COUNTRY REPORT TIMOR LESTE

DNMG Expectations of New – Generation Satellites for Hazard Monitoring

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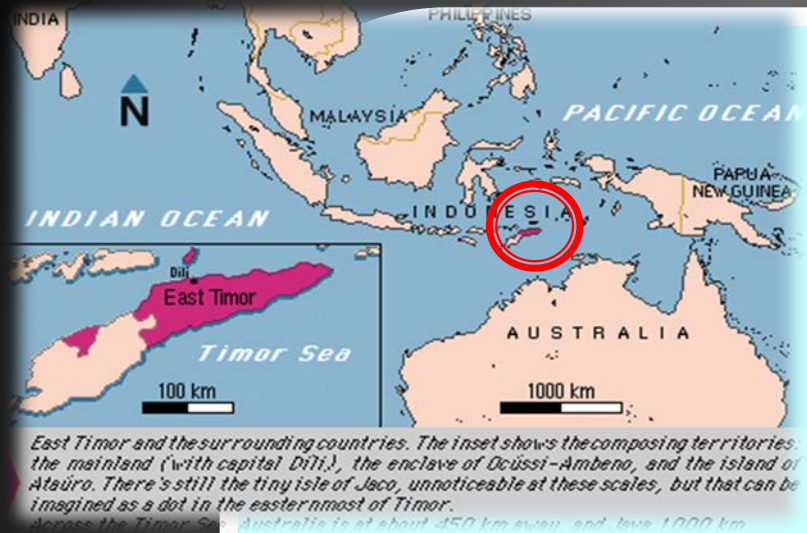
Democratic Republic of Timor-Leste



East Timor and the surrounding countries. The inset shows the composing territories: the mainland (with capital Dili), the enclave of Ocüssi-Ambeno, and the island of Ataúro. There's still the tiny isle of Jaco, unnoticeable at these scales, but that can be imagined as a dot in the easternmost of Timor.

Ataúro
Lautém
Dili
Baucau
Liquiçá
Manatuto
Ailéu
Viqueque
Ermera
Bobonaro
Manufahi
Ainaro
Cova Lima
Oécussi

Agriculture
- Coffee, rice, corn, cassava, sweat potatoes, soybeans, cabbage, mangoes, banana vanilla

Government
- Country name : RDTL/Republic Democratic of Timor-Leste
- Capital Dili
- 13 administrative district
- Independence 28 November 1975
- Restoration of Independence 20 May 2002

Official Language,
- Portuguese and Tetum

- **Geography**
- ***Location, Southern Asia, Northwest of Australia***

The coordinates of the Timor-Leste are 125. 55 E and 8.50S.

