



GNSS Continuously Operating Reference Stations of Indonesia (Ina-CORS)

Parluhutan Manurung

Indonesia Geospatial Information Agency (BIG)
formerly BAKOSURTANAL

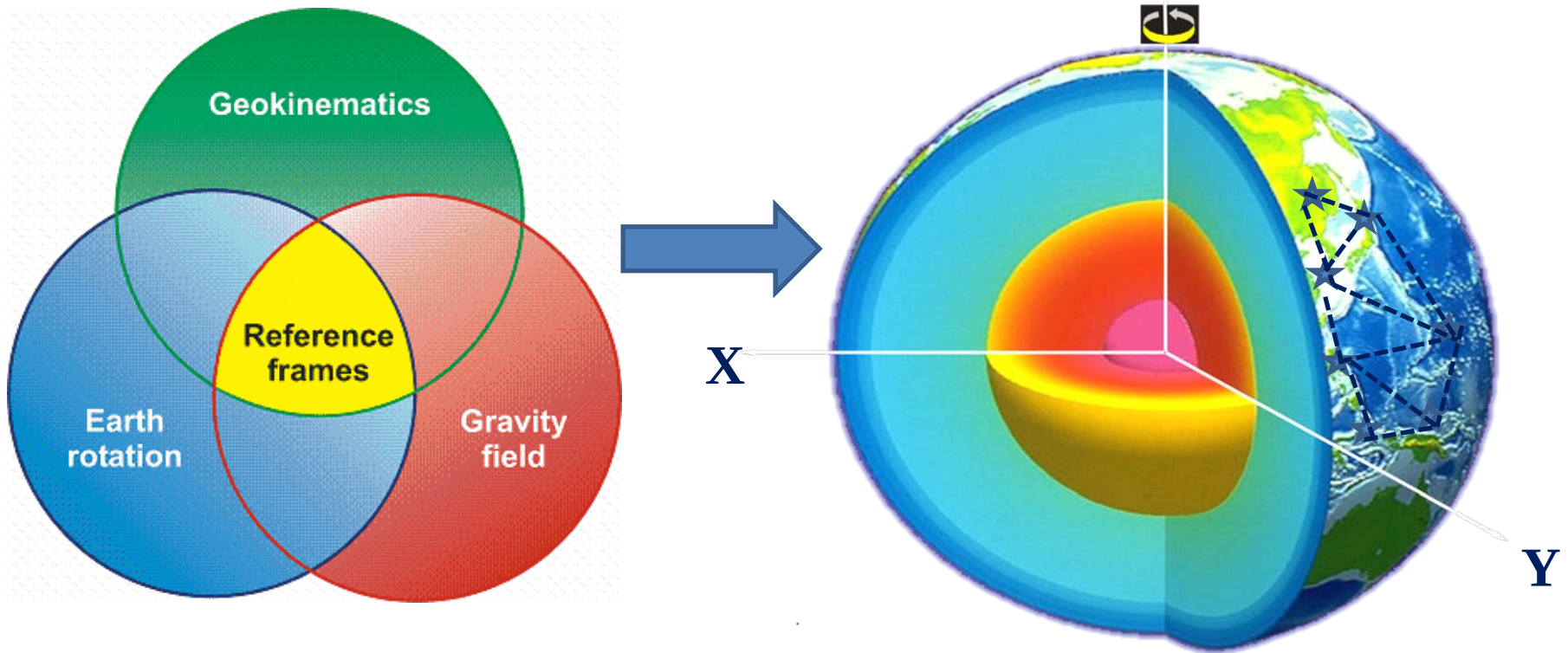
49th Session of UNCOPUOS Scientific and Technical Subcommittee,
Vienna, 6-17 February 2012

Outline

- Why need continuous observations?
- Non-continuous observation
- Ina-CORS
- Future Development

