2025 Mandalay Earthquake (Myanmar) (GLIDE No. EQ-2025-000043-MMR)





On 28 March 2025, 12:50(MMT, UTC+6:30)(15:20JST), an earthquake with a magnitude of 7.7 occurred in the Sagaing region of central Myanmar (GLIDE No. EQ-2025-000043-MMR). The hypocenter was near Mandalay, the country's second-largest city, and the depth of the epicenter is around 10 km. The maximum seismic intensity was IX on the MMI scale. This is the largest earthquake since the Maymyo earthquake (magnitude 7.9) on 23 May 1912. Significant damage has been reported in both Myanmar and Thailand. In Myanmar, a state of emergency was declared in six states and regions, including Sagaing region. A state of emergency was also declared in Bangkok, where seismic damage tends to be severe due to geological factors. As the secretariat of Sentinel Asia, which promotes the use of satellites for disaster management, ADRC contacted relevant organisations and requested emergency satellite observation.



Location of the Sagaing Fault Zone and Major Historical Earthquakes https://www.facebook.com/photo.php?fbid=1440521199431830

Basic Information

- Located in the west of Indochina Island, Myanmar borders Thailand, Lao, PDR, Bangladesh and India. Land area is about 680,000 km2.
- The population is 51.31 million (2024 census). 70% is Burma, while others are various national races. The largest city is Yangon (approximately 2.4 million), followed by Mandalay (about 1.7 million), and then the capital Naypyidaw (about 900,000).
- The Ayeyarwady River runs vertically through the center of the country, and the Sagaing Fault, which marks the boundary between the Indian Plate and the Eurasian Plate, also runs through it. It is a strike-slip fault similar to the San Andreas Fault in the United States.
- The largest earthquake to hit Myanmar was the Chittagong– Rakhine earthquake on 2 April 1762 (estimated 8.8 Mw), with an estimated maximum intensity of XI (MMI), and it also triggered a tsunami.
- The largest recorded earthquake near Mandalay was the Mandalay Earthquake on 23 March 1839 (estimated 8.2 Mw), with an estimated maximum intensity of XI (MMI). Ava, the capital at the time, was almost completely destroyed by the quake and was subsequently abandoned.
- Mapping 100 Years of Earthquakes in Myanmar is available at the MIMU site (<u>https://themimu.info/news/updated-mapping-100-years-</u> <u>earthquakes-myanmar</u>)

