



MARINE SCIENCE
TECHNOLOGY SDN BHD

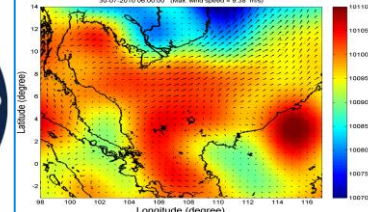
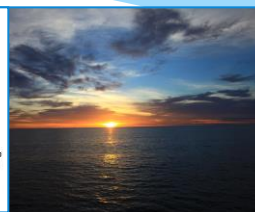
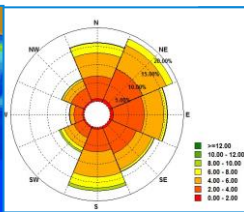
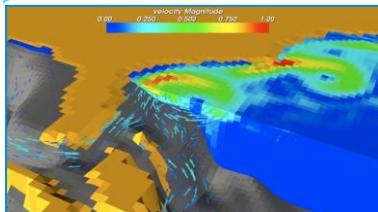
Evokes The Technology



MARINE GEO-SPATIAL DATACENTER

A BLUE OCEAN STRATEGY (B.O.S) TOWARDS SUSTAINABLE MARINE INDUSTRY

SEASC'17
Bandar Seri Begawan
16 Aug. 2017





MARINE GEOSPATIAL DATACENTER.. A BOS TO MARINE INDUSTRY

INTRODUCTION

INTRODUCTION

MARINE GEOSPATIAL DATA CENTER B.O.S TO MARINE INDUSTRY

PROJECT EXECUTION : MARINE GEOSPATIAL DATA CENTER

DATA/ I NFORMATION COLLECTION &ASSEMBLY

DATA PROCESSING AND ANALYSIS

DECISION SUPORT SYSTEM (DSS) DELIVERABLES ENGINE

DELIVERABLES TO MARINE INDUSTRY

FISHERY

OIL & GAS

TOURISM

AQUACULTURE

MARITIME & NAVIGATION

NAVAL AND SAFETY

NATURAL RESOURCES

ETC

A B.O.S TOWARDS SUSTAINABLE MARINE INDUSTRY



INTRODUCTION

Marine Geospatial Data Center is about transforming information and data of **HYDROGRAPHY**, **METEOROLOGY** and **OCEANOGRAPHY** into an Integrated Decision Support System/Tool that generate **HIGH IMPACT** deliverables and **INTER-CONNECT** initiatives across marine industries.



MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES

INTRODUCTION

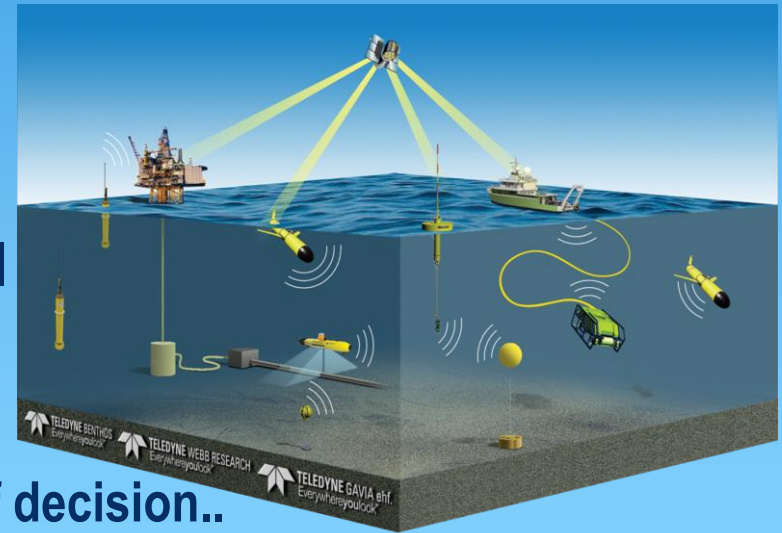
Data → Information → Knowledge

Capability of sensors and communication technologies are advancing
→ abundance of data

Scale and spectrum of problems
are getting more complex



Systematic approach and appropriate tool
(i.e. DSSs) are in demand to ensure:
affectivity of knowledge production
accuracy of interpretation optimization of decision..





DSS (Decision Support System)

- * What does DSS do?

DSS supports decision processes in the management of OPPORTUNITIES / PROBLEMS

- * in marine environments



MARINE GEOSPATIAL DATACENTER .. A BOS TO MARINE INDUSTRIES

INTRODUCTION

MISSION

TO SET UP AN **INTEGRATED MARINE GEOSPATIAL DATA CENTER** TO BECOME A BLUE OCEANS DECISION SUPPORT SYSTEM & TOOLS WITH OPPORTUNITY-MAXIMIZING, RISK-MINIMIZING AND COST EFFECTIVE ACROSS MARINE INDUSTRIES

VISION

TO IMPROVE GROWTH & PRODUCTIVITY BY CREATING A SUSTAINABLE MARINE INDUSTRY



INTRODUCTION

MARINE GEOSPATIAL DATACENTER .. A BOS TO MARINE INDUSTRIES

PROJECT EXECUTION
(SET UP)

INTEGRATED MARINE GEOSPATIAL DATA CENTER

HYDROGRAPHY+METEOROLOGY+OCEANOGRAPHY
(HINDCAST + FORECAST + NOWCAST)



DECISION SUPPORT SYSTEM/TOOL
MARINE INDUSTRY



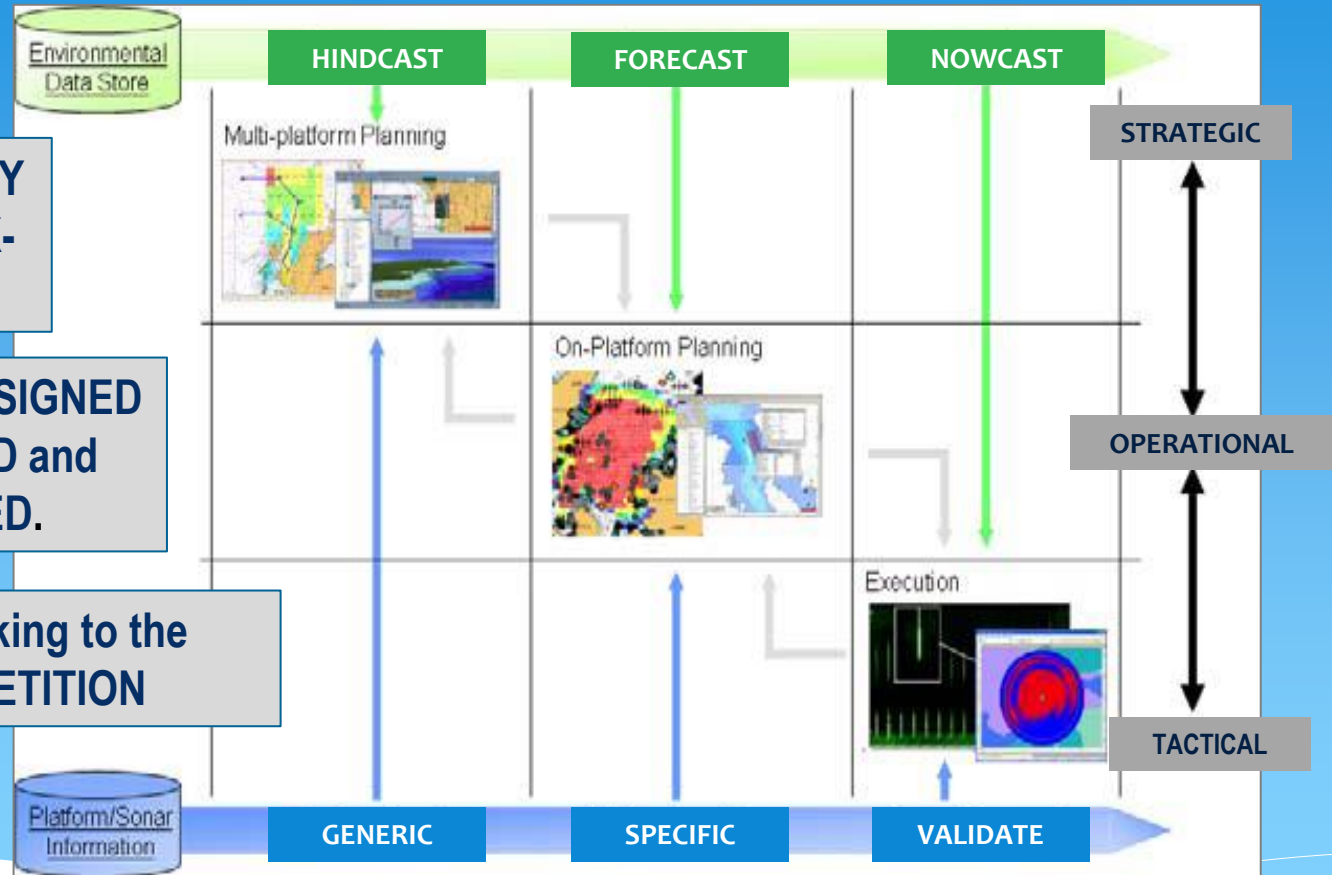
MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES

PROJECT EXECUTION

Aims for OPPORTUNITY
MAXIMISING and RISK-
MINIMIZING

Must be well DESIGNED
, STURCTURED and
INTEGRATED.

