

MAP THE GAPS
A GEBCO SYMPOSIUM ON BATHYMETRY
BUSAN, SOUTH KOREA • 15.11.17
mapthegaps.org

LISTEN. SHARE. ENGAGE.

INVENT

(Indian Ocean Thermal Vent Mapping Program)
Transit and Sea Acceptance Test dataset of
RV ISABU

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- New Research Vessel RV ISABU
- Example of Transit & SAT dataset for ocean mapping
- How to share gathering data under national government policy.

General of RV ISABU



Length	99.8 m	Gross Tonnage	Approx. 5,900 Ton
Breadth	18.0 m	Depth	10.3 m
Speed	12/15 kts (cruising /max.)	Endurance	10,000 N.M (at cruising speed)
Propulsion Unit	2,500 kW motor x 2	Propeller	Azimuth thruster x 2
Main Generator	1,881kW x 4	Capacity	60 (Crew 22, Scientist 38)

Equipments on RV ISABU

Category	Equipment	Remarks
Positioning	DGPS	FUGRO, C-NAV, SeaPath
	Acoustic Synchronization System	-K-Sync
	Attitude and Motion with GYRO	- IXSEA, MRU
Underwater Positioning	Ultra Short Baseline Underwater Positioning System	- KM HiPAP 10,000m
Winch	Coring Winch	10000 m, Ø28mm
	Deep-Tow Winch (Optical Cable)	10000 m, Ø17mm
	Deep-Tow Winch (Co-axial Cable)	10000 m, Ø17mm
	CTD Winch	Standard, Clean
	General Purpose Winch	10000 m, Ø20mm
Boom & A-frame	CTD Overhead Boom	6 ton
	Side A-Frame	25 ton
	Core Catcher	Removable Type
	Core Davit	Removable Type
	Stern A-Frame	30 ton, 170°folding

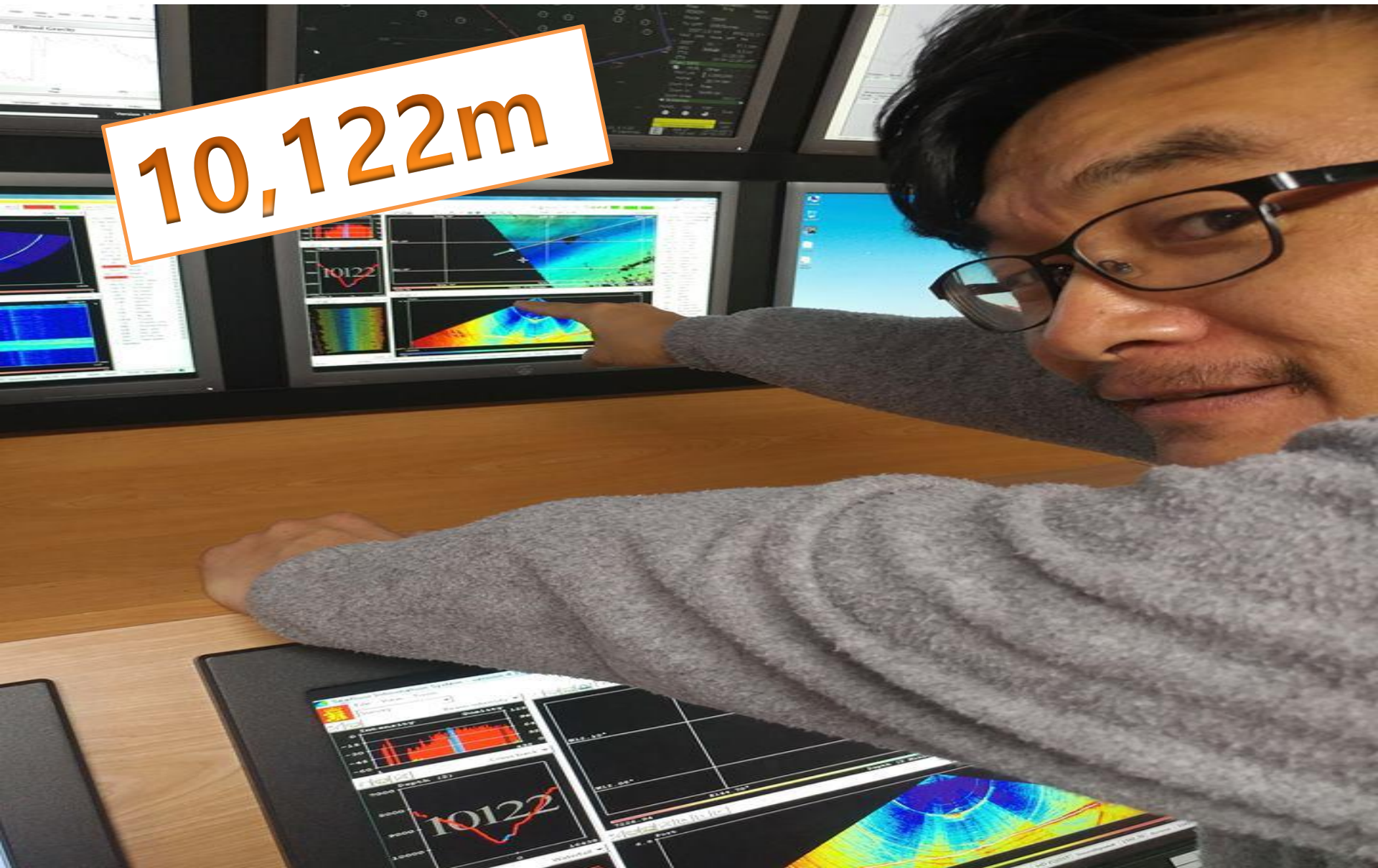
Category	Equipment	Remarks
Acoustic Equipment	Scientific Fish Finder	EK80, 15,000 m
	Scientific Multibeam Echo Sounder	ME70 , 70 ~ 120 kHz.
	High Frequency Omni Directional Sonar	114kHz, 2000m
	Precision Depth Recorder	EA600, 12, 38, 200 kHz
	Shallow Water Multi-beam Echo Sounder	EM710, 70~100 kHz, 2000m
	Deep Sea Multi-beam Echo Sounder	EM120S, 12kHzm 11,000m
	Sub-Bottom Profiler	P70, 11,000m
	Acoustic Doppler Current Profiler	ADCP, 38, 150kHz
Sound Velocity	Sound Velocity Probe	±0.05 m/s
	Sound Velocity Sensor	6,000m, ±0.05 m/s
T/S	XBT	XCTD included
	Thermosalinograph	T : 0.003 deg Cond.: 0.003 mS
	Salinometer	
Gravity	Marine Gravimeter	0.01 mGal
Meteorology	Meteorological Observation system	

Main Lab Screen Layout of RV ISABU



RV ISABU Can map deepest seafloor of World !

10,122m



해양의 가치와 중요성

해양의 가치	해양의 중요성	해양의 가치	해양의 중요성
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글로벌 해양강국, 대한민국

거꾸로 보면 새로운 세계가 열립니다!

범례

- 수도 (Capital)
- 주요 해안가
- 해양경제권
- 해양경제권
- 해양경제권



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- INdian ocean hydro thermal VENT Expedition From 2017 to 2022