- **Area**

total : 14,410 sq km

- **Population**

Total : 1.178

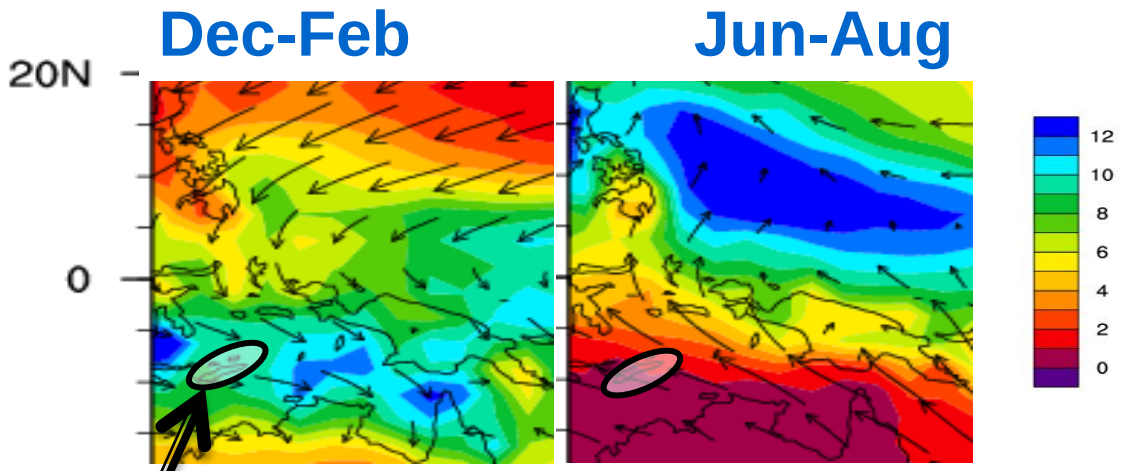
- **Natural Resources**

Gold, petroleum, natural gas, manganese, marble

Climate Drivers

Driver-1: Monsoon

- Its seasonal arrival usually brings a switch from very dry to very wet conditions. The normal south easterly trade winds in Dili (Jun-Aug) are replaced by westerly winds from the monsoon onset until the end of the monsoon season.



Location of TL

Blue/Red = regions of high/low rainfall
Arrows = direction of winds

Driver-2: ENSO

- Year to year variations in Timor-Leste's climate are due to El Niño Southern Oscillation (ENSO).

El Niño

- Generally brings drier conditions to TL
- Often leads to a late onset and early finish to wet season
- Is associated with droughts.

La Niña (i.e. 2010/2011)

- Dry season rainfall tends to above normal
- Wet season often starts earlier and finish later
- Increased flooding and landslides.

Driver-3: Indian Ocean Dipole (IOD)

- Year to year variations in Timor-Leste's climate are also due to the Indian Ocean Dipole (IOD).

IOD

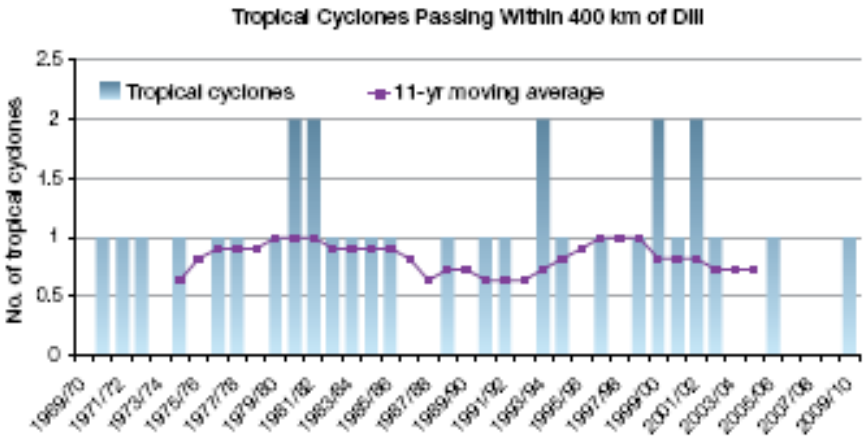
- The impact is only seen in the dry season, as the IOD is usually not active in the wet season.
- ENSO and IOD are not completely independent from each other.

IOD positive phase

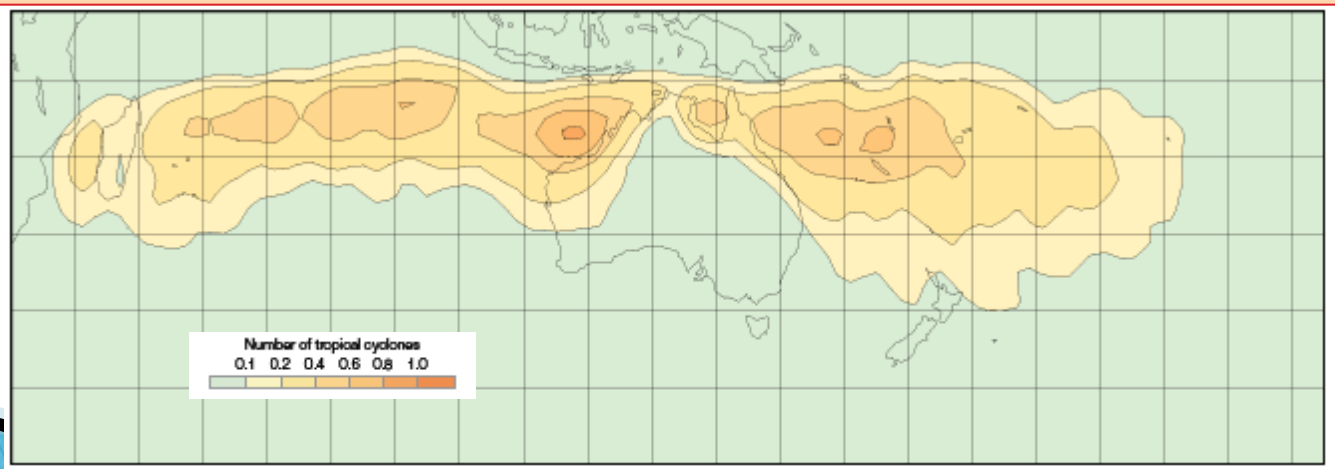
- Dry season rainfall in Dili is lower than normal.

