



# **The french national programme for claiming continental shelf beyond 200 Miles**

***Using global bathymetric models  
in the context of an  
Extended Continental Shelf submission***

# The french national programme for claiming the continental shelf beyond 200 M

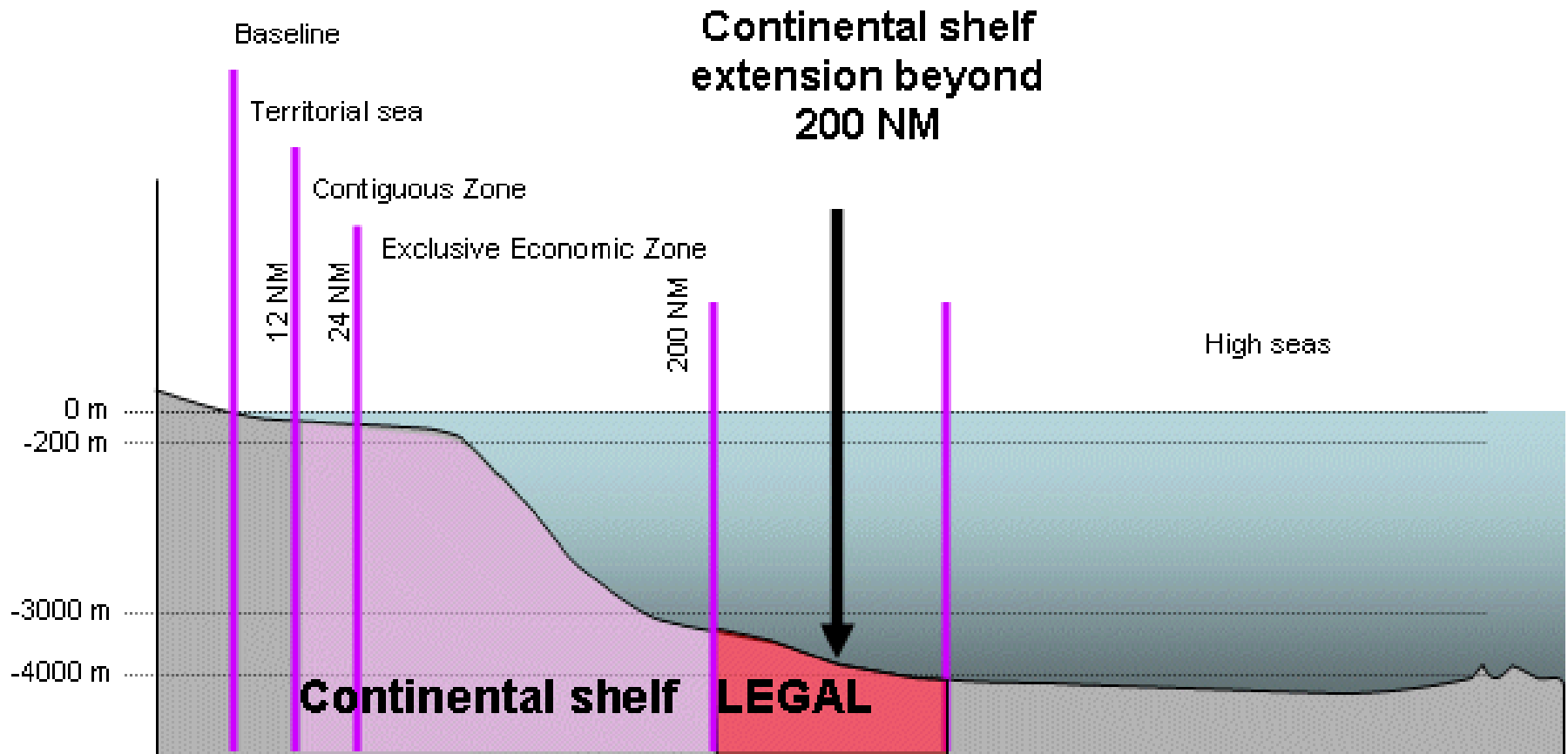


- An introduction to E.C.S
- Building a submission
- The french experience
  - *Using global bathymetric models*
- *Conclusions*

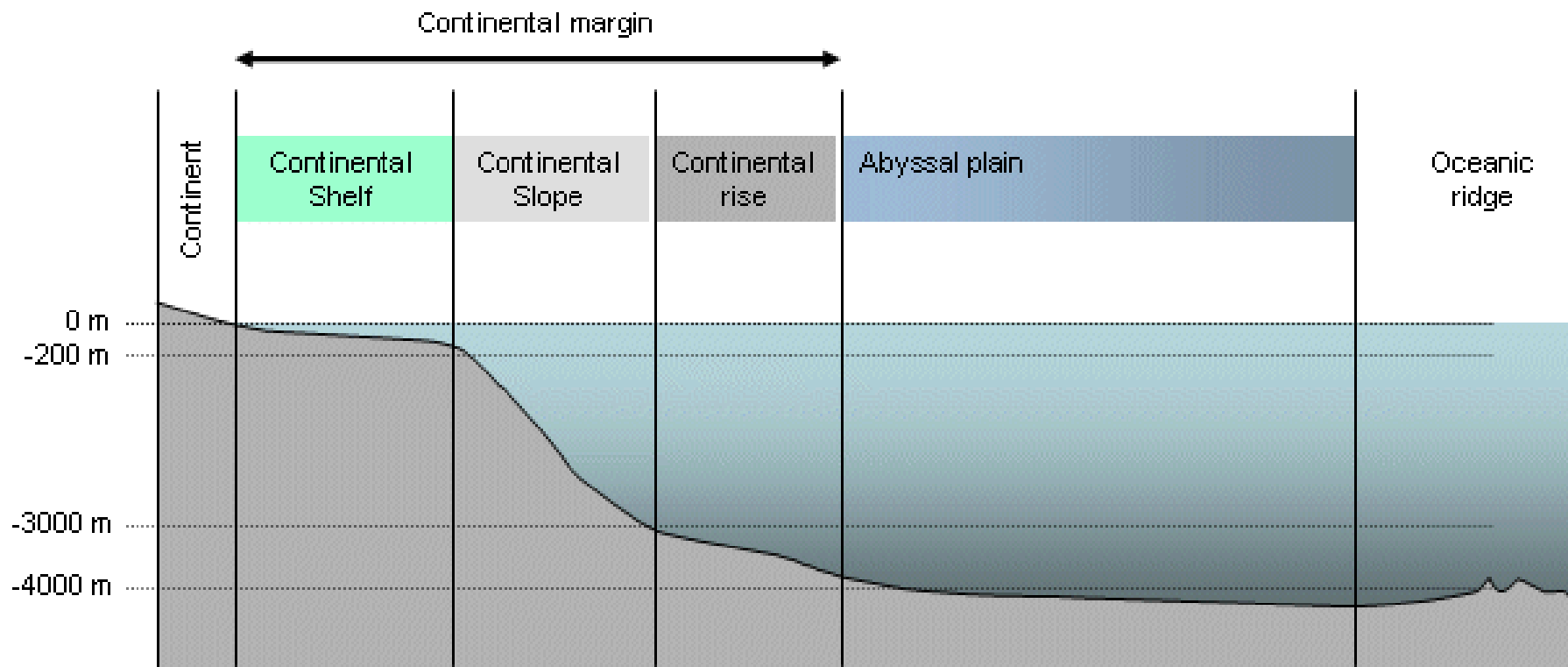


# UNLCOS Article 76

## E.C.S



# UNLCOS Article 76



# UNLCOS Article 76

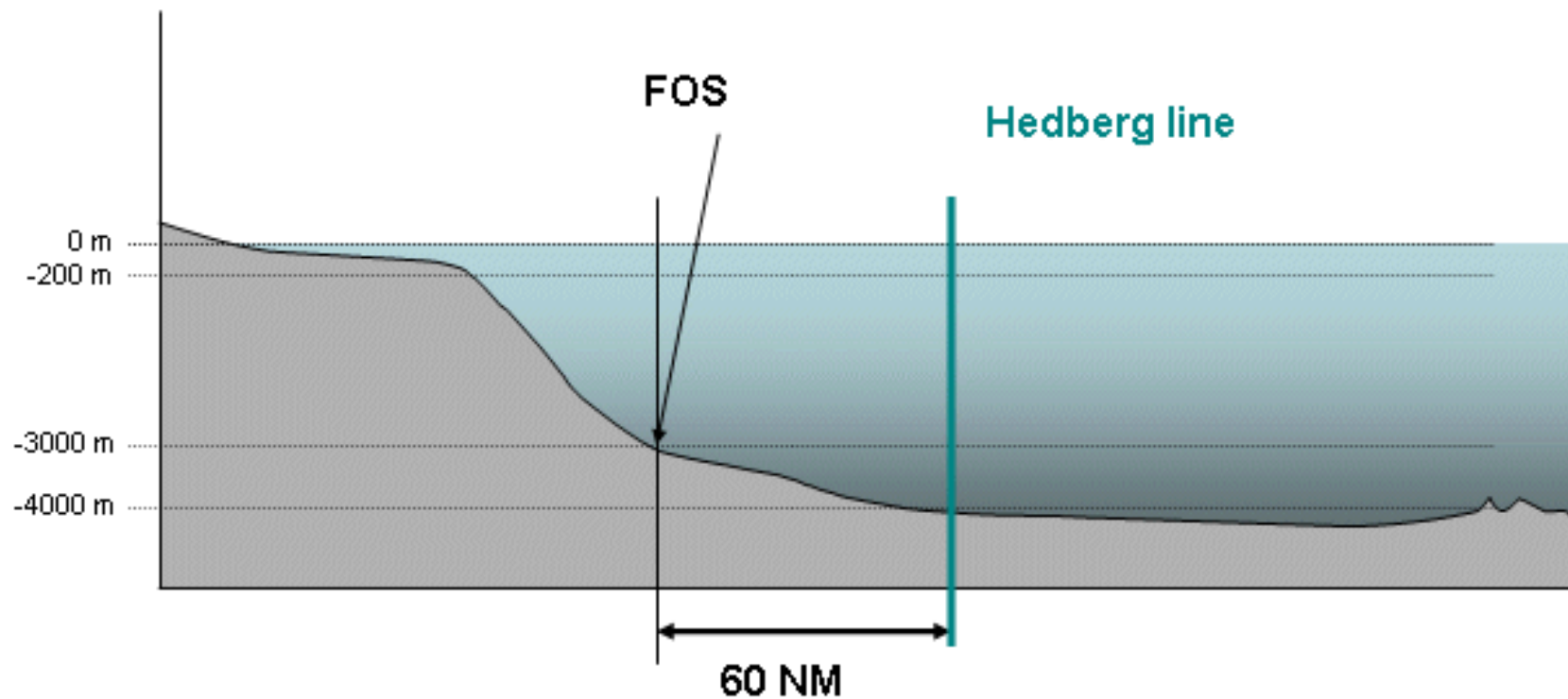
## The continental shelf of a coastal State :

- Is the natural prolongation of the landmass
- Extends to the outer edge of the continental margin
- The outer limit of the continental shelf is defined by points distant from each other less than 60 M
- These points may not lie beyond 350 M from the territorial sea baselines or 100 M from the isobath 2,500 m
- These points must satisfy one of two criteria : the Hedberg criterion or the Gardiner criterion



