

Unraveling the hydrocarbon potential of deep water Mozambique Channel (THE GIS STORY)

Olayemi Tolulope
Geosciences Department
South Atlantic Petroleum Limited(SAPETRO)
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PRESENTATION OVERVIEW



- Introduction
 - ü Aim & Objective
- Geologic Background
- Role of GIS
 - ü Implementation workflow
 - ü Successes
- Conclusion

INTRODUCTION

AIM & OBJECTIVE

- The aim is to discuss the role of GIS as a mapping tool to integrate Geological, Geophysical and Geochemical spatial data sets in the quest for hydrocarbon.
- The Objective is to showcase the importance and benefits of GIS to SAPETRO's deep-water Mozambique Channel Project.



INTRODUCTION

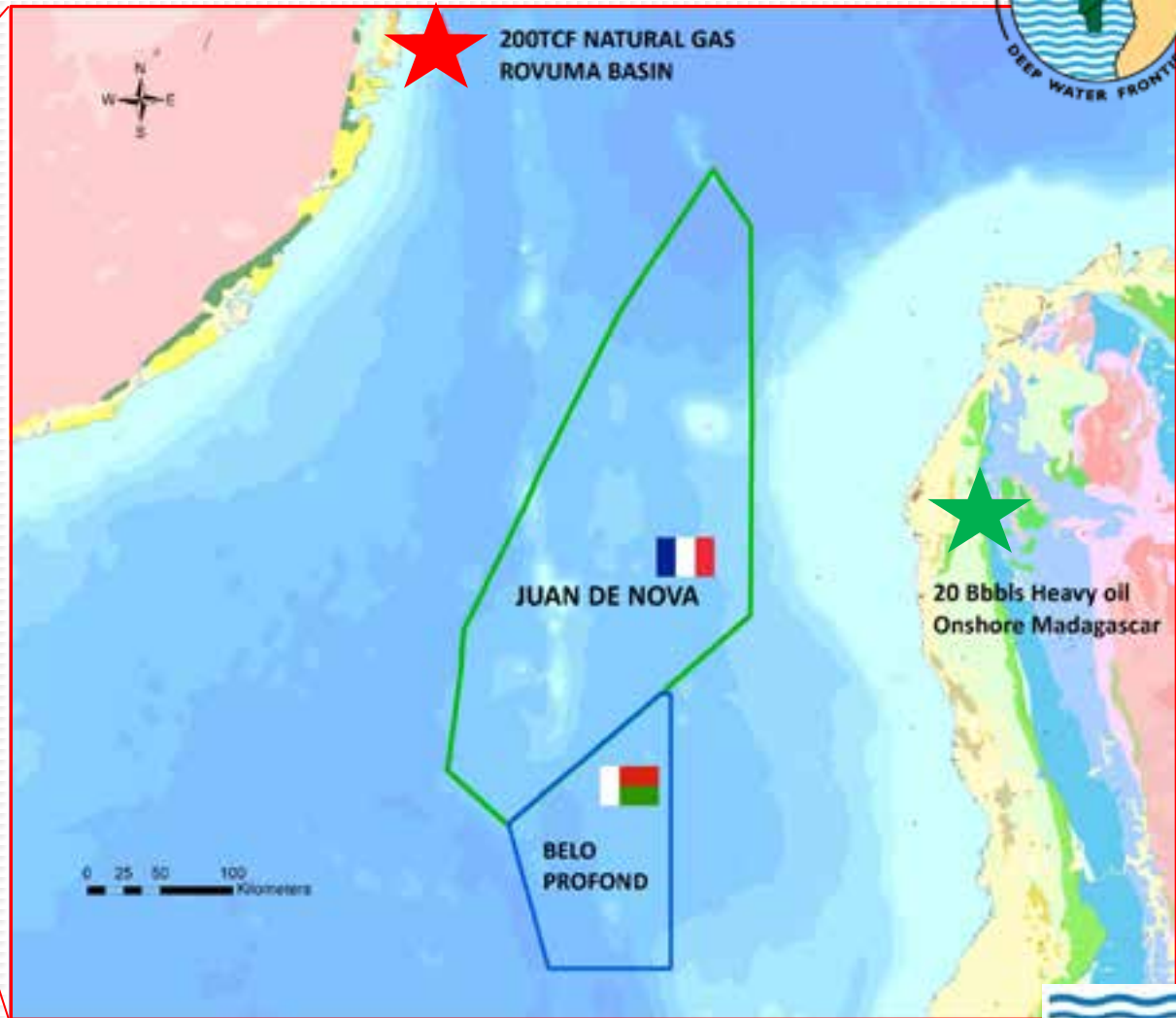


Fig 1: SAPETRO's Juan de Nova and Belo Maritime Profond Acreages





Geologic Background

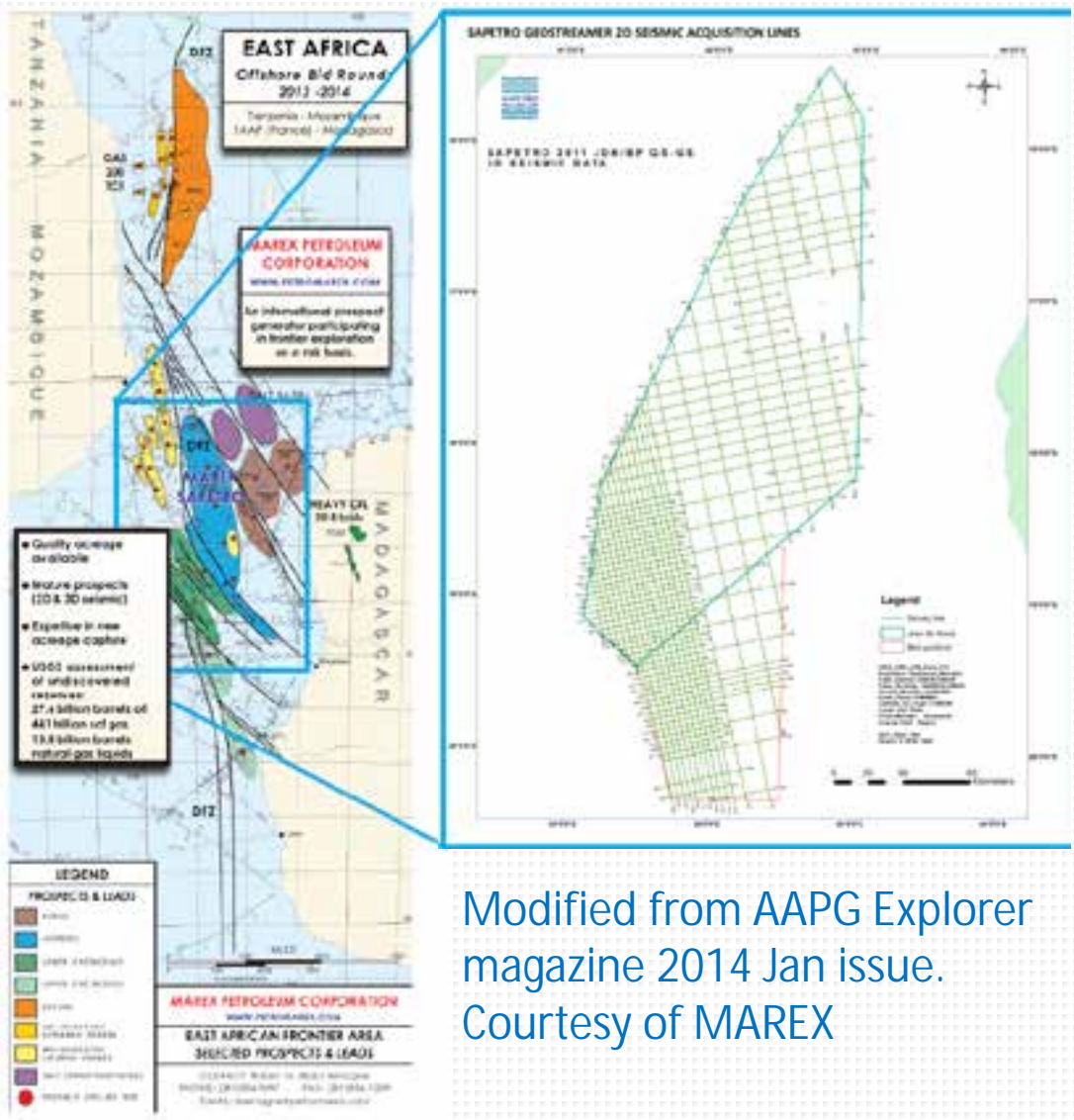


Fig 2 gives a brief summary of the petroleum geology of the study area.

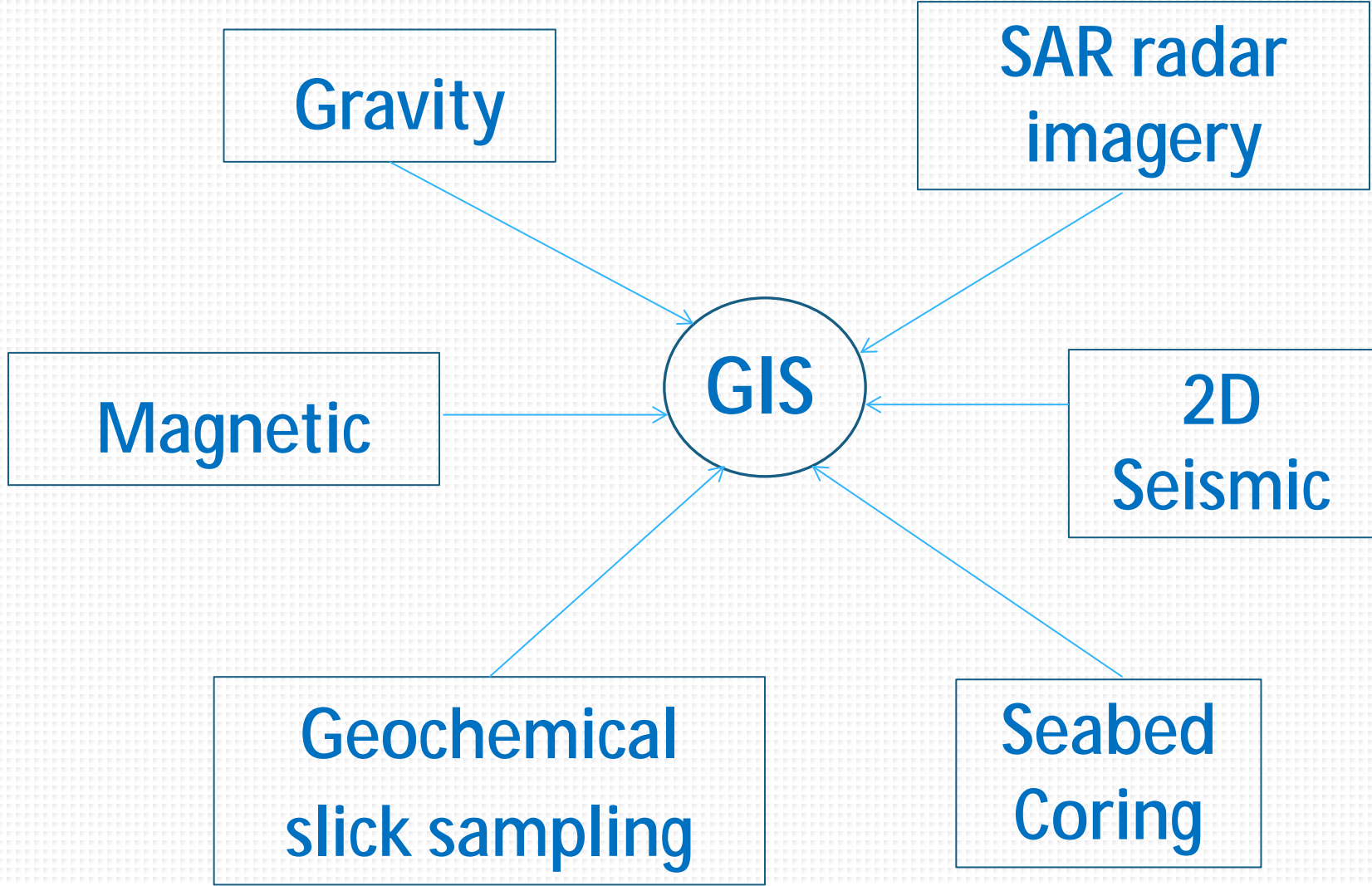
Modified from AAPG Explorer magazine 2014 Jan issue.
Courtesy of MAREX