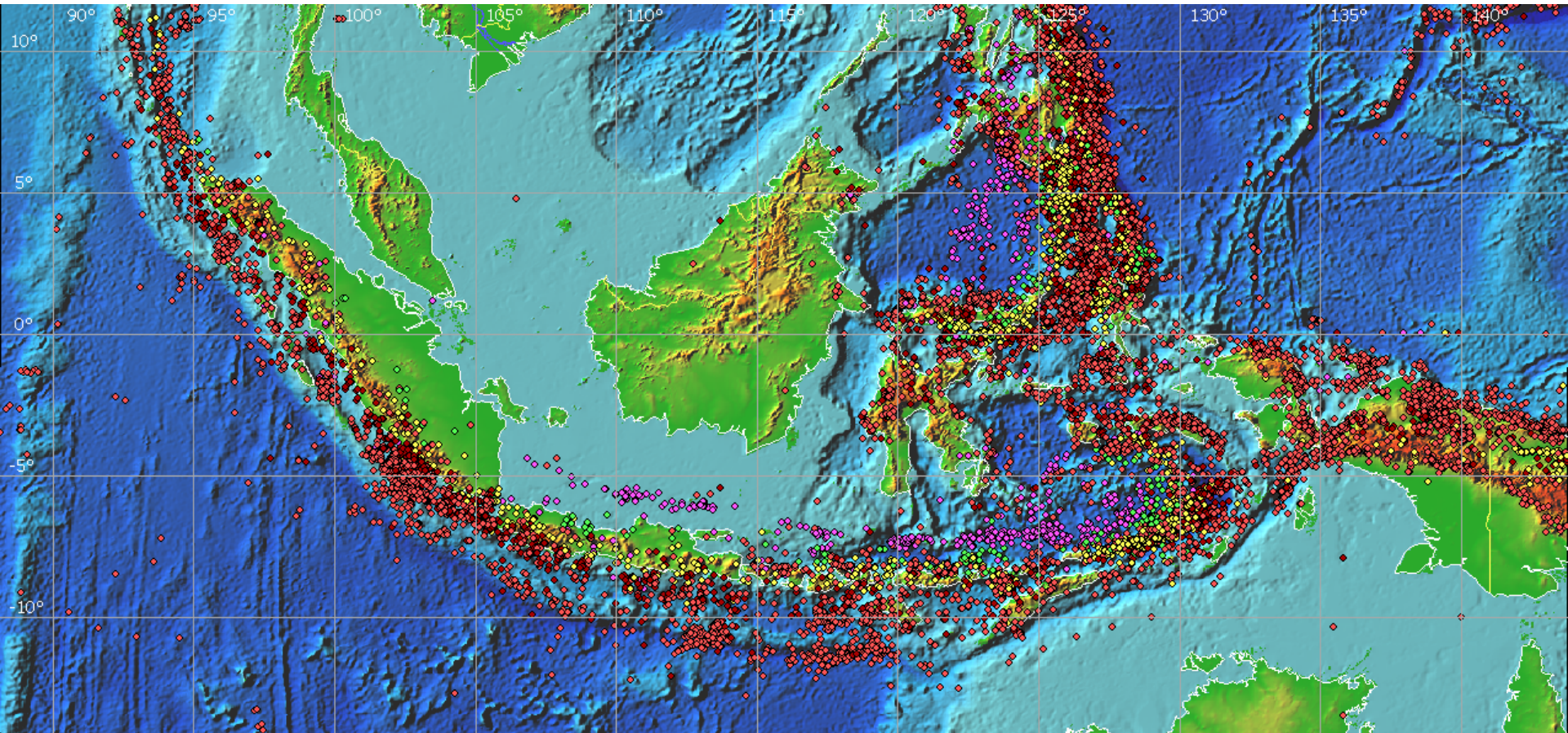
Why Need Continuous Observations?

To provide reference frames in the gravity field, rotating Earth and moving crust



Why Need Continuous Observations?

