Viet Nam Meteorological and Hydrological Administration

COUNTRY REPORT

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Viet Nam Meteorological and Hydrological Administration

HANOI - NOV, 2022

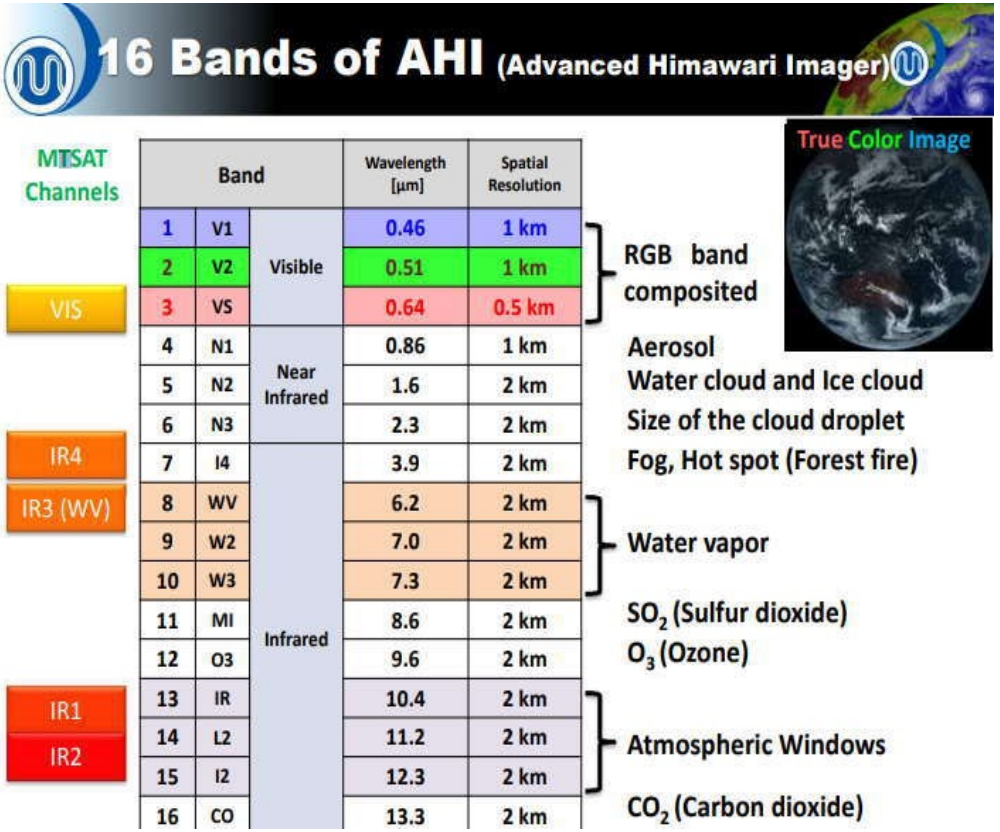
OUTLINE

- Meteorological satellite data receiving systems
- Utilizations in weather forecasting
- Remarked conclusions

Meteorological satellite data receiving systems

GEO Receivers

- **Equipment**: DVB-S2 Receiver (HimawariCast); or Internet services (HimawariCloud)
- 16 bands of AHI (Himawari-Cloud) or 14 bands (Himawaricast).
- Period: every 10 minutes
- Resolution: 0.5 - 2km (Himawari-Cloud); 1-4 km (Himawari-Cast)