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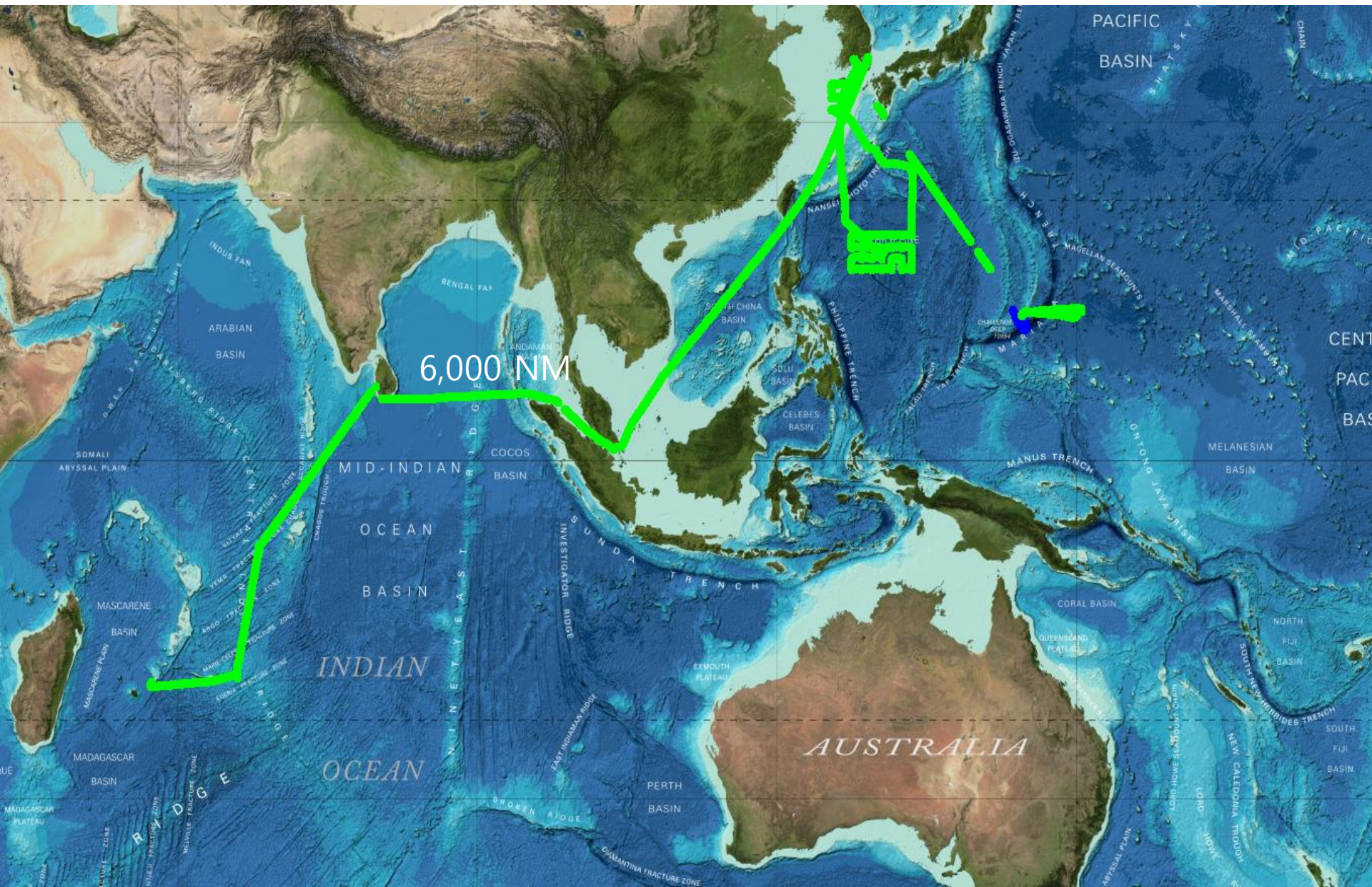
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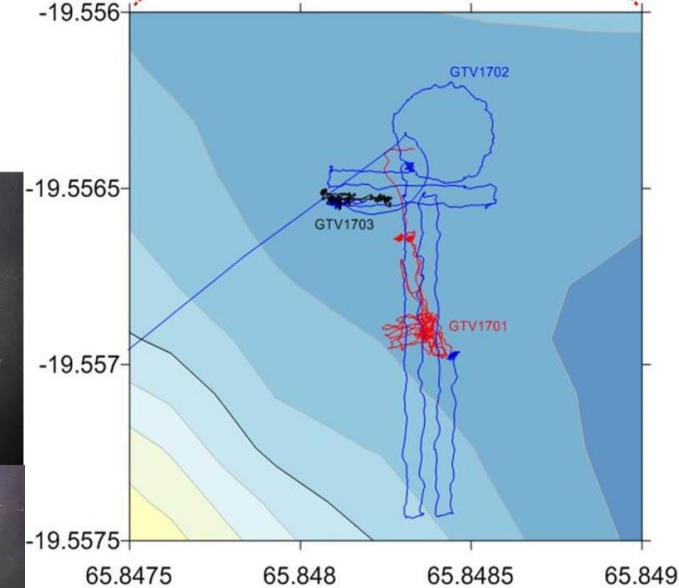
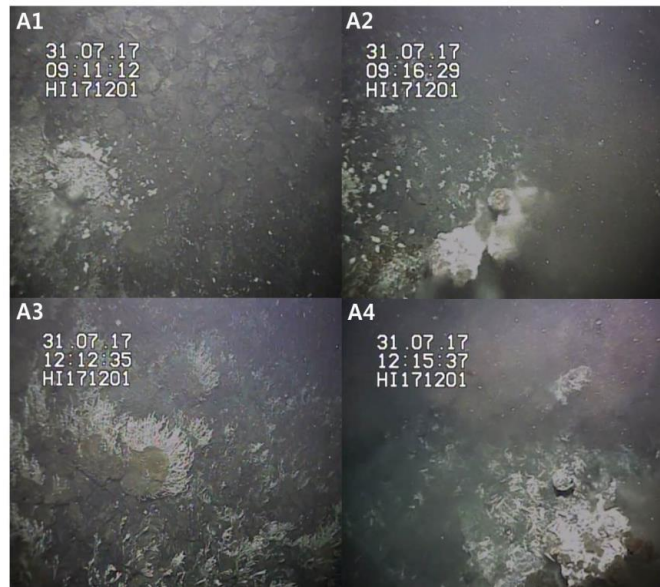
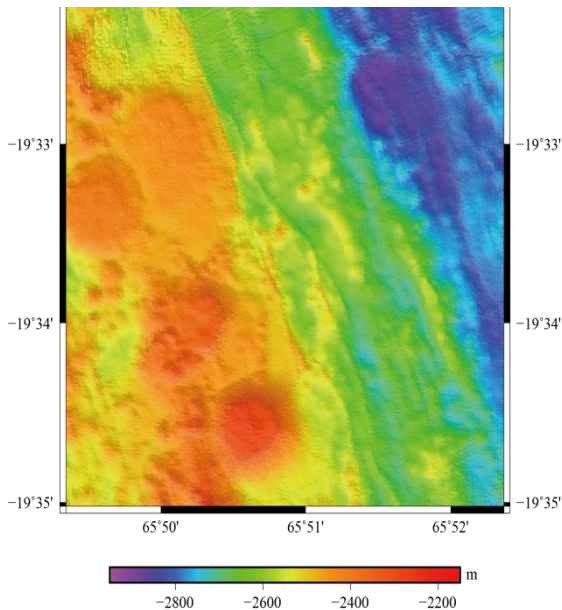
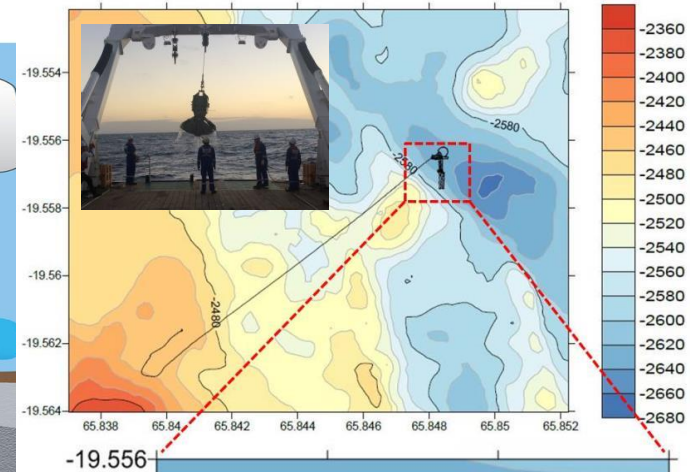
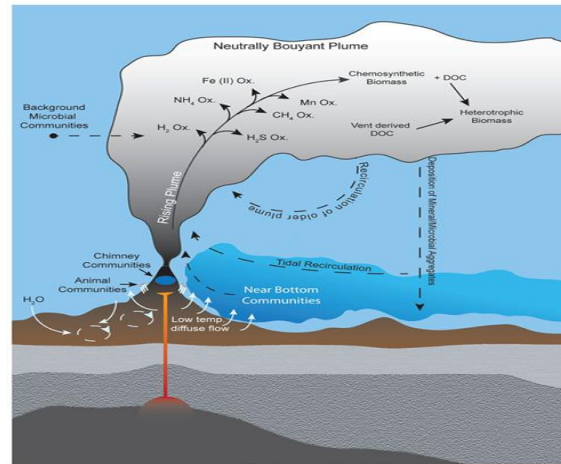
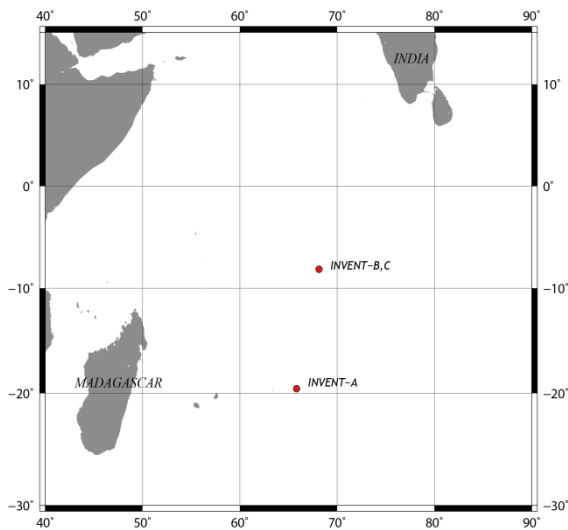
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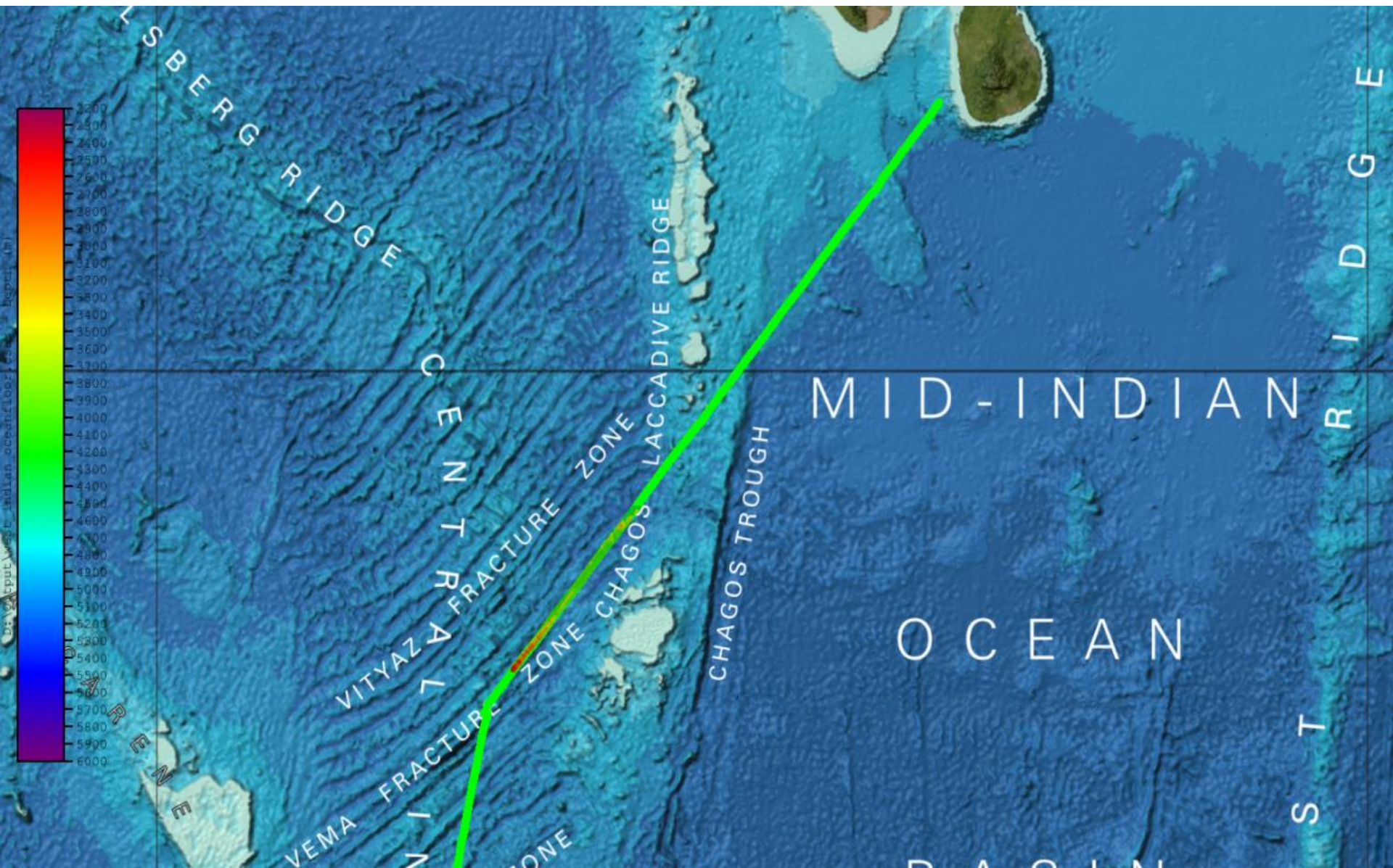
- To investigate Deep Sea Life Eco-System around Hydro thermal vent where is Very Hot, Dark, and High Pressure.

