



ONE ASEAN
ONE RESPONSE

SITUATION UPDATE

TROPICAL CYCLONE TRAMI IN THE PHILIPPINES AND FLOODING IN THAILAND

Wednesday, 24 October 2024, 1800 HRS (UTC+7)

No. **1**

This Situation Update is provided by the AHA Centre for use of the ASEAN Member States and relevant stakeholders. The information presented is collected from various sources, including but not limited to ASEAN Member States' Government Agencies, UN, IFRC, NGOs, Humanitarian and Dialogue Partners, and News Organisations.

Tropical Cyclone TRAMI in the Philippines & Flooding in Thailand

Disclosure(s): Figures are the updates from NDRRC Philippines and DDPM Thailand as of 24 October



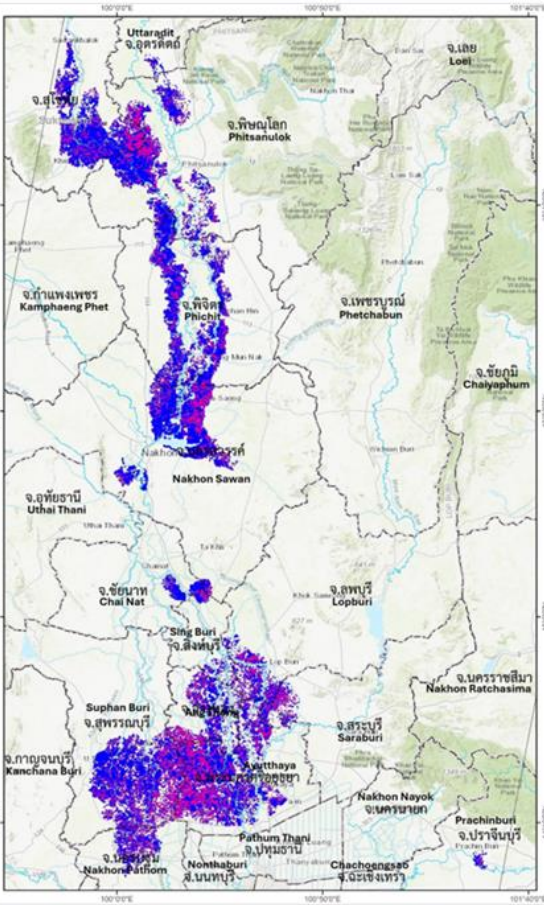
WFS-13 Rev.1/15-01-2024

แผนที่น้ำท่วม Flood Inundated Map

จากภาพถ่ายดาวเทียม ณ วันที่ 17 ตุลาคม 2567 Extracted from Satellite Image on 17 October 2024



พื้นที่น้ำท่วมจากการวิเคราะห์ข้อมูลดาวเทียม Sentinel-1 ณ วันที่ 17 ตุลาคม 2567 ในบริเวณทางตอนกลางของประเทศไทย Inundated areas from Sentinel-1 image acquired on 17 October 2024 found flooded areas of Central.



3,250
Flood extent in this map boundary (km²)

Floodwater depth (m)
พื้นที่ที่ละระดับความลึกของน้ำท่วม

--- จังหวัด (Province boundary)
--- อำเภอ (District boundary)
--- เส้นทางหลวง (Road)
--- แม่น้ำ (River)
--- แหล่งน้ำ (Water body)
--- อาคาร (Building)

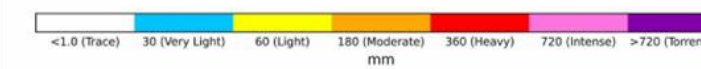
GISTDA
Interactive Map
disaster.gistda.or.th



24-HOUR ISOHYETAL ANALYSIS October 22, 2024

24-HOUR HIGHEST RAINFALL (mm)

98440	Daet, Camarines Norte	528.5
98444	Legazpi City, Albay	431.0
98545	Juban, Sorsogon	406.0
98437	Mulanay, Quezon	384.6
98446	Virac, Catanduanes	327.3



Flood proxy map in Thailand (GISTDA)

24-hour highest rainfall in the Philippines (PAGASA)

