Joint Meeting of RA II WIGOS Project and RA V TT-SU on 11 October 2018 BMKG Headquarter Jakarta, Indonesia

Mrs. Sinthaly CHANTHANA Lao PDR

Background

Department of Meteorology and Hydrology
(DMH) in Lao PDR is a pure governmental organization under the Water resources and Environmental Administration, Prime Minister's office.
DMH is assigned as National Service Provider of both fields meteorological and hydrological monitoring and products.
To perform and fulfill its missions and mandatory, DMH's administrative structure is divided into two levels such as Headquarters level and Provincial level.

The provincial level is actually responsible for routine operational duties of all stations whereas The Headquarters level looks after strategic plans, principles, regulations for the whole country.
Data collection, processing, analyzing, archiving and disseminating for services are also roles of Headquarters level, where the whole budget is annually allocated by central government.
DMH also plays important roles contributing to National Disaster Management Committee framework, as well as handling a close cooperation with the National Disaster Management Office.

As we know now that the work of Meteorology and Hydrology is the science sector that perform tasks such uniform across the country and a comprehensive contribution to the development - economic, social, especially building infrastructure and a clear warning to the social right conditions to minimize loss Arising from natural disasters are now climate has changed as flooding (flood lightning, flooding extremely), droughts, storms, Winter and increasingly severe and more frequent our country and other countries in the world facing the threat thereof. From the natural disaster, so we use and update my country's satellite data, only accept information from Japanese, Korean and Chinese artificial intelligence to use the forecasting in climate and information from different websites: from Vietnam, Hong Kong through the Internet.

Updates on status and plan of satellite data access, processing, application and training on Meteorology and Hydrology is a technic instrument in responding and mitigating the effects of such disasters. Also, to support action to ensure compliance to international standards is to comply with the terms and regulations of the meteorological world Laos has become a permanent member from 1955 onwards and ready to perform the obligations of the Commission of Taiwan to Laos became a member in 1973 and an obligation to the responsibility of the countries members Parties The implementation of the Mekong 1995 and also contributes to making Laos a state governed by law meteorology and Hydrology.

I would like to express my great thanks to WMO and BMKG for providing financial support for me com to join in this meeting

Carrent observationnel system overview

Damage and Loss Analysis, Immediate Effects, DAMAGES
Destruction of physical assets Occur at time of natural event
Measured in physical units, and at monetary replacement value
Damage examples: Houses and household goods Hospital and schools, and contents Agriculture lands and irrigation systems Roads and bridges
Ports and airports Water supply systems, Electrical systems
Medium Term Effects LOSSES Changes in economic flows Losses examples:
Production losses in agriculture, fishery, livestock, industry, commerce, tourism
Higher operational costs and lower revenues in electricity, water supply and transport

Introduction

- Lao PDR is land lock country
- Lao PDR has a tropical monsoon climate
- The economy of Lao PDR is primarily natural resource
- Lao PDR is still largely an agricultural country.
- The population growth remains relatively high at almost 3 percent per year.
- Area 236,800 square kilometres.
- Population= 7,2 million

Climate characteristic of Lao PDR

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

Rainy season: (southwest monsoon):

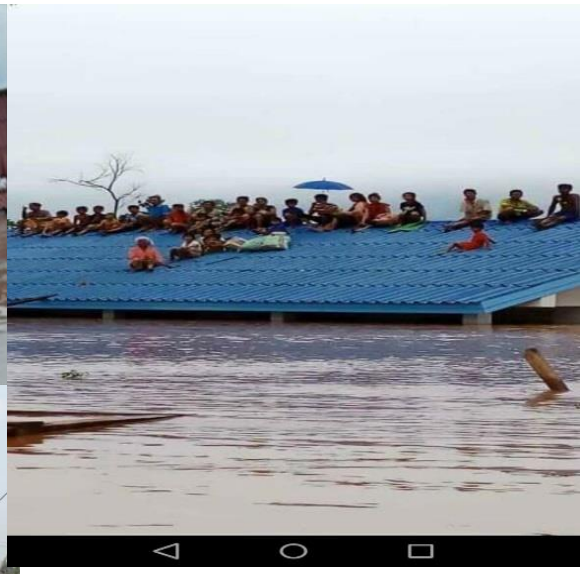
- affects from mid - May to mid – October
- It is a period brings stream of warm moist air from Bay Bengal / Gulf of Thailand to Lao PDR causing abundant rain with high humidity over the country

Dry season: (Northeast monsoon):

-affects from mid – October to mid - May, atmospheric is high, it`s a dry period with low humidity and temperature.

-It causes dry air with least rainfall (minimum rainfall)

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 reoccurrence of one every 1.5 years
- Flash flood is also common natural disaster mostly affected northern and central parts.

