Information that shows the location, and position of an object or event that is below, on, or above the surface of the earth which is stated in a particular coordinate system.

Contents:
1. Coastline
2. Hysography
3. Hydrography
4. Geographical Names
5. Boundaries
6. Transportation and Utilities
7. Buildings & Public Facilities
8. Land Cover

Geodetic Control Network
- Horizontal
- Vertical
- Gravity

Basemaps

Topographic Maps
Coastal Maps
Marine Maps

Geospatial Information

Basic Geospatial Information
- Geodetic Reference Frame

Thematic Geospatial Information
- Various Thematic Maps

Other Institutions
Indonesian Geospatial Reference System (IGRS) 2013
HORIZONTAL DATUM

- Launched: 11 October 2013
- Semi-Dynamic datum.
- Refer to ITRF2008 reference frame.
- Reference epoch: 1 January 2012
- Reference Ellipsoid: WGS 1984
  \(a = 6378137.0\) m; \(1/f = 298.257223563\).
- Currently in the process to update the IGRS 2013 to refer to ITRF2014.
- A velocity model, which incorporates tectonic plate movements and earthquake related deformation, is used to transform coordinates at an observation epoch to or from this reference epoch.
Indonesian Vertical datum is **Geoid**.

- The Geoid is derived from the gravity surveys which was tied to National Gravity Control Network (NGCN).
- NGCN has to be connected to the **IGSN71** or its new version.
- In case there is no official Geoid yet, the vertical datum is **MSL** derived from **18.6 years** tide observation or at least from **1 year** observation.
SRGI 2013: Initial Deformation Model

Deformation model based on 4 tectonic plates, 7 tectonic blocks, and 126 earthquakes data

Susilo, BIG (2017).
IGRS 2013: Velocity Rates

Susilo, BIG (2017).
Static Geodetic Control Network of Indonesia

7153 Stations (2018)

ROLES/BENEFITS

- Reference for Survey and Mapping
- Supporting Disaster Risk Reduction
- Supporting Research & Development

Established using GPS Geodetic Survey

http://srgi.big.go.id/
GNSS CORS Network of Indonesia

ROLES/BENEFITS
- Reference for Survey and Mapping
- Supporting Real-time Positioning
- Supporting Disaster Risk Reduction
- Supporting Research & Development

LEGENDA
- BIG CORS constructed in 2019 (30 Sta, InaTEWS)
- BIG CORS constructed in 2019 (20 Sta, SRGN)
- BIG CORS up to 2018 (187 stations)

http://srgi.big.go.id/
Indonesian CORS Stations Contributed to APRGP 2019
Tide Gauges Network of Indonesia

ROLES/BENEFITS
- Reference for Survey and Mapping
- Supporting Tsunami Early Warning System
- Supporting Maritime Navigation
- Supporting Research & Development

LEGEND:
- BIG Tide Gauges constructed in 2019
- BIG Tide Gauges up to 2018 (139 stations)

http://tides.big.go.id/
Main Gravity Control Network of Indonesia

Total Gravity Control Network by 2018: 50 stations (Absolute Gravity)
Based on the 2018 geoid processing results, the Indonesian geoid model was obtained with an accuracy of around 15-20 cm. Airborne gravity data used to produce this geoid model are only from the islands of Kalimantan, Sulawesi, Papua and Sumatra.

In order to improve the accuracy of the Indonesian geoid model, in 2019 the airborne gravity surveys were carried out on the islands of Java, Bali, Nusa Tenggara, and Maluku, with validation using data from the results of leveling and GPS surveys on Java and Bali islands.

http://srgi.big.go.id/
Closing Remarks
INDONESIA has vast territory and abundant land and marine resources.

Geospatial Information is compulsory for supporting sustainable development of Indonesia and managing its natural resources.

**Maritime Continent of Indonesia**

Marine area is about 77%

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<table>
<thead>
<tr>
<th>Land Area</th>
<th>1,900,000 Km²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Area</strong></td>
<td><strong>1,900,000 Km²</strong></td>
</tr>
<tr>
<td><strong>Maritime Area : Sovereignty Territory</strong></td>
<td></td>
</tr>
<tr>
<td>• Internal and archipelagic waters</td>
<td>3,110,000 Km²</td>
</tr>
<tr>
<td>• Territorial Sea</td>
<td>290,000 Km²</td>
</tr>
<tr>
<td><strong>Maritime Area : Sovereign Right Zone</strong></td>
<td></td>
</tr>
<tr>
<td>• Contiguous Zone</td>
<td>270,000 Km²</td>
</tr>
<tr>
<td>• Economic Exclusive Zone</td>
<td>3,000,000 Km²</td>
</tr>
<tr>
<td>• Continental Shelf</td>
<td>2,800,000 Km²</td>
</tr>
<tr>
<td><strong>Maritime Area of Indonesia</strong></td>
<td>6,400,000 Km²</td>
</tr>
<tr>
<td><strong>Total Area of Indonesia (Land &amp; Water)</strong></td>
<td>8,300,000 Km²</td>
</tr>
<tr>
<td><strong>Coastline length</strong></td>
<td>108,000 Km</td>
</tr>
<tr>
<td><strong>Number of Islands</strong></td>
<td>17,504 islands, 16,671 islands has been verified and submitted to UN (2018)</td>
</tr>
</tbody>
</table>

**GRF of Indonesia should cover the whole region of Indonesia, for supporting various positioning, surveying, and mapping activities at various scales.**
Geospatial-Enabling Smart Cities Program in Indonesia

Cities in Indonesia

- **Cities**: [Stars]
- **Provincial Capital**: [Red Stars]

Administrative Territorial:
- 34 Provinces
- 514 Cities
- 7094 Districts
- 83,447 Villages

Geospatial Information is necessary for realization of Smart Cities program and activities

GRF of Indonesia should support various positioning, surveying, and mapping activities for enablement of smart cities in all region of Indonesia.
INDONESIA
Home of Natural Hazards

Geospatial Information (including GRF) should support Disaster Risk Reduction Management activities

- Earthquakes
- Tsunami
- Volcano Eruption
- Flooding
- Landslide
- Land subsidence
- Drought
- Flooding
- Forest fire
- Windstorm
Thank you very much