259.3K
Affected households over 47 provinces in Thailand

57
Dead persons in Thailand

2.08M
Affected persons in the Philippines

7
Dead persons in the Philippines

31.4K
Affected households over 3 provinces still inundated in Thailand

28
Injured persons in Thailand

196K
Displaced persons in the Philippines

4
Injured persons in the Philippines



1. SUMMARY

In the **Philippines**, on 19 October, an area of convection (INVEST 96W) has persisted over the West Pacific Ocean with a high likelihood of a tropical cyclone formation. On 21 October, INVEST 96W further developed into a significant tropical cyclone with Tropical Depression (TD) level, with international name TRAMI (Philippine local name: Kristine) and entered the Philippine Area of Responsibility. TRAMI further intensified into a Tropical Storm (TS) level on 22 October at 0100 HRS UTC+7 and Severe Tropical Storm (STS) level on 23 October at 0100 HRS UTC+7. According to PAGASA, TRAMI made its initial landfall over Divilacan, Isabela, the Philippines on 23 October around 1130 HRS UTC+7 and continue to move west-northwestwards. As of 24 October at 1300 HRS UTC+7, TRAMI is no longer in the landmass of Luzon, and is forecasted to move westward or west-northwestward over the West Philippine Sea and exit the Philippine Area of Responsibility by 25 October afternoon. According to PAGASA, at most Tropical Cyclone Wind Signal (TCWS) No. 3 is still raised, with potential impacts of winds that pose moderate to significant threat to life and property, and at most intense to torrential rainfall (more than 200 mm) over the Philippines.

In **Thailand**, according to DDPM, extreme flood situations have persisted across the provinces of Thailand since the middle of August. As of 24 October, DDPM reported that around 259K households were affected with 57 people dead (33 caused by flooding and 24 caused by landslides) and 28 people injured over 49 provinces. According to the report, there are 3 provinces (Suphan Buri, Phra Nakhon Si Ayutthaya, and Nakhon Pathom) that are still affected, including 14 districts, 151 sub-districts, and 866 villages, with 31.4K households remaining impacted.

Preparedness and Response

In the Philippines, on 21 October, the National Disaster Risk Reduction and Management Operation Centre (NDRRMOC) alert level has been escalated to RED for Tropical Cyclone TRAMI (Philippine local name Kristine). The NDRRMC also activated the highest level of emergency preparedness and response.

In Thailand, DDPM has issued a warning and closely monitor the situation in the 49 provinces affected by flooding situations, including potential thunderstorms, strong winds, flash floods, mudslides, and landslides for the upcoming days. Operation teams from DDPM are continuing its effort to support emergency relief operations in flood affected areas. DDPM's regional operation team is accelerating post-flood rehabilitation efforts in the flooding affected areas including Chiang Rai province.

The AHA Centre has received requests of assistance from the NDRRMC–OCD Philippines on 23 October and DDPM Thailand on 24 October for the mobilisation of ASEAN relief items. In close coordination with NDRRMC-OCD Philippines, the AHA Centre will dispatch ASEAN relief items in the form of 4,500 units of family kits, 7,000 personal hygiene kits, and 5,000 tarpaulin sheets from the DELSA Satellite Warehouse in Camp Aguinaldo, Philippines. And in close coordination with DDPM Thailand, the AHA Centre will dispatch, 2,250 personal hygiene kits, 2,500 jerry cans, and 2,000 mosquito nets to be distributed to the affected population by flooding in Thailand.



2. ASSESSMENT OF IMPACT AND HUMANITARIAN NEEDS

Impacts in the Philippines

In the Philippines, as of 24 October, the NDRRMC reported the following impacts of Tropical Cyclone TRAMI:

- a. Casualties and Affected Population
 - 431,738 families (2,077,643 persons) across Regions 1, 2, CALABARZON, MIMAROPA, 5, 6, 7, 8, 9, CARAGA, BARMM, and CAR.
 - 196,061 persons displaced, of which 163,184 persons are staying inside 4,567 evacuation centres
 - 7 dead, 4 injured, 7 missing
- b. Damages
 - 1,007 damaged houses (915 partially, 92 totally damaged)
 - 299 road sections affected, of which 256 are not passable in Regions 2, MIMAROPA, 5, 8, 9, and 10
 - 41 bridges affected, of which 40 remain not passable
 - 86 seaports affected (all are still not operational)
 - 114 cities/municipalities with interrupted power supply (22% restored)
 - 11 cities/municipalities with interrupted water supply (0% restored)
- c. Related Incidents
 - 191 flooded areas in CALABARZON, MIMAROPA, Regions 5, 6, 8, 9, and BARMM
 - 22 other related incidents (rain-induced landslides, uprooted trees, vehicular accidents)
 - From the recent Sentinel Asia activations for the Philippines to assess the extent of the floods, Earth Observatory Singapore Remote Sensing (EOS-RS) assessed widespread flooding in Luzon using images from Sentinel 1 on 21 October. As indicated by the blue pixels widespread flooding identified over Bicol Region (Annex-1).