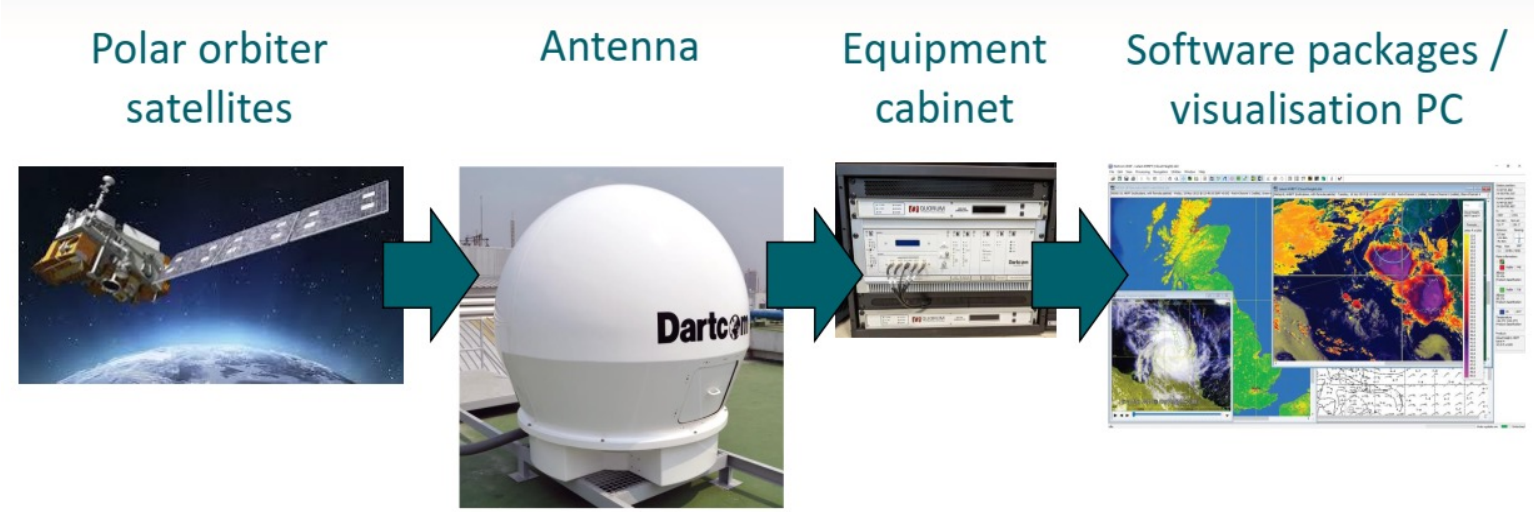


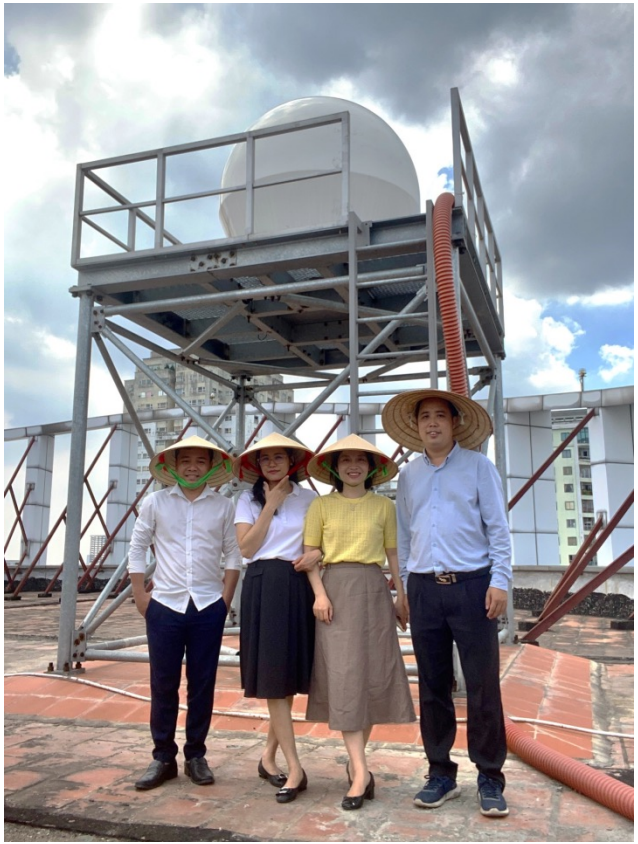
Meteorological satellite data receiving systems

LEO Receivers:

- **Equipment:** Dartcom receiver

- The system has been installed and is initially exploiting the product





LEO Receivers

System receiving data from satellites: Terra, Aqua, NOAA, METOP, Suomi NPP, NPOESS, JPSS-1 và FengYun-3A/B/C (FY-3).