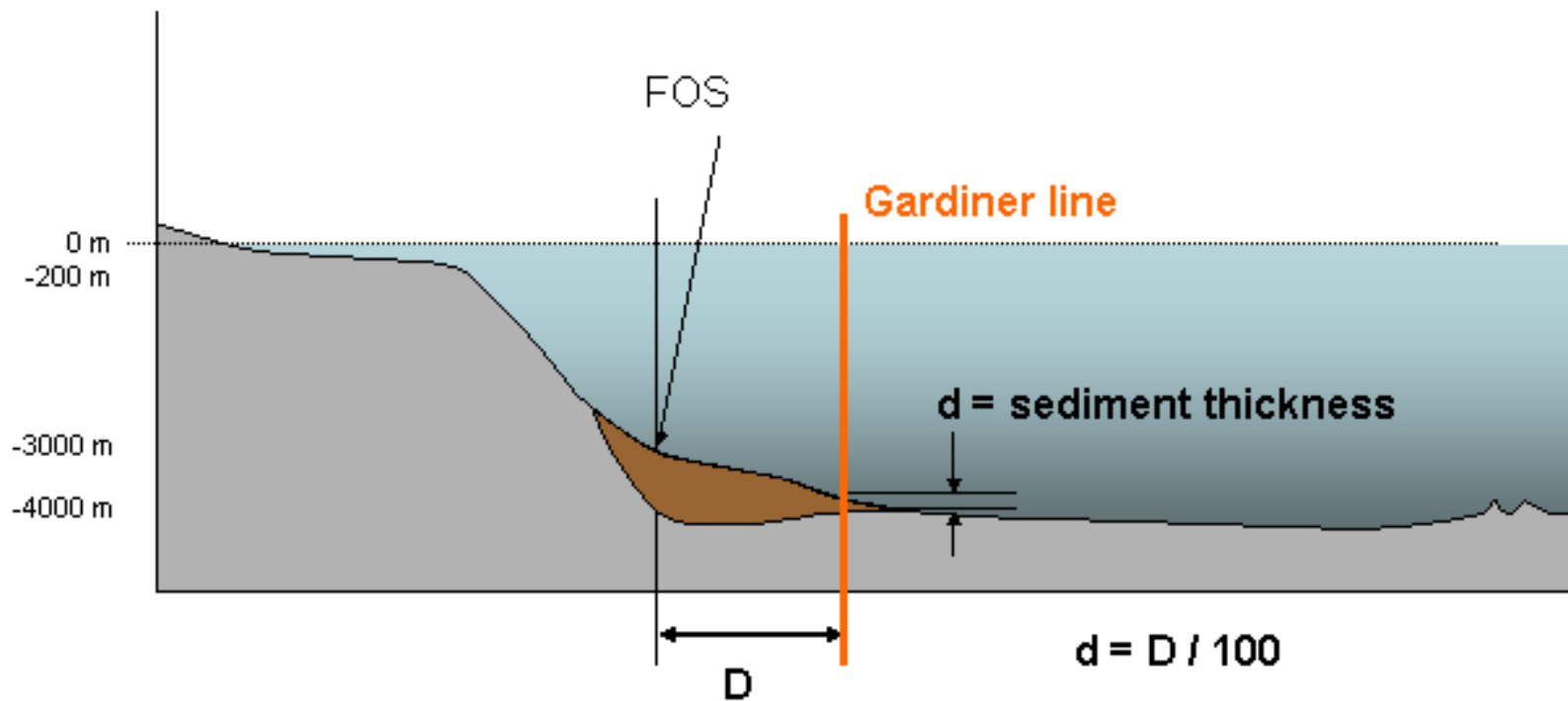
# UNLCOS Article 76

- The Hedberg criterion



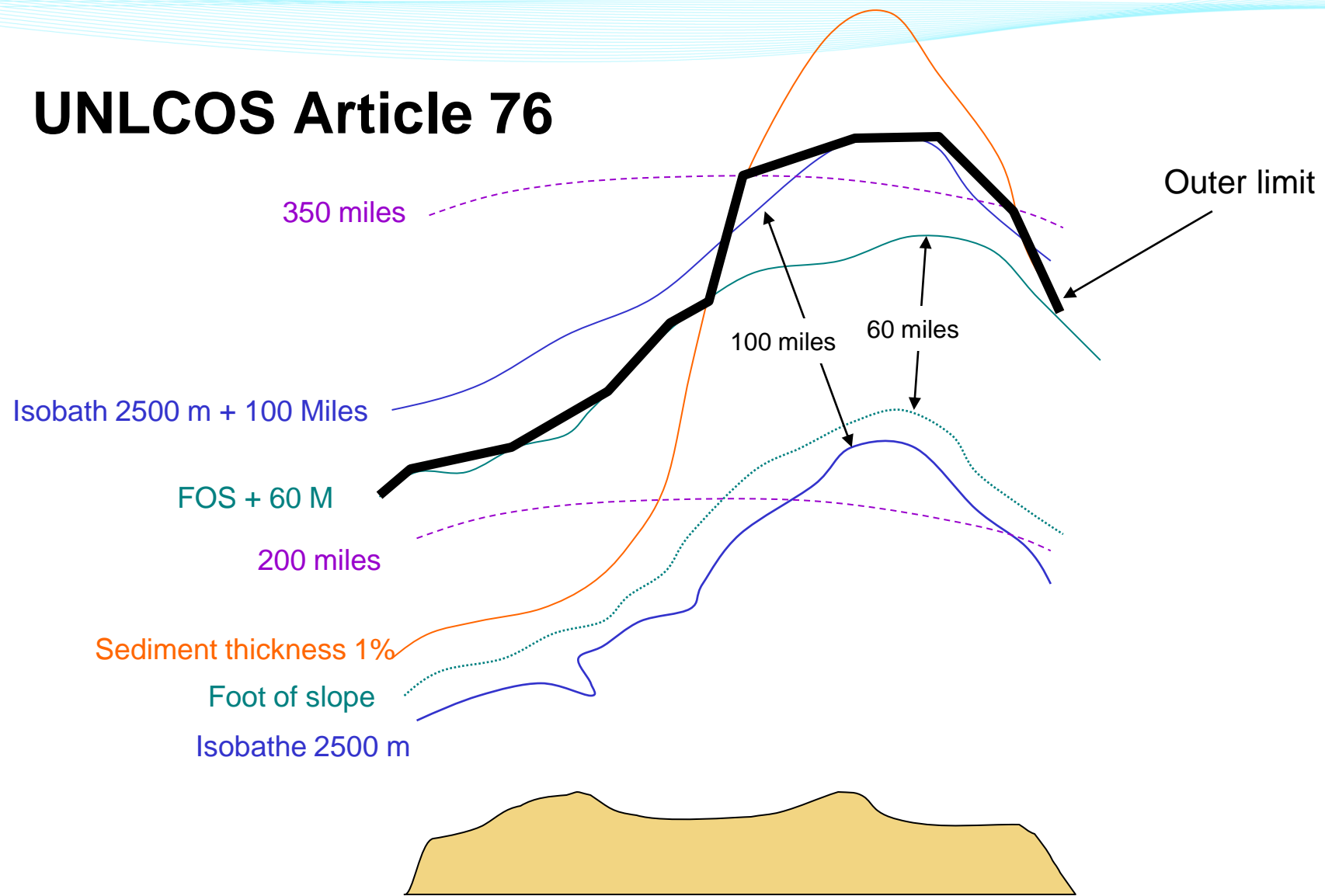
# UNLCOS Article 76

- The Gardiner criterion





# UNLCOS Article 76



# Claiming extended C.S

- The State makes a submission to the U.N containing data and documents to support its claim
- The submission is examined by the Commission for the Limits of the Continental Shelf (CLCS)
- The CLCS is composed of 21 scientific experts elected among states parties to the convention.
- The CLCS examines the E.C.S limits submitted by the State and produces recommendations.



# CLCS Scientific and technical guidelines

In 1999, the CLCS adopted its scientific and technical guidelines

- *primarily intended to assist coastal States in preparing their submissions.*
- *also designed to provide an important scientific and technical reference for the consideration of these submissions and the preparation of the Commission's own recommendations.*
- *form the basis on which the Commission shall provide advice, if requested by coastal States during the preparation of their necessary data.*



# CLCS Scientific and technical guidelines

## 4.2. Sources of data and hydrographic measurements

4.2.1. *The complete bathymetric database used in the delineation of the 2,500 m isobath in a submission may only include a combination of the following data:*

- *Single-beam echo sounding measurements;*
- *Multi-beam echo sounding measurements;*
- *Bathymetric side-scan sonar measurements;*
- *Interferometric side-scan sonar measurements; and*
- *Seismic reflection-derived bathymetric measurements.*

# CLCS Scientific and technical guidelines

4.2.6. *Other sources of evidence, such as **satellite altimetry-derived bathymetric data** or imaging side-scan sonar information, **will not be regarded as admissible** for the purpose of delineating the 2,500 m isobath. This information, however, might be useful as additional qualitative information in support of other parts of a submission but will not be considered during the determination of this or any other isobaths. However, this data will be considered **admissible as supporting information in a submission**.*

# Global bathymetric models and Article 76

- *Altimetry predicted and Gebco bathymetric models are not acceptable to determine E.C.S limits.*
- *However, they are the only comprehensive data sources in offshore areas concerned by an E.C.S submission*
- *Although they are not acceptable to locate important features like the 2,500 m isobath and the foot of slope in the final submission...*
- *...they are widely used at different stages while building an E.C.S submission*



# E.C.S claiming process

- *Desktop study*
- *Data acquisition*
- *Data processing and interpretation*
- *Writing the submission and GIS*
- *Deposit to the U.N*
- *Examination by the CLCS and interactions with the State*
- *Adoption of the recommendation*



# E.C.S claiming process

## ■ *Possibility for a State to provide Preliminary Information before making a full submission :*

- Desktop study only
- Does not require data acquisition before making a full submission

*France has made preliminary information for 3 areas and full submissions for 8 areas.*

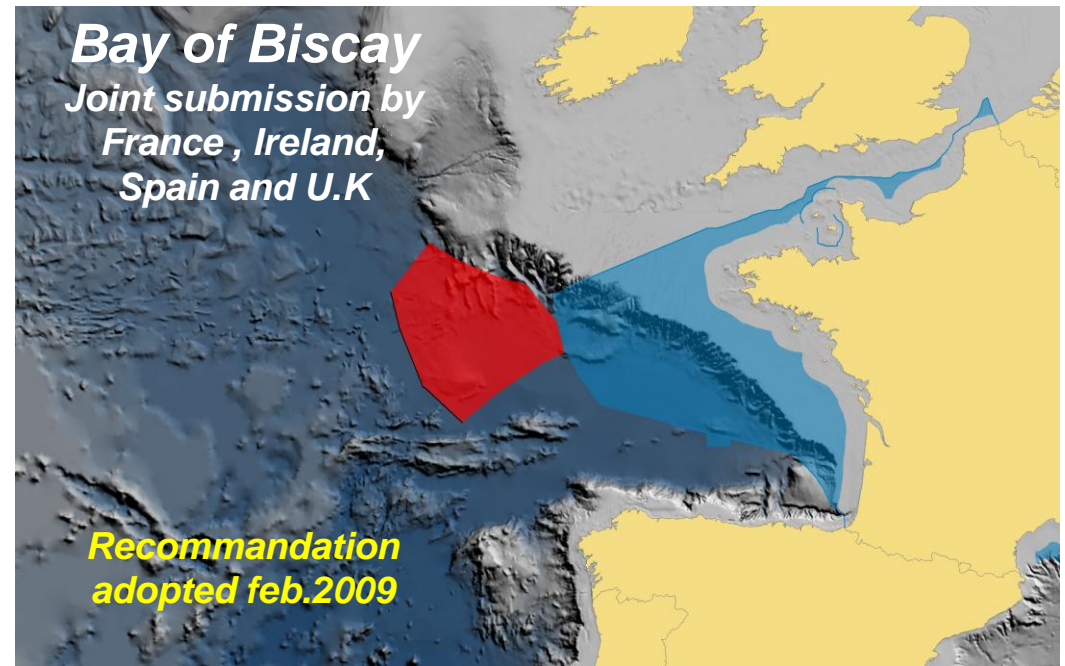
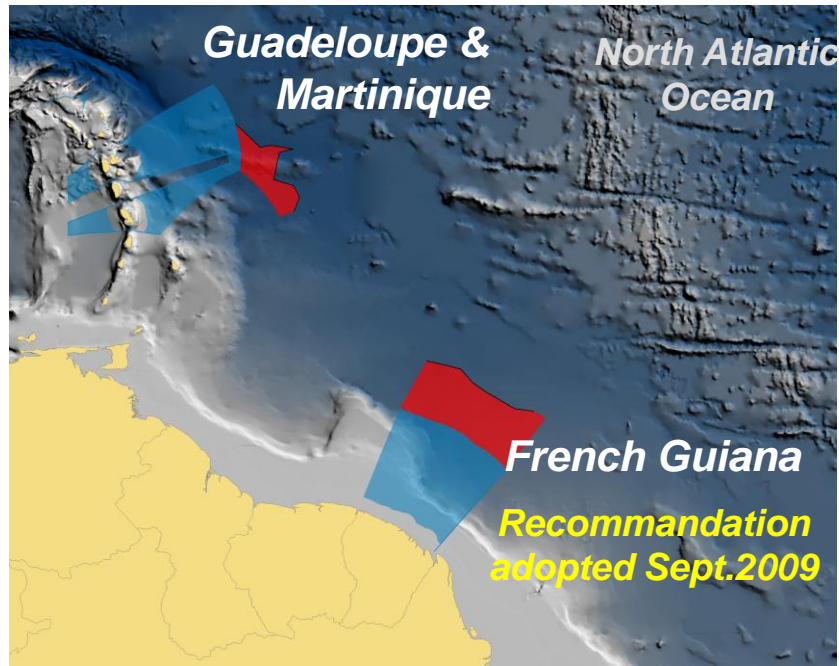
*Two of these 8 submissions are joint submissions.*





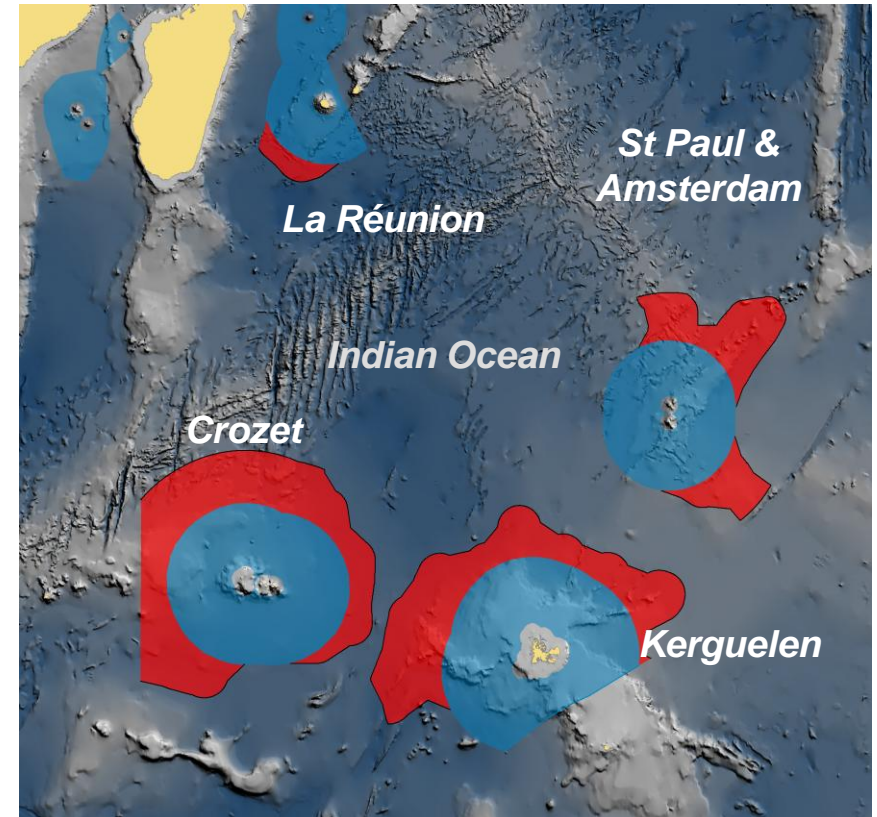
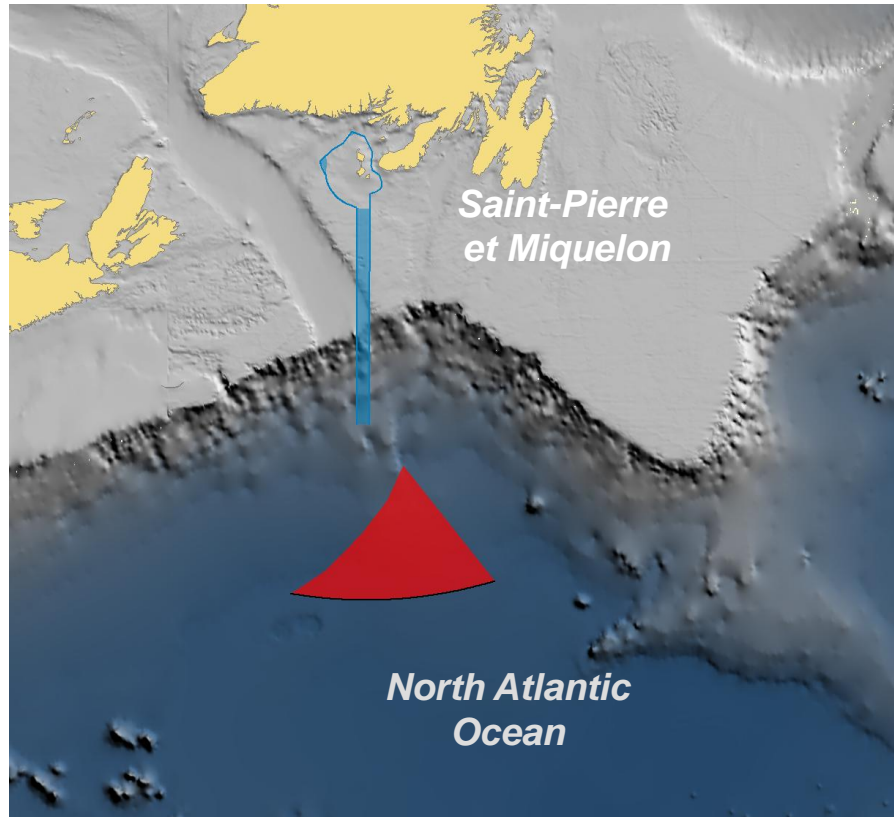
# The E.C.S claimed by France

■ EEZ  
■ E.C.S



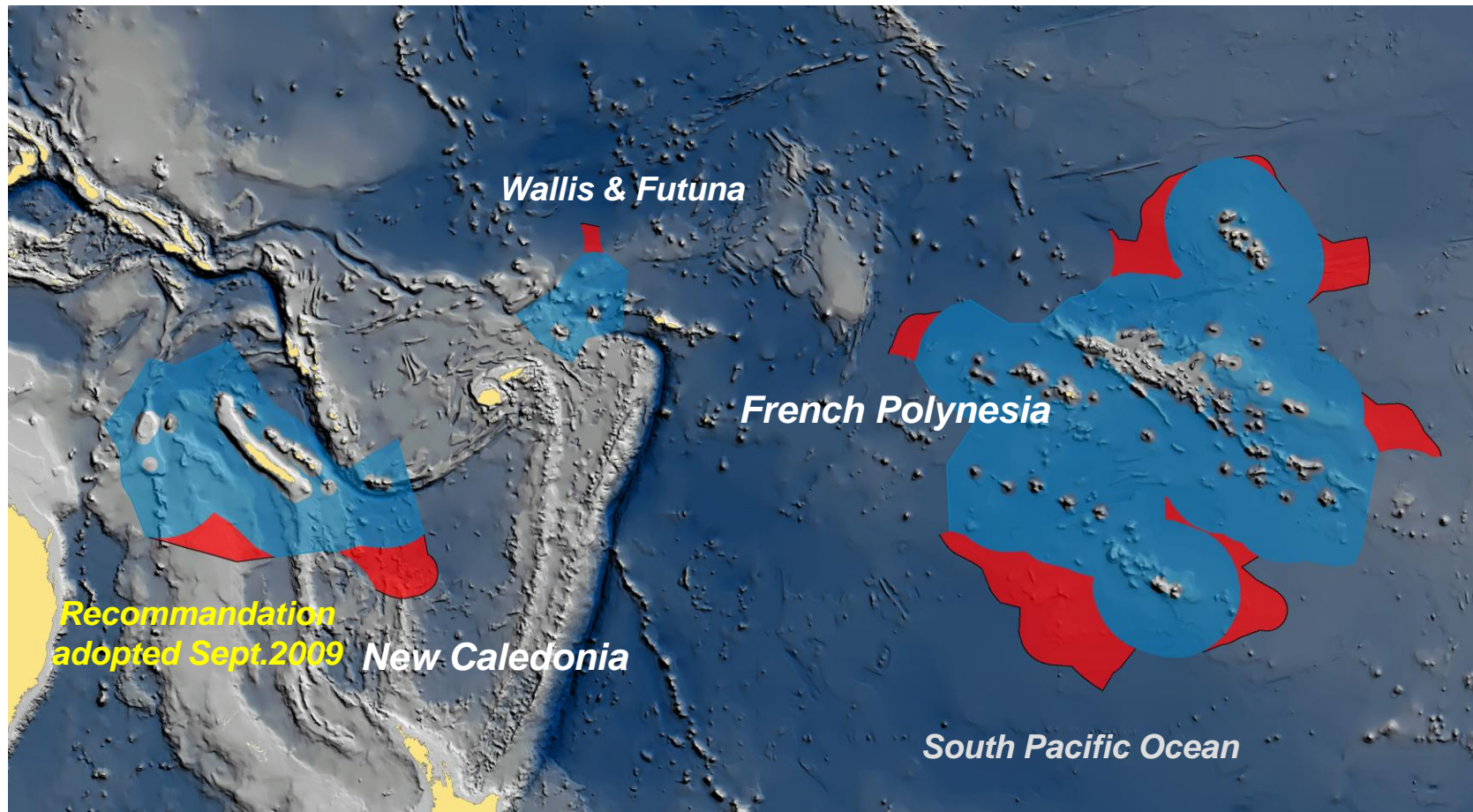
# The E.C.S claimed by France

EEZ  
E.C.S



# The E.C.S claimed by France

EEZ  
E.C.S



# E.C.S claiming process

- *Desktop study*
- *Data acquisition*
- *Data processing and interpretation*
- *Writing the submission and GIS*
- *Deposit to the U.N*
- *Examination by the CLCS and interactions with the State*
- *Adoption of the recommendation*