Impacts in Thailand

According to the report of DDPM on 24 October 2024:

- a. Floods, flash floods and landslides between 16 August - 24 October 2024 have been reported in 47 provinces (Chiang Rai, Chiang Mai, Mae Hong Son, Tak, Phayao, Nan, Lamphun, Lampang, Phrae, Uttaradit, Sukhothai, Phitsanulok, Nakhon Sawan, Phetchabun, Uthai Thani, Loei, Udon Thani, Kalasin, Nong Khai, Nakhon Phanom, Khon Kaen, Chaiyaphum, Maha Sarakham, Nakhon Ratchasima, Buriram, Bueng Kan, Nong Bua Lamphu, Ubon Ratchathani, Prachin Buri, Chainat, Sing Buri, Suphan Buri, Ang Thong, Phra Nakhon Si Ayutthaya, Nakhon Pathom, Pathum Thani, Rayong, Chumphon, Surat Thani, Phuket, Yala, Nakhon Si Thammarat, Phang Nga, Krabi, Trang, Satun, and Songkhla) 283 districts, 1,273 sub-districts, 6,630 villages.
- b. 259,296 households were affected with 57 deaths (33 due to flood, 24 due to landslides) and 28 injuries were reported by DDPM Thailand.
- c. A total of 453 roads sections (452 passable) and 16 railway locations (15 passable) were affected.
- d. 110 healthcare facilities have been affected.
- e. About 132K hectares of agricultural land, 1.02K hectares of fisheries, and 128,728 livestock animals have been affected.



- f. As of 24 October, flooding persists in three provinces: Suphan Buri, Phra Nakhon Si Ayutthaya and Nakhon Pathom with 31,407 households.

Anticipated Risks

a. Tropical Cyclone Advisories and Wind Signal

- According to PAGASA (Annex-2), at 1600 HRS UTC+7 today, the centre of Tropical Cyclone TRAMI (local name Kristine) was estimated based on all available data over the coastal waters of Santa Lucia, Ilocos Sur (17.1°N, 120.2°E). It has maximum sustained winds of 95 km/h near the centre, gustiness of up to 145 km/h, and central pressure of 985 hPa, moving westward slowly. Strong to storm-force winds extend outwards up to 730 km from the centre.
- The following Tropical Cyclone Wind Signals (TCWS) are hoisted due to TC TRAMI (Annex-3):
 - **TCWS No. 3** (moderate to significant threat to life and property) is raised over Ilocos Sur, La Union, and Pangasinan.
 - **TCWS No. 2** (minor to moderate threat to life and property) is raised over Cagayan including Babuyan Islands, Isabela, Quirino, Nueva Vizcaya, Apayao, Kalinga, Abra, Ifugao, Mountain Province, Benguet, Ilocos Norte, Aurora, Nueva Ecija, Tarlac, Zambales, Bataan, Pampanga, and Bulacan.
 - **TCWS No. 1** (minimal to minor threat to life and property) is raised over Batanes, Metro Manila, Rizal, Batangas, Laguna, Cavite, Quezon, Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, the northern portion of mainland Palawan (El Nido, Taytay, Araceli, San Vicente, Dumarán, Roxas) including Calamian Islands, Cuyo, and, Kalayaan Islands, Camarines Norte, Camarines Sur, Catanduanes, Albay, Sorsogon, and Masbate including Ticao and Burias Islands in Luzon; and Aklan, Capiz, Antique including Caluya Islands, Iloilo, Bantayan Islands, Northern Samar, the northern portion of Samar (Calbayog City, Almagro, Tagapul-An, Santo Nino) in Visayas.
- According to PAGASA, TRAMI is forecasted to move westward or west northwestward over the West Philippine Sea and exit the Philippine Area of Responsibility (PAR) by tomorrow (25 October) afternoon.
- In the extended outlook, there is a developing forecast situation wherein TRAMI will be looping over the West Philippine Sea on Sunday and Monday and move eastward or east northwestward towards the general direction of the PAR. However, this scenario heavily depends on the behavior of the weather disturbance east of the PAR (INVEST 98W) which is expected to develop into a tropical depression within the next 24 hours
- TRAMI is forecasted to re-intensify as it moves over the West Philippine Sea. While it is likely that the tropical cyclone will remain a severe tropical storm in the next five days, the chance for it to be upgraded into a typhoon is not ruled out.

b. Heavy Rainfall

Philippines

- Today until tomorrow afternoon (25 October):
 - Heavy to intense rainfall (100 – 200 mm) is expected in Pangasinan, Zambales, La Union, Cavite, Batangas, and Occidental Mindoro
 - Moderate to heavy rainfall (50 – 100 mm) is expected in Cordillera Administrative Region, the rest of Ilocos Region, Tarlac, Pampanga, Bataan, Bulacan, Nueva Ecija, Aurora, Metro Manila, Laguna, Rizal, Quezon, Oriental Mindoro, Marinduque, Romblon, Antique, Aklan, Negros Occidental, Palawan including Calamian Islands.