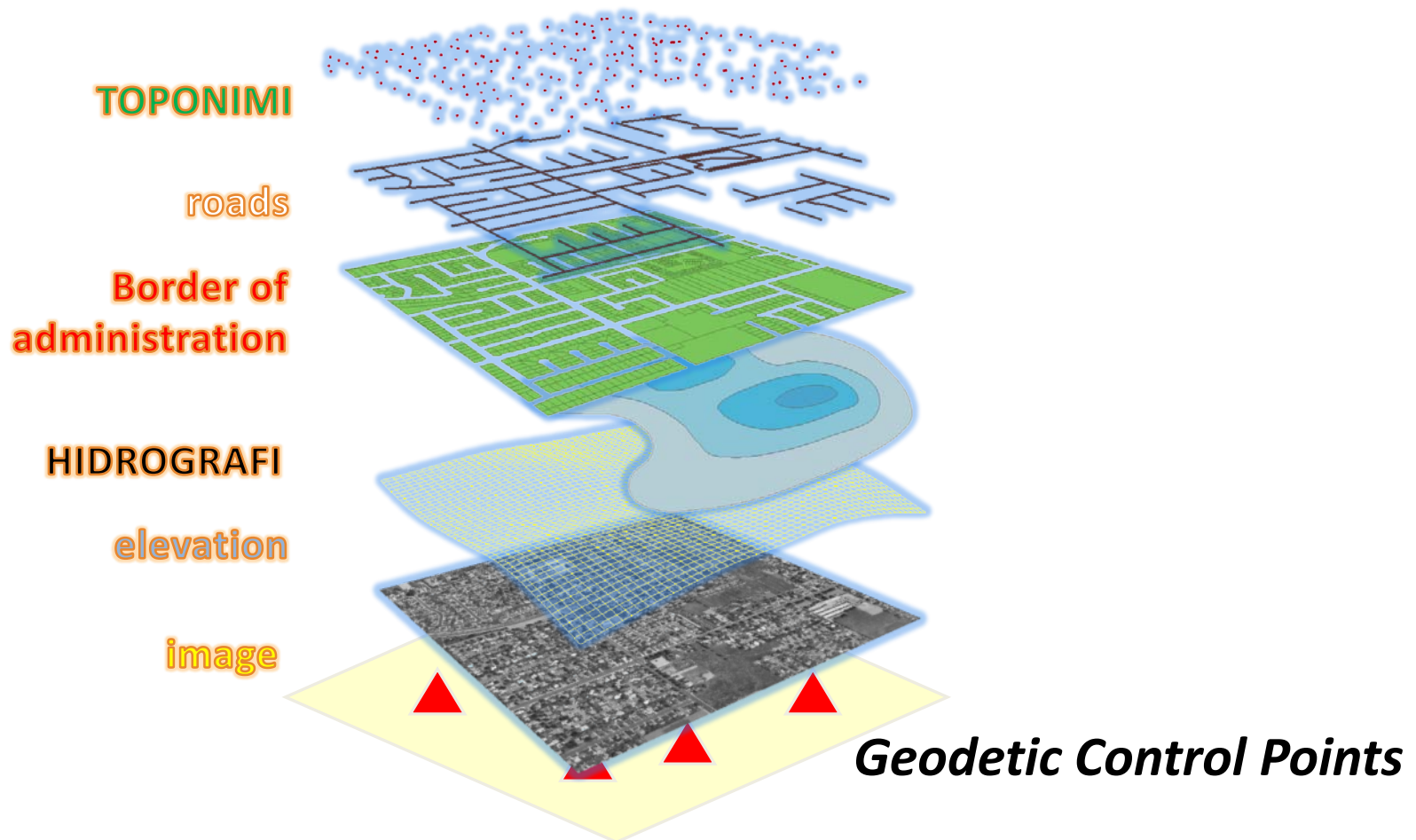
To observe crustal deformation of areas located in the ring of fire



Seismicity maps of Indonesia

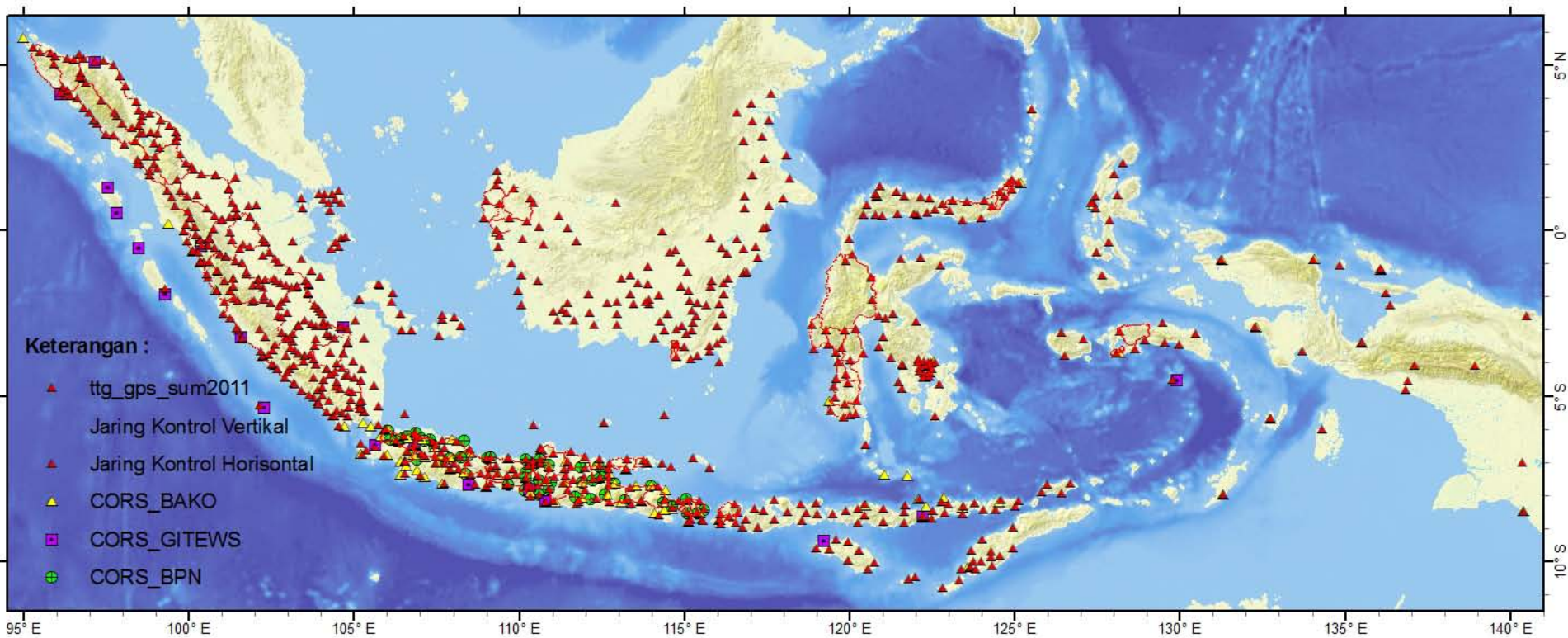
Why Need Continuous Observations?