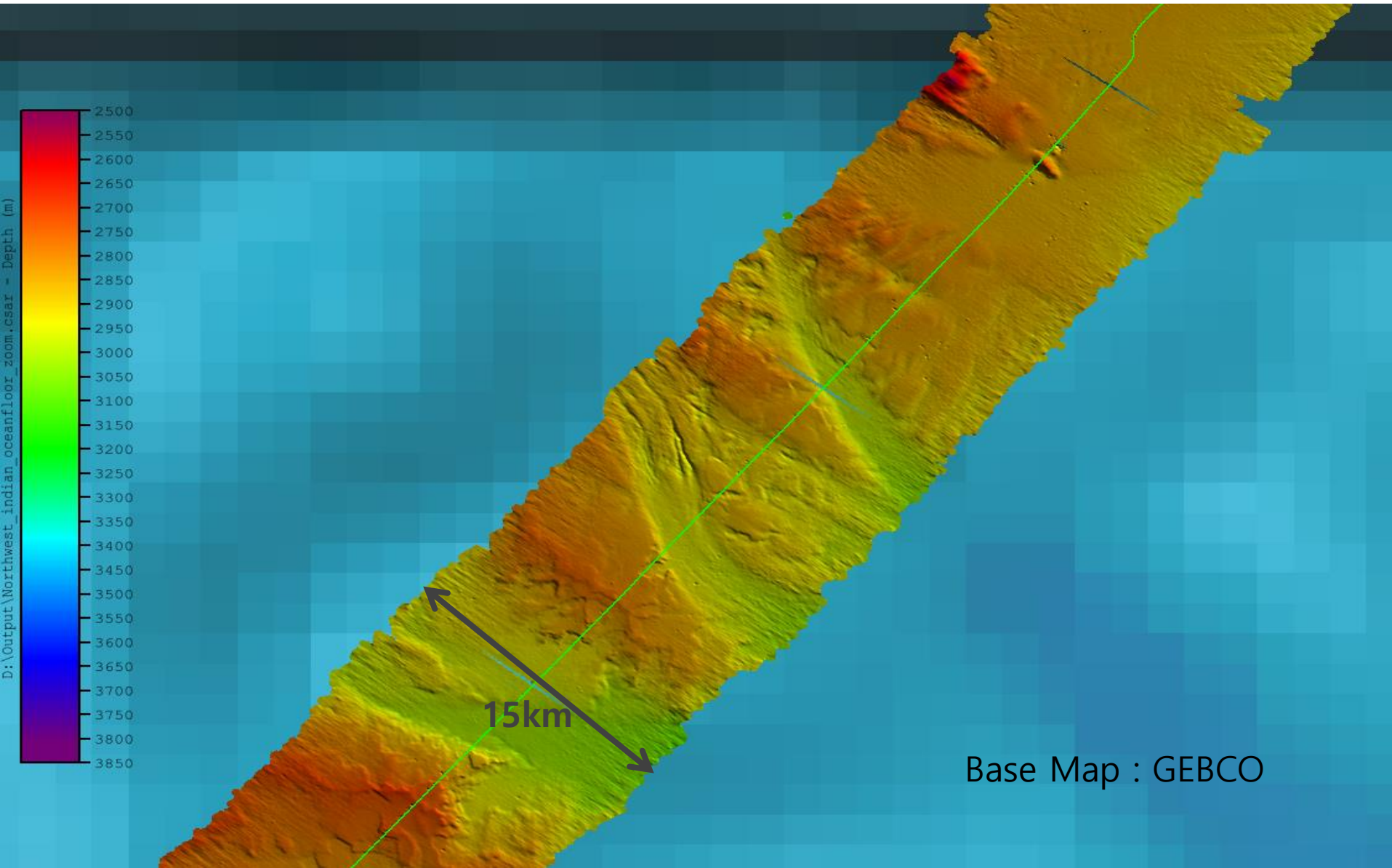
Transit route to Expedition Site of RV ISABU