- Tomorrow afternoon to Saturday afternoon (26 October):
 - Heavy to intense rainfall (100 – 200 mm) is forecast in Pangasinan, Zambales, and La Union.
 - Moderate to heavy (50 – 100 mm) is forecast in the rest of Ilocos Region, Bataan, Antique, Aklan, and Negros Occidental.
- Under these conditions, flooding and rain-induced landslides are likely, especially in areas that are highly or very highly susceptible to these hazards as identified in hazard maps and in areas with significant antecedent rainfall.
Source: PAGASA

Thailand

- From 26 to 28 October, the upper part of Thailand is forecasted to have more rain and some heavy rain in the Northeast, Central, East, and the East coast of the South, with some areas in the West coast of the South experiencing very heavy rain.
- From 29 to 30 October, thunderstorms are forecasted in some areas, and heavy to very heavy rain in some areas of the South is expected to occur.
- In this forecast period, heavy to very heavy rain and accumulated rain may cause flash floods and forest runoff, especially in areas on hillsides near waterways and lowlands.
Source: TMD

c. Coastal Inundation/Storm Surge

Philippines

- There is a minimal to moderate risk of storm surge with peak heights of around 1.0 to 2.0 m above normal tide levels in the next 48 hours over the low-lying or exposed coastal localities of Ilocos Sur, La Union, Pangasinan, Cagayan, Isabela, Aurora, and Zambales (Annex-4).

d. Tropical Disturbances

In addition to Tropical Cyclone TRAMI, two tropical disturbances (Annex-5) are being monitored outside of the Philippine Area of Responsibility, as follows:

- **INVEST 98W**
 - The area of convection INVEST 98W is being monitored near 8.4N 150.0E, approximately 2,295km east of Northeastern Mindanao. Maximum sustained surface winds are around 33 to 43 km/h. Minimum sea-level pressure is estimated to be near 1001 hPa
 - Environmental analysis reveals that 98W is in a favourable environment for development. Global models agree that 98W will track generally northwestward over the next 48 hours.
 - According to JTWC and PAGASA, the potential for development into a significant TC in the next 24 hours is HIGH. Meanwhile, JMA has already raised the category of 98W into a tropical depression.
- **INVEST 99W**
 - INVEST 99W is being monitored near 13.4N, 148.6E, in close proximity to 98W. Maximum sustained surface winds are around 33 to 43 km/h. Minimum sea level pressure at 1000 hPa.
 - Environmental analysis indicates that 99W is in a generally favourable environment for further development due to low to moderate vertical shear and warm sea surface. Numerical models are mixed, with GFS showing that 99W will continue its track towards the west-northwest and intensify over the next 24-48 hours. Meanwhile, ECWMF shows 98W being the main circulation that develops. Regardless of these model scenarios, the wind



field associated with 99W is expected to move west towards the northern Marianas and bring gusty easterly winds to the region over the next 24 hours. According to JTWC, the potential for development into a significant tropical cyclone in the next 24 hours is low.

e. Weather Forecast in ASEAN Member States

Philippines

- According to PAGASA, stormy weather condition is expected in Ilocos Region, Cordillera Administrative Region, Zambales, and Bataan due to Tropical Cyclone TRAMI
- Rains with gusty winds are forecast in Metro Manila, the rest of Luzon, Western Visayas, Northern Samar, and Samar due to Tropical Cyclone TRAMI
- Cloudy skies with scattered rain and thunderstorms are expected in Zamboanga Peninsula, Lanao del Norte, Misamis Occidental, and the rest of Visayas, while partly cloudy to cloudy skies with isolated rainshowers and thunderstorms are expected over the rest of Mindanao due to the trough of Tropical Cyclone TRAMI.

Thailand

- According to Thailand Meteorological Department (TMD), from 24 to 25 October 2024, the high-pressure area or cold air mass from China will cover the upper North, the Northeast, and the East Sea. This will cause the upper part of Thailand to have less rain, but there will still be thunderstorms in some areas and some heavy rain in the South.
- From 26 to 28 October 2024, the southwest monsoon blowing over the Andaman Sea, the South, and the Gulf of Thailand will strengthen. In addition, Tropical Cyclone TRAMI in the central East Sea is expected to move closer to the coast of central Viet Nam. This will result in a cross-section of northwesterly and northeasterly winds blowing over the upper part of Thailand. This will cause the upper part of Thailand to have more rain and some heavy rain in the Northeast, Central, East, and the East coast of the South, with some areas in the West coast of the South experiencing very heavy rain.
- From October 29 to 30, 2024, the southwest monsoon blowing across the Andaman Sea, the South, and the Gulf of Thailand will weaken. Meanwhile, the monsoon trough passing through the central South, coupled with Tropical Cyclone TRAMI off the coast of central Viet Nam will change its direction to the upper East Sea. This storm will not move into Thailand. This will cause less rain in the upper part of Thailand, but thunderstorms will still occur in some areas, and there will be heavy to very heavy rain in some areas of the South.