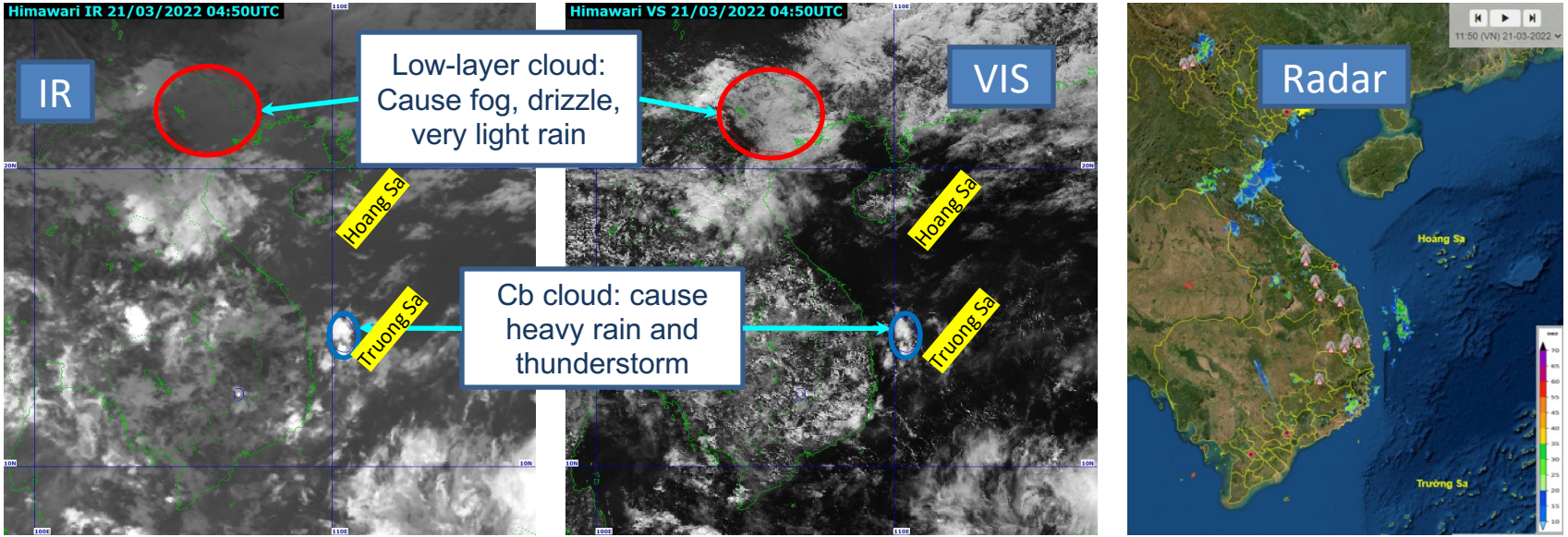
Antenna system:
- X band in the frequency range 7.45 to 8.4 GHz
-Antenna diameter: 1.5m, Radome diameter: 2m;
Radome height: 1.9m

Utilizations in weather forecasting

- Warning, forecasting thunderstorms, heavy rainfall,…
- Identify and track the phenomena in synoptic scale: fronts, typhoons, Intertropical convergence zone,…
- Analysis of tropical depressions, tropical cyclones, (especially when it locates at sea, out of the observing area of weather radar): determine center, speed, intensity (based on the Dvorak method).
- When tropical cyclones approach the land, combine satellite and radars to determine the location of the center, rain field, intensity, direction and speed.