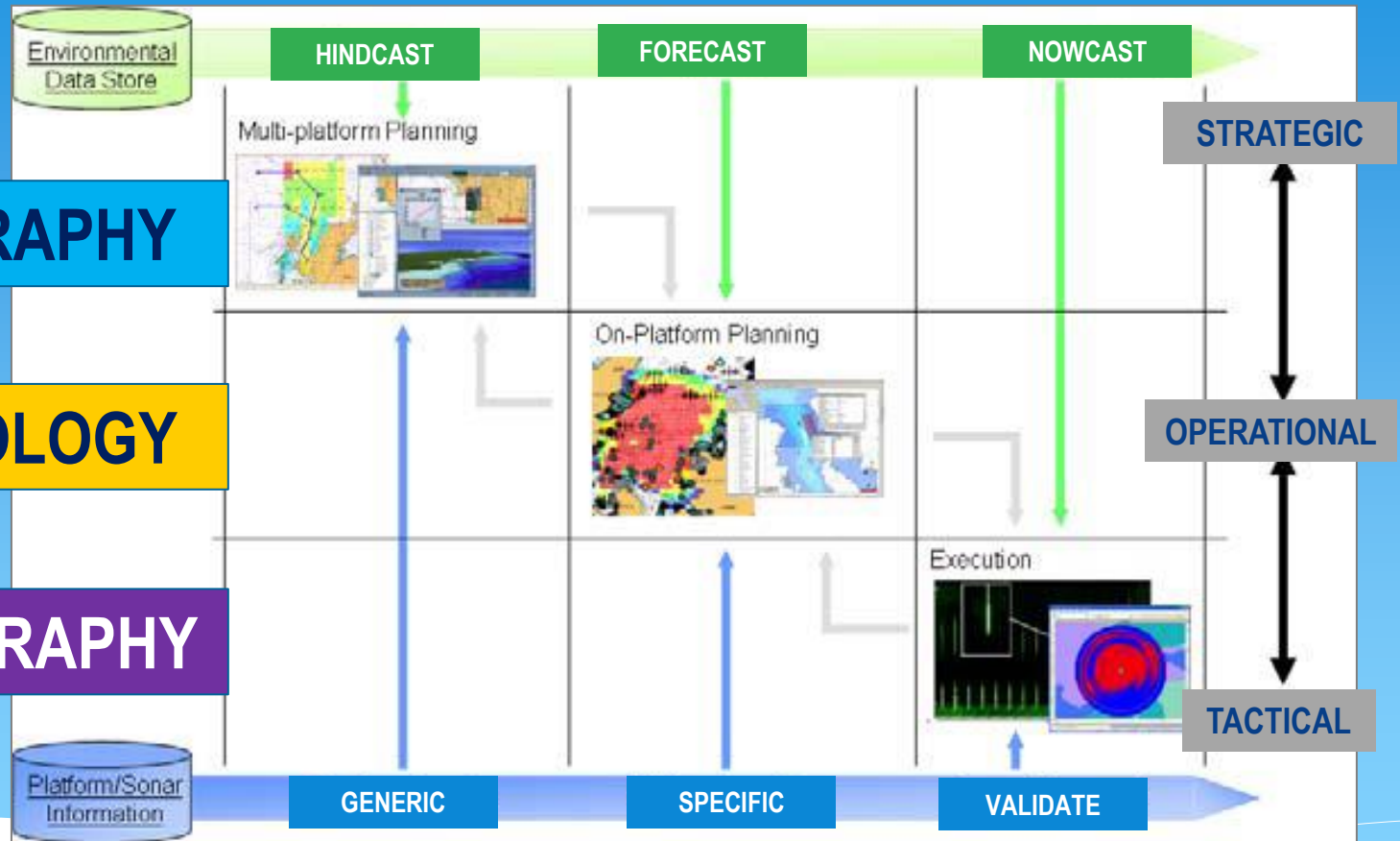
Stop looking to the
COMPETITION





MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES

PROJECT EXECUTION





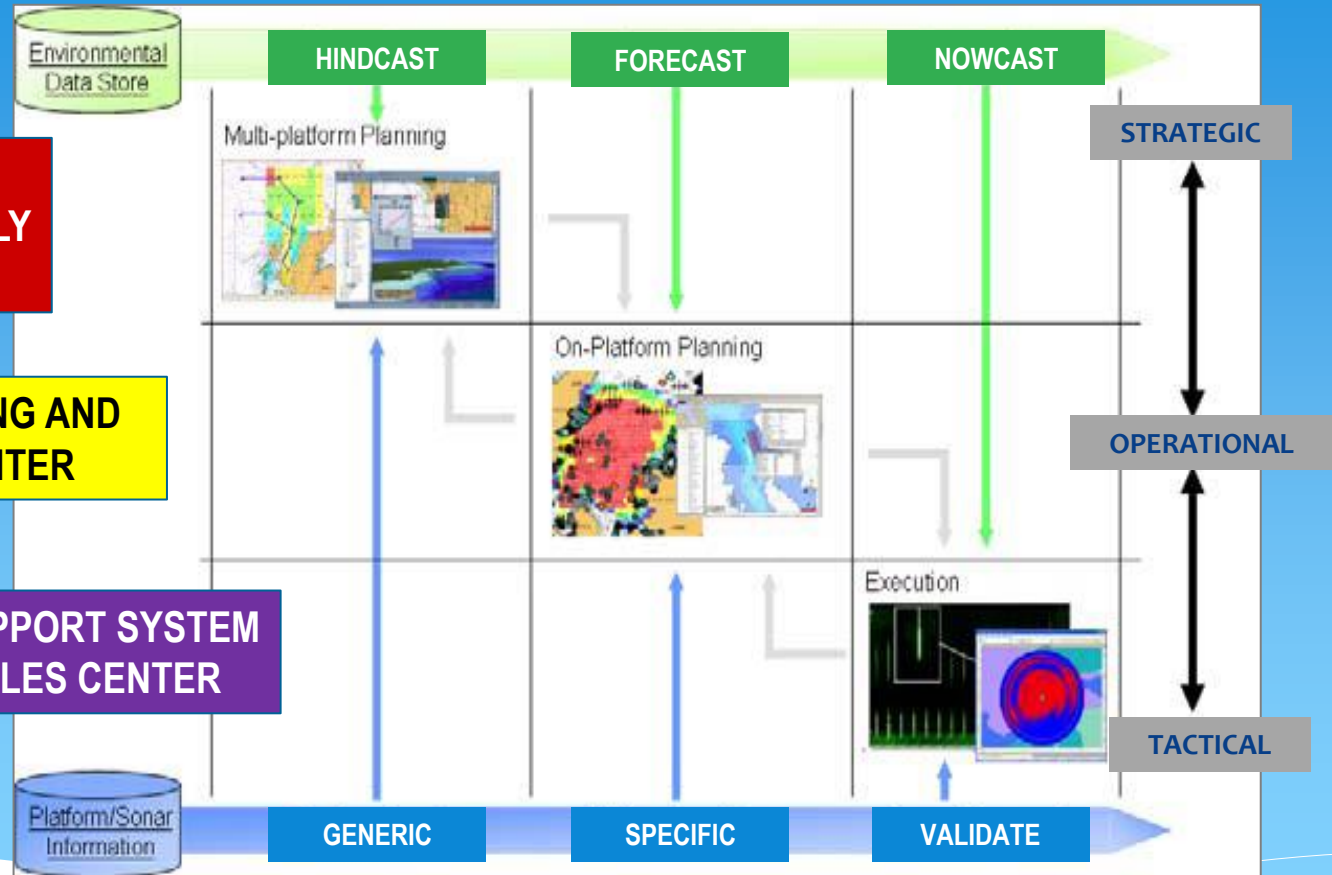
MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES

PROJECT EXECUTION

DATA+INFORMATION
COLLECTION / ASSEMBLY
CENTER

DATA PROCESSING AND
ANALYSIS CENTER

DECISION SUPPORT SYSTEM
DELIVERABLES CENTER



PROJECT EXECUTION

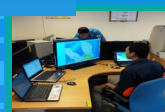
MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES



SURVEY PLATFORM



DATA PROCESSING CENTER



MARINE GEO-SPATIAL DATABASE CENTER



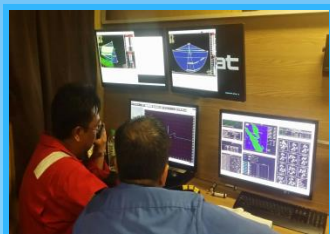
TRAINING DEVELOPMENT PROGRAM



THE VESSEL



THE CREWS



THE IHSS ON BOARD
DATA ACQUISITION
ON-LINE QC



DEDICATED DATA
PROCESSING ROOM



SERVER ROOM
DATA ARCHIVING FARM
GEO-SPATIAL DATABASE



ON-GROUND DATA QC AND
PROCESSING TEAM



CARIS CHARTING PRODUCTION



SERVER ROOM
DATA ARCHIVING
GEO-SPATIAL DATABASE



ENC



HUMAN DEVELOPMENT
TRAINING PROGRAM



SUB-SEA SONAR SYSTEM AND
SOFTWARE TRAINING



ON-GROUND SERVICE AND
SUPPORTS – TECHNOLOGY
PARTNER

INTEGRATED MARINE GEO-SPATIAL DATA CENTER



PROJECT EXECUTION

MARINE GEOSPATIAL DATACENTER A BOS TO MARINE INDUSTRIES

SURVEY PLATFORM



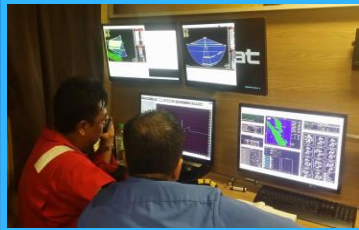
DATA PROCESSING CENTER



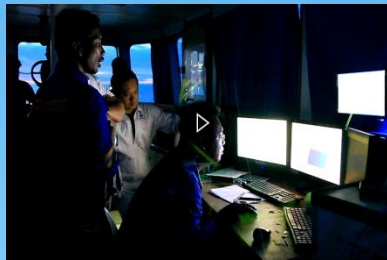
MARINE GEO-SPATIAL DATABASE CENTER



EXTENDED PRODUCTS (JOINT-DEVELOP)



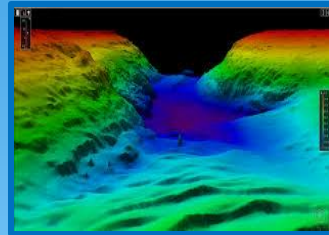
ACQUISITION : PDS2000
BATHYMETRIC
SVP
MRU
POSITIONING
TIDE
SEA-BED SAMPLING
CURRENT
METEOROLOGY



