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Research Article

The One and Only Successful Earthquake Prediction Method, a Great Historic Solution to Earthquake Prediction

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Abstract

This paper is original research, no other authors previously published papers referred. The most important parameter in earthquake prediction is earthquake precursors that have been successfully identified. During generation process of earthquakes weather anomalies are generated as precursors, in this way the earthquake precursors are earthquakes related.

Based on atrocious weather anomalies and the corresponding devastating earthquakes can be verified even after 100 years. For the first time in the history of earthquake prediction, the satellite image of storm of East Pacific have been used to successfully predict earthquakes in California, the most significant in this observation study. As weather anomalies are generated by earthquake process, both individual and cluster of earthquakes are always preceded by weather anomalies, so, can be verified even after 100 years.

In this paper, the deadly and devastating earthquakes of M7.8 killed over 55,000 people and cause damage cost over 100 USD, though predicted in time but ignored and satellite image of storm to predict California earthquakes are tabulated. Experts can use this data catalogue to warn impending earthquakes to mitigate loss of lives and properties with more improvements.

Keywords: Orbital motion of the earth; Natural hazards, generation process of storms and earthquakes; driving force of tectonic plates, geological coordinates of precursors and earthquakes. satellite imagery of storms, East and West Pacific and North India

Introduction

Orbital motion of the earth causes Natural Hazards on earth every year at same locations. During the initial generation process of earthquakes, earthquake precursors are generated. All form of weather anomalies are the earthquake precursors, all are observable, recordable, scientifically tested and use for future reference to warn earthquakes at same location but with different severity level of earthquakes. The Earthquake generated earthquake precursors activities are above the earth surface phenomena and earthquakes activities are below the earth phenomena.

In the History of 2500 years earthquake studies, epicentre zone concept is the one and only successful earthquake prediction method. Earthquakes are occurred with the uniform earthquakes related precursors. Earthquakes and earthquake generated precursors are testable and diagnosable on either way that is before and after devastating earthquakes. Even after hundreds of years of deadly earthquakes, the precursors for particular devastating earthquakes can be analysed and identified, say from earthquakes to weather precursors or from weather precursor to earthquakes. Most of the generation process of weather anomalies and followed by earthquakes are already discussed and published in previous five papers in Austin Journal of Publication. Every year, lakhs of tiny tremors are recorded all over the planet, so small that they go unnoticed. However, some huge earthquakes are remembered throughout history for being so massive destructive that they leave devastating consequences.

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Figure 1: Turkey Map.

Figure 2: Heavy snowfall precursor for M7.8 devastating earthquake in Turkey.

Figure 3: After devastating earthquakes in Turkey.

Methodology

Detailed earthquake prediction method has been explained in the previous published papers as in the reference. The generation process of earthquakes confined to particular epicenter zones, so earthquakes are localised in nature. There are several

Feb.06, 2023

Firure 4: The most devastating earthquakes of all time. Central Turkey (37-38N 38-39E)

misconceptions have been circulated in journals as journalistic interest, even for any massive earthquakes, the entire continent does not move.

One more interesting in earthquake prediction is, the satellite image of storms is also used to predict earthquakes at California regions in an innovative unique approach. This method also applicable to other regions too. In this satellite image, the bright image represents the storm location. See under the subtitle California. Earthquake prediction method: Time frame: usually 10-15 days after rainfall /snowfall; magnitude frame: 4-6; Rainfall (precursor) amount 50mm and above; location frame: up to 15° from precursor location and Direction: from precursor location to epicentre zone.

Result

Each and every earthquakes are preceded by uniform weather anomalies for the entire seismically active regions. Both precursor location and earthquakes occurred at corresponding locations are observed and tabulated.

Left column Precursor location and right column corresponding earthquake location. Star icons represent the snowfall/rainfall location and earthquakes location.

Figure 5: Europe and Middle East Asia.

Figure 6: Asia Map.

1 Timely warned based on heavy snowfall precursor but authorities ignored. Weather precursor for the devastating earthquakes in Turkey, heavy storms accompanied by rain, snow batter Istanbul.

Heavy snowfall, rain, storm and icing - that's what the Turkish weather authority has predicted for parts of the country. The governor calls on people to stay at home in Istanbul Heavy snowfall is to be expected in Anatolia and in the east of the country.

The people on the Black Sea would have to be prepared for heavy rain and some snowfall as well as storms. Winds could reach speeds of up to 75 km/h.

Heavy storms disrupted traffic and paralyzed daily life in many provinces of the region, especially in Istanbul. With cold waves coming from the Thrace region, snowfall gripped the higher parts of the Asian side of Istanbul. Turkish Airlines canceled a total of 238 flights, 72 of which were domestic and 166 of which were international flights at Istanbul Airport on Feb. 4 and 5 due to adverse weather conditions and expected snowfall. The bureau issued a “yellow alert” for heavy snowfall in Istanbul. A “yellow alert” is issued when there is a “potential threat by a weather event.”

Feb.06, 2023

The Most Devastating Earthquakes of all Time

A 7.8-magnitude earthquake left thousands of people dead, with reports numbering over 55,000, and thousands more injured as it toppled buildings in southern Turkey and northern Syria in the early hours of February 6, 2023. More casualties were feared in the aftermath, which the US Geological Survey said included over a dozen aftershocks measuring 4.5 magnitude or more, per NBC.

The disastrous quake, which has trapped many people under rubble, was reportedly centered about 20 miles (32 km) from Gaziantep, Turkey, a major city and provincial capital when it struck at 3:17 am local time. Rescue efforts are underway as many fear the death toll may rise.

Feb.09, 2023

After Devastating Earthquakes in Turkey

Feb 07, 2023, Heavy snowfall in Turkey’s Malatya hampered rescue and relief operations as the region turned into rubble after the massive earthquakes that hit the country on Monday. Survivors can be seen begging for help to pull out their children out of the rubble.

Latest on Quakes that Hit Beleaguered Region

A second 7.6-magnitude earthquake has hit southeastern Turkey. It followed a quake registering 7.8 that hit the region earlier on Monday. The early morning 7.8-magnitude temblor was centered about 20 miles from Gaziantep, a major city and provincial capital in Turkey. The first quake was Turkey's largest disaster since 1939.

Turkey’s earthquakes have destroyed more than 5,000 homes and could affect more than 250,000 people: here are the estimates the Red Cross has made. Powerful earthquakes hit Turkey and parts of Syria on Monday, causing massive destruction of life and property. More than 6,000 people died in the quake, but the death toll is expected to rise.

Turkey and Syria were jolted by two major earthquakes of magnitude 7.8 and 7.5. Several aftershocks hampered the rescue work. The epicentre of Monday's earthquake was at a depth of about 17.9 kilometres near the Turkish city of Gaziantep. The city is home to around two million people.

Many people died because of freezing cold, living nightmare in my country: Turkish national on quake aftermath.

California Earthquakes

Storm Location and Earthquake Prediction for California Region

It is an innovative way to predict earthquakes with the help of Satellite images of storm location helpful to warn successfully the earthquakes in California, US and Hawaii.

Conclusion

Earthquake generated earthquake precursor identified is the most significant in this earthquake prediction study, all weather anomalies followed by earthquakes are observed and tabulated for the entire seismically active regions and based on this concept several earthquakes have been successfully predicted.

Orbital motion of the earth causes natural hazards like weather anomalies and earthquakes. Natural hazards are predictable but never preventable. The generation process of all form of weather anomalies are the part of the generation process of earthquakes. Weather anomalies are the earthquakes generated earthquake precursors.

Both weather and earthquake phenomena are naturally and scientifically interrelated. Even after hundred years, it is quite possible ascertain, one weather phenomena with corresponding earthquakes phenomena. Whether it may be based on weather to earthquakes and vice versa.

For instance, prior to December 06, 2004 ,Indian Ocean devastating earthquakes and tsunami; March 11, 2011 devastating earthquakes and tsunami in Japan and Feb.06,2023.the most devastating earthquakes of all time a 7.8-magnitude earthquake in Central Turkey, by severe atrocious record weather anomalies like, intense heat waves, forest fire, high category cyclone/typhoon and hurricanes, snowfalls, avalanches, ice breaks as examples of earthquake precursors occurred.

From the past record devastating earthquake details, can identify the precursor of the corresponding earthquakes. It is also observed that different Epicentre zones in same latitude, simultaneously activated seismically. Same location but different year (see in the sub-title Iceland), confirms orbital motion of the earth causes natural hazards on earth every year at same location and same duration.

It is quite confirmed that earthquakes generated its own earthquake precursors, so for a particular weather anomalies at particular location it is possible to warn the impending earthquakes.this has been strongly proved in this paper. With observations of different regions of the world only with the earthquake generated earthquake precursors and successfully predicted several earthquakes but earth science experts and scientists ignored and neglected cause huge loss lives and properties.

Earthquake prediction research experts can use precursor and the corresponding earthquakes location data to mitigate loss of lives and properties.

Table-1.1: Eastern Turkey, geological coordinates precursor and earthquake location.

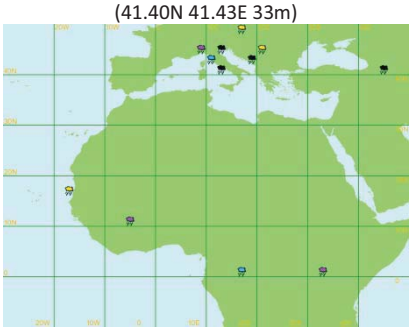
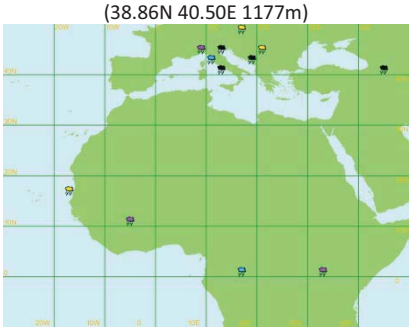
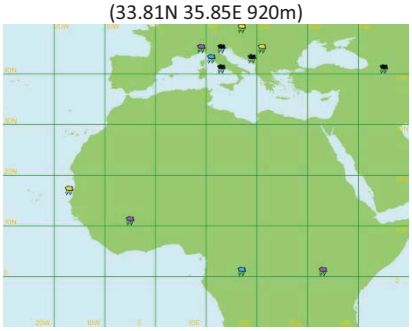
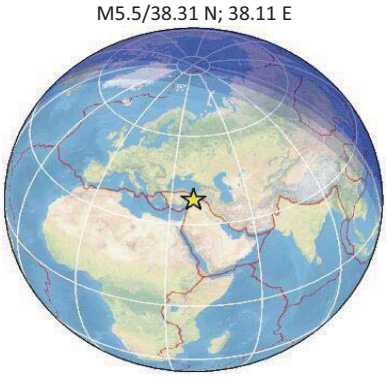
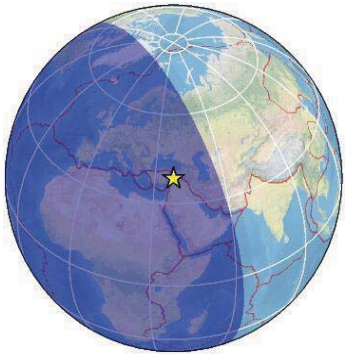
Precursor Location	Earthquake location
EasternTurkey (36.08N 32.83E 4m) (38.86N 40.50E 1177m) (42.03N 35.16E 32m) (41.36N 33.78E 800m) Turkey (41.45N 31.80E 137m) (41.40N 41.43E 33m) 	**Eastern Turkey** **38-39N 38-40E** 38.31 N; 38.11 E 38.25 N; 38.29 E 38.25 N; 38.29 E 40.12 N; 40.96 E 38.20 N; 39.44 E 38.21 N; 38.60 E 38.18 N; 38.06 E 39.92 N; 40.77 E Near Eastern Turkey 38.44 N; 38.10 E 38.45 N; 39.23 E

Table-1.2: Precursor location and corresponding earthquakes location.

Earthquake precursor locations	Earthquake hit locations
Feb.04-06,2023 Turkey (36.08N 32.83E 4m) (38.86N 40.50E 1177m)  Feb.07,2023 Turkey NE (38.86N 40.50E 1177m) (36.08N 32.83E 4m) Syria (35.40N 35.93E 50m) Lebanon and Jordan (32.55N 35.85E 616m) (33.81N 35.85E 920m) 	Feb.06,2023 Eastern Turkey M5.5/38.31 N; 38.11 E  Feb.27,2023 Eastern Turkey M5.2/ 38.25 N; 38.29 E Apr.02,2023 Near Eastern Turkey M4.7/38.44 N; 38.10 E 

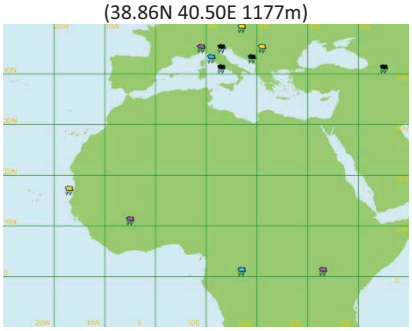
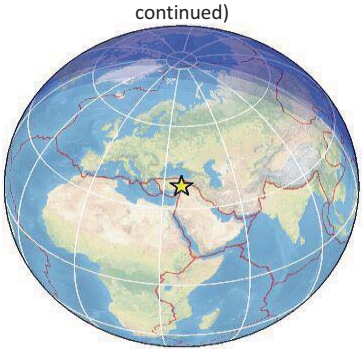
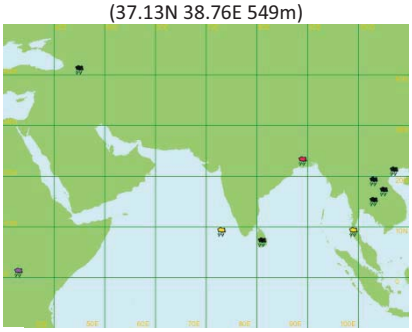
	Apr.19,2023 Eastern Turkey M4.4/38.45 N; 39.23 E

Table 1.3: Central Turkey: Precursor area and epicenter zones.

Precursor area	Epicenter zone
Central Turkey Turkey NE (38.86N 40.50E 1177m) (36.08N 32.83E 4m) Syria (35.40N 35.93E 50m) Lebanon and Jordan (32.55N 35.85E 616m) (33.81N 35.85E 920m) Turkey 37-38N 38-39E) (38.75N 30.53E 1034m) (36.86N 30.73E 54m)	**Central Turkey** **37-38N 35-37E** M7.8;7.7; 6.7/ 38.05 N; 37.25 E 37.99 N; 37.27 E 37.94 N; 36.29 E 37.94 N; 36.28 E 37.92 N; 36.30 E 37.68 N; 35.36 E 38.46 N; 37.57 E 37.92 N; 36.25 E 37.98 N; 36.53 E

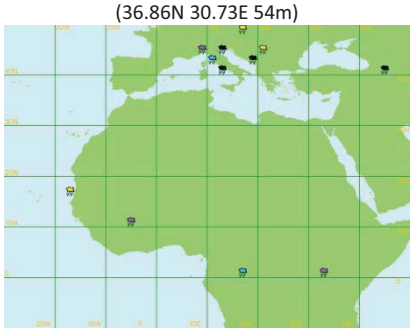
Feb.06,2023

Table 1.4: Central Turkey. Precursor and corresponding earthquakes location.

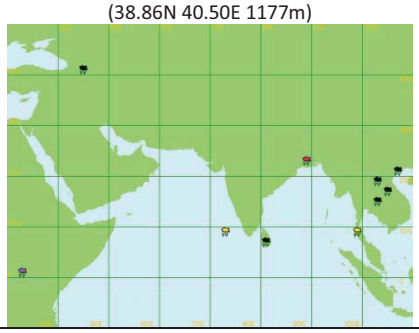
Feb.04-06,2023 Turkey (36.08N 32.83E 4m) (38.86N 40.50E 1177m) 	Feb.06-07,2023 Central Turkey M7.8;7.7; 6.7/ 38.05 N; 37.25 E 4300 aftershocks of magnitude over M4.0 occurred and continued) 
Mar.15,2023 Turkey (37-38N 38-39E) (38.60N 39.28E 881m) (38.35N 38.25E) (37.13N 38.76E 549m)  Flash floods **killed at least 11 people living in tents and container housing set up across Turkey's quake-hit southeast on Wednesday**, Agence France-Presse reported, citing local media. Several more people were swept away by the rushing water, which turned streets into muddy rivers in areas hit by last month's 7.8 and 7.5-magnitude	Mar.21,2023 Central Turkey M4.5/ 37.99 N; 37.27 E

quakes.

Mar.17,2023
Turkey
(36.86N 30.73E 54m)

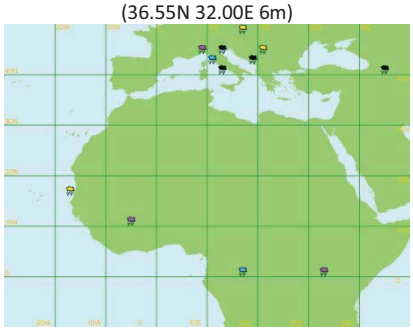


Mar.26,2023
Turkey (38-39N 39-49E)
(38.60N 39.28E 881m)
(38.86N 40.50E 1177m)



Mar.27,2023
Central Turkey
M4.6/ 38.07N 36.51 E
Mar.29,2023
Central Turkey
M4.6; 4.0/ 37.94 N; 36.29 E

Apr.27,2023
Turkey
(36.55N 32.00E 6m)



Apr.28,2023
Turkey- Syria border
M4.5/ 36.15 N; 36.02 E

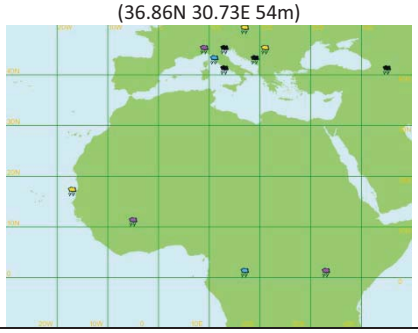
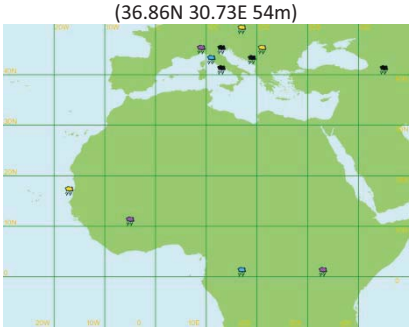
May 22,2023 SW Turkey (36.86N 30.73E 54m) 	May 22-23,2023 Central Turkey M4.6;4.3;4.0/ 37.94 N; 36.28 E May 25,2023 Near the coast of Syria M4.2/ 35.85 N; 35.58 E
May 24,2023 Turkey (38.75N 30.53E 1034m) (36.86N 30.73E 54m)  May 31,2023 Antalia,Turkey (36.86N 30.73E 54m)	May 27,2023 Central Turkey M4.0/37.92 N; 36.30 E May 30,2023 Central Turkey M4.5/ 37.68 N; 35.36 E M4.0/ 38.46 N; 37.57 E

Table 1.5: Earthquakes in Western Turkey.

Precursor Area	Epicenter zone
36-41N 24-30E	**36-40N 26-30E**
Western Turkey (36.86N 30.73E 54m)	Turkey- Syria border 36.15 N; 36.02 E Near the coast of Syria M4.2/ 35.85 N; 35.58 E Western Turkey M4.1/ 37.78 N; 27.10 E

Table 2.1: Satellite image of storm location and corresponding earthquake location in California.

Feb.27,2023 East Pacific 	Feb.27,2023 Offshore Baja California, Mexico M4.1/ 30.65 N; 116.38 W
Mar.04,2023	Mar.05,2023

The US west coast snowfall is once iin a generation event.

The **unprecedented levels of snowfall on the west coast of the U.S. is a 'once-in-a-generation' event**. More than 40ft of snow has been received since the start of the season. From Oregon to the mountains of California, the towns are covered with a white sheet of snow. Portland, Oregon received nearly a foot of snow in a single day in what proved to be its second-snowiest day in history.

Mar.05,2023

snowmageddon

Storms Wreak Havoc In California Jan 16, 2023 .A series of storms have wreaked havoc in California over the past three weeks. "This is gorgeous in California for 30 years."

Mar.18,2023

Mar.23,2023

Deadly storm slams California

An intense and deadly winter storm is barreling into California, unleashing damaging winds, heavy rain and flooding, and feet of mountain snow.

In Southern California, the same storm is dragging an atmospheric river into the coast, delivering heavy rain, up to 6 feet of snow and strong winds.

A bomb cyclone with dangerous winds

"Numerous flash floods are likely" as heavy rain with strong winds along the Southern California coast.The resulting strong winds prompted high wind warnings and wind advisories for much of the southern two-thirds of California.