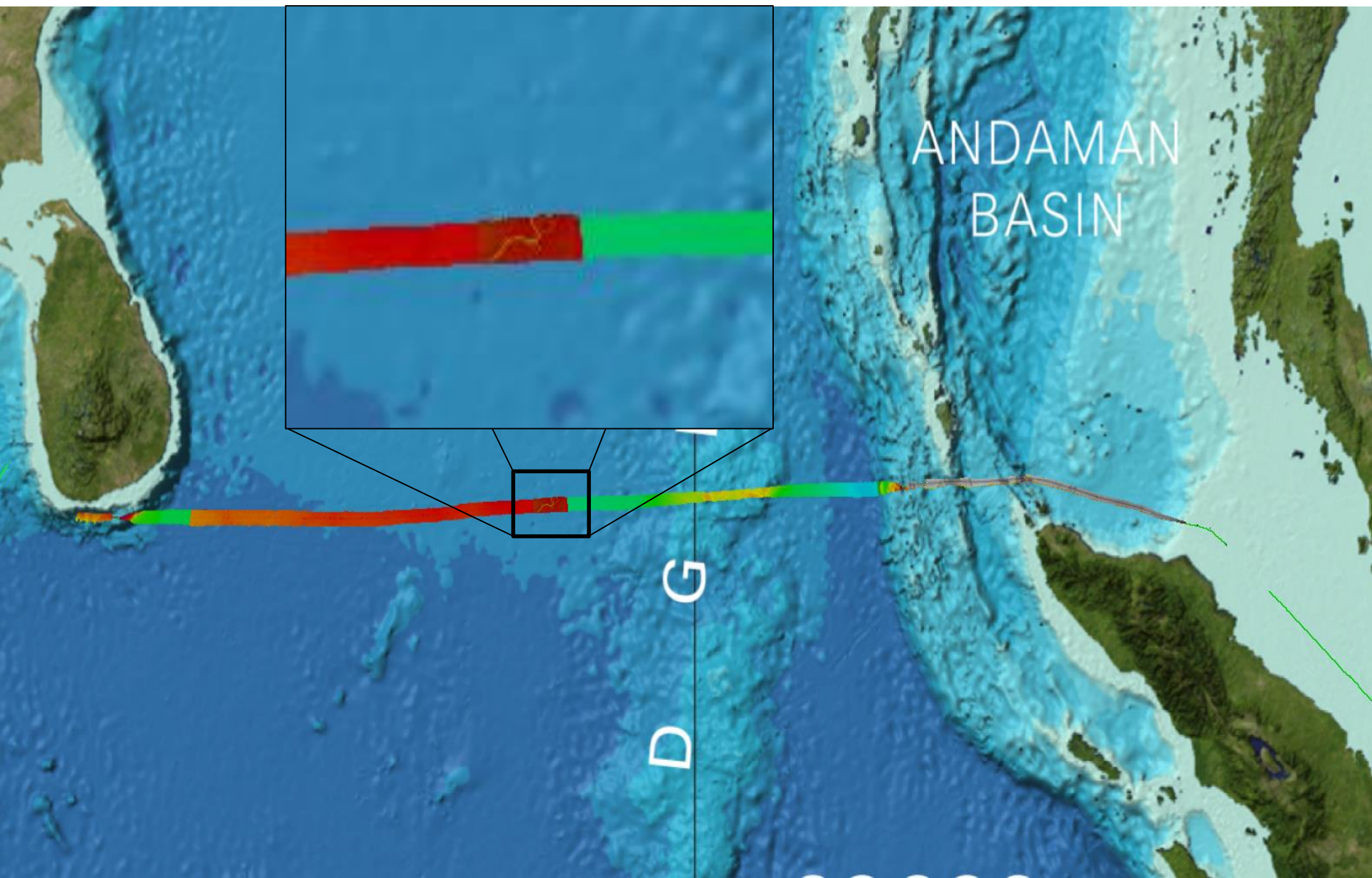
Study Area



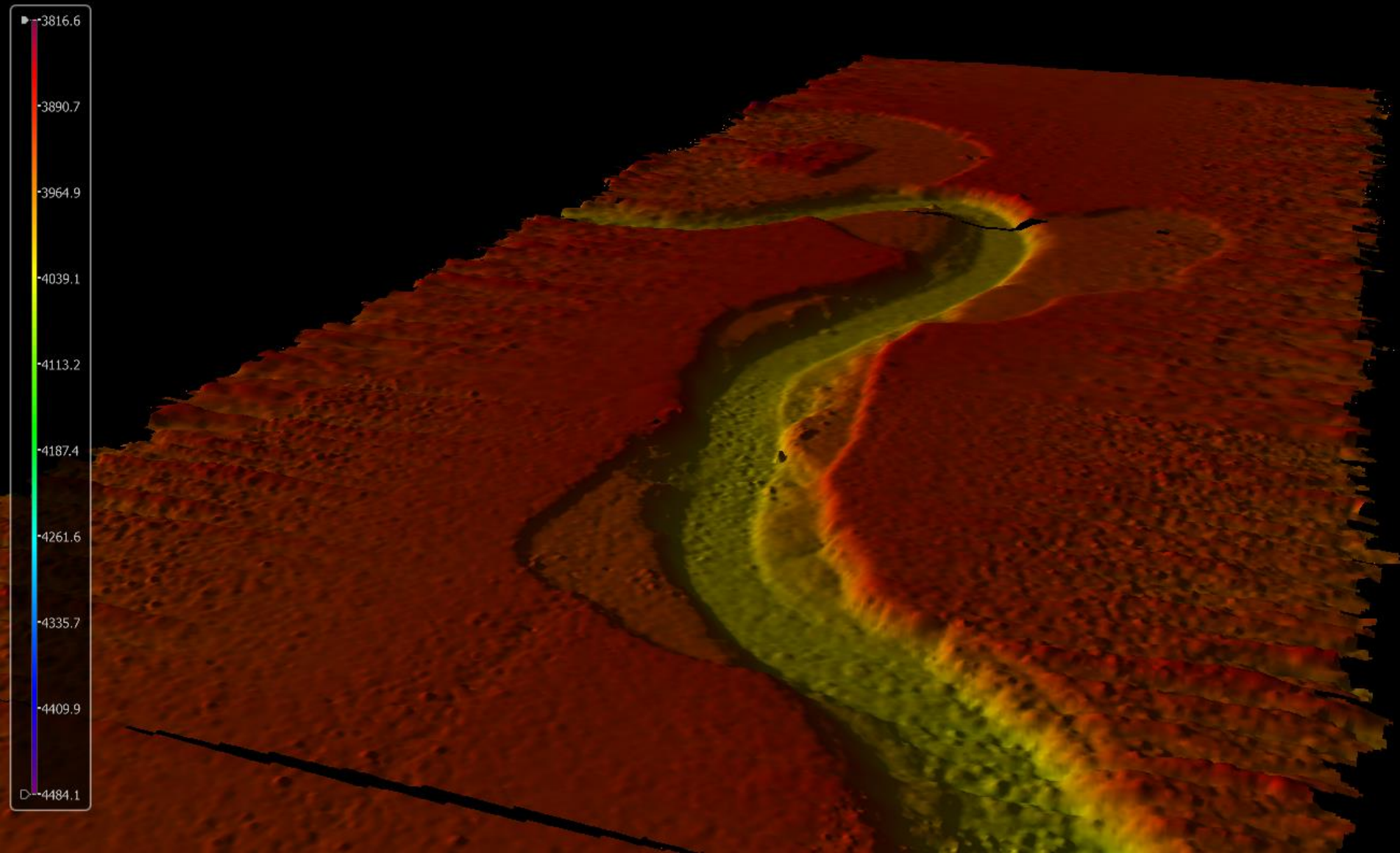


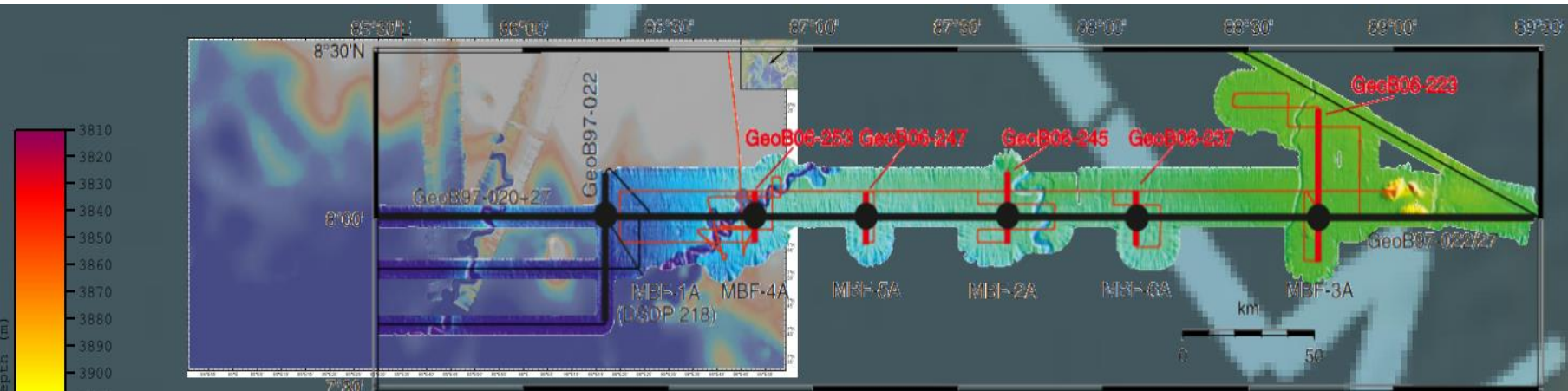


Return Home Sailing



Deep Sea Canyon from 1500 km shore





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[IODP Publications](#) / [Preliminary Reports](#) / [Expedition 354](#)

doi:10.14379/iodp.pr.354.2015

International Ocean Discovery Program Expedition 354 Preliminary Report



Bengal Fan

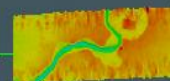
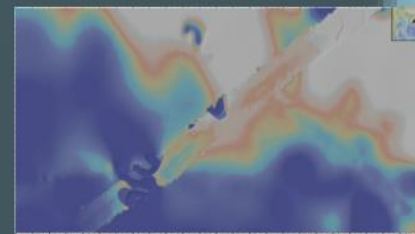
Neogene and late Paleogene record of Himalayan orogeny and climate: a transect across the Middle Bengal Fan¹

30 January–31 March 2015

Christian France-Lanord, Volkard Spiess, Adam Klaus, and the Expedition 354 Scientists

Published May 2015

See the full publication in [PDF](#).



INTERMEDIATE

GLOBAL AND REGIONAL ECOLOGY | Lead Editor:



Submarine Fans and Canyon-Channel Systems: A Review of Processes, Products, and Models

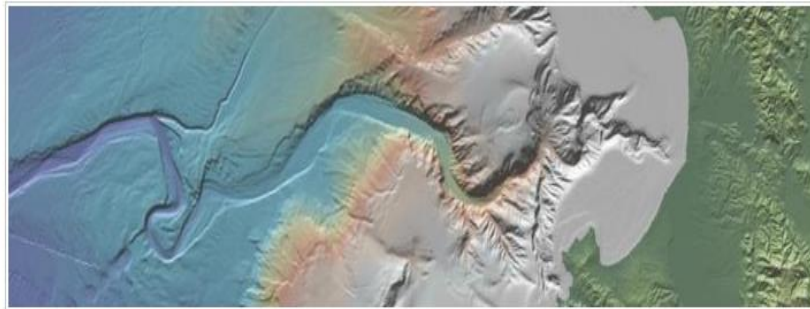
By: Jacob A. Covault (U. S. Geological Survey Eastern Energy Resources Science Center, Reston, USA) © 2011 Nature Education

Citation: Covault, J. A. (2011) Submarine Fans and Canyon-Channel Systems: A Review of Processes, Products, and Models. *Nature Education Knowledge* 3(10):4

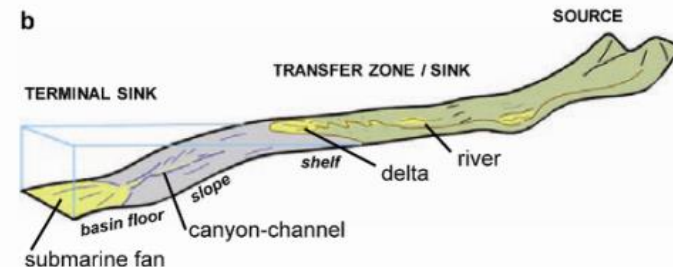
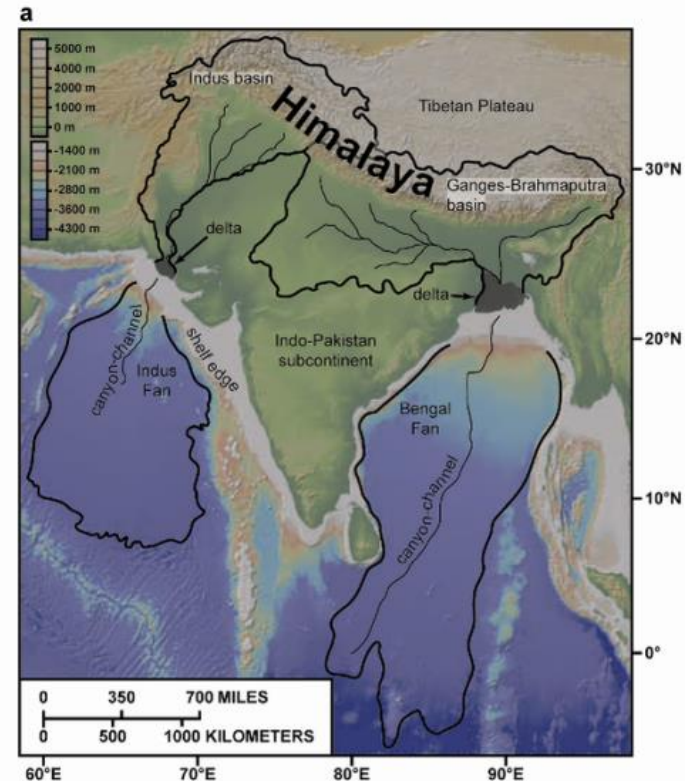


Submarine fans receive sediment through canyon-channel systems and are the largest detrital accumulations on Earth. Their general characteristics and developmental models are reviewed.

