

# 19<sup>th</sup> Meeting of the North Indian Ocean Hydrographic Commission

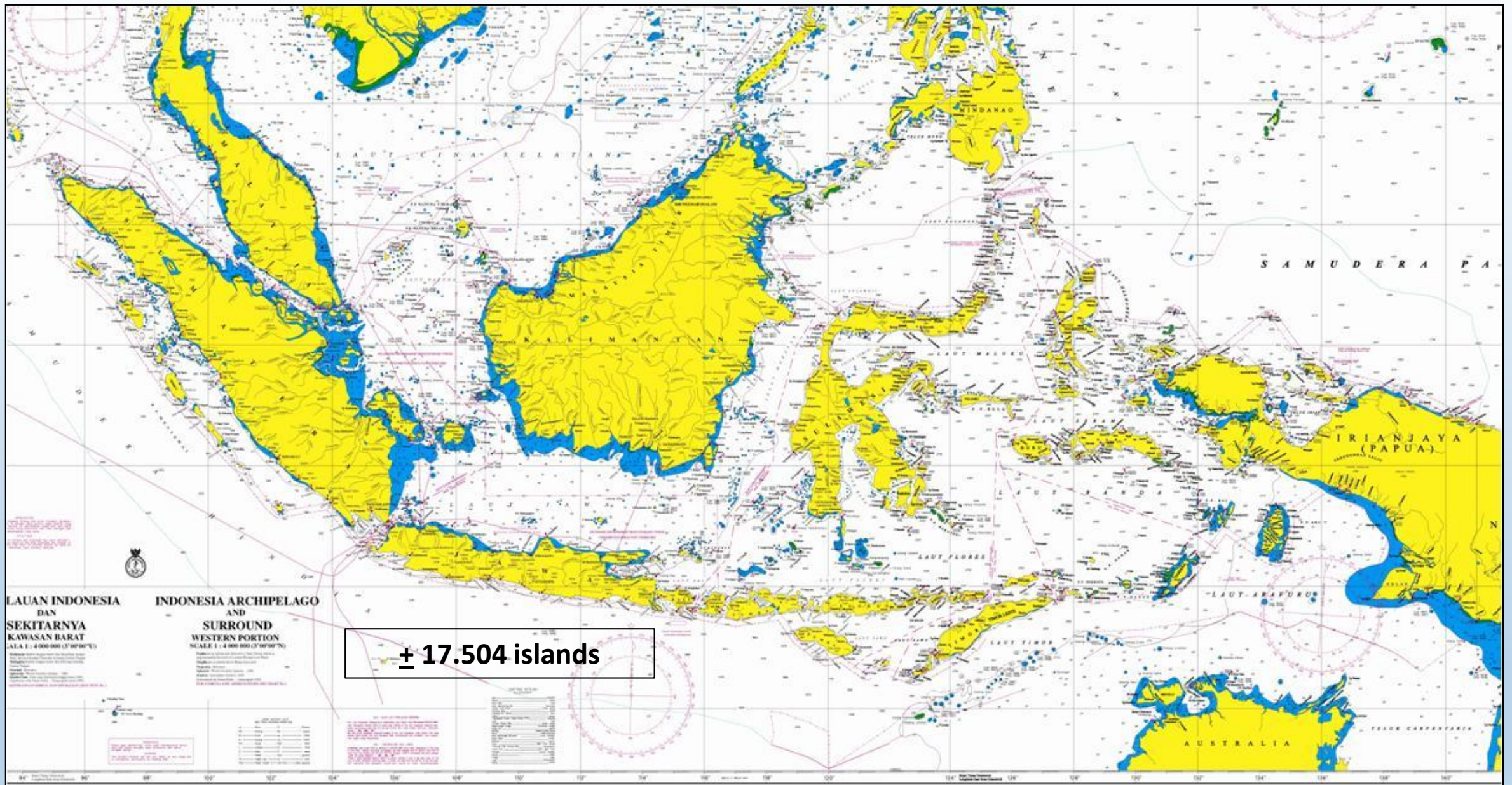
National Report by  
**INDONESIA**



International Hydrographic Organization  
*Organisation Hydrographique Internationale*

North Indian Ocean Hydrographic Commission





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North Indian Ocean Hydrographic Commission







# Main achievements during the year of 2018

The main achievements during the year of 2018, Pushidrosal had conducted

- a. Hydrographic re-survey for  $\pm 54,000$  km<sup>2</sup>
- b. Update 86 numbers of Nautical Charts
- c. Update 50 cells of ENC
- d. Publish Notice to Mariners
- e. Publish Navigational Warning
- f. Participated on SAR and natural disaster relief and mitigation
  - Toba Lake ferry accident;
  - Palu Bay and Sunda Strait, earthquake and Tsunami;
  - Lion Air - JT610 in North of Tanjung Karawang (Java Sea))





# Progress on surveys and charting

## SURVEY ACTIVITIES - 2018

- ❖ Conduct Hydrographic Survey
  - $\pm 53$  survey areas
  - covering  $\pm 54.000 \text{ km}^2$ ,
  - less then 1% of all Indonesian waters
- ❖ Priorities Area :
  - Channel;
  - Ports;
  - Archipelagic Sea Lanes;
  - Busiest water; and
  - Straits;
- ❖ CATZOC C - D area
- ❖ Identification of Under water Pipeline and Cable





# Progress on surveys and charting



## Charting Activities

### PRODUCTION

- 20 Cartographers on Paper Chart
- 86 Numbers of Paper Charts (Reprints and New Editions)
- 8 Cartographers on ENC
- 50 Cells annually (New Cells and New Editions)

### SOFTWARE

- CARIS GIS 4.4
- SevenCs ENC Tools
- D'Kart Inspector
- CARIS HOM and S57 Composer (HPD ongoing)
- ECS Orca Master
- ECDIS MARIS

## Progress On Charting 2018

- ENC Coverage 520 Cells
- Paper Chart in 2018 Update 86 numbers from the total 580 numbers of paper chart, consist of:
  - ❖ 47 Numbers of Chart - Port & Channel
  - ❖ 15 Numbers of Chart - Archipelagic Sea Lanes
  - ❖ 24 Numbers of Chart - Busies water





# Progress on surveys and charting

## MARINE SAFETY INFORMATION

- ☐ Directorate General of Sea Transportation (DGST) is responsible for MSI in Indonesia water.
- ☐ Navtex Station under DGST are 4 Stations (Jakarta; Makassar; Ambon and Jayapura)
- ☐ Pushidrosal (HO) support the information from hydrographic Notes on providing navigational warning.
- ☐ Hydrographic Data Center (IMAGIC) as MSDI provide also navigational warning (E - Navigational Dashboard)
- ☐ Pushidrosal published NtMs weekly (52) ;
- ☐ Navigational Warning & Hydro-Indonesia published due to urgent information of ships collision; natural disaster; SAR; under water cable & pipes installation etc TO all mariners by Coastal Radio Station.