Climate Extremes: tropical cyclones

On average eight Tropical Cyclones per decade pass within 400 km of Dili, with most occurring between November and April. However, the **impact is usually weak** due to Timor -Leste's proximity to the equator.



Average annual number of tropical cyclones per year in the Southern Hemisphere in an area 2° x 2° over the period, 1969/70 to 2005/06. Source: http://www.bom.gov.au/jsp/ncc/climate_averages/tropical-cyclones.



Top three hazards that can be monitoring by Satellite

Hazard 1: Monsoon Activity

Caused by of Heavy rain on 2010 (La Nina event), more than 3000 house damaged, road and bridge other facilities damaged.

Flooding

Strong Wind

Landslide

Flooding

Landslide

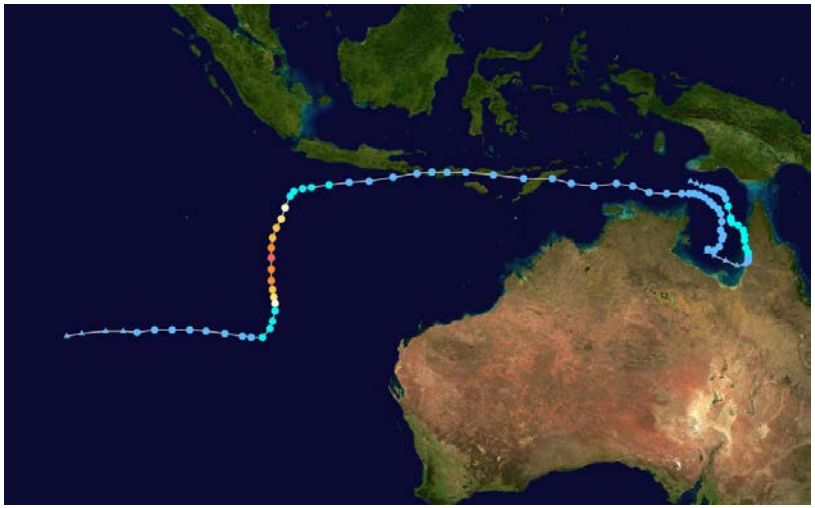
Hazard 2: Drought
Caused by Elnino 2007

2007 (EL NINO): That year there were serious negative impacts on agricultural production due to the late onset of the rainy season and erratic rainfall pattern. There was a 30% drop in production in 2007 which is attributed to drought (FAO/WFP, 2007) And reduce of water spring.

Hazard 3: Tropical Cyclone

Effected with strong wind and heavy rainfall in south coast area and high land

TC Gillian on March 2014



BoM

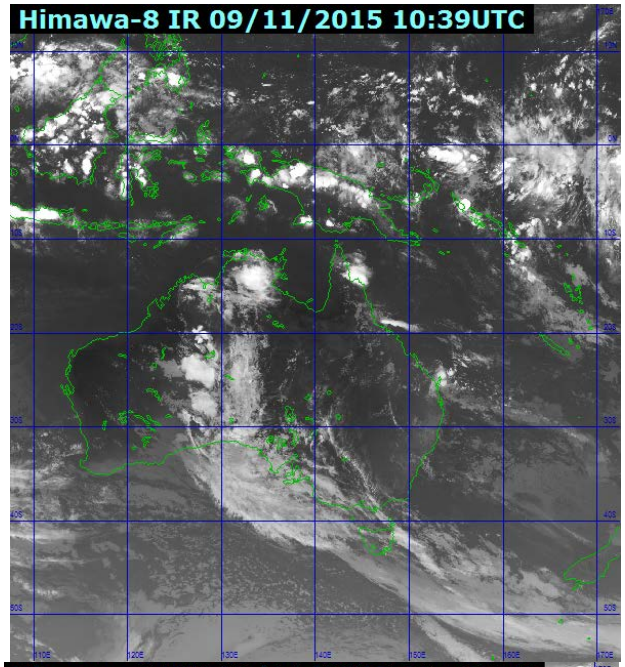
DNMG expectations of new series of satellites for hazard monitoring

