

# **FENGYUN Satellite User Conference (FYSUC)**

*(Haikou, Hainan Province, China, 15 to 17 November 2019)*

## **Current Status of Satellite Application in Lao PDR**

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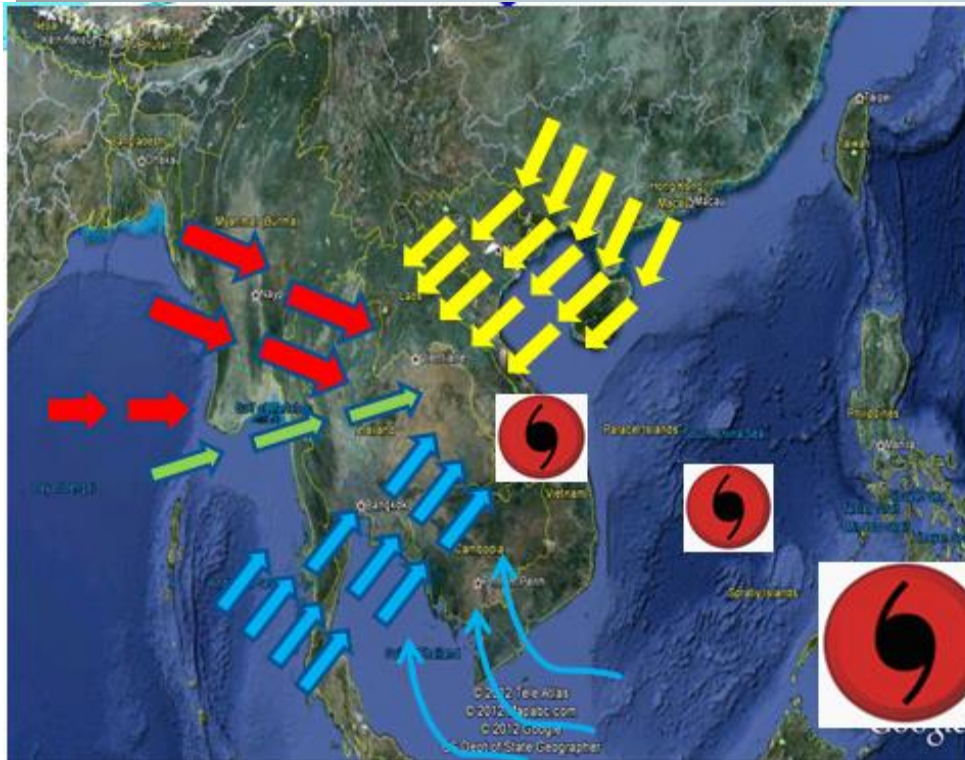
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# Outline

- **Introduction**
- **Current Status of Weather Satellite in Lao PDR**
- **Weather Monitoring**
- **Natural Disaster in Lao PDR**
- **Conclusion**