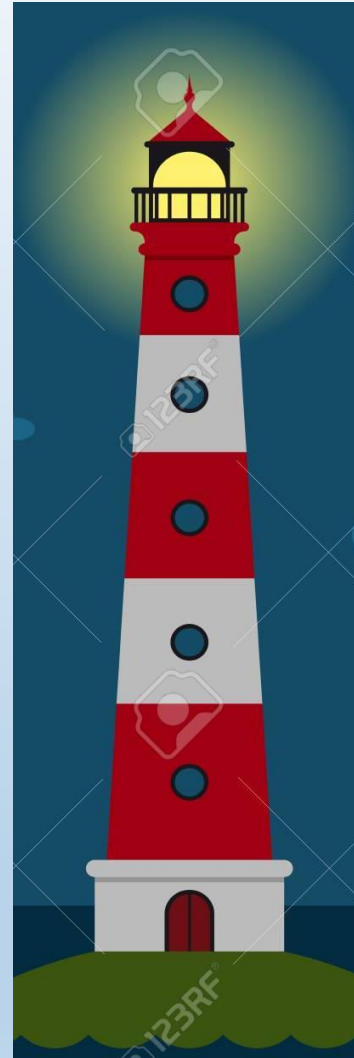
# Progress on surveys and charting

## MARINE SAFETY INFORMATION

Annually published 52 numbers of Notice to Mariners

59 Navigation Warnings published in 2018

No	TYPE	NUMBERS OF INFORMATIONS	REMARK
1	NAVIGATIONAL AIDS	268	
2	WRECKS	31	
4	SHALLOW WATERS	11	
5	PIPELINES	5	
6	SUBMARINE CABLES	30	
7	MINE-FREE AREAS	5	
8	CONSERVATION AREAS	3	
9	ANCHORING AREAS	3	
10	OIL PLATFORMS	31	
11	SURVEYS	3	
12	NAVIGATION CHANNELS	2	
13	FISH TRAP AREAS	1	
14	NATURAL DISASTERS	2	Palu Tsunami + Eruption on Anak Krakatau
15	MILITARY EXERCISES	2	
	Total	397	

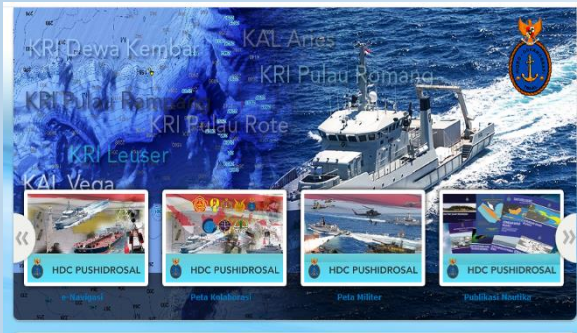


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# DEVELOPMENT INDONESIA MARINE GEOSPATIAL INFORMATION CENTER (IMAGIC) AS IMPLEMENTATION OF MSDI



<http://hdc.pushidrosal.id>

- PUSHIDROSAL INDONESIA HAD DEVELOPED THE HYDROGRAPHIC DATA CENTRE AS IMPLEMENTATION OF MARINE SPATIAL DATA INFRASTRUCTURE IN INDONESIA (IMAGIC).
- THIS DATA ARE OPENED AS WELL AS SAFETY OF NAVIGATION, MARINE ENVIRONMENT PROTECTION, INTEGRATED COASTAL ZONE MANAGEMENT, MARINE RESEARCH, EXPLOITATION AND EXPLORATION OF MARINE RESOURCES.
- HYDROGRAPHIC DATA CENTRE PORTAL CONNECT TO OTHER PORTAL IN INDONESIA.
- INDONESIA GOVERNMENT DEVELOP NATIONAL MARITIME PORTAL “**NATIONAL OCEAN DATA CENTER**” WHICH INTEGRATE MARITIME PORTAL FROM ALL NATIONAL MARITIME AGENCY





# Capacity Building Activities

## PARTICIPATING IN INTERNATIONAL COURSE

- ❖ Oceanography Course in India
- ❖ Hydrographic Course Cat – B, in Japan
- ❖ Long Hydrography Course Cat – A, in India
- ❖ 10<sup>th</sup> Course in **Marine Cartography** and Data Assessment – MCDA (FIG-IHO-ICA-Cat B) in UK – 2 persons in 2018
- ❖ **Hydrographic Course in Australia (2019)** – one candidate
- ❖ **International Hydrography Management and Engineering Program in Mississippi US - 2019** (19 February – 22 August 2019) – one candidate

## REGIONAL CB ON EAHC TRAINING IN 2018

- ❖ Jakarta – GNSS for tide correction (18 participants)
- ❖ Shanghai – Carto Production Database System Development

## INTERNATIONAL WORKSHOP AND SEMINAR

- ❖ Workshop International Delimiting Maritime Boundaries Challenges and Outlook 2018 in Paris
- ❖ Workshop Satellite Derived Bathymetry (Remote Sensing Technology in Bathymetry) - 2018 University of Ottawa Canada

## Hydrographic Survey Cat B & A

- ❖ Cat B Hydrographic Survey Course (IDN Navy Hydrographic School)
- ❖ Cat A Hydrographic Survey Course (Institute of Technology Bandung)





## Participate in IHO WG, RHC, and others

NO.	MEETING	MEMBER/ASOCIATE	REMARKS
1.	Hydrographic Service and Standards Committee (HSSC)	M	
2.	Nautical Cartography Working Group (NCWG)	M	
3.	Data Quality Working Group (DQWG)	M	
4.	Marine Spatial Data Infrastructures Working Group (MSDIWG)	M	
5.	S-100 Working Group (S100WG)	M	
6.	Nautical Information Provision Working Group (NIPWG)	M	
7.	Tides, Water Level And Currents Working Group (TWCWG)	M	
8.	ENC Standards Maintenance Working Group (ENCWG)	M	
9.	Hydrographic Dictionary Working Group (HDWG)	M	
10.	East Asia Hydrographic Commission (EAHC)	M	Vice Chair
11.	North Indian Ocean Hydrographic Commission (NIOHC)	M	
12.	South West Pacific Hydrographic Commission (SWPHC)	A	
13.	FIG/IHO/ICA – International Board on Standards of Competence for Hydrographic Surveyor and Nautical Cartographers		
14.	GEBCO Sub Committee on Undersea Feature Names (SCUFN)		
15.	IHO Council	M	
16.	Malacca and Singapore Straits (MSS) ENC	M	Coordinator





# Plans that affect the region

- IHO CB – EAHC TRDC-BoD Program 2019 (on *Marine Safety Information*)
- **Indonesia Golden Jubilee 2020 – International Hydrographic Seminar 2020**