Natural Disaster in Lao PDR on 2018

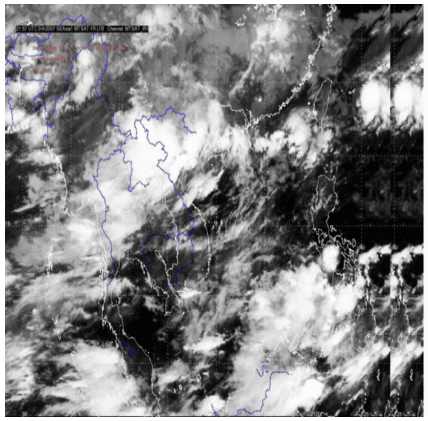
Receiver satellite station

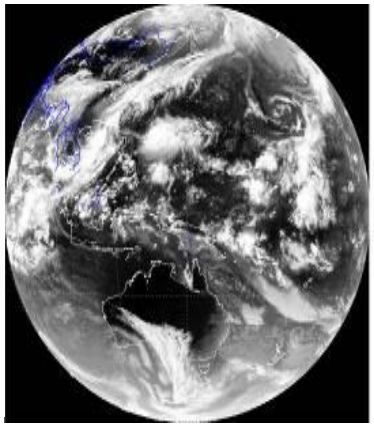
COMS-1

CMACast

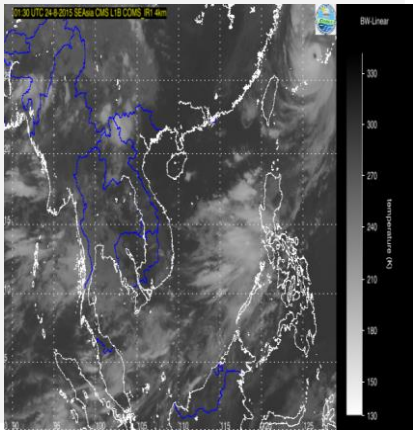
MTSAT-1R

Meteorological Satellite ground Receiving Facilities



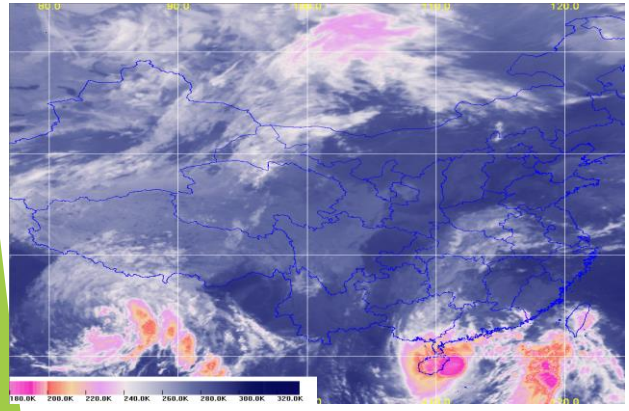