# Introduction

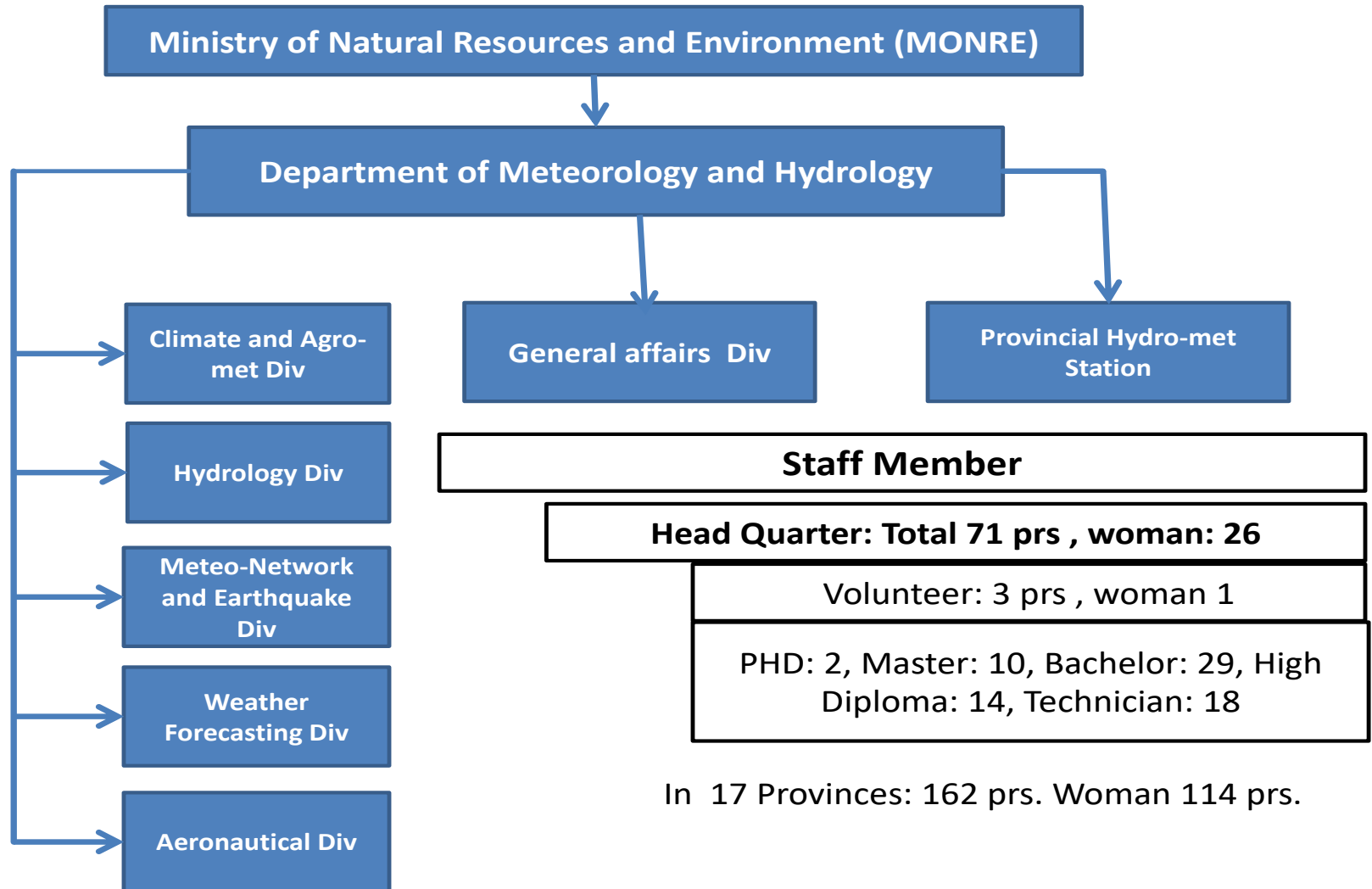
Climate characteristic of Lao PDR is tropical climate and influent by monsoons (Southwest and Northeast monsoons) which divided in two seasons:



- Wet season:
  - Mid May to mid October
  - The average annual rainfall ranges from 900 – 3,500 mm
- Dry season:
  - Mid October to mid May
  - The average annual rainfall ranges from 400 – 900 mm.