## IHO CB – EAHC TRDC program 2018 – GNSS for Tide Correction



## International Hydrographic Seminar 2018

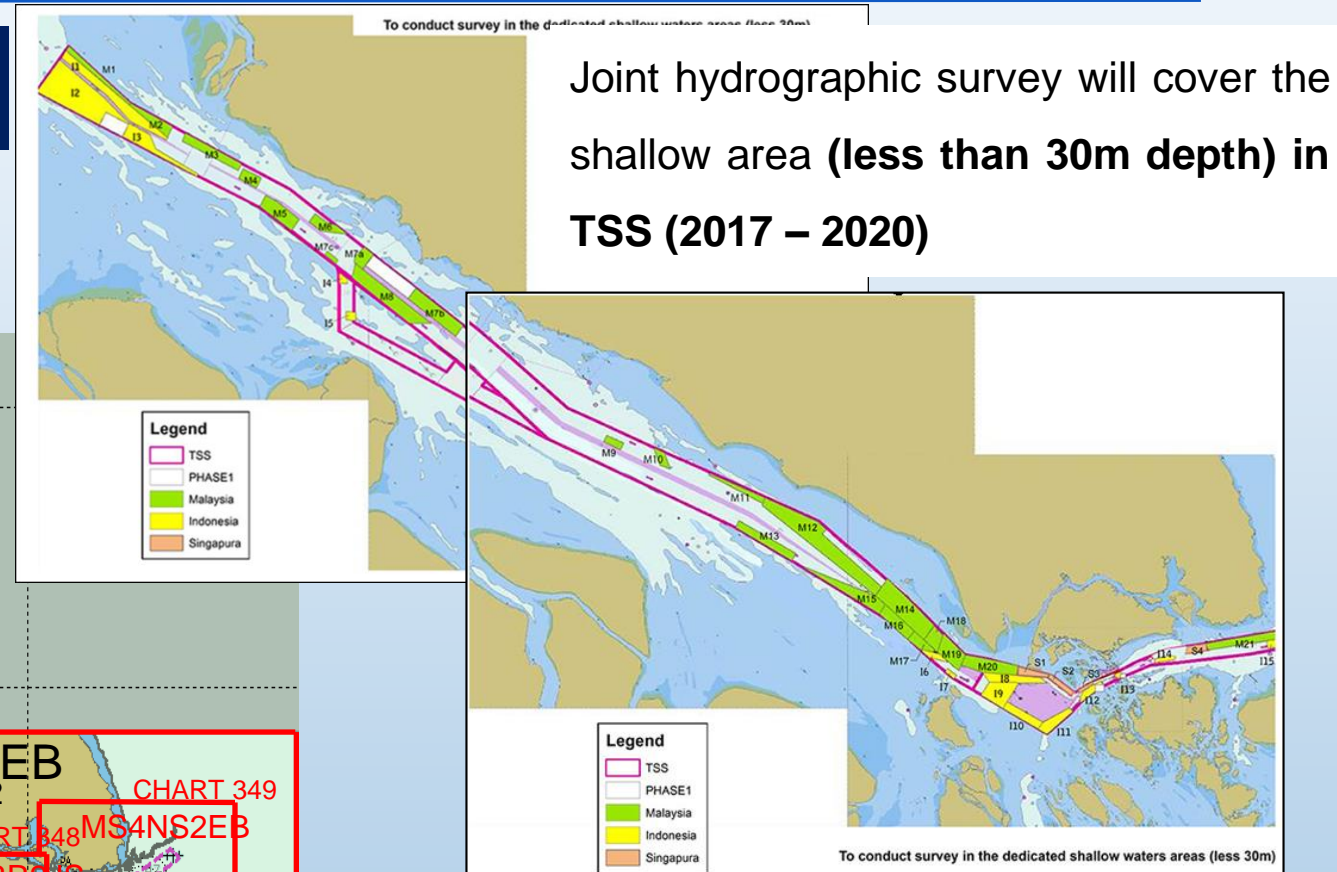
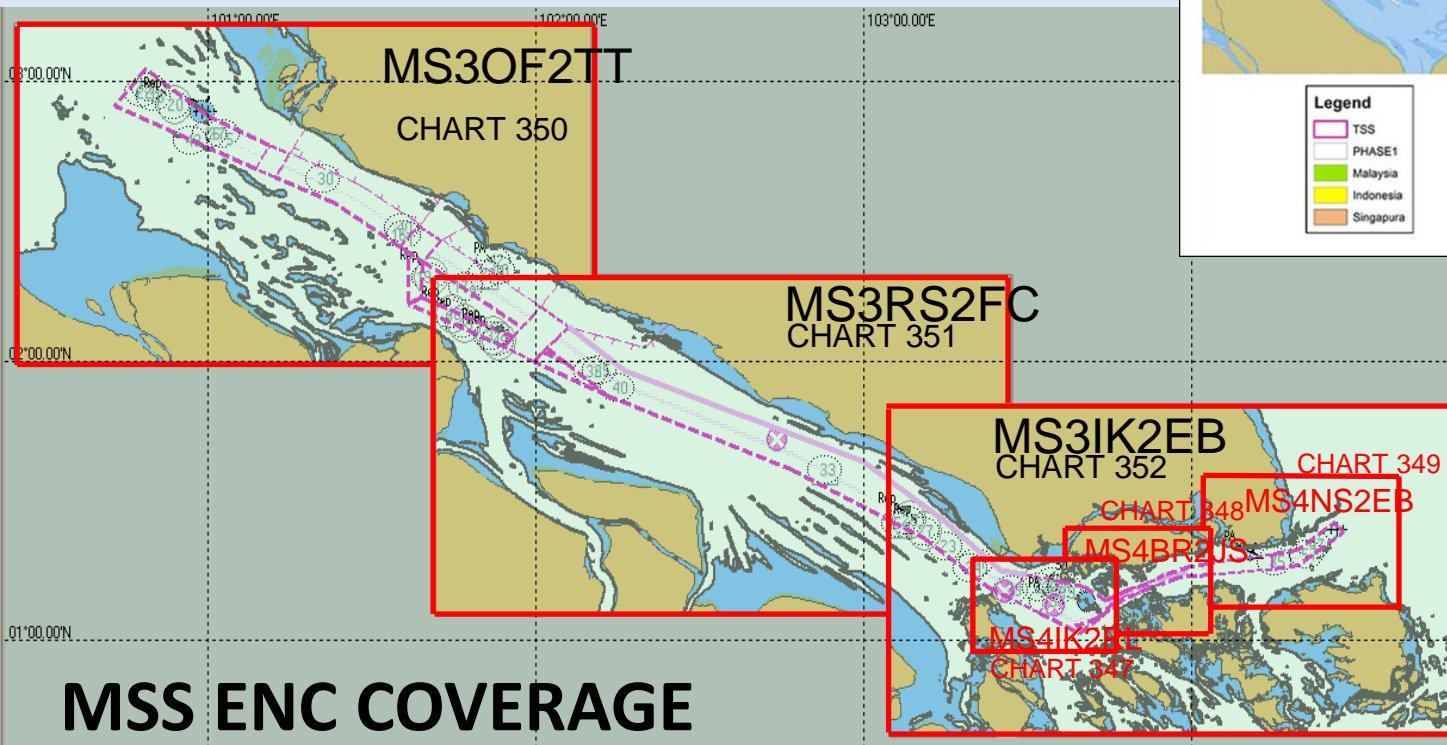






# Lesson learned to share

## MALACCA SINGAPORE STRAIT ELECTRONIC NAVIGATIONAL CHART (MSS ENC)



Joint hydrographic survey will cover the shallow area (**less than 30m depth**) in TSS (2017 – 2020)

The hydrographic data acquired will be processed and **high density electronic navigational charts (ENCs)** will be produced for the safety of navigation.



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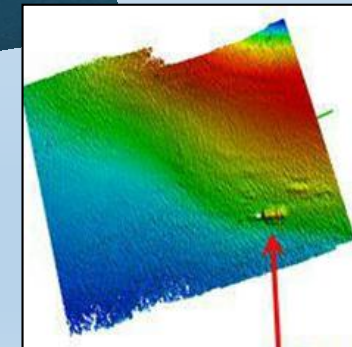




