INDONESIAN RESEARCH ACTIVITIES IN THE INDIAN OCEAN
Research In Indian Ocean by Indonesian Scientist

The joint research between Indonesia and Norway on *the Earthquakes and Tsunami impact in Aceh and West Sumatera, 2005 and 2006*

**INAGOOS** (Indonesian Global Ocean Observing System), 2005

**MOMSEI** (Monsoon Onset Monitoring and Its Social and Ecosystem Impacts) (2013)

The Earthquakes and Tsunami impact in Aceh and West Sumatera, 2005 and 2006
Why the project designed?

Giant Earthquake & Tsunami, 24 Dec 2004
Objective:

To determine the recovery of coastal ecosystems such as coral reef and mangrove ecosystems and the improvement of natural resources stocks after tsunami disaster in Aceh and western Sumatra.

To identify the changes of the sea floor caused by the earthquake and tsunami in Aceh province and along the Western of Mentawai Archipelago, Sumatra.
INAGOOS is Indonesia's contribution to the GOOS program especially to IOGOOS (Indian Ocean GOOS) and SEAGOOS (Southeast Asia GOOS)
INAGOOS is organized by Ministry of Marine Affairs and Fisheries Indonesia

THE DECLARATION OF
INDONESIAN GLOBAL OCEAN
OBSERVING SYSTEM

THROUGH the culmination of years of collaborative work by the Indonesian science community, The Minister of Marine Affairs and Fisheries of the Republic of Indonesia, herein, takes pleasure in announcing the Indonesian node of the global oceans observation system.

The data collected by the Indonesian system will vastly improve our domestic understanding of our ocean, coastal and atmospheric environments and position our scientists to exchange information with other regional and global partners.

I hereby, declare the launching of the Indonesian Global Ocean Observing System (INAGOOS). May this Indonesian system play important role as a node for both The Indian Ocean Observing System (IOOS) and the Global Observing System.

Denpasar, Bali - Indonesia,
August 9, 2005

Minister of Marine Affairs and Fisheries,
Republic of Indonesia

Freddy Numberi
Vision of INAGOOS is to better understand Indonesian marine environment and a better life amid the International community through the understanding of Indonesia and the surrounding sea.
### InaGOOS activities in Indian Ocean

<table>
<thead>
<tr>
<th>Deep Sea Fishery Survey</th>
<th>Bathymetry Survey</th>
<th>ATLAS Survey</th>
<th>JUVO Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>• May-Aug 2005</td>
<td>• April 2008</td>
<td>• April/May, 2011 and 2013</td>
<td>• March, April, and May 2013</td>
</tr>
<tr>
<td>• Deep Sea Fishery</td>
<td>• Bottom Topography Padang (West Sumatera) and Bali, Indian Ocean</td>
<td>• Survey Recovery and Re-Deployment Tsunami Bouy Indian Ocean</td>
<td>• Java Upwelling Variation Observation</td>
</tr>
<tr>
<td>Indian Ocean</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Bathymetry Survey**: April 2008, Bottom Topography Padang (West Sumatera) and Bali, Indian Ocean
- **ATLAS Survey**: April/May, 2011 and 2013, Survey Recovery and Re-Deployment Tsunami Bouy Indian Ocean
- **JUVO Survey**: March, April, and May 2013, Java Upwelling Variation Observation
MOMSEI (Indonesian Global Ocean Observing System)
A collaborative research between Ministry of Marine Affairs and Fisheries Indonesia and The First Institute of Oceanography, State Oceanic Administration P.R. China
MOMSEI, this project aims;
to improve the understanding and forecasting of Asia monsoon and its multi-scale variability at a regional scale through developing and carrying out air-sea observations over the Sea of Southeast Asia and analyzing the preconditioning role of ocean in the monsoon onset.
Objective: to establish a baseline of oceanographic and marine biodiversity in the outer islands of Indonesia
Locations:
- Raja Ampat Waters (2008)
- Banggai Waters (2009)
- Natuna Archipelago Waters (2010)
- Leti Waters 2011 (Indian Ocean)
- North of Makassar Strait (2013)