Role of GIS

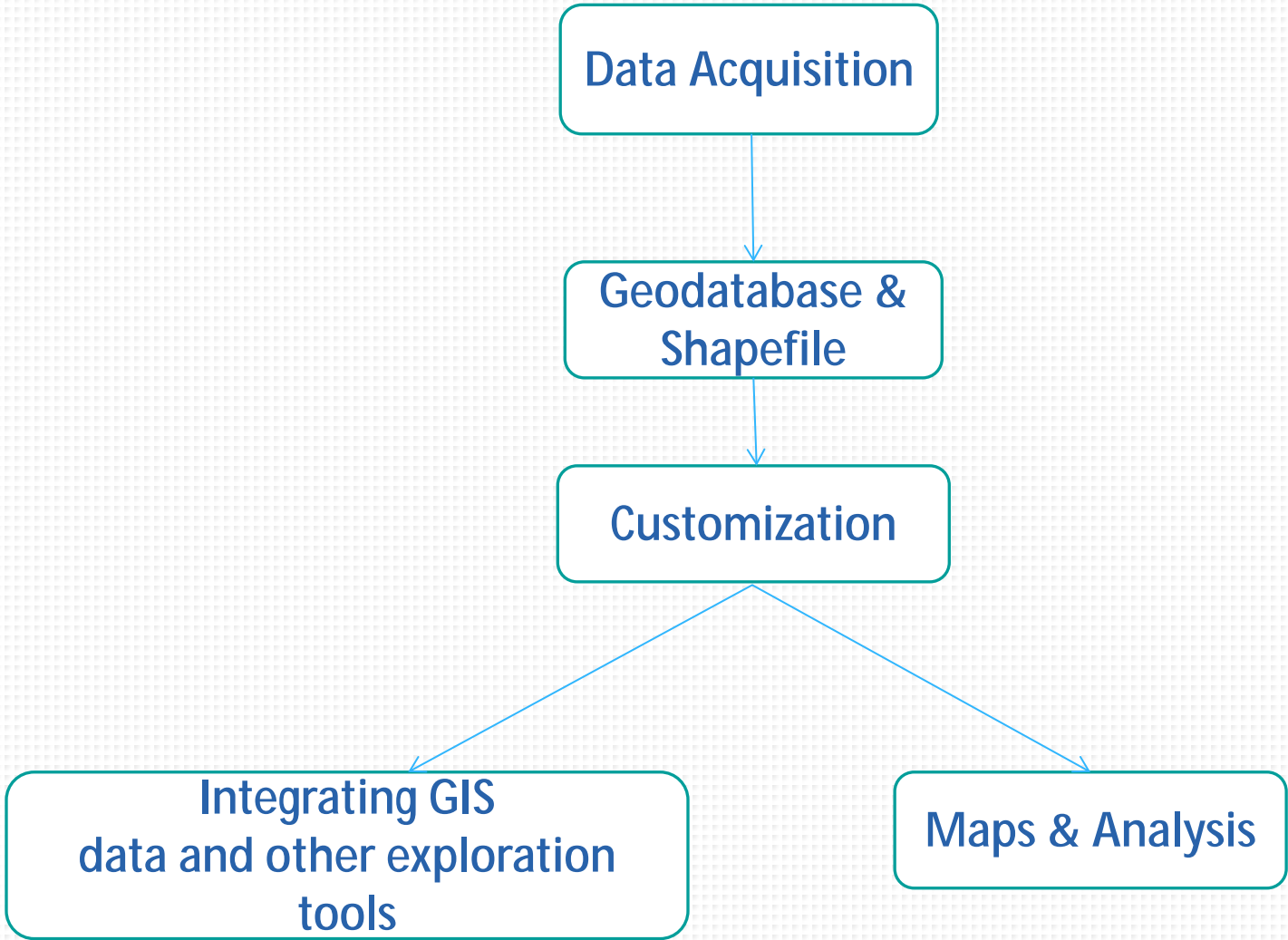
Surveys analyzed spatially using GIS





Role of GIS

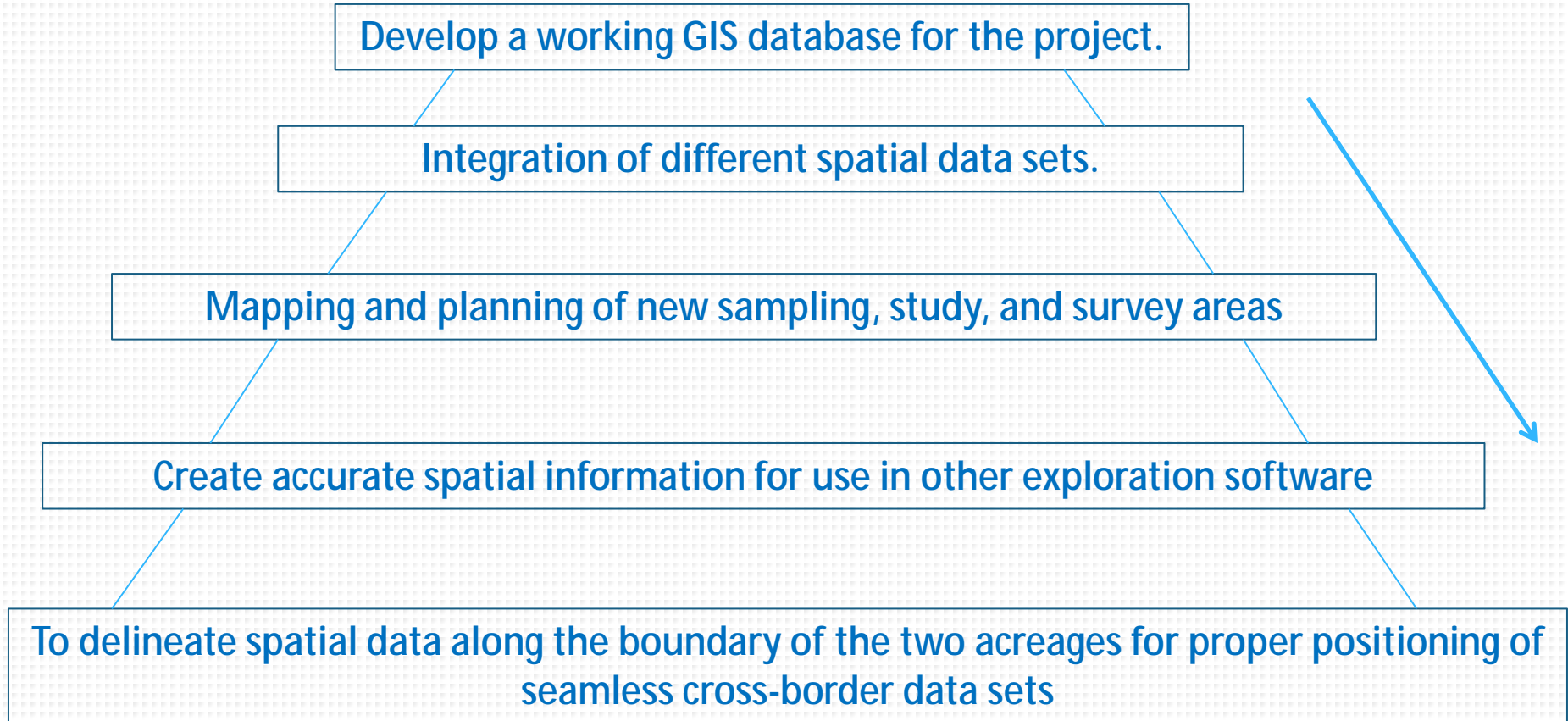
Implementation Workflow





Role of GIS

GIS was used to achieve the following objectives