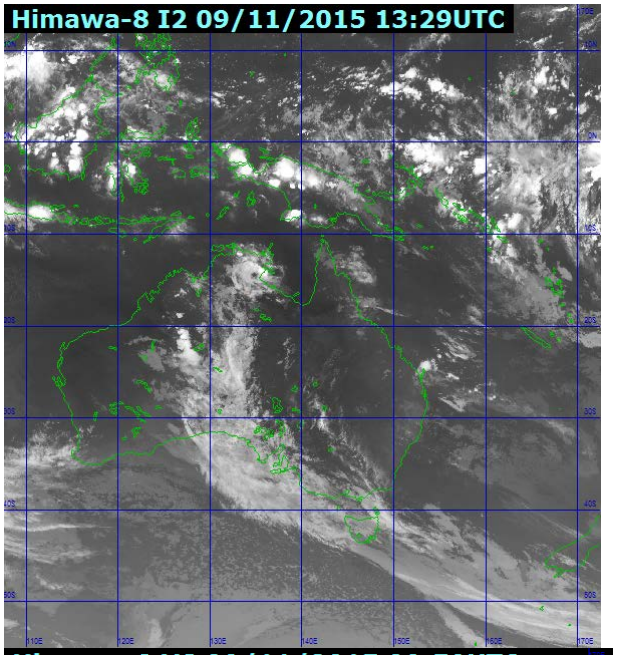
Major hazard	Features of new generation GEO met. satellite
Hazard 1: Monsoon Activity	**Multi spectral bands:** New products will be derived from multi-spectral band observation data, which will help to issue heavy rainfall warning due to strong monsoon. **High spatial resolutions:** Data from High spatial resolution bands will also provide the additional data necessary address the feature classification of the atmosphere.
Hazard 2: Drought	**High spatial resolution:** New products will be useful for real time monitoring the drought spatial distribution.
Hazard 3: Tropical Cyclone	Multi-spectral bands: New signal derived from multi-spectral-band observations will support issuance of more effective warning.

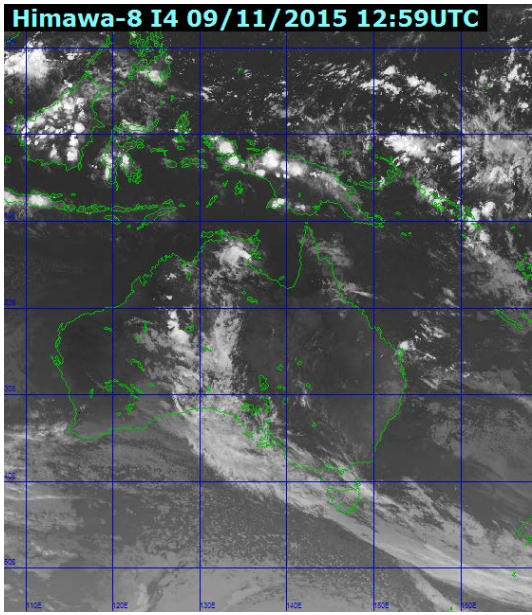
DNMG requirements to get desired benefits from the new generation of satellites