# Lesson learned to share

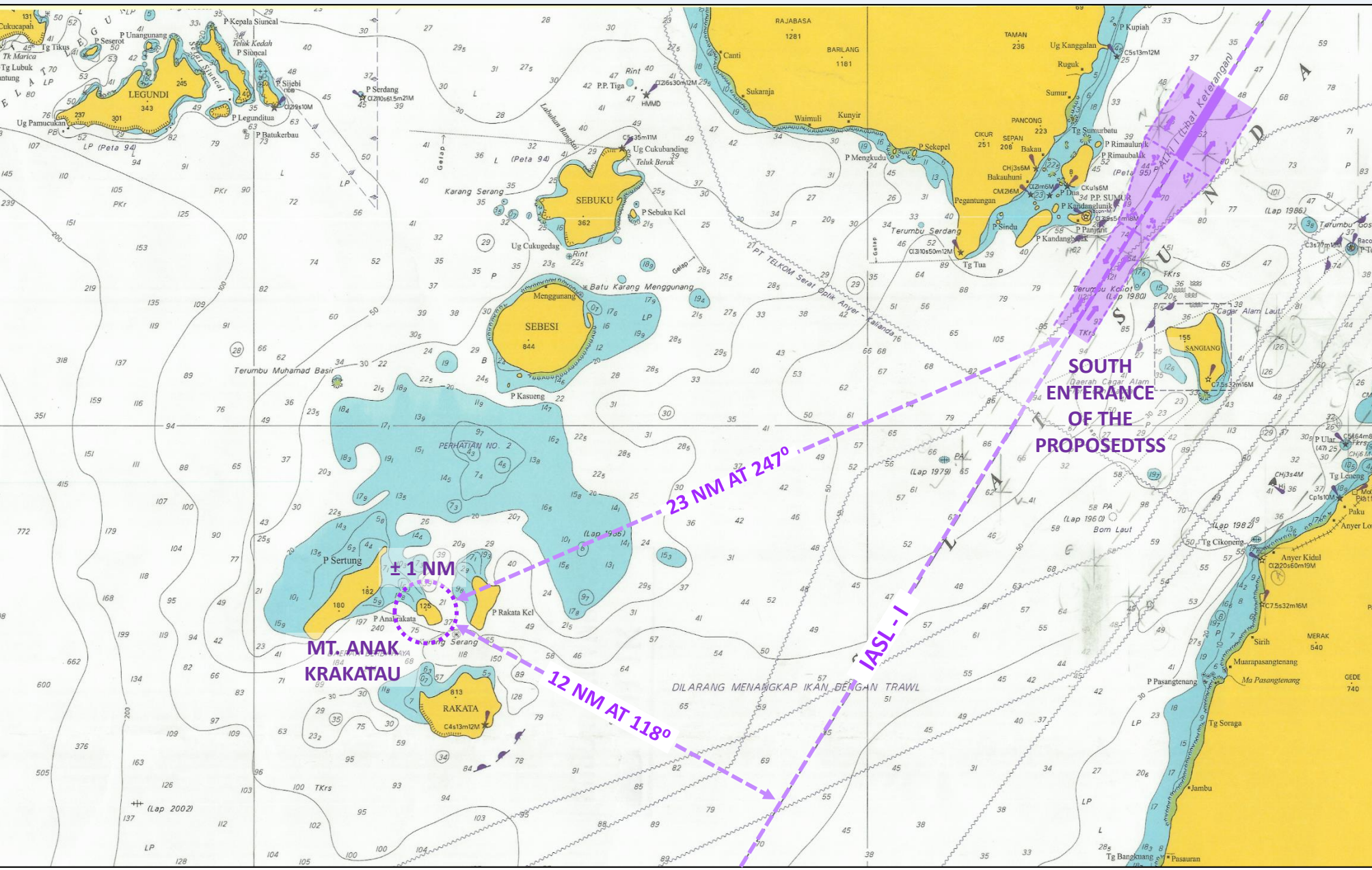
## PARTICIPATE ON DISASTER RELIEF AND MITIGATION

- ❖ SAR on MV Sinar Bangun sinking in Toba Lake
- ❖ Participate on Palu – Donggala Earthquake and Tsunami
- ❖ SAR JT610 (Lion Air Crash) in North of Tanjung Karawang – Java Sea.
- ❖ Participate on Sunda Strait Tsunami effect – Disaster Relief, Search and Rescue





# SUNDA STRAIT | IMPACT OF KRAKATAU ERUPTION



## MOUNT KRAKATAU Eruption Dec 2018

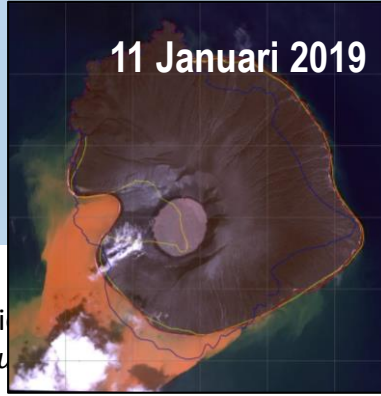
- Minor impact to navigation activities
- Landslide of Seabed away from the IASL-I and the proposed TSS
- Continuously Observed & Monitored
- Published Navigational Warning





# Lesson learned to share

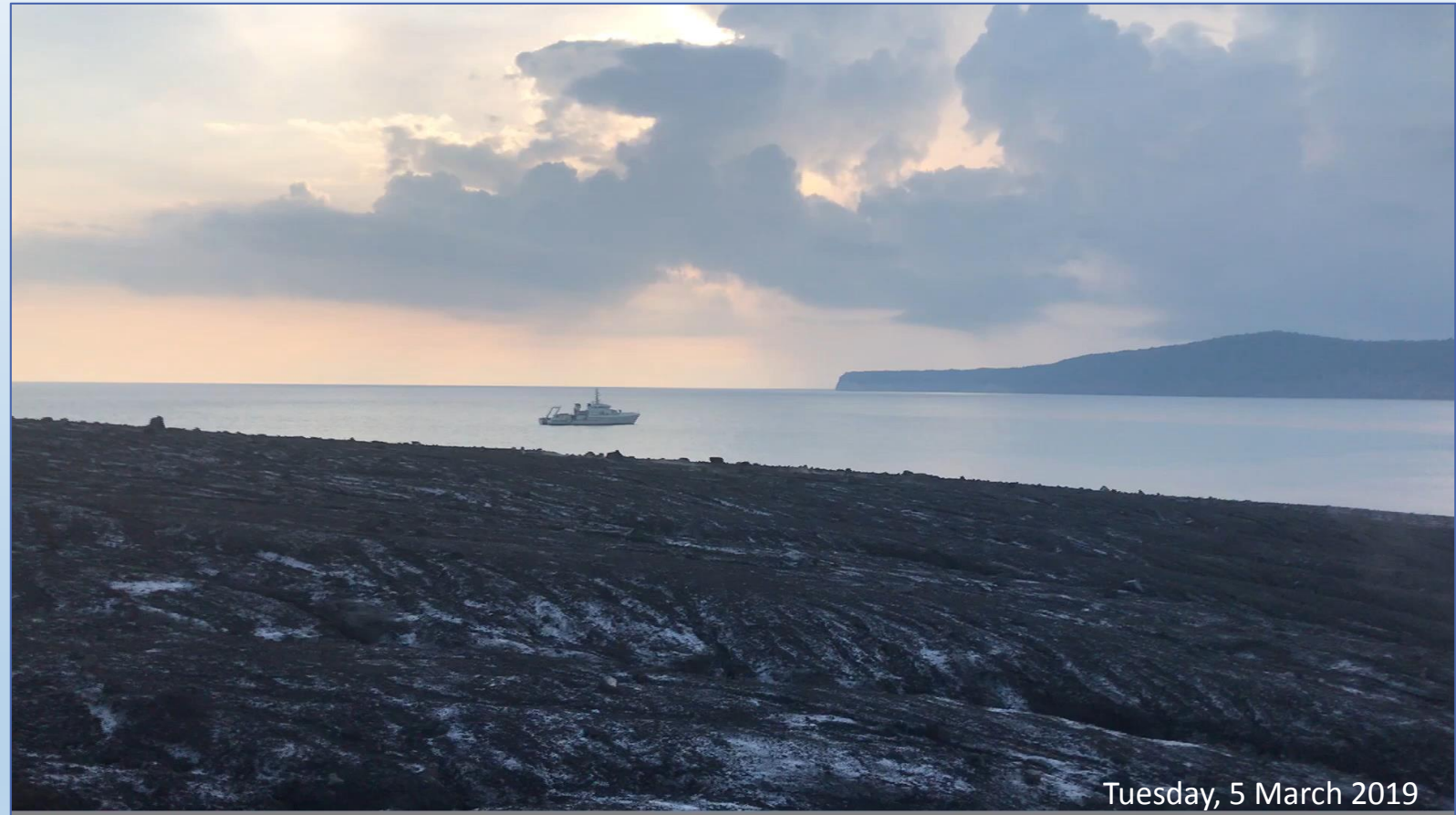
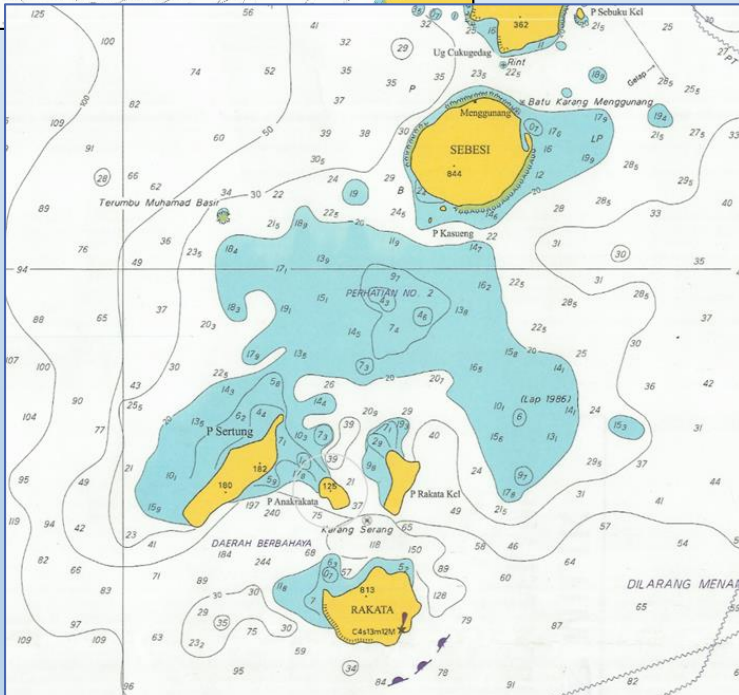
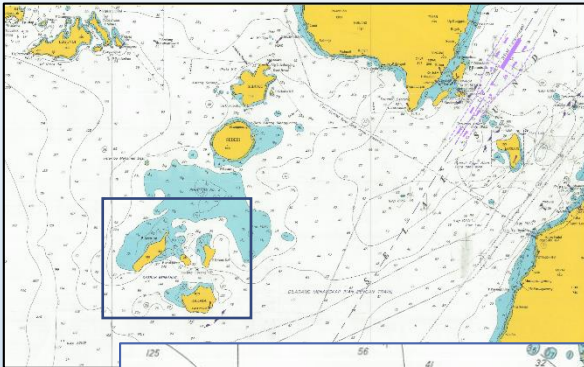
- Before eruption, Mt. Anak Krakatau - 297 Ha
- After Eruption
  - Until 11 January 2019, The Anak Krakatau Mt grow very fast due to frequently of eruption which the area more than 18 Ha since eruption.
  - New Crater: Diameter 400 m, Crater Area 12 ha