Role of GIS

Ø *Developing a GIS database for the project*

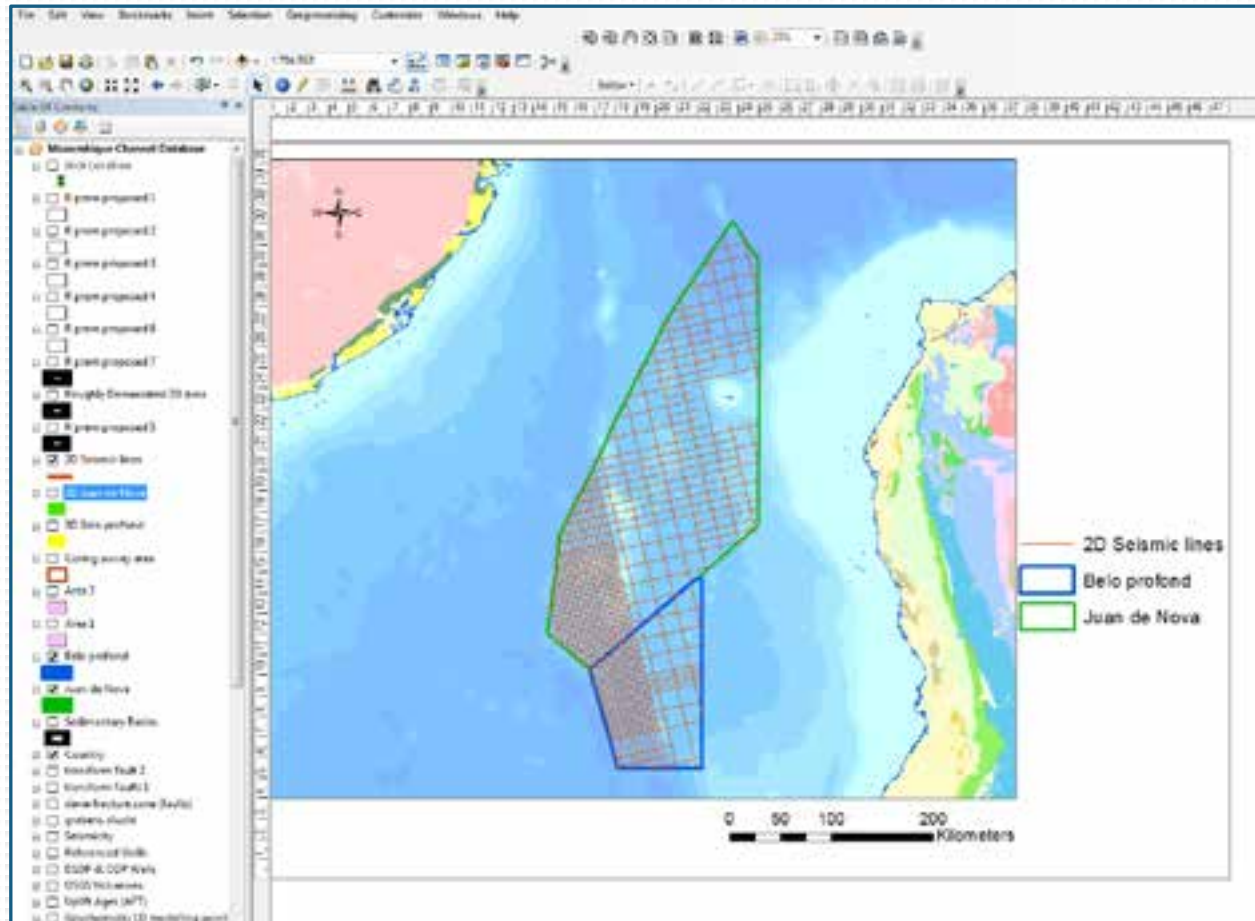


Fig 3 shows a screen capture of developed database on Advanced ArcGIS for desktop software.