- To provide a active geodetic control points for geospatial mapping
- To unify layers of geospatial information provided by many institutions in a single reference



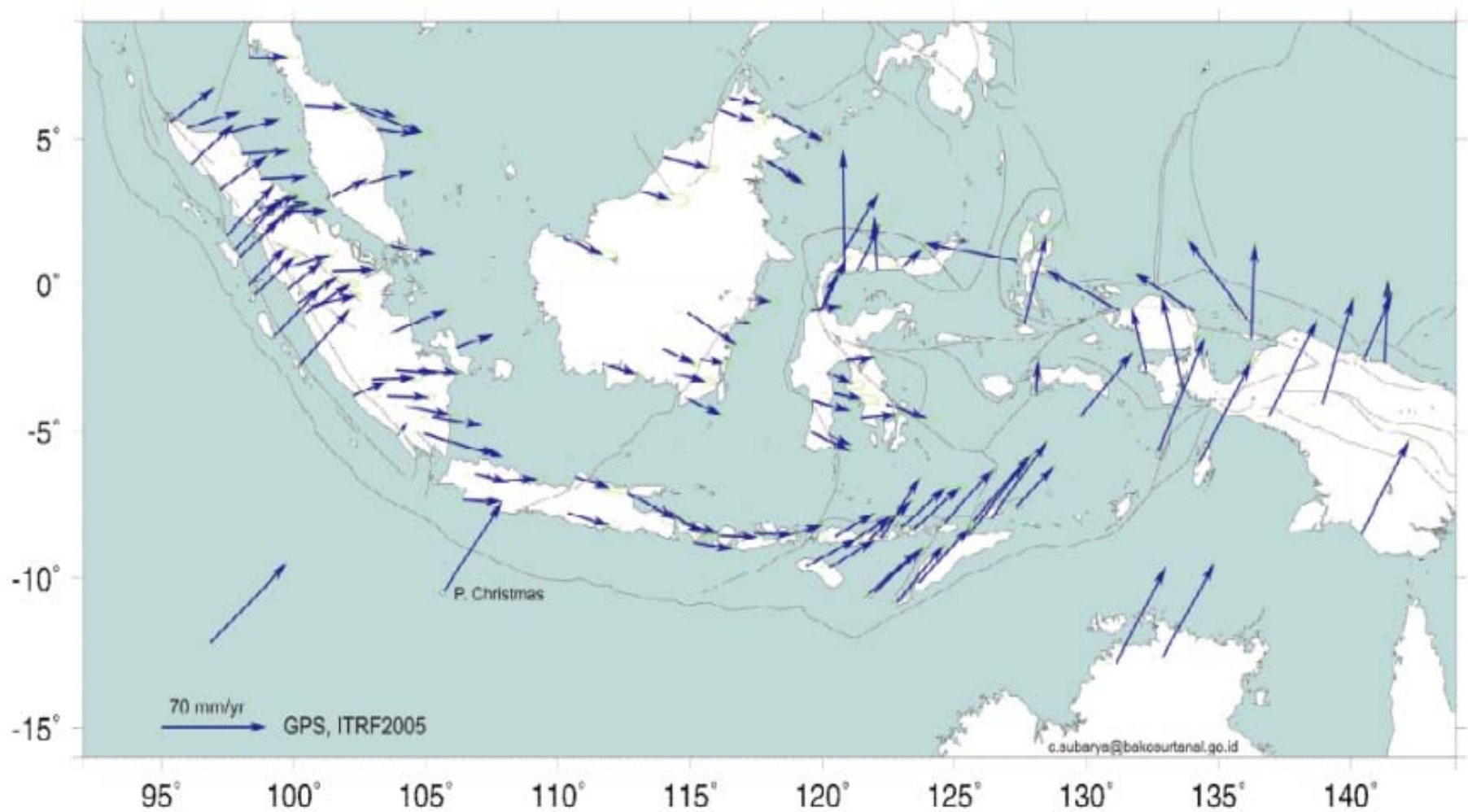
Non-Continuous Observation

630 geodetic control points observed periodically



Non-Continuous Observation

Velocity rate of crustal deformation derived from GPS Repeated Observations



(C. Subarya 2010).

