



# Twelfth Asia- Oceania Meteorological Satellite Users' Conference (AOMSUC-12)

11-18 November 2022

## Country Report BHUTAN

Pema Syldon

Meteorology/Hydrology Officer

National Center for Hydrology and Meteorology



## Outline

- I. Data Utilization: updates on status and plan of satellite data access, processing, application and training
- II. Data Requirements: Satellite data and product requirements, training needs
- III. General Issues, Findings and updates



## Data Utilization:

# Updates on status and plan of satellite data access, processing, application and training

Year	Activity
August, 2015 (JICA Phase I Project)	The National Center for Hydrology and Meteorology (NCHM) first installed the display software visualizing Satellite Animation and Interactive Diagnosis, SATAID version 3.00. through which the Himawari satellite images were downloaded from the WMO Information System, WIS portal
March, 2016 (JICA Phase I Project)	An independent reception antenna was installed which enabled the Center to download the images directly from the satellite.
June, 2016 (JICA Phase I Project)	Quick guide to SATAID and weather analysis using SATAID were provided by experts from Japan Meteorological Agency at the Center in Thimphu. Few members from the agency also travelled to JMA for further capacity enhancement.



## Data Utilization:

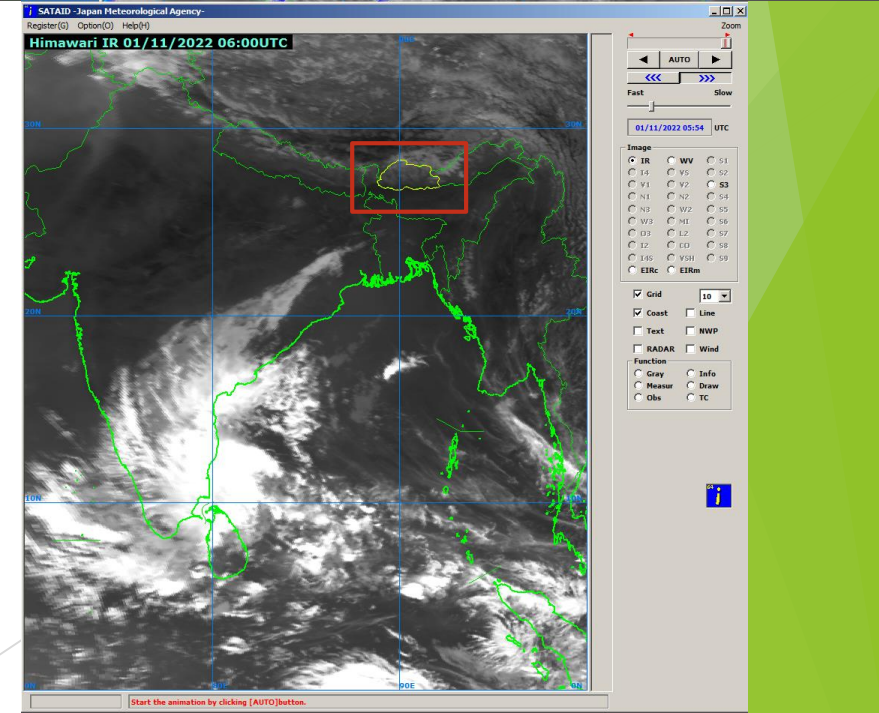
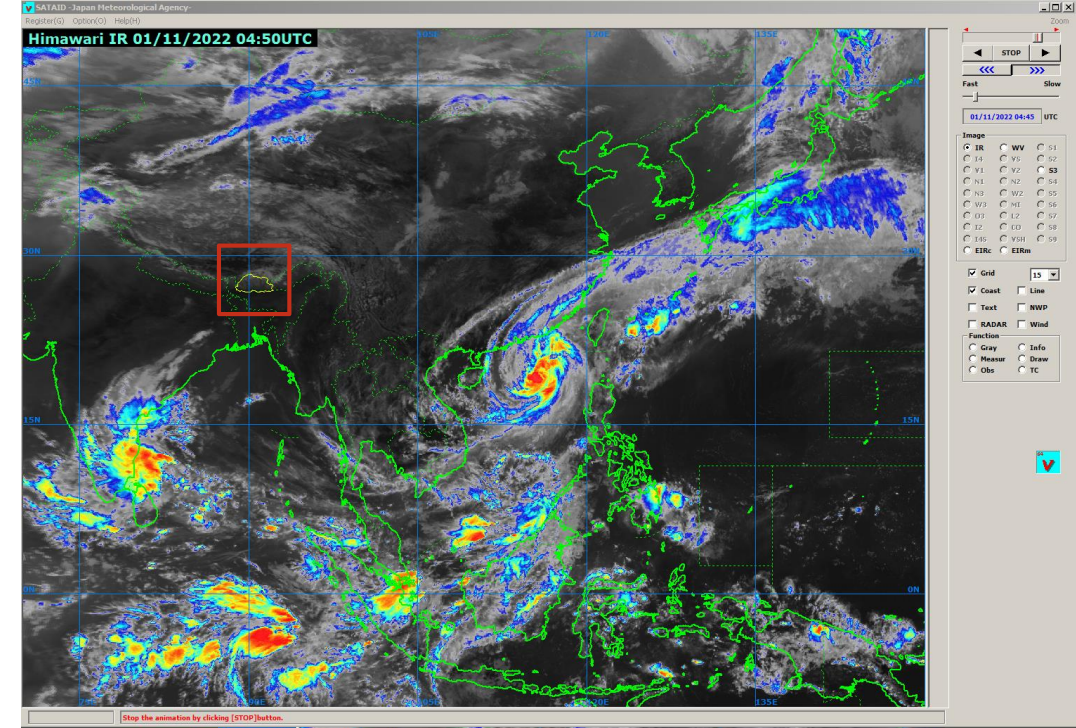
# Updates on status and plan of satellite data access, processing, application and training