Mar.25-26,2023

East Pacific

Gulf of California

M4.0/ 25.80 N; 110.13 W

Mar.18,2023

Offshore Baja California

M4.2-4.5 and 8 more quakes /22.39 N; 108.25 W

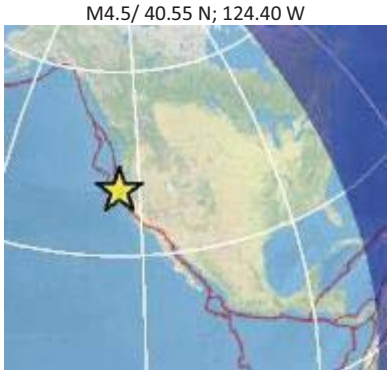
Gulf of California

M4.2/ 23.99 N; 108.90 W

Mar.21,2023

Offshore Northern California

M4.5/ 40.55 N; 124.40 W



Mar.28,2023

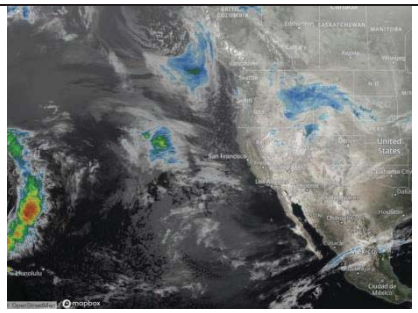
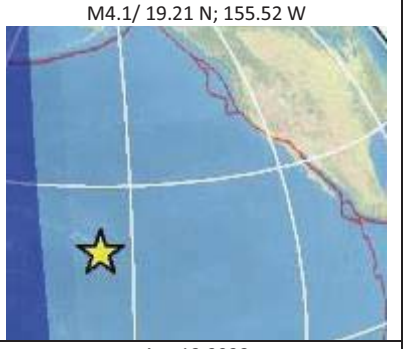
Gulf of California

M4.0/ 27.97 N; 112.08 W

Apr.04,2023

Central California

M4.3/36.84 N; 121.26 W

	 Apr.06,2023 Gulf of California M4.3/25.60 N; 109.96 W Apr.13,2023 Gulf of California M4.9/ 24.08 N; 108.75 W
Feb.17,2023 **Hawaii Island under flood watch as rain continues** A flood watch continues through Sunday afternoon for Hawaii Island. Flash flooding caused by excessive rainfall on saturated soil is possible as moderate to heavy rainfall continues.	Apr.04,2023 Islands of Hawaii, Hawaii M4.1/ 19.21 N; 155.52 W 
Apr.28,2023 Easi Pacifc 	Apr.13,2023 Gulf of California M4.9/ 24.08 N; 108.75 W Apr.28,2023 Revilla Gigedo Islands region M4.5/19.36 N; 108.52 W
May 12-13,2023	May 05,2023 Gulf of California M4.1;4.2/ 28.12 N; 112.29 W

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<tr>
<td>

May 04,2023

May 16,2023

May 17,2023
Pacific East</td>
<td>
May 13,2023
Gulf of California
M4-5 (nine earthquakes)/ 26.63 N; 110.78 W

May 10,2023
Gulf of California
M4.9,4.7,4.6,4.3/ 25.44 N; 109.90 W
May 11,2023
Northern California
M5.4/ 40.20 N; 121.11 W

May 18,2023
Gulf of California
M4.0;4.0/ 26.95 N; 111.30 W
May 21,2023
Offshore Northern California
M5.6/ 40.41 N; 125.38 W
Gulf of California
M4.6/ 30.61 N; 113.97 W
May 25,2023
Gulf of California
M4.3/ 29.87 N; 114.21 W

May 26,2023
Northern California</td>
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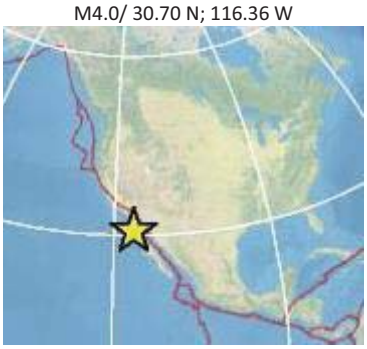
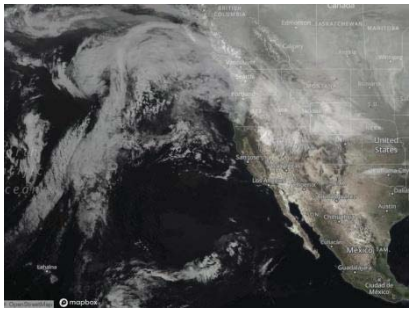
 May 20,2023 East Pacific May 28,2023 East Pacific 	M4.3/ 40.23 N; 121.15 W
Jun.06,2023 	Jun.06,2023 Gulf of California M4.0/ 27.89N 111.98 W Jun.12,2023 Offshore Baja California M4.0/ 30.70 N; 116.36 W  Jun.18,2023 Northern California M4.4/39.08 N; 123.09 W

Jun.18,2023
Gulf of California
M6.4; 4.5/ 23.35 N; 108.32 W
Jun.19,2023
Gulf of California
M5.2/ 23.17 N; 108.41 W

Jan.05,2022
East Pacific



Jan.06,2022
Central California
M4.8/ 37.32 N; 117.89 W

Jan.01,2022 Heavy snowfall and snowstorm in California.

East Pacific

Jan.06,2022
Offshore Northern California
M4.6/ 40.38 N; 124.86 W

Jan.06-08,2022
Gulf of California

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<td> </td>
<td>M4.3/ 23.70 N; 109.49 W
Jan.09,2022
Gulf of California
M4.8;4.1/ 24.66 N; 109.29 W
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<tr>
<td>July 02-07,2022
Eastern Pacific
Hurricane Bonnie
Location: 11.2N-86.4W
LocationL 15.3N-104.3W
Wind:115mph

July 12,2022
 </td>
<td>July 13-14,2022
Gulf of California
M4.5/ 23.55 N; 108.75 W
M4.0/ 30.20 N; 113.78 W
 </td>
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<tr>
<td>July 11-23,2022
LOS ANGELES: A California wildfire ripped through thousands of acres.
The heat wave encompassing multiple regions has increased the risk of blazes, such as the major Oak Fire, which broke out Friday in California near Yosemite National Park, where giant sequoias have already been threatened by flames in recent days.
The fire -- described as "explosive" by officials -- grew from about 600 acres to some 9,500 (3,800 hectares) within 24 hours. Concentrated in Mariposa County, it has already destroyed ten properties and damaged five others, with thousands more threatened.</td>
<td>July 22,2022
Gulf of California
M4.2;4.1/ 29.49 N; 113.71 W</td>
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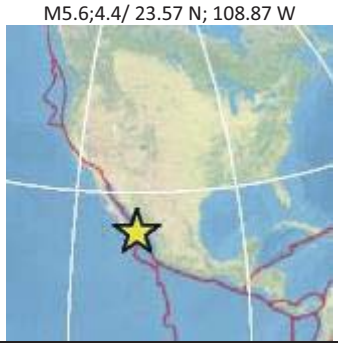
Sep. 22,2022 East Pacific	Oct.02,2022 Gulf of California M5.6;4.4/ 23.57 N; 108.87 W 

Table 2.2: Hurricane followed by earth quakes at California and Revilla Gigedo Islands regions.

July 12,2022 Category 4 storm Hurricane Darby Location: 14.3N-113.5W Location: 14.7N-128.1W Wind: 140 mph	July 19,2022 Revilla Gigedo Islands region M4.2/ 19.86 N; 109.44 W
Sep. 04-07,2022 Hurricane Kay Category 2 Location: 14N -101.4W Location: 21.1N -112.6W Wind:105mph	Oct.17,2022 Revilla Gigedo Islands region M4.6/ 19.68 N; 109.28 W

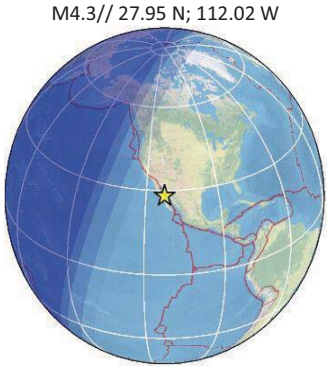
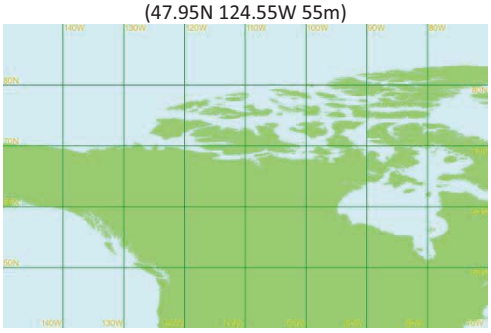
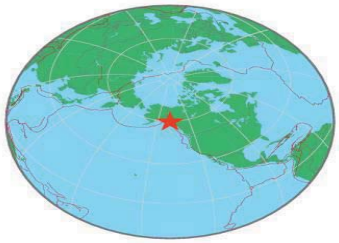
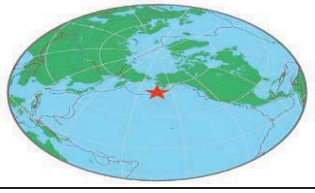
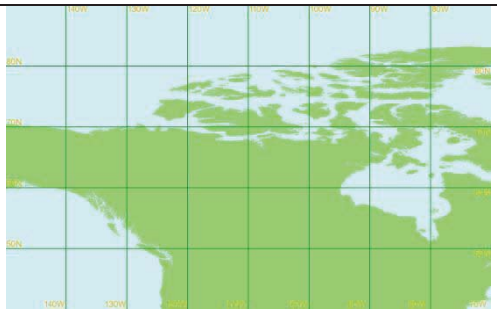
Sep. 06,2022 East Pacific Sep. 07,2022 Oct.09,2022 Pacific East 	
Aug. 13,16,2022 East Pacific 	Aug. 17,2022 Revilla Gigedo Islands region M4.1/ 19.26 N; 108.25 W
Oct.20-22,2022 Hurricane Roslyn Location: 15.2N-101.3W Location: 17.6N-106.3W Wind: 120 mph 	Nov.04,2022 Gulf of California M6.1; 4.1/ 28.23 N; 112.26 W Nov.04-07,2022 GOC M4.1;4.2/ 28.15 N 112.46 W Nov.05,2022 M4.2/ 28.27 N; 112.49 W M4.3// 27.95 N; 112.02 W 

Table 2.3: Precursor and corresponding earthquake location in Hawaii, US.

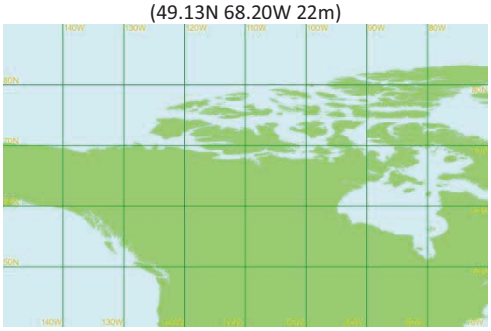
Jul.20,2020 Eastern Pacific Category 4 Hurricane Douglas Location: 13.7N-119.8W July 24,2020 Location: 15.7N -140.3W Wind:130mph Douglas exploded into a Category 4 hurricane over the middle of the East Pacific Ocean, and as of 11 p.m. Thursday HST, the storm was located about 1,010 miles east-**southeast of Hilo, Hawaii.**	Jul.27,2020 Hawaii M4.6/ 18.98 N; 155.46 W

Table 3: NW Canada (Alaska, US). Precursor and corresponding earthquake locations in Alaska.

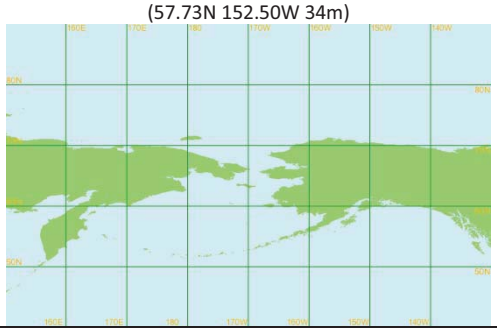
Feb.22,202 NW Canada (54.28N 130.43W) (49.81N 92.73W 413m) (52.18N 127.46W) (50.93N 127.63W) (50.68N 127.36W 17m) (49.78N 123.16W 52m) (49.13N 68.20W 22m) (47.95N 124.55W 55m) 	Feb.24,2021 South Eastern Alaska M4.1/ 59.38 N; 138.30 W  Feb.23,2021 South of Aleutian Islands M4.0/ 51.85 N; 165.68 W
Mar.24,2021 NW Canada (54.28N 130.43W)	Mar.28,2021 Unimak Isl., region, Alaska M4.5/ 53.25 N; 163.67 W 



Mar.28-29,2021
NW Canada
(54.28N 130.43W)
(49.81N 92.73W 413m)
(52.18N 127.46W)
(49.78N 123.16W 52m)
(49.13N 68.20W 22m)



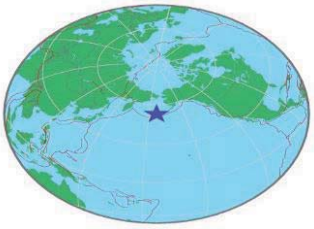
May.21,2021
NW US
AK
(57.73N 152.50W 34m)



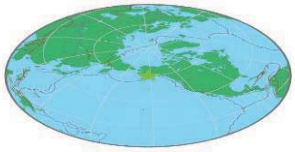
May.30,2021
Alaska
(59.51N 139.66W 13m)
(55.28N 114.76W)

Apr.08,2021
Central Alaska
M5.5/ 63.20 N; 148.65 W

Andreanof Islands, Aleutian Is.
M4.2/ 52.92 N; 173.39 W



May.30,2021
Southern Alaska
M4.0/ 59.58 N; 152.69 W



Jun.29,2021
South of Alaska
M4.1/ 54.28 N; 156.22 W

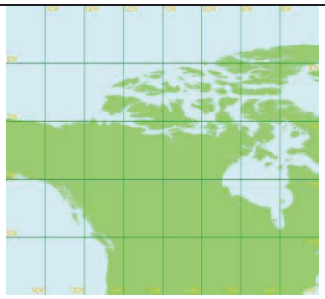
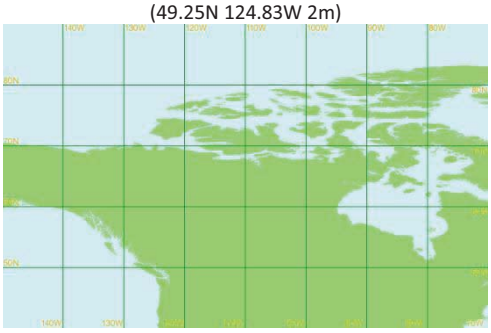
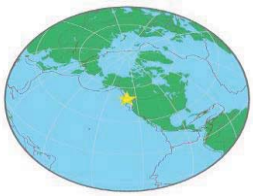
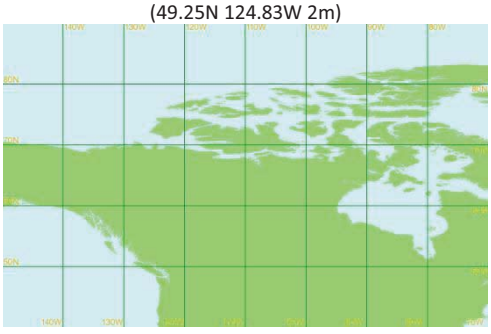
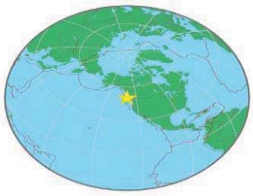
	

Table 3.1: NW Canada: Precursor and corresponding earthquake location.

Jan.03,2022 NW Canada (49.81N 92.73W 413m) (50.11N 122.95W) (50.45N 125.98W 8m) (49.25N 124.83W 2m) 	Jan.08,2022 Southern Yukon Territory, Canada M5.2/ 60.52 N; 140.43 W Jan.02,2022 Vancouver Island, Canada M4.4/ 50.27 N; 129.38 W 
Canada(N) (62 28N 114 27W 702.2 mm) 54 28N 128 35W 992.8 mm	Northern Yukon Territory, Canada: 68.135°N, 136.408°W Northwest Territories, Canada, : 64.952°N, 122.966°W
Jan.03,2022 NW Canada (49.81N 92.73W 413m) (50.11N 122.95W) (50.45N 125.98W 8m) (49.25N 124.83W 2m) 	Jan.02,2022 Vancouver Island, Canada M4.4/ 50.27 N; 129.38 W  Jan.08,2022 Southern Yukon Territory, Canada M5.2/ 60.52 N; 140.43 W

Canada (60 42N 135 04W 993.8mm) Canada(NW) (52 11N 122 03W 992.4 mm), (55.38N 116.46W 50.0 mm)	Southern Yukon Territory, Canada: 64.886°N, 133.990°W

Table 3.2: Precursor and corresponding earthquake location British Colombia.

Precursor area 55.76N 118.66W 50.83N 112.05W 47-50N 114,119,121-126W	**Epicenter zones** 58.104°N, 124.664°W 52.769°N, 131.927°W
(55.76N 118.66W 56.6 mm), (50.83N 112.05W 83.9mm)	British Columbia, Canada,: 58.104°N, 124.664°W
(Oct)Idaho and Washington have been adversely affected by the fires burned 340,000 acres of land. Canada(NW) (47-50N 114,119,121-126W) (50-79mm at 11 stans)	M7.7 Haida Gwaii, Canada: 52.769°N, 131.927°W (Canada's strongest earthquake in more than 60 years has struck off British Columbia's coast).

Table 3.3: Precursor and corresponding earthquake location of Queen Charlotte Islands.

Precursor area (56.65N 111.21W) (55.73N 120.16W), 53.43N 114.71W (51.10N 114.36W (49 49N 92 44W)	**Epicenter Zone : Queen Charlotte Islands:** 52.374°N, 132.142°W 51.32 N; 130.05 W 50.73 N; 131.36 W
Canada (55.73N 120.16W 92mm), (56.65N 111.21W 873.9mm) (49 49N 92 44W 55.6mm)	Queen Charlotte Islands: 52.374°N, 132.142°W
Aug . Canada (NW) (49,51&53N 114 &123W) 53.43N 114.71W 53.1 mm), (51.10N 114.36W **988.9 mm**), (49 47N 123 10W 64.2 mm)	Queen Charlotte Islands 51.32 N; 130.05 W (M 5.7; 6.1 in 5 days) Vancouver Island, Canada 50.73 N; 131.36 W
Canada(NW) (49 37N 115,121&126W 990.0mm) US(NW)(Washington and Oregon) (40,44&47N 122-123W)	Queen Charlotte Islands: 52.977°N, 132.393°W

Table 3.4: Precursor and corresponding earthquake location Vancouver Island, Canada.

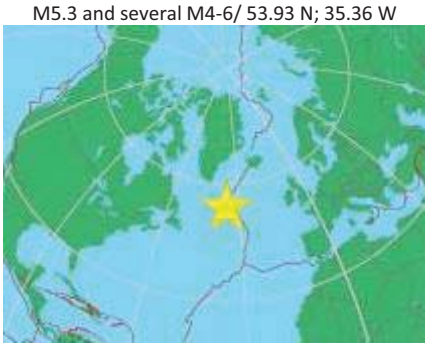
Precursor area: . (49 20N 123 11W 97.6 mm). (47 57N 124 33W 59 mm). 40 &44N 123-124W	**Vancouver Island, Canada** 50.594°N, 129.774°W 49.78 N; 127.49 W.
Canada(NW) (49 15N 124 50W 63.4 mm) US (NW) .(47 57N 124 33W 59 mm).	Vancouver Island, Canada : 50.594°N, 129.774°W
Massive Mile-Long Mudslide In Washington State and was hit with the largest March snowstorm since 1999.	Apr.24,2014/ M 6.5 (5.0;4.2;4.2) Vancouver Island, Canada; 49.78 N; 127.49 W.
In Oregon, high winds hammered as high as 113 mph. US(NW) (40 &44N 123-124W) (51-60mm at 3 stans)	Vancouver Island, Canada : 48-49°N,127-128°W
Canada(NW) (49 20N 123 11W 97.6 mm).	Vancouver Island, Canada: 49-50°N, 128-129°W

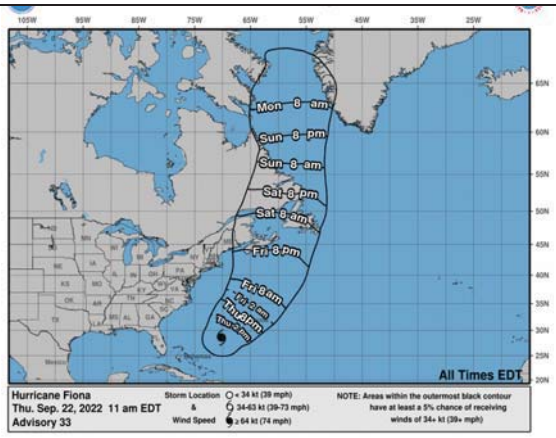
Oct.-Nov. Canada(NW) (49N 122-123W)	(Nov) M6.3 Vancouver Island, Canada: 49.185°N, 128.528°W

Table 3.5: Precursor and corresponding earthquake location Oregon and Off coast of Oregon.

Precursor Area: (50 24N 125 52W) (46-47N 122-124W) .(44 07N 123 13W), (45,47,48-50,52,54N 123-125, 127-128,130W)(	**Epicenter zoneOregon:** 45.122°N, 122.692°W Off coast of Oregon: 44.199°N, 128.280°W 43.536°N, 126-127°W 42.464°N, 125.837°W
Aug. Wildfires in northwestern Wyoming burned 12,584 acres . (49.45N 123.70W 139.7mm)	Oregon: 45.122°N, 122.692°W Off coast of Oregon: 42.464°N, 125.837°W
Canada (50 24N 125 52W 56.8mm)	Off coast of Oregon: 44.574°N, 129.595°W
US (46-47N 122-124W)	Off the coast of Oregon: 44.673°N, 129.216°W
January Record Snow hits Seattle: Rain and Snow to Wallop California Northern California A winter storm warning is in effect for much of Eastern Washington and North Idaho Jan .(44 07N 123 13W 52mm), (44 55N 123 01W 71mm)	(Feb) M 6.0 Off coast of Oregon: 43.536°N, 126-127°W;
Oct/Canada(NW) (45,47,48-50,52,54N 123-125, 127-128,130W)(54-73mm at 6 stans)	Nov/Off coast of Oregon; 44.04 N; 128-129W.
Canada/US(NW) (46-47,49-50N 123-126W)	Off coast of Oregon: 42-43°N, 126-127°W
A whole train of storms blast areas from northern California to Oregon and Washington with drenching rain and heavy mountain snow. (46-47 N 123-124W 66.8 mm),	Off coast of Oregon: 43.593°N, 127.557°W
Canada(NW) (48-49N 121-123W)	Off the coast of Oregon: 43.631°N, 126-127°W

Table 3.6: NE Canada: precursor location and corresponding earthquake location Reykjanes ridges.