Role of GIS

Integration of different spatial data set for proper analysis

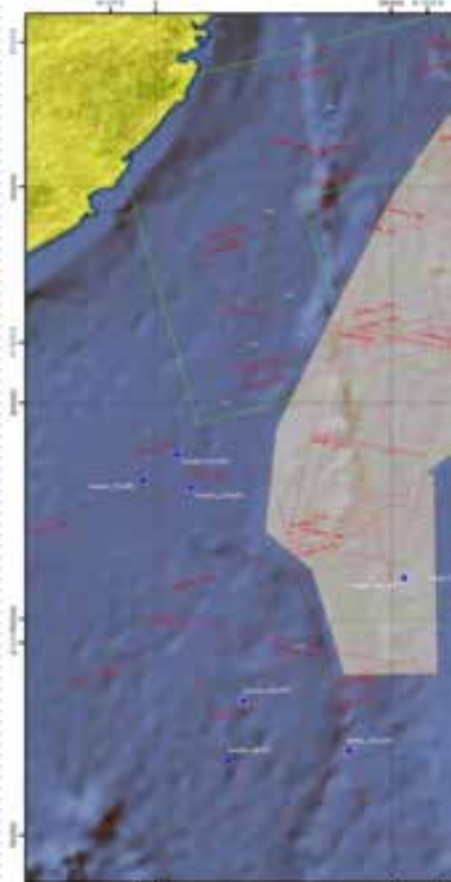


Fig 4.1



Fig 4.2

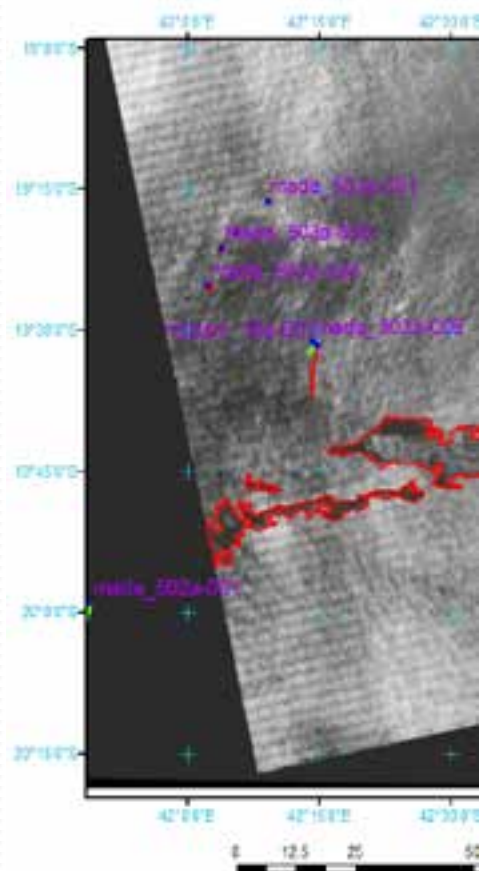


Fig 4.3

Regional Multi-Year SAR Satellite Coverage (4.1)

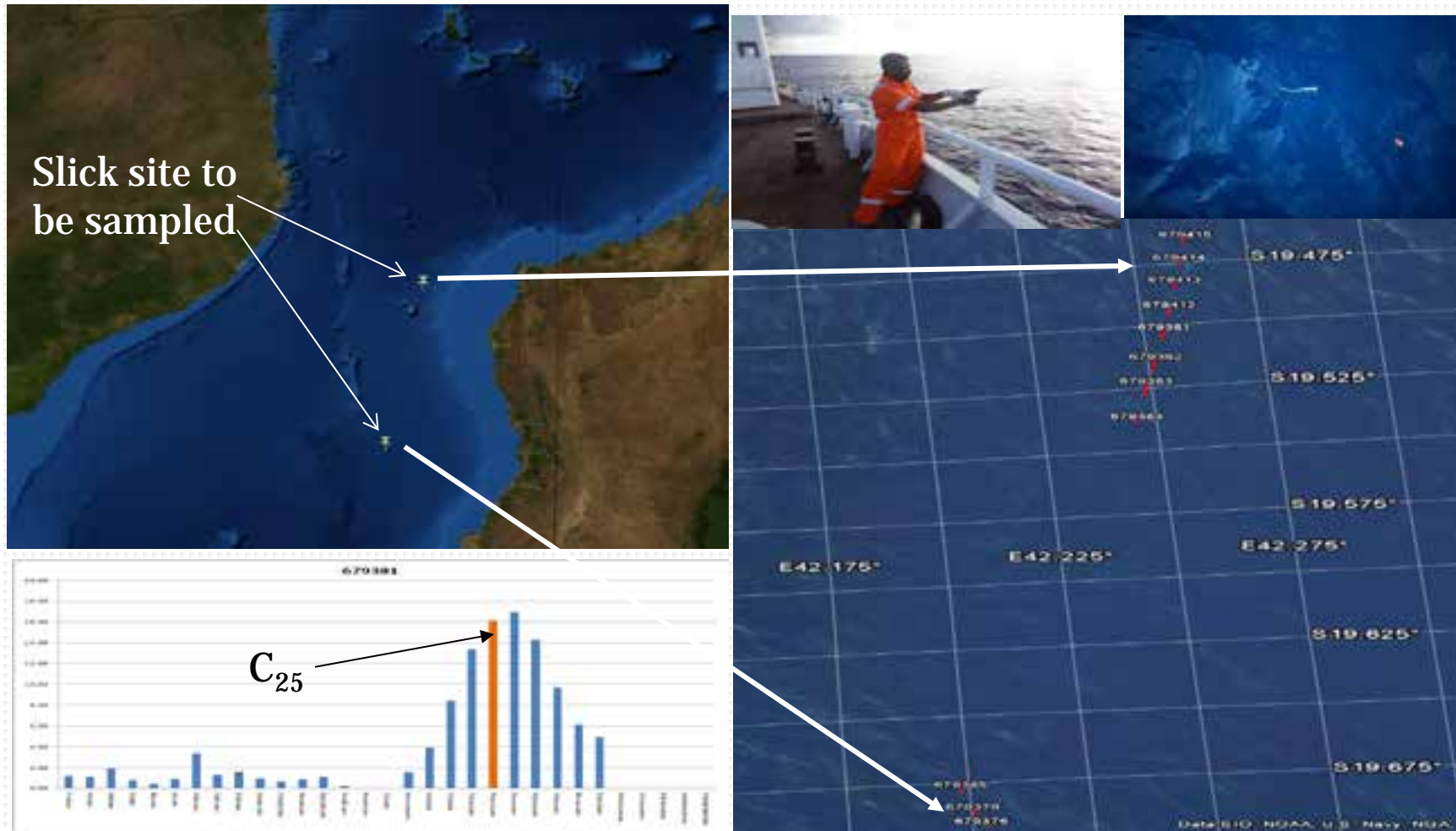
New Custom Satellite Scenes (4.2)

Dec.2011 Image used to Locate Slicks 5 Days Prior to Sampling Voyage (4.3)