Year	Activity
1 March, 2018	The SATAID version was upgraded to version 3.2.0.4. With the new version of SATAID, we were equipped with the features of RGB color interpretation display function with the existing applications of NWP which the Center utilized for daily weather forecasting.
April, 2022 (JICA Phase II Project ongoing)	Due to an installation of a commercial telecommunications network, there was interference to the data reception from Himawari. Therefore, now we are receiving data from JMA through FTP. We are only limited to IR and WV channels. We are currently checking if we can also utilize VS images.
October, 2022	The old Himawari servers were replaced with new servers. SATAID version was upgraded to version 3.3.0.1
October, 2022	OJT on the new system at NCHM, Thimphu

# Data Requirements: Satellite data and product requirements and training needs

## Satellite data and product requirements

- ▶ Bhutan is utilizing West Central image area settings of the Himawari Satellite.
- ▶ It has proved to be effective to monitor large scale conditions such as the southwest summer monsoon and the winter monsoon.
- ▶ Noting the systems in Southeast Asia and studying those which would affect Bhutan has found to be important.
- ▶ However, the country has a square kilometers of 38,394. It is very difficult to observe over the country particularly. Region-wise observation is very challenging.





# Data Requirements: Satellite data and product requirements, training needs and infrastructure

## Training needs

- A quick guide to, and weather analysis using SATAID were presented by experts from Japan Meteorological Agency at the Center at Thimphu, 2016. The Center has capacity on basic operation of the satellite images and tools of NWP.
- A detailed capacity enhancement on the analysis of the images and the tools would add to better forecasting.
- Advanced troubleshoot is another issued faced at the Center
- Utilization in nowcasting



# General Issues, Findings and Updates

## List of satellites/instruments currently used operationally for NWP, and other applications:

- Himawari Satellite data.
- Weather Research and Forecasting
- Reference sources from Indian Meteorological Department, Thai Meteorological Department, Japan Meteorological Agency, Korean Meteorological Administration, etc

## Current capabilities of access, processing and archiving of satellite data and products

- Two staffs with a civil engineering and electronics and communication background operate the Himawari satellite system. The forecasters then utilize the Himawari images and NWP data for daily forecast.
- We are limited in size as well as knowledge. We are assisted by the only IT member of the Center for operations related to accessing and archiving the satellite data and products.

**Thank you**