# Introduction

## DMH Structure Chart



# Current status of Weather Satellite



# Satellite Receiving Stations

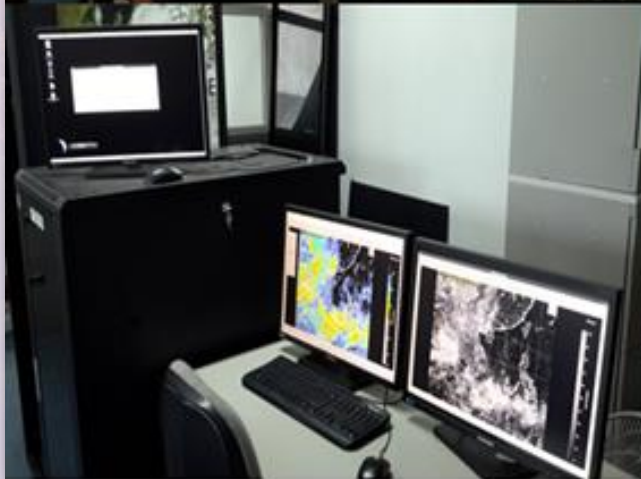
## Meteorological Satellites

*Since 2009,  
FY has been used.*

**COMS-1**

**CMA-Cast**

**Himawari-8**





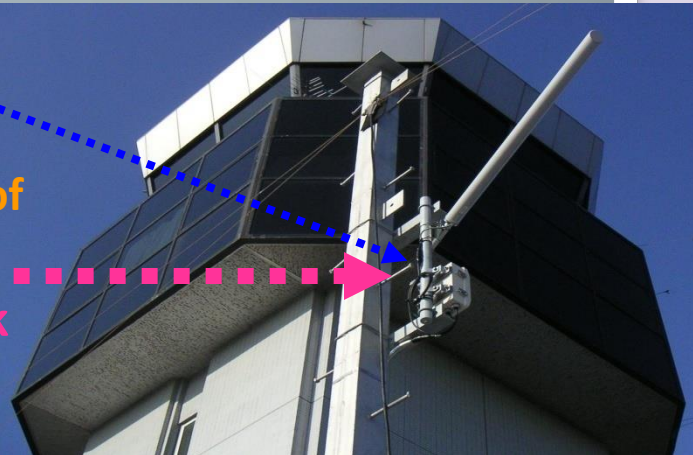
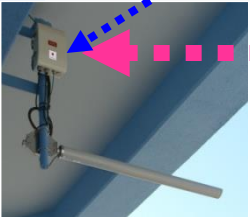
# C Band Doppler Weather RADAR





# High Data Rate Spread Spectrum Transceiver

(SST)



Hi-speed Data TX & RX of  
54Mbps  
2.4GHz, Wireless Link  
(Point to Point)

Radar Tower Site  
DMH Headquarters

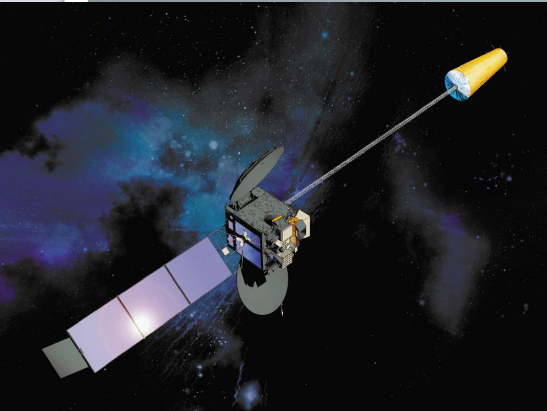
Main targeted Service  
For Safety Air Navigation

Air Traffic Control Tower Site  
International Airport (Wattay)





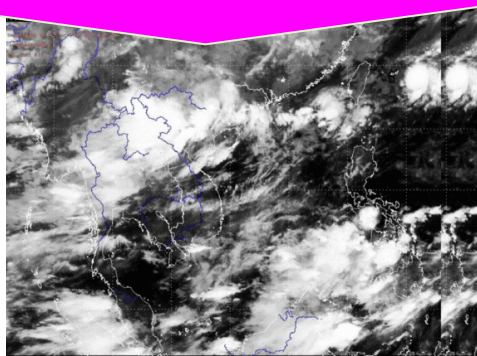
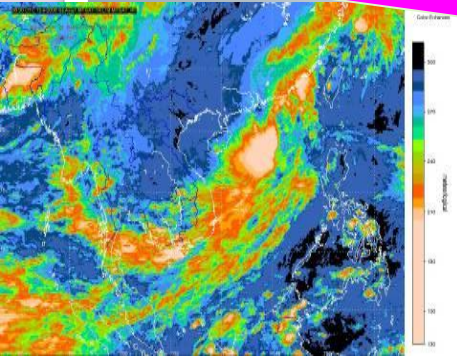
# Satellite Ground Receiving Station Geostationary



**CMACast (CMA) &  
HIMAWARI-8 (JMA)**

**5 channel imagers:**

**IR1 ; IR2 ; IR3 ; IR4=WV ; VIS**



# Weather Monitoring





# Current Hydro-met Networks

Station Type	Quantity
Manual Weather Stations	53
Automatic Weather Station	43
Manual Water Level Station	110
Automatic Water Level Station	37
Manual Rain Gauge posts	119
Satellite Ground Receiving Station	3 (Coms-1, FenYung, Himawari-8)
Weather Radar	1 (Doppler: C-Band)