Sep. 26,2022 NE Canada (both NE Canada and Europe affected by severe weather) (45-53N 60-64W) (52.30N 55.81W) **(53.30N 60.36W 36m)** Sep. 14-22,2022 Category 4 Hurricane Fiona Location: 16.6N-49.6W Location: 28.6N-70.2W Wind: 130mph	Sep. 26-27,2022 Reykjanes ridges M5.3 and several M4-6/ 53.93 N; 35.36 W 



Sep. 27,2022
NE Canada
(45.60N 61.66W)
(45.23N 81.63W)
US, PA.
(42.08N 80.18W 225m)

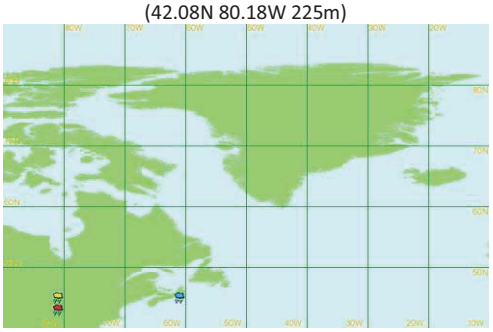


Table 4: Precursor and Land Earthquakes location US Oklahoma.

Precursory Area 40-41N 95-97E 36.20N 95.88W 35.03N 85.20W 34.35N 85.16W 38-40N 84,87,89,90 &92W	**Epicenter Zone** 35-36°N 97.248°W
US (36.20N 95.88W 61.3 mm) (40-41N 95-97E)	Oklahoma; 35-36°N 97.248°W.
US (40-42N 90,92,97-98&108W)(90-108mm at 3 stans)	Oklahoma; 36.72 N; 97.81 W .
US (35.03N 85.20W 65.5 mm)	Kansas;37.24 N; 97.70 W . Oklahoma; 35.86 N; 97.28 W.
US (34.35N 85.16W 50 mm),(35.33N 94.36W 53.8 mm)	Oklahoma; 35-36 N; 97.25 W.
US (38-40N 84,87,89,90 &92W) Oklahoma wildfire Areas in Kansas saw record high temp.	Oklahoma; 35-36N 97.50W.

Table 5: NE Russia :Precursor and corresponding earthquake location Near East coast of Kamchatka.

Precursor area **Russian federation** 61.11N 149.63E 60.46N 125&130.00E 50&56N 127& 131 08E	**Epicenter zone** **Off /Near East coast of Kamchatka**, 55.97 N; 161.90 E 52.84 N; 159.45 E 51.81 N; 158.96 E

51,53 &56N 118-119 &123E	
Near Kamchatka (61.11N 149.63E 300 mm)	Off East coast of Kamchatka,: 51.494°N, 161.006°E
Russian federation (56.80N 105.80E 917 mm), (59.01N 121.76E 955mm).	Near East coast of Kamchatka: 55.723°N, 161.313°E .
Russian Federation (59.93N 117.60E 56 mm)	Northeastern Sakha, Russia, , 67.79 N; 143.00 E .
Russian Federation (59.66N 127.05E 67.7 mm)	Off /Near East coast of Kamchatka, 52.84 N; 159.45 E 55.97 N; 161.90 E Komandorskiye Ostrova 54-55 N; 164 &167 E
Sep. Russian Federation 54 43N 128 56E 56 mm)	Sep.-Oct.(very active) Off East coast of Kamchatka; 52.22 N; 160.56 E. Lake Baykal region, Russia; 55.91 N; 110.10 E. Near East coast of Kamchatka : 54-55 N; 161-162 E. 51.81 N; 158.96 E. Komandorskiye Ostrova; 55.01 N; 167.31 E.
Russian federation (60.46N 125&130.00E 50 mm) (51,53 &56N 118-119 &123E 58 mm), (50&56N 127& 131 08E 55 mm) China (50 27N 121 42E 53 mm)	Near East Coast of Kamchatka,: 52.183°N, 158.577°E

Table 5.1: Precursor and corresponding earthquake location of Sea of Okhotsk.

Precursor Area	**Epicenter zone**
Russian Federation 65 44N 150 54E 61.13N 152.38E 54.11N 159.98E 50-51N 128-129E 49-53N 117,119,122,125,127-128E 47 26N 126 58E	**Sea of Okhotsk**; 58.77 N; 149.19 E. 53-54 N; 152-153E. 51.485°N 150.750°E 49.41 N; 147.91 E 48.118°N, 146.378°E 47.29 N; 145.67 E.
Russian Federation (65 44N 150 54E 202 mm)	Sea of Okhotsk; 58.77 N; 149.19 E.
Sep. (61.13N 152.38E 925 mm)	Oct. / M 6.7 Sea of Okhotsk; 53-54 N; 152-153E. Southwestern Sakha, Russia; 61.49 N; 131.82 E.
Russian Federation(E) (55N 124E)	Sea of Okhotsk: 48.118°N, 146.378°E
Russian Federation (E) (54.48N 107.06E 960.2mm)	Sea of Okhotsk: 51.485°N 150.750°E
Russian Federation (54.11N 159.98E 301 mm)	Sea of Okhotsk ; 53.17 N; 153.24 E.
China (49-53N 117,119,122,125,127-128E)	Aug . /M 5.6 Sea of Okhotsk; 47.05 N; 145.31 E.
Russian Federation (50-51N 128-129E)	Sea of Okhotsk : 49.41 N; 147.91 E .
Wildfires in Russia's Yakutia Russia. A number of ten wildfires swept across 298.5 hectares.	Sea of Okhotsk: 49.185°N,147.294°E
(47 26N 126 58E 79 mm)	Sea of Okhotsk ; 47.29 N; 145.67 E.

Table 5.2: Precursor and corresponding earthquake location of Kuril Islands.

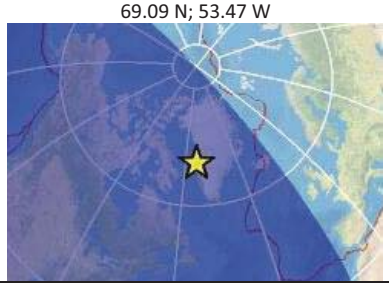
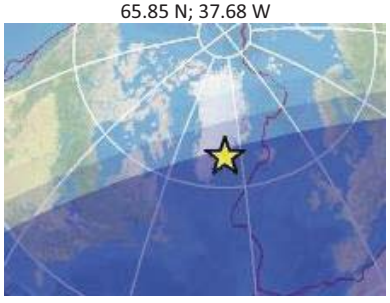
Precursor area	**Epicenter zone**
China	**Kuril Islands**

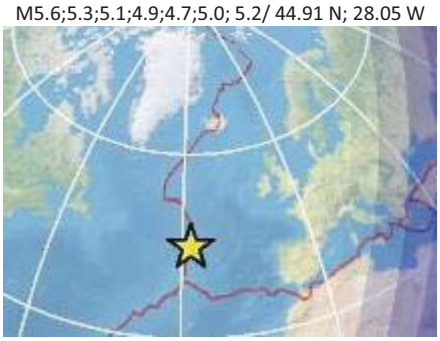
47-49,51-52N 116,118-119,122-123,128E 47 &49-50N 123 &126-127E) 48-49N 119 &121E (44 34N 129 36E Japan (43-44N 144-145E	43-45,47-50N 147-149,152 &154-157E 44.72 N; 148.79E
China & Russian Federation (Kuril Islnds)(47-49,51-52N 116,118-119,122-123,128E)(55-69mm at 7 stans)	July / M 6.5 Kuril Islands; 44.72 N; 148.79E
China 47 &49-50N 123 &126-127E) (48-49N 119 &121E) (44 34N 129 36E 64.0 mm)	Kuril Islands: 43-45,47-50N 147-149,152 &154-157E.
Forest Fires Remain Active in Russia's Far East	Kuril Islands,: 43.837°N, 146.349°E 45.487°N, 151.266°E
China (46&49N 123 43E 63.7mm),	Kuril Islands,: 45.577°N, 151.336°E :49.399°N, 155.831°E.
Sep. Japan (43-44N 144-145E)(51-70 mm)	Kuril Islands; 44-45 N; 149-150 E. 47.43 N; 153.09 E
Oct. (43 20N 145 35E 86 mm)	Oct. / M 5.9 Kuril Islands; 45.65 N; 151.03 E.
China (42 25N 122 32E 66 mm)	Sep.02,2013/M 5.4 Primor'ye, Russia: 42.25 N; 133.66 E

Europe

Table 6: Precursor location and corresponding earthquakes locations of Greenland Sea, Svalbard Islands region,Jan Mayen Islands, Western Greenland, Iceland, Eastern Greenland, Reykjanes ridge and Northern Mid-Atlantic Ridges.

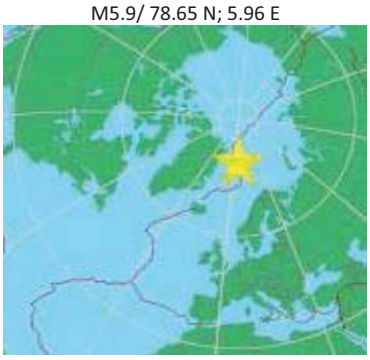
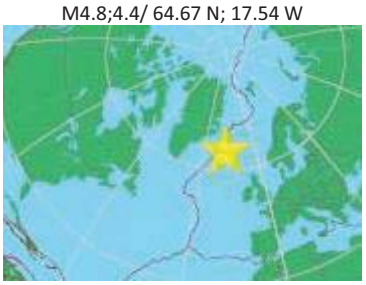
Precursor areas	Epicenter zones
Sea temperatures are several degrees above normal off the coasts of the United Kingdom and Ireland, resulting in a marine heatwave 'unheard of'. The temperatures off the northeast coast of England and the west of Ireland have broken records for late spring and early summer. Data has shown that the North Sea, which is bordered by France, Belgium, Netherlands, Germany, Denmark, Sweden, Norway, and the United Kingdom; and the north Atlantic, which lies between North and South America on the west and Europe and Asia on the east, are experiencing higher temperatures	Greenland Sea 79.47 N; 2.84 E
The Arctic is heating up more than four times faster than the rate of global warming, according to a new analysis of observed temperatures.	**Svalbard Islands region** 78.65 N; 5.96 E 77.74 N; 7.92 E 77.98 N; 7.65 E
Today in Norway: A roundup of the latest news on Tuesday. Heavy snowfall	**Jan Mayen Islands** 71.85 N; 1.53 W 71.75 N; 2.01 W 70.30 N; 15.32 W 70.74 N; 14.03 W

LONDON (AP) — Trains were canceled, some schools were shut and drivers were stuck for hours on a major highway as a blast of snow and wind hit Britain on Friday for the second time in a week.	**Western Greenland** 69.09 N; 53.47 W 
July 18,2022 Heatwave engulfs much of Europe as wildfires rage Western France is facing a "heat apocalypse", experts have warned, as extreme temperatures continue to hit much of Europe.	**Iceland** 66.72 N; 17.73 W 66.58 N; 17.83 W 64.67 N; 17.54 W
Meteorological agency Météo-France said 450mm (17.7in) of rain fell in some areas over 24 hours - the equivalent of nearly four months at this time of year, reports Reuters news agency. The southern Alps region appeared the worst hit, with serious damage in the Roya, Tinée, Esteron and Vésubie valleys	Eastern Greenland 65.85 N; 37.68 W 
68.96N 28.76E Oct.09,2022 Iceland	**Reykjanes ridge** 60.88 N; 28.86 W 53.80 N; 35.19 W

66.45N 15.95W 	
Jun.20,2023 High Sea Temperatures Have Led To A Marine Heatwave 'Unheard Of' Off Coasts Of UK And Ireland: Report Story by ABP News Bureau • Yesterday 11:34 pm The temperatures off the northeast coast of England and the west of Ireland have broken records for late spring and early summer. Data has shown that the North Sea, which is bordered by France, Belgium, Netherlands, Germany, Denmark, Sweden, Norway, and the United Kingdom; and the north Atlantic, which lies between North and South America on the west and Europe and Asia on the east, are experiencing higher temperatures.	Jun.23-24,2023 Northern Mid-Atlantic Ridges M5.6;5.3;5.1;4.9;4.7;5.0; 5.2/ 44.91 N; 28.05 W 

Cluster of earthquakes at Iceland:

Table 6.1: Cluster of earthquakes occurred in Iceland in July 2022 and also in July 2023.Examples of earthquakes in Iceland, significant to mention.

July 09,2022 The Arctic is heating up more than four times faster than the rate of global warming, according to a new analysis of observed temperatures. July 18,2022 Heatwave engulfs much of Europe as wildfires rage Western France is facing a "heat apocalypse", experts have warned, as extreme temperatures continue to hit much of Europe. Blazes in Spain, Portugal and Greece have forced thousands more to flee. Record temperatures are also expected in parts of the UK, which has its first ever red extreme heat warning in place. UK breaks all-time record high as intense heat sends temps past 100 F Unprecedented temperatures were recorded in England Tuesday as London's Fire Brigade declared a "major incident" due to a surge of fires across the capital. Not only was the reading of 104 F (40.2 C) a new all-time record in the U.K., but officials said it was also the first time in recorded history that the country had eclipsed 40 degrees Celsius.	July 18,2022 Svalbard region M5.9/ 78.65 N; 5.96 E  July 24,2022 Iceland M4.8;4.4/ 64.67 N; 17.54 W  Sep. 08-10,2022

<table>
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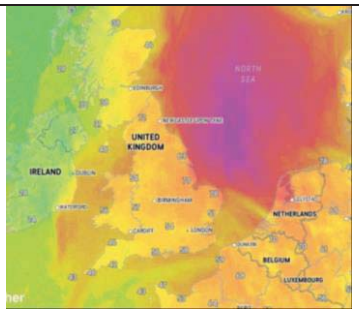
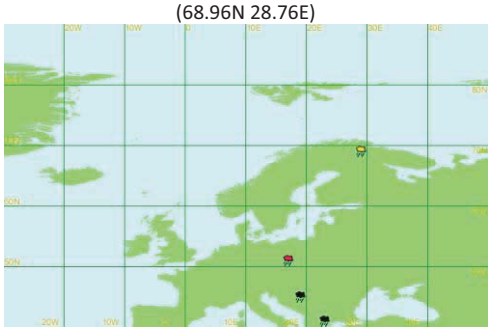
<td> 
</td>
<td>Iceland
M5.0;4.6;4.5/ 66.72 N; 17.73 W
M4.6; 4.4;4.2/ 66.58 N; 17.83 W</td>
</tr>
<tr>
<td>June 20,2023
The North Atlantic is experiencing a ‘totally unprecedented’ marine heat wave Temperatures in the North Atlantic in May were around 1.25 degrees Celsius (2.25 Fahrenheit) above average.
“The eastern Atlantic, from Iceland down to the tropics, is much warmer than average. But areas around parts of north-western Europe, including parts of the UK, have among some of the highest sea-surface temperatures relative to average,” Stephen Belcher, the Met Office’s chief scientist,</td>
<td>July 05-07,2023
Iceland
M4.5 / 64.047N; -22.202W
(more earthquakes of M4-5)
 </td>
</tr>
<tr>
<td>Aug. 21,2022
(68.96N 28.76E)
  </td>
<td>Aug. 21-22,2022 and
Oct.02-05,2022
Reykjanes ridge
M5.1;4.6;4.4/ 60.88 N; 28.86 W

Sep. 23,2022
Svalbard region
M4.6/ 77.98 N; 7.65 E</td>
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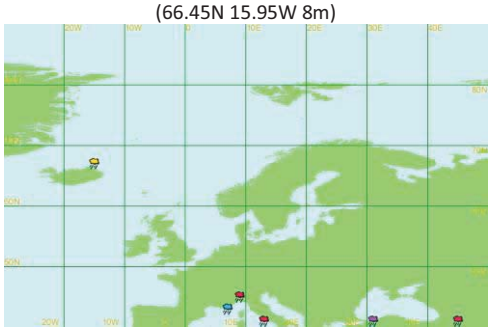
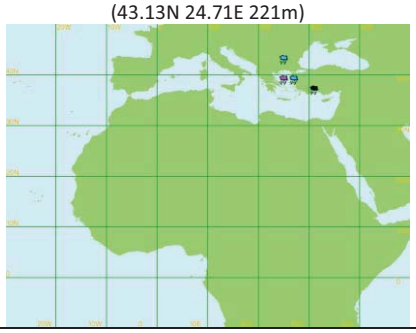
</table>

Oct.09,2022 Iceland (66.45N 15.95W 8m) 	Oct.09-12,2022 Reykjanes ridge M4.5;4.6;4.7/53.80 N; 35.19 W Oct.12,2022 Svalbard region M4.0/ 77.74 N; 7.92 E

Romania

Table 6.2: Precursor and corresponding earthquakes locations of Romania.

Mar.05,2023 Bulgaria (41.51N 23.26E 207m) Mar.16,2023 Bulgaria (43.13N 24.71E 221m) 	Mar.21,2023 Romania M4.9/ 45.13 N; 23.06 E
May 17,2023 Bulgaria (43.51N 26.53E 347m) (41.65N 25.36E 331m) May 18-22,2023 Bulgaria (43.51N 26.53E 347m) (41.65N 25.36E 331m) (42.65N 23.38E 591m)	May 22,2023 Romania(NW EQ) M4.5/ 46.11 N; 21.46 E Jun.06,2023 Romania M4.7/ 46.12 N; 21.52 E
Jun.13,2023 Bulgaria (42.65N 23.38E 591m) (43.81N 22.88E 33m)	Jun.12,2023 Serbia M4.3/ 43.77 N; 21.38 E

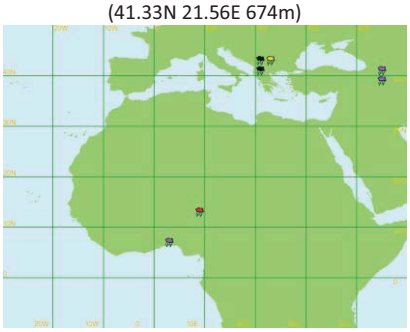
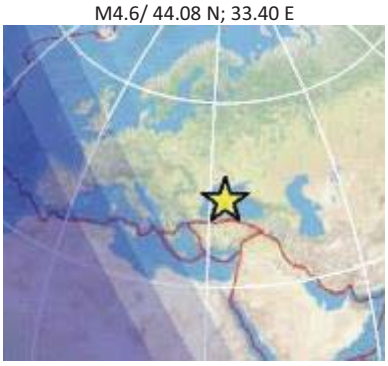
Jun.13,2023 Serbia (43.93N 21.38E 125m) (43.56N 21.35E 167m) Macedonia (41.33N 21.56E 674m) 	
Jun.19,2023 Bulgaria (43.51N 26.53E 347m) (41.51N 23.26E 207m)	Jun.19,2023 Romania M4.1/ 45.50 N; 26.34 E Jun.22,2023 Crimea region, Ukraine M4.6/ 44.08 N; 33.40 E 
Sep. 12,2022 Bulgaria (42.65N 23.38E 591m)	Sep. 13,2022 Romania (NE) M4.0/45.55 N; 26.33 E

Table 6.3: Precursor and earthquake locations of Armenia.

Precursor Area	Epicenter zone
Armenia (40.56N 45.00E)	Armenia; 39.11 N; 46.47 E
Armenia (40.56N 45.00E 99.8 mm)	Caucasus region, Russia; 43.00 N; 45.84 E
July 04,2022 Azerbaijan (41.66N 46.65E 490m) Armenia (39.83N 45.68E 2075m)	July 11,2022 Armenia 41.12 N; 43.88 E

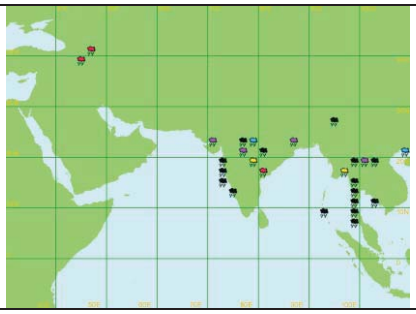
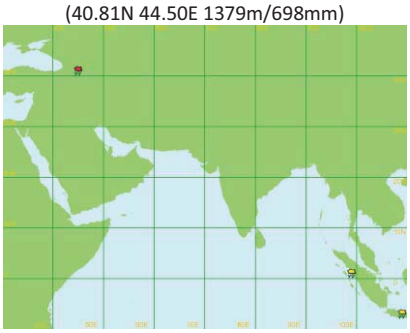


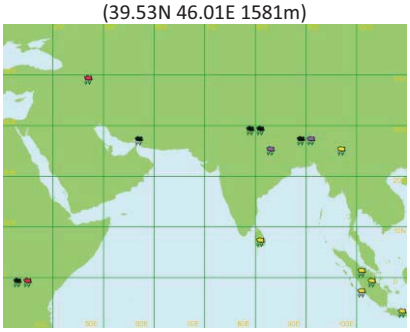
Table 6.4: Precursor and earthquake locations of Azerbaijan.