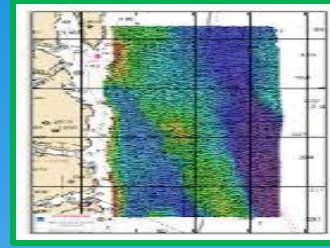
ON-LINE QC : CARSI HIPS & SIPS



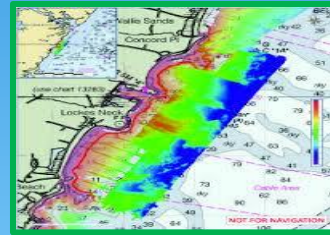
TIDE PROCESSING
SV CORRECTION



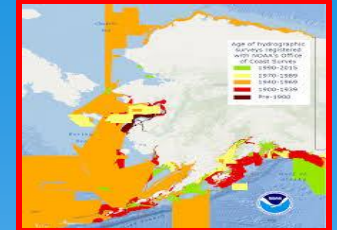
CARIS POST PROCESS
• BATHYMETRIC
• SEA-BED CLASSIFICATION
• BACK SCATTER



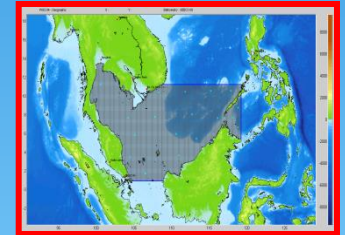
CARIS CHARTING PRODUCTION



ENC



AMLS

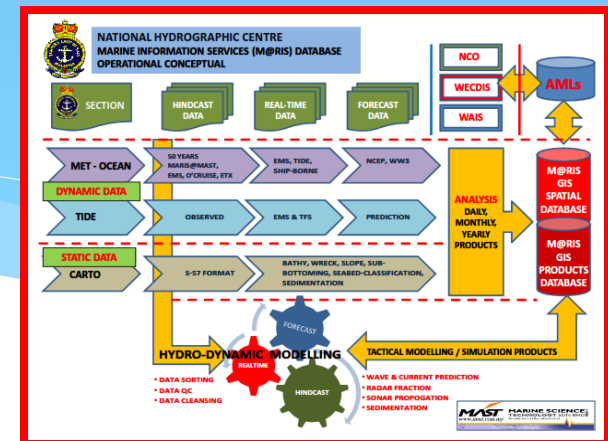


3D REGIONAL
HINDCAST MODEL

EXTENDED PRODUCTS DEVELOPMENT



MAST 3D 50-YEARS
HINDCAST DATA





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PROJECT EXECUTION

THIS IS

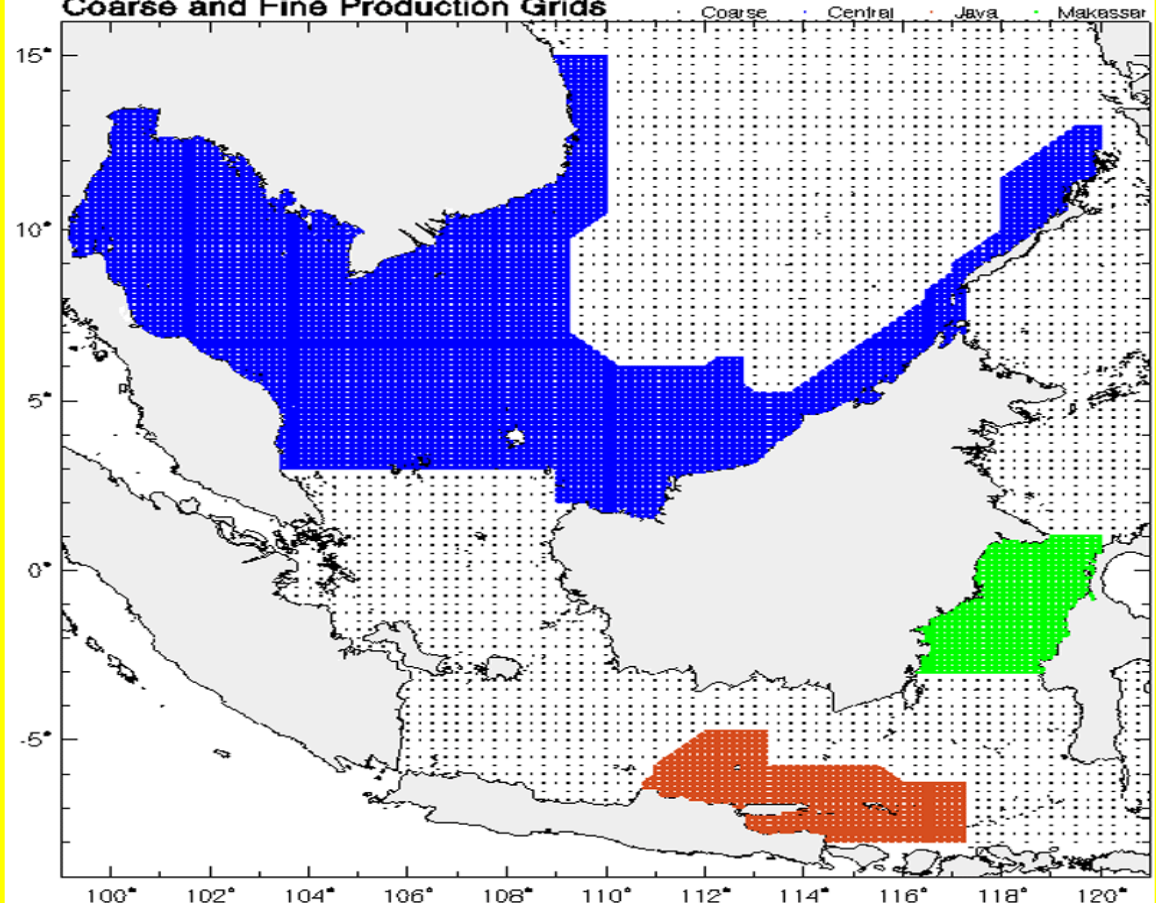


TERRITORY !!!

- * Assimilated metocean data set covering mainly South China Sea, Makassar Strait and North Bali Sea
- * Available from July 1956 until June 2015 and continuously updated
- * Spatial resolution:
 - * Coarse 25km
 - * Fine 6km

SEAFINE

Coarse and Fine Production Grids

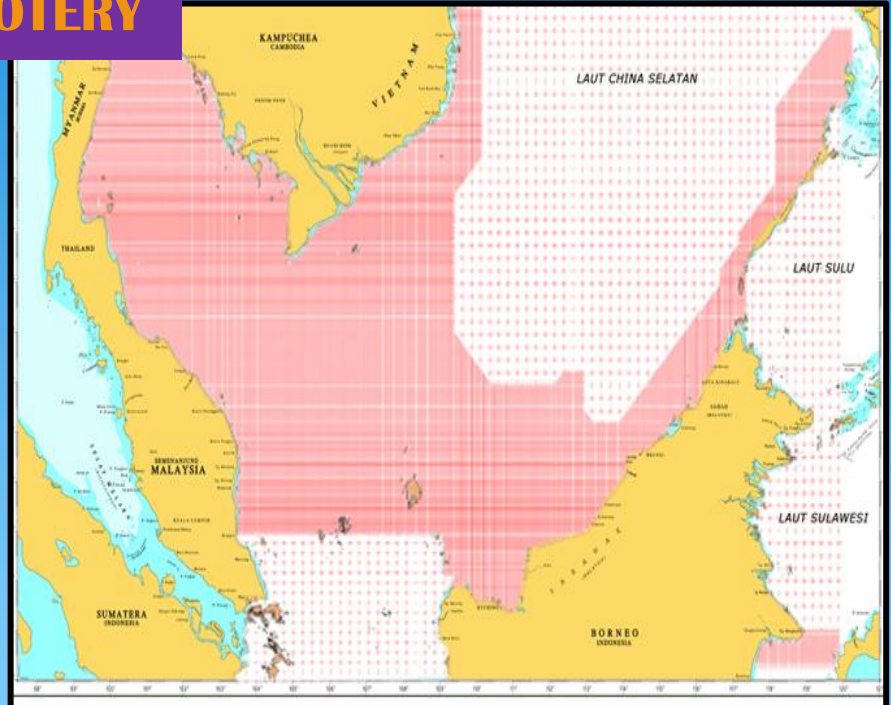
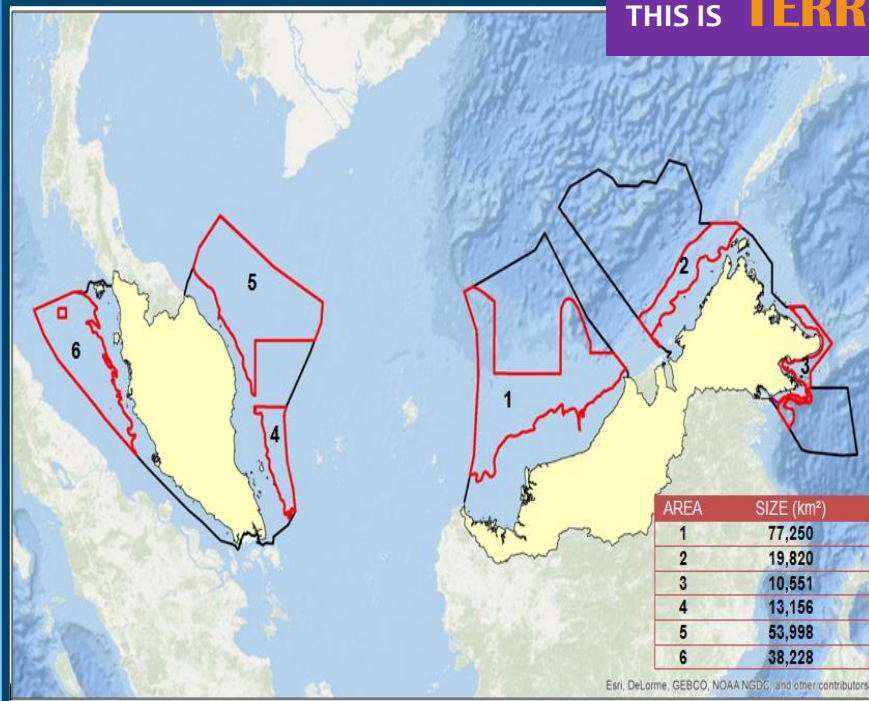




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PROJECT EXECUTION

THIS IS **TERRITORY**



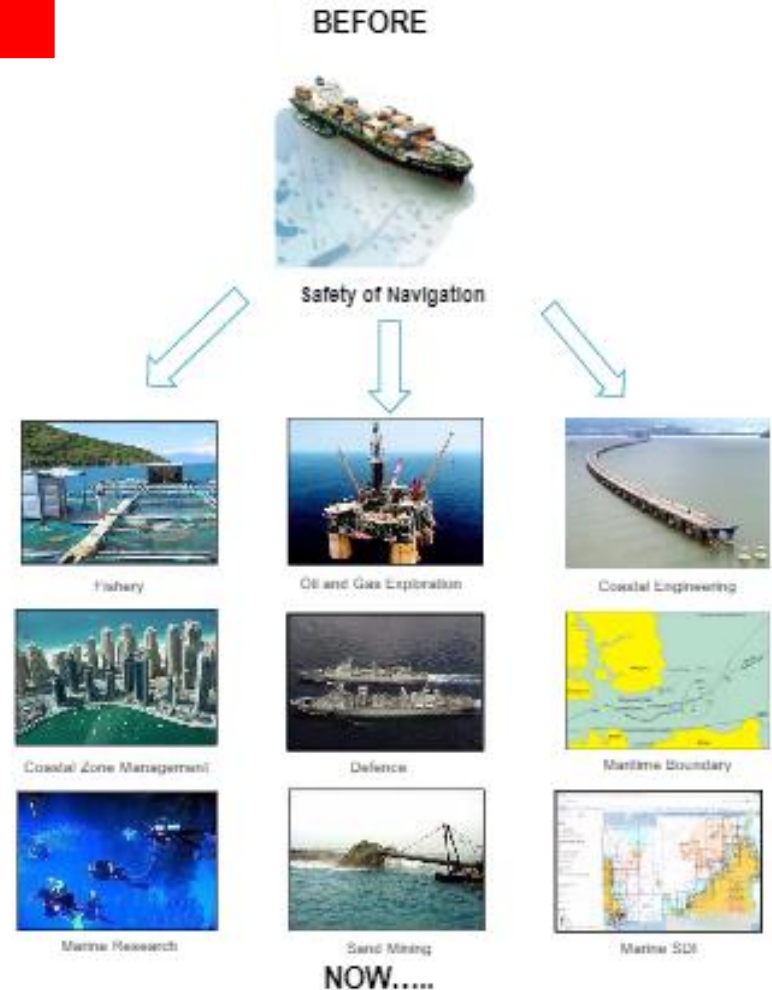
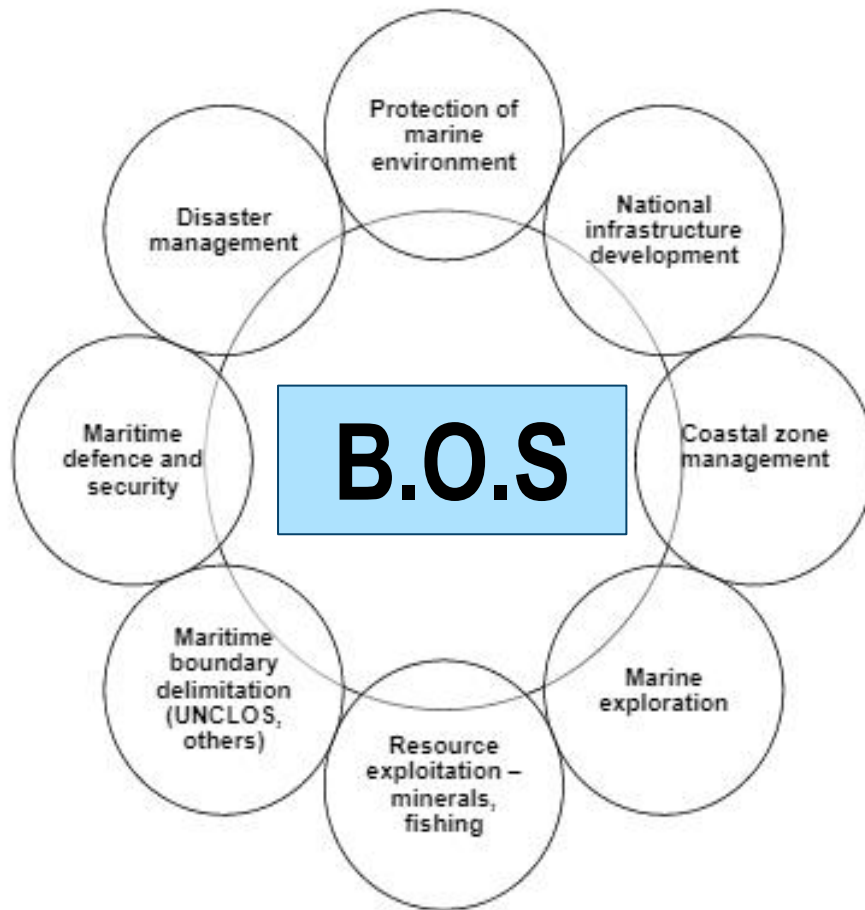
COLLECTION OF REGIONAL METOCEAN & HYDROGRAPHY