# The desktop study

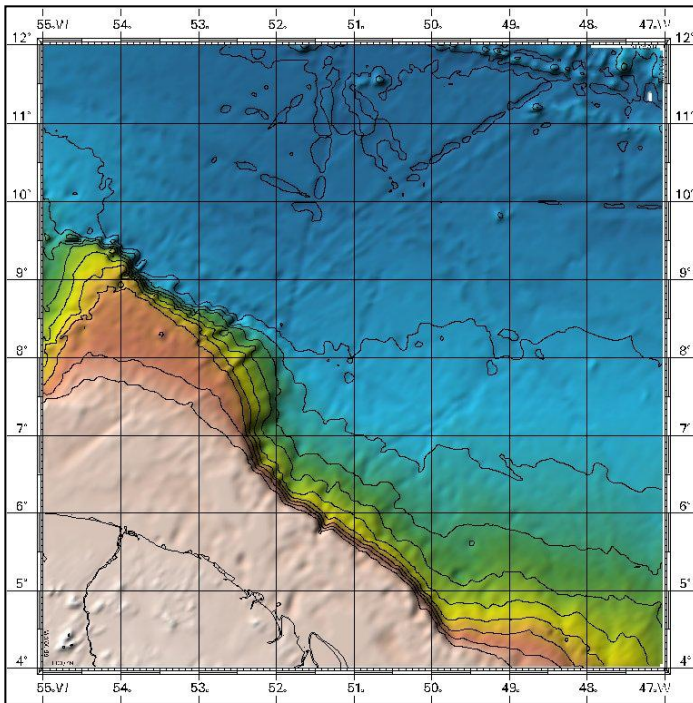
*The desktop study aims at :*

- *Check the States entitlement to E.C.S*
- *Assess limits of the E.C.S*
- *Assess data to be collected at sea*

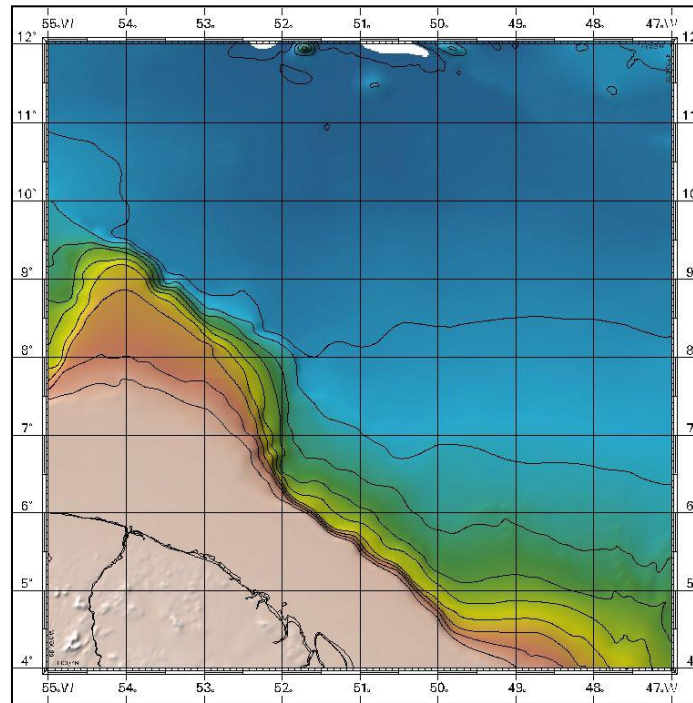


# The desktop study

## *Bathymetric data sources*

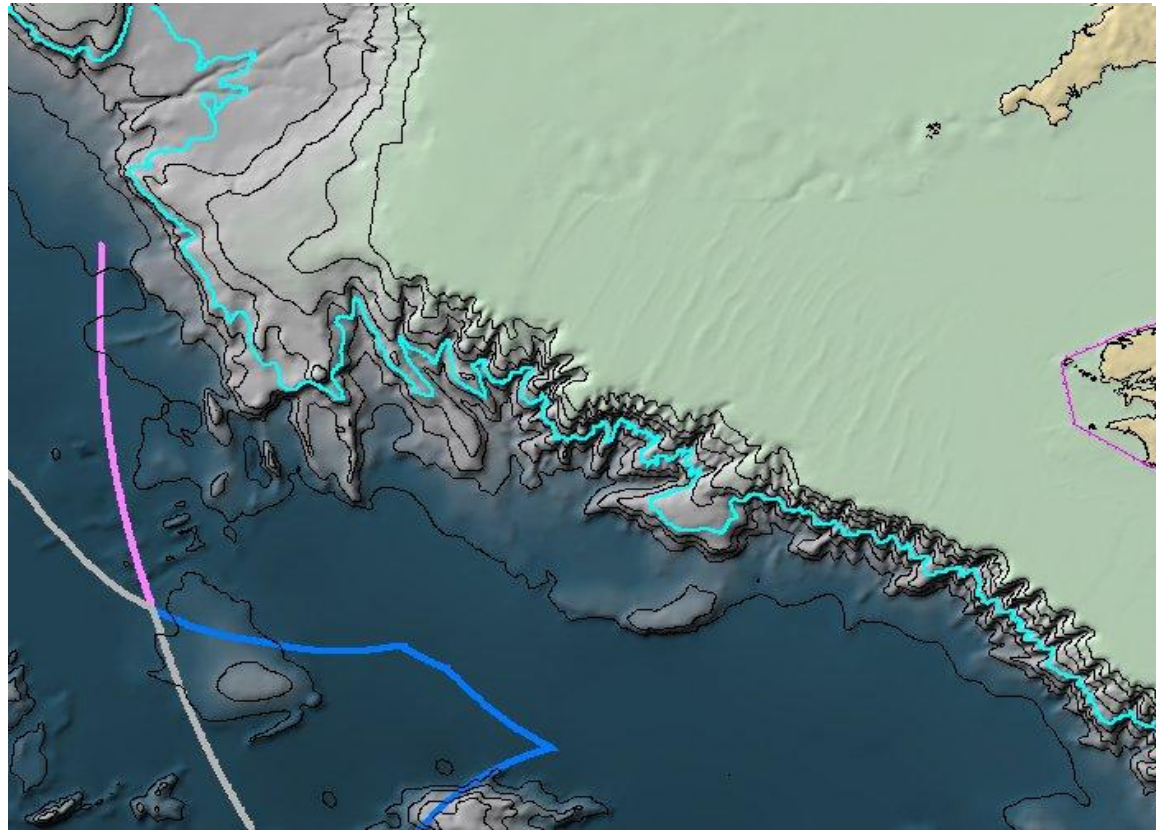


**ETOPO 2**



**GEBCO 1'**

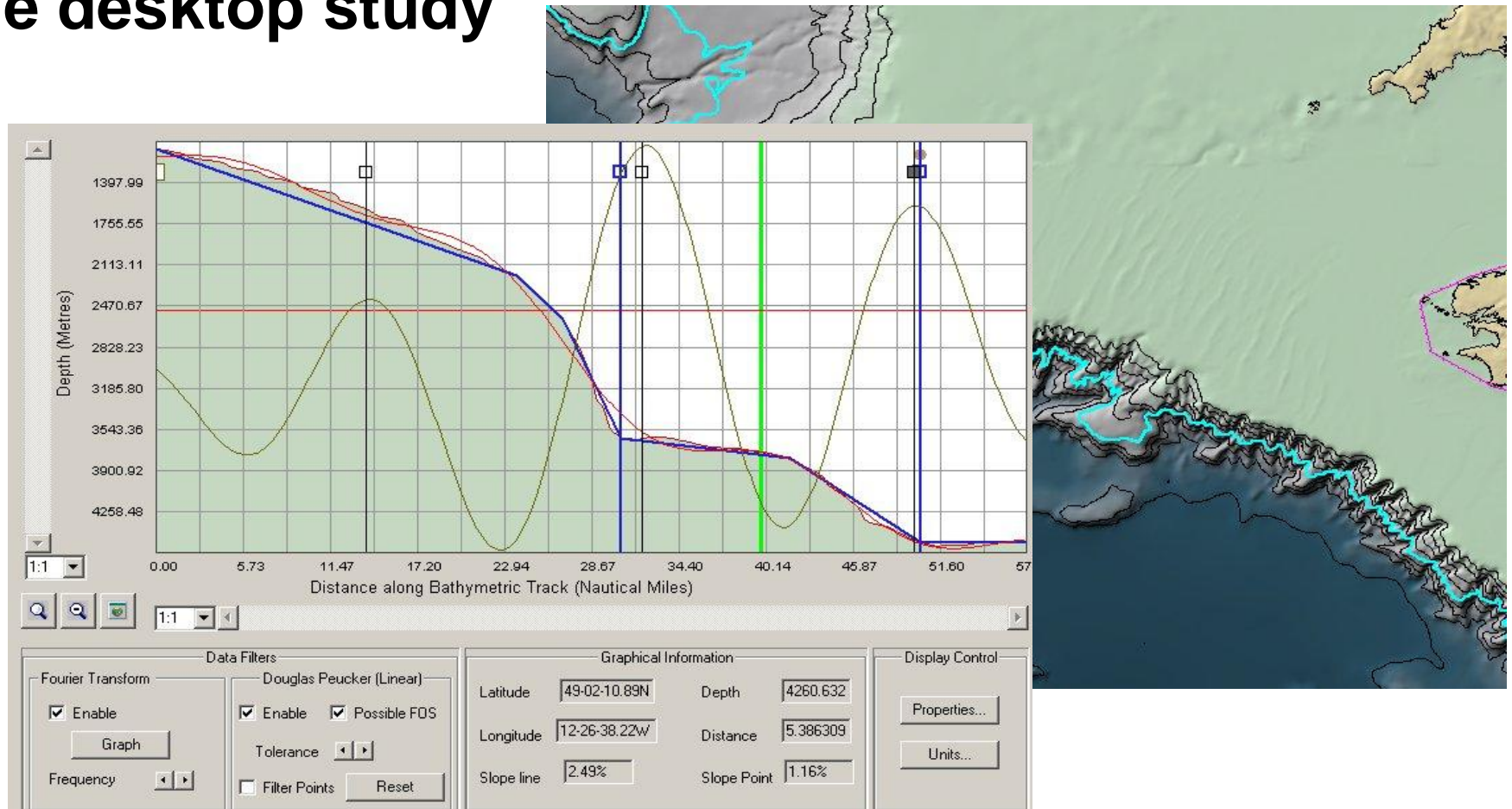
# The desktop study



**Constraint line assesement using Gebco 1' grid**



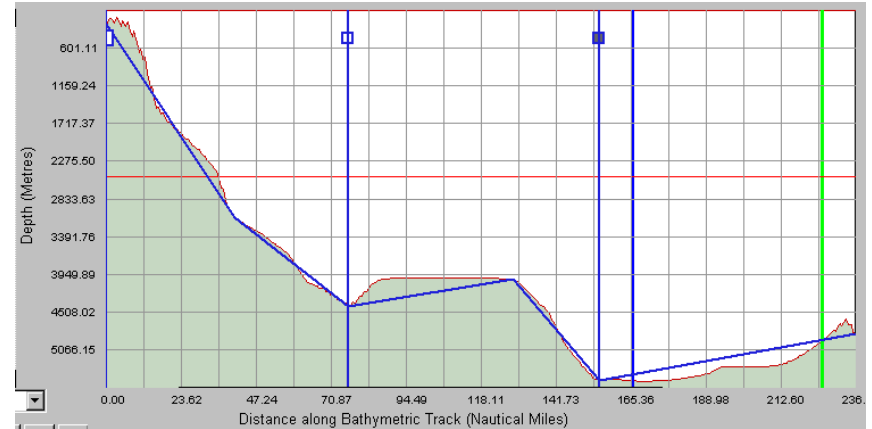
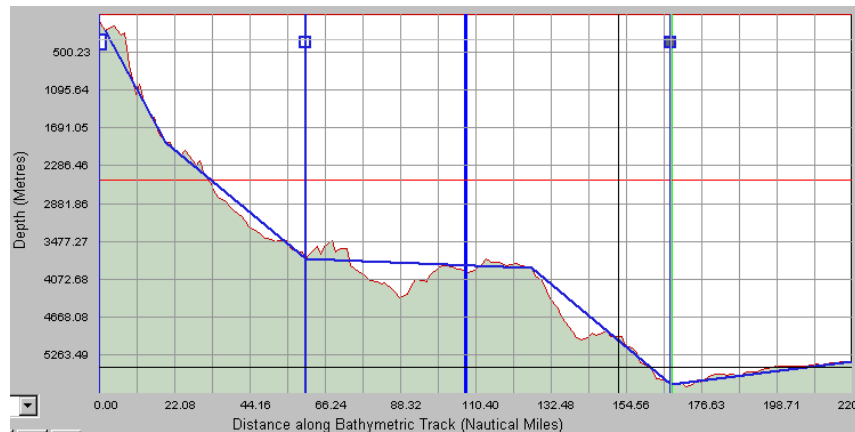
# The desktop study