Himawari 8

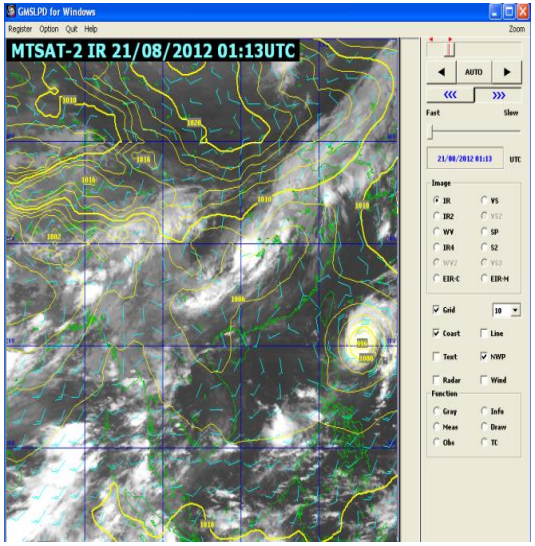


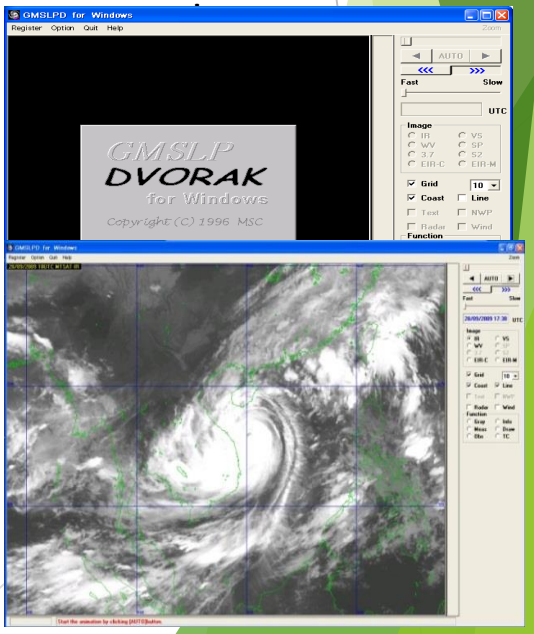
Satellite COMS

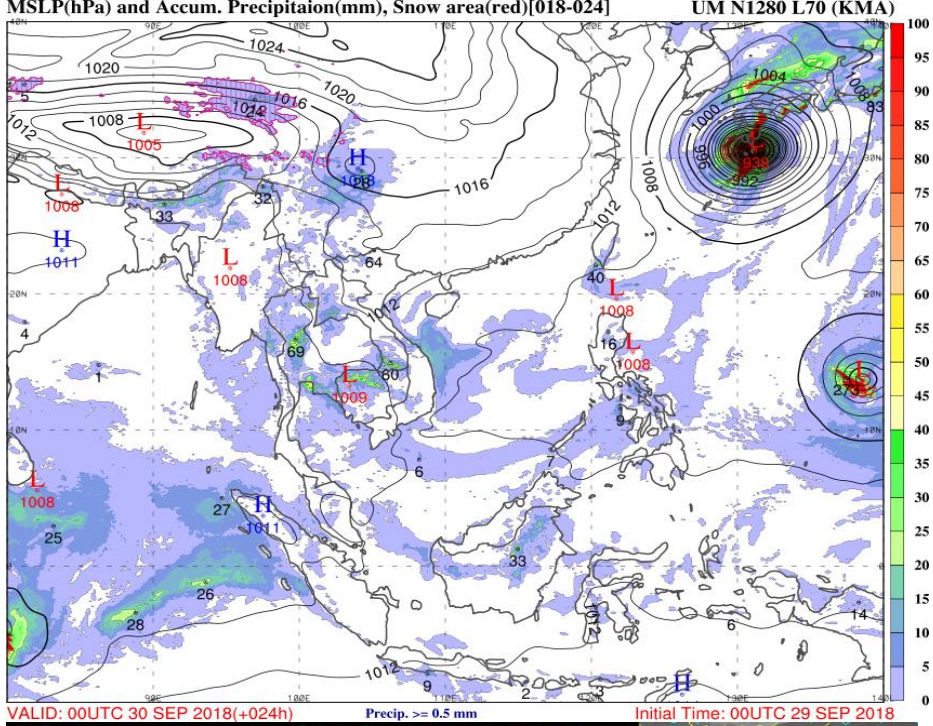
Satellite

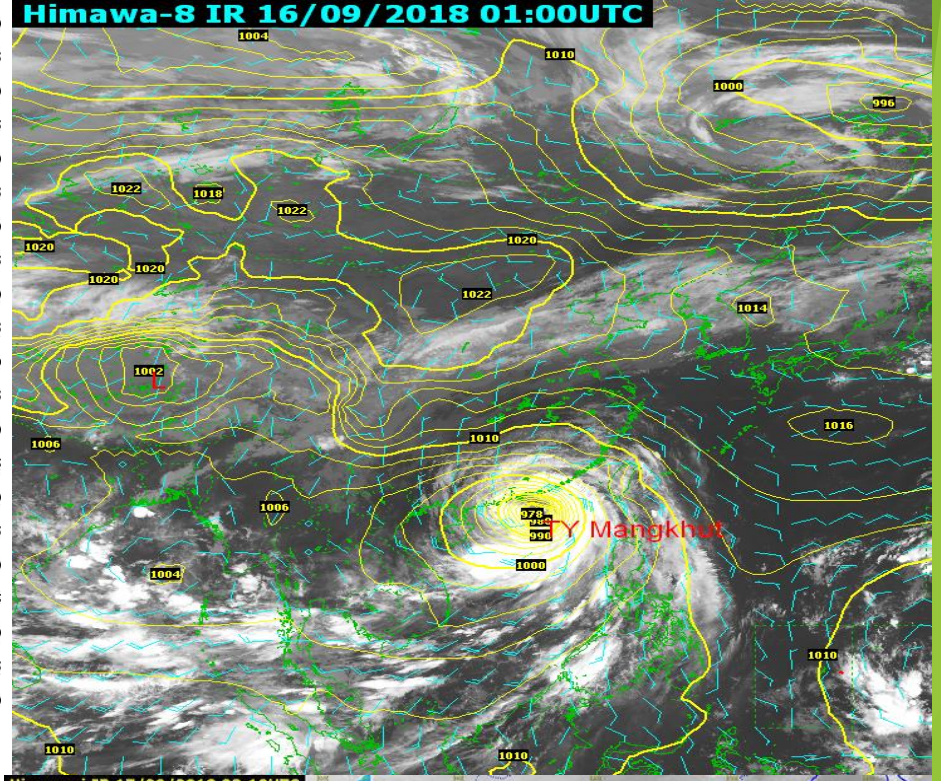


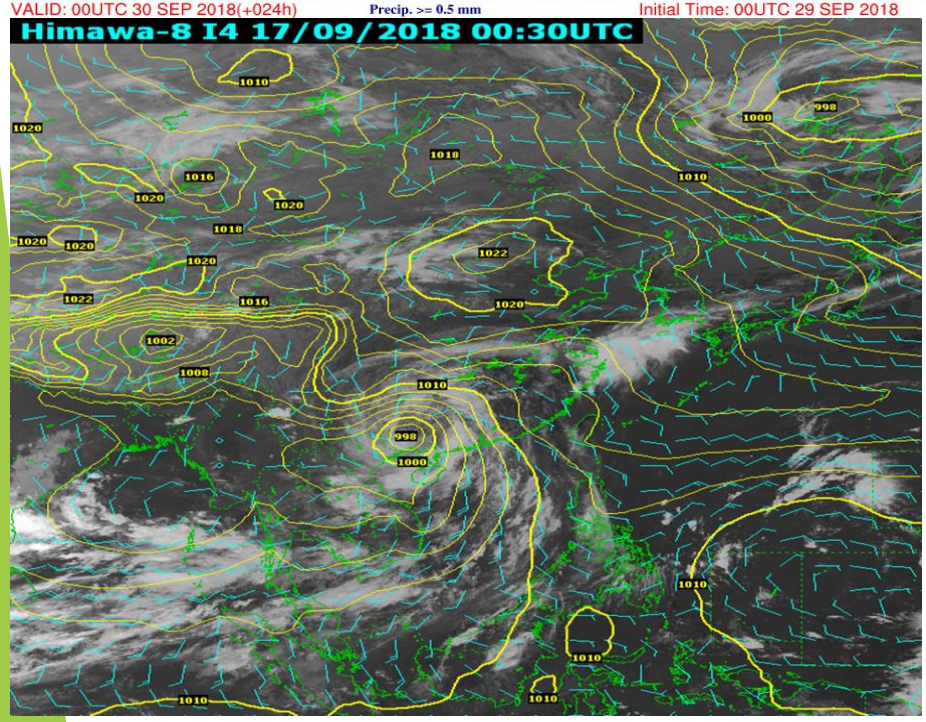
FENGYUN Cast Satellite Receiver FY-2C/2D