Summary of historical and recent earthquakes in Myanmar

DATE	Location	Magnitude and/or brief description	DATE	Location	Magnitude and/or brief description	DATE	Location	Magnitude and/or brief description
868	Bago	Shwemawdaw Pagoda fell	1768/12/27	Bago	Ponnyayadana Pagoda fell	1020/0/0	Near	Bent railroad tracks, bridges and
875	Bago	Shwemawdaw Pagoda fell	1771/7/15	Innwa		1929/8/8	Taungoo	overturned (Swa Earthquake)
1429	Innwa	Fire-stopping enclosure walls fell	1776/6/9	Innwa	A well known pagoda fell			M=7.3 RS, Imax=IX; in a zone
1467	Innwa	Pagodas, solid and hollow, and brick monasteries destroyed	1830/4/26	Innwa	Old palace and many buildings	1930/5/5	Near Khayan	rending north-south for 37 km south of Bago (on the Sagaing Fault line); about 500 persons in Bago and
1485/5/24	Sagaing	3 well-known pagodas fell	1839/3/21	Innwa	demolished;			about 50 persons in Yangon killed
1501	Innwa	Pagodas, etc. fell			8.2Mw. Pagodas and city walls fell;	1930/12/3	Nyaunalehin	M=7.3 RS; railroad tracks twisted
1564/9/13	Bago	Pagodas including Shwemawdaw and Mahazedi fell	1839/3/23	Innwa	ground surface broken; the river's flow was reversed for sometime; Mingun Pagoda shattered; about 300 to 400 persons killed	1930/12/3	Nyaungiebin	killed
1567	Bago	Kyaikko Pagoda fell				1931/1/27	East of	M=7.6 RS, Imax=IX; numerous fissures and cracks (Myitkyina
1582	Bago	Umbrella of Mahazedi Pagoda fell	1843/2/6	Kyaukpyu	Eruption of mud volcanoes at the Rambye (Ramree) Island			Earthquake)
1588/2/9	Bago	Pagodas, and other buildings fell	1010/1/2		The civil line and other buildings	1931/8/10	Pyinmana	
1591/3/30	Bago	The Great Incumbent Buddha	1848/1/3	куаикруи	were damaged	1931/3/2/	Yangon	
1001,0,00	Dugo	destroyed			Collapsed houses and tops of	1931/3/16	Yangon	
1620/6/23	Innwa	Ground surface broken, river fishes were killed after quake	1858/8/24	Руау	Thayetmyo and felt with some damages in Innwa, Sittwe,	1931/3/21	Yangon	
1637/8/18	Innwa	River water flush				1946/9/12	Tagaung	M=7.5 RS
1646/9/10	Innwa		1888/10/8	Bago	Mahazedi Pagoda collapsed	1956/7/16	Sagaing	M=7.0 RS; Several pagodas severely damaged (40 to 50 persons killed)
1648/6/11	Innwa				M=7.6-7.9, the largest earthquake	1076 17 10	Daman	M=6.8 RS; Several pagodas in Bagan
1660/9/1	Innwa		1912/5/23	Taunggyi	in Myanmar's recorded history, with tremors felt in neighboring Thailand, Yunnan (China), and northeastern India (Maymyo earthquake)	19/6///8	Bagan	(1 person killed)
1690/4/3	Innwa						Taunadwina	M=6.8; RS Severe damaged to rural
1696/9/15	Innwa	4 well-known pagodas destroyed	1913/3/6	Bago	Shwemawdaw Pagoda lost its finial	2003/9/22	yi	houses and religious buildings (7 persons killed)
1714/8/8	Innwa	Pagodas, etc. fell; the water from the river gushed into the city	1917/7/5	Bago	Shwemawdaw Pagoda fell	2012/11/11	Thabeikkyin	M=6, 6 persons killed, 231 injured,
1757/6/4	Bago	Shwemawdaw Pagoda damaged	1927/9/10	Yangon		Sourco		
1762/4/2	Sittwe	M=7 RS; very destructive violent	1927/12/17	Yangon	M=7 RS; extended to Dedaye	https://re	liefweb.int/repo	ort/myanmar/hazard-profile-myanmar
1,02,1/2	Ciccite	Rakhine up to Calcutta.		Acian Dicact	or Doduction Contor			

Asian Disaster Reduction Center

Overview of the Earthquake and Response Measures

On 28 March 2025, at 12:50 (MMT) (06:20UTC, 15:20JST), a magnitude 7.7 earthquake struck the Sagaing Region in central Myanmar.

At 13:02, the largest aftershock occurred with a magnitude of 6.7.

The United States Geological Survey (USGS) released earthquake information at 13:17, and the ADRC issued a GLIDE number.

Shortly after 14:00, the International Charter on Space and Major Disasters and the Sentinel Asia were activated.

Damage reports also emerged from Thailand and China, and the extent of destruction in various areas gradually became clear.