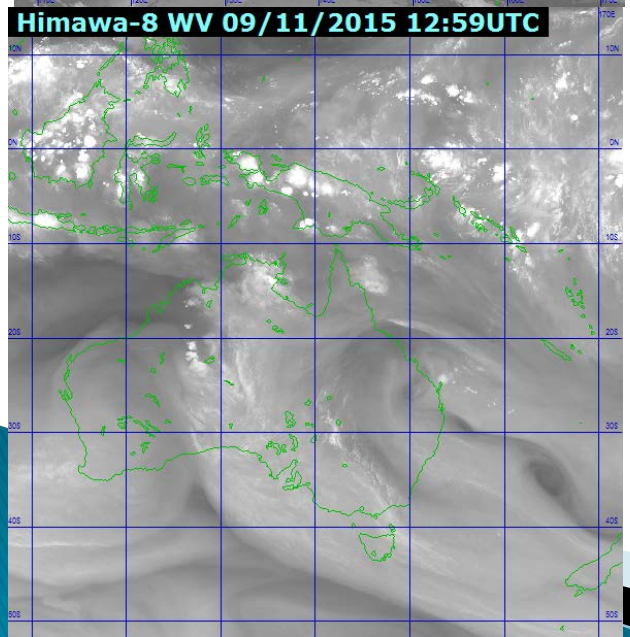
Major hazard	Features of new generation GEO met. satellite
Hazard 1: Monsoon Activity	**Training in imagery analysis:** Training would support the retrieval of new signals from multi-spectral band observation. **Training in the basics of multi-spectral observation:** Training will give us opportunity to interpret all products from the new generation of satellite
Hazard 2: Drought	**Training imagery analysis:** Analysis imagery would support to monitoring and forecast drought indicator
Hazard 3: Tropical Cyclone	**Easy-to-understand product:** Need to using a product made with multi-spectral band data that indicates new signals prior to extremely heavy rain.