## Assessing foot of slope (FOS) location on GEBCO 1' Bay of Biscay

# The desktop study

## Assessing FOS location (French Antilles)

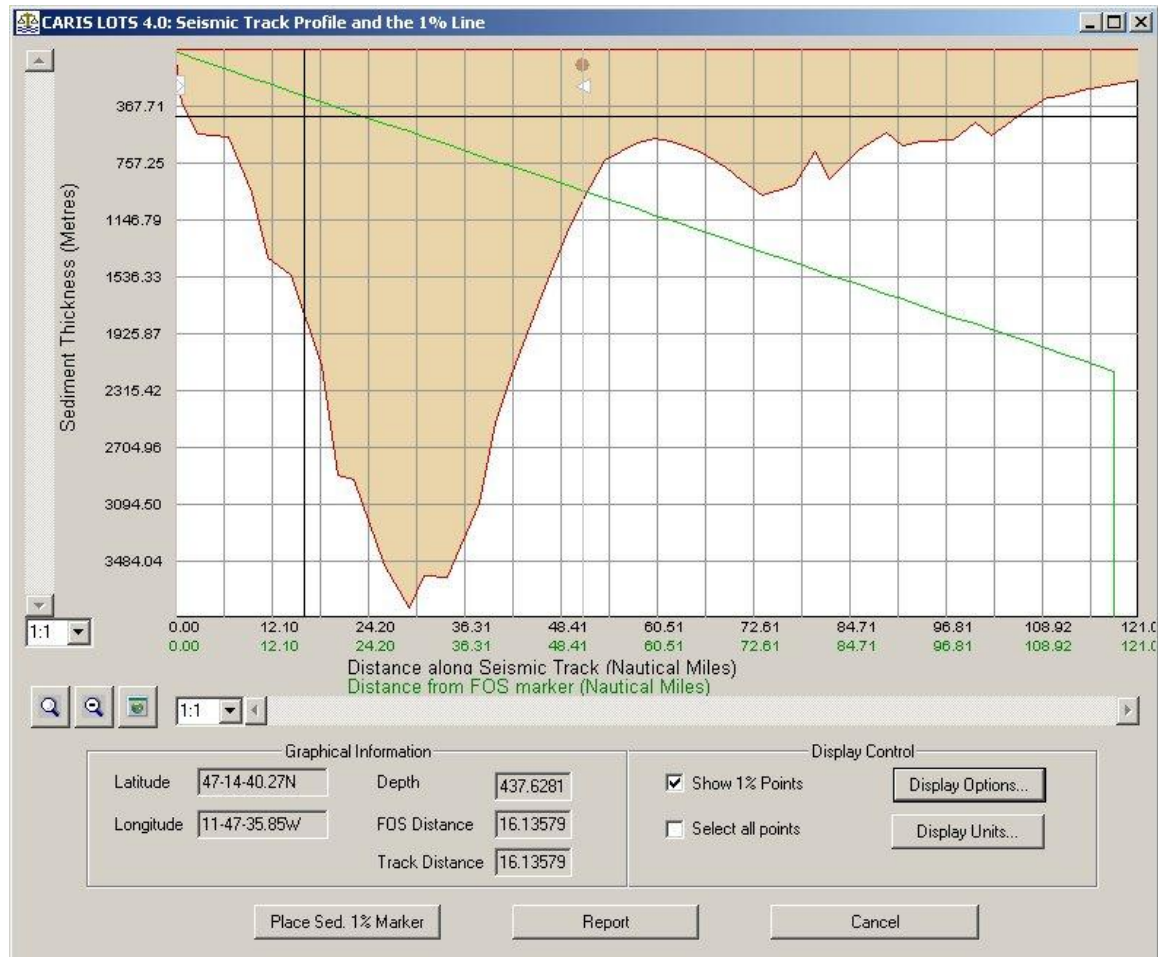


Using Etopo 2'

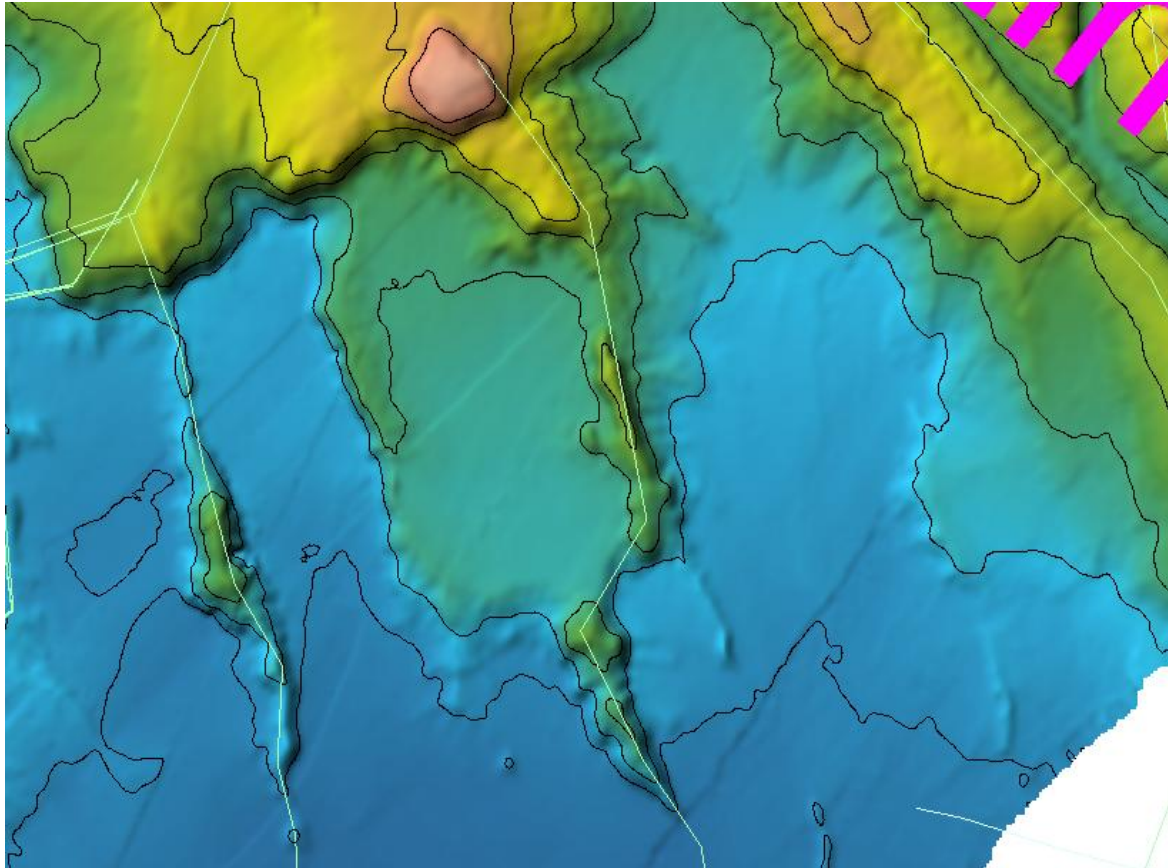
Using GEBCO 1'

# The desktop study

Combined with sediment thickness model to assess Gardiner line

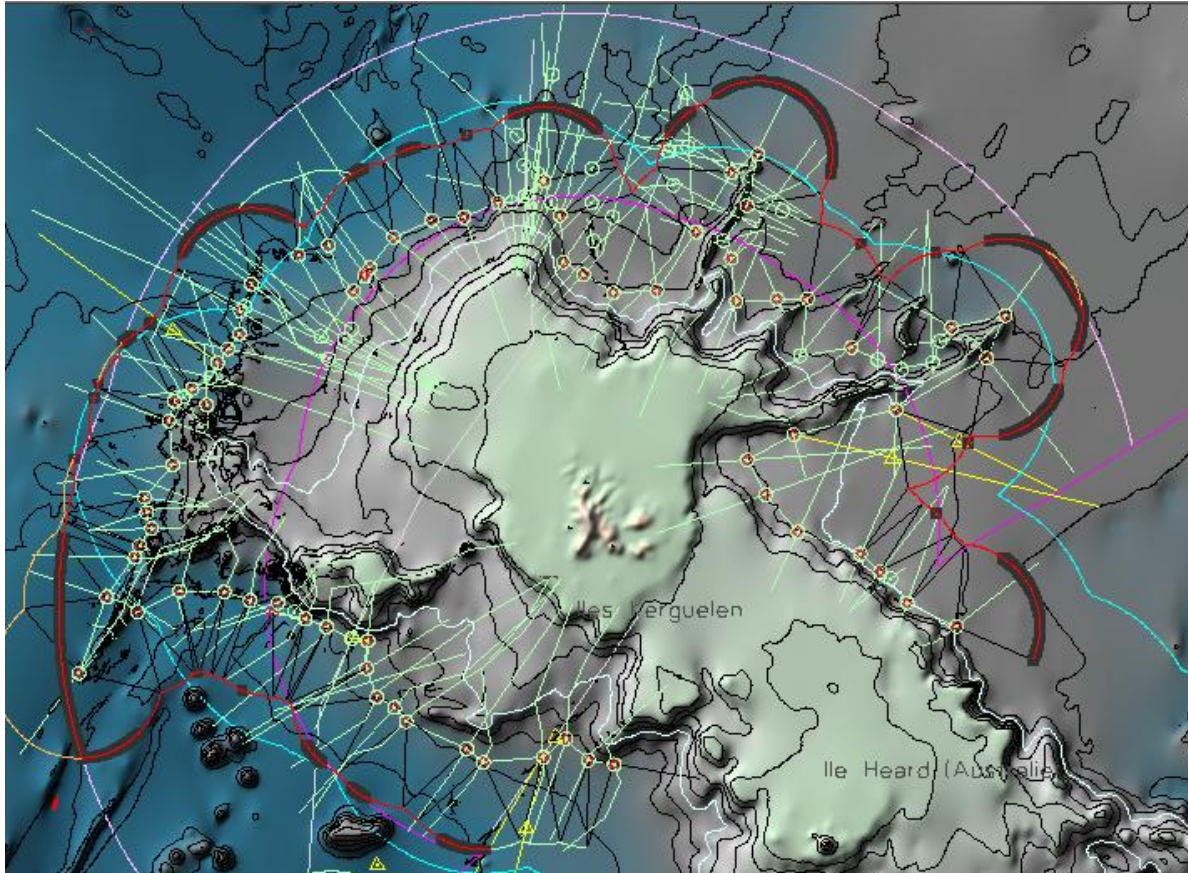


# The desktop study



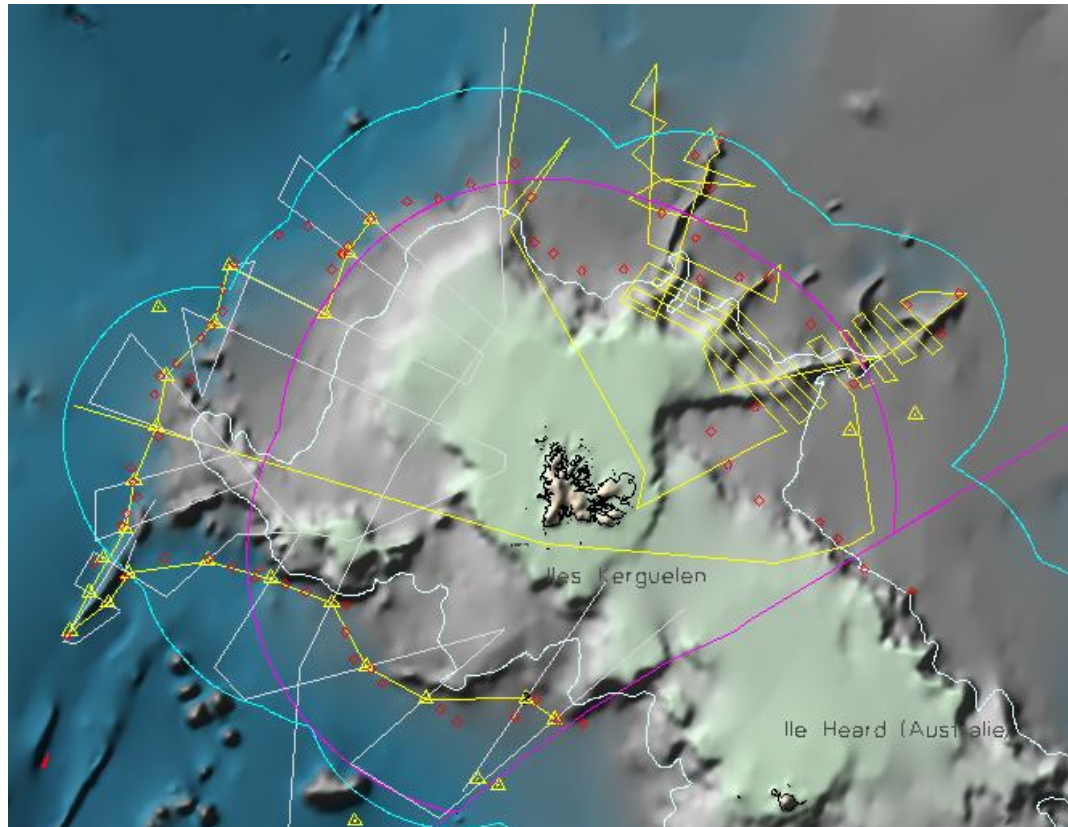
**Finding critical FOS positions (Gebco 1' Bay of Biscay)**

# The desktop study



**Compute 60 M Hedberg line to locate contributing FOSs**

# The desktop study



**Planning Shiptracks - Kerguelen Is.**

# The submission : data acquisition & use of existing data

*For the specific purpose of E.C.S delimitation and claim, France and its partners in joint submissions have collected :*

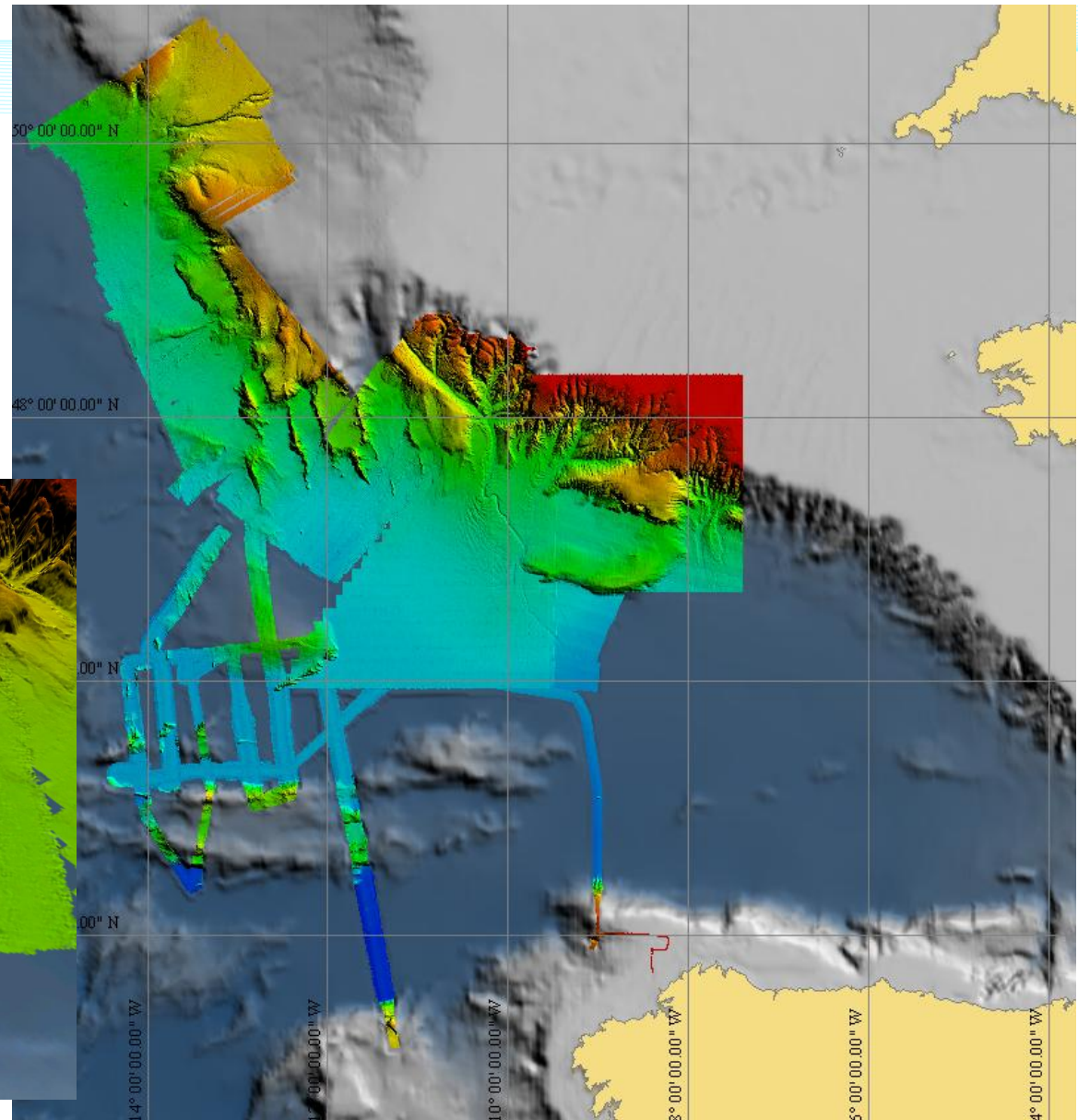
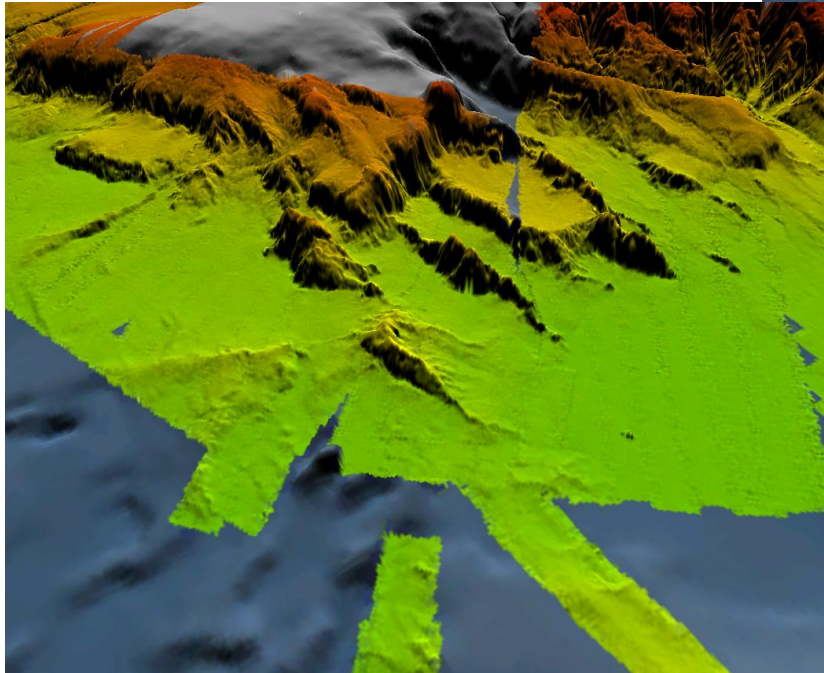
- multibeam echosounder data to prove natural prolongation, locate the foot of slope and the 2,500m isobath
- Gravity and magnetism measurements to support geological considerations
- Seismics to support geological consideration and determine the Gardiner line when where it is likely to overcome the Hedberg line