Role of GIS

Integration of different spatial data set for proper analysis



2012 Successful SAR Surface Oil Slick Sampling Campaign





Role of GIS

Mapping and planning of new sampling, study and survey areas

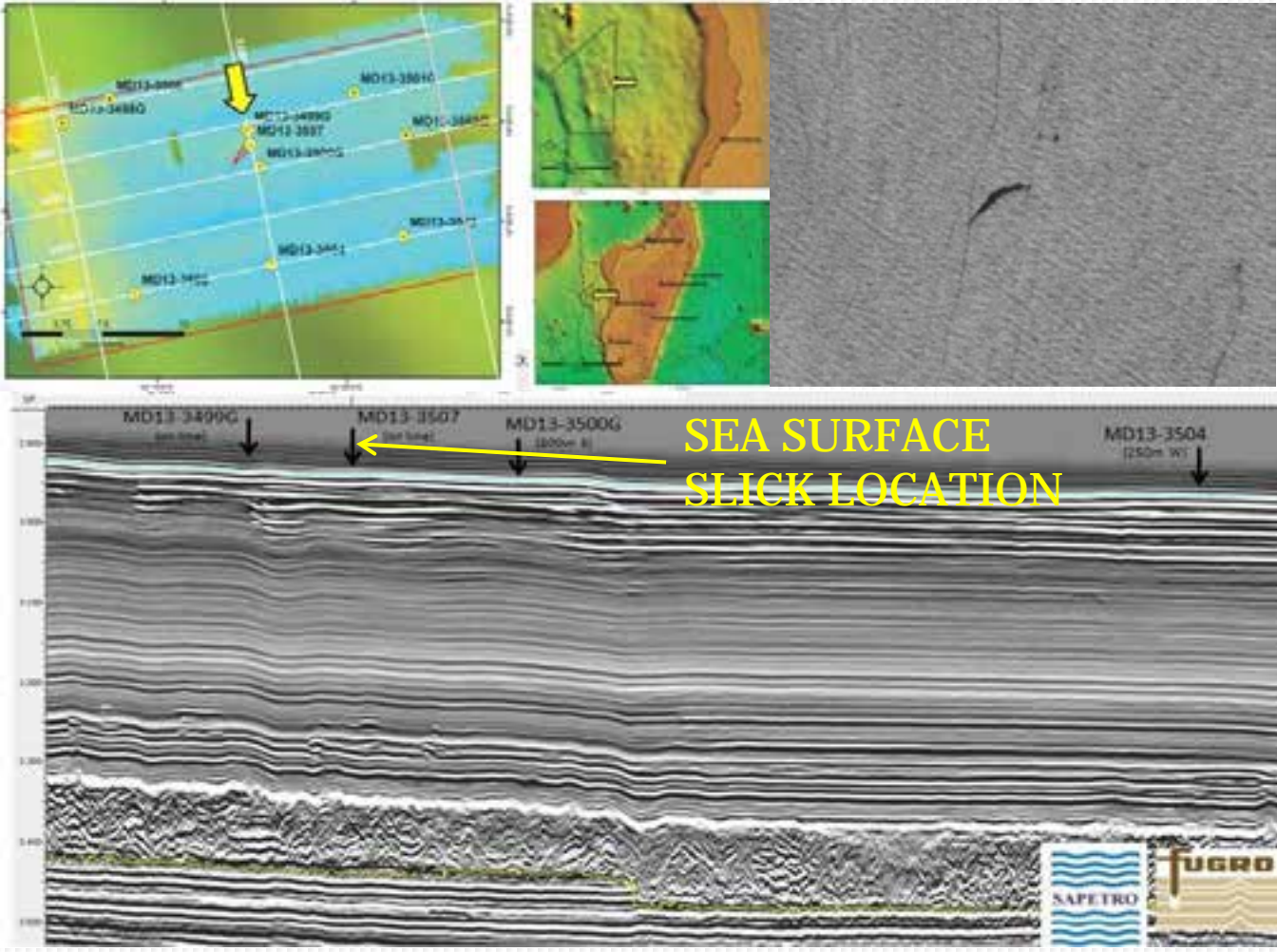


Figure 5 showing slick location on GIS, SAR Imagery and 2D Seismic section.





Role of GIS

Mapping and planning of new sampling, study and survey areas

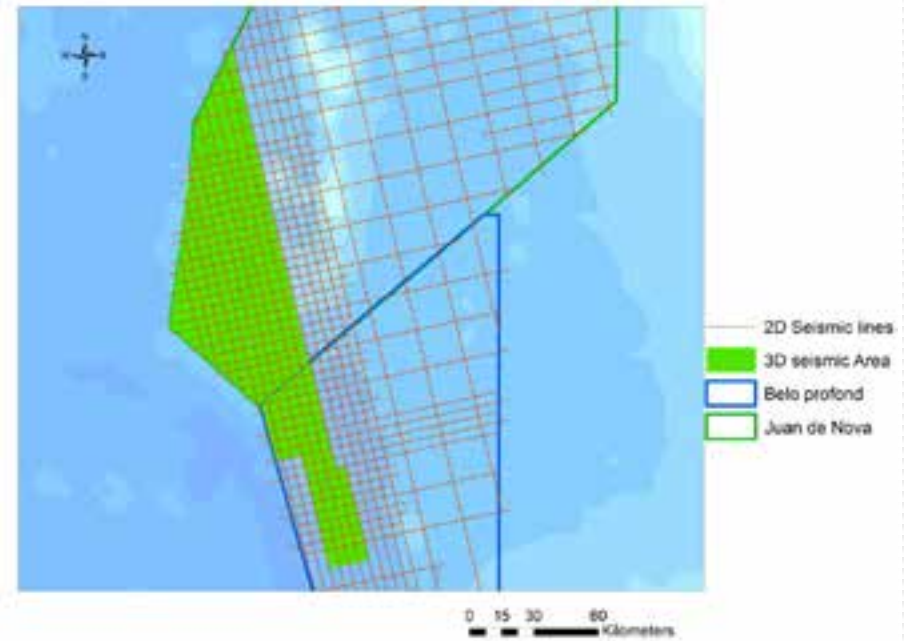
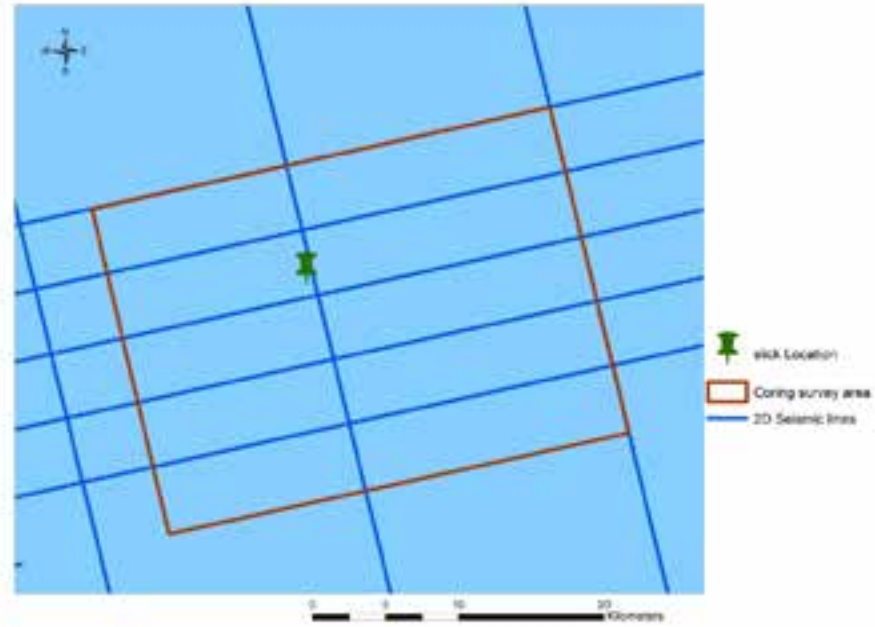


