The Status of Geodetic / Geospatial Data Infrastructure in Thailand

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Outline

- Overview on Geodetic Network
- Current status of GNSS CORS
- Past and On-going projects related to GNSS technology
- Issues to be resolved
Overview
Royal Thai Survey Department (RTSD)

- Founded in 1885
- A department under the Royal Thai Armed Forces (RTArF), Ministry of Defence
Mission

- Field and Aerial Surveying for Mapping and Geo-information Production
- Geodesy and Geophysics Surveying

To Support National Security and Development of the Country
National Geodetic Network:
Horizontal and Vertical Network

Surveying campaigns:
- Horizontal surveying: GPS Network
- Vertical surveying: First order Leveling
- Gravity and Magnetic surveying
Reference Network

Primary Network

Secondary Network

Instrument

• Coordinate System of Thailand base on WGS84 (ITRF2008)
• Geodesy:

• RTSD maintain the National Geodetic Reference Frame
Current status of GNSS CORS in Thailand
• GNSS technology has been widely used in Thailand for over 20 years
• Most of govt organizations have employed GNSS technology to carry out their routine responsibilities (i.e. Department of Lands, RTSD, GISTDA, Department of Public Works and Town & Country Planning, Royal Forest Department and so on)
• Both state organizations and private companies, GNSS technology is also widely used.
Thailand’s CORS network

80 + 120 CORS being installed by RTSD & DOL to provide NRTK service in Thailand
GNSS CORS Specification

- About 200 stations cover the country
- Each station 30-40 km. apart
- Classes: Tier I, II, and III
- Services: NRTK, DGPS, and Post-processing
- Reference Frame: ITRF2014
Past and On-going projects related to GNSS in Thailand
- GEODYSSEA
- Tectonic Plate motion of SE Asia
• Horizontal displacement during the Sumatra-Andaman earthquakes 2004

December 26th 2004 Earthquake

Rupture and surface wave propagation and resulting co-seismic displacements measured by GPS (30s)

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Horizontal total displacements due to the Sumatra-Andaman and Nias earthquakes at each zero-order Thai geodetic network site up to Dec 2011
Distortion of Geodetic network

Crustal movement
Precise Geoid determination of Thailand
Precise Geoid determination of Thailand

- To develop precise local geoid of Thailand (accuracy 10 cm.)
- Used data:
  - GPS-Leveling
  - Ground Gravity data
  - Airborne Gravity data
- To be completed in 2017
Issues to be resolved

- How to combine CORS Networks with many purposes to be a unique system.
- Reference Frame is a key role for GNSS CORS.
- Plate tectonic affect the accuracy of position. Geodynamics is the fourth dimension of geodesy.
Thank you for your kind attention