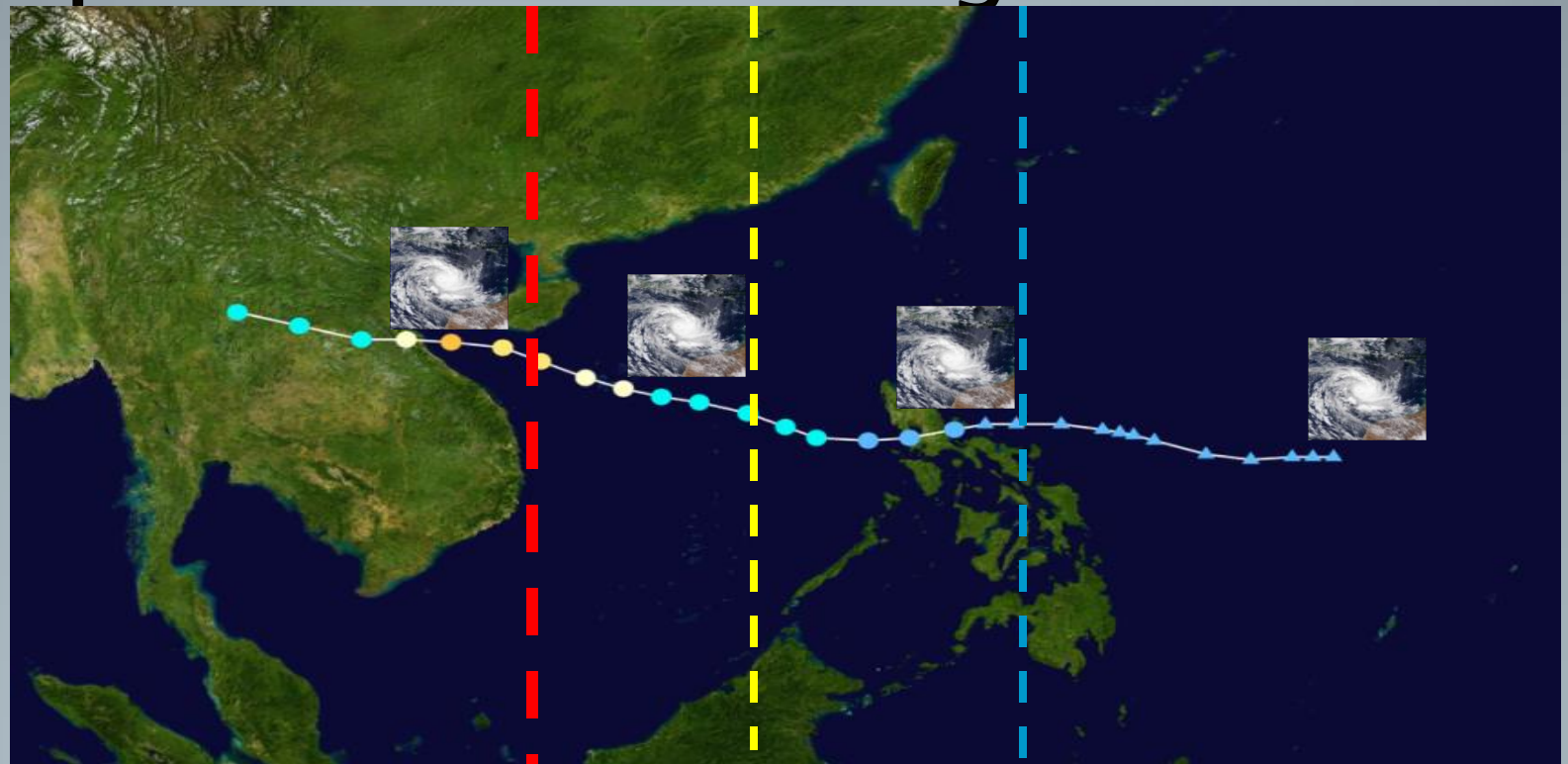


# Issued Warning

- DMH issued warnings such as:
  - Heavy rainfall
  - Local Storm (Strong wind)
  - Flash Flood
  - Landslides
  - Floods
  - Typhoon
  - Cold weather
  - Hot weather
  - Lightning



# Tropical Storm Warning



110°E

115°E

120°E

## Urgent Warning

Issued every 6 hrs when TS is located west of 110 deg. East

## Near Warning

Issued once a day when TS is located between 110 to 115 deg. East.