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DELIVERIABLES

DELIVERIABLES

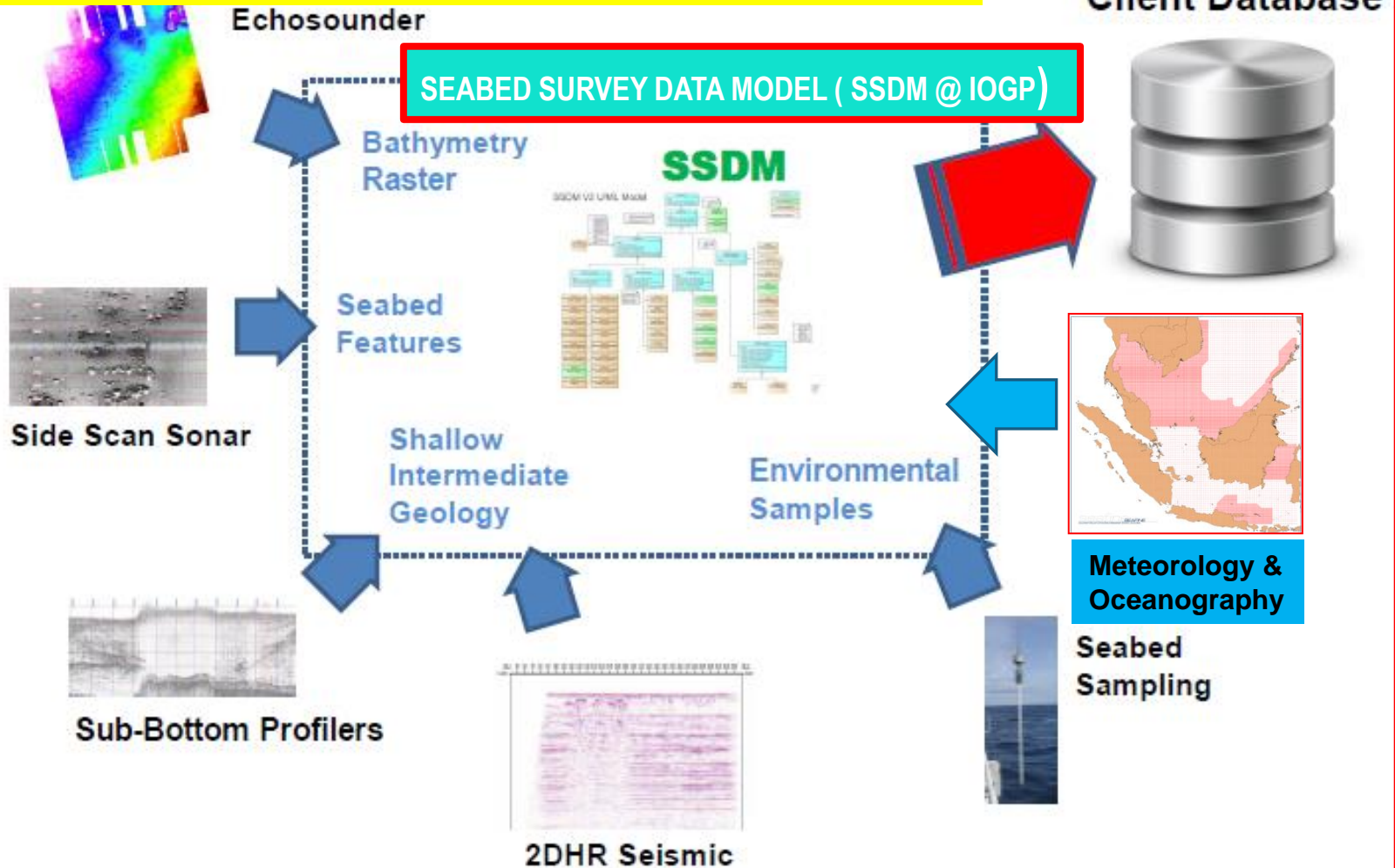




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DELIVERIABLES

PETRO-CARBON & SUBSURFACE NATURAL RESOURCES





Seabed Survey Data Model (SSDM)