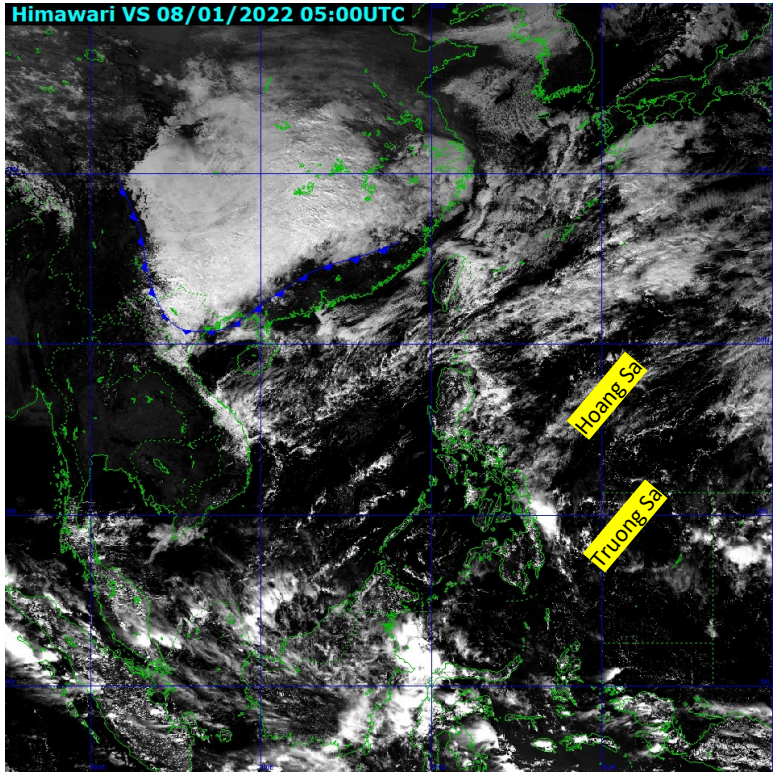
Utilizations in weather forecasting

- Combine multiple channels of satellite images to identify and warn, forecast the phenomenon.
- Simultaneously combine with weather radar images to provide instant warning bulletin



Utilizations in weather forecasting

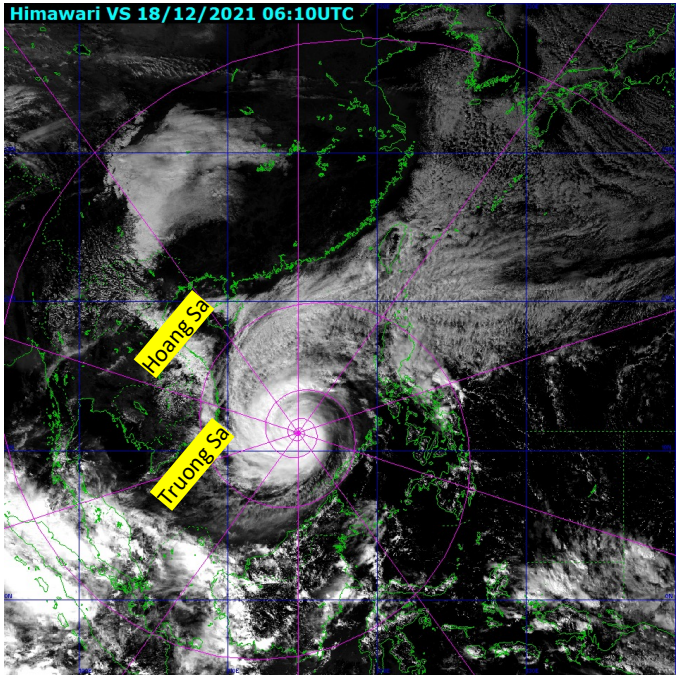
- Identify the cold-front on satellite images