## Far Warning

Issued once a day when TS is located between 115 to 120 deg. East

# Early Warning and Dissemination

## Early Warning and Dissemination

**ՀԱՅԱՍՏԱՆԻ ԾԱՌԳՆԻՆ ԿՐԹԱԿԱՆ**  
**Ճանաչողական Կրթության և Դպրոցային Կազմակերպության Գործակալություն**  
Հանրային և գիտական կազմակերպություն  
Համար: 09.11  
Տարածվելու ամսաթիվ: 24 հունվարի 2017

**Ստորագրված է Կրթության և Գիտության նախարարի կողմից 2017 թ. հունվարի 27-ին**

**Ստորագրված է Կրթության և Գիտության նախարարի կողմից 2017 թ. հունվարի 26-ին**

Ստորագրված է Կրթության և Գիտության նախարարի կողմից 2017 թ. հունվարի 24-ին

Ստորագրված է Կրթության և Գիտության նախարարի կողմից 2017 թ. հունվարի 24-ին

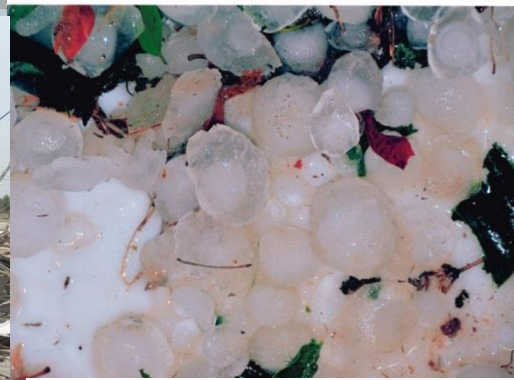
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From January to October 2017, DMH issued the warnings such as: local storm warnings, landslides warnings, flash flood warnings and flood plain warnings.

All warnings sent directly to Prime's Minister Office and media and public by using telephone, fax, email, website, Facebook and What Apps. Resulted, people can receive the warning information in time.

# Natural Disaster in Lao PDR



- In Lao PDR droughts and floods are the most common natural disasters.
- Floods have the greatest macro-economic impact on the country and affect a greater number of people, as the areas affected are the primary locations of economic activity and contain 63% of the country population.
- Floods mostly affected central and southern provinces of the country. 27 major floods have occurred over the past 35 years with an average recurrence of one every 1.5 years.
- Flash flood is also common natural disaster mostly affected northern to south of country.



# Socio-Economic Assessment in 2017



Local Storm in Vientiane Capital (17 March 2017)

In March 2017, local hail storm caused severe damages by heavy hail and strong winds in some areas of northwestern and central parts of Lao PDR.



Hail Storm in Muang Phonthong, Luang Prabang (17 March 2017)

Hail Storm in Vientiane Province (16 March 2017)



# Socio-Economic Assessment in 2017



- In July 2017, heavy rainfall caused severe damages on landslides in northern and central provinces such as: Six people were killed in landslide in northern Laos at province Phongsaly after almost two weeks of rainfall hit the region and 2 people in Muang Med, Vientiane province. The landslides not only affected to the people but also affected to transportation and agriculture sectors.
- During the tropical cyclones passed over Lao PDR (in July to September), its brought the heavy rainfall with wind gusts in Lao PDR caused severe damages on flash flood, landslides and flood plain such as:
- Two people were killed by flash flood and many severely impacted as heavy rain lashed multiple districts in Oudomxay Province.

# Socio-Economic Assessment in 2017







## **Socio-Economic Assessment in 2017**



## Socio-Economic Assessment in 2018



Lightning on 21 Feb 2018 at Kenethao District, Xaiyabouly Province



22 Feb 18, Luangprabang Province



21 Feb 18, Vientiane Capital

- Started from March to June 2018, Lao people suffered from natural disasters such as local storms, lightning, heavy rain, flash flood and landslides in some areas of northern and central parts, and then from mid-June to August 2018, the active southwest monsoon and associated with two tropical cyclones passed over Central and Northern parts of Lao PDR, resulted, it enhanced the continuous rain and extreme weather over Lao PDR such as: landslides, flash flood, floods and dam break causing catastrophic damage to properties and loss of life of the people, infrastructures and socio economic, especially to roads, bridges, agricultural areas, irrigations, drinking water, schools, hospitals, electricity, buildings and other facilities over 17 provinces and one capital city of Lao PDR



# Conclusion

- The Department of Meteorology and Hydrology (DMH) of Lao PDR, there are three satellites receiving station are located at DMH Headquarters.
- The satellite application of DMH used for climate monitoring especially for tropical cyclones impact to Lao PDR.
- DMH lack of staff who has knowledge and experience on weather satellite analysis, therefore needs much more supports and assistant from CMA in technical facilities, analysis tools and personnel performance.

# Department of Meteorology and Hydrology (DMH)

Khob Chai

**Thank you for your  
attention**