DATE	Universal Time	日本 (JST)	Myanmar (MMT)	Earthquake Occurrence and Response
28-Mar	6:20	15:20	12:50	Magnitude 7.7 earthquake strikes Sagaing Region, central Myanmar
	6:32	15:32	13:02	Magnitude 6.7 aftershock strikes Sagaing Region
	6:47	15:47	13:17	USGS issues email alert on Myanmar earthquake
	7:20	16:20	13:50	ADRC issues GLIDE number (EQ-2025-000043-MMR)
	7:28	16:28	13:58	The Guardian reports the first news of the earthquake as AFP news
	8:08	17:08	14:38	ADRC contacts relevant agencies to discuss the need to activate Sentinel Asi
	8:15	17:15	14:45	UNOCHA activates the Disaster Charter
	8:22	17:22	14:52	AHA Centre requests Sentinel Asia emergency observation
	10:06	19:06	16:36	UNDP's Myanmar Information Management Unit (MIMU) requests Sentinel Asia emergency observation
	10:09	19:09	16:39	GLIDE number (EQ-2025-000043-THA) issued for damage in Thailand
	13:47	22:47	20:17	A GLIDE number (EQ-2025-000043-CHN) was issued for the damage in Chi
29-Mar	16:35	1:35	23:05	JAXA notified that ALOS-2 would observe on 3/30.
	20:05	5:05	2:35	JAXA started providing archive images.
	21:15	6:15	3:45	Synspective observes Synspective observed that Inwa Bridge in Mandalay was damaged using his SAR satellite.
	6:57	15:57	13:27	GISTDA requests Sentinel Asia emergency observation
31-Mar	7:33	16:33	14:03	JAXA has uploaded ALOS-2 Emergency Observation data
2-Apr	2:38	11:38	9:08	GISTDA has uploaded THEOS-2 and THEOS-1 Emergency Observation data
	1:45	10:45	8:15	TASA has uploaded Formosat Emergency Observation data
3-Apr	8:16	17:16	14:46	ISRO has uploaded Resourcesat-2A Emergency Observation data

Damage Situation (as of 18:00 on 21 April 2025)

Damage in Myanmar, Thailand, China etc.

		Myanmar	Thailand	China etc.
Killed		3,869	54	
Missing		441		
Injured		5,742	38	
Affected People		347,704		
Evacuee		10,565		
	Houses 52,671 (13,194 totally damaged)		1,389	
	Buildings	5,488	39 *A high-rise building under construction collapsed	
Damaged	Government offices		83	
Buildings	Schools	2,661	129	
	Hospitals	640	168	
	Religious buildings	5,114		
	Pagodas/ Temples	6,033	91	
Damaged	Railways	38		
Infra- structure	Roads	405		
	Expressway	198		
Fire		occurred		
Lifeline		Widespread interruption of electricity and communication lines		
Source			DDPM <u>https://www.disaster.go.th/contents/disaster_news</u>	CEAhttps://www.cea.gov.cn/ce
		AHA Centre <u>https://ahacentre.org/situation-upd</u> MOFA <u>https://www.mofa.go.jp/mofaj/area/asia</u> .	a/xwzx/fzjzyw/5807447/index. html	

ADRC 22/04/2025

Status of international community support (as of 06:00 on 03 April 2025)

Many countries and international organisations have announced their support, and are beginning to provide aid to Myanmar.

In addition to the countries listed in the table on the right, Singapore, Malaysia and the Philippines have also decided to send rescue and humanitarian aid teams.

Ireland has announced a 6 million euro (approximately 6.49 million dollar) aid package.

The Japanese Red Cross Society is also in close contact with the local authorities and will provide support as necessary.

Country/Organization	Type of Support	Support Amount/Details
China	Rescue teams, medical supplies, shelters	約1380万ドル
India	Field hospitals, medical personnel, supplies	Multiple aircraft and ships
Russia	Rescue teams, medical staff, mobile hospitals	3 aircraft
UK	Financial aid	£10 million
USA	Financial aid, emergency response teams	Up to \$2 million
EU	Financial aid	€2.5 million
IFRC	Emergency assistance request	Over \$100 million requested
UN	Financial aid	\$5 million (Central Emergency Response Fund)
Rep. Korea	Financial aid	\$2 million
New Zealand	Financial aid	\$1.14 million
Cambodia	Financial aid	\$100,000 (Initial aid)
Vietnam	Taskfoce of Relief supplies, medica	a 80 people, 60 tons of supplies,
Hongkong	Rescue teams, financial aid	51 people, 9 tons of equipment, emergency relief supplies, HK\$30 million (~\$3.8 million)
Japan	Medical support, supplies, financial aid	32 people, \$6 million