3. ACTIONS TAKEN AND RESOURCES MOBILISED

Response by the Government of the Philippines

a. Operations

- The NDRRMC issued the following memoranda:
 - No. 269, s. 2024 re Preparations for the LPA in east of Southeastern Luzon
 - No. 271, s. 2024 re Maintaining of the National Disaster Risk Reduction and Management Operations Center (NDRRMOC) Alert Status to BLUE ICOW the Low Pressure Area (LPA) effective 21 October 2024
 - No. 276, s. 2024 re EPR Protocols ICOW TC KRISTINE (TRAMI)



- No. 277, s. 2024 re NDRRMC Alert Status from BLUE to RED ICOW TC KRISTINE (TRAMI)
 - No. 278, s. 2024 re Activation and Standby Status of Response Clusters ICOW TC KRISTINE (TRAMI)
 - A total of 18 cities/municipalities have been placed under State of Calamity in Region 5 due to the impacts of Tropical Cyclone TRAMI
- b. Costs of Humanitarian Assistance for TC TRAMI
- Around 810K USD worth of assistance from DSWD, LGUs, and other partners, has been provided to those affected by Tropical Cyclone TRAMI
- c. Response Cluster EEIs for TC TRAMI
- **Food and Non-Food Items (F/NFI):** 61,383 family food packs were provided to affected families in Regions MIMAROPA, 5, 6, 8, 9, 12, and CAR
 - **Search Rescue and Retrieval (SRR):** A total of 28 squads, 1,409 teams, 3,176 assets from AFP and BFP were deployed. A total of 2,695 SRR teams and 4,914 SRR assets from the AFP, PCG, and BFP are on standby. A total of 195 individuals were rescued in CALABARZON and Region 5.
 - **Emergency Telecommunications:** 6 emergency telecommunications equipment/resources have been deployed to CALABARZON and MIMAROPA. 71 equipment/resources from DICT are on standby and ready for deployment.
 - **Law and Order:** 4,037 personnel and 1,068 assets have been deployed to Regions 1, 2, 3, MIMAROPA, 5, 8, NCR, CALABARZON, CARAGA, and CAR. 12,207 assets such as patrol vehicles, patrol jeeps, and motorcycles are on standby in all PROs.
 - **Education:** 214 schools used as evacuation centres in Regions 1, 2, CALABARZON, 5, 8, and 12.
 - **Health:** A total of 11.2K USD worth of assistance was provided to CHD 5.

Response by the Government of Thailand

- a. The Operations Team of the District Center from the DDPM continues to work on restoring flood affected areas in Chiang Rai Province. They are supporting the preparation of food and the production of drinking water for the public and workers ahead of the scheduled handover of the area on October 28, 2024.
- b. Five helicopters and one fixed-wing aircraft are ready to support flood survey missions and assist flood victims at operation centers in Chiang Mai, Nakhon Sawan, and Nakhon Si Thammarat.
- c. Flood relief efforts are underway in seven provinces, with 14 water pumps deployed, providing a total water pumping capacity of 362,976 cubic meters. Temporary animal shelters have been established in Chiang Rai to protect livestock affected by the floods.
- d. Support for Agriculture: A total of 806,406 animals have been evacuated, with 1,026,120 kilograms of animal feed provided. Health promotion for animals includes 34,122 packets of minerals, antibiotics, and vitamins. Additionally, 7,583 animals have received treatment, and 371 animal relief bags have been distributed. Temporary animal shelter facilities have been established, staffed with veterinarians and personnel to assist in caring for the animals' health
- e. Support for Telecommunications Systems Assistance: The Anti-Fake News Center of Thailand has reviewed news related to floods, storms, and landslides in collaboration with various agencies. Public relations efforts were made to clarify accurate information to the public through multiple channels, including Facebook, TikTok, Line, X (formerly Twitter), Instagram, and the official website. Between 1 September 2024 and 23 October 2024, a total of 60 news stories were examined, consisting of 32 fake news stories and 28 real news stories.



- f. Support to Public Health: A total of 4,332 medical and public health teams have been deployed, providing support with 277,091 sets of medicines and medical supplies. A total of 242,086 individuals have received care, including 58,428 who received mental health support. Monitoring of the situation is ongoing, and communication alerts are being issued to the public regarding health risks associated with the flooding, including leptospirosis, dengue fever, diarrhea, pneumonia, and influenza, among others (data from August 17 to October 23, 2024).
- g. Assistance to the Public: A total of 9,319 sets of emergency relief kits, 6,756 boxed meals, and 10,882 sets of drinking water were provided to affected communities.
- h. Thai Meteorological Department and other relevant agencies are actively monitoring weather conditions, issuing warnings, and coordinating with local authorities to prepare for further adverse weather impacts.