Mar.07,2023
Armenia
(40.81N 44.50E 1379m/698mm)

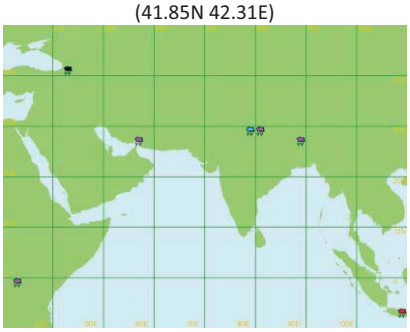


Mar.08,2023
Azerbaijan
M4.2/ 39.44 N; 48.36 E

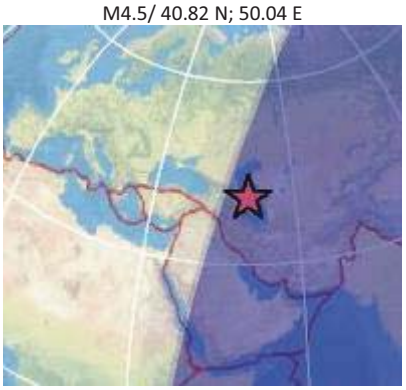
Mar.21,2023
Armenia
(39.53N 46.01E 1581m)



Mar.22,2023
(41.85N 42.31E)



Apr.07,2023
Caspian Sea, offshore Azerbaizan
M4.5/ 40.82 N; 50.04 E



Apr.15,2023 Armenia (40.56N 45.00E 1917m)	Apr.18,2023 Azerbaijan M4.0/40.79 N; 48.37 E

Table 7: Precursor and earthquake locations of Turkmenistan.

Iran (36 54N 50 40E 58 mm), (36 39N 51 30E 51.1 mm)	Turkmenistan; 38.58 N; 255.74 E.
Iran 37.20N 49.63E	Turkmenistan; 39.28 N; 54.94 E

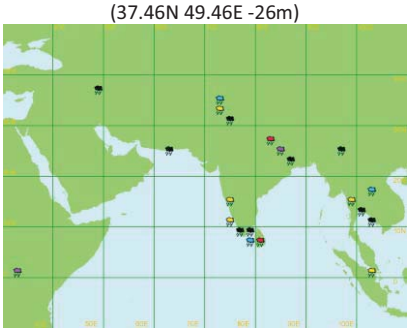
Table 7.1: Precursor and earthquake locations of Eastern Iran.

Precursor Area **36-37N 54-55,59E**	**Epicenter zone** **30,33N 57,59E**
Iran (36 16N 59 38E 913.9 mm)	Eastern Iran: 30.364°N, 57.470°E
Iran (36-37N 54-55E 78mm),	Eastern Iran: 33.448°N,59.382°E

Table 4.13: Western Iran.

Precursor Area	**Epicenter zone**
Iran : (36-37N 50-55E)	Western Iran,: 31-34°N, 48-50°E
Iran **(34-37N 48-52E)** (37 28N 49 28E 51.2mm), (36 43N 52 39E 62.5 mm). (34 51N 48 32E 99.2 mm)	Western Iran : 34.042°N, 48.474°E
Iran (34 01N 58 10E 149.3mm)	Western Iran,: 32.546°N, 48.811°E
Iran : (32 20N 50 51E 702 mm).	Western Iran: 31.847°N, 50.960°E 33.366°N, 48.525°E
Iran: (32.50N 45.81E 119.9mm)	Central Iran: 32.892°N, 50.499°E Western Iran: 31.746°N, 50.856°E
Iran (29-31 & 33 N 44,48-51E)	Western Iran: 33.198°N, 49.213°E

Table 7.2: Precursor and earthquake locations of Iran W.

Oct.02,2021 Iran (37.46N 49.46E -26m) 	Oct.04,2021 Western Iran M5.6/ 32.30 N; 49.78 E
Oct.08,2020 Iran (37.46N 49.46E -26m)	Nov.05,2020 Western Iran M4.7/ 32.18 N; 49.00 E

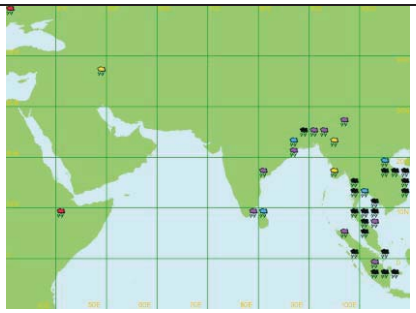
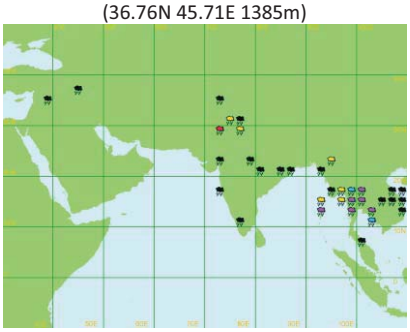
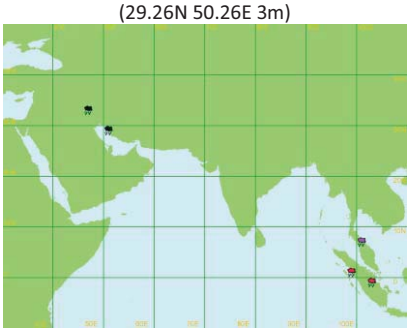
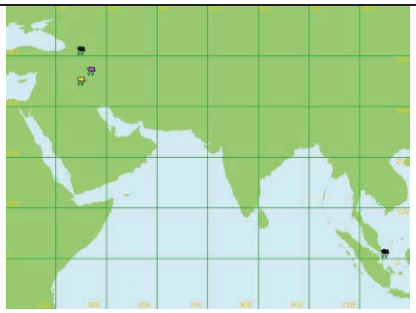
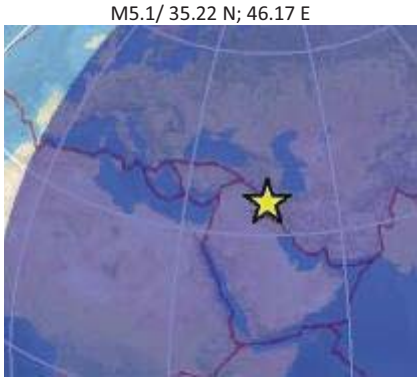
	

Table 7.3: Precursor and earthquake locations of Northeastern Iran.

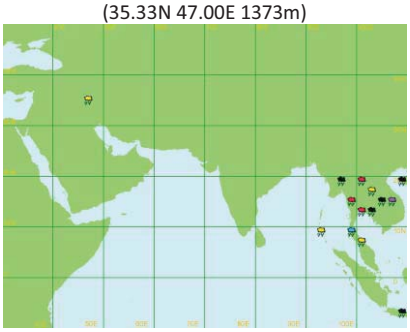
Sep.12,2021 Iran (36.76N 45.71E 1385m) 	Sep.13,2021 Northeastern Iran M5.1/ 37.22 N; 58.93 E
Jan.14,2023 Iran (33.63N 46.41E 1363m) (28.95N 50.81E) (29.26N 50.26E 3m) 	Jan.18,2023 Turkey-Iran border M5.6/38.53 N; 44.95 E
Mar.10,2023 Armenia (40.86N 45.15E 733m) Iran (36.25N 46.26E 1523m) Iraq (35.55N 45.45E 853m) (34.88N 44.65E)	Mar.16,2023 Northwestern Iran M5.2/ 38.48 N; 45.14 E



Mar.16,2023
Iran and Iraq border region
M5.1/ 35.22 N; 46.17 E



May 10,2023
Iran
(35.33N 47.00E 1373m)



May 13,2023
Iran-Iraq border
M4.5/ 34.43 N; 45.51 E

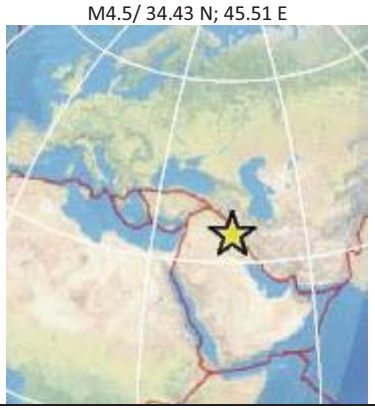


Table 7.4: Precursor and earthquake locations of Northeastern Iran.

Precursor Area	Epicenter zone
Iran (36-37N 50-55E)	Northeastern Iran,: 35.436°N, 58.279°E Northern Iran: 36.648°N, 51.404°E 35.886°N, 53.264°E
Iran N : (36-37N 49-51E)	Northern Iran; 36.82 N; 53.78 E.
N Iran (36N 52 &54E)(51-88 at 3 stans)	Northeastern Iran : 37.46 N; 57.72 E . Central Iran :

	34.83 N; 52.71 E . Northwestern Iran : 37.14 N; 45.06 E .
Iran (36.26N 59.63E 472mm)	Northeastern Iran: 36.284°N, 58.892°E
Iran (35.55N 53.38E 276.0 mm) Iran (35.68N 51.35E 666 mm)	Northern Iran; 36.76 N; 54.56 E 37.15 N; 55.82 E.
Iraq : (31,33&35N 44-46&49E)	North-eastern Iran : 37.494°N, 57.390°E
Iraq (33,35-37N 41,44-45&49-50E) (54-90mm)	Iran-Iraq border (M5.6 active in Nov.) 34-35.27 N; 45-46.09 E. 32.82 N; 47.70 E. Central Iran; 31.66 N; 51.08 E.
Sep.-Oct./Iran (36-37N 45,49-51E)(54-76mm at 3 stans)	Oct./ M 5.8(4.7; 4.5;4.5) Iran-Iraq border; 32.56 N; 47.84 E.

Table 7.5: Precursor and earthquake locations of Northwestern Iran.

Precursor Area	Epicenter zone
Iran (31,33,36-39,41N 45-47,49,56E) Iraq (31N 46-47E 102mm),	36-38N 46E
The worst flooding(July 08) in decades in southern Russia's Krasnodar 45.02°N, 38.58°E Region, near the Black Sea.	(Aug.14) Northwestern Iran: 38.322°N, 46.888°E
Iran (31, 33, 36-39,41N 45-47,49,56E) Iraq (31N 46-47E 102mm),	Northwestern Iran,: 38.686°N, 46.939°E
Azerbaijan: 40 27N 50 04E	Northwestern Iran: 37-38°N, 45-46°E
Iran (38 05N 46 17E 527mm)	Near the coast of Northern Iran,: 37.566°N, 49.733°E
Iran () (36-37 N 49 &54E 52.4 mm), (33 47N 55 05E 51 mm), (30 50N 51 41E 61.1 mm)	Iraq : 36.610°N, 43.403°E
Iran (36-37N 49-50E)	Turkey-Iran border: 38.504°N, 44.845°E. Northwestern Iran: 38.342°N, 45.003°E
Iran : 36 39N 51-52E	Northwestern Iran, : 38.295°N, 46.814°E
Iraq (35 33N 45 27E 270.4 mm)	Northwestern Iran: 38.435°N, 45.456°E 36.80 N; 58.58 E.

Table 7.6: Precursor and earthquake locations of Central Iran.

Iran (30 50N 51 41E 61.6 & 59mm), (30 26N 50 46E 52.4mm)	Central Iran: 31.466°N, 56.776°E Southern Iran: 27.586°N, 57.459°E Central Iran: 31.935°N, 55.834°E 31.677°N, 56.545°E

Table 7.7: Precursor and earthquake locations of Southern Iran.

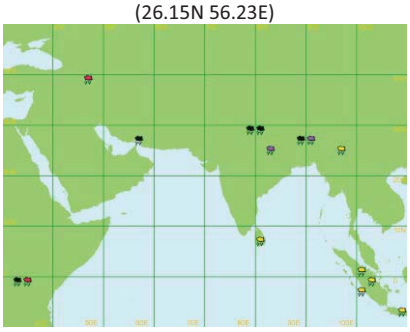
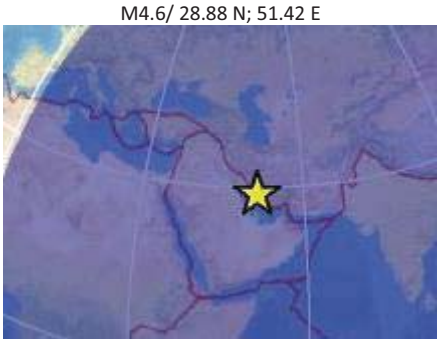
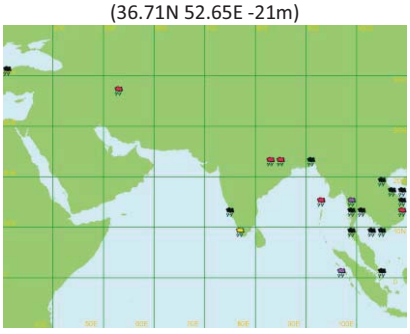
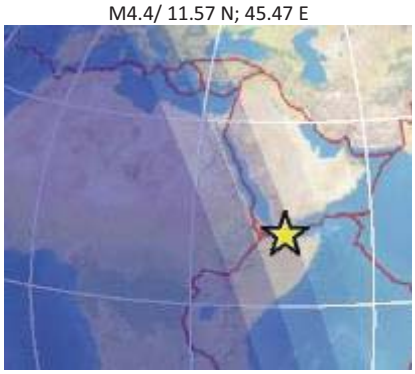
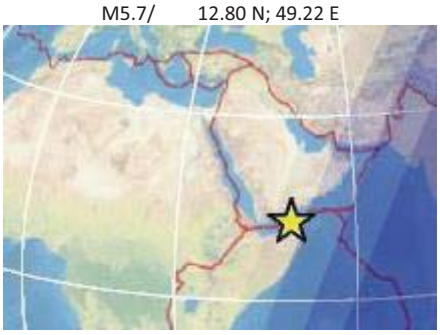
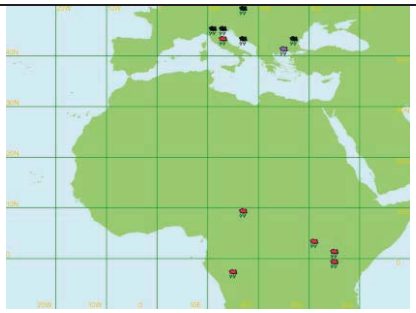
Feb.18,2021 Iran S (33.50N 48.30E 1125m) 	Feb.17,2021 Southern Iran M5.4/ 30.87 N; 51.45 E
July 23,2022 Flash floods in southern Iran. Heavy rains on July 22,2022 in the central parts of Estahban county led to the flooding.	July 23,2022 Southern Iran M5.6;5.4/ 26.91N 55.53E
Mar.21,2023 S Iran (26.15N 56.23E) 	Mar.25,2023 Southern Iran M4.6/ 28.88 N; 51.42 E 
Oct.10,2020 Iran (36.71N 52.65E -21m) 	Nov.05,2020 Southern Iran M4.4/ 27.22 N; 53.55 E

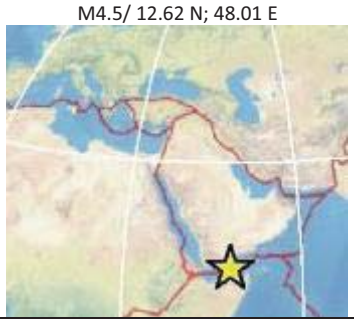
Table 8: Precursor and corresponding earthquake locations of Gulf of Aden Owen Fracture and Carlsberg ridge.

Precursor Areas	**Epicenter zones**
Saudi Arabia (16.88N 42.58E 7m) Kenya	Owen Fracture zone 15.14 N; 59.51 E 14.87 N; 57.88 E

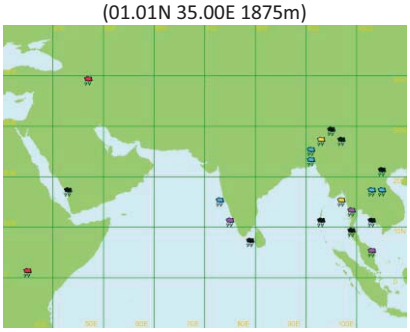
(01.01N 35.00E 1875m) Uganda (03.05N 30.91E 1211m) Kenya (00.28N 34.78E) (00.66S 34.78E)	13.45 N; 57.41 E Gulf of Aden 12.80 N; 49.22 E 12.55 N; 48.00 E 12.62 N; 48.01 E 12.62 N; 47.93 E 12.08 N; 46.95 E 11.57 N; 45.47 E
May 14,2023 **200,000 people are displaced by flooding in Somalia (2°2'N 45°21'E)** Mogadishu: According to a regional official, 200,000 people have been forced to flee their homes as a result of flash flooding in central Somalia, where the Shabelle River burst its banks and flooded roads. Heavy rains earlier this month in Rwanda caused floods and landslides in several areas of the hilly country. Nearly two million people were affected by the heavy rains, which also killed tens of thousands of animals in Burundi, Djibouti, **Ethiopia, Kenya, Somalia, South Sudan, Tanzania, and Uganda** May 17,2023 Uganda (03.05N 30.91E 1211m) Kenya (00.28N 34.78E) (00.66S 34.78E)	May 12,2023 Gulf of Aden M4.4/ 11.57 N; 45.47 E  May.19,2023 Gulf of Aden M5.7/ 12.80 N; 49.22 E  May 21,2023 Owen Fracture zone M4.6/ 13.45 N; 57.41 E Jun.04,2023 Eritrea-Ethiopia M4.7/ 14.63 N; 40.16 E



Jun.03,2023
Gulf of Aden
M5.8;5.5;5.2 and several of M4-6/ 12.62 N; 47.93 E
Jun.04-05,2023
Gulf of Aden
M4.6/ 12.55 N; 48.00 E
M4.5/ 12.62 N; 48.01 E

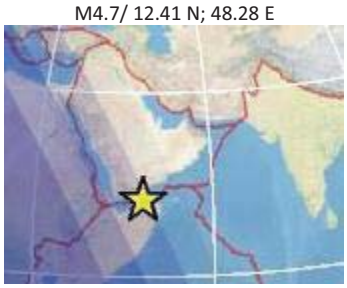


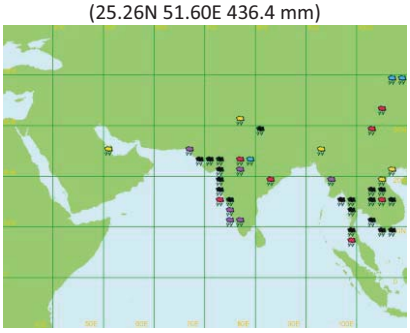
Jun.12,2023
Saudi Arabia
(16.88N 42.58E 7m)
Kenya
(01.01N 35.00E 1875m)

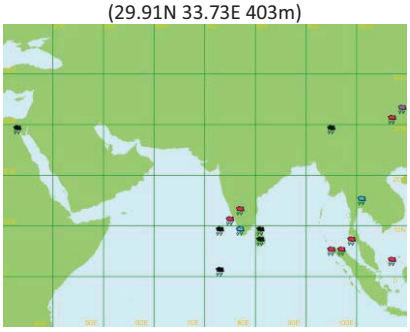


Jun.15,2023
Gulf of Aden
M4.7/ 12.42 N; 47.90 E

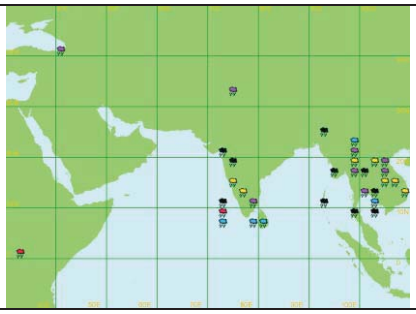
Jun.17,2023
Gulf of Aden
M4.7/ 12.41 N; 48.28 E



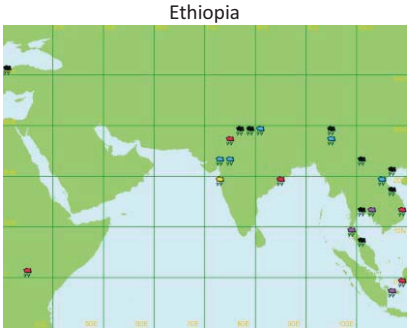
<table>
<tr>
<td>July 11,2022
(25.26N 51.60E 436.4 mm)
  </td>
<td>July 26,2022
Owen Fracture zone region
M5.0/ 15.14 N; 59.51 E

July 28,2022
Owen Fracture zone region
M4.5/ 14.87 N; 57.88 E
 </td>
</tr>
<tr>
<td>Aug. 31,2022
Egypt
(28.23N 33.61E 14m)
(29.91N 33.73E 403m)
  </td>
<td>Aug. 15,2022
Gulf of Aden
M4.6/ 14.36 N; 52.86 E

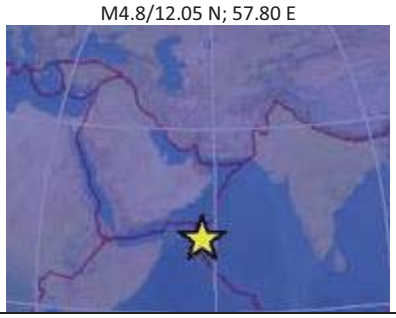
Aug. 30,2022
Owen Fracture zone
M4.3/ 14.63 N; 55.80 E
Sep. 01,2022
M5.3/ 13.16 N; 57.73 E
 </td>
</tr>
<tr>
<td>Sep. 07,2022
Ethiopia
(08.86N 39.90E 930m)</td>
<td>Sep. 16,2022
Owen fracture zone
M4.8/ 14.52 N; 53.59 E</td>
</tr>
</table>



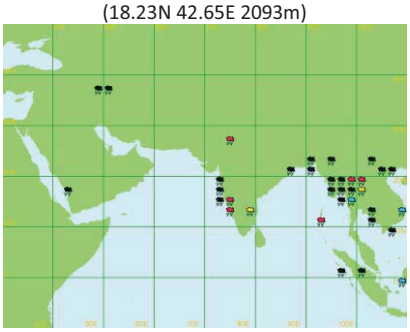
Oct.09,2022
Ethiopia



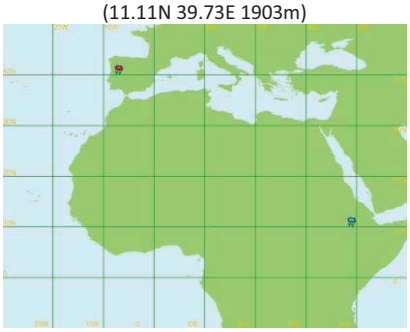
Oct.21,2022
Owen Fracture zone
M4.8/12.05 N; 57.80 E