Fig 6.1 shows prospective area Mapped for further Seabed Coring studies and survey

Fig 6.2 shows 3D seismic Area (Mapped area in green) properly mapped to meet exploration objectives using ArcGIS





Role of GIS

Mapping and planning of new sampling, study and survey areas

S16



1450-1550 cm

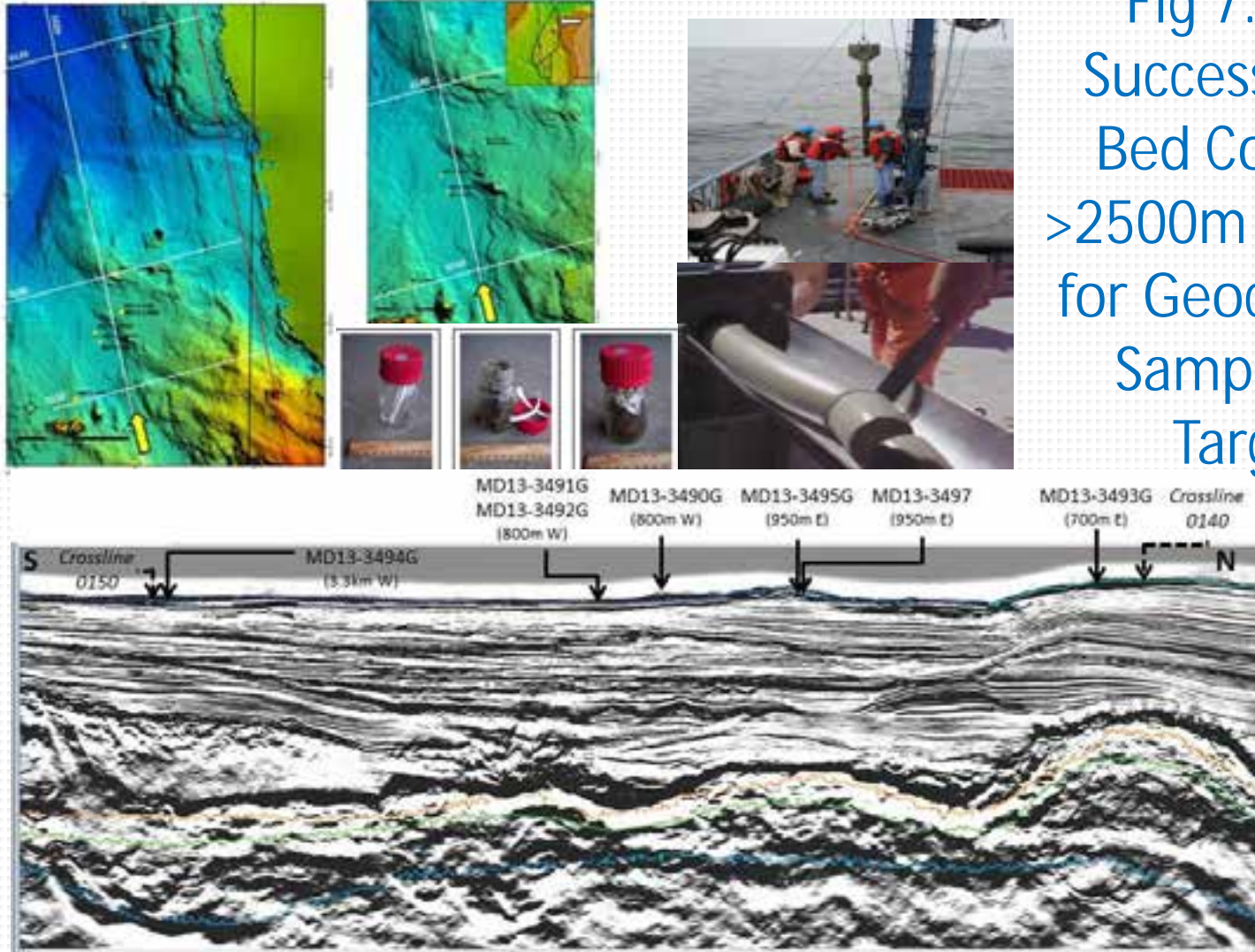


Fig 7: 2013 Successful Sea Bed Coring in >2500m of Water for Geochemical Sampling of Targets