Response by the AHA Centre

- a. On 19 October, the AHA Centre EOC started to monitor the development of INVEST 96W, which later evolved into Tropical Cyclone TRAMI. Information was subsequently disseminated internally within the AHA Centre and coordinated with respective EOC focal points from ASEAN Member States.
- b. On 22 October, the AHA Centre issued Flash Update #1 for Tropical Cyclone TRAMI.
- c. Following the request of assistance from NDRRMC-OCD Philippines on 23 October, the AHA Centre has sent a sympathy letter and readiness to support the NDRRMC-OCD on 24 October in the ongoing operations to alleviate the suffering of affected communities due to the impacts of Tropical Cyclone TRAMI in the Philippines.
- d. The AHA Centre has maintained coordination with the NDRRMC Philippines and started to dispatch ASEAN relief items from the DELSA Satellite Warehouse in Quezon City, the Philippines. On 24 October, the NDRRMC retrieved and mobilised 450 family kits, 3,500 personal hygiene kits, and 300 tarpaulins from the DELSA Warehouse in Quezon City, the Philippines with a total value of 88.17K USD.
- e. The AHA Centre has maintained coordination and continues to liaise with the DDPM Thailand to plan for the dispatch of requested ASEAN relief items from the DELSA Satellite Warehouse in Chainat, Thailand for mobilisation to the communities affected by the flooding in Thailand.

RECOMMENDATIONS AND PLAN OF ACTION

Recommendations

- a. Humanitarian partners are advised to monitor information on the hazards and disaster impacts from official government sources through the Philippines's National Disaster Risk Reduction and Management Council (NDRRMC) and the Philippines' Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) for the Philippines; and the Department of Disaster Prevention and Mitigation (DDPM) and Thailand Meteorological Department (TMD) for Thailand.

The AHA Centre's Plan

- a. The AHA Centre will continue to liaise with NDRRMC-OCD of the Philippines for the dispatch of the remaining requested ASEAN relief items from the DELSA Satellite Warehouse in the Philippines for affected communities by TC TRAMI.



- b. The AHA Centre will continue to liaise with DDPM Thailand for the dispatch of the requested ASEAN relief items from the DELSA Satellite Warehouse in Chainat, Thailand for flooding affected communities.
- c. The AHA Centre will continue to closely coordinate with NDRRMC Philippines and DDPM Thailand, and stands ready to provide support should other needs arise.
- d. The AHA Centre will continuously update the impact information in the ASEAN Disaster Information Network (ADINet).

Prepared by:

The AHA Centre - Emergency Operations Centre (EOC)

ABOUT THE AHA CENTRE

The AHA Centre - ASEAN Coordinating Centre for Humanitarian Assistance on disaster management - is an inter-governmental organisation established by 10 ASEAN Member States – Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam - to facilitate the cooperation and coordination among ASEAN Member States and with the United Nations and international organisations for disaster management and emergency response in the region.

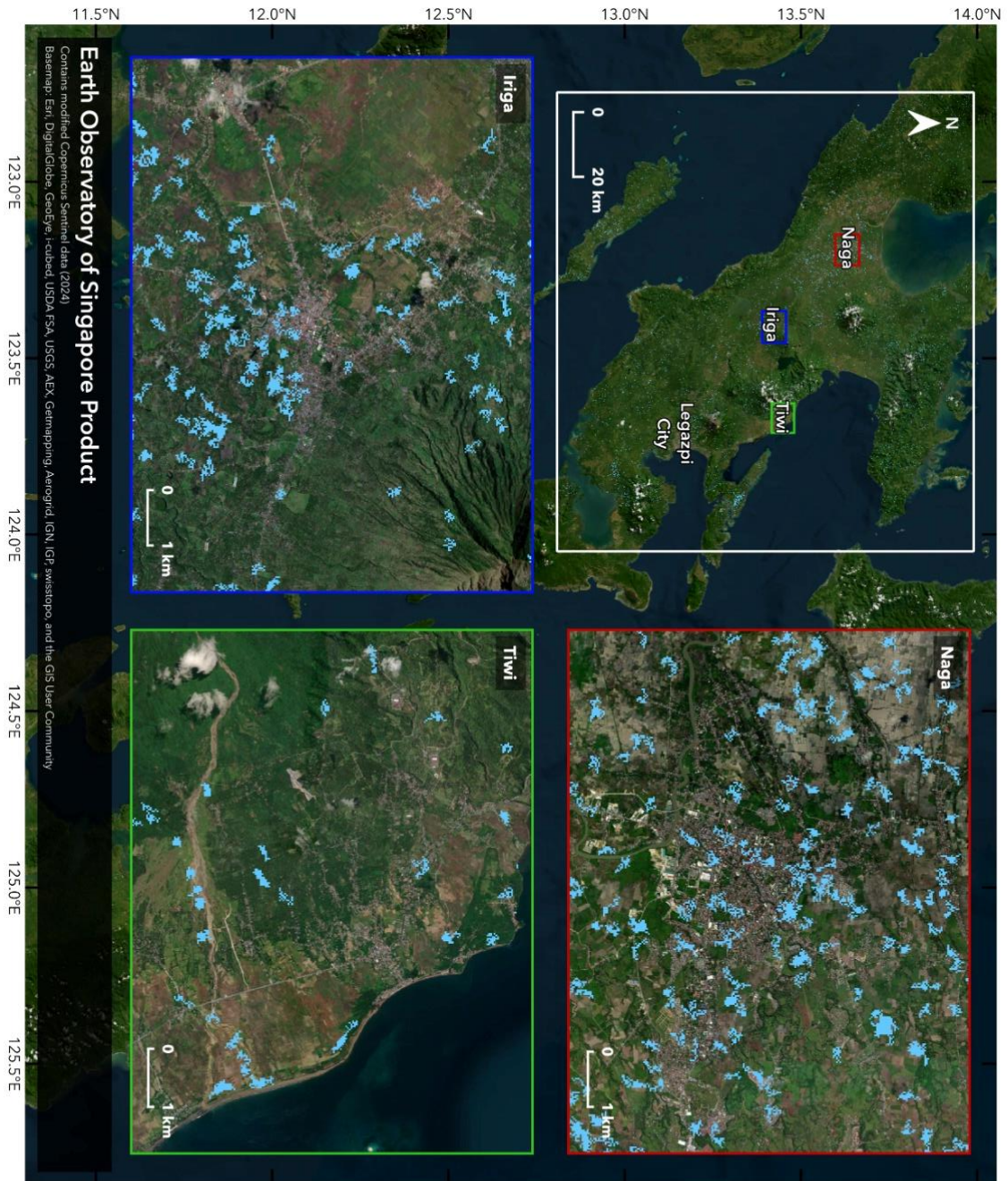
The ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre), Graha BNPB 13th Floor, JL Raya Pramuka Kav 38, East Jakarta, 13210, Indonesia
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Annex 1. Satellite Imagery Analysis from EOS-RS