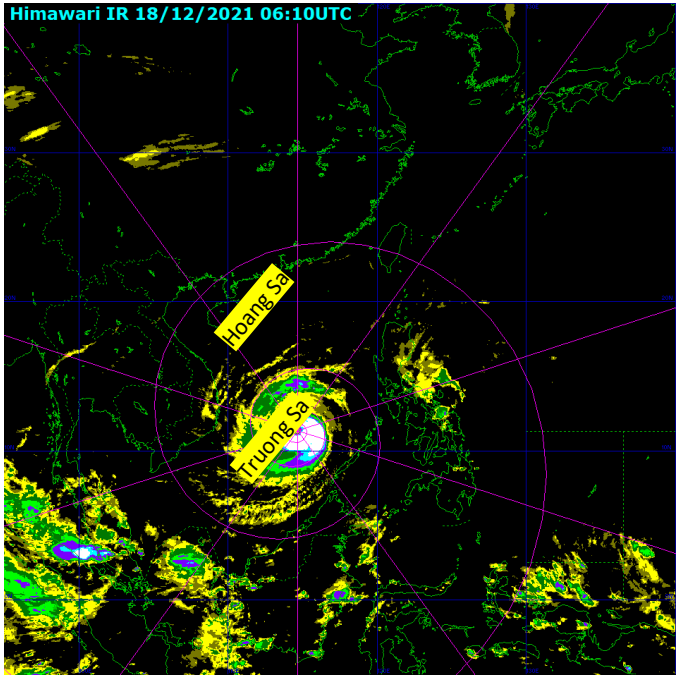


•The cold front line can be clearly seen (the blue line in the picture).
•Through this, the affected area as well as the speed of movement of this cold air can be monitored.

Utilizations in weather forecasting

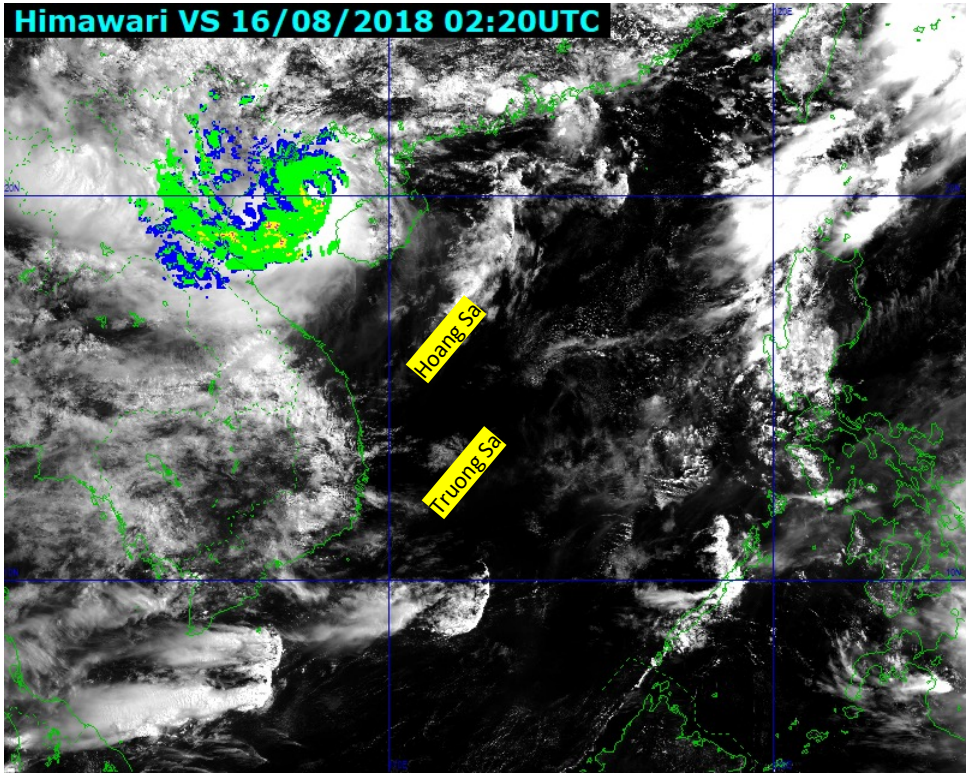
- Analysis of tropical depressions, tropical cyclones,… at sea: determine center, speed, intensity