North of Makassar Strait (E-WIN)
Korea (KORDI) and China (TIO)
Objective:
To know the characteristics of marine biota and ecosystems in coastal with high-energy wave. To identify factors that potentially threaten marine biodiversity and ecosystem balance.
Deep Sea Research in Indian Ocean 2015 -2016

- The aim of the study is
- To study bio ecological processes in Eastern Indian Ocean (upwelling, marine biodiversity and geological processes )
- Location : 1) Western part of Sumatera Island  
  2) Southern part of Java Island
Research Center for Oceanography – LIPI

• Research Facilities

• two research vessel:
  1. RV Baruna Jaya VII (in Ambon)
  2. RV Baruna Jaya VIII (in Jakarta)
RV Baruna Jaya VII
RESEARCH FACILITIES: RV. Baruna Jaya 1 – IV (BPPT) and RV. Baruna Jaya VII – VIII (LIPI)
<table>
<thead>
<tr>
<th><strong>GENERAL INFORMATION</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship Name</td>
<td>RV BARUNA JAYA VIII</td>
</tr>
<tr>
<td>IMO Number</td>
<td>9155171</td>
</tr>
<tr>
<td>Call Sign</td>
<td>YFZQ</td>
</tr>
<tr>
<td>Nationality</td>
<td>Indonesia</td>
</tr>
<tr>
<td>Owner</td>
<td>Indonesian Institute of Sciences</td>
</tr>
<tr>
<td></td>
<td>Research Center for Oceanography</td>
</tr>
<tr>
<td>Address</td>
<td>Jln. Pasir Putih I, Ancol Timur</td>
</tr>
<tr>
<td></td>
<td>Jakarta 11048</td>
</tr>
<tr>
<td></td>
<td>Phone +62 21 6471 3850   Fax +62 21 6471 1948</td>
</tr>
<tr>
<td>Port Register</td>
<td>Jakarta</td>
</tr>
<tr>
<td>Name &amp; Place Builder</td>
<td>Mjellem &amp; Karlsen AS Bergen, Norway</td>
</tr>
<tr>
<td>Year of Build</td>
<td>July 1997 – August 1998</td>
</tr>
<tr>
<td>Certificate Class</td>
<td>BKI</td>
</tr>
<tr>
<td>Class</td>
<td>BKI + A100 Eo</td>
</tr>
<tr>
<td>Construction</td>
<td>Hull Carbon Steel (marine use)</td>
</tr>
<tr>
<td></td>
<td>Superstructure Marine Aluminum</td>
</tr>
</tbody>
</table>

**Conference Room**

**Day Room**

**Mess Room**

**Bed Room**

**Liferaft**

**Exercise Room**
### MAIN DIMENSION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOA</td>
<td>53.20 m</td>
</tr>
<tr>
<td>LBP</td>
<td>46.50 m</td>
</tr>
<tr>
<td>LWL</td>
<td>48.89 m</td>
</tr>
<tr>
<td>Moulded Breath</td>
<td>12.50 m</td>
</tr>
<tr>
<td>Maximum Draft</td>
<td>4.30 m + 0.5 m</td>
</tr>
<tr>
<td>Gross Tonnage</td>
<td>1273 Ton</td>
</tr>
<tr>
<td>Net Tonnage</td>
<td>382 Ton</td>
</tr>
<tr>
<td>Cruise Speed</td>
<td>10 knot / 12 knot (emergency)</td>
</tr>
<tr>
<td>Duration</td>
<td>5000 mile / 20 days</td>
</tr>
<tr>
<td>Accommodation</td>
<td>24 persons Crew &amp; 30 persons Surveyor</td>
</tr>
</tbody>
</table>

### PROPULSION SYSTEM & AUXILIARY MACHINE

- **Main Engine**: Caterpillar 3516B, 2000 HP
- **Auxiliary Engine**: Cummins (2 units) KTA 19-G2, @ 336 kW
- **Emergency Generator**: Cummins Seri C 6CTA8, 175 kVA, 140 kW
- **Fuel Tank Capacity**: 176.6 KL
- **Fresh Water Generator**: WWS - AQUASEP, 8 Ton/day
- **Incinerator**: TEAM TEC - GOLAR
- **Fresh Water Tank Capacity**: 51.28 Ton
- **Maneuver Equipment**: Steering Gear Auto Pilot, Ship Auto Motion, Joystick, Forward & Aft Thruster