# Lesson learned to share

On going Hydrographic Survey in Anak Krakatau vicinity for updating bathymetry data and supporting national agency for disaster relief and management.



Tuesday, 5 March 2019



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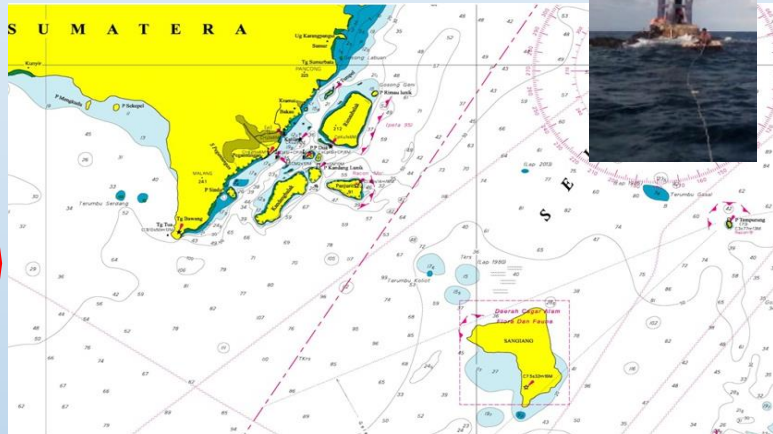




# THE TRAFFIC SEPARATION SCHEME IN SUNDA STRAIT PROPOSED IN NCSR-6



KOLIOT REEF LIGHT BEACON

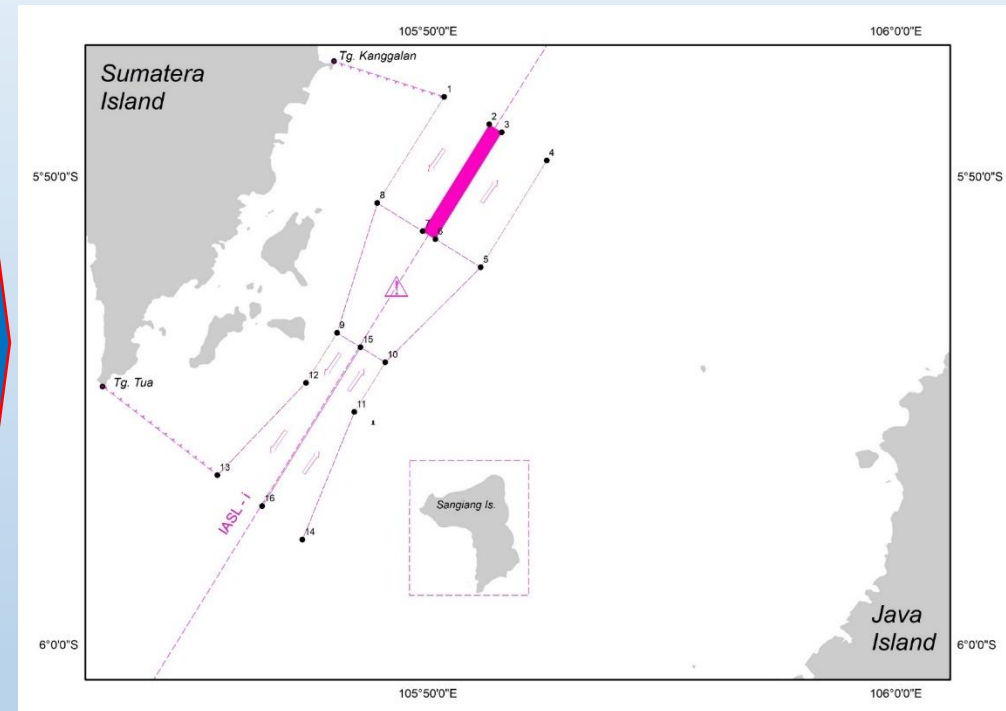


Natural Tourism Park  
Coral reefs & Marine Biota



720 HA Island

2.8 NM from IASL-I







# THE TRAFFIC SEPARATION SCHEME IN LOMBOK STRAIT PROPOSED IN NCSR-6

**DESIGNATED  
CONSERVATION AREA**

**2273.56 HA**

Decision of the  
Indonesian Minister for  
Ocean Affairs & Fisheries  
No.57/2014