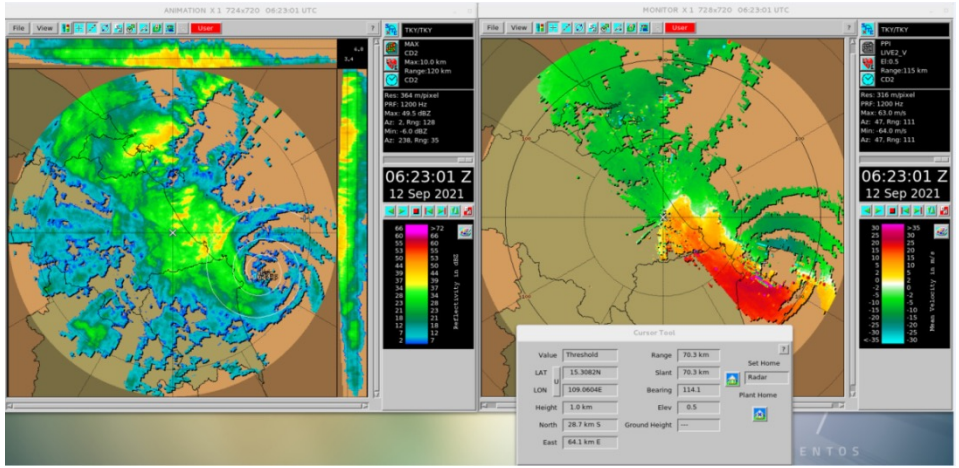


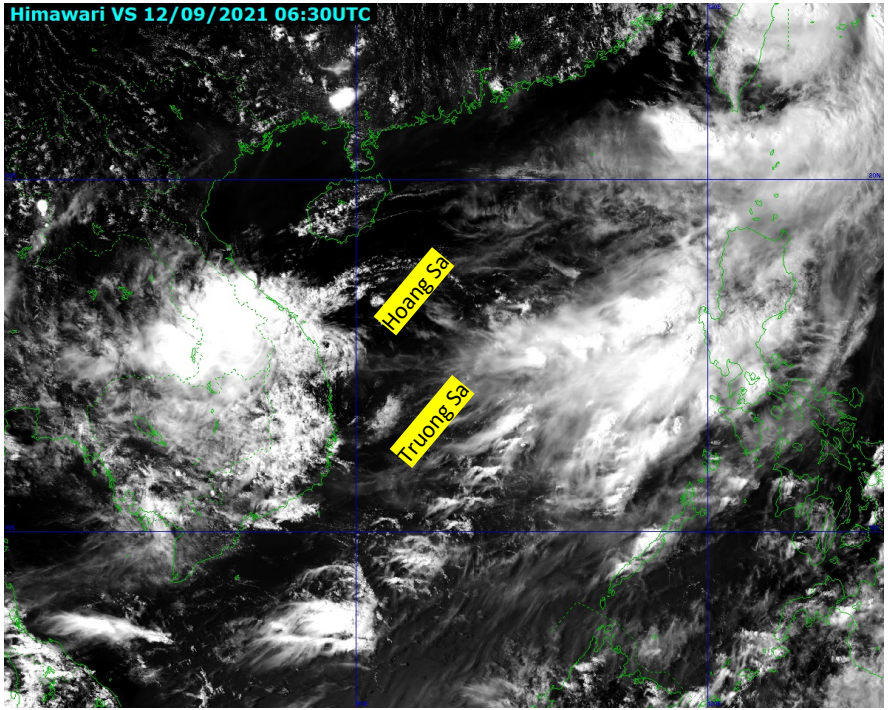
Utilizations in weather forecasting

- Combine, overlay weather radar and satellite images to determine center of TC



Utilizations in weather forecasting

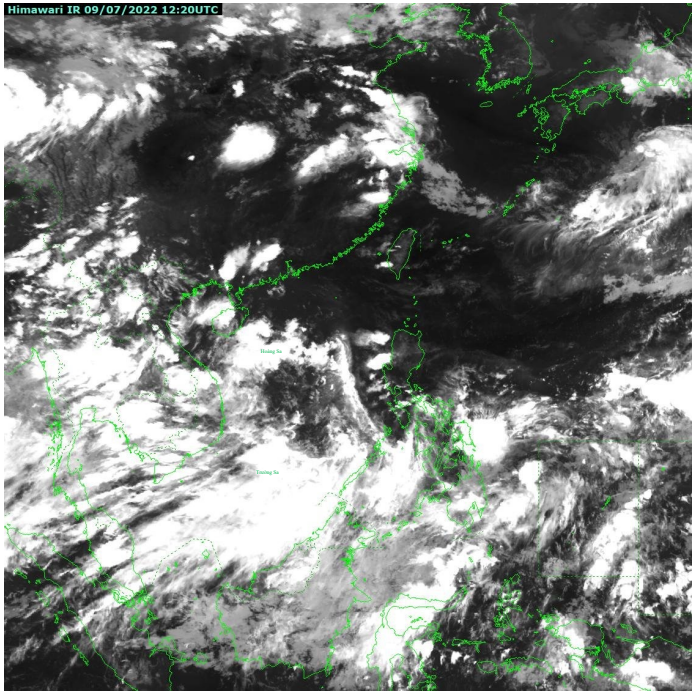