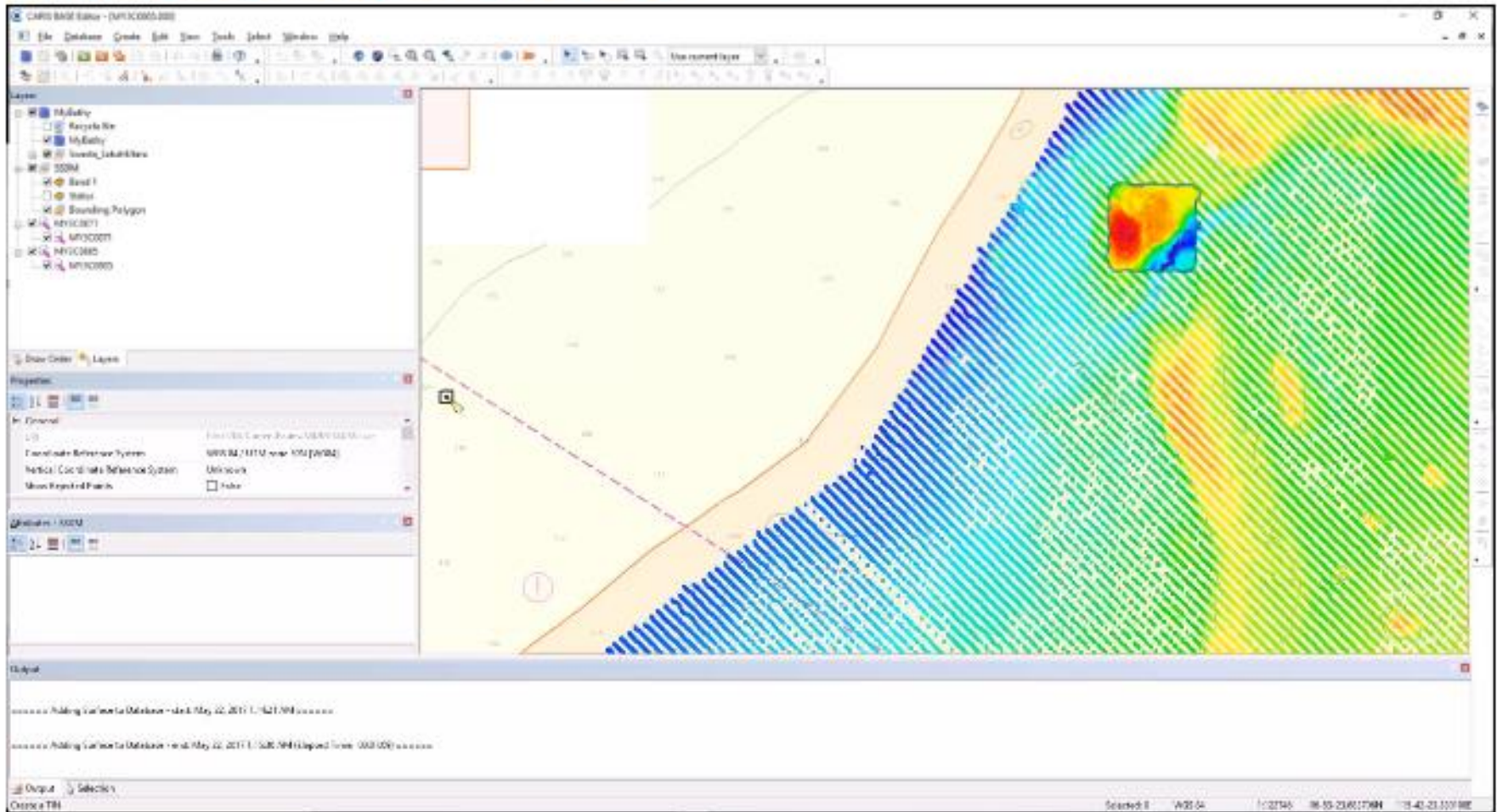




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DELIVERIABLES

Add Bathymetry to Database

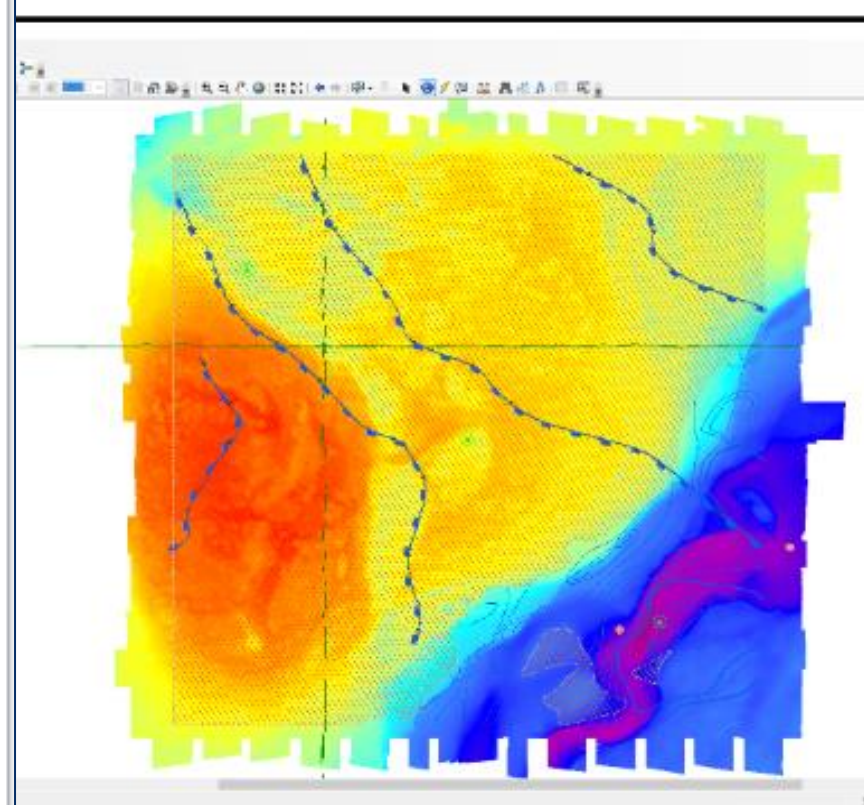
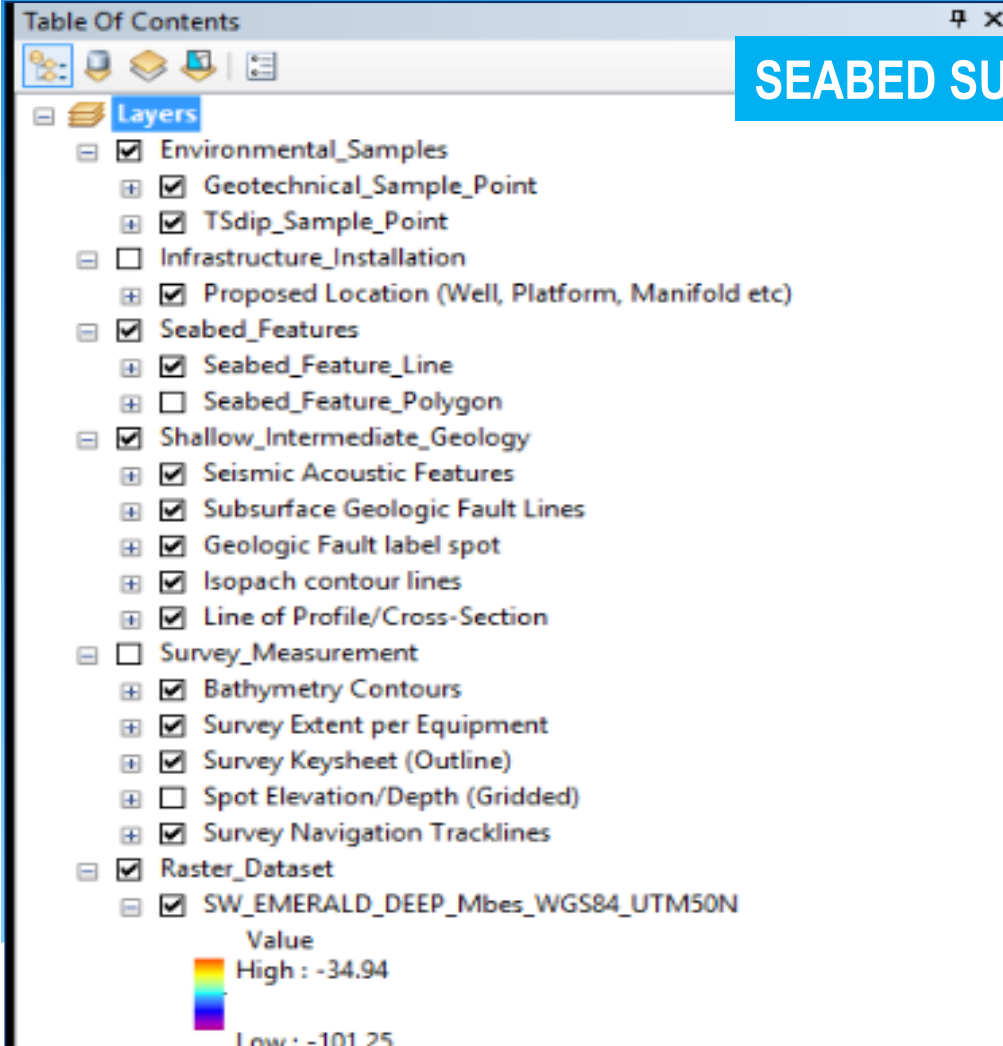




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DELIVERIABLES

SEABED SURVEY DATA MODEL (SSDM @ IOGP)





MARINE GEOSPATIAL DATACENTER.. A BOS TO MARINE INDUSTRIES

DELIVERIABLES

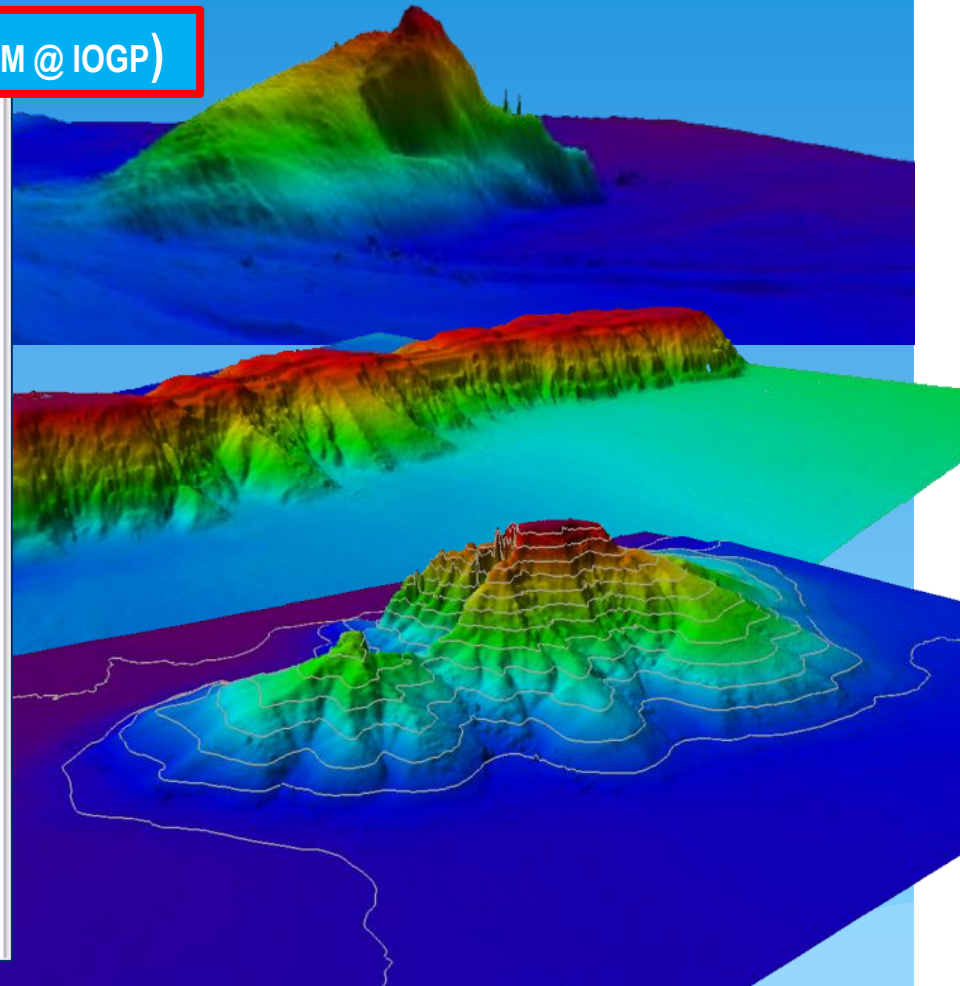
SEABED SURVEY DATA MODEL (SSDM @ IOGP)

Table Of Contents



Layers

- ☒ Environmental_Samples
 - ☒ Geotechnical_Sample_Point
 - ☒ TSdip_Sample_Point
- ☐ Infrastructure_Installation
 - ☒ Proposed Location (Well, Platform, Manifold etc)
- ☒ Seabed_Features
 - ☒ Seabed_Feature_Line
 - ☐ Seabed_Feature_Polygon
- ☒ Shallow_Intermediate_Geology
 - ☒ Seismic Acoustic Features
 - ☒ Subsurface Geologic Fault Lines
 - ☒ Geologic Fault label spot
 - ☒ Isopach contour lines
 - ☒ Line of Profile/Cross-Section
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 - ☒ Survey Navigation Tracklines
- ☒ Raster_Dataset
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MARINE GEOSPATIAL DATACENTER.. A BOS TO MARINE INDUSTRIES

DELIVERIABLES

FISHERY & AQUACULTURE

Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) Implementation Area



**CORAL TRIANGLE
INITIATIVE**
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

A publication supporting the Coral Triangle Initiative on
Coral Reefs, Fisheries and Food Security (CTI-CFF)
www.coraltriangleinitiative.org

MOVING TOWARDS SUSTAINABLE MANAGEMENT OF LIVE REEF FISH TRADE IN SABAH, MALAYSIA



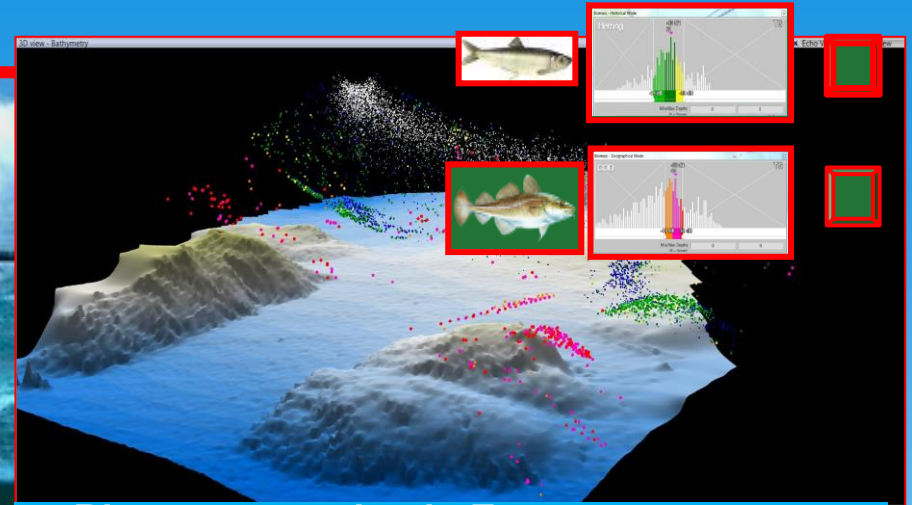


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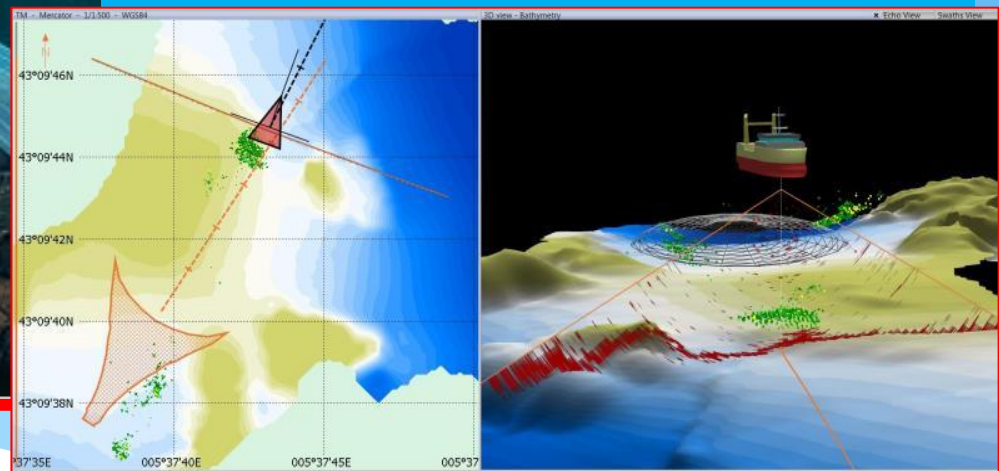
DELIVERIABLES