**511 FISH SPECIES**

Allen & Werner  
Calculation Formula 2002

surrounded by  
**rich type of  
coral reef ecosystem**

**296 CORAL SPECIES**

**101.27  
HA**

GILI  
TRAWANGAN

**58.14  
HA**

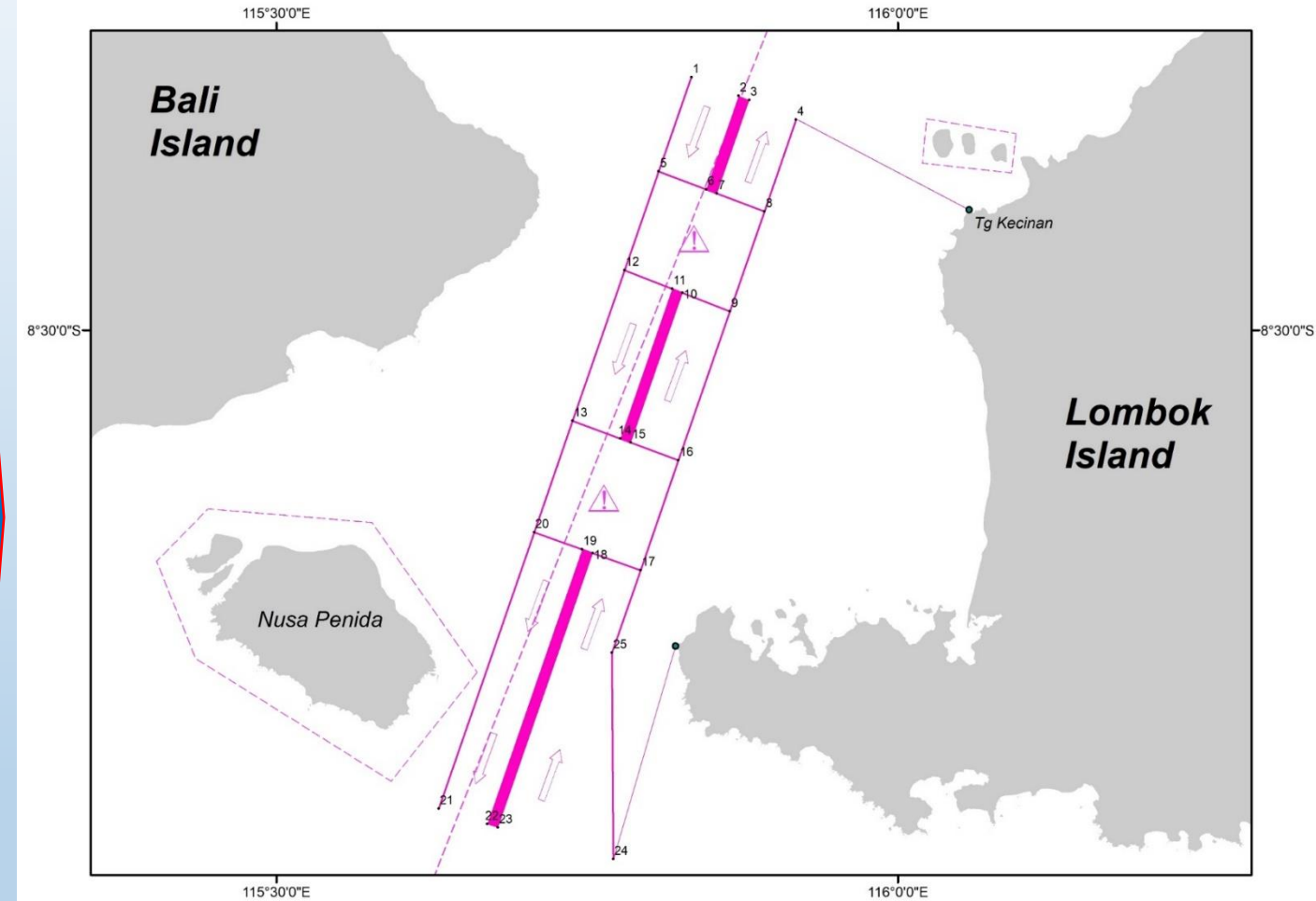
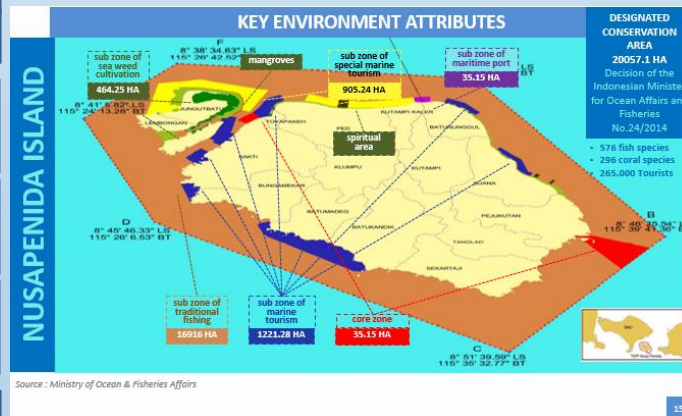
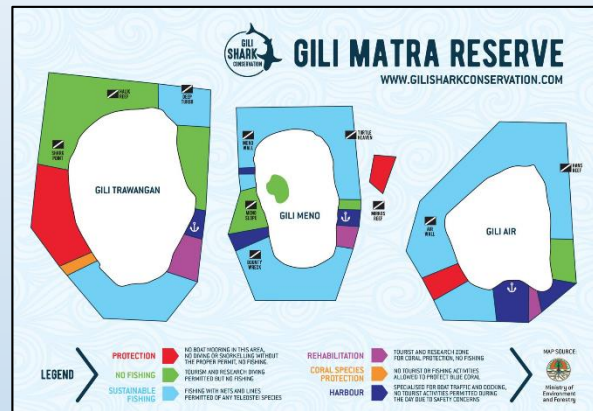
GILI MENO

**76.84  
HA**

GILI AYER

**MARINE TOURISM PARK**

**445.000 TOURISTS**



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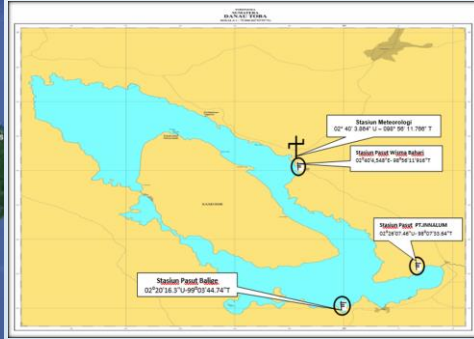
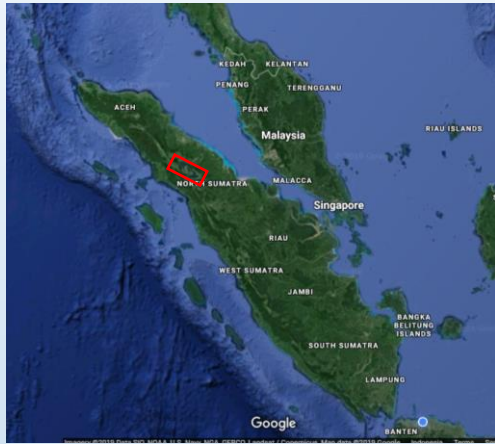
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# Success stories to share