The combination of weather radar and satellite to determine storm parameters, when the storm near the shore.

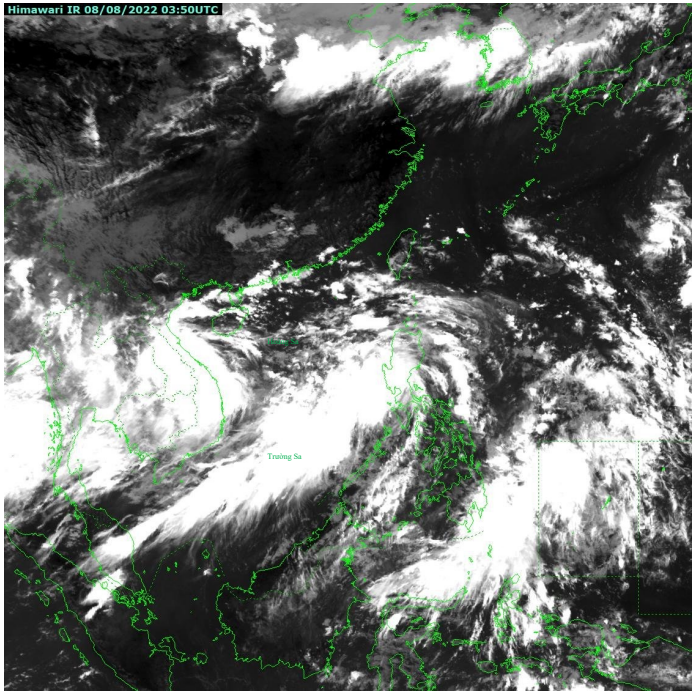
MONITOR THE PATTERN CAUSES HEAVY RAINFALL

- Heavy rainfall causes by southwest wind in the Highland and the Southern of Vietnam and the south of South China Sea