# MBES acquisition

*Bay of Biscay*

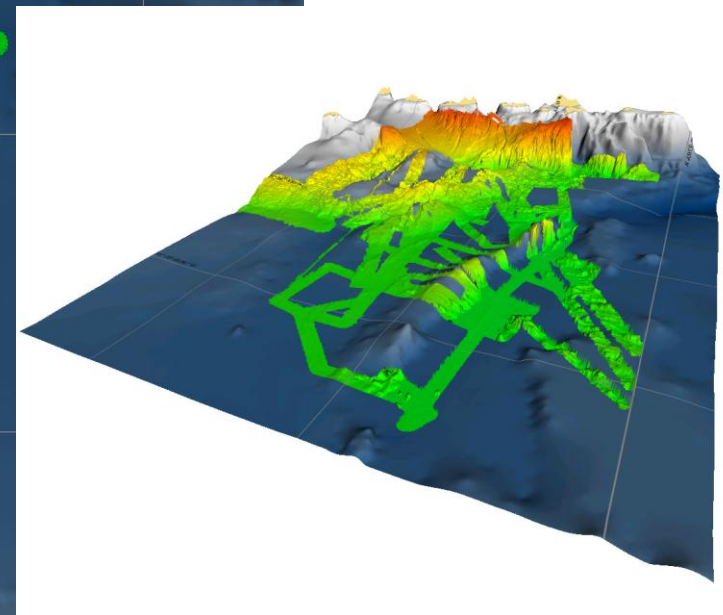
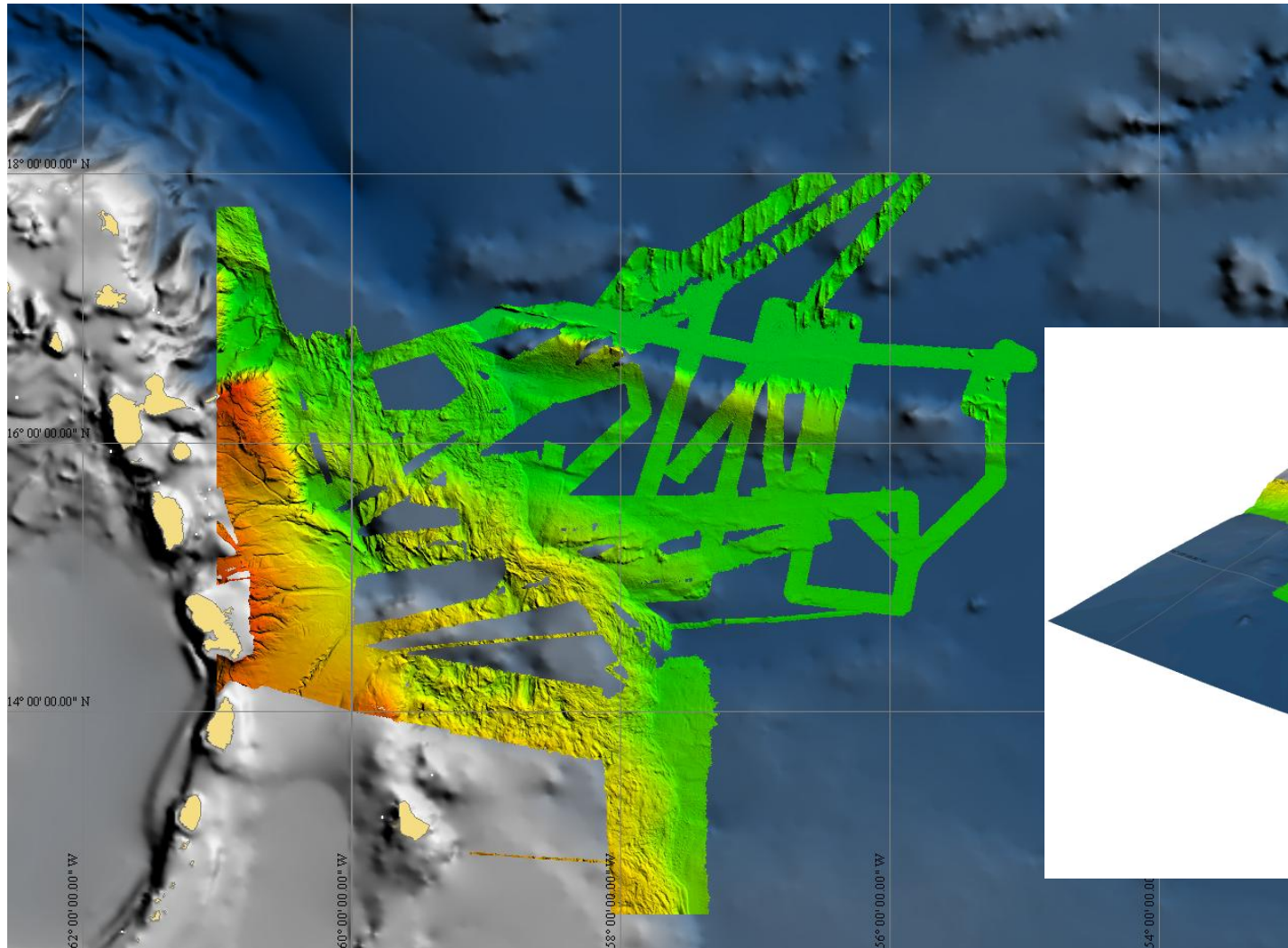
*(with Ireland, Spain and U.K)*