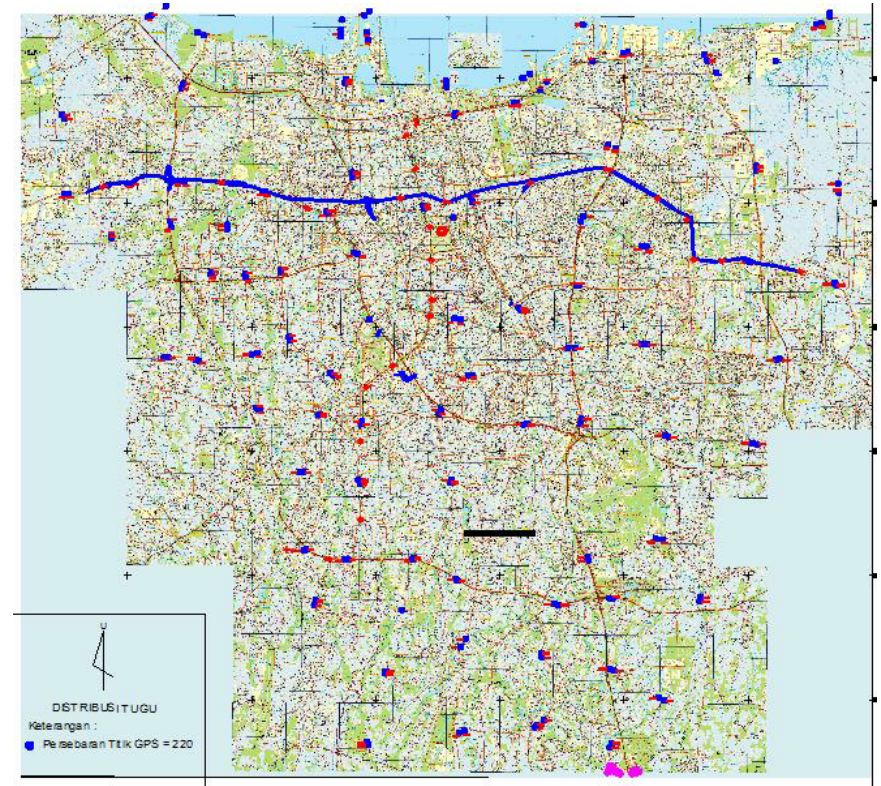
Non-Continuous Observations



Geodetic control points for land cadastral

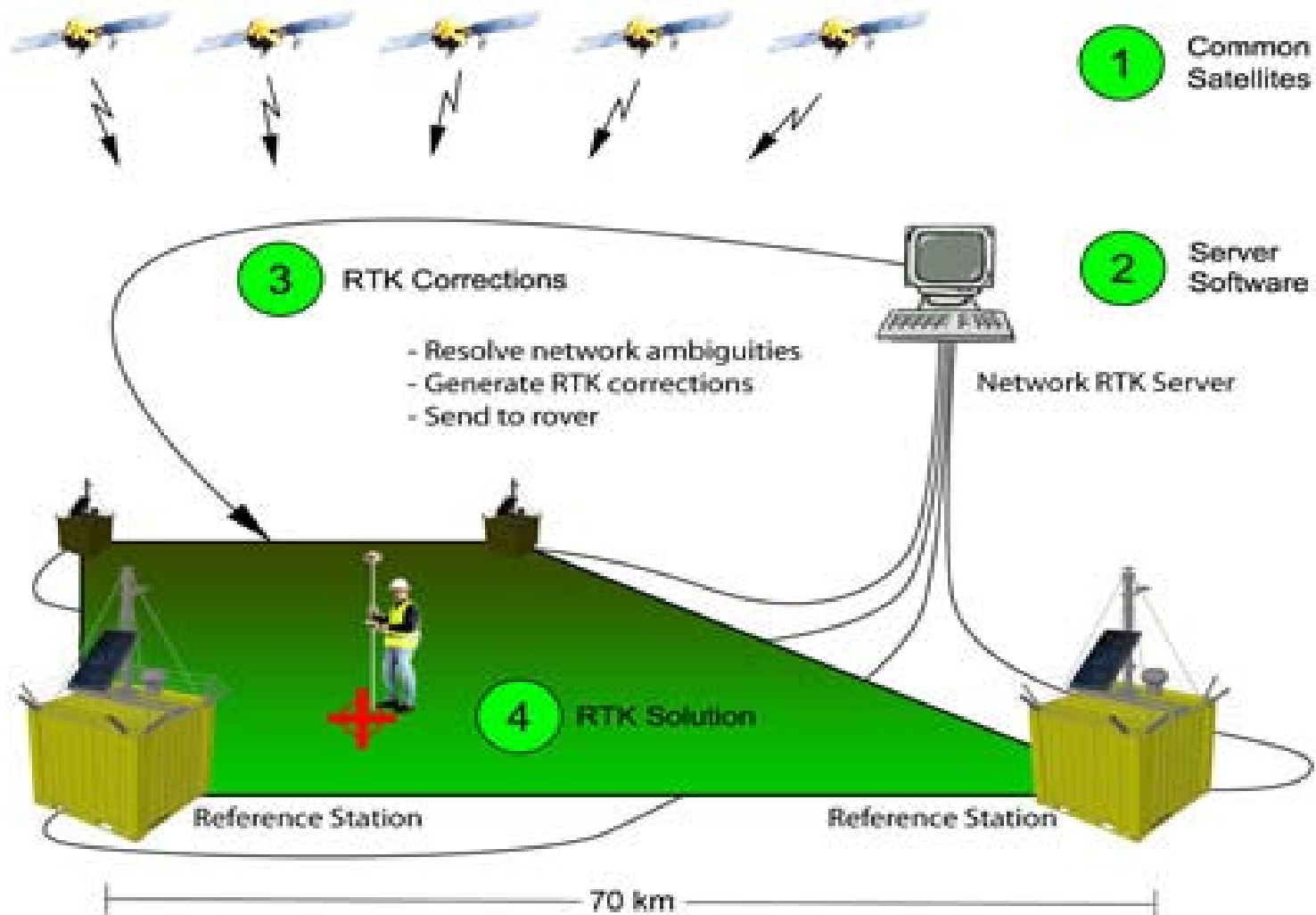
No.	Order	Control Points (2010)
1.	2	7.054
2.	3	14.085