EOS-RS Flood Proxy Map: Bicol Region, Philippines, Tropical Storm Trami Floods, 21 Oct 2024, v0.5

The Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS) created this preliminary Flood Proxy Map (FPM) depicting areas that are likely flooded in the Bicol Region, Philippines, due to heavy rainfall from Tropical Storm Trami. This map was derived from synthetic aperture radar (SAR) images acquired by the Copernicus Sentinel-1 satellite operated by the European Space Agency (ESA) before (12 Feb 2024 to 9 Oct 2024) and during (21 Oct 2024) the early stages of the event.

The map covers an area indicated by the white polygon. The preliminary map shows areas which are likely flooded (shown by light blue pixels of approximately 30m in size) due to the heavy rainfall from Tropical Storm Trami. Preliminary validation was conducted using news reports and ground-level imagery in selected areas. This map should be used as a guide to identify areas that are likely flooded, and may be less reliable over urban and vegetated areas.

This product contains modified Copernicus Sentinel data (2024), processed by ESA and analyzed by the Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS).

More map details and files at: https://eos-rs-products.earthobservatory.sg/EOS_RS_202410_Philippines_Tropical_Storm_Trami_Floods/

Legal Disclaimer: <https://products.earthobservatory.sg/#/faq/>

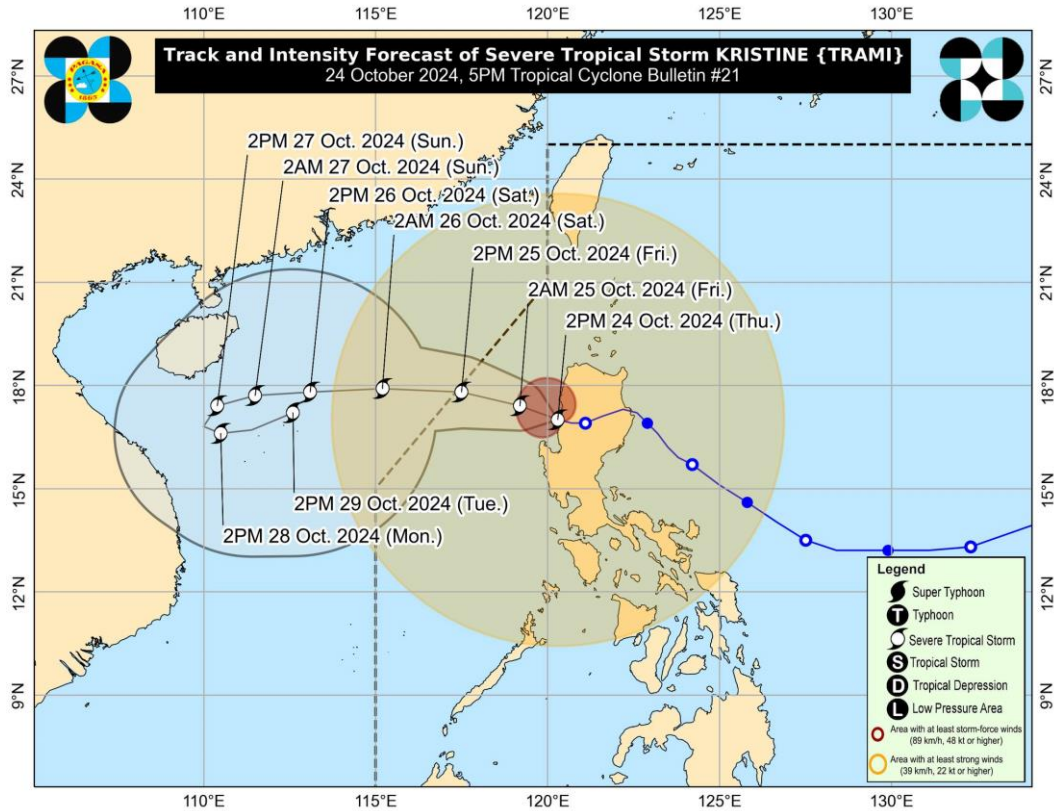
Credits: Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS). Contains modified Copernicus Sentinel data (2024)