![Main Engine](image1)
![Auxiliary Engine](image2)
![Fresh Water Generator](image3)
![Incinerator](image4)
NAVIGATION & TELECOMUNICATION

Communication Equipment:
- VHF Sailor Consol
- GMDSS Compact Sailor Console
- Inmarsat C, Sailor
- Inmarsat B (Phone, Fax, Telex, Data)
- SSB ICOM – M 710
- Byru Satellite Phone

Navigation Equipment:
- Radar 72 mil (Freq 9 GHz)
- Radar Arpa 120 mil
- Simrad Planning Station
- Echo Sounder
- Doppler Log (Speed Log)
- GPS / DGPS
- Navtec
- Weather Station

DECK MACHINERY

Deck Crane Hydraulic (Aft):
- 3 Ton Capacity (12 meters)

Deck Crane Hydraulic (Fwd):
- 2 Ton Capacity (6 meters)

Trawl / Try Net Winch:
- 13 mm diameter, 1500 m, 8 Ton SWL

Oceanography Winch:
- 4 mm diameter, 2500 m, 2.5 Ton SWL

CTD Winch:
- 8 mm diameter, 6000 m, 6 Ton SWL

Multipurpose Winch:
- 14 mm diameter, 10300 m, 8 Ton SWL

Capstan:
- 4 Ton
Water Mass Circulation Survey

CTD Sea Bird 911 Plus

Sensor:
- Temperature: SBE 3 plus, -5 to 35 °C, 0.001°C accuracy
- Conductivity: SBE 4, 0 to 7 Siemens/meter, 0.0003 S/m accuracy
- Pressure: Diapazon SBE 4000, up to 15000 psi, 0.015% of full scale accuracy
- Fluorometer: MK III Aquatec, 0 to 100 µg/l, 0.04 µg/l accuracy
- Turbidity: OBS, 0 to 400 FTU
- pH: SBE 270, 0 to 14 pH, 0.1 accuracy
- PAR: Osr-240
- Light Transmission: OQP-200L
- Dissolved Oxygen: SBE13B, 0 to 15 ml/l, 0.1 ml/l accuracy
- Target Range: 6000 m

Software:
- SeaSoft for windows

Output Device:
- HP Deskjet 3820

Postprocess:
- Carousel Water Sampler, 12 Bottles Sampler @ 19 l

Note:
- Network Connected

Current Profile and Pattern

Acoustic Doppler Current Profiler

- R0 Instrument: 75 kHz
- Transducer Type: Hull Mounted
- Frequency: 75 kHz
- Layer Range: 500 m
- Bottom Track Depth: 700 m
- Bin: max 128 bin @ 5 m

Software:
- Data Logging: VM2Art & NavTrack
- Processing: WinADCP
- Platform: Local PC - Intel Pentium 4 - Windows 2000
- Note: DGPS Positioning, Gyro, Motion Sensor, NAVFAC & Network Connected
BATHYMETRIC SURVEY

Hydrographic Echo Sounder SIMRAD EA 500
- Type: Singlebeam
- Frequency: 12 & 38 kHz, Dual Transducer
- Depth Range: 4 – 12000 meter
- Note: Recorded real time by NAVIPAC DGPS Positioning System

Multi-beam Echo Sounder SIMRAD EM1002
- Type: Multi-beam, 111 beams
- Frequency: 95 kHz
- Depth Range: 3 – 1000 meter
- Accuracy: 0.3 % x Target depth
- Coverage: Up to 7.4 x Target Depth

Sub Bottom Profile Survey

Sub Bottom Profiler DATASONICS CAP-6600 CHIRP II
- Frequency: 3.5 kHz
- Trigger rate: 0.125 – 8 Second
- Chirp wave length: 5 – 50 mS
- Software: CHIRP II, DSP-661 Signal Processor
- Peripheral: DGPS, Thermal Printer, MO Disk, Network Connected

RV Baruna Jaya VIII
- Phone: (+62) 271 340 685, 340 686, 340 688
- Email: oceano@oceanografi.co.id
- Website: www.oceanografi.co.id
THANK YOU