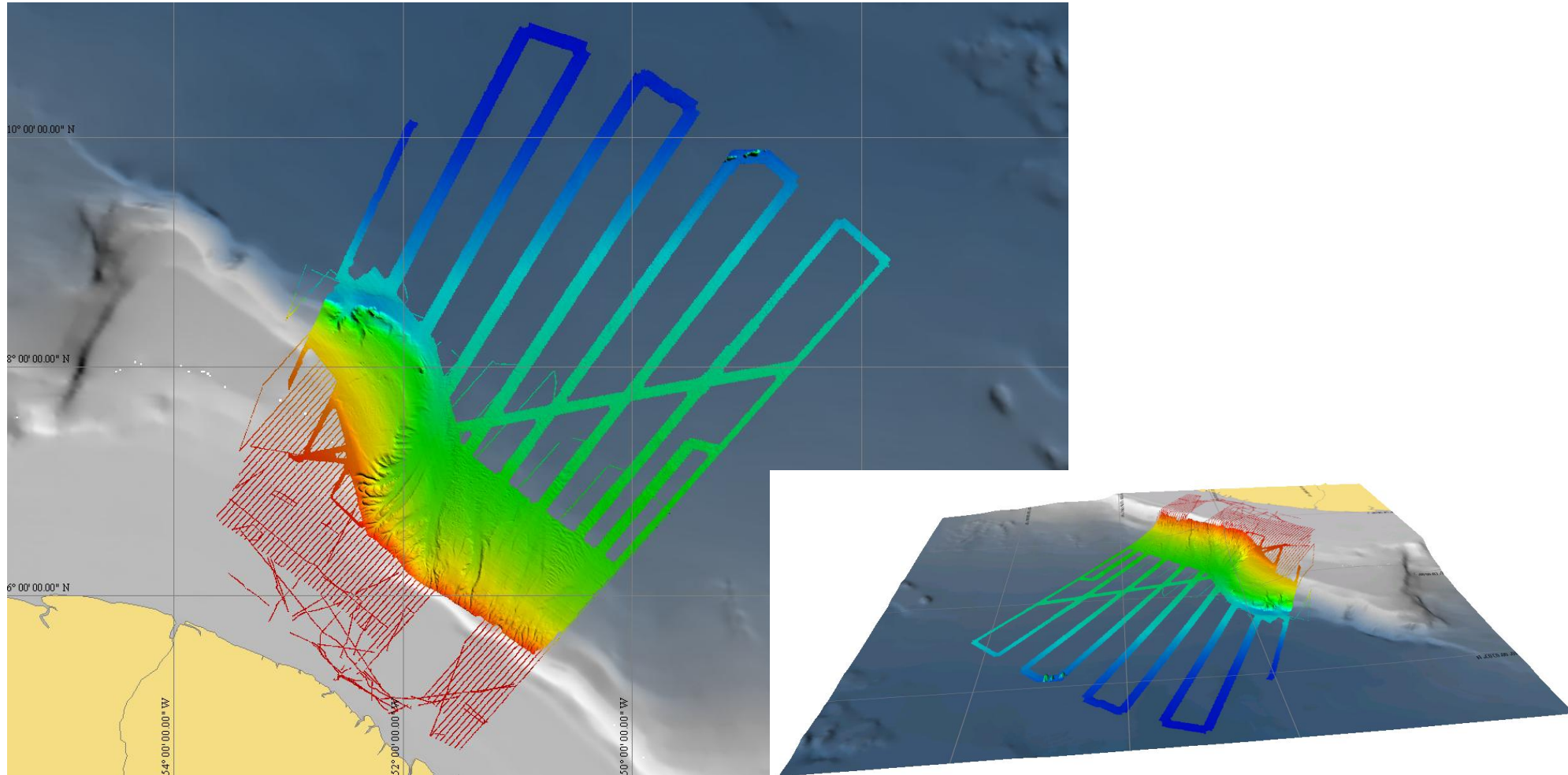
# MBES acquisition

# French Antilles



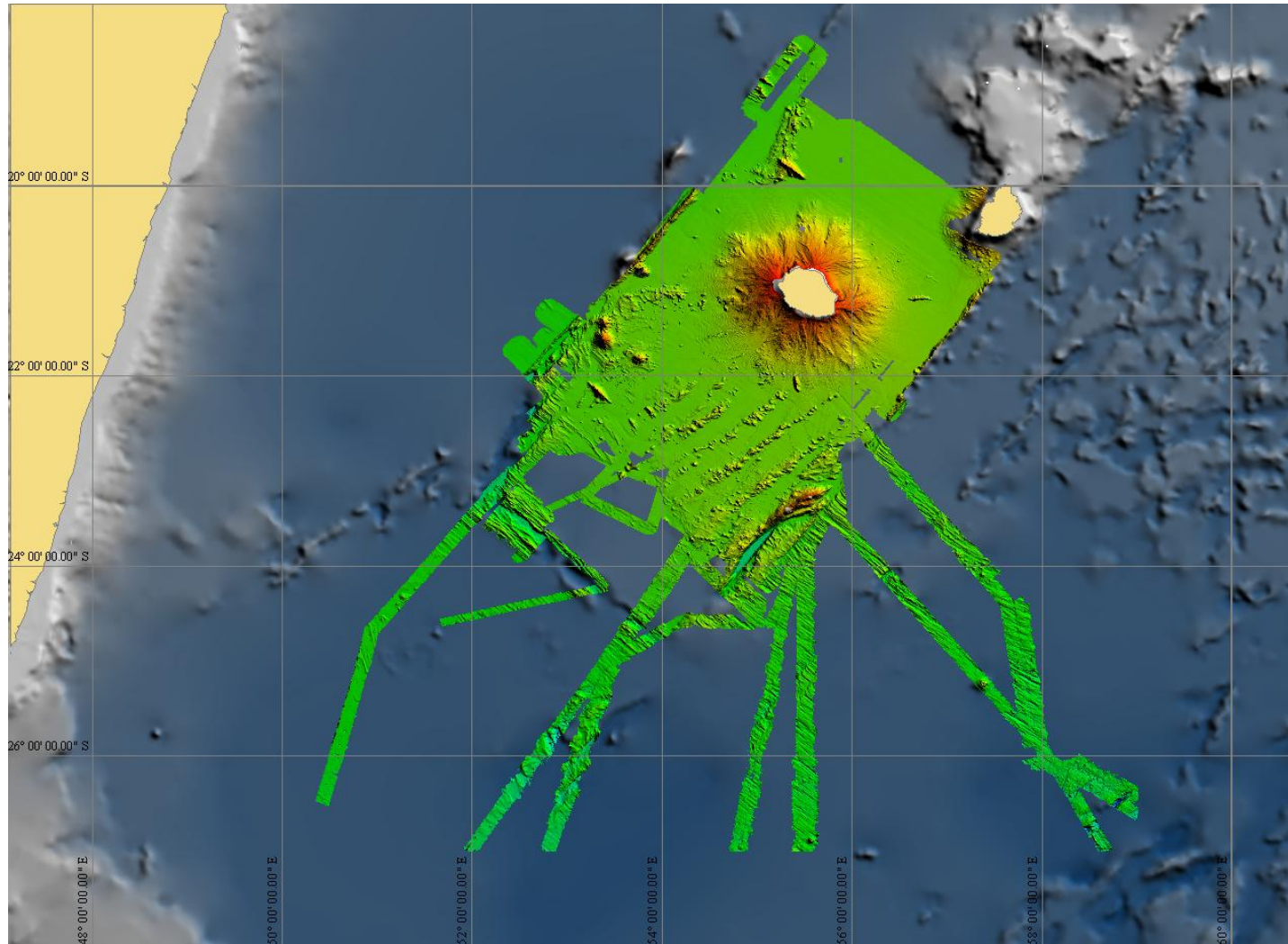
# MBES acquisition

# French Guiana



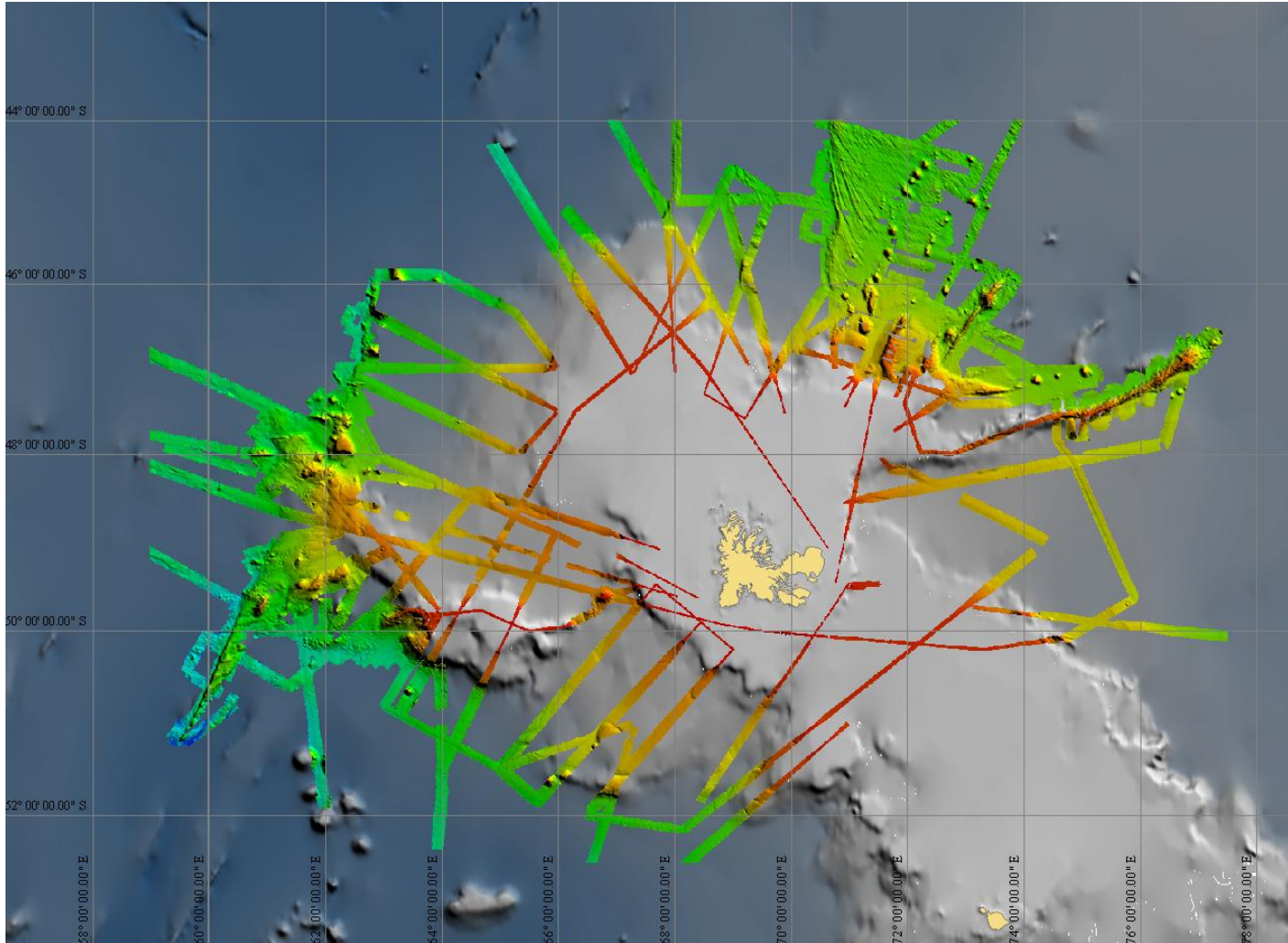
# MBES acquisition

# La Réunion



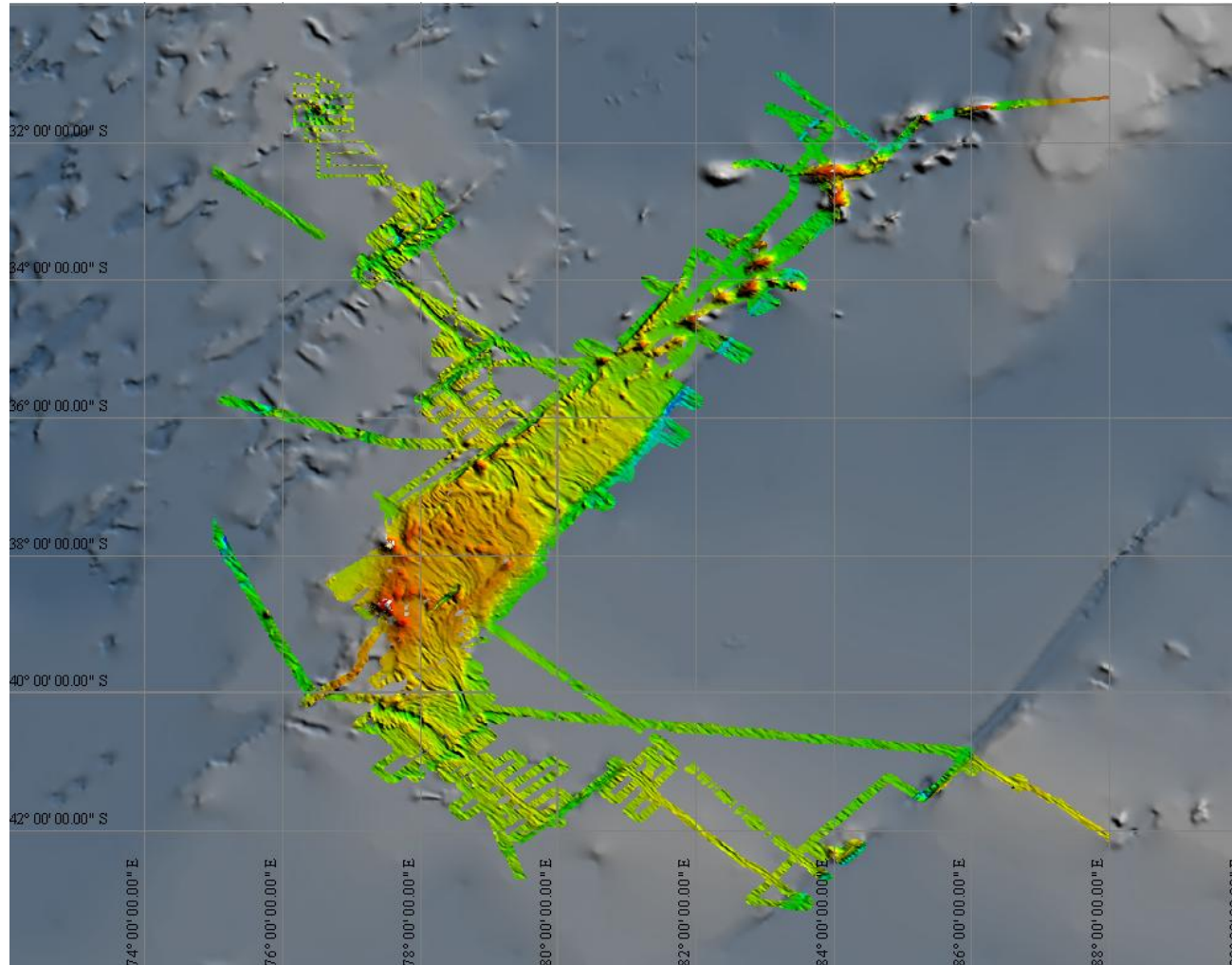
# MBES DATA

## *Kerguelen*



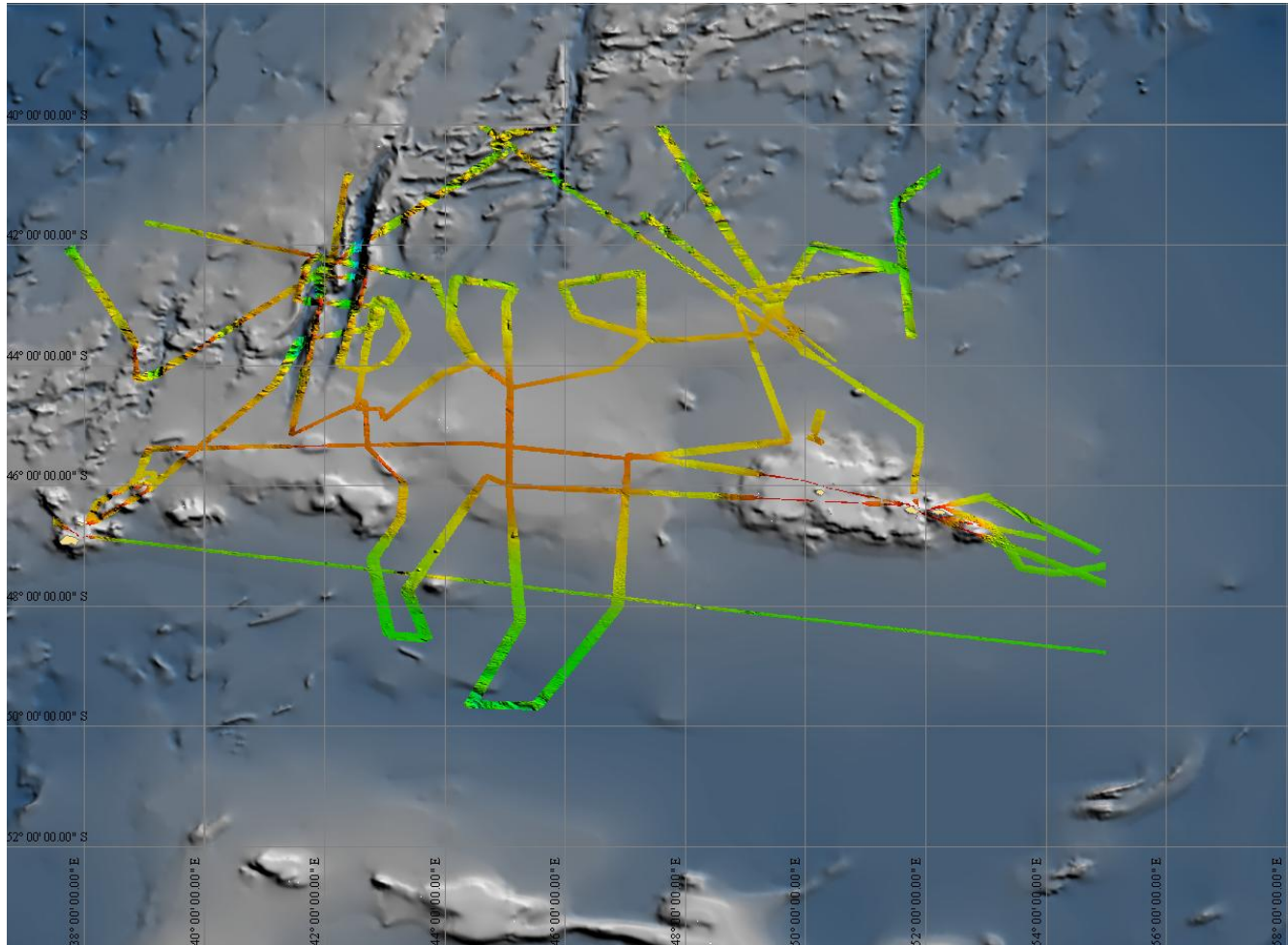
# MBES acquisition

## *Saint-Paul & Amsterdam*



# MBES acquisition

*Crozet (FR) and Prince Edward Is. (S.A)*



# The submission & its examination by the CLCS

## *Use of bathymetric data*

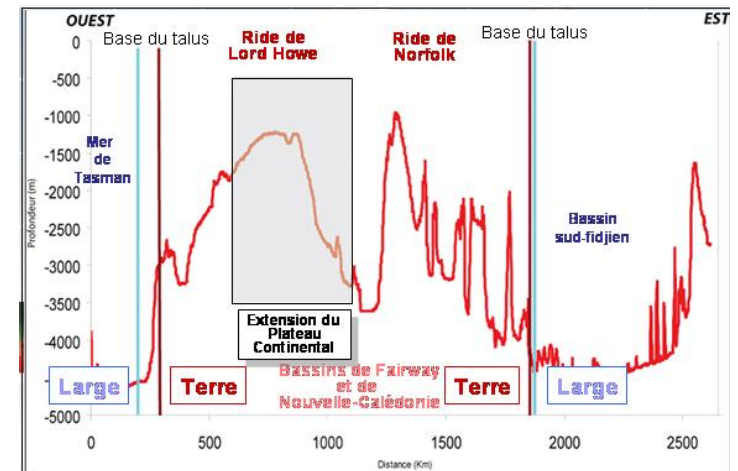
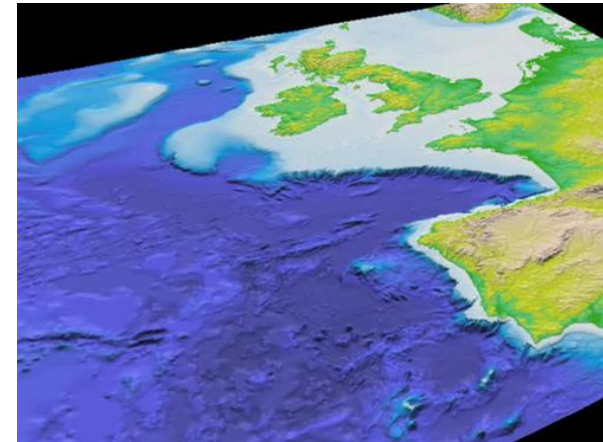
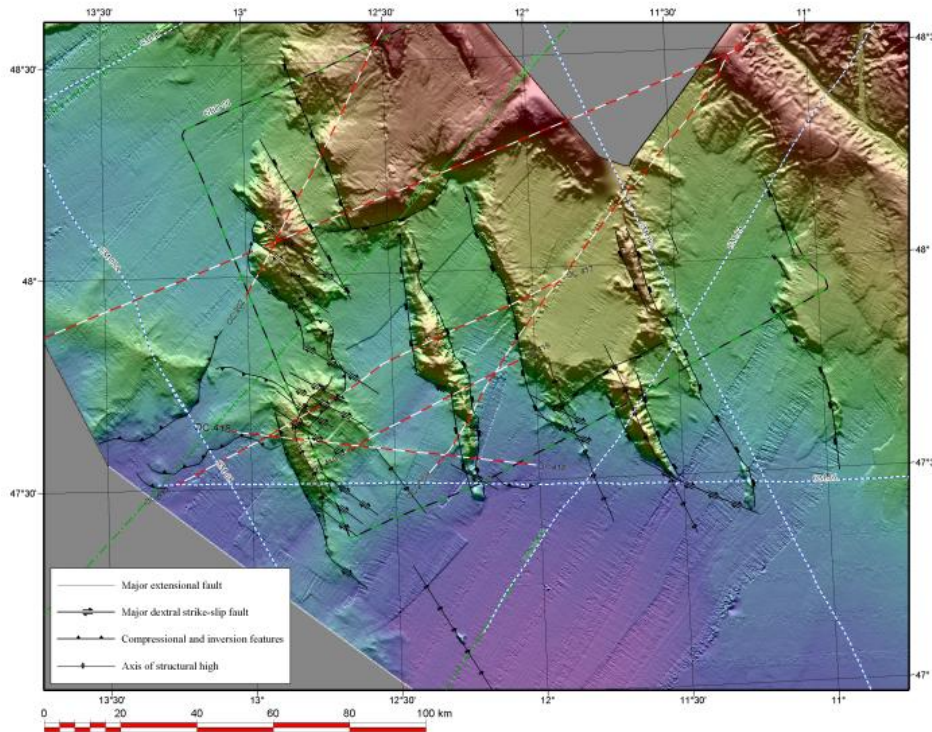
***Bathymetric data are mainly used to :***

- ***Prove natural prolongation***
  - Support geological context (MBES + global)
  - Show morphologic continuity to FOS (MBES)
- ***Locate 2,500m isobath***
- ***Locate the base of slope :***
  - FOS is at the maximum change of gradient at the base of the slope (MBES)
  - Is also supported by geological and geophysical considerations (geophysical, MBES, global)
- ***Locate FOS***
  - By calculating second derivative grids (MBES)