EOS Remote Sensing
LinkedIn

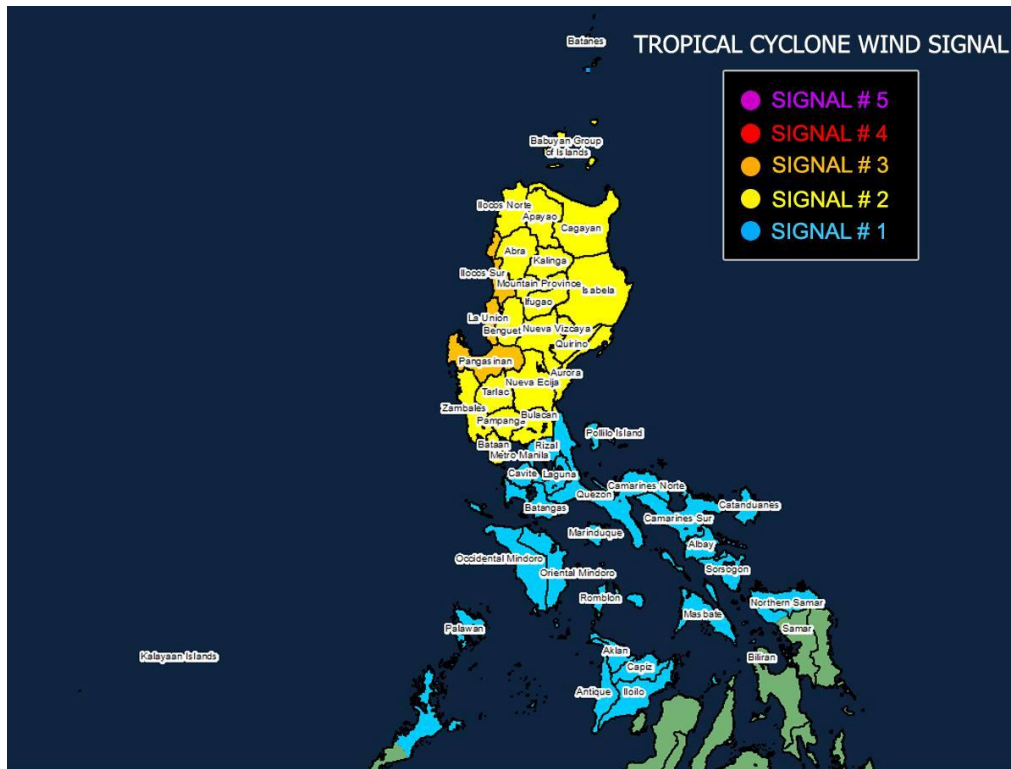


Annex 2. Tropical Cyclone Bulletin No.21 PAGASA Forecast Track

TAU-09 Rev.0/15-08-2023



Annex 3. Tropical Cyclone Bulletin No.21 PAGASA TCWS



Tropical Cyclone Bulletin #21 - Severe Tropical Storm "KRISTINE" {TRAMI}
5:00 PM, 24 October 2024



Annex 4. PAGASA Storm Surge Warning

Severe Tropical Storm Kristine
48 Hour Forecast
Philippine Atmospheric Geophysical and Astronomical Services Administration

Storm Surge Warning #10

Severe Tropical Storm Kristine
Issued: 2:00 PM, Thursday
October 24, 2024

Storm Surge Warning #10

A **MINIMAL to MODERATE** risk of storm surge may occur in the next 48-hours. However, residents along the coast are advised to take extra precautions due to high waves in the municipalities of:

See Attached List

Recommended Action

Residents living in the low-lying coastal communities are still advised to:

- > Stay away from the coast or beach;
- > Cancel all marine activities;
- > Be aware and follow the latest updates from PAGASA

NOTE: Inundation / flood depth due to storm surge depends on the topography of the area.

Annex 5. JTWC Advisory

JOINT TYPHOON WARNING CENTER

LOW TC development unlikely within 24 hours

MEDIUM TC development likely, but expected to occur beyond 24 hours

HIGH TC development likely and expected to occur within 24 hours

SUB TROPICAL Monitoring for potential transition to TC. Invest label, cone, denotes tropical transition probability

Tropical Cyclone (TC) Areas of Interest

SITUATION UPDATE