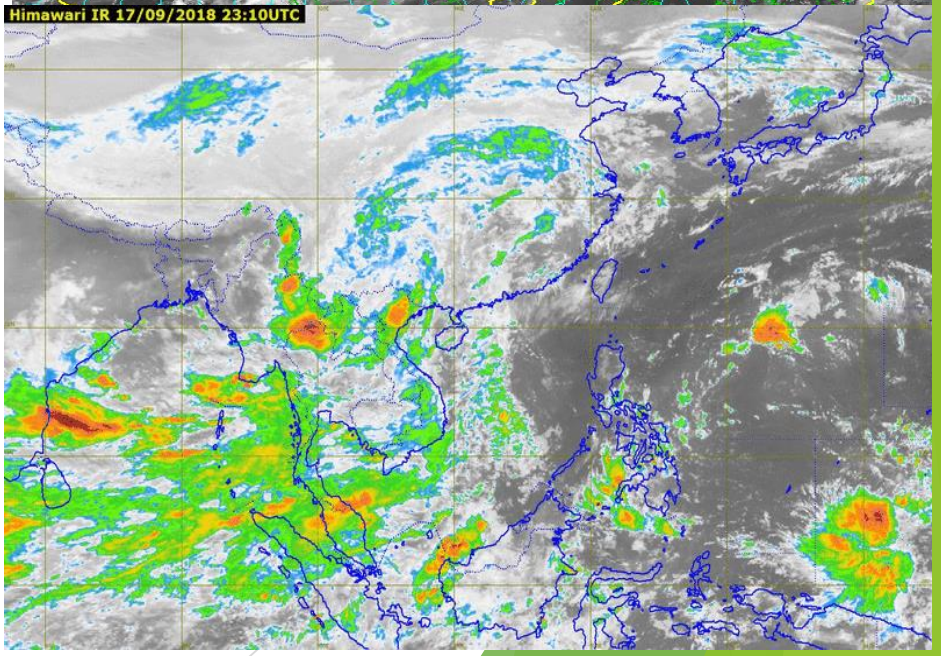





MSLP(hPa) and Accum. Precipitaion(mm), Snow area(red)[018-024]
UM N1280 L70 (KMA)
VALID: 00UTC 30 SEP 2018(+024h)
Precip. >= 0.5 mm
Initial Time: 00UTC 29 SEP 2018


Himawa-8 IR 16/09/2018 01:00UTC
TY Mangkhut


Himawa-8 I4 17/09/2018 00:30UTC


Himawari IR 17/09/2018 23:10UTC

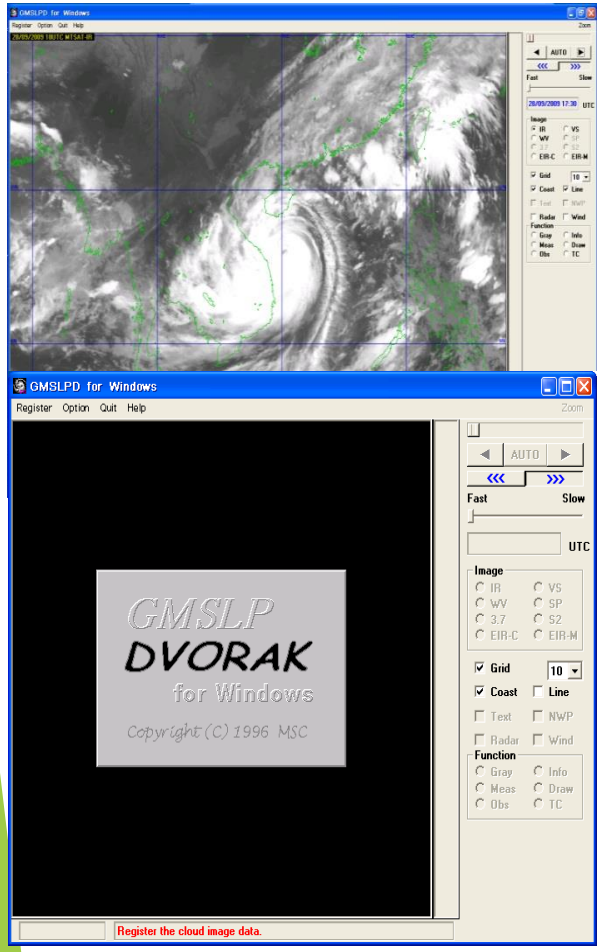
Status of the Warning Services Activities in Laos

- Meteo - Hydrological information take vital role to play in the national strategy.
- DMH provides and carry out both of Meteorological and hydrological information to users .

Severe Weather Monitoring, DMH is monitored by:

- Meteorological observation data
- Weather maps
- Satellite imageries
- Doppler Radar data
- Utilize the typhoon forecast and NWP Products from ECWMF , RSMC (JMA) , KMA , Hong Kong Observatory, and other center trough GTS and Internet