Aug.04,2020
Saudi Arabia
(16.88N 42.58E 7m)
Aug.08,2020
(18.23N 42.65E 2093m)



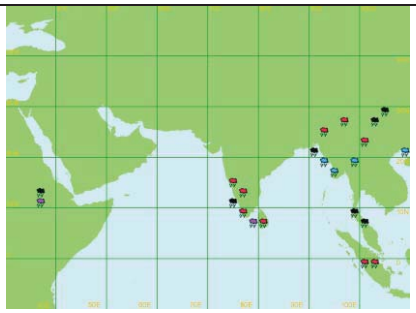
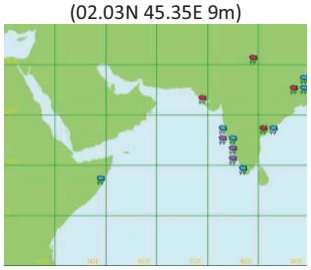
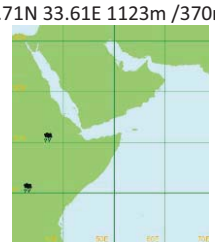
Aug.20,2020
Ethiopia
(11.11N 39.73E 1903m)

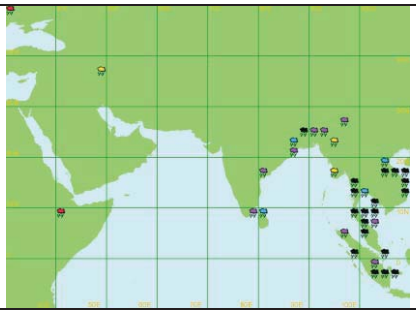


Aug.25,2020
Owen Fracture zone region
M5.2/ 12.56 N; 58.23 E

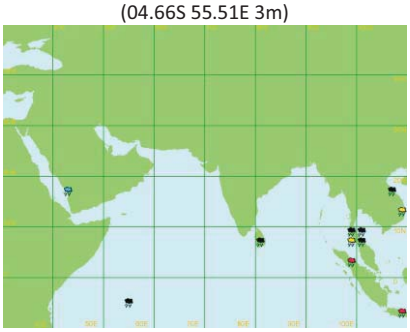
Sep.10,2020
Ethiopia
(12.55N 37.41E 1967m)
(11.60N 37.41E 1770m)

Sep.13,2020
Carlsberg ridge
M4.6/ 6.32 N; 60.31 E
Sep.15,2020

 Sep.13,2020 Somalia (07.95N 48.50E) (02.03N 45.35E 9m) 	M4.5/ 6.44 N; 60.35 E
Sep.21,2020 Ethiopia (11.60N 37.41E 1770m) Uganda (01.71N 33.61E 1123m /370mm)  Sep.24,2020 Uganda (39.61N 19.91E 4m) 	Sep.30,2020 Carlsberg ridge M4.6/ 2.80 S; 67.91 E
Oct.08,2020 Ethiopia (09.60N 41.85E 1260m)	Oct.13,2020 Socotra region M5.4;4.5 /13.92 N; 56.87 E



Dec.01,2020
Saudi Arabia
(16.88N 42.58E 7m)
Seychelles
(04.66S 55.51E 3m)



Dec.21,2020
Kuwait-Saudi Arabia border reg
M4.3/ 28.83 N; 47.49 E

Nov.21-24,2020
Tropical Cyclone Gati (Ethiopia)
Location: 10.3N 52.5E
Wind: 115 mph
Uganda
(00.68N 34.16E 1171m)

Nov.27,2020
Red Sea
M4.5/ 17.92 N; 40.16 E

Nov.27,2020
Gulf of Aden
M4.5/ 13.15 N; 50.30 E

Table 9: Precursor and corresponding earthquake locations Kyrgyzstan Precursors scorching heat, heavy snowfall/rainfall, avalanches and landslides, location and earthquake location.

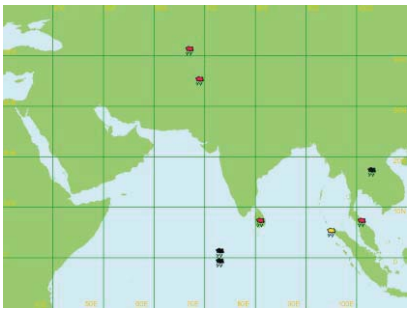
	
May.26,2023 Being a mountainous country with a long winter and heavy snowfall	Jun.01,2023 Kyrgyzstan M4.8/ 41.79 N; 71.78 E
Mar.29,2021 Uzbekistan (40.11N 67.83E 345m)	Mar.31,2021 Kyrgyzstan M4.5/ 42.32 N; 70.95 E Apr.10,2021 Kyrgyzstan M4.0/ 42.56 N; 79.29 E
Sep.12,2021 N India Ambala (28-30N 73-77E 100-300m) New Delhi Delhi records highest rainfall in 46 years	Sep.16,2021 Kyrgyzstan M4.0/ 42.28 N; 76.45 E

Table 10: Precursor and corresponding earthquake locations Tajikistan, Hindukush region, Afghanistan and Pakistan: For the weather changes in Afghanistan, Pakistan and in North India, cluster of earthquakes happens in Tajikistan, Hindu Kush region, Afghanistan and also in Pakistan.

Tajikistan **(37-39N 70-74E)**	**Hindu Kush region** **(34-37N 69-71E)**	**Pakistan** **(26-36N 66-73E)**
39.47 N; 70.00 E	**37.72 N; 71.53 E**	36.04 N; 71.23 E
38.10 N; 73.22 E	37.09 N; 70.95 E	34.32 N; 73.51 E
37.93 N; 72.94 E	**36.79 N; 69.85 E**	33.05 N; 69.54 E
	36.78 N; 71.47 E	32.78 N; 73.48 E
	34-37.00 N; 70.92 E	30.25 N; 71.06 E
	Central Afghanistan	29.03 N; 69.62 E
	33.51 N; 69.90 E	29.01 N; 66.45 E

Table 10.1: Precursor and corresponding earthquake locations Examples earthquakes: Kyrgyzstan, Tajikistan, Afghanistan and Pakistan.

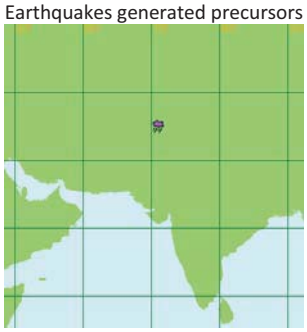
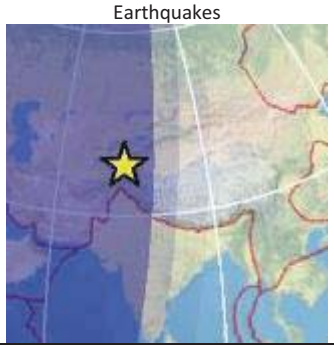
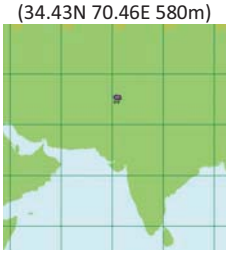
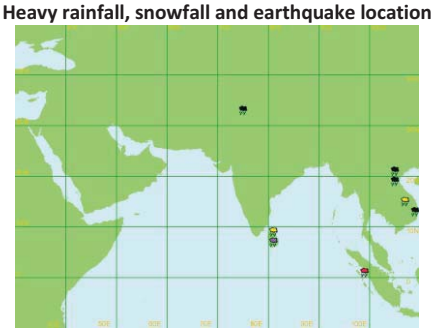
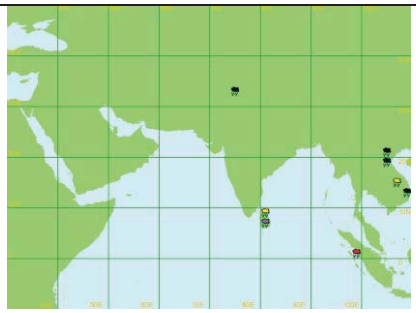
Earthquakes generated precursors	Earthquakes
	
Feb.15,2023 Pakistan Heavy rain and landslides in Pakistan Passengers suffer as landslide blocks road in Bisham 34.56N 72. 52E	Feb.23,2023 Tajikistan M6.8; 5.1;4.9;4.8;4.7;4.6/ 38.10 N; 73.22 E
Feb.23,2021 Afghanistan (34.43N 70.46E 580m) 	Mar.18,2021 Tajikistan M4.4/ 37.46 N; 72.24 E
Mar.29,2021 Afghanistan (35.31N 69.01E 3366m)	May.03,2021 Tajikistan M4.8/ 38.54 N; 73.41 E May.09,2021 Tajikistan M4.4/ 37.24 N; 71.65 E
July 06,2021 Himachal Pradesh Witnesses Heavy Rain, Thunderstorms and landslides; Yellow Alert from July 7 to 9. The maximum temperature in Himachal on Monday was recorded in Una at 39.4 degrees Celsius.	July 06,2021 Tajikistan M4.6;4.4/38.12 N; 72.80 E July 10,2021 Tajikistan M5.9;4.6/ 38.99 N; 70.70 E

Table 10.2: Precursor and corresponding earthquake locations Hindu Kushregion, Afghanistan..

Heavy rainfall, snowfall and earthquake location 	
Feb.15,2023 Pakistan Heavy rain and landslides in Pakistan Passengers suffer as landslide blocks road in Bisham 34.56N 72. 52E	Feb.21,2023 HKR, Afghanistan M4.2/ 36.22 N; 69.93 E Feb.27,2023 HKR, Afghanistan M4.1/36.31 N; 70.66 E Feb.28,2023 Tajikistan M4.3/37.93 N; 72.94 E Mar.05,2023 HKR, Afghanistan M4.1/ 36.78 N; 71.47 E Mar.05,2023 Tajikistan M4.2/ 38.13 N; 73.22 E Mar.05,2023 Tajikistan M4.0/ 38.78 N; 73.69 E Mar.08,2023 Tajikistan M4.2/ 37.39 N; 71.85 E
	Mar.06,2023 Pakistan M4.3/26.09 N; 68.37 E

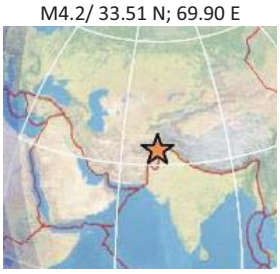
	 Mar.22,2023 Tajikistan M5.8/ 39.47 N; 70.00 E Mar.28,2023 Krygyzstan M4.2/39.58 N; 70.34 E Mar.28,2023 Tajikistan M4.2/38.85 N; 71.89 E Mar.28,2023 HKR, Afghanistan M4.3;4.2/34-37.00 N; 70.92 E Apr.08,2023 HKR M4.4/ 34.71 N; 70.62 E Apr.09,2023 HKR M4.3/ 36.55 N; 70.93 E Apr.11-12,2023 HKR M4.3/ 36.65 N; 71.14 E M4.7;4.6/ 36.27 N 69.61 E
Himachal Pradesh on Sunday continued to experience moderate to heavy snowfall, temporarily closing over 400 roads, officials said here. Roads in the Kinnaur district and towns in Shimla district such as Narkanda, Jubbal, Kharapathar, Rohru and Chopal have been cut off with heavy snow cover piled on roads; a government official told IANS.	May 02-03,2023 HKR, Afghanistan M4.3;4.4;4.6/ 37.09 N; 70.95 E
May 08,2023 Qazi Gund (33.58N 75.08E 1690m)	May 11,2023 HKR, Afghanistan M4.9;4.5/ 36.79 N; 69.85 E May 10,2023 Pakistan M4.3/ 36.04 N; 71.23 E May 09,2023 Tajikistan M4.3/ 37.54 N; 72.49 E M4.2/ 38.16 N; 73.06 E



May 08-09,2023
Unseasonal heavy rains, snowfall and hailstorm in Kashmir affects normal life
Gulmarg, Pahalgam, Sonamarg and Qazigund areas of the Valley received snowfall early in the morning.

May 16,2023
HKR
M4.1/37.72 N; 71.53 E
May 16,2023
Kazakhstan-Xinjiang Border region
M4.7/42.85 N; 80.64 E

May 15,2023
Tajikistan
M4.1/ 38.42 N; 73.03 E
May 14,2023
Central Afghanistan
M4.2/ 33.51 N; 69.90 E

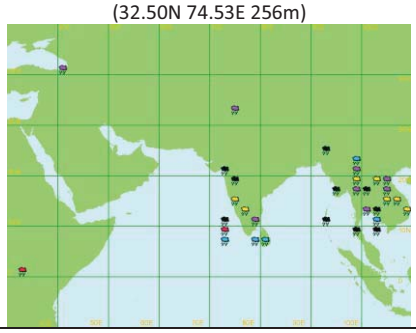


May 22,2023
HKR, Afghanistan
M4.9/ 36.36 N; 71.31 E

June 25 - Sep. 05,2022
Pakistan has faced its worst flooding in a decade. According to the country's National Disaster Management Authority.

Lake Manchar is Overflowing
Pakistan's largest freshwater lake overflowed in early September 2022 as devastating floods hit the Indus River Valley.

Sep. 06,2022
Pakistan
(32.50N 74.53E 256m)



Jan.05-06,2021

Sep. 06-07,2022
HKR, Afghanistan
(flood in Pakistan)
M4.8;4.1/36.68 N; 70.77 E

Jan. 11,2021

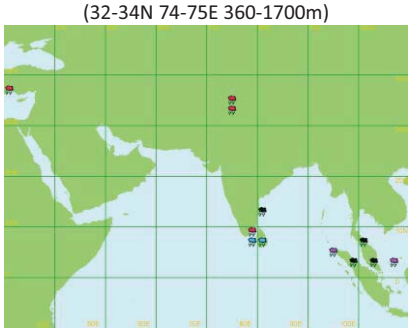
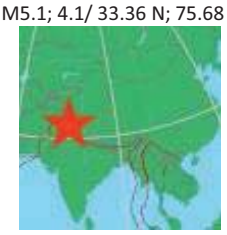
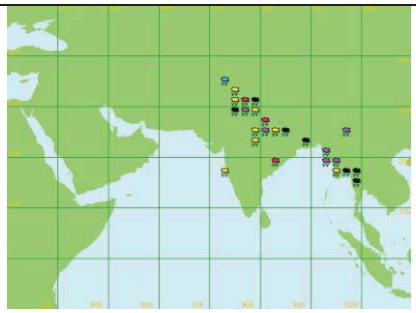
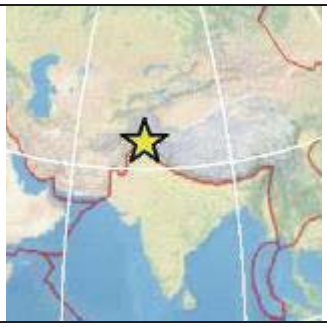
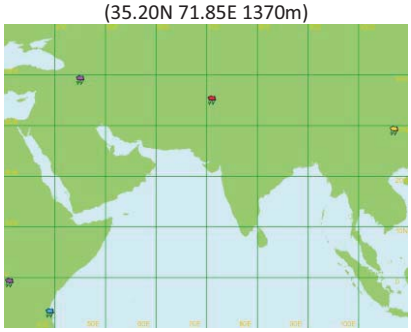
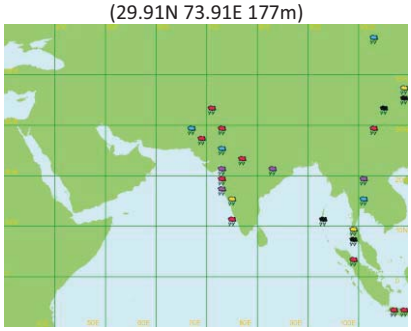
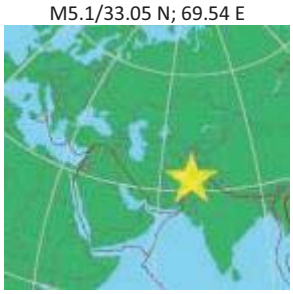
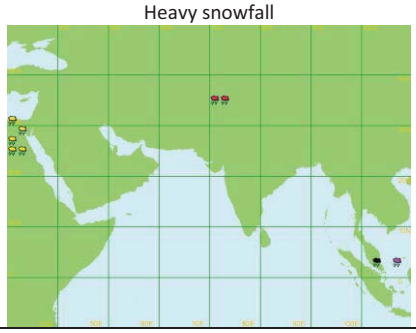
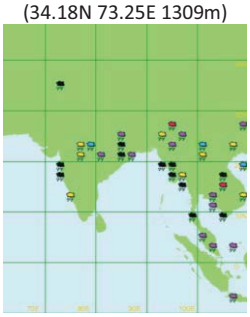
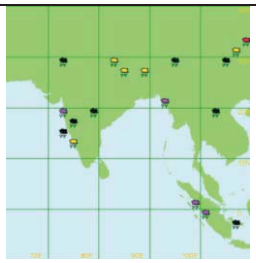
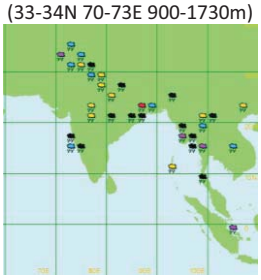
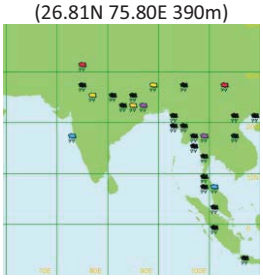
Srinagar (32-34N 74-75E 360-1700m)  Jan.23,2021 Heavy rain and snow storm in Himchala Pradesh	Eastern Kashmir M5.1; 4.1/ 33.36 N; 75.68 E  Jan. 12,2021 Hindu Kush region, Afghanistan M4.4/ 36.65 N; 70.98 E Jan. 12,2021 Kazakhstan-Xinjiang border reg. M4.5/ 44.40 N; 80.52 E Jan.16,2021 Hindu Kush region, Afghanistan M5.5/ 36.49 N; 70.80 E Jan.24,2021 M4.3/ 36.51 N; 71.39 E
Feb-Mar.2023 Heavy snowfall and rain fall in Afghanistan, Pakistan and New Delhi, India	Mar.21,2023 HKR, Afghanistan M6.5/ 36.51 N; 70.99 E Strong earthquake of 6.6 magnitude shakes northern India and surrounding countries, people rush to safety Strong earthquake tremors were felt in northern India on March 21, including the Delhi-NCR region, as well as several other countries in the region. According to reports, the earthquake, measuring 6.6 magnitude, hit countries including Turkmenistan, India, Kazakhstan, Pakistan, Tajikistan, Uzbekistan, China, Afghanistan, and Kyrgyzstan. The epicenter is believed to be 90 km from Kalafgan in Afghanistan.

Table 10.3: Precursor and the corresponding earthquake location of Pakistan.

Star icons represents the location of amount of rainfall and snowfall.	Star icon represents the earthquake location

	
Precursor Area	Epicenter Zone
Apr.19,2023 Pakistan (35.20N 71.85E 1370m) 	Apr.11-12,2023 Pakistan M4.3/ 34.32 N; 73.51 E Apr.19,2023 Tajikistan M4.3/37.91 N; 73.17 E Apr.23,2023 Tajikistan M4.4/ 37.53 N; 70.14 E Apr.23,2023 Pakistan M4.8/ 30.25 N; 71.06 E
July 16,2022 S Pakistan (26.85N 68.13E 47m) (26.25N 68.36E 38m) Ganganagar (Rajasthan), India (29.91N 73.91E 177m) 	July 16,2022 Pakistan M4.7/ 29.03 N; 69.62 E July 18,2022 Pakistan M5.1/33.05 N; 69.54 E 
Sep. 06,2022 Highest Rainfall in 30 Years Threatens Pakistan's Recovery Sep. 12,2022 Pakistan (32.93N 73.71E 234m)	Sep. 27,2022 Pakistan M4.2/ 32.78 N; 73.48 E
Mar.23,2021	Mar.28,2021

Pakistan (34-35N 71-73E 900- 1500m) Heavy snowfall 	Southwestern Pakistan M4.4/ 27.76 N; 64.78 E
May.05,2021 Pakistan (34.73N 72.35E 951m)	May.02,2021 Off coast of Pakistan M4.4/ 24.04 N; 65.03 E May.17,2021 Hindu Kush region, Afghanistan M4.0/ 36.19 N; 71.07 E May.27,2021 M4.4/ 30.06 N; 66.29 E May.28,2021 Pakistan M4.8/27.93 N; 66.50 E May.21,2021 Kashmir-Xinjiang border region M4.2/ 35.29 N; 77.98 E May.27,2021 Western Afghanistan M4.9/ 30.28 N; 66.32 E
Jun.12,2021 Pakistan (34.18N 73.25E 1309m)  June,27, 2021 Ganga Nagar, J&K (29.91N 73.91E 177m)	Jun.17,2021 Pakistan M4.9/ 34.69 N; 73.24 E Jun.23,2021 Pakistan M4.3/ 33.57 N; 71.69 E

	 Jun.24,2021 Hindu Kush region, Afghanistan M4.6/ 36.00 N; 71.01 E
July 20,2021 Pakistan Heavy snowfall (33-34N 70-73E 900-1730m) 	July 20,2021 Pakistan M5.1/ 29.37 N; 70.08 E Off Coast of Pakistan M4.1/ 23.86 N; 65.28 E
July 29,2021 Pakistan (34.38N 73.35E 981m) July 26-27,2021 Jammu &Pakistan (28-32N 74-75E) Guna (24.65N 77.31E 478m) July 28,2021 Pakistan (32-34N 73-74E) Aug.01,2021 Pakistan (31.55N 74.33E 215m) Jaipur (26.81N 75.80E 390m)  Aug.03,2021 Jammu	July 26-27,2021 Tajikistan M4.3/37.93 N; 72.74 E M4.3/38.29 N; 74.02 E

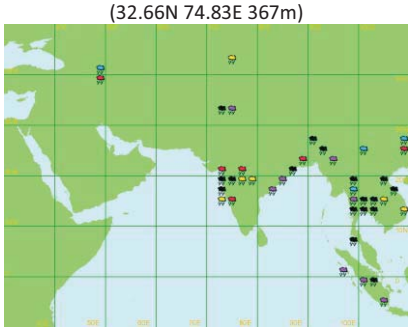
(32.66N 74.83E 367m)	
Aug.29,2021 Pakistan (33.61N 73.10E 508m)	Sep.08,2021 Tajikistan M5.5/ 38.16 N; 73.15 E
Sep.08-09,2021 Pakistan (32-34N 73-74E 300-1300m) Sep.07-08,2021 Pakistan (32.93N 73.71E 234m) (33.61N 73.10E 508m) Jammu (32.66N 74.83E 367m)  Sep.10,2021 Pakistan (31.55N 74.33E 215m)	Sep.13,2021 Kashmir-India border M4.3/ 33.77 N; 76.34 E
Oct.02,2021 Pakistan (25.26N 63.48E 6m) (25.13N 62.33E) Oct.06,2021 Pakistan (34.36N 73.48E 2303m)	Oct.06,2021 Pakistan M5.9/30.22 N; 68.06 E

Table 11: Himalayan Regions Epicenter zones of Northern and Southern Xinjiang, China.