Geodetic Control Points in Jakarta



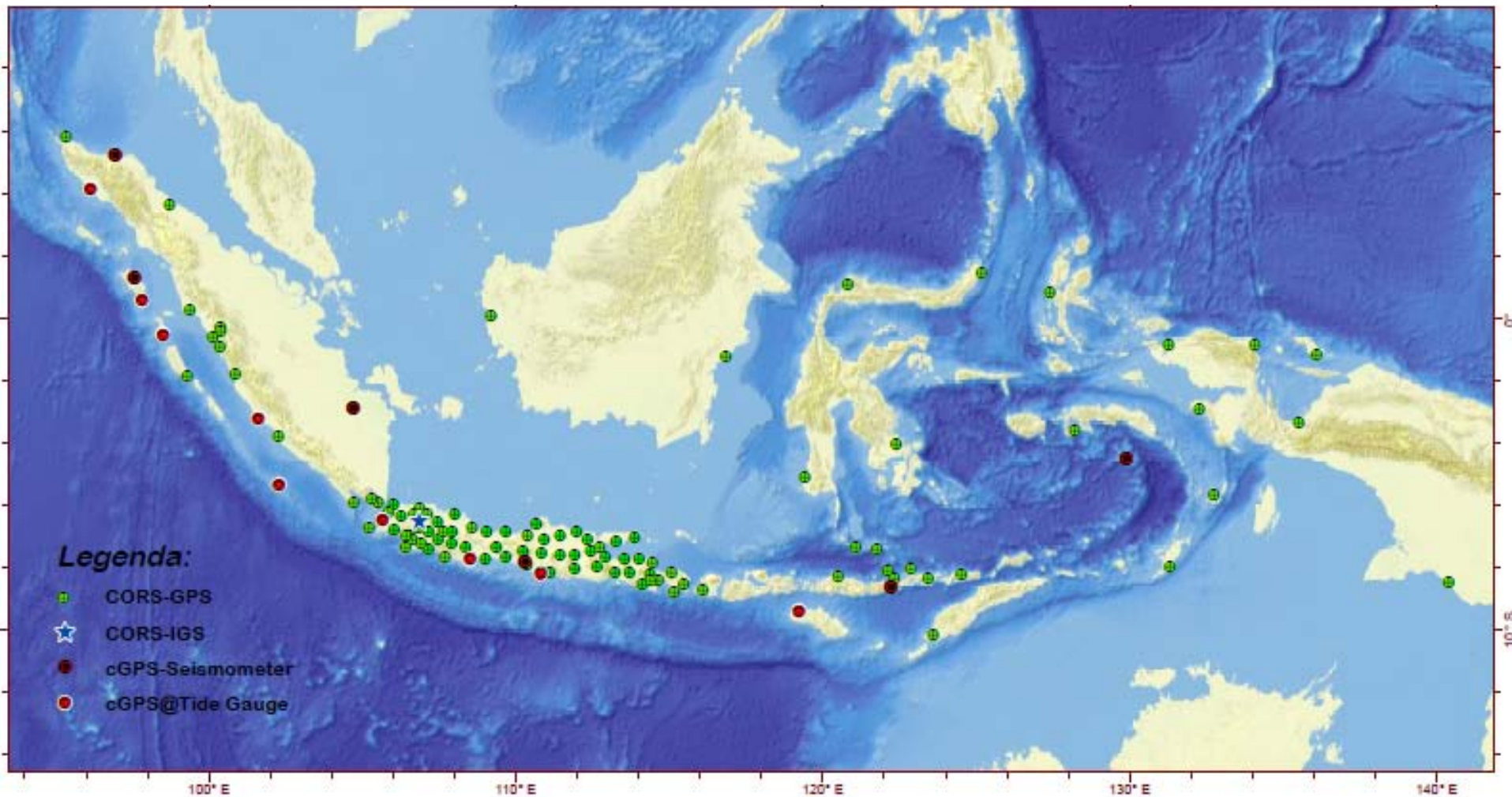
- GPS Observations in coastal areas highly affected by land subsidence
- Geodetic control points provided by local government of Jakarta Metropolitan