Useful Links

Situation Report	
DDPM, Thailand	https://www.facebook.com/DDPMNews
MOSWRR, Myanmar	https://www.moswrr.gov.mm/
China Earthquake Networks Center	https://www.cenc.ac.cn/
China Earthquake Administration	https://www.cea.gov.cn/
Geographical Data	
Sentinel Asia: Emergency Observation	https://sentinel-asia.org/EO/2025/article20250328MM.html
Disaster Charter	https://disasterscharter.org/activations/earthquake-in-myanmar-activation-956-
USGS	https://earthquake.usgs.gov/earthquakes/eventpage/us7000pn9s/executive
International Organisations	
International Organisations ADRC	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742
International Organisations ADRC GDACS	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742 https://www.gdacs.org/Earthquakes/report.aspx?eventtype=EQ&eventid=1474479&episodeid=1630569
International OrganisationsADRCGDACSRelief Web	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742 https://www.gdacs.org/Earthquakes/report.aspx?eventtype=EQ&eventid=1474479&episodeid=1630569 https://reliefweb.int/disaster/eq-2025-000043-mmr
International OrganisationsADRCGDACSRelief WebMIMU (Myanmar Information Management Unit)	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742 https://www.gdacs.org/Earthquakes/report.aspx?eventtype=EQ&eventid=1474479&episodeid=1630569 https://reliefweb.int/disaster/eq-2025-000043-mmr https://themimu.info/
International OrganisationsADRCGDACSRelief WebMIMU (Myanmar Information Management Unit)Study Report	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742 https://www.gdacs.org/Earthquakes/report.aspx?eventtype=EQ&eventid=1474479&episodeid=1630569 https://reliefweb.int/disaster/eq-2025-000043-mmr https://themimu.info/
International OrganisationsADRCGDACSRelief WebMIMU (Myanmar Information Management Unit)Study ReportYangon Region Earthquake Preparedness and Response Plan	https://www.adrc.asia/view_disaster_jp.php?Lang=jp&Key=2742 https://www.gdacs.org/Earthquakes/report.aspx?eventtype=EQ&eventid=1474479&episodeid=1630569 https://reliefweb.int/disaster/eq-2025-000043-mmr https://themimu.info/ https://themimu.info/ https://www.undp.org/sites/g/files/zskgke326/files/migration/mm/undp-mm-yangon-region-earthquake-preparedness-and-response-plan-eng.pdf

Emergency Observation by Space Satellites

The ADRC, the Sentinel Asia Secretariat, started coordinating with relevant organisations on the same day following the earthquake reports, and AHA Centre and UNDP requested the activation of Sentinel Asia. The International Disaster Charter (IDC), which covers the entire world, was likewise activated.

Resources N

2025-03-28

ASTA Sentinel Asia

Emergency Observation

Earthquake in Mandalay, Myanmar on 28 March, 2025

Disaster Type: Earthquake

Occurrence Date (UTC): 28 March, 2025

SA activation Date(UTC): 28 March, 2025

Escalation to the International Charter: No

GLIDE Number: EQ-2025-000043-MMR

Requester: Myanmar Information Management Unit (MIMU)

Country: Myanmar

Emergency Obs. Request Information



Disaster Situation

[USGS]

https://earthquake.usgs.gov/earthquakes/eventpage/us7000pn9s/executive [Local Social Media]

https://myanmar-now.org/en/news/breaking-7-7-magnitude-earthquake-hits-sagaing-and-mandalay/

https://www.ndtv.com/world-news/7-7-magnitude-earthquake-hits-myanmar-strong-tremors-felt-in-bangkok-news-agency-afp-8030256

Sentinel Asia (https://sentinel-asia.org/EO/2025/article20250328MM.html)

Earthquake in Myanmar

Activations

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On 28 March an earthquake with a magnitude of 7.7 has struck central Myanmar. The epicentre was located 10 miles northwest of the city of Sagaing. Many buildings have been left with extensive damage. Road surfaces in the capital city, Naypyidaw, were reported to have warped and become uneven. Seventy construction workers are missing after a high-rise building under construction collapsed. Travelers at Mandalay Airport were evacuated to the tarmac landing areas as airplanes shook around them. The death toll is yet to be confirmed. Strong tremors were felt in nearby countries, including Thailand and China.

