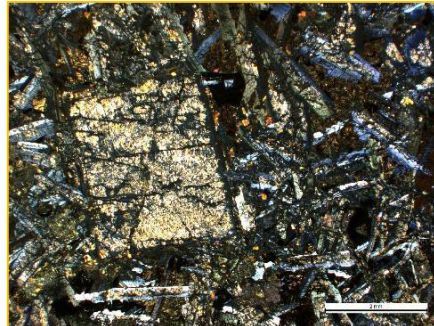
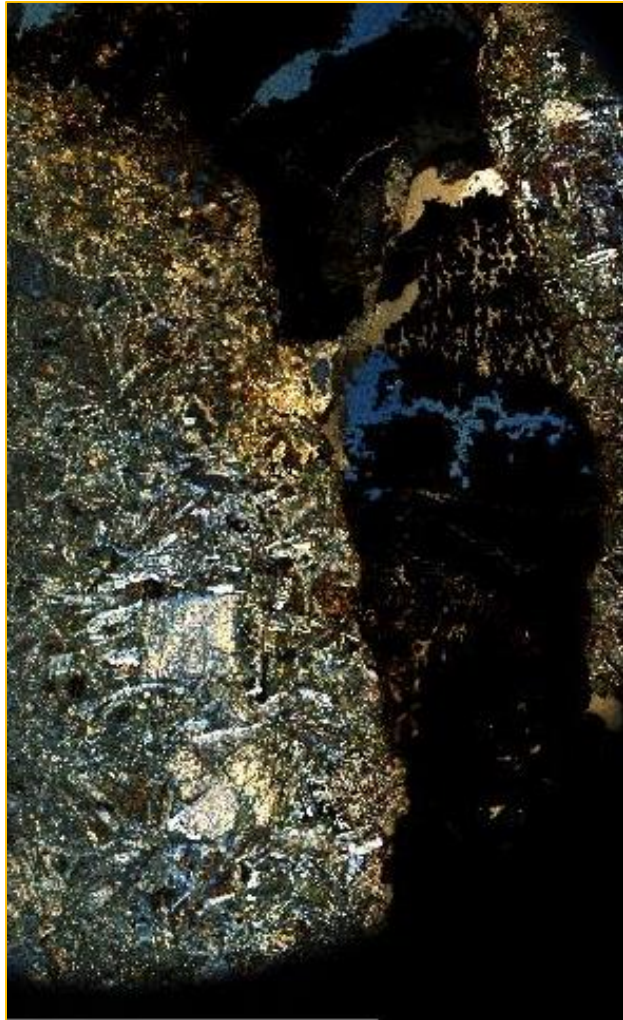
ROV-drill in action