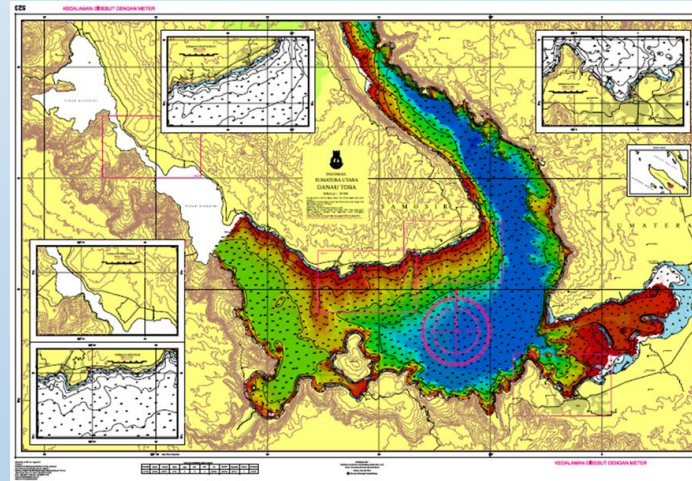
## Hydrographic Survey & Charting in Toba Lake



H = 903 m from MSL

IHO Publication : S-4, specifies regulations of the IHO for international (INT) charts and chart specifications of IHO,

- B-350.4 : Navigable rivers, lakes and canals should be shown as completely as possible on the larger scales;
- B-353 : land drainage: rivers, lakes, glaciers



- Safety Navigation Purposes provide inland waterways chart in Toba Lake
- 9 local port for local transport
- Hydrographic Survey
- Full Cover MBES - 60% Area
- Max Depth : 504 m
- Continue on 2019 program



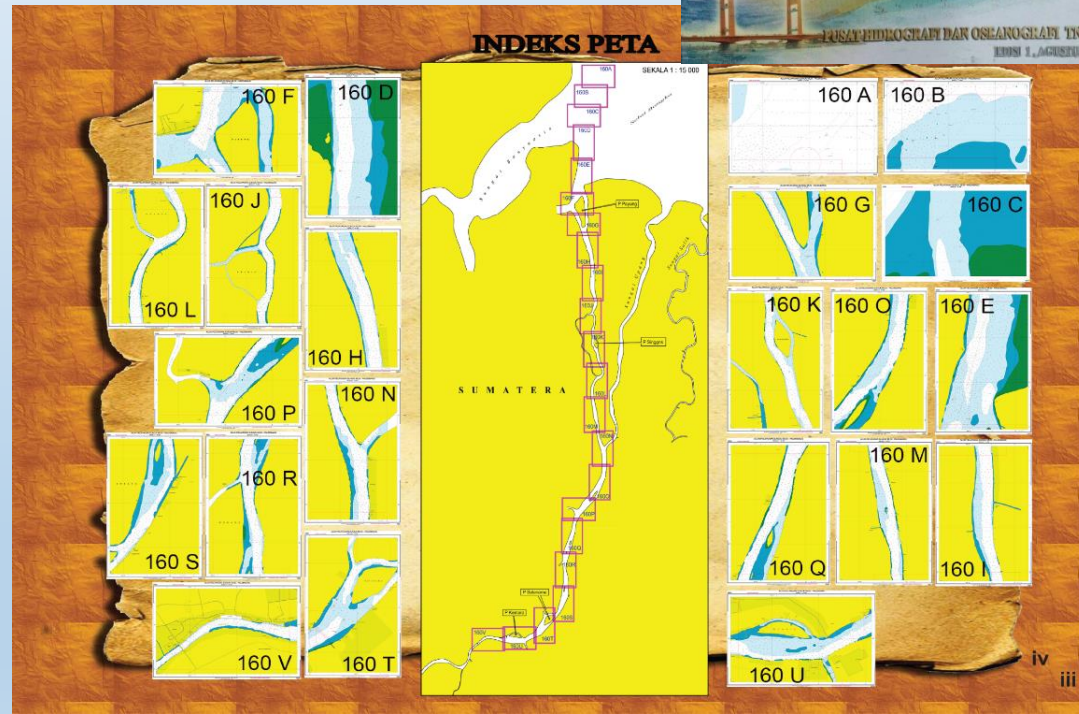
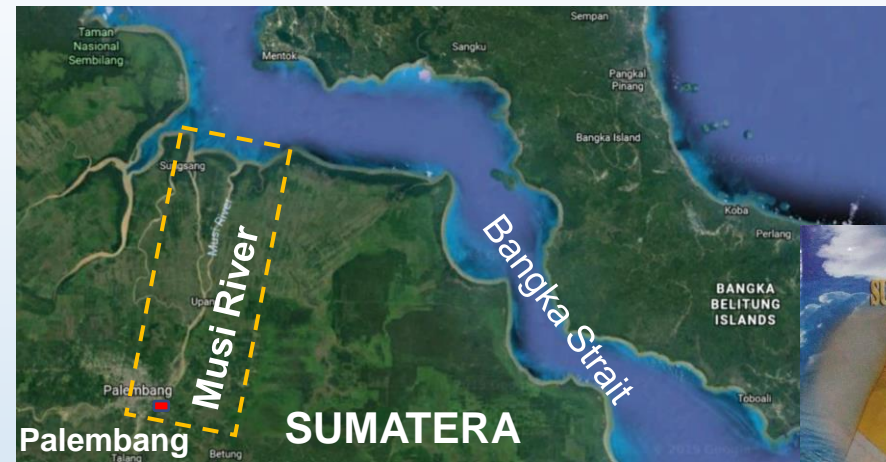


# Success stories to share



## PORT ENC PALEMBANG AND INLAND WATERWAYS CHARTS, MUSI RIVER

- ❖ Launching in 2017
- ❖ Musi River in South Sumatera (hydrographic survey 2013 – 2015) – depth average 3 – 10 m.
- ❖ The distance from the estuary to the harbor is 100 km. And river width between 270 m to 2.5 km,
- ❖ Book Chart of Musi River has 22 paper chart (Scale 1 : 10.000)
- ❖ ENC 22 cell
- ❖ Next project of Book Chart (ongoing process) is the channel of Muara Pegah – Palaran Samarinda East Kalimantan (Mahakam river)





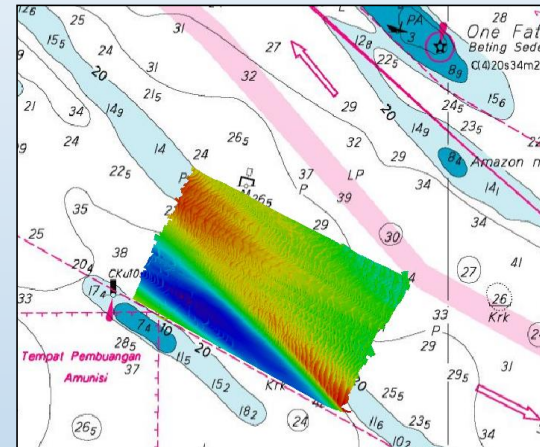
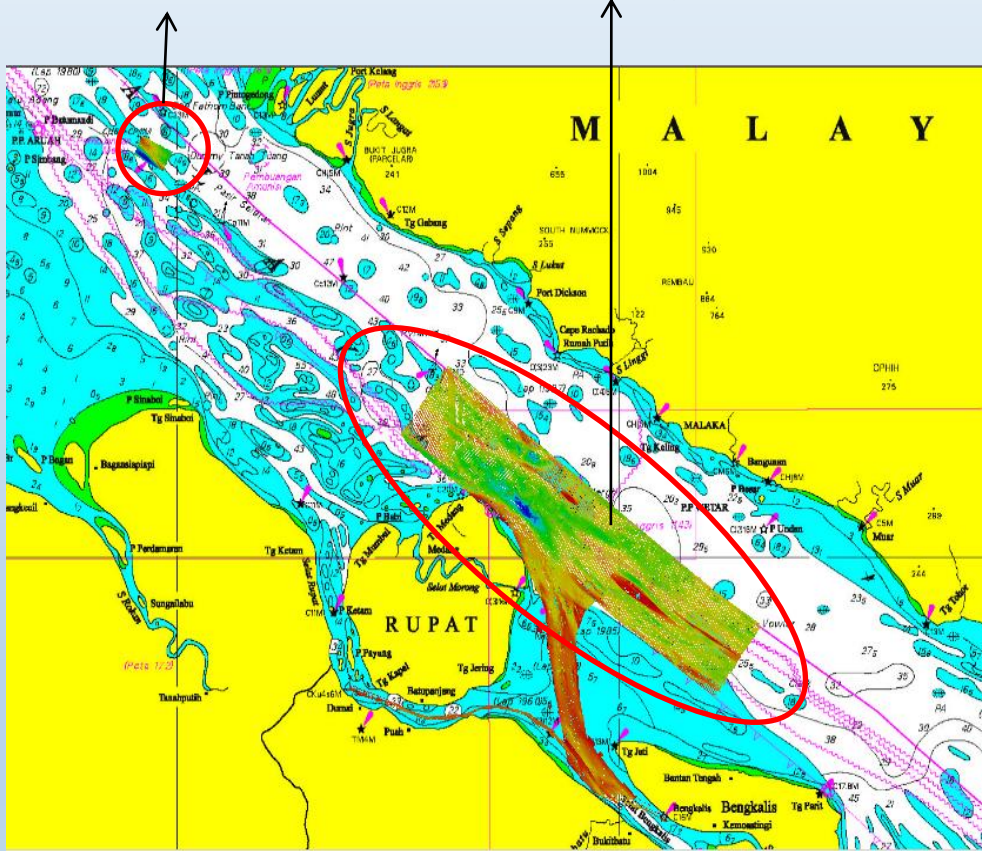