Northern Xinjiang	Southern Xinjiang, China
44.82 N; 81.20 E 43.46 N; 83.91 E Kazakhstan-Xinjiang border reg. 42.08 N; 80.85 E 44.45 N; 80.78 E	41.39 N; 84.07 E 41.37 N; 83.96 E 41.15 N; 82.93 E 41.72 N; 81.26 E 41.84 N; 82.00 E Kashmir-Xinjiang border region 35.76 N; 79.92 E

Table 11.1: Precursor and the corresponding earthquake location of Northern Xinjiang, China.

January 18, 2023 **Dozens of people killed as cold wave sweeps Afghanistan** At least 70 people and 70,000 cattle have died within a week as many provinces witness a cold wave, with temperatures dipping to as low as -33C (-27F). For the last two weeks, many provinces in Afghanistan have been witnessing exceptionally cold weather, with the central region of Ghor recording the lowest reading of -33C (-27F) over the weekend. "This winter is by far the coldest in recent years," said Mohammad Nasim Muradi, the head of Afghanistan's meteorology office.	Jan.25,2023 Northern Xinjiang, China M4.6/ 44.82 N; 81.20 E

Vehicles are seen stuck along a road during snowfall near the Pakistan-Afghanistan border in Chaman, Afghanistan on January 18, 2023	
Apr.19,2023 IMD forecast: Rainfall expected in Delhi, Punjab, Haryana, Chandigarh, **Rajasthan** today After experiencing rain during the final days of March, several regions of the country experienced early heatwave-like conditions during the summer.The weather agency has advised the public to be ready for "above-normal" temperatures over the next two to three months.	Apr.24,2023 Northern Xinjiang, China M4.5/ 43.46 N; 83.91 E

Table 11.2: Precursor and the corresponding earthquake location of Southern Xinjiang, China.

Heavy snowfall in North India and Himalayan regions.	Jan.03,2023 Southern Xinjiang, China M4.4/ 41.39 N; 84.07 E
May 23,2023 **IMD Predicts Rainfall, Thunderstorm in Delhi, Uttarakhand And Other States** New Delhi: The India Meteorological Department (IMD) on Tuesday said that a fresh and active Western Disturbance is likely to move over Northwest India from today for subsequent three days. It will be accompanied by moisture supply from Arabian Sea. Under its influence, Uttarakhand, Punjab, Haryana, and Delhi, are likely to experience rainfall/thunderstorm on May 24 (Wednesday). In its latest bulletin, the IMD stated the areas in Northwest India are likely to witness thunderstorm, lightning and rainfall from May 23-26. Uttarakhand is projected to experience thundersquall/gusty wind speed on May 24 and 25. Delhi,	May 23,2023 Southern Xinjiang M4.7;4.7/ 41.83 N; 82.21 E

Punjab, Haryana and Chandigarh are likely to experience similar weather conditions tomorrow.

The India Meteorological Department predicted heavy rainfall in Jammu and Kashmir, Ladakh, Gilgit-Baltistan, Muzaffarabad and Himachal Pradesh on May 23, 24.

Jun.13,2023
Southern Xinjiang, China
M4.7/ 41.70 N; 80.94 E

Jun.13,2023
Eastern Kashmir
M5.0;4.6/ 33.17 N; 75.83 E

Jun.17-18,2023
Kashmir- Xinjiang region
M4.6;4.4;4.3/ 35.78 N; 79.88 E
32.98 N; 75.93 E

Jun.17,2023
Kashmir-India border
M4.3/ 33.40 N; 76.02 E

Jun.19,2023
Southern Xinjiang
M4.6/ 40.74 N; 77.71 E

Table 12.1: Epicenter zones of Eastern and Western Xizang, China.

Eastern Xizang, China	Western Xizang, China
30.78 N; 96.05 E	33.26 N; 86.74 E 33.79 N; 82.14 E 28.81 N; 86.61 E Xinjiang- Xizang border 35.48 N; 80.35 E

Table 12.2: Precursor and the corresponding earthquake location of Western Xizang, China.

Joshimath land 'sinking': 4,000 people shifted to relief camps; demolition of damaged hotels and houses to begin shortly	Jan.04,2023 Western Xizang, China M4.4/ 33.26 N; 86.74 E

Joshimath land sinking: The holy town of Joshimath has been divided into three zones, 'Danger', 'Buffer', and 'Completely Safe', based on the magnitude of danger from land subsidence or the sinking or settling of the ground surface.

According to the bulletin, cracks have been noticed in a total of 678 buildings in the Joshimath town area. In view of security, a total of 81 families have been temporarily displaced.

"Under the Joshimath city area, 213 rooms have been temporarily identified as habitable, with their capacities estimated at 1191. Also, 491 rooms/halls have been identified in Pipalkoti outside the Joshimath area, with a combined capacity of 2,205," the bulletin said.

January 18, 2023

Dozens of people killed as cold wave sweeps Afghanistan

At least 70 people and 70,000 cattle have died within a week as many provinces witness a cold wave, with temperatures dipping to as low as -33C (-27F).

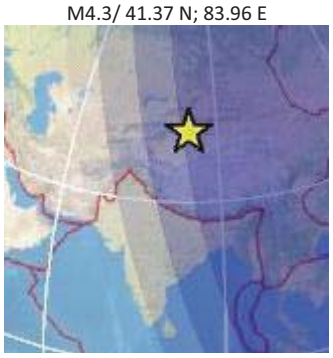
For the last two weeks, many provinces in Afghanistan have been witnessing exceptionally cold weather, with the central region of Ghor recording the lowest reading of -33C (-27F) over the weekend.

“This winter is by far the coldest in recent years,” said Mohammad Nasim Muradi, the head of Afghanistan’s meteorology office.

Vehicles are seen stuck along a road during snowfall near the Pakistan-Afghanistan border in Chaman, Afghanistan on January 18, 2023

Jan.03,2023
Kazakhstan-Xinjiang border reg.
M4.4/ 42.08 N; 80.85 E

Jan.25,2023
Southern Xinjiang, China
M4.3/ 41.37 N; 83.96 E



Jan.25,2023
Northern Xinjiang, China
M4.6/ 44.82 N; 81.20 E

Jan.25,2023
Kashmir-Xinjiang border region
M5.3/ 35.76 N; 79.92 E

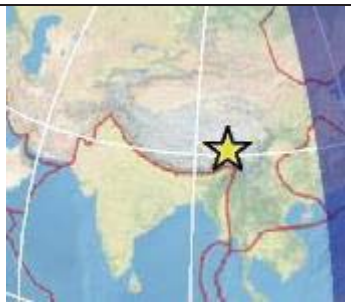
Jan.20,2023
Western Xizang
M4.5/ 33.79 N; 82.14 E

Jan.20,2023
Xinjiang- Xizang border
M4.2/ 35.48 N; 80.35 E

Jan.20,2023
Tajikistan
M4.7/ 39.04 N; 70.58 E

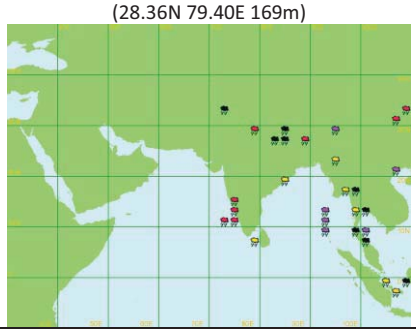
Jan.30,2023
Southern Xinjiang, China
M5.8/ 41.37 N; 83.96 E
Feb.04,2023
Tajikistan

	M4.7/ 37.50 N; 72.77 E Feb.04,2023 Kazakhstan-Xinjiang border reg. M4.3/ 44.45 N; 80.78 E Feb.04,2023 HKR, Afghanistan M4.1;4.2;4.3/ 37.30 N; 71.48 E Feb.04,2023 Kyrgyzstan M4.1/ 39.76 N; 73.14 E Apr.04,2023 Tajikistan M4.6/ 38.14 N; 74.32 E
Mar.12,2023 Snowfall and rainfall in Uttarkhand	Mar.17,2023 Eastern Xizang M5.1/ 30.78 N; 96.05 E

	
Apr.24,2023 **Char Dham Yatra Update: Uttarakhand govt issues weather alert as heavy rain, snowfall hit Kedarnath Dham** May 05,2023 Heavy landslide has been observed in Chamoli, Uttarakhand. A portion of the mountain came crashing down on the road near Helang in Chamoli district	May 06,2023 Western Xizang M4.5/ 28.81 N; 86.61 E
Apr.24,2023 **Char Dham Yatra Update: Uttarakhand govt issues weather alert as heavy rain, snowfall hit Kedarnath Dham** As the Char Dham Yatra began on the auspicious occasion of Akshay Tritiya on Saturday, the state government said that it is making all possible arrangements to make the Char Dham Yatra smooth and safe for the devotees. In its bulletin for Char Dharm Yatris, the state government said that intermittent rain and snowfall have continued in Kedarnath Dham over the past few days and all the devotees coming for the yatra have been advised to carry warm clothes and check the weather forecast before going towards Kedarnath shrine. May 05,2023 Heavy landslide has been observed in Chamoli, Uttarakhand. A portion of the mountain came crashing down on the road near Helang in Chamoli district	May 06,2023 Western Xizang M4.5/ 28.81 N; 86.61 E
Ranchi (Jharkhand) – A bridge on Kanchi river which was constructed just 3 years ago and built by spending Rs. 13 crore has collapsed in heavy rainfall due to Yaas cyclone. The bridge was 600 meters long and was connecting Tamar, Bundu and Sonahatu areas of Ranchi District. The bridge collapsed on 27th May in the afternoon. May.26,2023 **Jharkhand**: Newly constructed bridge collapses near Ranchi allegedly due to illegal mining. In Jharkhand as a newly-constructed bridge collapsed just 70 kilometres away from the state capital of Ranchi. A pillar of the bridge crumbled allegedly due to years of illegal mining, while two other adjoining pillars are also unstable. Locals say that the bridge requires immediate repair, else the whole structure might collapse. The entire incident in Tamar area of Ranchi got triggered after cyclonic winds and subsequent rainfall due to Cyclone Yaas rattled the weak structure.	Jun.06,2023 Western Xizang M4.0/ 34.37 N; 82.16 E Jun.12,2023 Western Xizang M4.5/ 33.20 N; 86.95 E

 A Bihar Bridge Collapse: Construction Company Faces Blacklist Threat bridge that was being constructed in Bihar's Bhagalpur district turned into a pile of rubble on Sunday. It is the second time in 14 months that the four-lane road bridge worth Rs 1,710 crore collapsed. Now, Chief Minister Nitish Kumar-led Bihar government has taken strict action against the construction company - SP Singla Constructions. On Monday, a notice was sent to the construction company responsible for the building of the bridge and also suspended an executive engineer of the Road Construction Department. 	

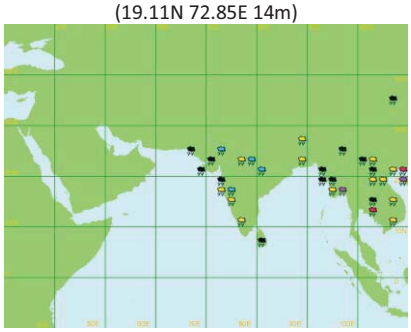
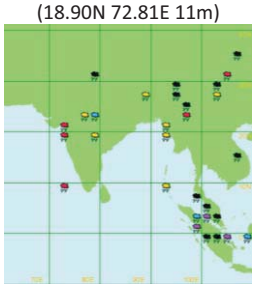
Table 12.3: Precursor and the corresponding earthquake location of Uttaranchal, India.

Aug.29,2021 N India (28.36N 79.40E 169m) 	Sep.11,2021 Uttaranchal M4.7/ 30.55 N; 79.27 E

13. Central India

Table 13.1: Precursor and the corresponding earthquake location of Gujarat.

Jun.11-19,2021 Bhuj, Gujarat (20-23N 69,,72-73E) (23.25N 69.66E 80m) (22.56N 72.93E 44m) Surat	Jun.18,2021 Gujarat, India M4.0/ 23.42 N; 70.32 E

(21.20N 72.83E 12m) (20.61N 72.93E 15m) (21.75N 72.20E 11m) Jun.18,2021 Gujarat (23.06N 72.63E 55m) (22.56N 72.93E 44m) (21.20N 72.83E 12m) (20.61N 72.93E 15m) 	
Aug.07,2020 **Gujarat, India** **(22.30N 70.78E 138m)** (21.65N 69.66E 7m) (19.96N 72.71E 5m) (18.90N 72.81E 11m) (19.11N 72.85E 14m) 	**Aug.23,2020** **Gujarat** **M4.1/ 23.25 N; 70.60 E**
Aug.19,2021 Gujarat (21.20N 72.83E 12m) Bombay 19.11N 72.85E 14m) (18.90N 72.81E 11m)  Aug.22,2021 Gujarat (22.71N 75.80E 567m) (21.08N 71.78E 9m) (21.60N 71.21E)	Aug.19,2021 Gujarat M4.3/ 22.22 N; 69.75 E

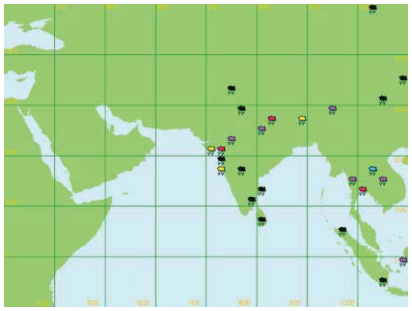
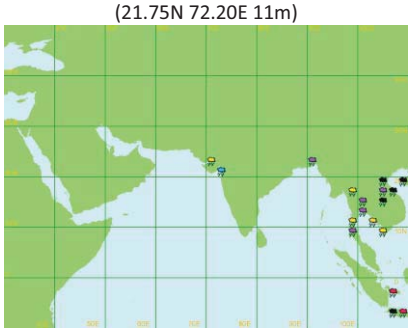
	
Oct.18,2020 Gujarat (21-22N 71-72E) (22.30N 70.78E 138m) (21.75N 72.20E 11m) 	Nov.07,2020 Gujarat, India M4.2/ 21.55 N; 73.15 E

Table 13.2: Precursor and the corresponding earthquake location of Maharashtra.

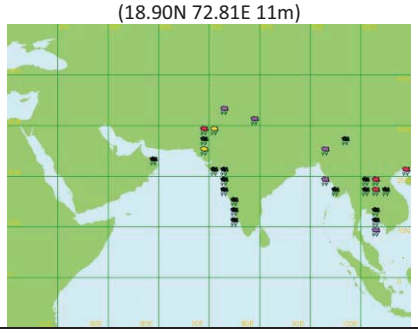
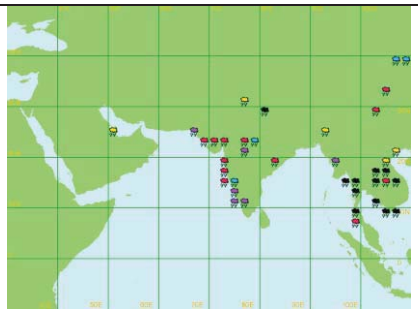
July 06-07,2022 Bombay (18-19N 72-73E) (19.96N 72.71E 5m) (19.11N 72.85E 14m) (18.90N 72.81E 11m) 	July 09,2022 Maharashtra, India M4.5;4.6/ 17.05 N; 75.65 E

Table 13.3: Precursor and the corresponding earthquake location of Chhattisgarh region.

July 11-12,2022 Madya Pradesh, India (23.28N 77.35E 523m) (23.31N 77.83E 440m) (22.76N 77.76E 302m) **(23.20N 79.95E 393m)** (22.08N 79.55E 619m) (21.86N 77.93E 653m)	July 12,2022 Chhattisgarh region (separated rom MP), India M4.6/ 23.37 N; 82.50 E



July 12,2022

14. North East India

Table 14.1: Precursor and the corresponding earthquake location of Sikkim.

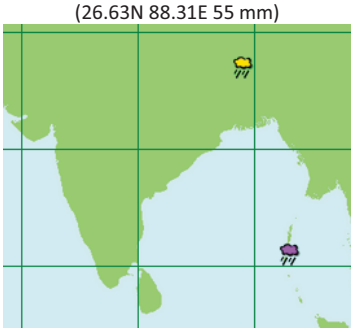
June 07, 2014 India (26.63N 88.31E 55 mm) 	June 09, 2014 / M 4.3 Sikkim, India : 27.21 N; 88.07 E.

Table 14.2: Precursor and the corresponding earthquake location of Assam.

Apr.20,2021 NE India (24.75N 92.80E 29m)	Apr.28,2021 Assam, India NE M6.0; 4.9;4.0/ 26.77 N; 92.43 E

<table>
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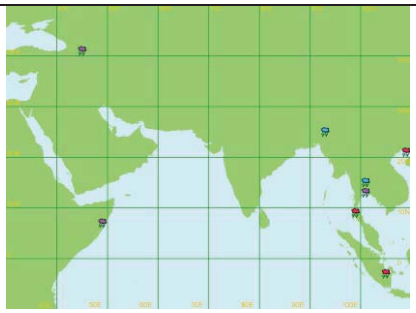
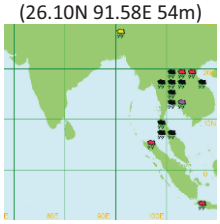
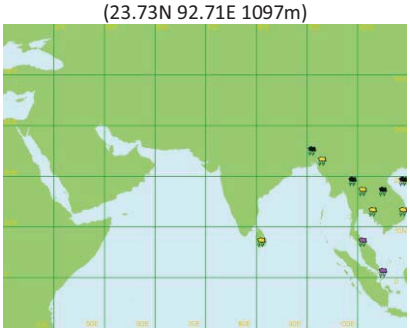
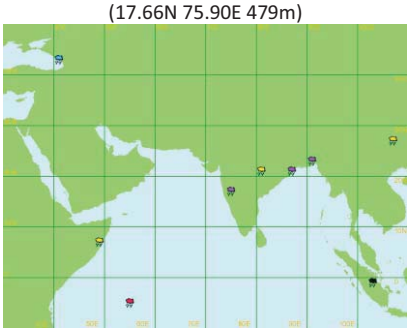
<td> 
Apr.29,2021
Gauhati, NE India
(26.10N 91.58E 54m)
  </td>
<td></td>
</tr>
<tr>
<td>May 02,2021
NE India
Shillong
(25.56N 91.88E 1598m)
Aijal
(23.73N 92.71E 1097m)
 
May.10,2021
Agartala
(23.88N 91.25E 16m)
(21.51N 86.93E 20m)
(21.23N 81.65E 298m)
(17.66N 75.90E 479m)
  </td>
<td>May.15,2021
Assam
M4.5/26.78 N; 92.61 E
 </td>
</tr>
<tr>
<td>May.14-15,2021
NE India
(28.10N 95.38E 157m)</td>
<td>May.18,2021
Assam, India
M4.5/ 26.29 N; 92.54 E</td>
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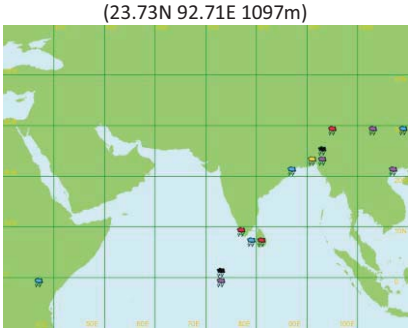
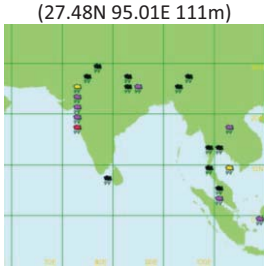
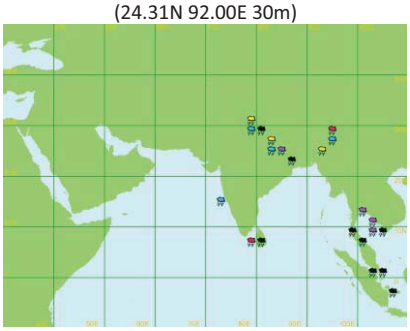
(27.23N 94.11E 102m)
(24.75N 92.80E 29m)
(23.73N 92.71E 1097m)



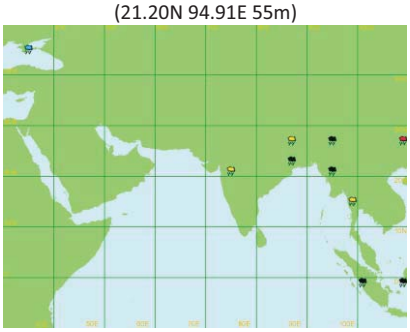
May.20,2021
NE India
(27.48N 95.01E 111m)



May.21,2021
Assam
(28.10N 95.38E 157m)
(27.48N 95.01E 111m)
(24.31N 92.00E 30m)



May.31,2021
Assam
(27.23N 94.11E 102m)
Myanmar
(21.20N 94.91E 55m)



Jun.05,2021

May.30,2021
Assam
M4.2/ 26.68 N; 92.34 E

Jun.17,2021

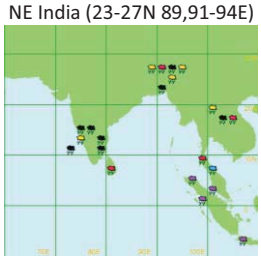
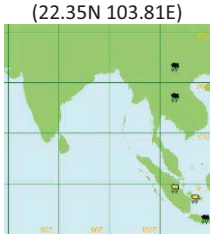
NE India (23-27N 89,91-94E)  Jun.09,2021 NE India (26.61N 92.78E 79m) (27.23N 94.11E 102m) Jun.19,2021 NE India (27.33N 88.61E) Myanmar (28.10N 95.38E 157m) 	Assam M4.4/ 26.78 N; 92.50 E

Table 14.3: Precursor and the corresponding earthquake location of Arunachal Pradesh.