Aa Aa Aa



Submarine fans are accumulations of sediment deposited at the termini of land-to-deep-sea sediment-routing systems (Menard 1955) (Figure 1). At a given moment in time, sediment-routing systems comprise sediment source areas dominated by denudation, a zone of sediment transfer, and a terminal region of deposition, such as a submarine fan (Allen 1997). The sediment-transfer zone between terrestrial source area and deep-sea depositional sink can include submarine canyon-channel systems, which generally pass from erosional V-shaped canyons indenting the continental shelf and uppermost slope, to U-shaped channels with overbank deposits across the lower slope and rise (Figure 2). Submarine fans are deposited at their termini and generally exhibit radial-, cone-, or fan-like morphologies in map view across the seafloor (Menard 1955) (Figure 1). However, receiving-basin geometry and substrate mobility can modify fan morphology (e.g., Nelson & Kulm 1973, Pickering 1982, Stow *et al.* 1985, Mutti & Normark 1987, Shanmugam & Moliola 1988, Prather *et al.* 1998, Booth *et al.* 2000, Piper & Normark 2001, Covault & Romans 2009) (Figure 1). Moreover, during the course of basin evolution, submarine fans can be uplifted by tectonic forces and subsequently eroded and redeposited.



We Can help Extend Continental Shelf Mapping Program (UNCLOS Article 76) of Small Islands States

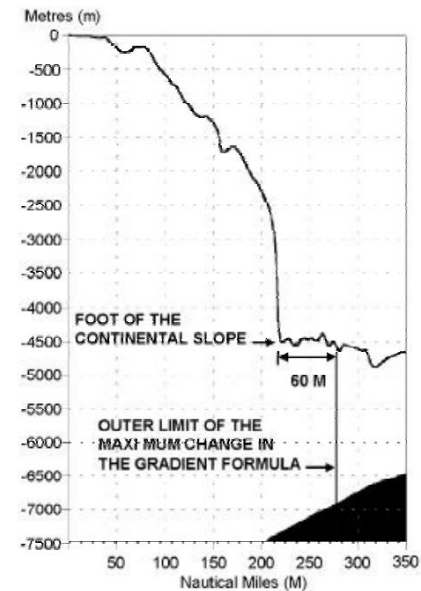
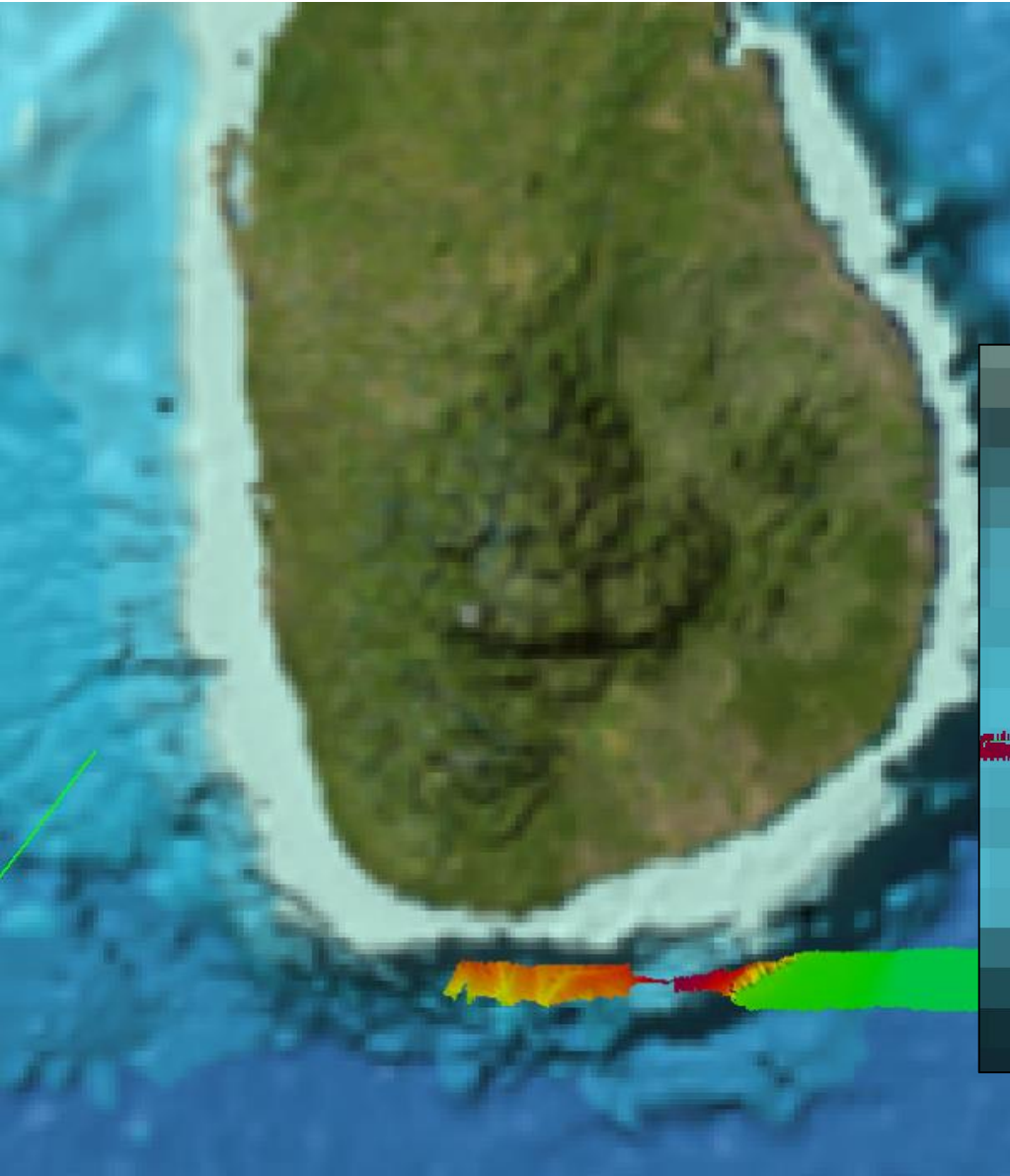
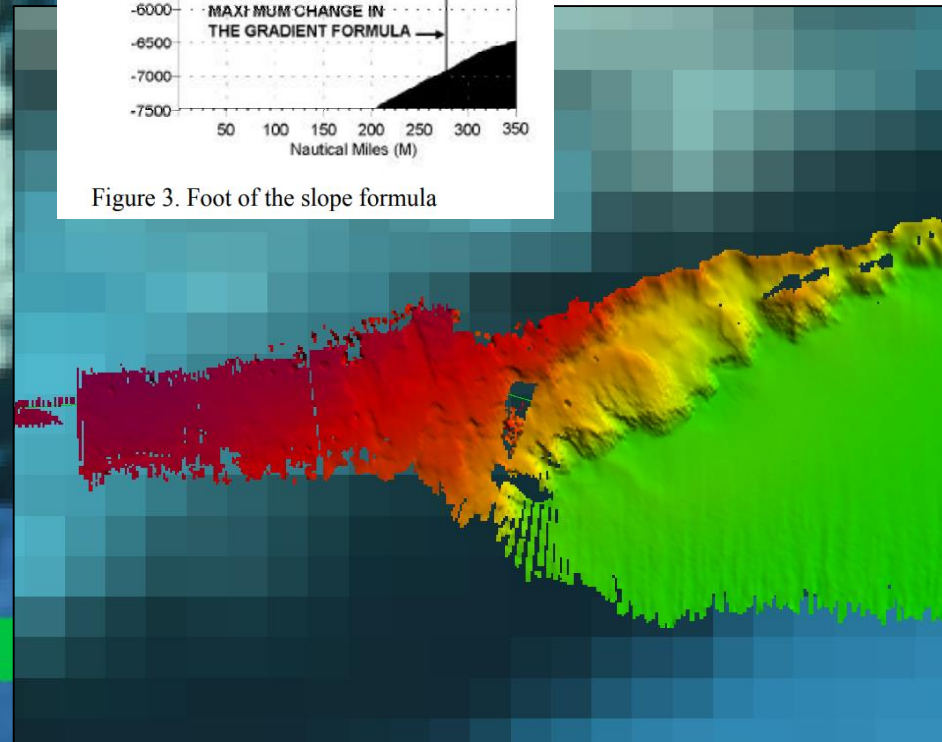
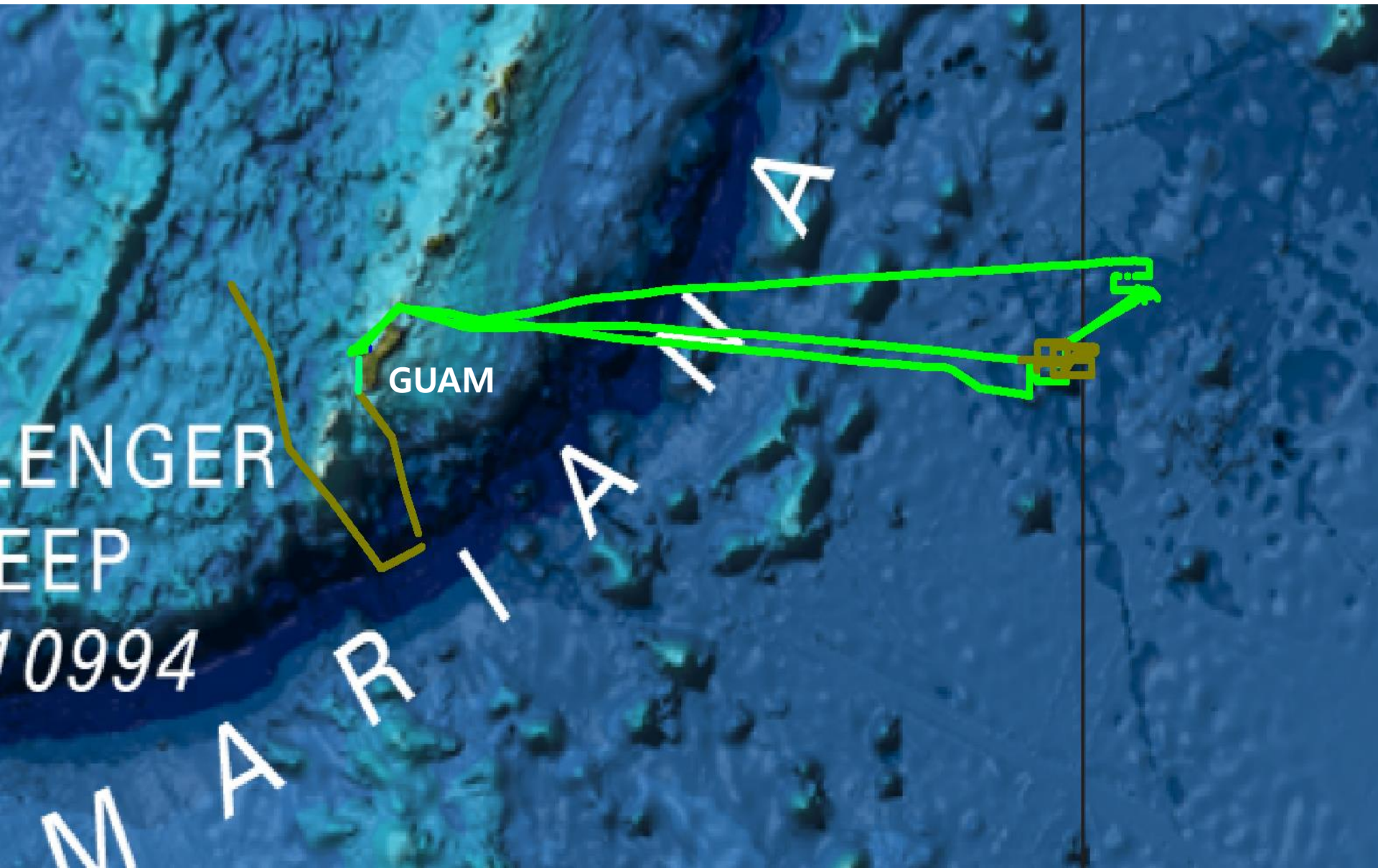