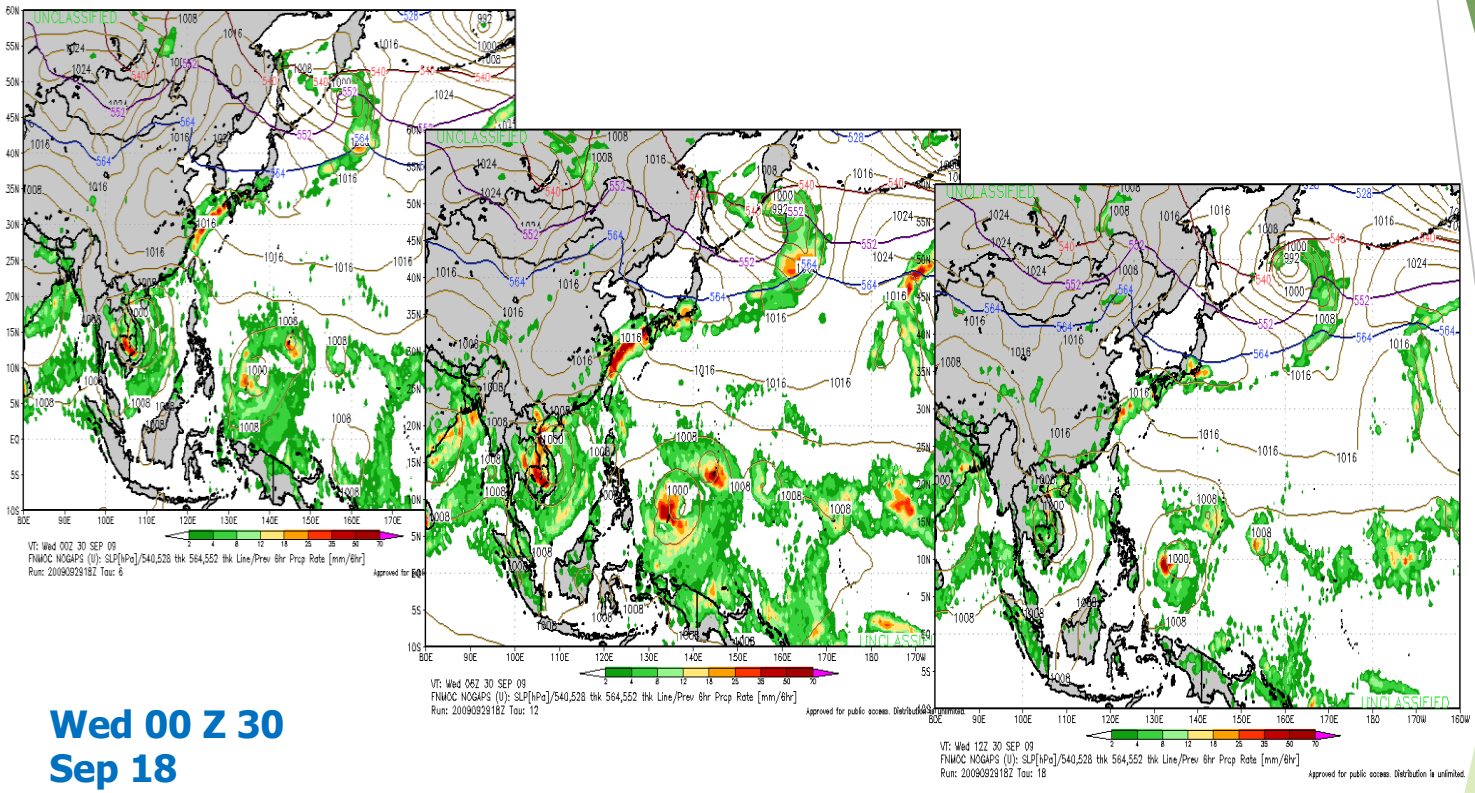
Tropical Cyclone forecast Methodology



The forecast methodologies used are:

- With the utility of HIMAVARI 8 in Tropical Cyclones, DMH has improved the operational work in analysing satellite data imageries.
- The procedure is based on the method delivered by Dvorak technique.
- Analysis surface observation by using compass method to determine pressure center of Tropical Cyclone.
- Pressure falling method: the use of pressure changes can be especially helpful in short range forecasting .