System Architecture



Ina-CORS

Presents stations

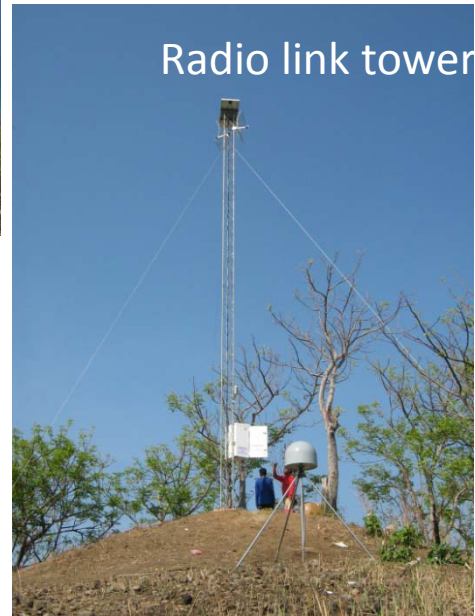


Ina-CORS

- Operated by Geospastial Information Agency (BIG) – 100 stations and Land Administration Agency (BPN) – 50 stations.
- Plan: to provide positioning corrections at centimeter level.
- Need 1000 stations distributed in the whole country.

Ina-CORS

Data Communication with Radio Link



Radio link tower

Data Communication with VPN IP



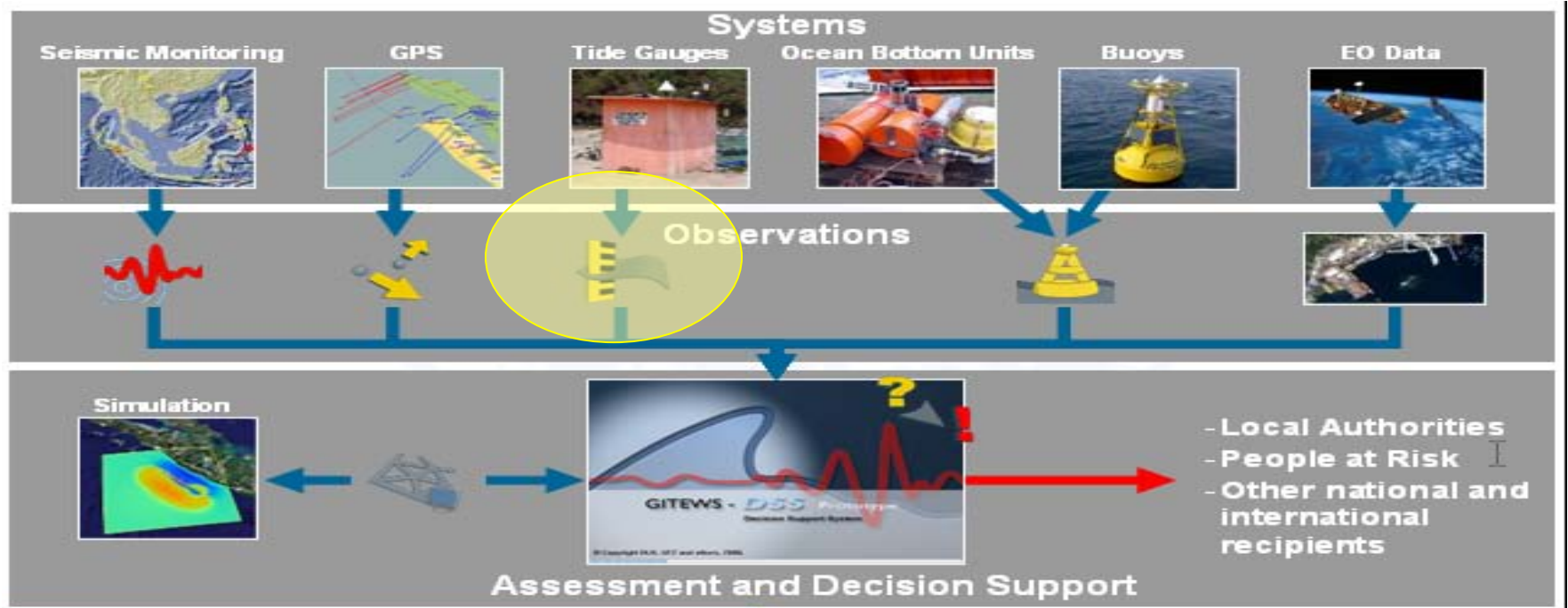