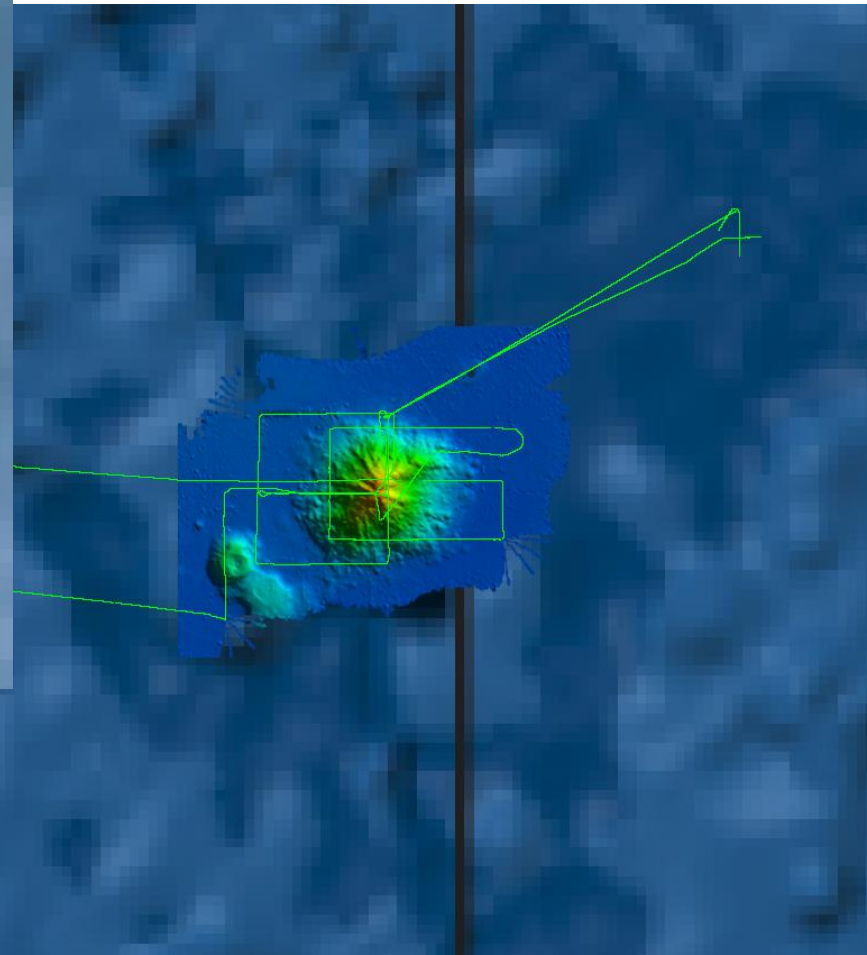
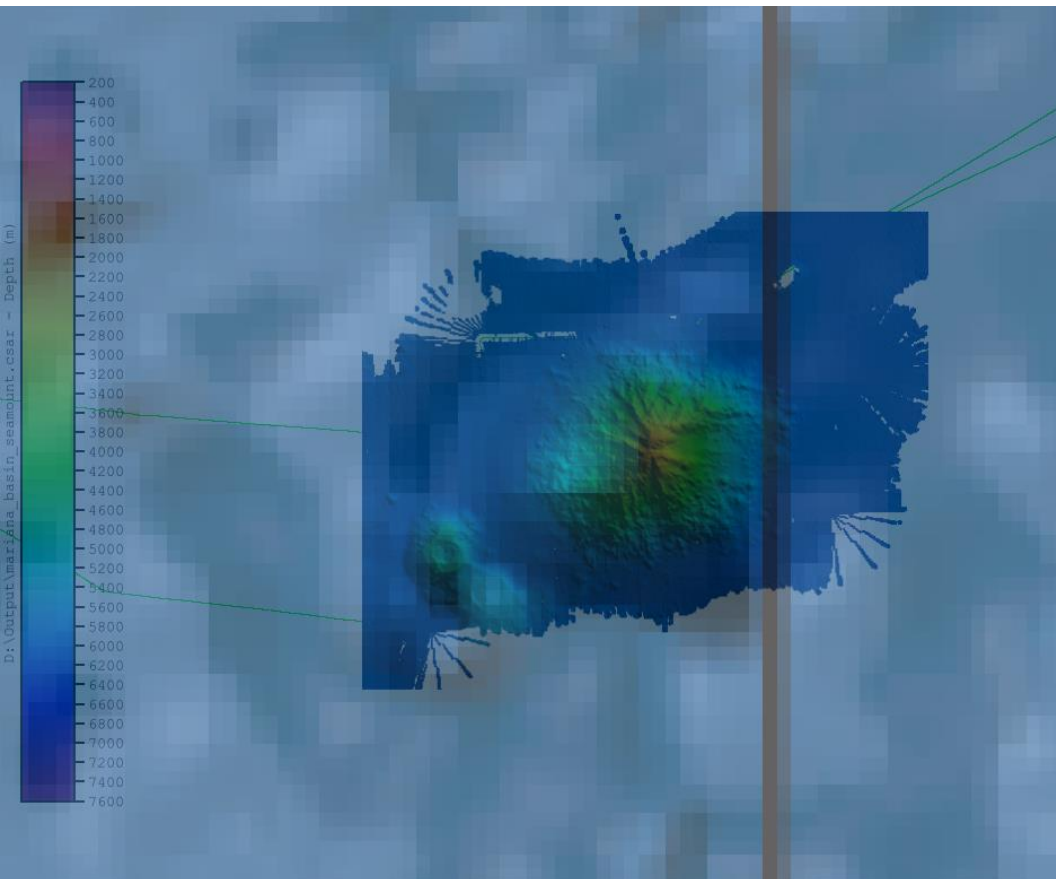
Figure 3. Foot of the slope formula