FISHERY & AQUACULTURE

3D Multibeam Sounder



Biomass mapping in Ecosystem context



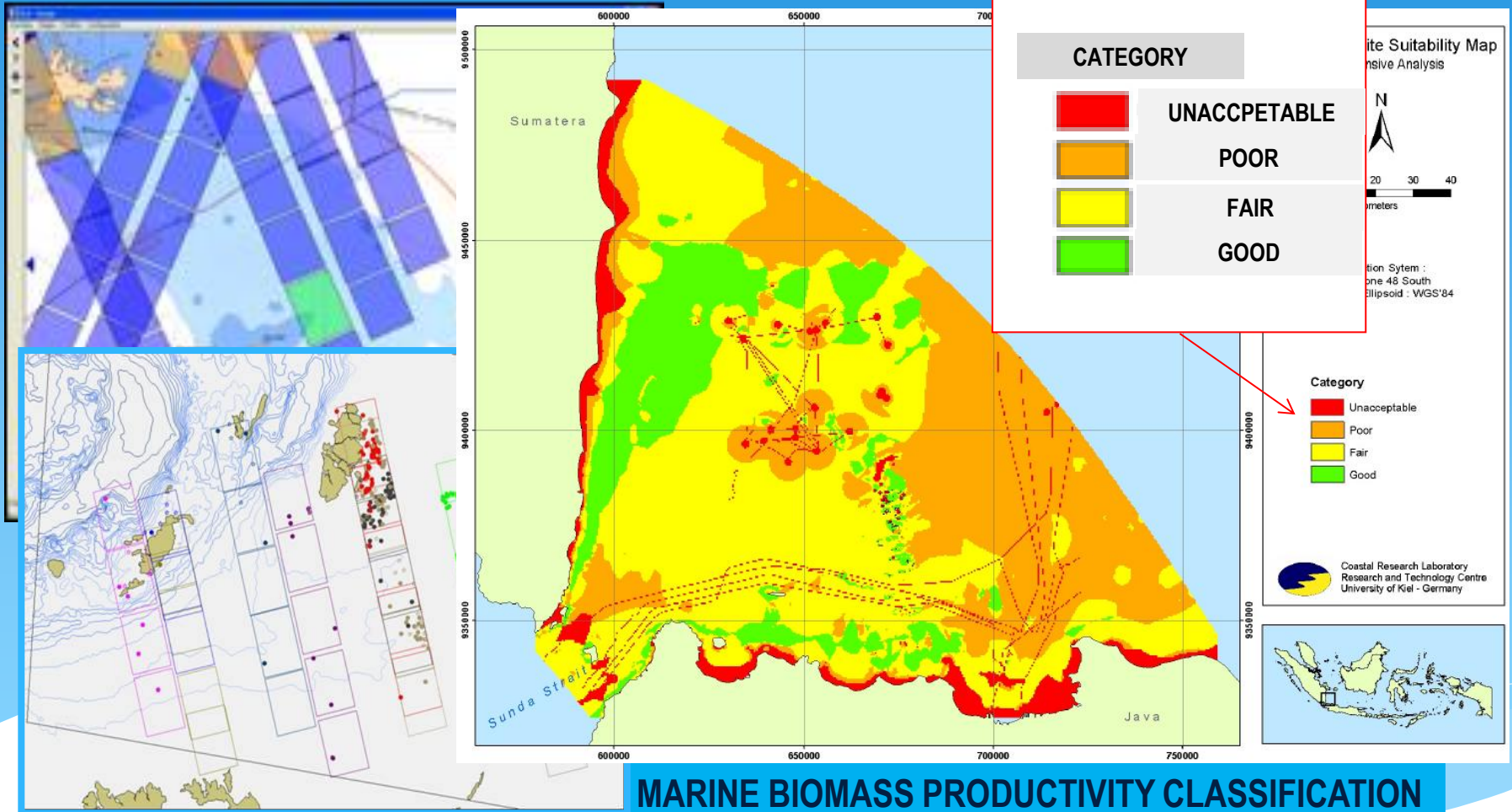
Real time fish Class tool Selective processing



MARINE GEOSPATIAL DATACENTER.. A BOS TO MARINE INDUSTRIES

DELIVERIABLES

FISHERY & AQUACULTURE



MARINE BIOMASS PRODUCTIVITY CLASSIFICATION



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DELIVERIABLES

Media Player Plugin

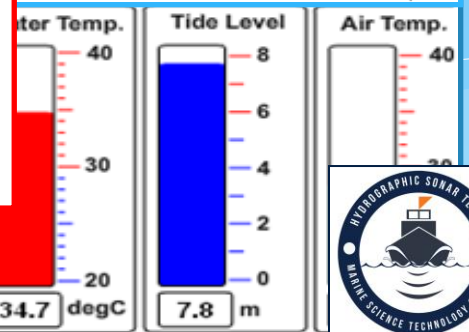
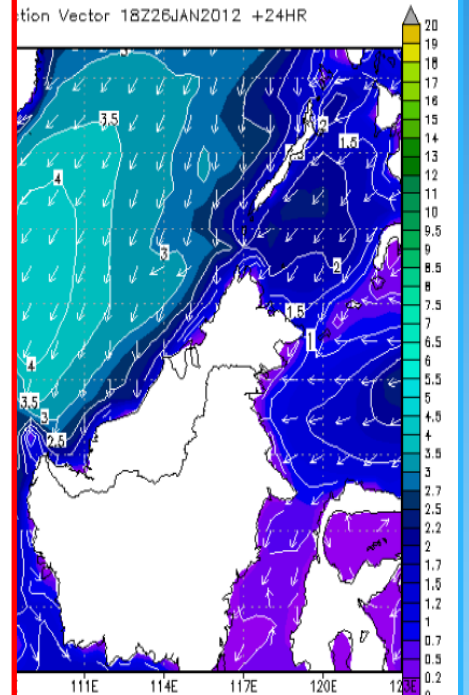
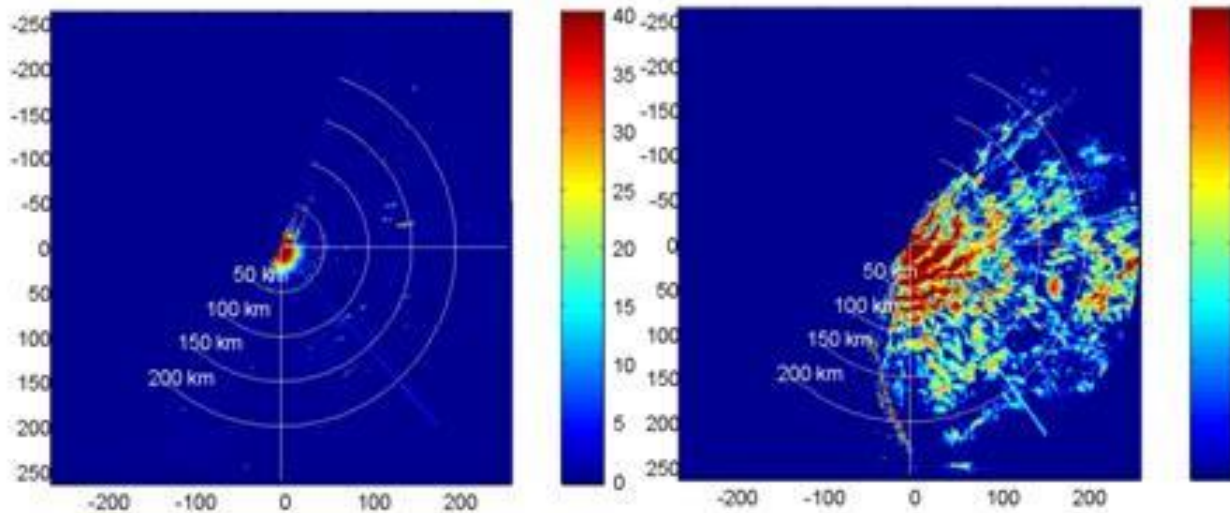
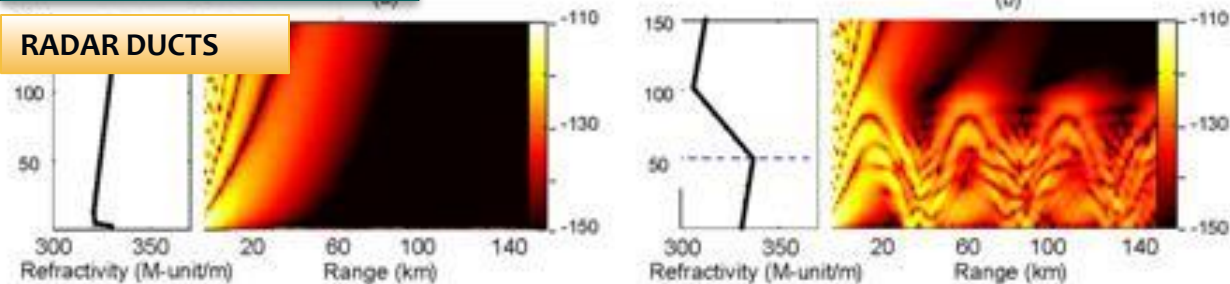


MILITARY

MAST ST – MetOcean Analysis & Spatial Tools

METEOROLOGICAL PROFILE

RADAR DUCTS





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DELIVERIABLES

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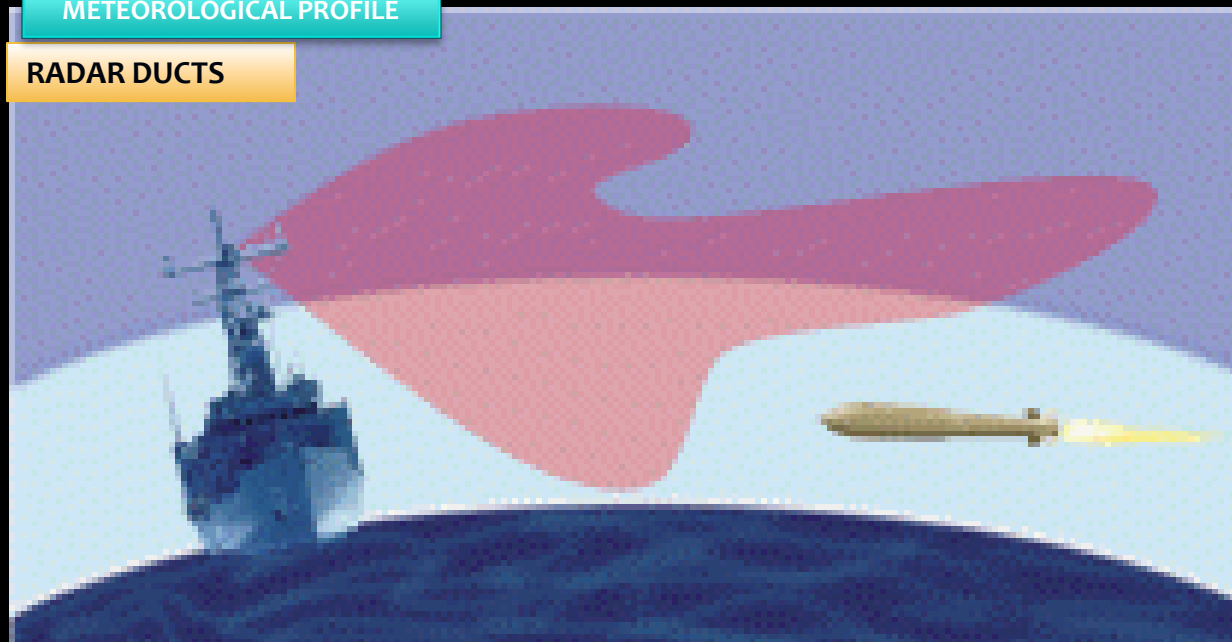