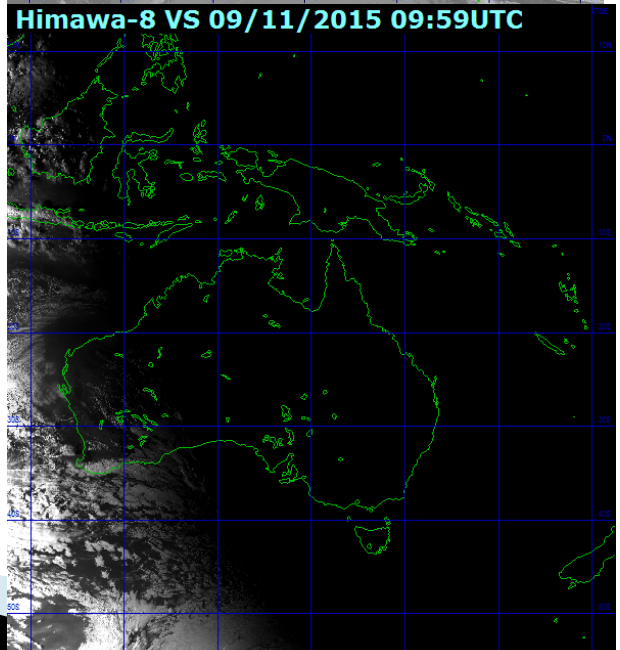
SATAID IMAGERY Product

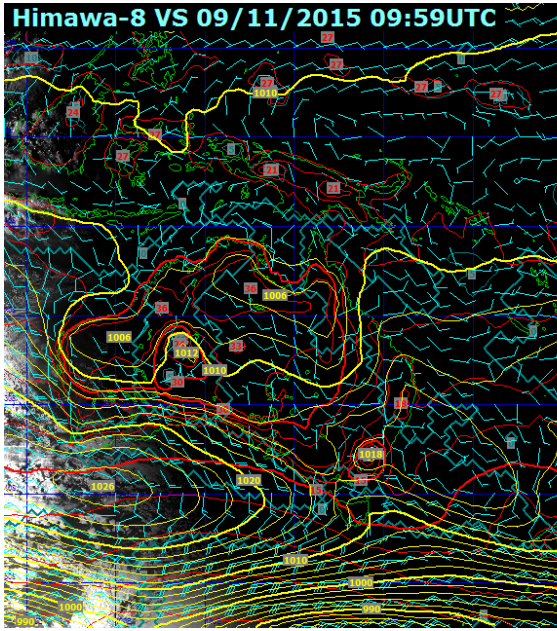










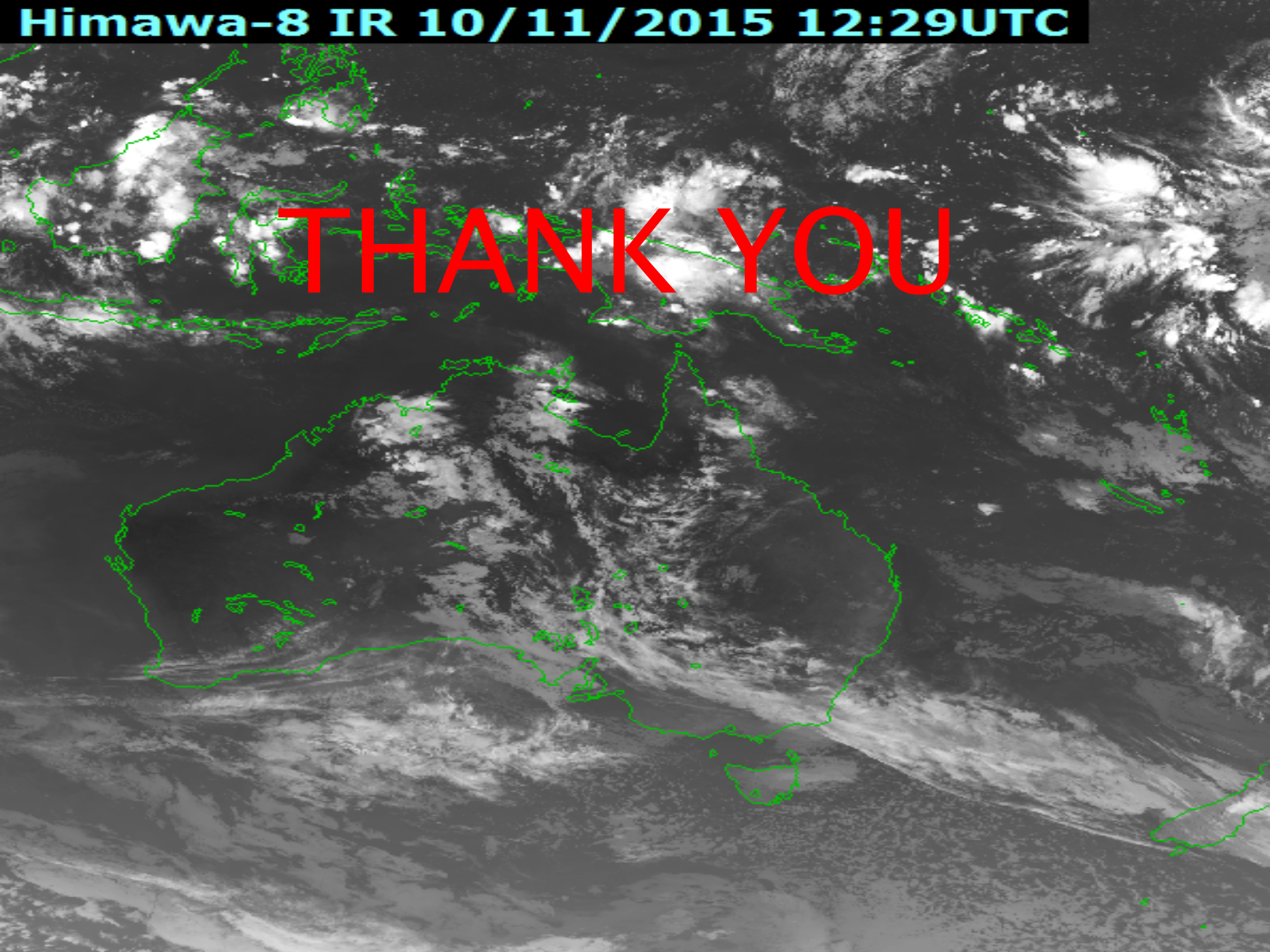


Challenges and Plan

- Setup and upgrade the system (internet high conection and high speed) to access Himawari data satellite.
- More training available to improve capacity of staff (manpower).

Conclusion

- The new generation geostationary meteorology satellite will help us to mitigate the Hazard.
- With the training (imagery analysis, basics of multi-spectral observation and product development), can be easy to analysis and understand the product.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