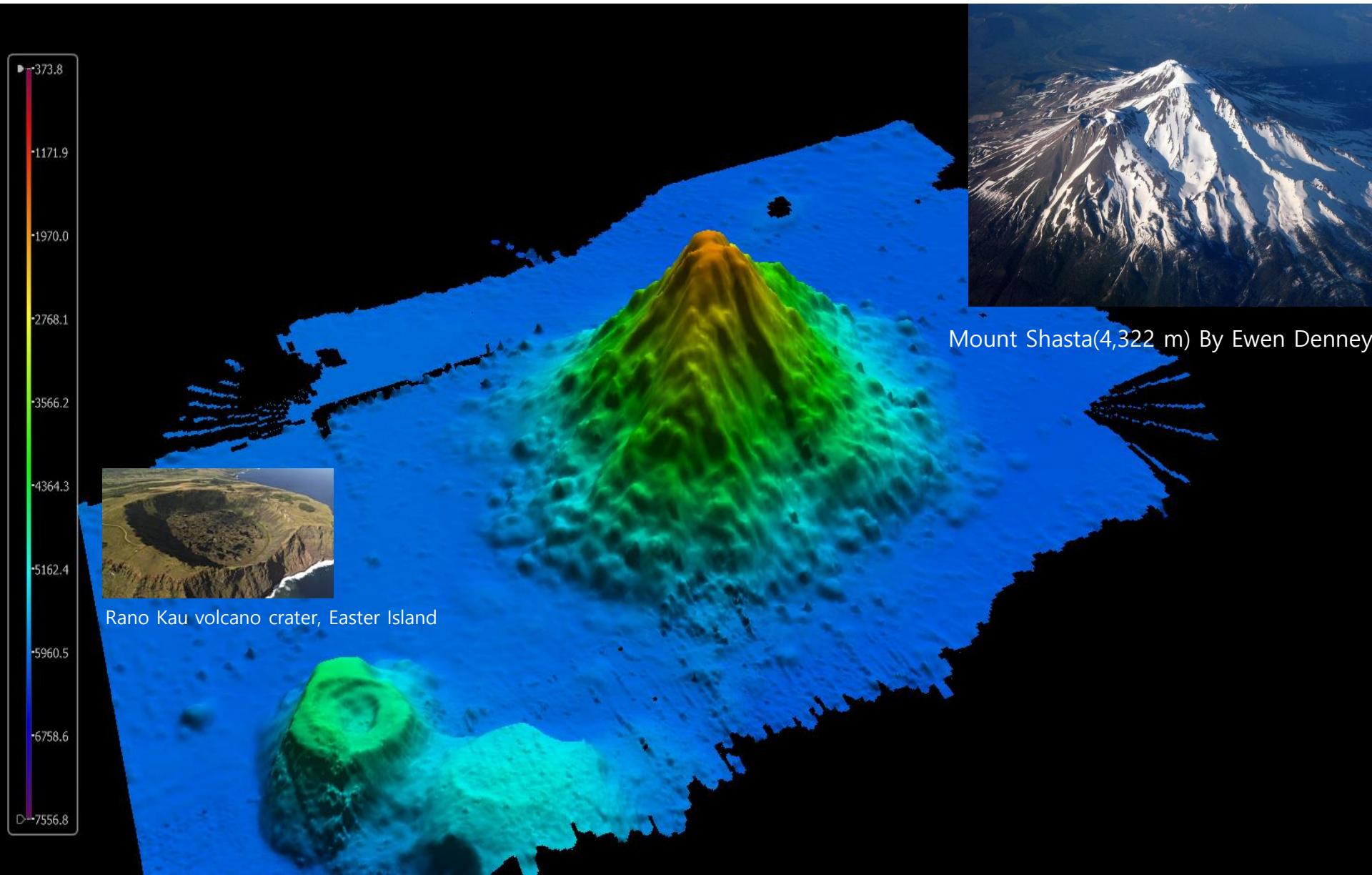
Sea Acceptance Test Cruise



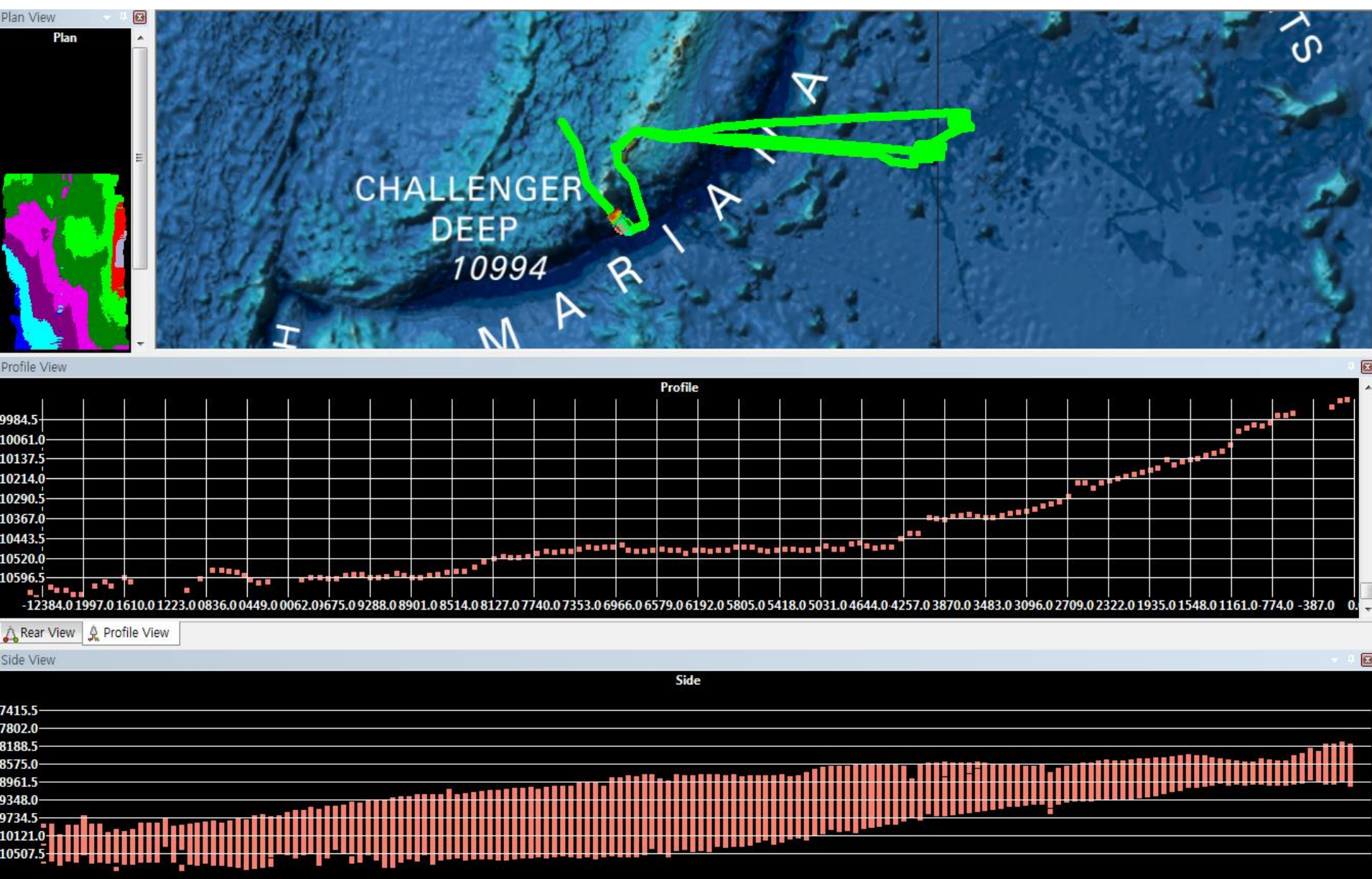
Sea Acceptance Test Cruise



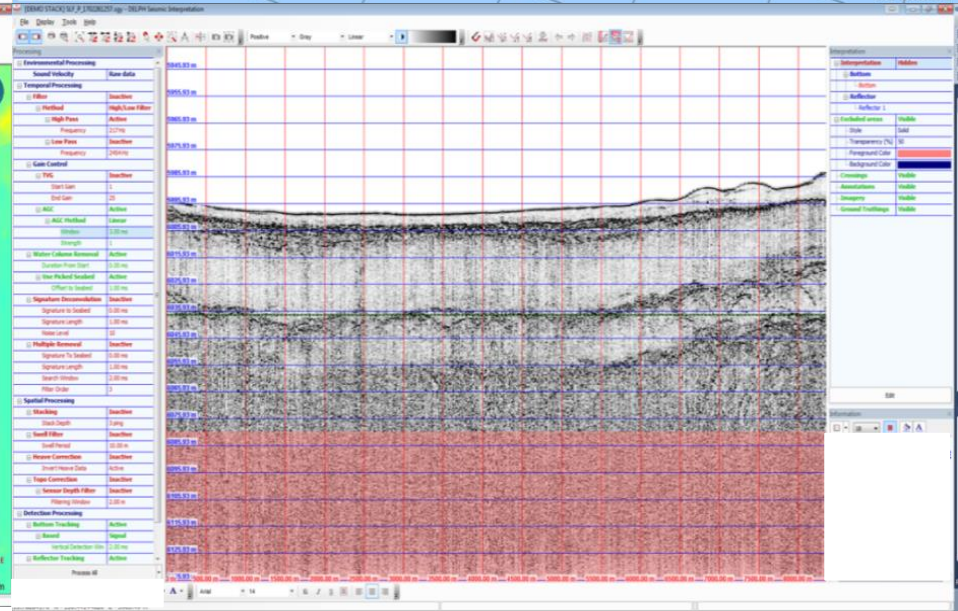
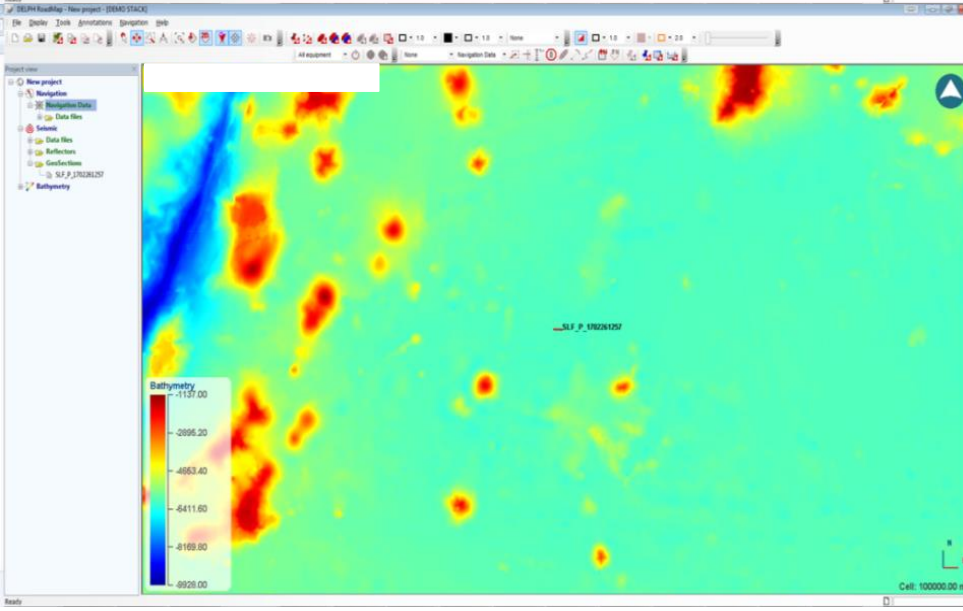
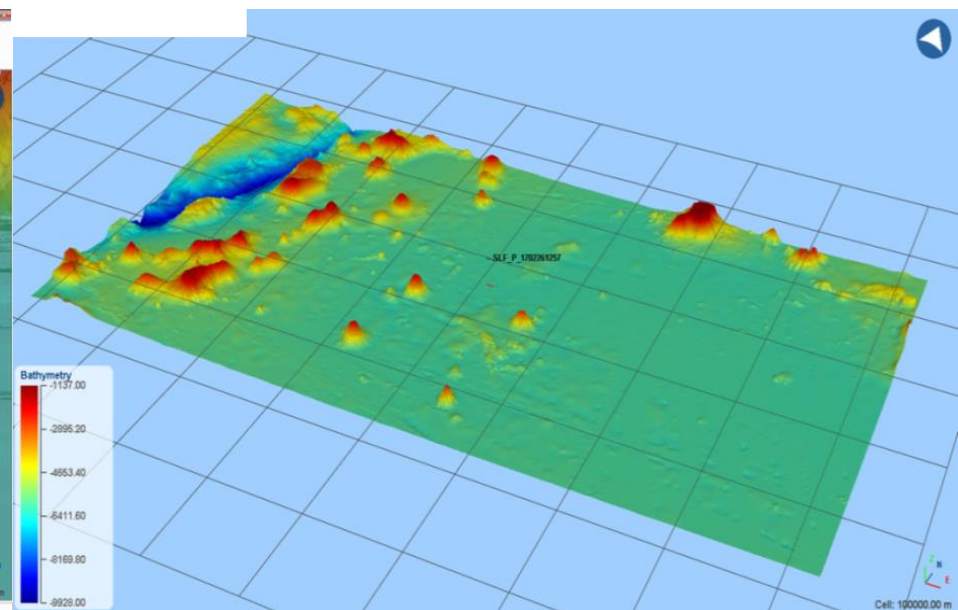
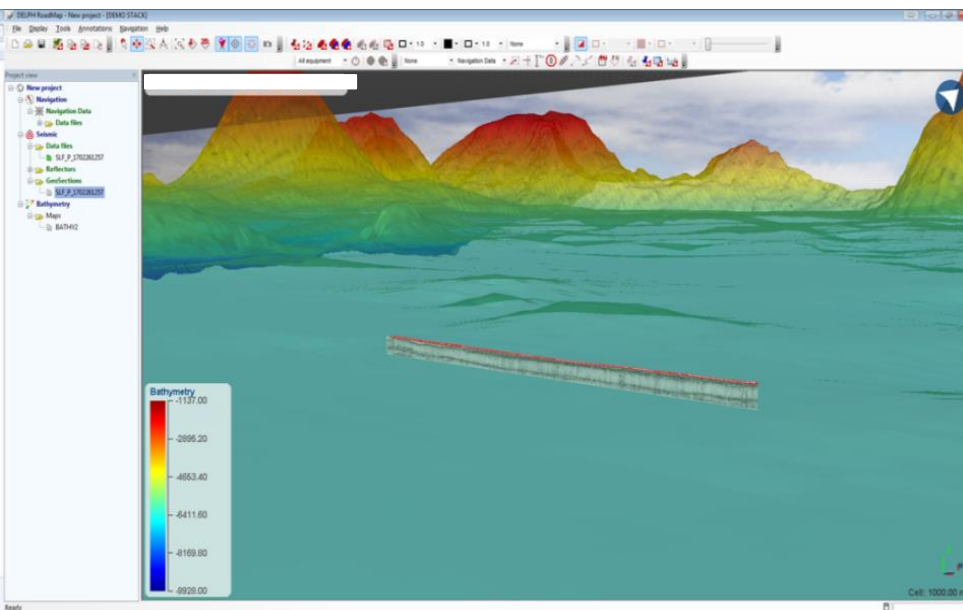
Sea Mount and Creator in Mariana Basin