FNMOC WXMAP , one week forecast with time interval every 6 hours

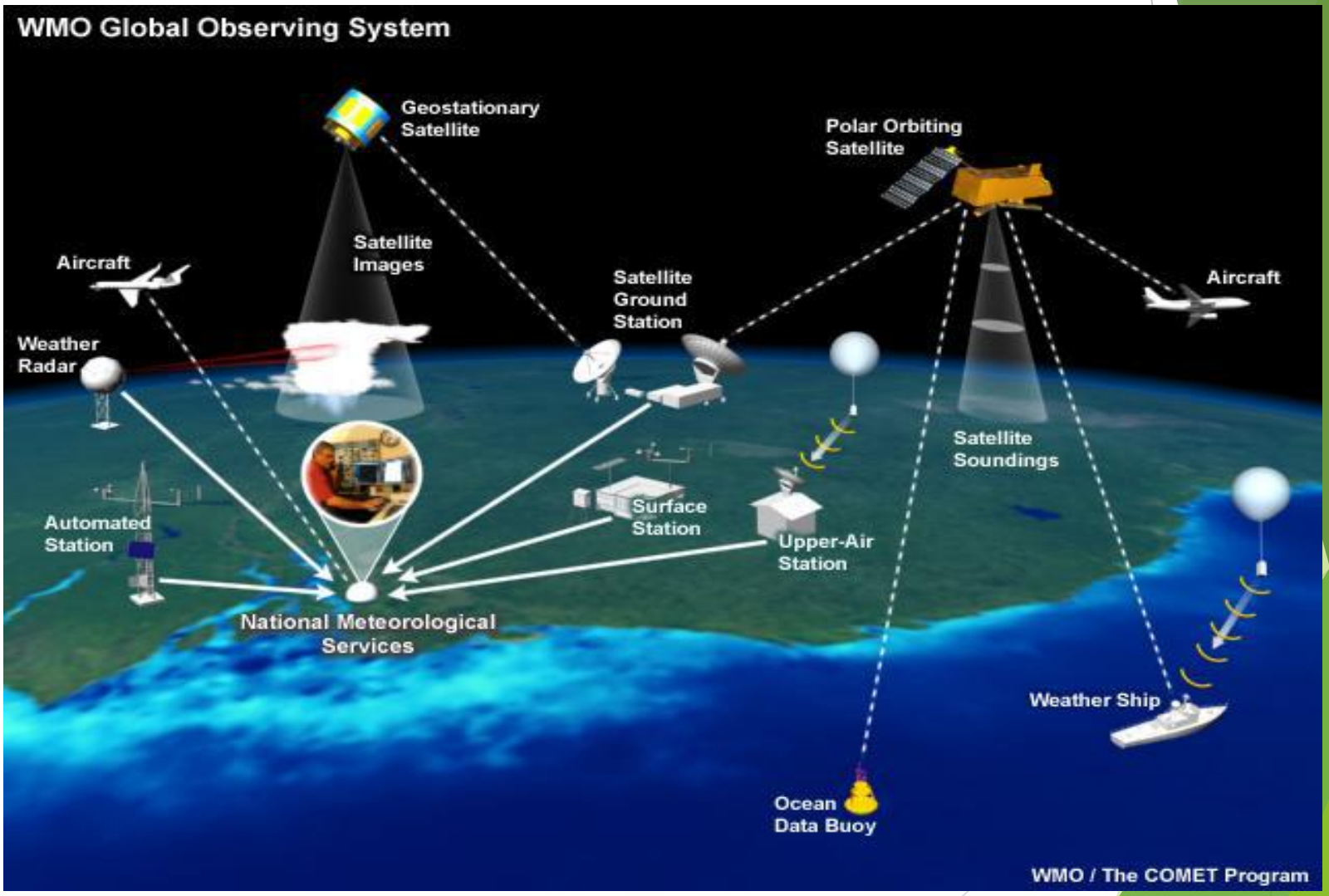


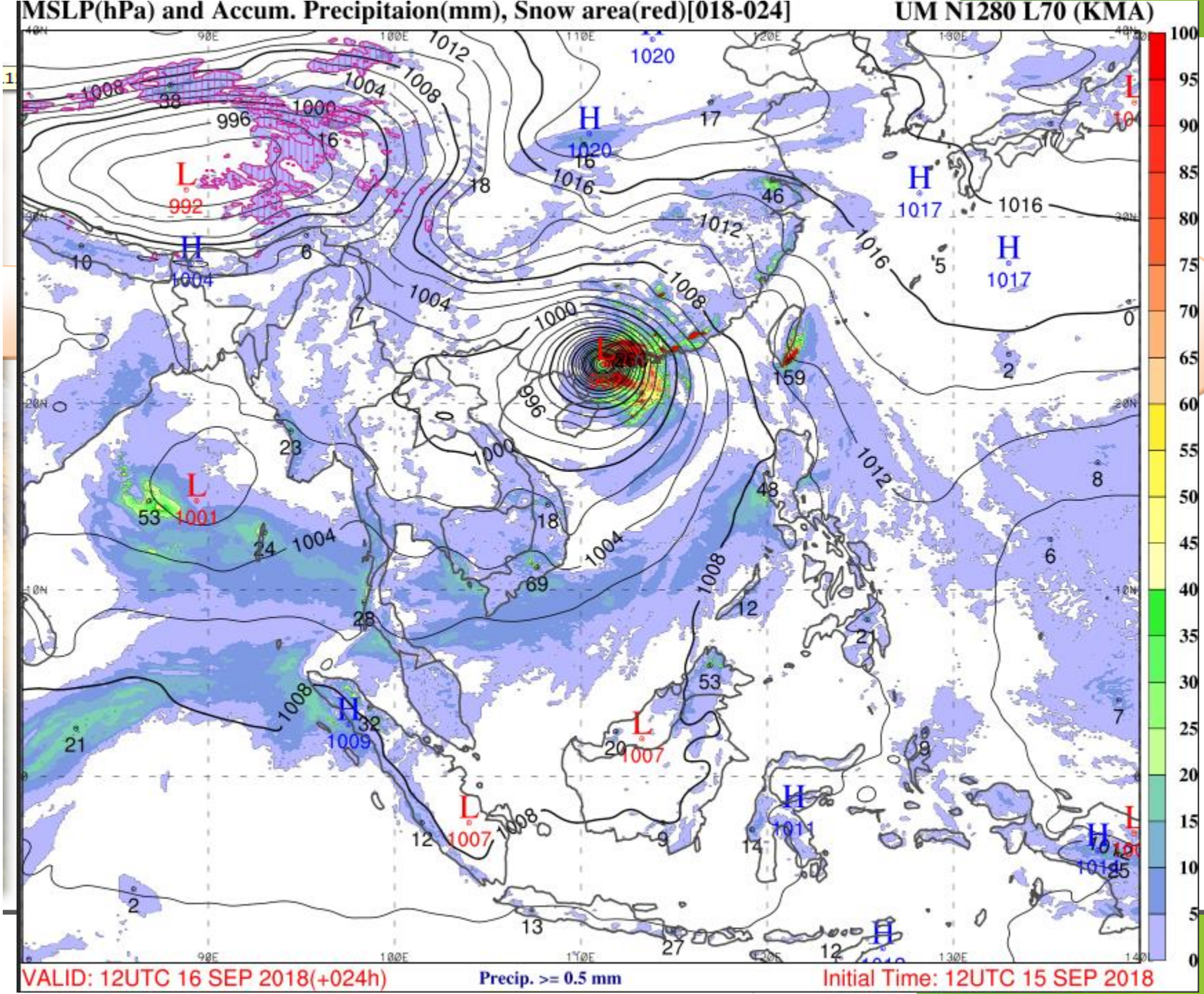
Wed 00 Z 30 Sep 18

Wed 006Z 30 Sep 18

Wed 12 Z 30 Sep 18