Type of event	Earthquake
Location of event	Myanmar
Date of Charter Activation	2025-03-28
Time of Charter Activation	09:28
Time zone of Charter Activation	UTC+07:00
Charter Requestor	UNOSAT on behalf of United Nations Office for th Coordination of Humanitarian Affairs (OCHA)
Activation ID	956
Project Management	Jakrapong Tawala (UNITAR)
Value Adding	NRSC/ISRO

956-)



IDC (https://disasterscharter.org/activations/earthquake-in-myanmar-activation-

S Login

Comparison of the Inwa Bridge in Mandalay, before and after the disaster

Satellite imagery from Strix Satellite of Synspective, showed the collapsed Inwa (Ava) bridge in Mandalay.



©Synspective
(<u>https://x.com/synspective/status/1905927311096193196</u>)



On March 28th, 2025, a 7.7-magnitude earthquake struck the Sagaing Region of Myanmar. Synspective StriX Satellite captured the Collapsed Ava Bridge in Mandalay.

This earthquake caused significant damage to buildings and infrastructure within Myanmar and neighboring countries. Our heartfelt sympathies go out to all those affected by this disaster.

Observation Date: 2025-03-28 21:15:55 UTC Observation Mode: Staring Spotlight Mode (0.9m x 0.25m resolution)

#DisasterResponse #EarthObservation #SatelliteData #StriX #SAR #earthquake #Myanmar ポストを翻訳





Monitoring Light Reduction and Population Impact After the Earthquake SDGSAT-1 acquired GLI and TIS data successfully. The images were analyzed to calculate the light decrease, which can reflect the change of human activities and the impact of the population.



Extraction of damage through comparative analysis of SAR data before and after the earthquake.

Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS) created some preliminary Damage Proxy Map (DPM).

Yellow to red indicates increasingly significant ground surface change before and after the event.



EOS-RS Damage Proxy Map: Bangkok, Thailand, Earthquakes, 29 Mar 2025, v0.9

The Earth Observatory of Singapore -Remote Sensing Jula (EO-RS) created this preliminary Damage Proxy Map (DPM) depicting areas that are likely damaged in Bangkok, Thailand, due to a Mw7.7 earthquake in Sagaing, Myanmar on 28 Mar 2025. This may was derived from synthetic aperture radar (SAR) images acquired by the Operated by the European Space Agency (ESA) before (17 Nov 2024 to 17 Mar 2025) and after (29 Mar 2025) the event.

The map covers an area indicated by the white polycon. Damage is shown by colored pixels of 30m in size, where yellow to red indicates increasingly significant ground surface change before and after the event. Preliminary validation was conducted using news reports and ground-level imagery and videos in selected areas. This map should be used as a guidance to identify damaged areas, and may be less reliable cover vegetated or mountainous areas. Scattered pixels over such areas and alex of colored pixels over such areas may not meen no damage.