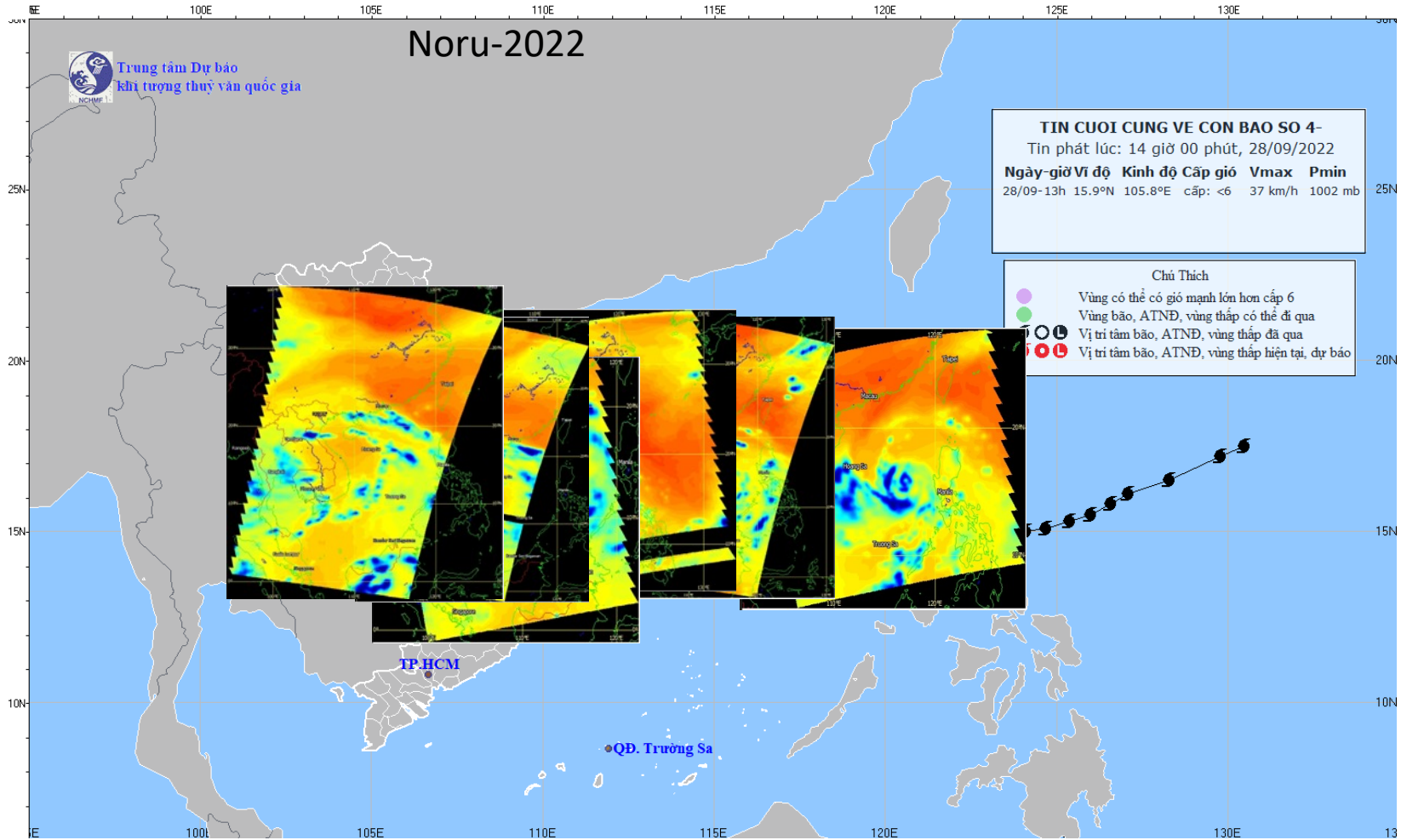


MONITOR THE PATTERN CAUSES HEAVY RAINFALL

- Heavy rainfall cause by **ITCZ**



Noru-2022


Trung tâm Dự báo
khí tượng thuỷ văn quốc gia
TIN CUOI CUNG VE CON BAO SO 4-
Tin phát lúc: 14 giờ 00 phút, 28/09/2022
Ngày-giờ Vĩ độ Kinh độ Cấp gió Vmax Pmin
28/09-13h 15.9°N 105.8°E cấp: <6 37 km/h 1002 mb
Chú Thích
Vùng có thể có gió mạnh lớn hơn cấp 6
Vùng bão, ATNĐ, vùng thấp có thể đi qua
Vị trí tâm bão, ATNĐ, vùng thấp đã qua
Vị trí tâm bão, ATNĐ, vùng thấp hiện tại, dự báo
TP.HCM
QĐ. Trường Sa
100E
105E
110E
115E
120E
125E
130E
25N
20N
15N
10N

Limitations

- Expanded Use of Microwave Imagery for Tropical Cyclone Analysis
- Improve position estimates for Dvorak intensity in GEO products:

+ Helps locate center when obscured by clouds

+ Incorrect center location can yield incorrect intensity estimates, especially when using embedded center or shear patterns

- The product of satellite rain estimation is not high quality
- Lack of experience in exploiting satellite products, so need to research using the data more effectively

Remarked conclusions

- Satellite data is very important in the process of monitoring and warning of severe weather in Vietnam
- The main advantages are from the support of international centers in operating satellite data receiver systems and applying satellite products on weather monitoring and warning.
- Due to the newly installed polar orbit satellite acquisition system, it is difficult to operate this system and the utilizations of polar and geostationary satellite data is still not deep => Need human resources through training, experience sharing in operating satellite receiving, analysis and processing systems, creating secondary products that support forecasting to effectively utilization satellite data sources.

THANK YOU!