GPS Antenna



Data logger

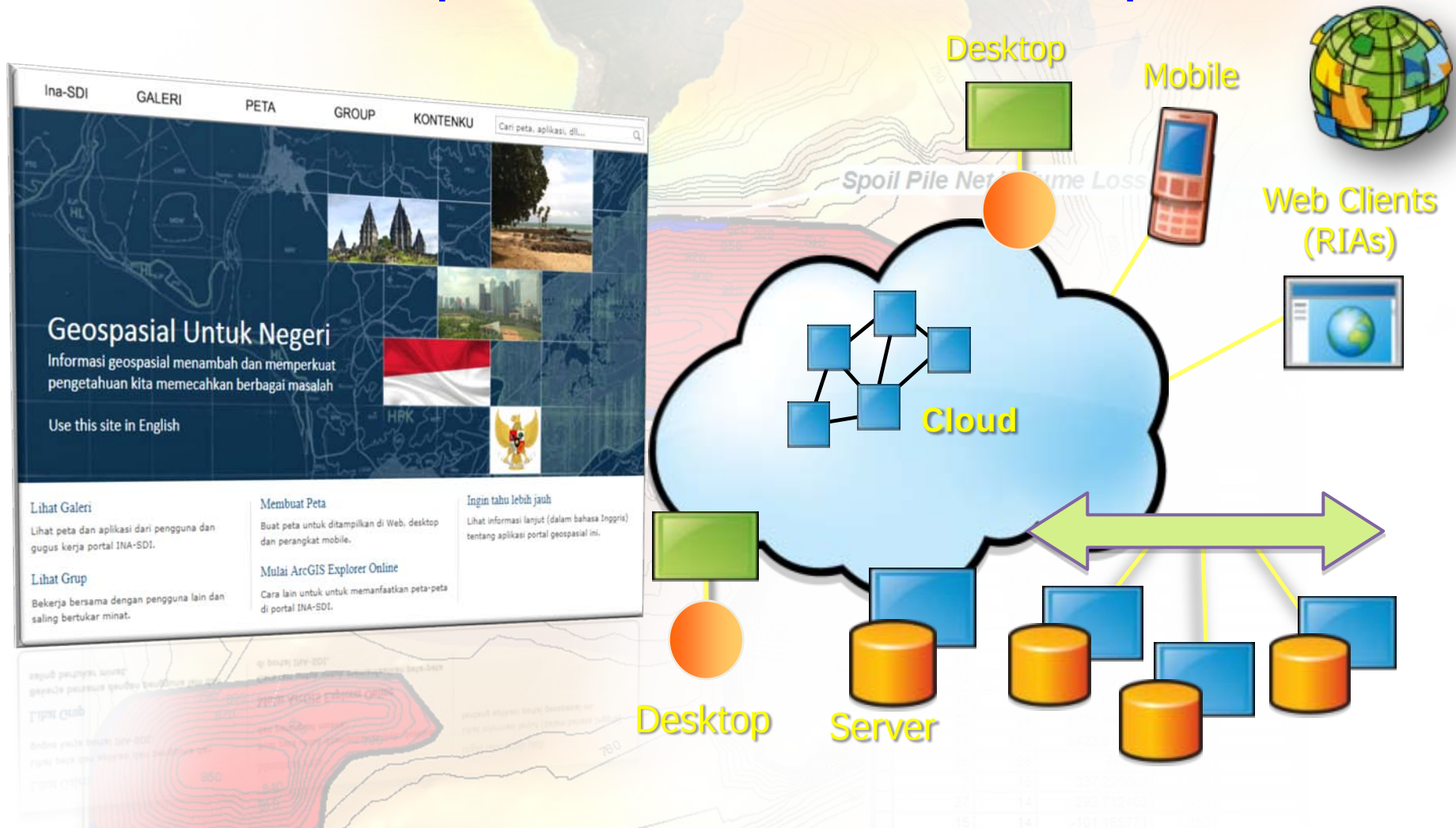
Ina-CORS

Support Tsunami Early Warning System of Indonesia



Future Development

Ina-CORS as part of Indonesian Geoportal



Future Development

- CORS utilisation is still limited since a high precision receiver is expensive.
- Need to provide a high precision low cost for rover receiver
- A rover GNSS receiver design: an integration of GIS Desktop, mobile data communication and precise antenna

Thanks