Role of GIS

∅ *Create accurate spatial information for use in other exploration software*

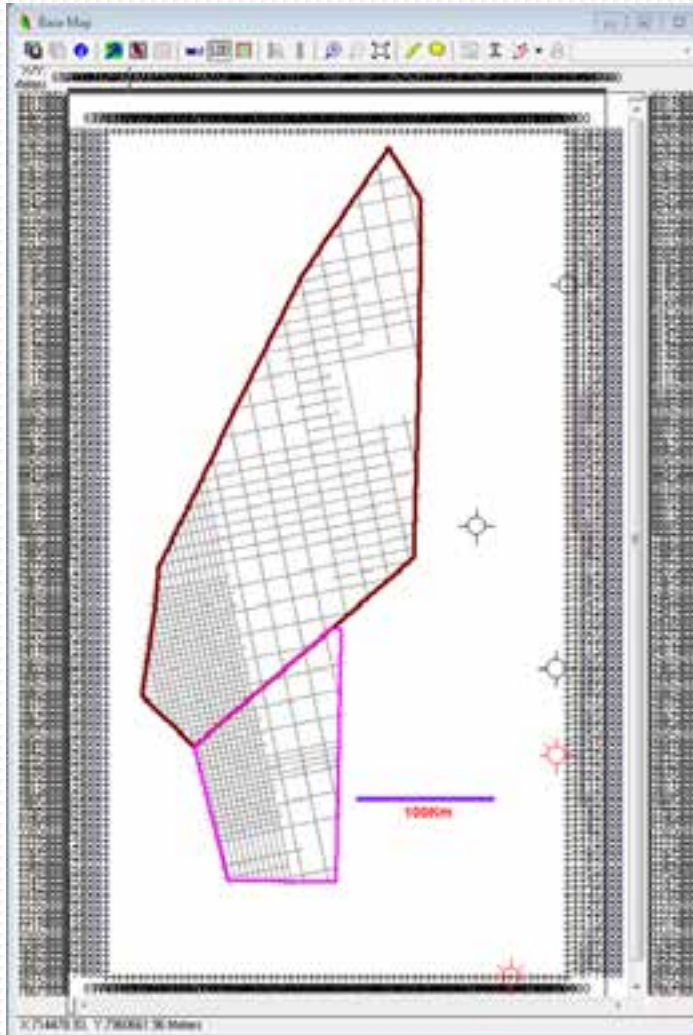


Fig 8 culture file (Juan de Nova and Belo Profond blocks in brown and purple outlines respectively) from ArcGIS.



Role of GIS

To delineate spatial data along the boundary of the two acreages for proper positioning of seamless cross-border data sets

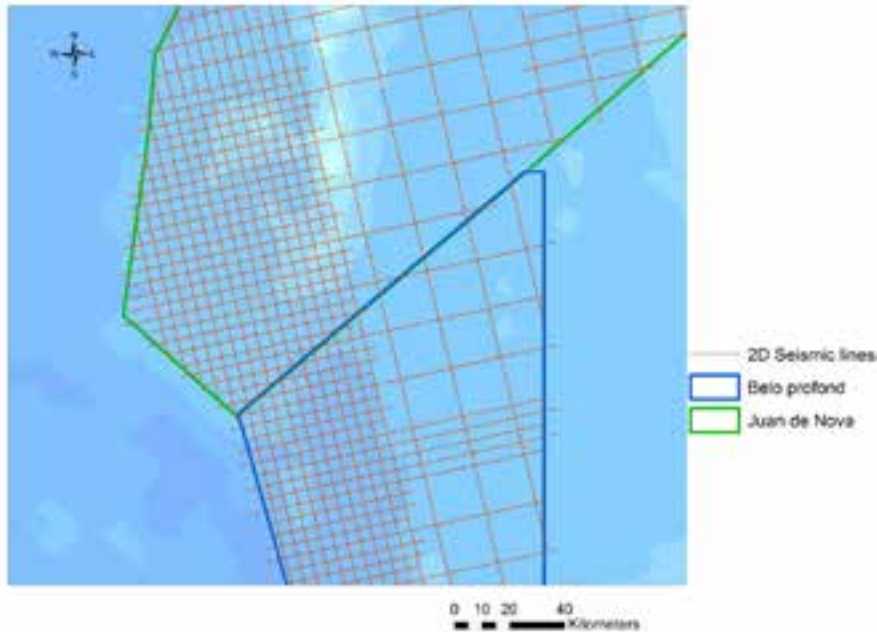


Fig 9.1 shows how both blocks in the acreage are delineated properly and demarcating between spatial data from overlying 2D lines.

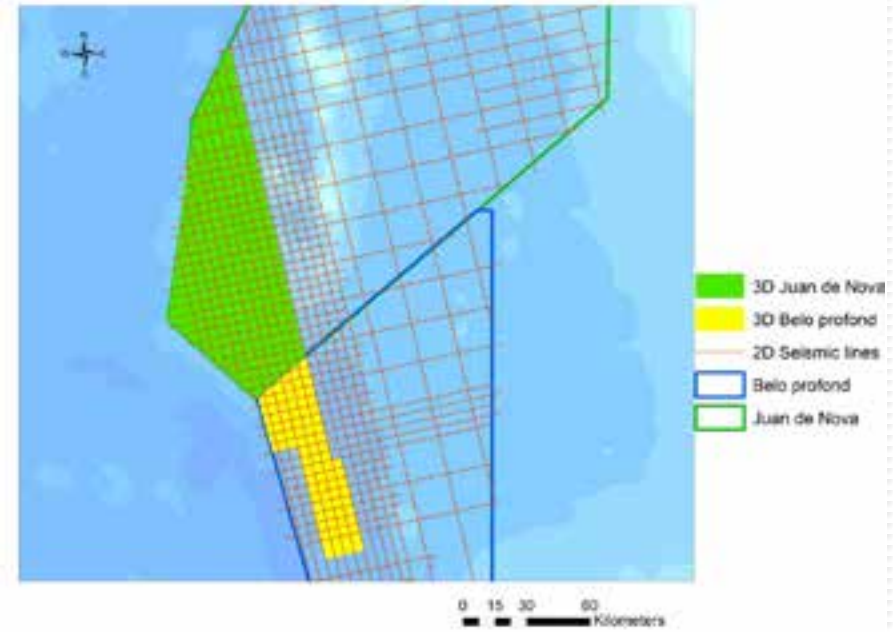


Fig 9.2 shows 3D seismic area clearly and accurately demarcated into the different blocks and jurisdictions



CONCLUSION

Utilizing GIS through the Advanced ArcGIS for desktop platform has aided in achieving exploration objectives especially in Geochemical and Seismic programs.

GIS has been used in demarcating clearly the spatial boundaries during survey activities.

GIS played a vital role in aiding SAPETRO's quest to unravel the hydrocarbon potential of the deep-water Mozambique Channel.

We believe we are on the verge of discovering offshore East Africa's missing oil deposits and GIS is aiding our search.





Acknowledgement

The authors would like to express their gratitude and appreciation to SAPETRO management for permission to publish this paper.

Thanks also for the contributions of our contractors and research collaborators;

AGI

ASTRIUM

FUGRO

IFREMER

IPEV

MAREX

PGS

QUESTIONS?