MILITARY

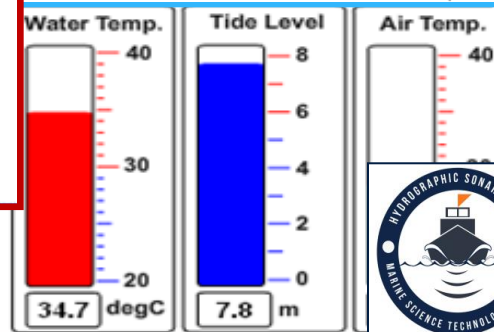
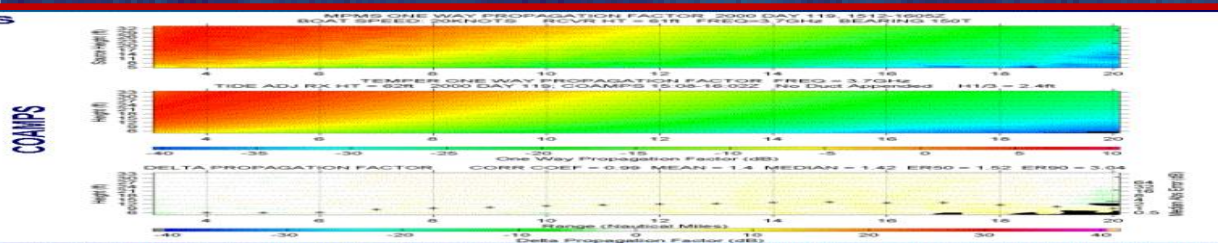
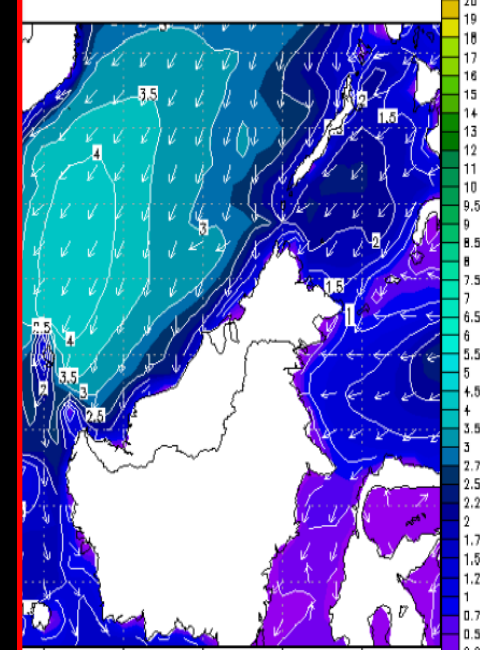
MAST ST – MetOcean Analysis & Spatial Tools

METEOROLOGICAL PROFILE

RADAR DUCTS



Direction Vector 18Z26JAN2012 +24HR

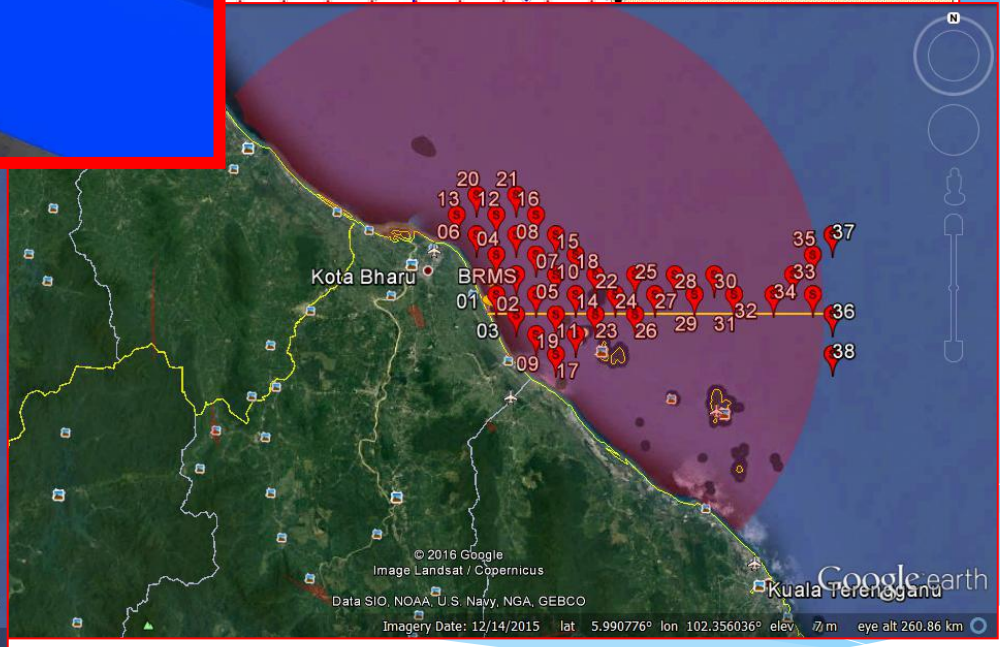
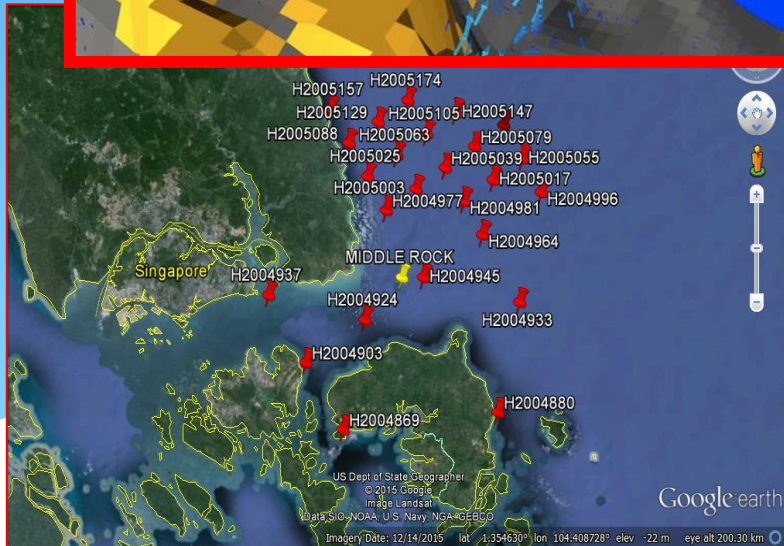
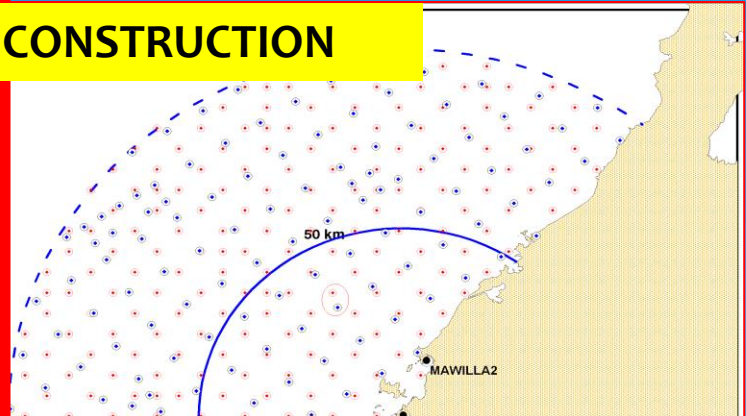
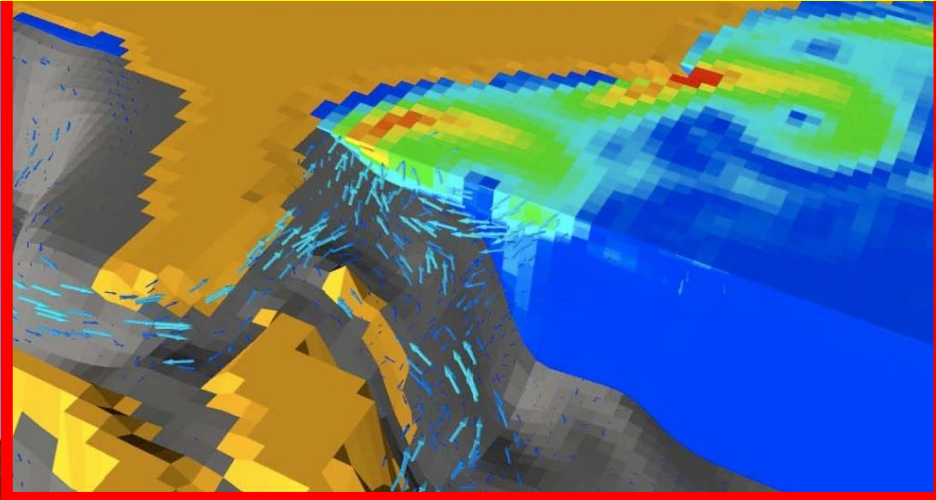




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DELIVERIABLES

METOCEAN DESIGN CRITERIA FOR MARINE CONSTRUCTION

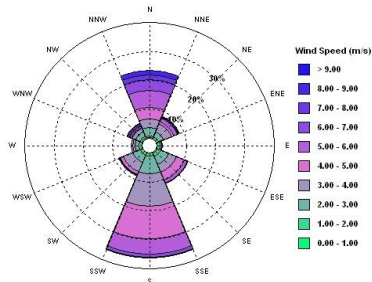




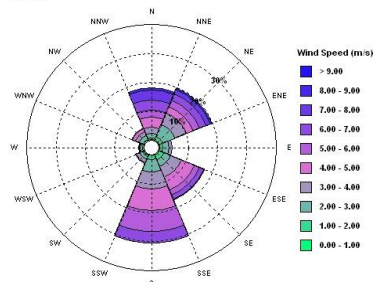
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DELIVERABLES