Current Hydro-met Networks and facilities for Hydro-met Services in Lao PDR

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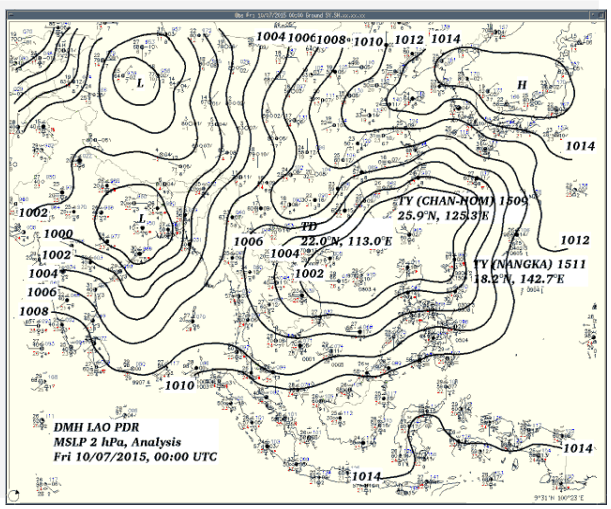
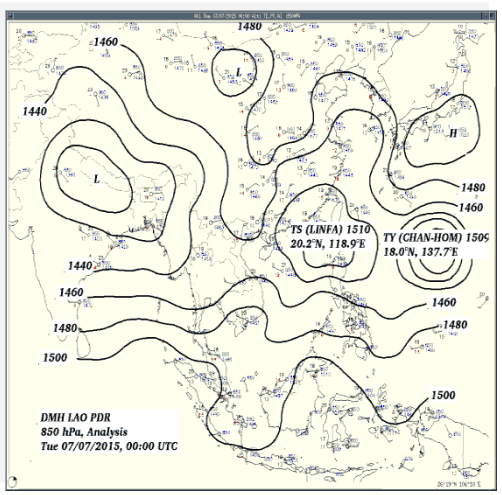
Tools and technique