Mar.21,2021 NE India (22.35N 103.81E) 	Mar.26,2021 Arunachal Pradesh, India M5.0/ 27.62 N; 92.73 E
May 25,2023 Eastern India States like West Bengal, Sikkim and Bihar are also likely to receive thunderstorm and rain. Parts of West Bengal and Sikkim are likely to receive heavy rainfall today and tomorrow, while some parts of the state may experience hailstorms. Winds with speed up to 60 kmph are likely over Gangetic West Bengal	May 02,2023 Nongpoh: An earthquake of magnitude 4.4 was reported near Nongpoh in Meghalaya . May 06,2023 M3.4 May 22,2023 Arunachala Pradesh

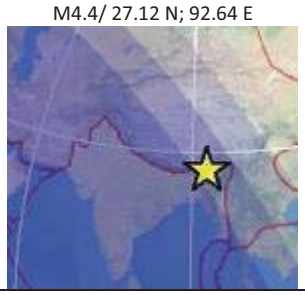
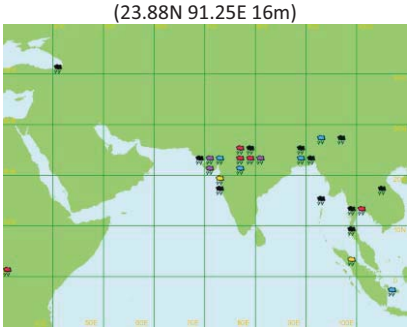
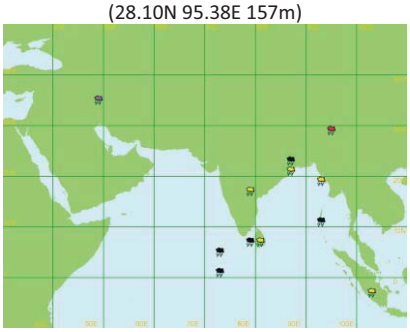
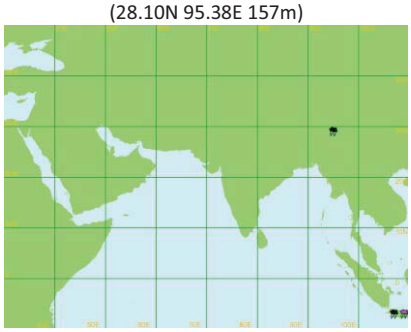
	M4.5/ 27.05N 97.04E May 27,2023 Arunachala Pradesh M4.4/ 27.12 N; 92.64 E 
Sep. 14,2022 Myanmar (27.33N 97.41E) Tezpur, Assam (26.61N 92.78E 79m) (25.03N 88.13E 31m) Agartala, Tripura (23.88N 91.25E 16m) 	Sep. 18,2022 Arunachal Pradesh, India (North of precursor) M4.4/ 28.77 N; 95.91 E
Oct.13,2022 Pasight, Arunachala Pradesh, India (28.10N 95.38E 157m) 	Oct.19,2022 Myanmar- India border M4.0/ 25.23 N; 94.13 E Nov.10,2022 Arunachal Pradesh, India M5.4/ 28.43 N; 94.40 E

Table 14.4: Precursor and the corresponding earthquake location of Meghalaya, India.

Feb.23,2023 Pasighat, Arunachala Pradesh (28.10N 95.38E 157m) 	Feb.26,2023 An earthquake of magnitude 4.7 hit Meghalaya, some 17 km from Resubalpara 25.89°N 90.59°E Feb.28,2023 Tura: An earthquake of magnitude 3.7 on the Richter scale occurred rocked Meghalaya`s Tura. Feb.28,2023 Tura, Meghalaya M3.7/26.04N: 90.11E
Apr.21-23,2023 27°28'48"N, 95°10'48"E SILCHAR: Heavy rainfall coupled with gusty winds over the past three days have wreaked havoc in Assam. Assam: Hailstorm Wreaks Havoc in Chabua; Causes Extensive Damage, Displacement The hailstorm caused extensive damage to properties across the area.	Apr.24,2023 Earthquake of magnitude 3.5 hits Meghalaya's West Khasi Hills M3.5/ 25.47N 90.94,E May 02,2023 Nongpoh: An earthquake of magnitude 4.4 was reported near Nongpoh in Meghalaya.
July 06,2023 Arunachala Pradesh Pasighat (28.10N 95.38E 157m) North Lakhimpur (27.23N 94.11E 102m) **Tezpur, Assam** **(26.61N 92.78E 79m)** Biratnagar Airport, Nepal (26.48N 87.26E 72m)	July 11,2023 **Meghalaya, NE India** **M4.0/ 25.590; 90.300**

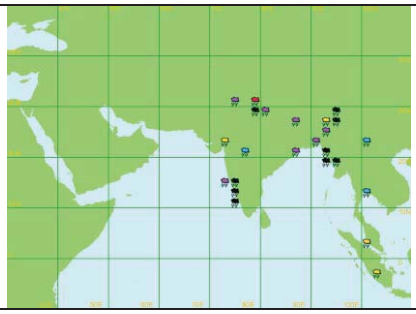
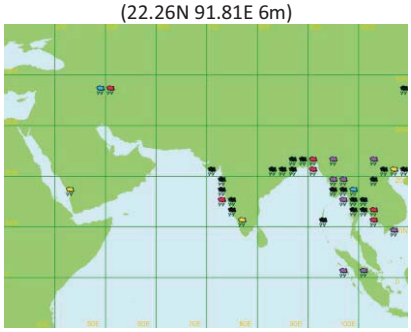
	

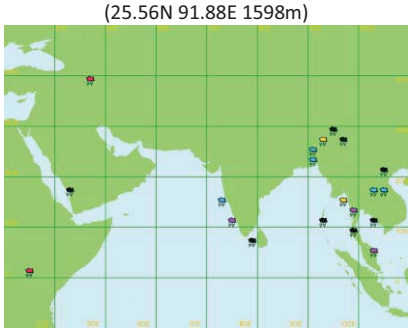
Table 14.5: Precursor and the corresponding earthquake location of Bihar, India.

Apr.11,2023 Over 100 shops gutted in fire at vegetable market in Bihar's Bodh Gaya	Apr.12,2023 Bihar M4.0/ 25.81 N; 87.17 E

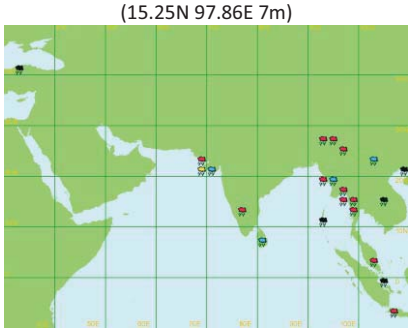
Table 14.6: Precursor and the corresponding earthquake location of Bangladesh and Manipur, India.

Aug.05,2020 India NE (20-22.81N 84-88E) Bangladesh (23.18N 89.16E 7m) (22.75N 90.36E 4m) (22.26N 91.81E 6m) 	Aug.11,2020 Manipur, NE India M 4.3 / 24.17 N; 93.89 E
Jun.12,2023 NE India Pasight, Arunachala Pradesh (28.10N 95.38E 157m) Myanmar (27.33N 97.41E) **Jun.12,2023** **Bangladesh** **(24.90N 91.88E 35m)** Shillong	Jun.16,2023 India- Bangladesh border M5.0/ **24.77 N; 92.00 E**

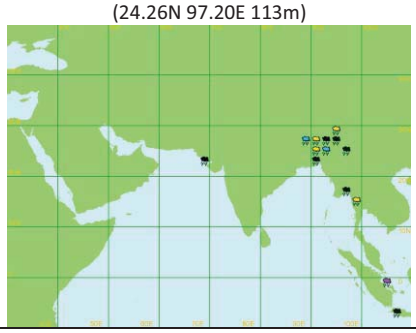
(25.56N 91.88E 1598m)



Jun.14,2023
Tezpur, Assam
(26.61N 92.78E 79m)
(27.23N 94.11E 102m)
Myanmar
(24.16N 96.33E 95m)
(19.41N 93.55E 5m)
(17.10N 96.01E)
(15.25N 97.86E 7m)



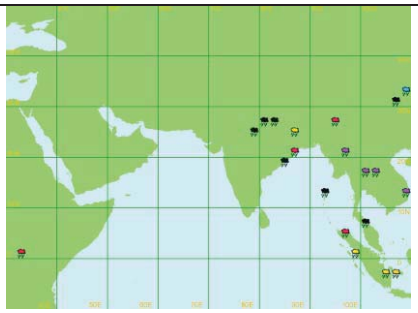
Jun.16,2023
Assam
(27.48N 95.01E 111m)
(26.61N 92.78E 79m)
Agartala
(23.88N 91.25E 16m)
Bangladesh
(24.90N 91.88E 35m)
Myanmar
(24.26N 97.20E 113m)



Jun.17,2023
Earthquake of magnitude 3.2 strikes Manipur's Ukhrul, NE India
M3.2/24.81N 94.50E

Table 14.7: Precursor and the corresponding earthquake location of Myanmar- India Border.

Oct.05,2022 NE India Dibrugarh /Mohanbari, Assam, India (27.48N 95.01E 111m)	Oct.21,2022 Myanmar- India border M4.5/ 24.22 N; 94.59 E



Oct.06,2022
Assam, NE India
North Lakhimpur
(27.23N 94.11E 102m)

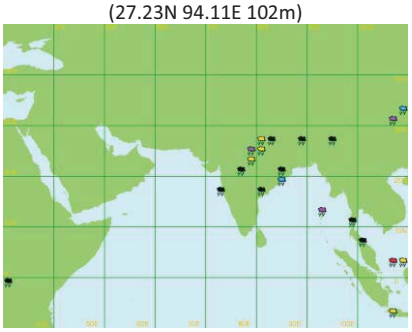
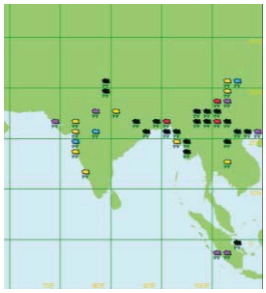
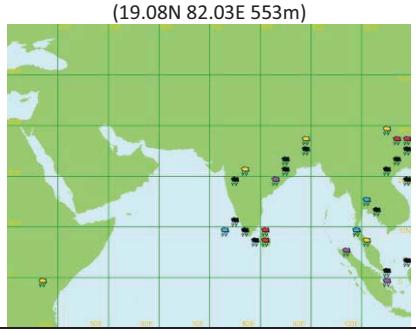


Table 14.8: Precursor and the corresponding earthquake location of Jharkhad region, India.

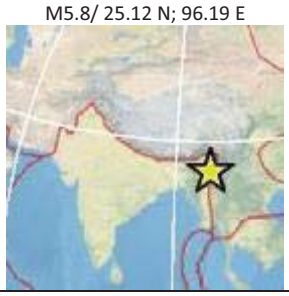
Aug.14,2020 E India Odissa (19.80N 85.81E 6m)	Aug.21,2020 Jharkhad region, India (to N of rainfall) M4.3/ 24.79 N; 87.81 E

Table 14.9: Precursor and the corresponding earthquake location of Nepal.

Aug.18-19,2020 NE India (20-23N 85-88E) Bihar and Ranchi 	Aug.25,2020 Nepal M4.1/ 29.63 N; 81.01 E
Sep.07,2020 India NE (23.31N 85.31E 652m) (21.91N 84.08E 230m) (19.08N 82.03E 553m) 	Sep.15,2020 Nepal M5.3/ 27.85 N; 85.93 E

15. Myanmar

Table 15.1: Precursor and the corresponding earthquake location of Myanmar.

May 15,2023 Cyclone Mocha leaves 'trail of devastation' in Myanmar. Cyclone Mocha was one of the strongest cyclones to ever hit Myanmar.	May 31,2023 Myanmar M5.8/ 25.12 N; 96.19 E 

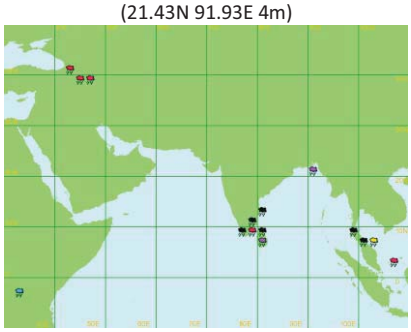
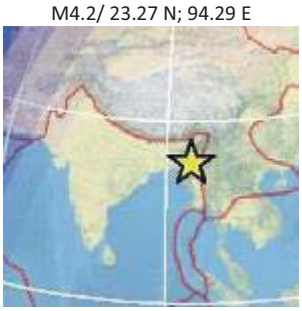
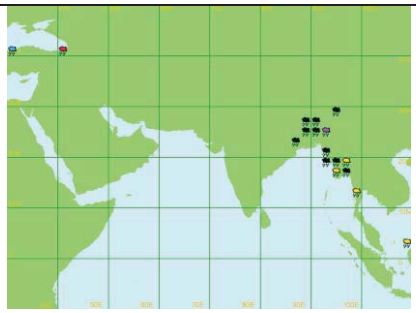
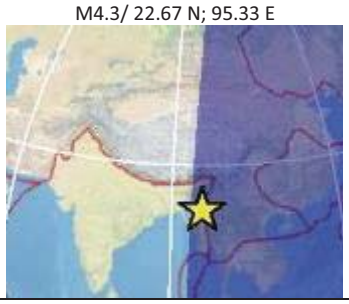
	Jun.13,2023 Myanmar M4.1/ 17.78 N; 96.63 E Jun.19,2023 Near South coast of Myanmar M5.6/ 15.33 N; 96.34 E
Nov.10,2022 Bangladesh Cox'Bazar (21.43N 91.93E 4m) 	Nov.11,2022 Myanmar (N of rain) M4.2/ 23.27 N; 94.29 E 

Table 15.2: Precursor and the corresponding earthquake location of Myanmar Near South coast of Myanmar.

Jun.21,2023 Myanmar (16-20N 92-94E)	Jun.22,2023 Near South coast of Myanmar M4.9/ 15.60 N; 96.19 E

	 July 04,2023 Myanmar M4.6/ 26.620N; 96.090E
Mar.16,2023 Myanmar: landslides triggered by heavy rainfall, landslides	Mar.25,2023 Myanmar M4.3/ 22.67 N; 95.33 E 
May.22,2021 Myanmar (14.11N 93.36E 3m)	May.22,2021 Myanmar M4.3/ 20.02 N; 95.68 E May.22,2021 Myanmar M4.3/ 24.58 N; 95.02 E
May.31,2021 Myanmar (14.10N 98.21E 17m)	May.31,2021 Myanmar M4.3/ 23.12 N; 94.64 E
July 25,2021 Myanmar (25.36N 97.40E 147m) (25.36N 97.40E 147m) July 25,2021 China (22.61N 101.81E 1121m) Laos (21.63N 101.88E 923m) July 26-27,2021 Myanmar (14-20N 92-98E)	July 26,2021 Myanmar- India border M4.9/24.57 N; 94.47 E July 29,2021 Myanmar M5.5/22.87 N; 95.95 E

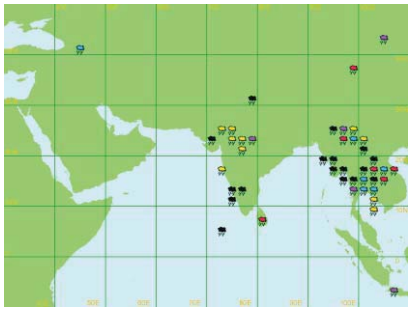
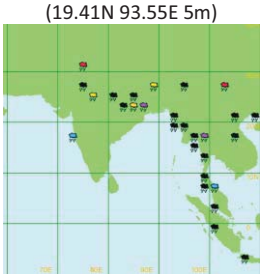
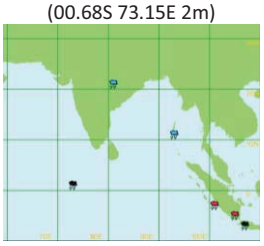
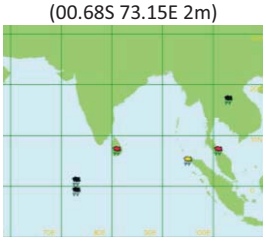
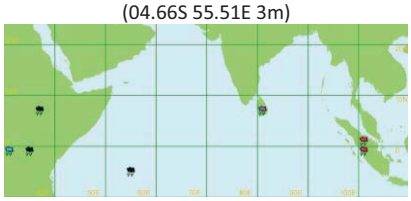
 Aug.01,2021 Myanmar (20.13N 92.88E 5m) (19.41N 93.55E 5m)  Aug.16,2021 Myanmar (27.33N 97.41E) (24.86N 94.91E 131m) (23.20N 94.30E 109m) Aug.16,2021 Myanmar (14.10N 98.21E 17m) (12.43N 98.60E 37m) Sep.24-26,2021 TC Gulab Location: 18.2N90.2E Location: 18.5N84.5E	 Oct.08,2021 Myanmar M5.5/22.33 N; 94.80 E

Table 16: Precursor and the corresponding earthquake location of Myanmar Maldives – Carlsberg ridge.

Feb.09,2021 Maldives (00.48N 72.98E 2m) Feb.21,2021 Maldives (00.68S 73.15E 2m) 	Feb.21, 2021 Carlsberg Ridge M4.9/ 2.08 S; 68.15 E
Mar.29,2021 Maldives	May.21-22,2021 Carlsberg Ridge

(00.48N 72.98E 2m) (01.88N 73.50E 2m) (00.68S 73.15E 2m)  Apr.22,2021 Seychelles (04.66S 55.51E 3m) 	M5.7/ 2.67 S; 68.11 E

17. China

Table 17.1: Precursor and the corresponding earthquake location of Myanmar Sichuan and Sichuan-Gansu border reg, China.

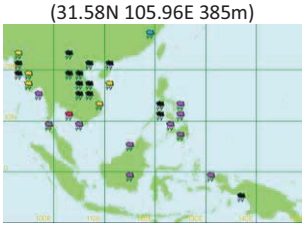
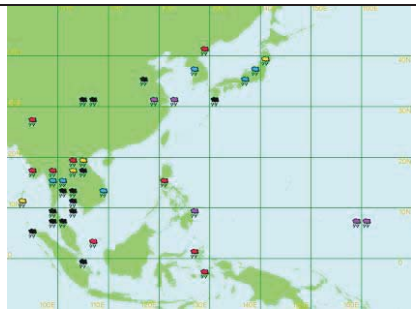
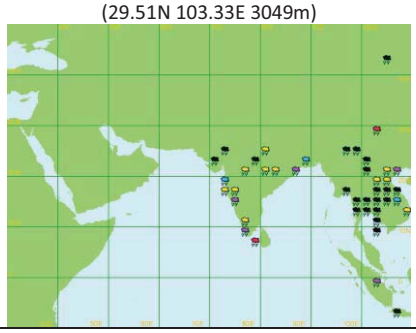
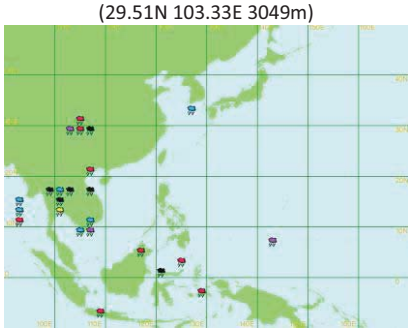
Jun.13,2021 China (Sichuan) (30.80N 106.08E 310m) (31.58N 105.96E 385m) 	Jun.13,2021 Eastern Sichuan M4.3/ 31.92 N; 104.45 E Jun.22,2021 Sichuan-Gansu border reg, China M4.5/ 32.36 N; 105.10 E

Table 17.2: Precursor and the corresponding earthquake location of Myanmar Sichuan-Chongqing bdr reg, Yunnan, China.