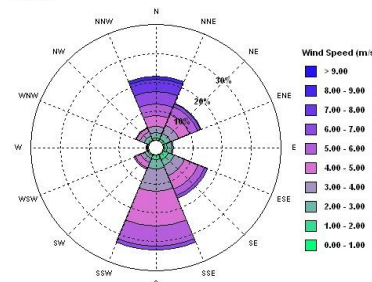
2001



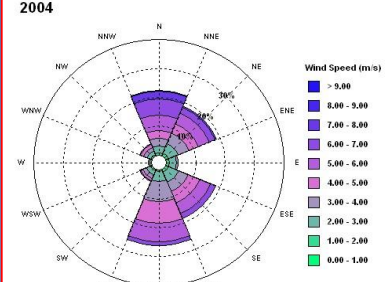
2002



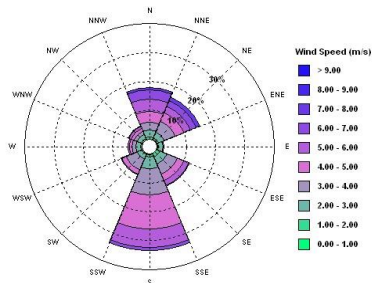
2003



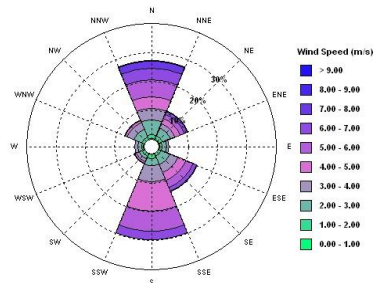
2004



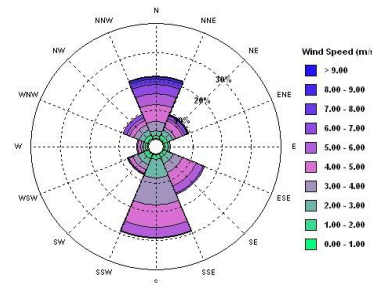
2005



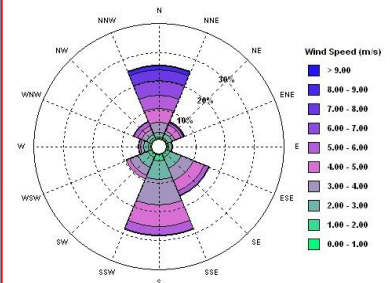
2006



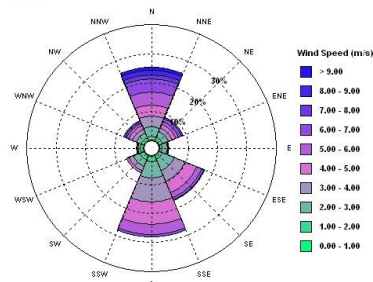
2007



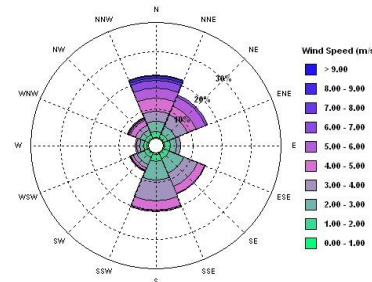
2008



2009



2010

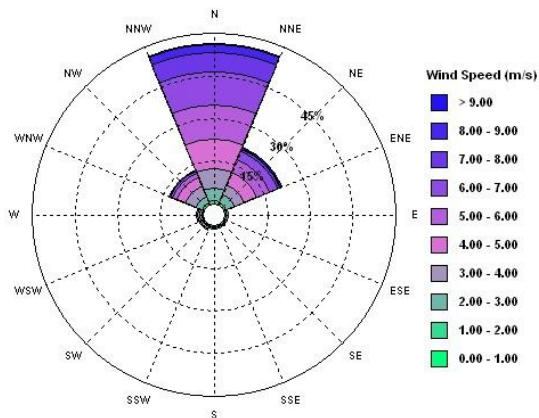




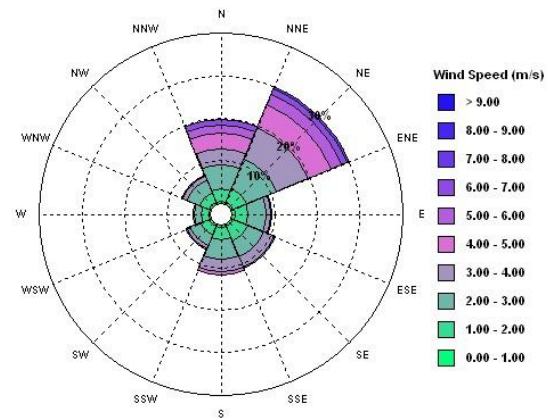
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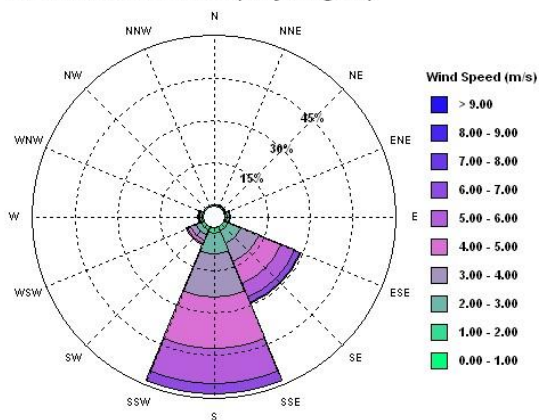
Northeast Monsoon (November-February)



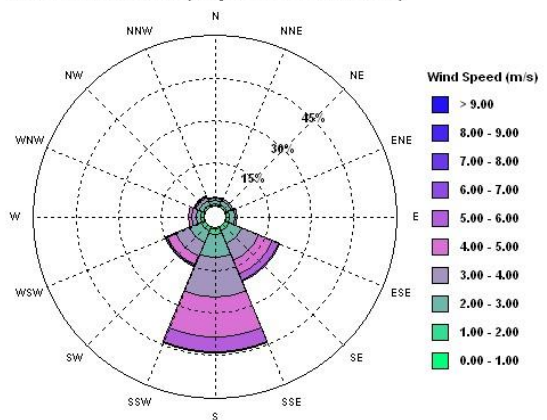
Intermonsoon 1 (March-April)



Southwest Monsoon (May-August)



Intermonsoon 2 (September-October)

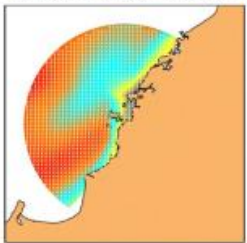




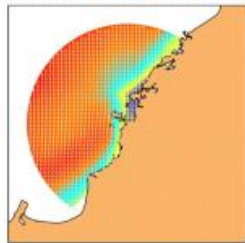
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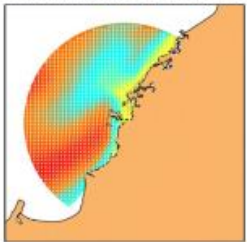
TIDAL CURR. PATTERN (AVG) - JANUARY 2006



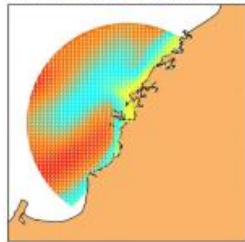
TIDAL CURR. PATTERN (AVG) - FEBRUARY 2006



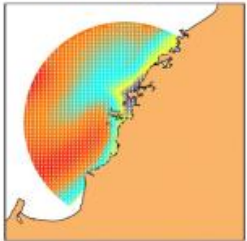
TIDAL CURR. PATTERN (AVG) - MARCH 2006



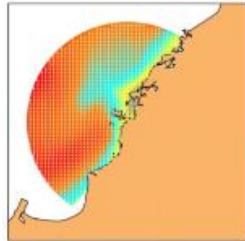
TIDAL CURR. PATTERN (AVG) - APRIL 2006



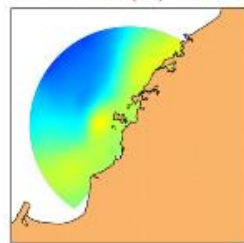
TIDAL CURR. PATTERN (AVG) - MAY 2006



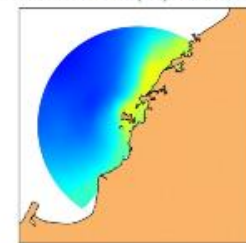
TIDAL CURR. PATTERN (AVG) - JUNE 2006



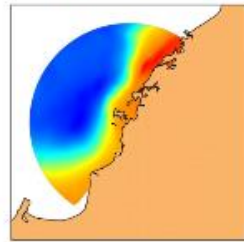
WATER TEMP. PATTERN (AVG) - JANUARY 2006



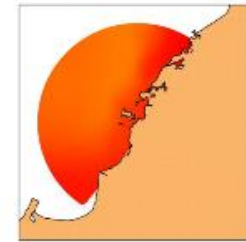
WATER TEMP. PATTERN (AVG) - FEBRUARY 2006



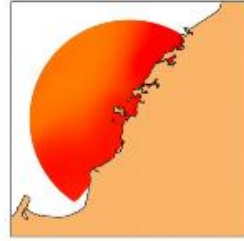
WATER TEMP. PATTERN (AVG) - MARCH 2006



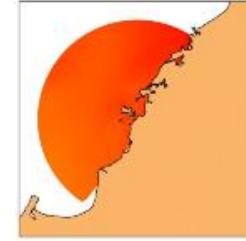
WATER TEMP. PATTERN (AVG) - APRIL 2006



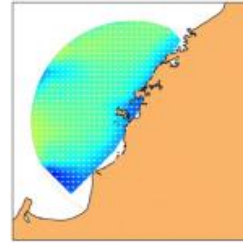
WATER TEMP. PATTERN (AVG) - MAY 2006



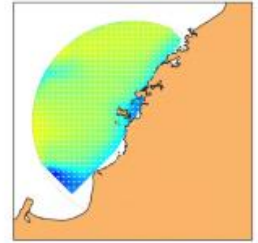
WATER TEMP. PATTERN (AVG) - JUNE 2006



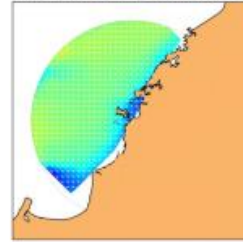
WAVE PATTERN (AVG) - JULY 2006



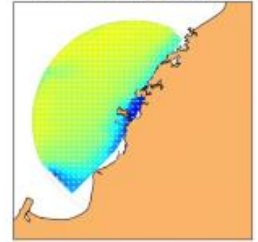
WAVE PATTERN (AVG) - AUGUST 2006



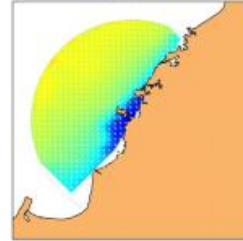
WAVE PATTERN (AVG) - SEPTEMBER 2006



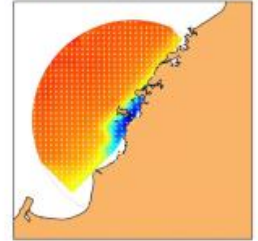
WAVE PATTERN (AVG) - OCTOBER 2006



WAVE PATTERN (AVG) - NOVEMBER 2006



WAVE PATTERN (AVG) - DECEMBER 2006



TIDAL CURRENT MONTHLY SEPARATION

SURFACE TEMP. MONTHLY SEPARATION

SURFACE WIND VS WAVE . SEPARATION



CONCLUSION

MARINE GEOSPATIAL DATACENTER .. A BOS TO MARINE INDUSTRIES

CONCLUSION

INTEGRATED MARINE GEOSPATIAL DATA CENTER

**HYDROGRAPHY+METEOROLOGY+OCEANOGRAPHY
(HINDCAST + FORECAST + NOWCAST)**



DECISION SUPPORT SYSTEM/TOOL

MARINE INDUSTRY



Aims for OPPORTUNITY MAXIMISING and RISK-MINIMISING

Must be well DESIGNED , STURCTURED and INTEGRATED.

Stop looking to the COMPETITION