# Lesson learned to share

## Sandwaves in the Strait of Malacca

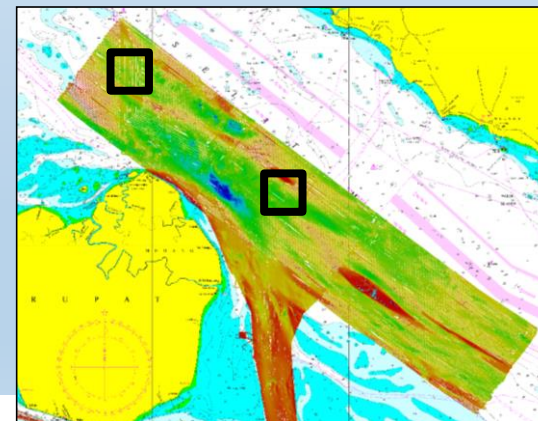
One-Fathom Bank

North of Rupert TSS (DW)



One-Fathom Bank

- Surveyed 2016
- KRI Rigel



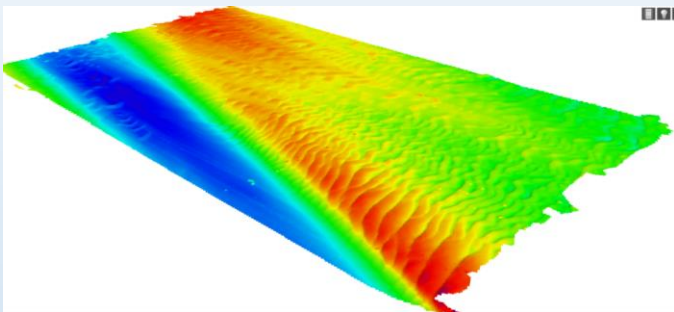
North of Rupert TSS (DW)

- Surveyed 2017
- KRI Spica



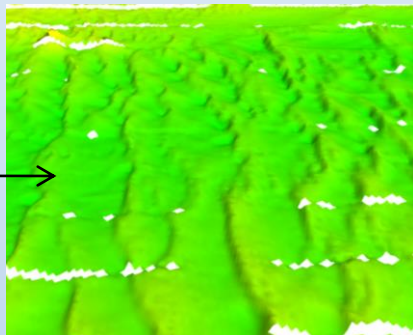
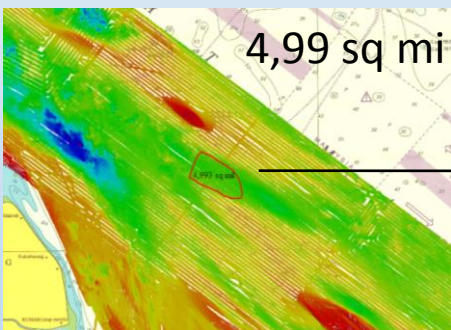


# Lesson learned to share

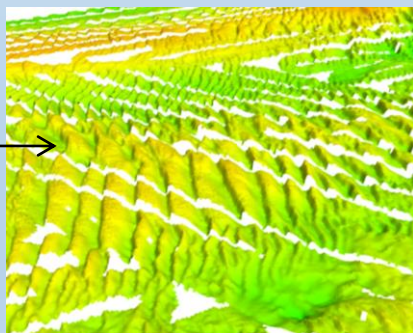
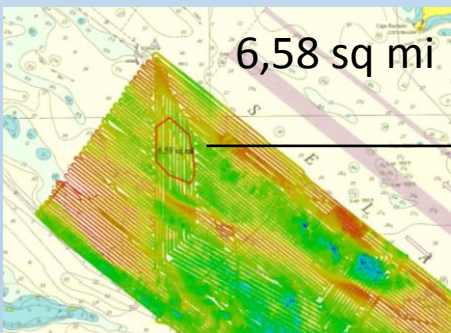


**One-Fathom Bank**  
Water depth 20 – 40m  
Amplitude 1-5m  
Spacing 100-200 m

## SANDWAVES IN THE STRAIT OF MALACCA



**Rupert island vicinity**  
Depth 50-70 m  
Amplitude 1-6 m  
Spacing 100-200m



**Rupert island vicinity**  
Depth 40-60 m  
Amplitude 3-9 m  
Spacing 100-300m  
DW south-bound

### SUMMARY AND RECOMMENDATION :

- ❖ Sandwaves were detected to be in/near TSS
- ❖ Sandwave is fluid hence periodic survey may be needed.
- ❖ Research on Sandwave



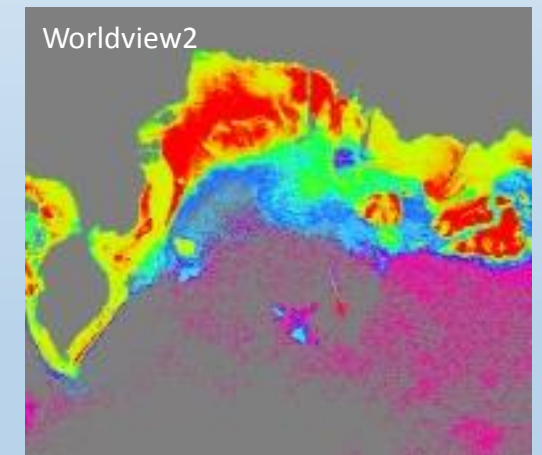




# Lesson learned to share

## Satellite Derived Bathymetry (SDB)

1. Joint research with the National Institute of Aeronautics and Space (LAPAN)
2. Joint Research areas:
  - a. Sabang Island 2016
  - b. Halong Bay 2016
  - c. Bawean Islands 2017
  - d. Gili Mantra 2018
  - e. Setokok 2018
3. Methods:
  - a. Semi Parametric w/ Independent Depth Variable (TNP) by Kanno et al (2011)
  - b. Random Forest (RF) by Manessa et al (2016)
4. Imageries:
  - a. Worldview2
  - b. SPOT-6/7





**THANK YOU**  
**TERIMA KASIH**



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