# The submission & its examination by the CLCS

## *Use of bathymetric data*

- Prove natural prolongation
  - Support geological context





# The submission & its examination by the CLCS

## *Use of bathymetric data*

- Locate 2,500m isobath

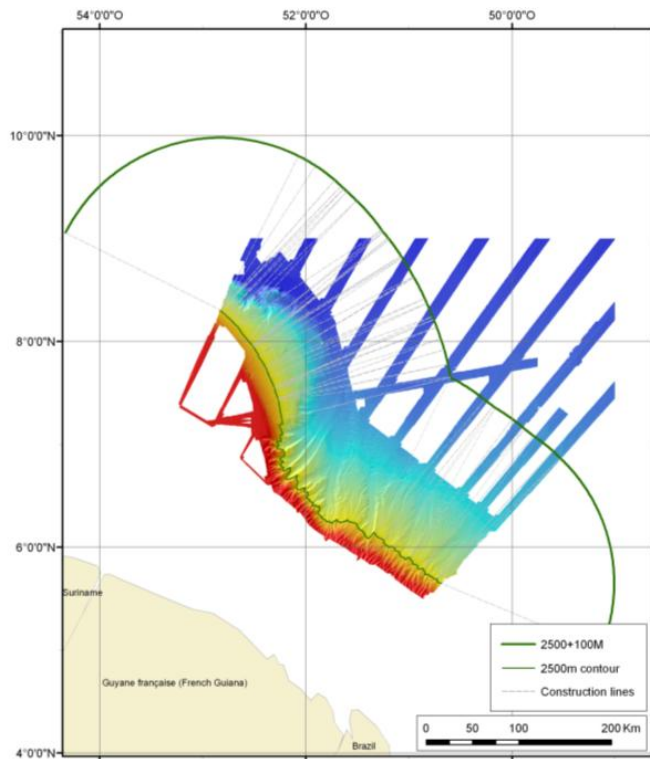
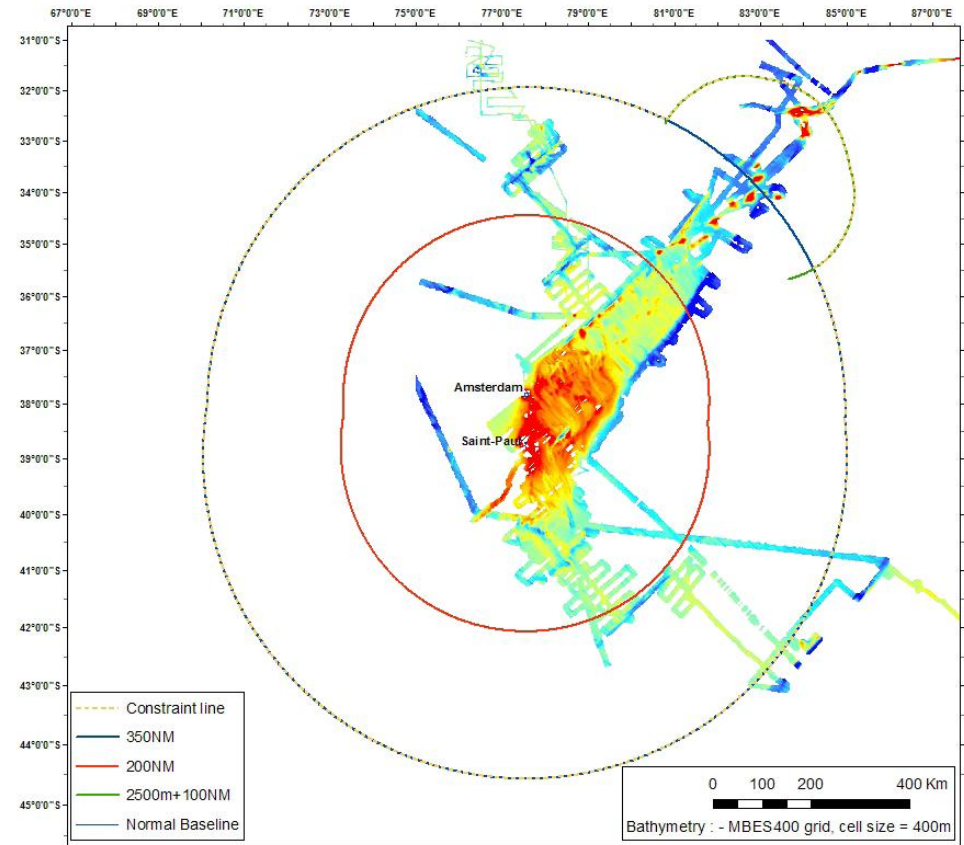


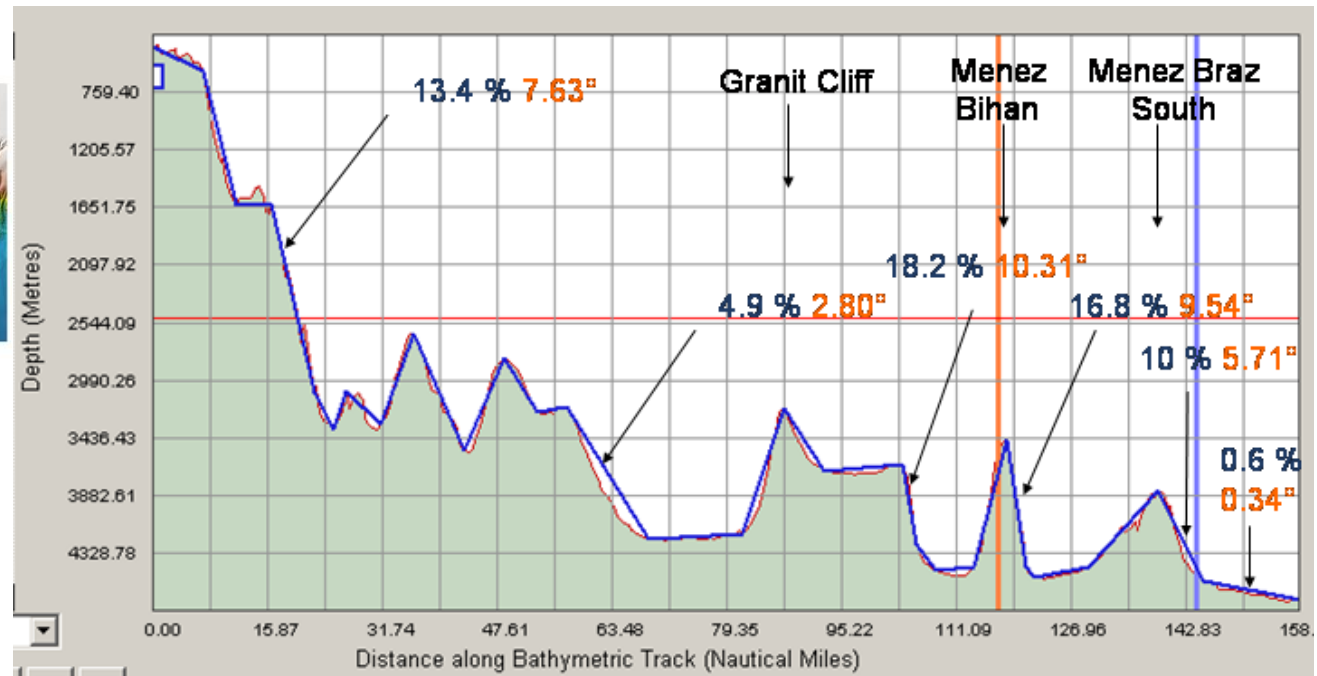
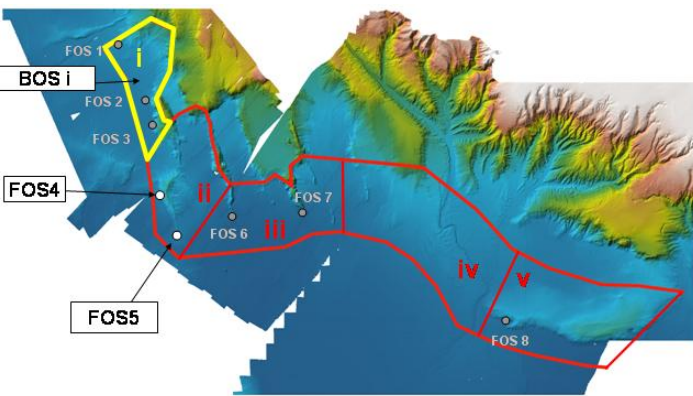
Figure 6-3 : isobathe 2500m + 100M



# The submission & its examination by the CLCS

## *Use of bathymetric data*

- Locate the base of slope :



Base of the slope region :

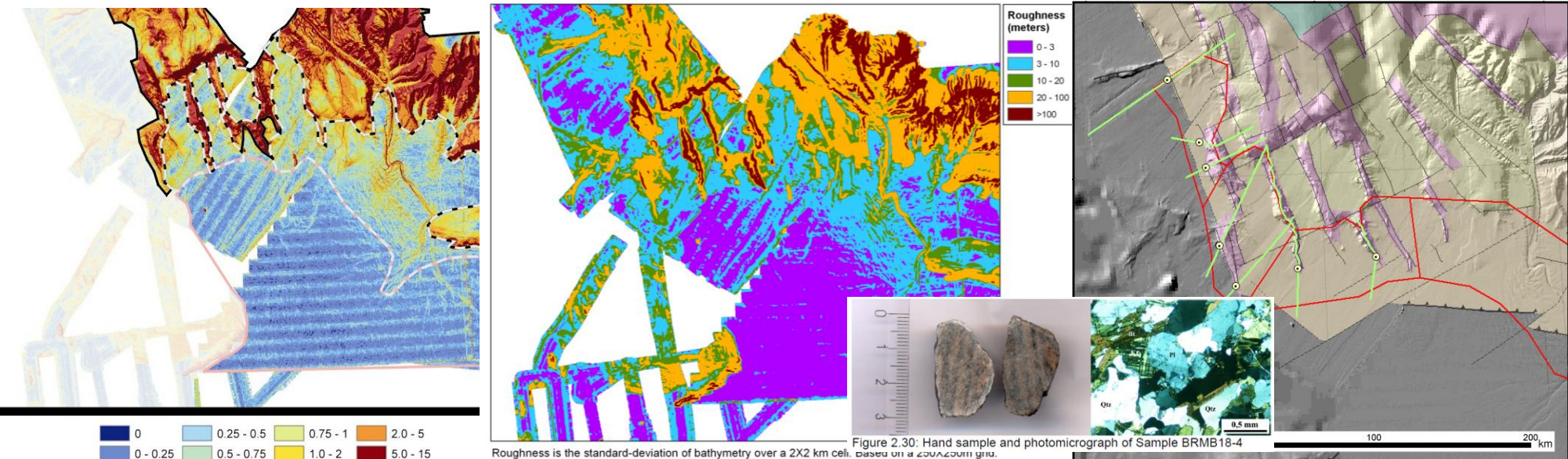
landward limit

seaward limit

# The submission & its examination by the CLCS

## *Use of bathymetric data*

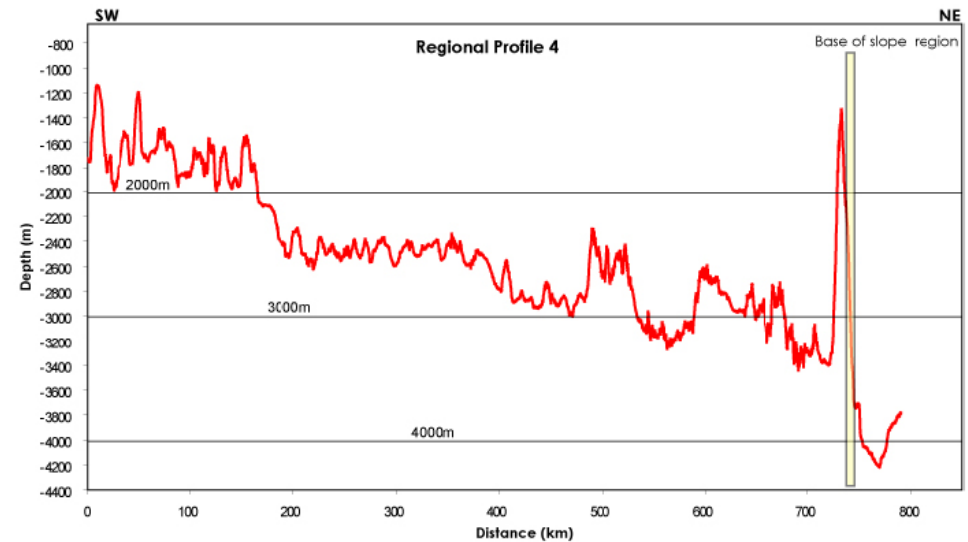
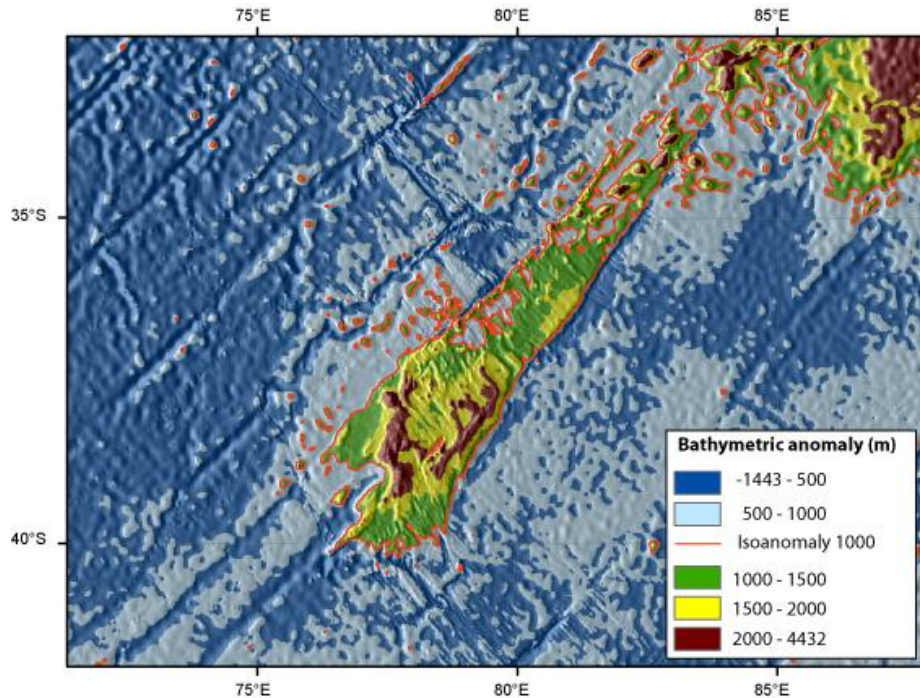
- Locate the base of slope :supported by geological and geophysical considerations (geophysical, MBES, global)