July 10,2021 China (Sichuan) (30.80N 106.08E 310m) (31.46N 104.68E 472m) (31.58N 105.96E 385m)	July 23,2021 Sichuan-Chongqing bdr reg, China M4.4/29.22 N; 105.42 E

<table>
<tr>
<td> 
July 25,2021
China
(29.98N 103.00E 629m)
(29.51N 103.33E 3049m)
  </td>
<td> </td>
</tr>
<tr>
<td>Sep.10,2021
China
(31.58N 105.96E 385m)
(31.46N 104.68E 472m)
(29.58N 106.46E 260m)
(29.61N 105.11E)
(29.51N 103.33E 3049m)
  </td>
<td>Sep.15,2021
Sichuan-Chongqing bdr reg, China
M5.4/29.21 N; 105.36 E
 </td>
</tr>
<tr>
<td>July 02,2020
China
(25.58N 103.83E 1900m)
(25.01N 102.68E 1892m)
(22.61N 101.81E 1121m)</td>
<td>Jul.08,2020
Yunnan, China
M 4.6 / 26.33 N; 103.01 E
 </td>
</tr>
</table>

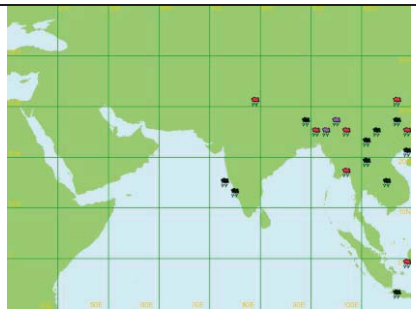
	

Table 17.3: Precursor and the corresponding earthquake location of Myanmar Qinghai: Northern Qinghai / Southern Qinghai.

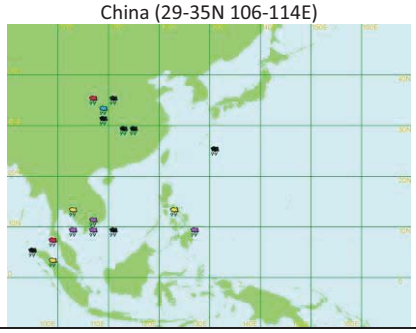
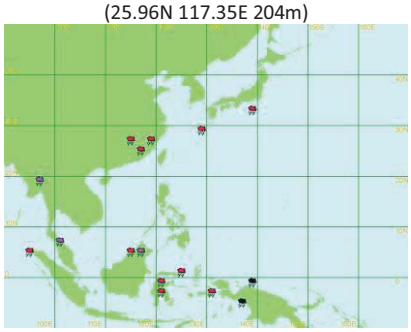
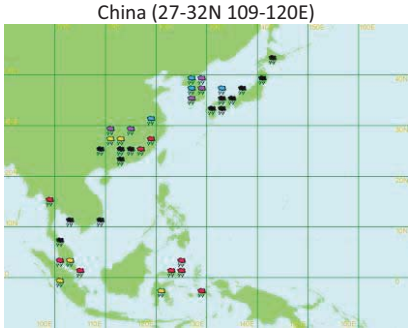
Apr.24,2021 China (29-35N 106-114E) 	May.03,2021 Northern Qinghai M4.6/ 36.72 N; 94.11 E

Table 17.4: Precursor and the corresponding earthquake location of Myanmar Southern Qinghai.

May.08,2021 China (25-27N 114,117-118E) (27.11N 114.96E 78m) (26.65N 118.16E 128m) (25.96N 117.35E 204m)  May.16-17,2021 China (27-32N 109-120E)  May 20,2021 China (24-28N 111-119E)	May.22,2021 Gansu-Qinghai border reg, China M4.7/ 34.28 N; 101.00 E May.21-23,2021 Southern Qinghai M7.4;5.2;5.1;5.1;5.1;4.6;4.8;4.8; 4.5;4.1/ 34.58 N; 98.36 E May.24,2021 Southern Qinghai M4.7;4.5/ 34.82 N; 98.00 E

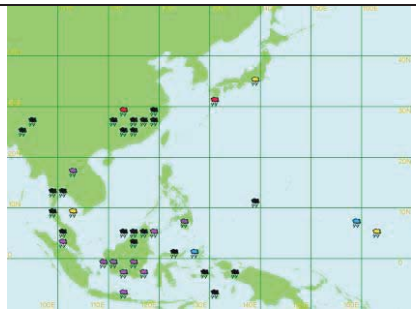
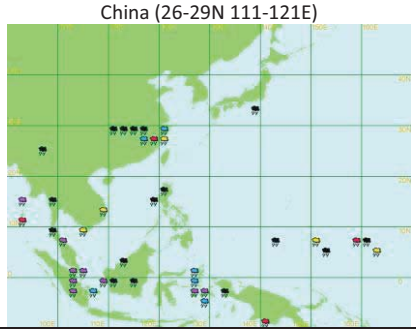
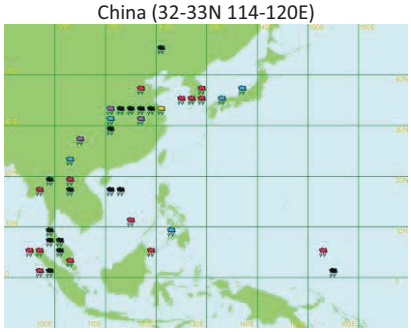
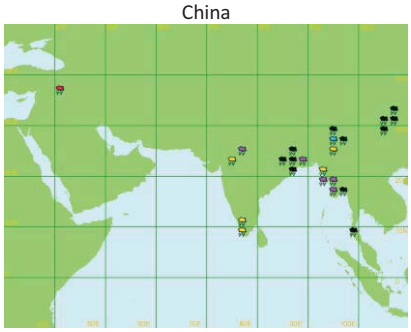
 May.23,2021 China (26-29N 111-121E) 	
July 06,2021 China (32-33N 114-120E) 	July 07,2021 Southern Qinghai, China M4.5;4.6/ 34.50 N; 98.94 E
Aug.06,2021 China (29-33N 103-107E) Aug.08,2021 China 	Aug.11,2021 Southern Qinghai, China M4.8/ 34.72 N; 98.23 E

Table 18: Precursor and the corresponding earthquake location of North Atlantic Ocean.

Jun.19-22,2023 TC Bret Location:11N -40.3W Location: 13.5N-55.8 W (above Venezuela)	July 11,2023 North Atlantic Ocean M6.6/ 20.031N; -61.134W July 11-12,2023 North Atlantic Ocean M4.4,5.0/20.542; -60.775

Table 19: Precursor and the corresponding earthquake location of South Atlantic Ocean (Indian Ocean side).

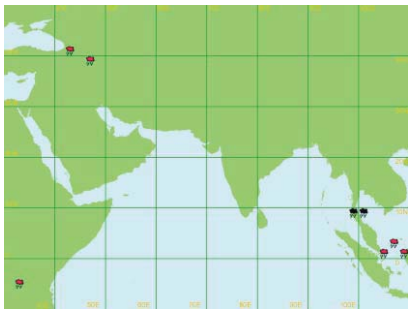
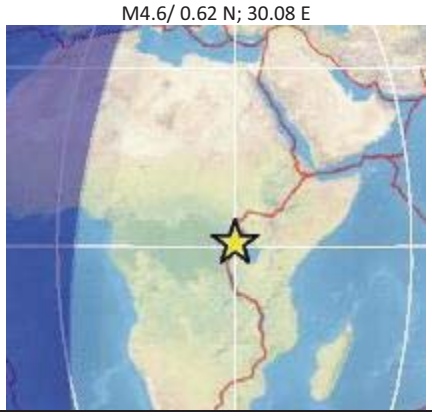
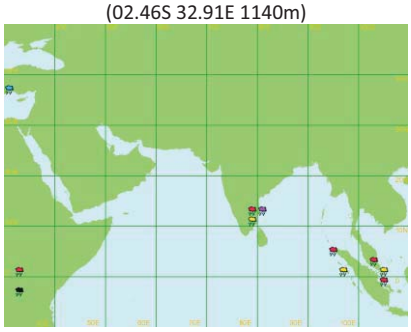
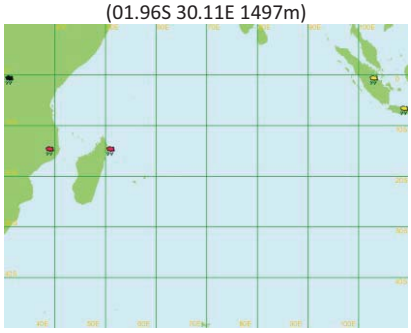
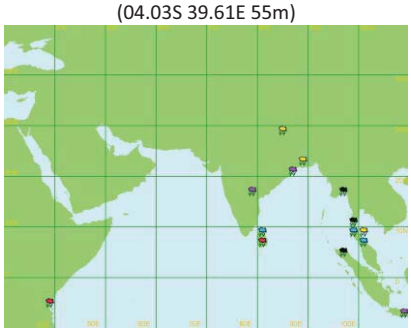
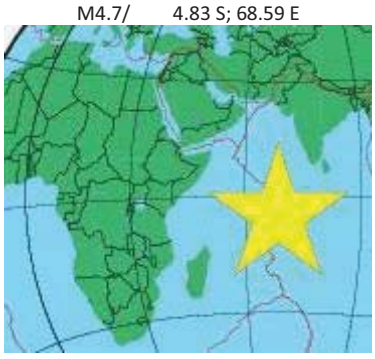
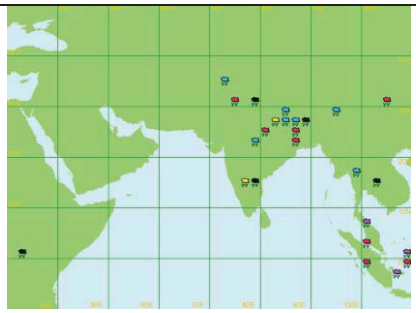
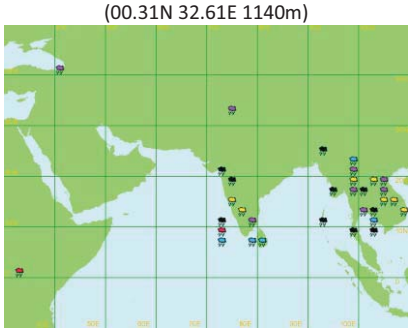
Mar.03-04,2023 Tanzania (05.08S 32.83E 1190m) 	Mar.03,2023 Lake Albert region, Uganda M4.6/ 0.62 N; 30.08 E 
Jan.01,2022 Uganda (00.45N 33.18E 1173m) Tanzania (02.46S 32.91E 1140m) 	Feb.14,2022 Lake Albert region, Uganda M4.9/ 0.56 N; 30.25 E Feb.14,2022 Lake Tanganyika region M4.7/ 4.21 S; 29.27 E

Table 20: Precursor and the corresponding earthquake location of Chagos Archipelago.

Jan.07,2022 Rwanda (01.96S 30.11E 1497m) 	Jan.07,2022 Chagos Archipelago M5.4/ 3.41 S; 68.35 E
May 05,2022 Kenya (04.03S 39.61E 55m) 	May 07,2022 Chagos Archipelago region M4.7/ 4.83 S; 68.59 E 
Aug. 29,2022 Uganda 01.71N 33.61E 1123m)	Aug. 30,2022 Tanzania M4.6/ 3.77 S; 35.61 E

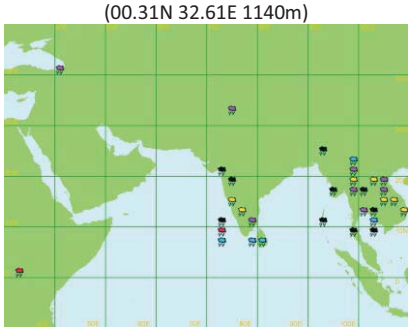


Sep. 04-06,2022
Uganda
(00.31N 32.61E 1140m)



Sep. 05,2022
Tanzania
M4.7/ 4.88 S; 35.10 E

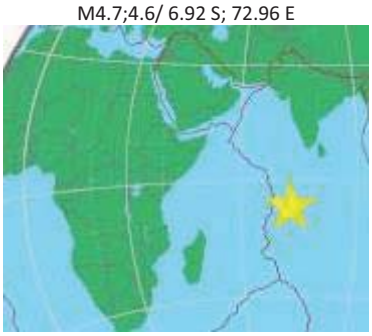
Sep. 04-06,2022
Uganda
(00.31N 32.61E 1140m)



Oct.04-09,2022
Kenya
(01.01N 35.00E 1875m)

Sep. 05,2022
Tanzania
M4.7/ 4.88 S; 35.10 E

Sep. 06,2022
Chagos Archipelago region
M4.7;4.6/ 6.92 S; 72.96 E



Oct.09,2022
Chagos Archipelago region
M5.1/ 4.18 S; 68.41 E

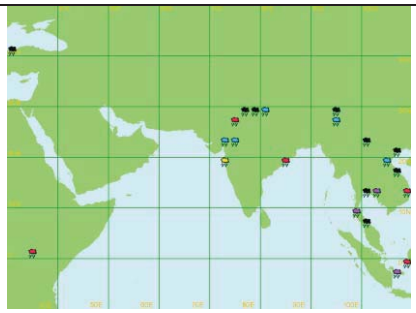
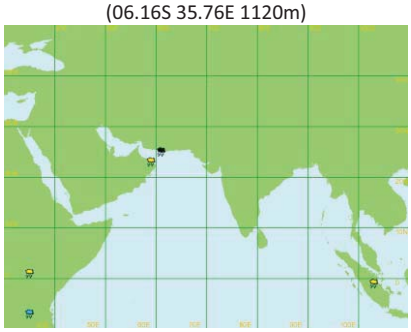
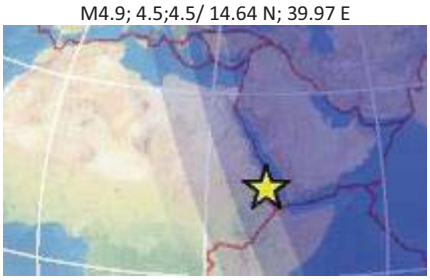
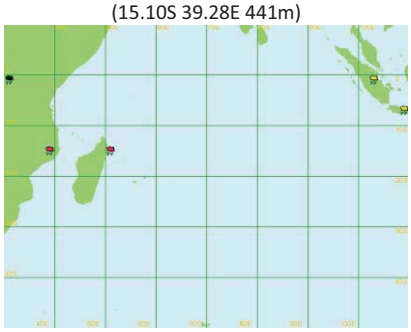
	
Dec.28,2022 Kenya (00.40N 35.23E 2104m) Tanzania (06.16S 35.76E 1120m) 	Dec.28,2022 Eritrea- Ethiopia border M4.9; 4.5;4.5/ 14.64 N; 39.97 E 

Table 21: Precursor and the corresponding earthquake location of Malawi.

Jan.07,2022 Madagascar (14.88S 50.25E 88m) Mozambique (15.10S 39.28E 441m)  Jan.05,2022 South Indian	Jan.07,2022 Malawi M4.6/ 14.11 S; 34.86 E

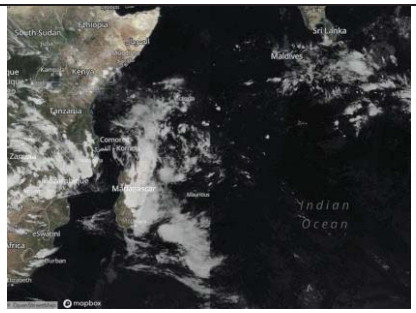
	

Table 22: Precursor and the corresponding earthquake location of Prince Edward Islands region.

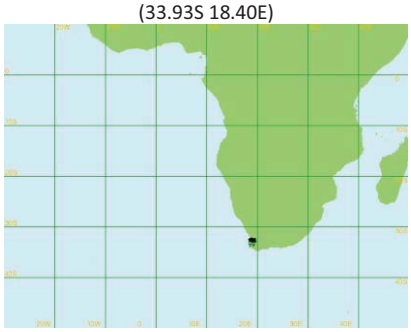
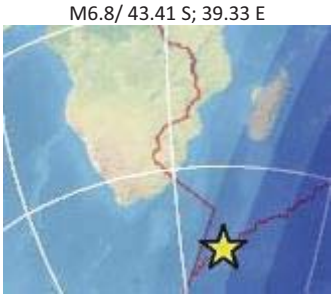
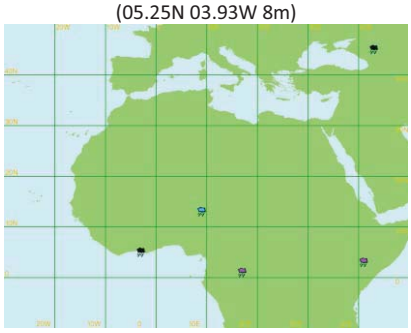
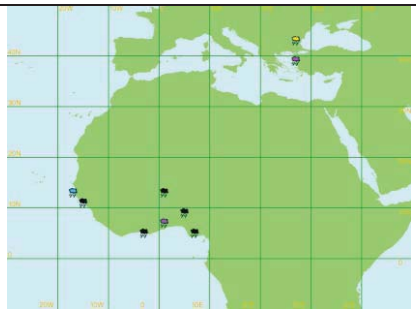
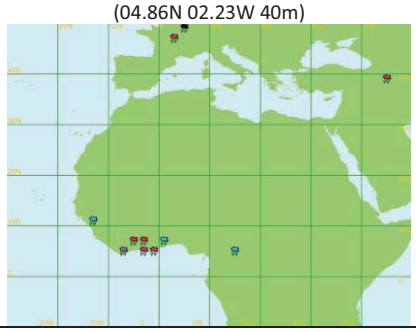
May 15-21,2023 (33.93S 18.40E) 	May 21,2023 Prince Edward Islands region (South Africa) M6.8/ 43.41 S; 39.33 E 

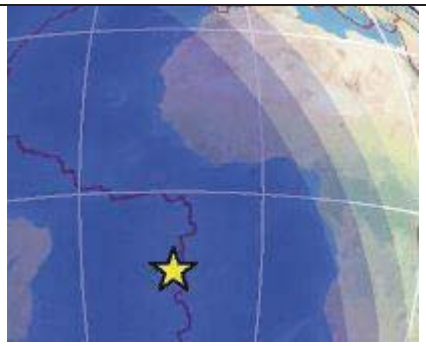
Table 23: Precursor and the corresponding earthquake location of South Atlantic Ocean.

Apr.22-24,2023 Cote D'Ivoire (05.25N 03.93W 8m) 	Apr.24,2023 North of Ascension Island M4.8/ 0.17 N; 17.20 W
Jun.20,2023 (12.06N 0.35E) Nigeria (08.48N 04.58E 305m) Togo (07.58N 01.11E 402m) Ghana (04.86N 02.23W 40m)	Jun.21,2023 Southern Mid-Atlantic Ridge M5.5/ 12.88 S; 14.67 W



Jun.22,2023
(7.73N 5.06W)
(6.65N 4.70W)
Ghana
(07.33N 02.33W 312m)
(06.20N 02.33W 172m)
(4.88N 1.76W)
Cote D'Ivoire
(5.20N 1.06W)
(05.25N 03.93W 8m)
Ghana
(5.30N 3.30W)
(04.86N 02.23W 40m)





South Africa (Indian Ocean side)

Table 24: Precursor and the corresponding earthquake location of Mozambique Channel; Mauritius - Reunion; Mid-Indian ridge; Prince Edward Islands;SW Indian Ridges (Active in Oct-Nov).

Table 24.1: Precursor and the corresponding earthquake location of Mid-Indian ridge.

Precursor Area	Epicenter zone
Mauritius (10.43S 56.75E 698 mm)	Mid-Indian ridge; 10.39 S; 66.43 E.
Comoros (11.53S 43.26E 99 mm)	Mid-Indian ridge; 10.44 S; 66.34 E.
Madagascar (21.20S 48.36E 52 mm)	Mid-Indian ridge; Nov. / M 5.2 24.11 S; 69.65 E. 20.63 S; 68.59 E
Oct. Madagascar (18 07S 49 24E 74 mm), (20 17S 44 19E 52.8 mm)	Oct. / M 6.4 Mid-Indian ridge; 38.76 S; 78.48 E.
Madagascar (15.66S 46.35E 150 mm)	Mozambique Channel; 15.06 S; 41.44 E.
Mozambique (11.35S 40.36E 99 mm)	Nov. / M 5.3 Zambia; 10.89 S; 29.77 E.

Table 24.2: Precursor and the corresponding earthquake location of Mauritius - Reunion.

Madagascar (14.28S 50.16E 77 mm) (18.11S 49.40E 60 mm)	Mauritius - Reunion; 18.53 S; 65.46 E.
Madagascar (17-18S 49.40E 54 mm)	Mauritius - Reunion region; 17.38 S; 66.79 E..

Table 24.3: Precursor and the corresponding earthquake location of Southwest Indian ridge.

South Africa (25 31S 31 54E 102 mm)	Southwest Indian ridge: 28.52 S; 63.22 E.
South Africa (25-29S 25-31E)(rainfall at 20 stans)	Southwest Indian ridge; 29.13 S; 61.15 E
South Africa (33-34S 19 28E 54 mm)	Southwest Indian ridge: 30.59 S; 59.47 E 36.57 S; 52.43 E
(Aug)South Africa (34 03S 19 09E 58 mm)	M 6.1 Southwest Indian ridge: 34.92 S; 54.00 E 33.79 S; 56.02 E

Table 24.4: Precursor and the corresponding earthquake location of Prince Edward Islands and Tristan Da Cunha.

Madagascar (25 02S 46 57E 67 mm) South Africa (25,30-31&33 26 &30-31E)	Prince Edward Islands; 46.80 S; 33.36 E.
South Africa (40.35S 09.88W 54m)	Tristan Da Cunha M5.0/ 35.48 S; 15.78 W
Ocean Islands (17.05S 42.70E) (20.46S 32.76E)	Madagascar; 20.17 S; 46.59 E
Mauritius (20.50S 57.83E)	Indian Ocean Triple Junction; 27.52 S; 65.49 E

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I could not do this historic landmark achievement beneficial to the entire humanity without the support data source of the websites:

http://severe.worldweather.wmo.int/rain/b5/, https://www.wunderground.com/hurricane,

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