The product contains modified Copernicus Sentinel data (2024-2025), 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_202503_Thailand_Earthquakes/

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

Credits: Earth Observatory of Singapore -Remote Sensing Lab (EOS-RS), Contains modified Copernicus Sentinel data (2024-2025)

EOS Remote Sensing LinkedIn

Sentinel Asia (<u>https://sentinel-asia.org/EO/2025/article20250328TH.html</u>)

InSAR (interferometric SAR) analysis of ALOS-2 satellite imagery

Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS) created Interferometric Synthetic Aperture Radar (InSAR) map that shows the surface displacement (wrapped interferogram) of the Mw7.7 earthquake and its aftershocks along the Sagaing Fault



Myanmar, Earthquakes, 2025/02/16-2025/03/30

- Remote Sensing Lab (EOS-RS) created this Interferometric Synthetic Aperture Radar (InSAR) map that shows the surface displacement (wrapped interferogram) of the Mw7.7 earthquake and its aftershocks along the Sagaing Fault in Myanmar on 28 Mar 2025. This map was derived from SAR images acquired by the ALOS-2 satellite operated by the Japan Aerospace Exploration Agency (JAXA) before (16 Feb 2025) and after (30 Mar 2025) the

Each color cycle represents 11.2 cm of ground displacement in the radar line-of-sight. Ionospheric delay variation was mitigated, but tropospheric delay variation was

Data were provided by JAXA and analyzed by the Earth Observatory of Singapore - Remote Sensing Lab

More map details and files at: http://eos-rs-products .earthobservatory.sg /EOS-RS_202503 Myanmar Earthquakes/

Credits: Earth Observatory of Singapore - Remote Sensing Lab (EOS-RS), Original data ALOS-2 PALSAR-2 Product - JAXA (2025)



EOS (https://eos-rs-products.earthobservatory.sg/EOS-RS 202503 Myanmar Earthquakes/)

Interactive Map: Sagaing Earthquake Reports (March 2025) is sharing at MIMU site

Interactive web map documenting reported damage from the Sagaing Earthquake on March 28, 2025. The map aims to visualize available reports to support awareness and response operations.

Disclaimer:

The data presented in this web map is compiled from publicly available social media posts and news reports. Location and other related information have been estimated based on the best available data; however, accuracy cannot be guaranteed. All content remains the property of the original content creators and publishers.



Crustal deformation along the Sagain Fault extending 400 km in a north-south direction is clearly visible in the interferometric analysis using ALOS-2 data.

The Geospatial Information Authority of Japan (GSI) carried out an interferometric analysis using ALOS-2 data. The analysis clearly showed the spatial distribution of crustal deformation.

Crustal deformation is seen to be almost northwards on the west side of the Sagaing fault and almost southwards on the east side. The crustal deformation is consistent with the earthquake mechanism.

6 m of ground deformation was observed across the Sagaing Fault.



The Live web-map by UNOSAT shows the result of the damage assessment in Sagaing Township, Myanmar

This map illustrates the potentially damaged structures/buildings.

The analysis focuses on a part of Sagaing Township, Sagaing District, Sagaing Region, where damage was detected using a Pleiades very highresolution satellite image acquired on March 30, 2025, at 11:01 local time.

UNOSAT identified 233 damaged structures and 557 potentially damaged ones. This is a preliminary analysis and has not yet been validated in the field.



Damage Assessment in Sagaing and Mandalay is provided by UNOSAT. More than 50% of each Village Tract has been assessed for impact.

This map illustrates the number of affected buildings within specific Towns/Village Tracts boundaries of interest in Sagaing and Mandalay, Myanmar, as of 30 March 2025.

Within the analyzed area—52 Towns/Village Tracts covering approximately 340 km², UNOSAT identified 1,095 damaged structures and 1,325 potentially damaged ones.

The analysis represents areas where more than 50% of each Village Tract has been assessed for impact.



UNOSAT (https://unosat.org/products/4096)

Probable Damaged Buildings in Mandalay and Sagaing Area is provided by MIMU. Destroyed/Damaged 1,853 Possible Damaged 2,290

The damage to buildings has been assessed using THEOS-2 and Maxar satellite imagery as of March 29, 2025.

This assessment is based on multiple sources and will be updated as more data becomes available.



MIMU (<u>https://documents.themimu.info/downloads/bwGkUTh/Map_Probable%20Damage%20Buildings%20in%20Mandalay%20and%20Sagaing%20Area_MIMU927v01_06Apr2025_A3.pdf</u>)