# The submission & its examination by the CLCS

## *Use of bathymetric data*

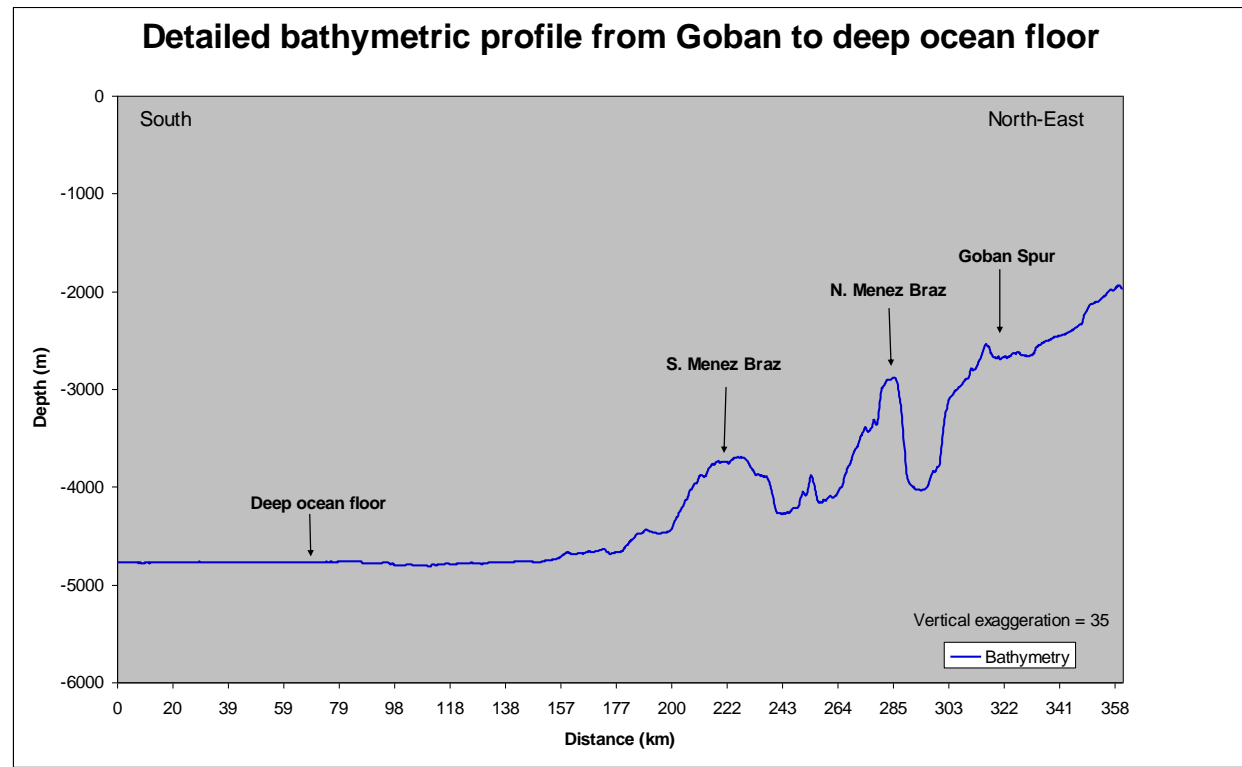
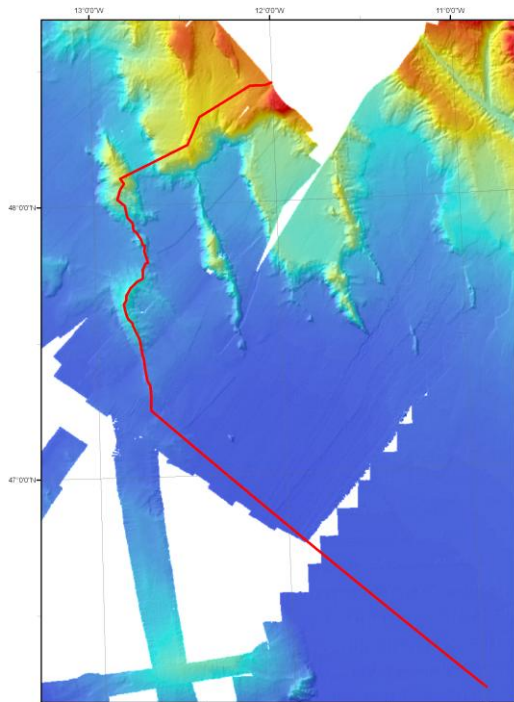
- Locate the base of slope :supported by geological and geophysical considerations (geophysical, MBES, global)



# The submission & its examination by the CLCS

## *Use of bathymetric data*

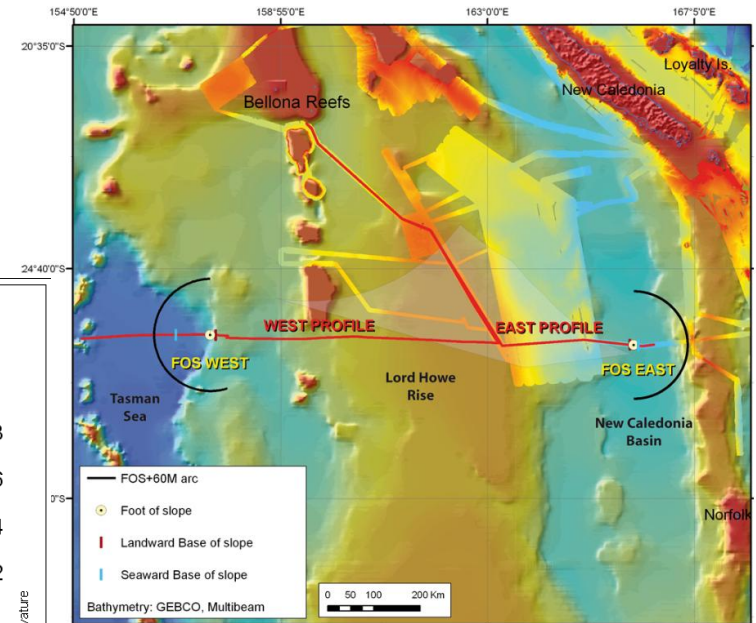
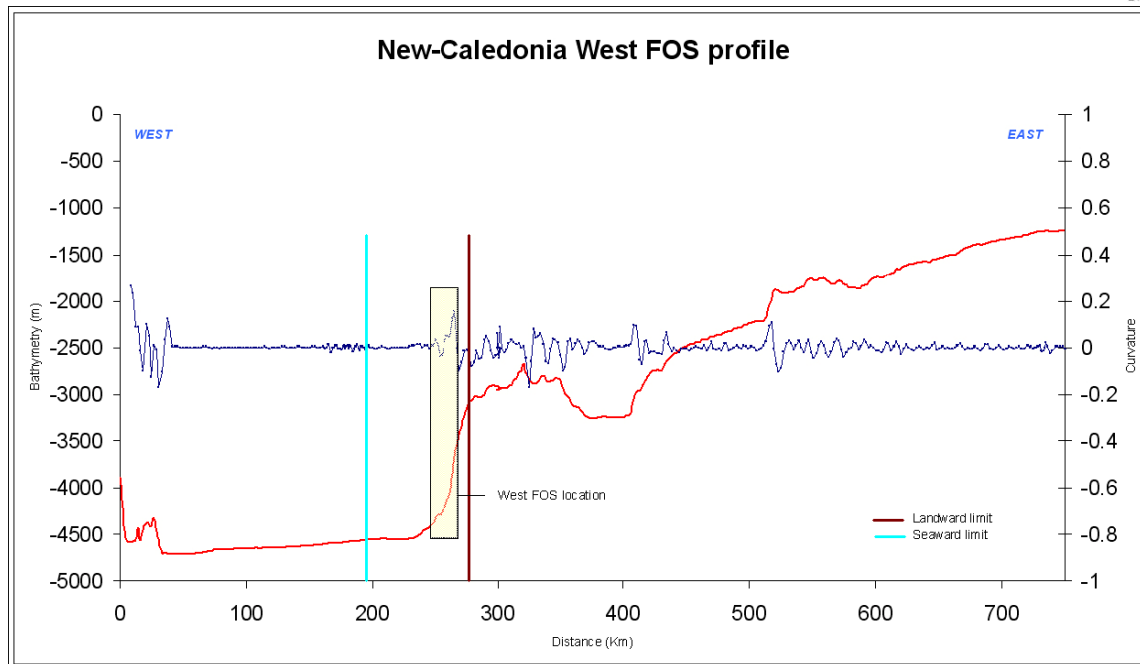
- Prove natural prolongation - Show morphologic continuity to FOS (MBES)



# The submission & its examination by the CLCS

## *Use of bathymetric data*

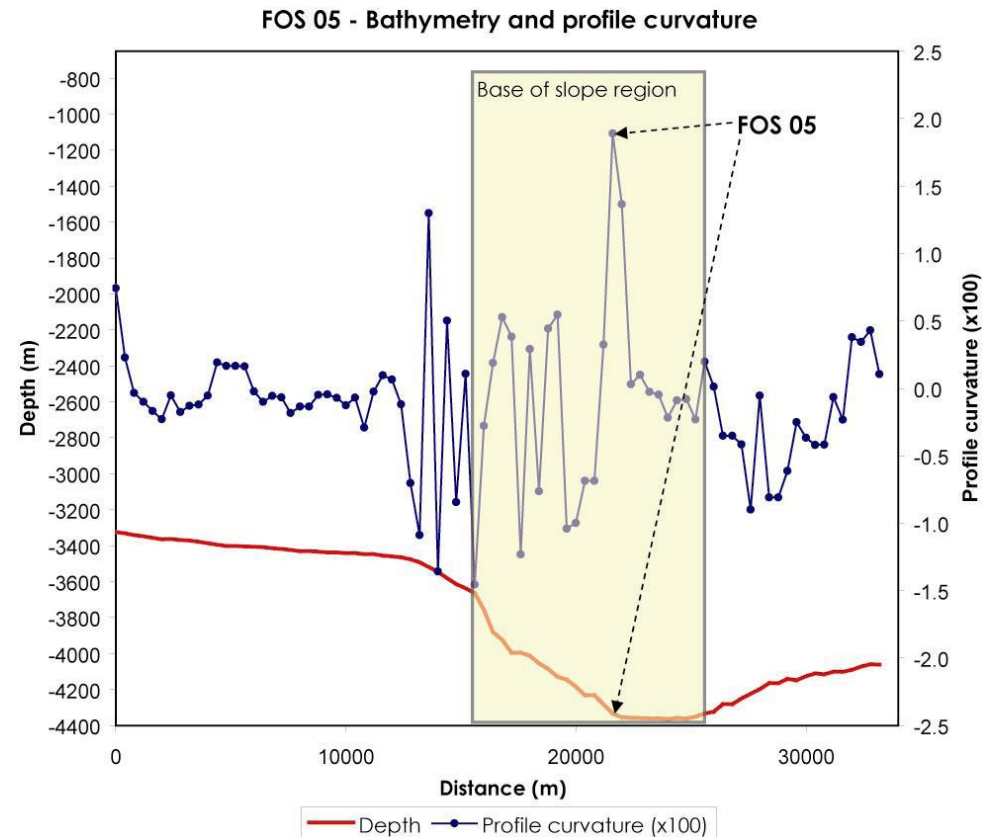
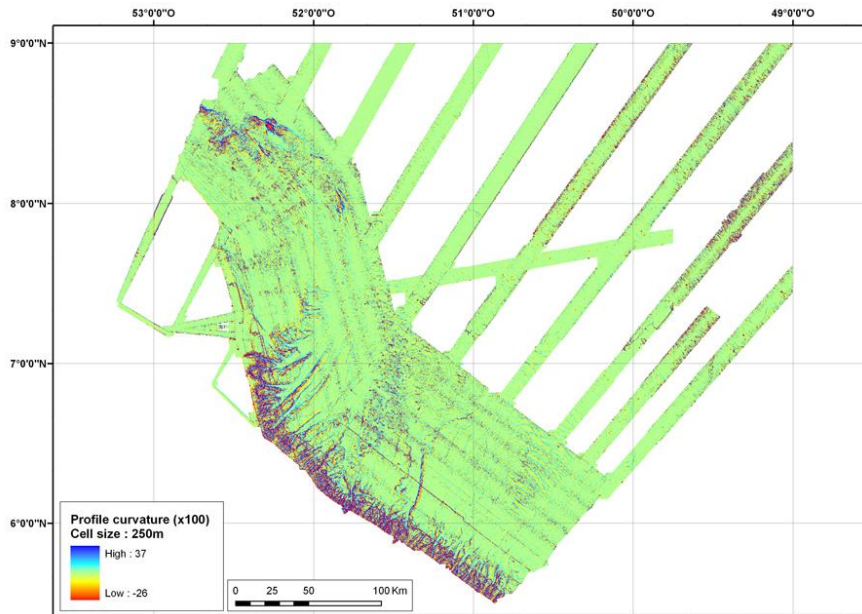
- Prove natural prolongation
  - Show morphologic continuity to FOS (MBES)



# The submission & its examination by the CLCS

## *Use of bathymetric data*

- Locate FOS By calculating second derivative grids (MBES)



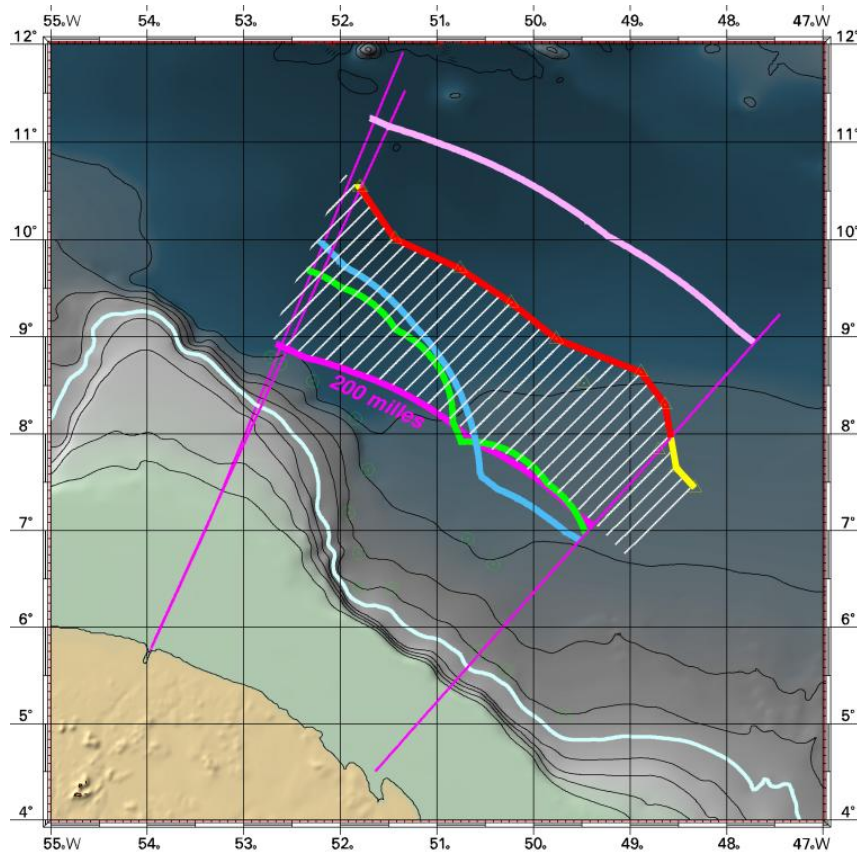
# Conclusions

***Global bathymetric models such as Etopo and Gebco are essential in the process of an E.C.S claim.***

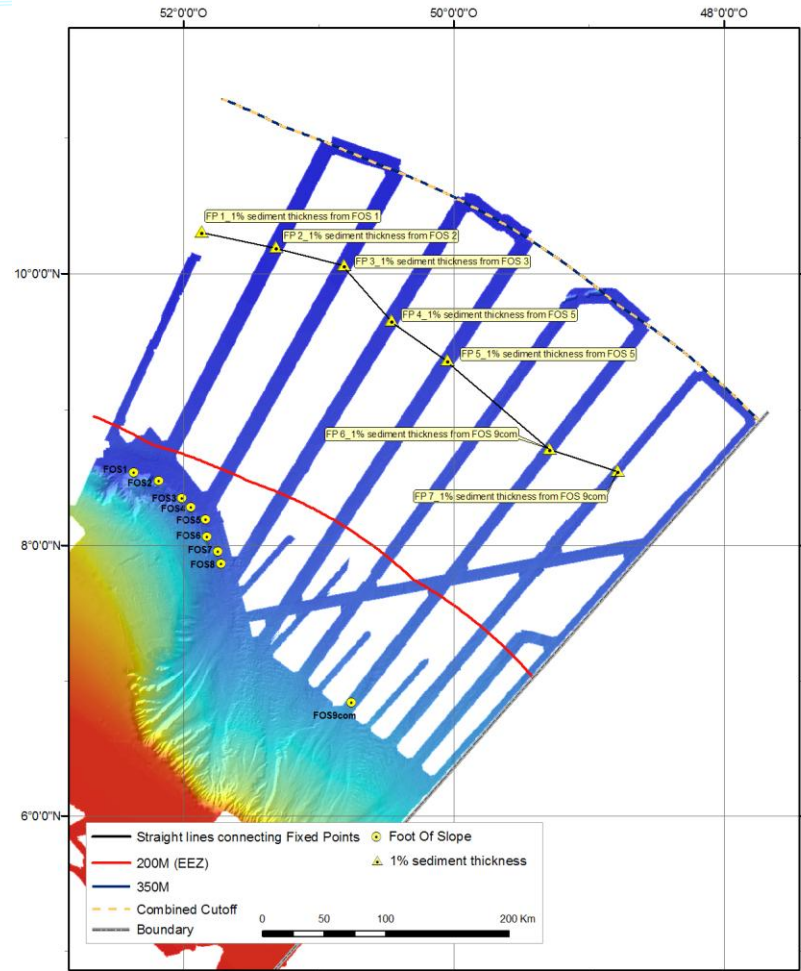
- **Make desktop study possible**
- **Help plan cruises**
- **Support the argumentation in the submission, and during the process of examination by the CLCS**



# Conclusions



Desktop Study (GDA 1'- 2003)  
68 to 73 000 Sq Kms



Recommendation to France - 2009  
72367 Sq Kms