ROV-drill in action



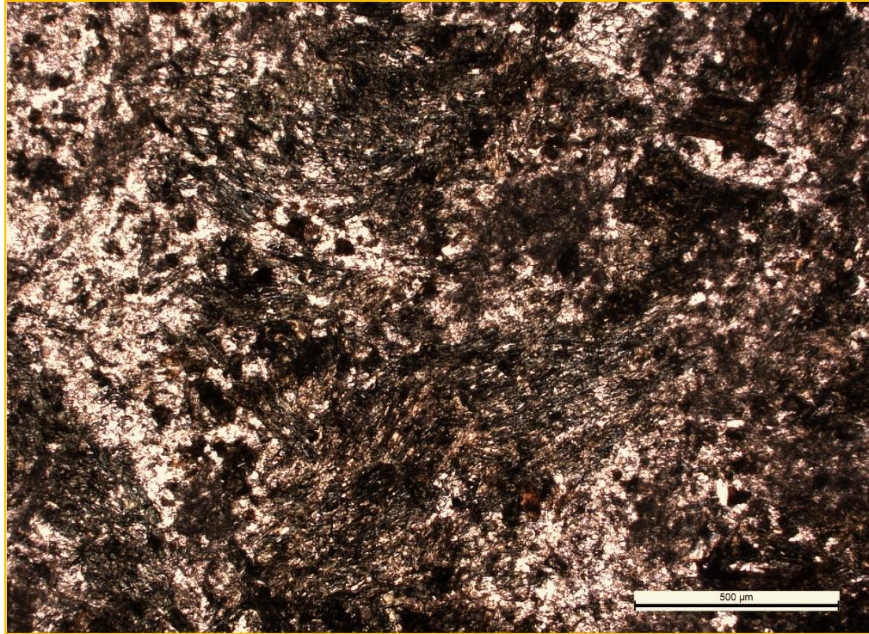
RH1 – 970 m water depth



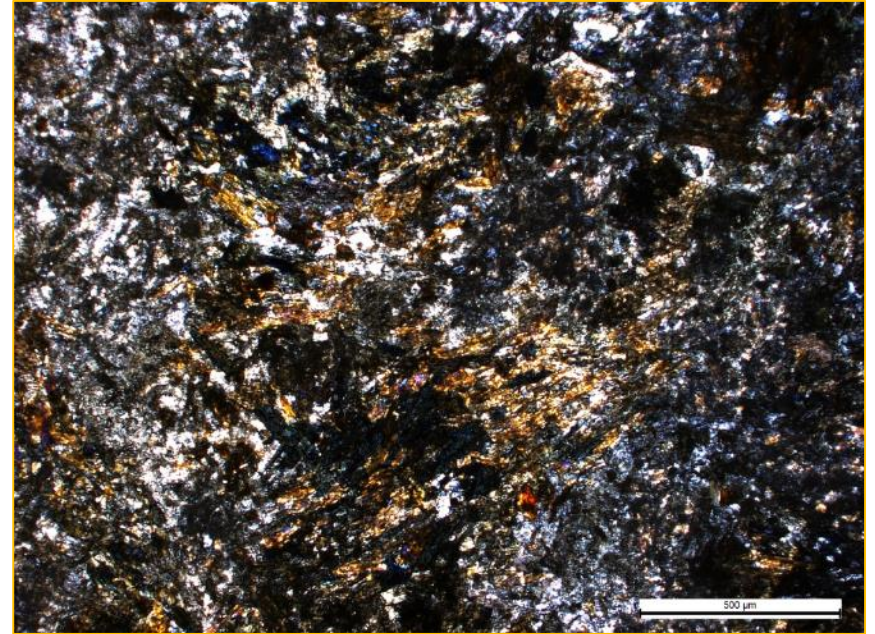
Metagabbro
(green schist facies)
Ophitic texture plagioclase
in amphiboles,
Sericitized plagioclases
Some epidote and calcite

Manganese crust veining

RH2 – 1132 m water depth



PPL



XPL

Metadolerite (green schist facies)

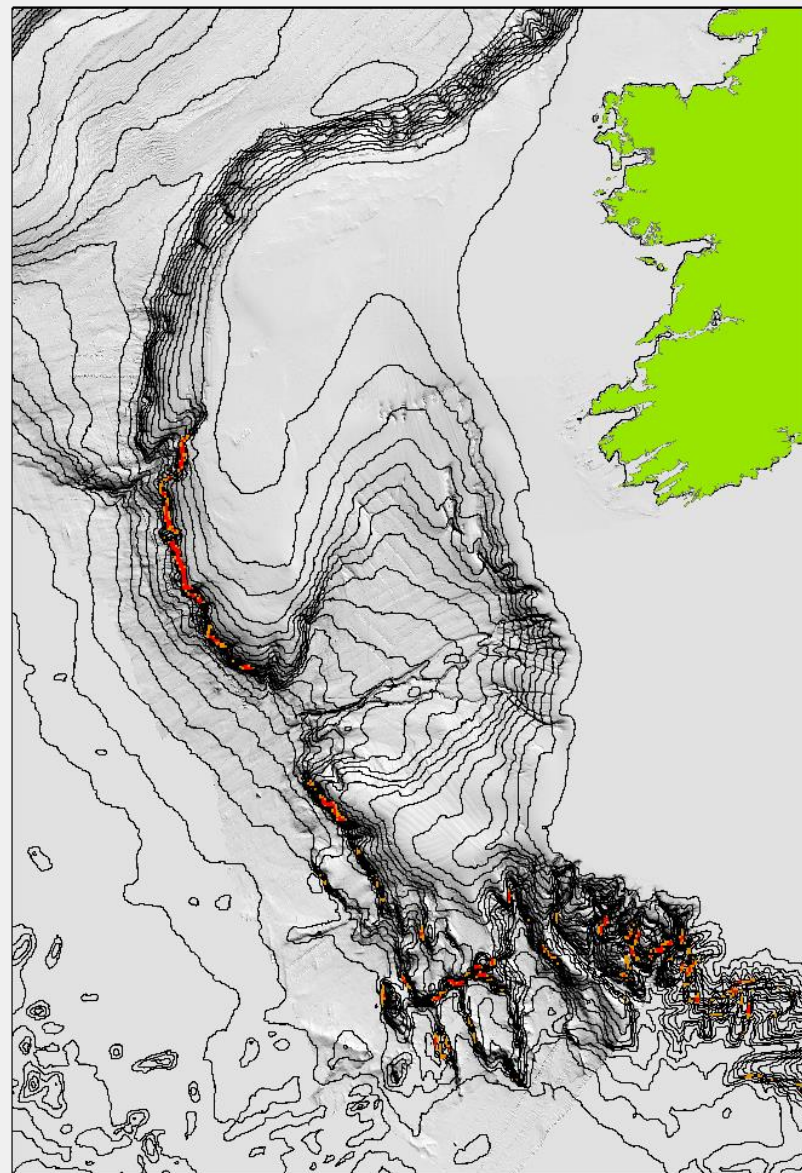
Epidote, amphiboles, albit & calcite

Probable vertical bedrock exposures

Slope analysis of INSS
multibeam analysis

Groundtruthed by:

- Holland I (CoCoHaCa survey)
- CyanPorc Submersible Survey



What next?

Opportunity

- **Low cost solution** to retrieving rock samples from stratigraphic exposures of basement and basinal sequence
- **Upgrade** of bespoke ROV rock drill
- **Desktop evaluation** of rock exposures and seismic correlations
- **Dedicate rock drill survey:** Holland I and RV Celtic Explorer
- **Post-cruise samples analysis**
 - Petrographic studies
 - Datings
 - Provenancing