Challenger Deep with RV ISABU



Data Gather & Interpretation



Data Sharing Examples

NOAA NATIONAL CENTERS FOR
ENVIRONMENTAL INFORMATION

NOAA > NESDIS > NCEI (formerly NGDC) > Maps > Bathymetry

Layers

Bathymetric Surveys

- ☒ Multibeam Bathymetric Surveys
- ☐ Multibeam Bathymetry Mosaic (Shaded Relief Imagery)
- ☐ Single-Beam (Trackline) Bathymetric Surveys
- ☐ Trackline Bathymetry Density
- ☐ NOS Hydrographic Surveys:
 - ☒ All Surveys
 - ☐ Surveys with Bathymetric Attributed Ords (BAOs)
- ☐ BAG Footprints
- ☐ BAG Color Shaded Relief Imagery
- Search Surveys ☒ Reset

Digital Elevation Models (DEMs)

- ☐ DEM Footprints
- ☐ DEM Color Shaded Relief Imagery

Bathymetric Lidar

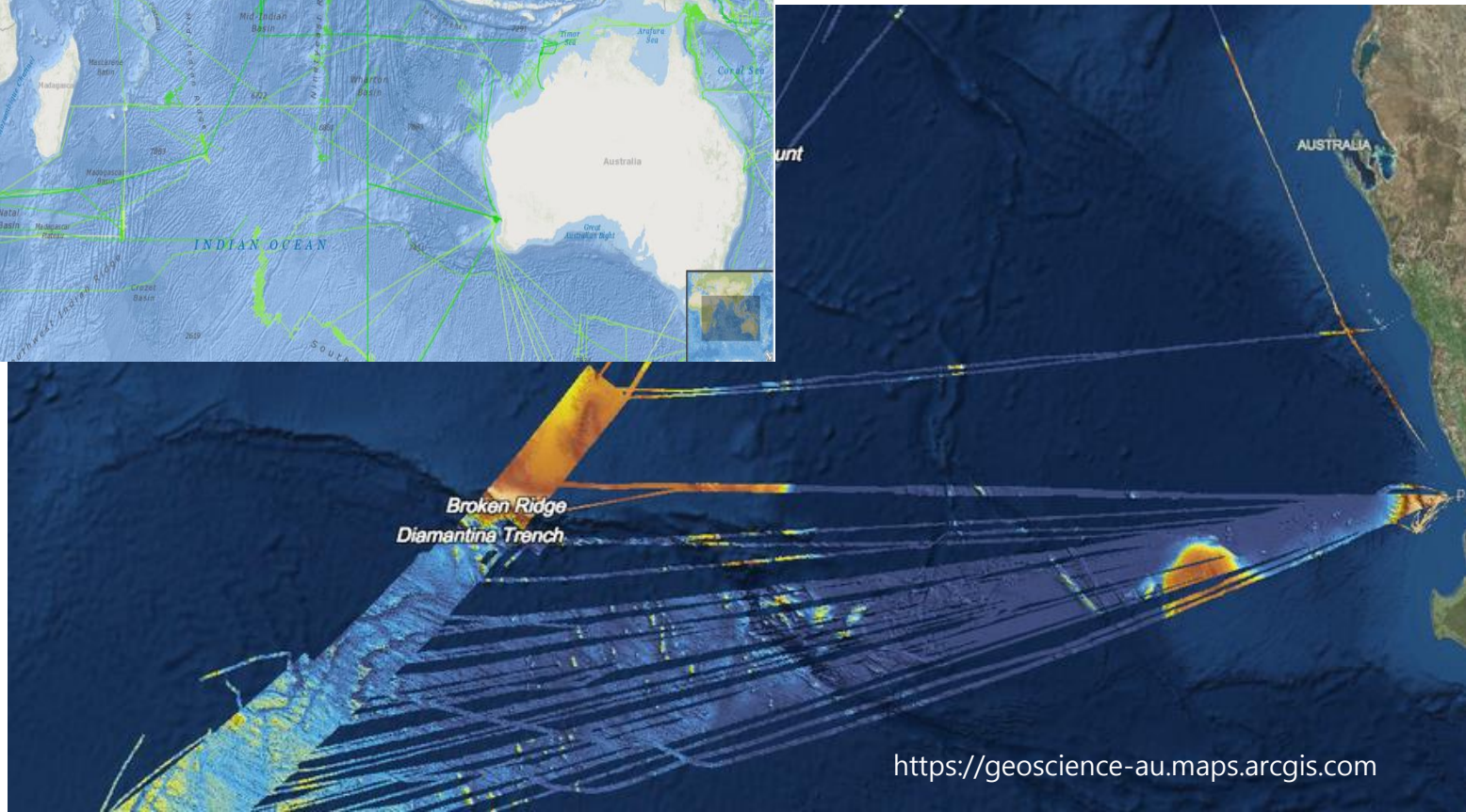
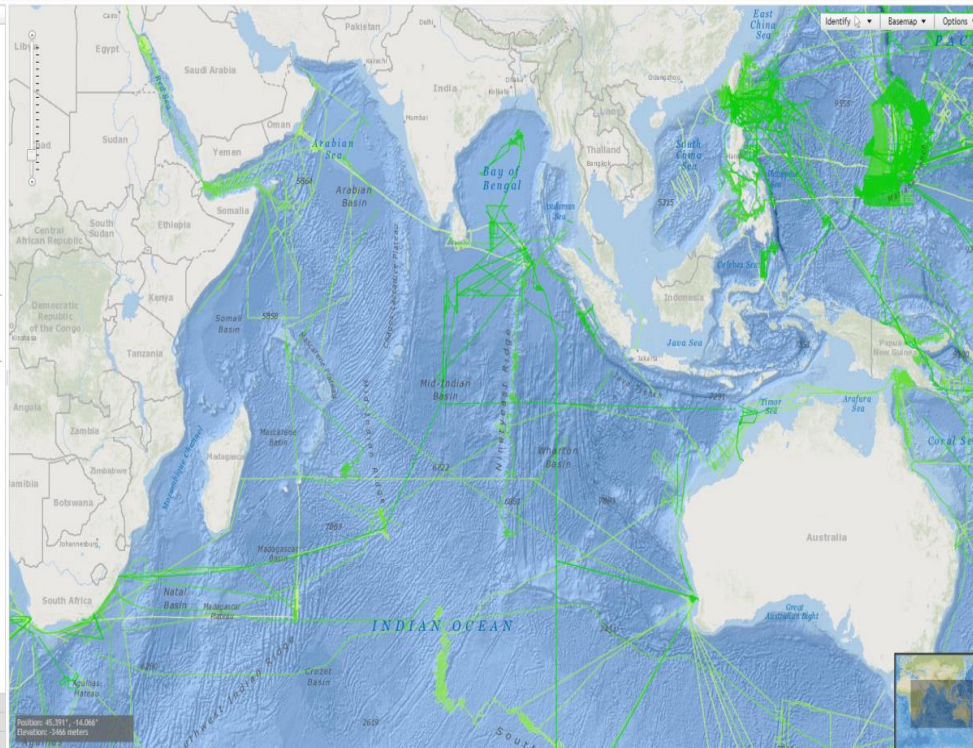
- ☐ Coastal Lidar Datasets available from NOAA's Office for Coastal Management

Legend

More Information

Help

Bathymetric Data Viewer



- Transit sailing coverage is about 70~90% of Scientific Cruise.
- Seafloor mapping data during transit need to be reviewed for sharing with international scientific community.
- Scientific Cruise Plan hope to be consulted under scientific party.
- To Encourage data sharing, National Government law must be improved with financial support.

Take Home Messages

- RV ISABU can map full ocean depth globally since 2017.
- Transit sailing are very valuable, then must be to organize for future demands.
- To share seafloor mapping data with international scientific group, we will develop official way to submit under Each Country Laws or Funding ORG's Permission.