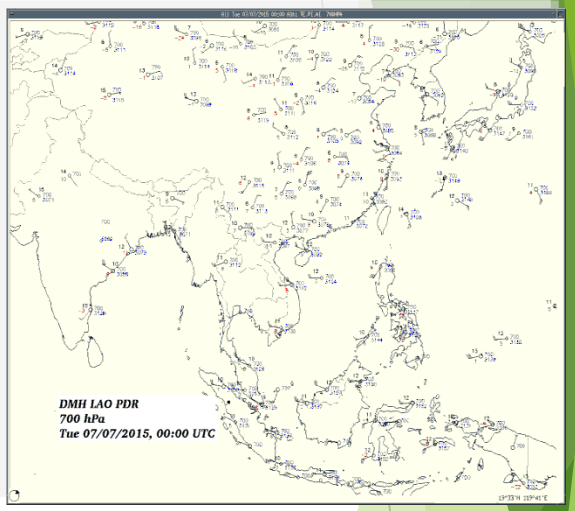
Surface map



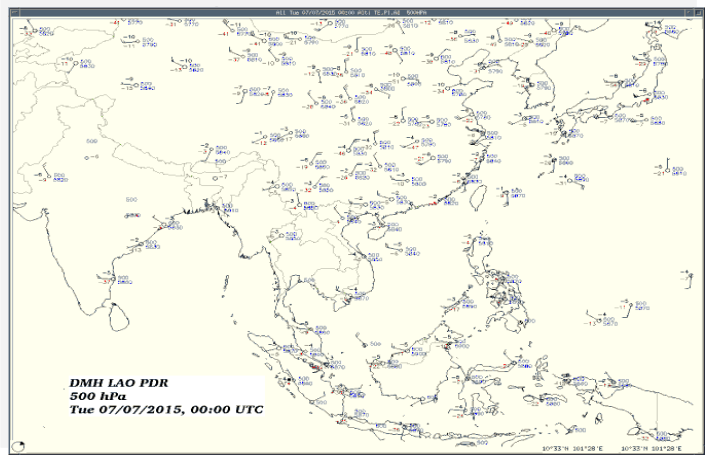
Upper air 850 hPa



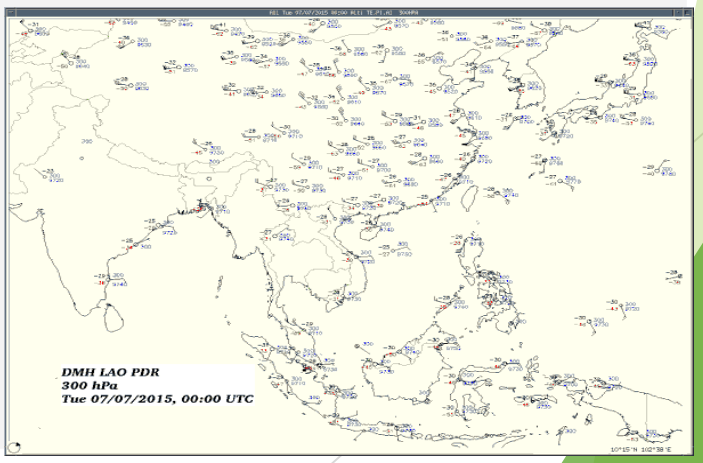
Upper air 700 hPa



Upper air 500

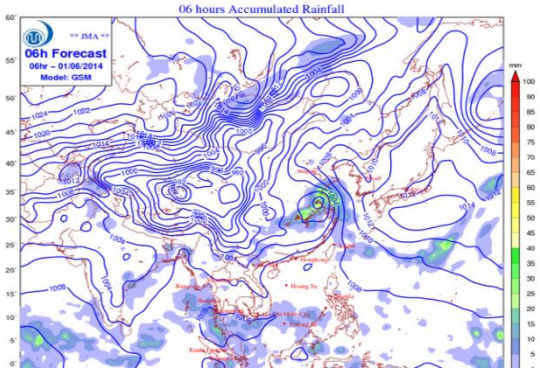


Upper air 300 hPa

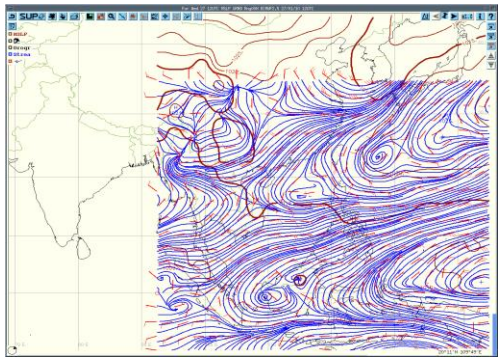


Status of NWP Products and Capacity

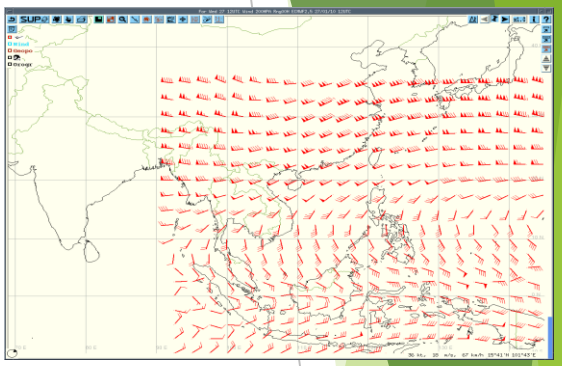
NWP Products



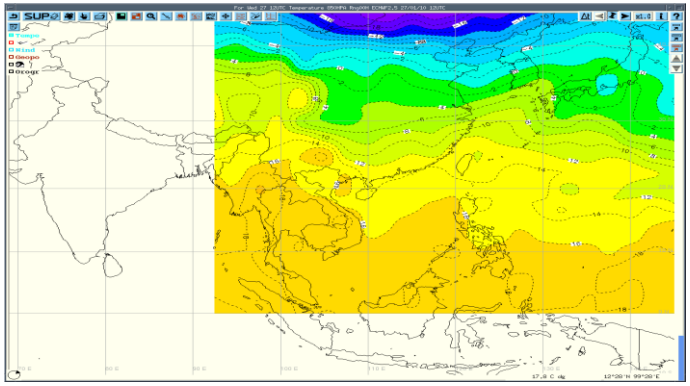
Model Parameter Overlay



Upper air charts 850, 200 mb
(forecast for 24, 48,72 hrs)



NWP products from ECMWF for Severe Weather monitoring and forecasting in Laos



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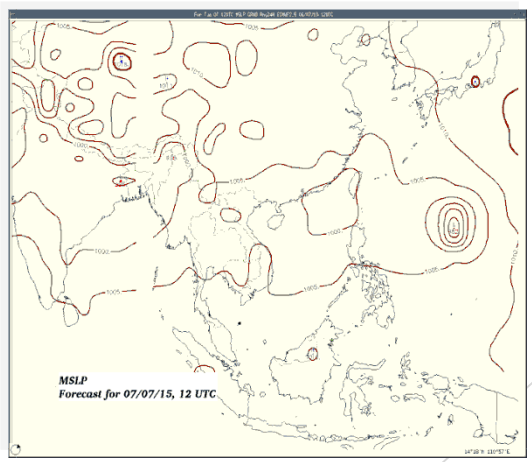

MSLP (forecast for 24, 48,72 hrs)

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)

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Education and Trainings

- By collaboration with National University to develop the curriculum on meteorology and hydrology
- Open house
- Trainings with Media
- Monsoon Forum
- Celebration of WMO's Day, World Water's Day

Public Education Trainings and Awareness program

The purpose of this activity is to supply to them with the basis knowledge about the role of DMH so that some of them will become interested in science and technology.

Celebration of WMO's Day, World Water's Day

Early Warning

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

Strong Winds

Strong Winds Advisory	Strong wind is expected in the area, with a sustained speed of more than 10 -12 mps
Strong Winds warning	Strong wind is expected in the area, with a sustained speed of more than 13 -15 mps

Heavy Rain

Heavy Rain Advisory	Heavy Rain is expected more than 60 - 80 millimetres per 12 hours
Heavy Rain Warning	Heavy Rain is expected exceeding 100 millimetres per 12 hours

Dissemination

Prime's minister Office

MONRE

TV

Radio

Newspaper

WMO

PONRE

Provincial Hydro-met

District Hydro-met

Risk Area

PDMO

EDL

MRC

NDMC

DDMCC

NDMO

MAF

Aviation

DAM

Provincial Administration

Provincial Media

Thank you for your attention