

## Research Article

# How to Predict Earthquakes by Using Simple and Reliable Method? Peru, Chile, Italy, Greece, New Zealand, Andaman and Nicobar Islands, India

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This paper intended to highlight the simple, quick and reliable method to detect impending earthquake's location. Volcanic eruption precursors are originated only around the volcanos, like that the onshore earthquake precursors are originated only from earthquake epicenter zones. Epicenter zones are earthquake zones, a little variation of fault zone, it comprises movable tectonic plates. Due to the orbital motion of the earth, centrifugal force generated, this centrifugal force is the major driving force of tectonic plates. The position of the orbital motion of the earth generated seasonal variations/atmospheric weather anomalies as onshore earthquake precursors and earthquakes, year after year repeating at same places. The generation process of seasonal weather anomalies is the part of generation process of earthquakes at epicenter zones. Both seasonal weather anomalies and seismic anomalies are not continued all through the year at same places. When earth comes to particular position, tectonic plates of particular epicenter zones are set to more active and becomes unstable epicenter zones, causes identifiable, observable, recordable and testable onshore earthquake precursors 1-15 days prior to earthquakes occur.

**Keywords:** Orbital motion of the earth; Centrifugal force; Stable and unstable epicenter zones; Tectonic plates; Onshore precursors; Earthquake and earthquake prediction

**Introduction**

Earthquakes killed over 923,000 people worldwide between 1900 and 2010 according to USGS. Greece has over 2500 years of earthquake investigation, Italy 1500 years and New Zealand over 600 years. Both deadly seasonal weather and earthquakes are Billion-dollar disasters [1]. Investigating about earthquakes and earthquake prediction studies are fascinating subject for both professional and non professional researchers. Earthquake prediction study over 120 years and the study of force move the tectonic plates over 40 years are still going on without any remarkable success. A large number of universities, research organizations, researchers and government agencies though actively involved in reliable earthquake prediction research but failed in their ultimate goal. In this empirical observational study, there over 250 epicenter zones and equal number of precursor areas have been identified worldwide. Scientists must need to understand the basic scientific knowledge about the generation process of onshore earthquake precursors and earthquakes [2,3].

**Unstable epicenter zones are generates onshore earthquake precursors and earthquakes**

There are two types of earthquakes: tectonic and volcanic; there are two types earthquake prediction: deterministic with known precursors and statistical with unknown precursors; there are two periods of prediction range: short term and long term; there are two zones: fault zone and epicenter zone; there are two types of epicenter zones: stable and unstable; and there are two types of precursors seismically and non-seismically related and so on. In this empirically

observational earthquake prediction study based, tectonic type, deterministic, short term and unstable epicenter zone concepts.

Epicenter zones are high hazard and high-risk areas of atmospheric weather and seismic activities. Every seismically risky nation has one or more number of epicenter zones. Stable epicenter zones are under less influence of centrifugal force, so tectonic plates are less active or seismically quiescence; unstable epicenter zones, those are under the strong influence of centrifugal force, tectonic plates are seismically more active.

All form of are atmospheric seasonal weather anomalies that originated from corresponding earthquake epicenter zones due to the position of the orbital motion of earth. Different form of weather anomalies occurred at different position of epicenter zones. For a seismic zone there are more than one epicenter zones can set to activate and more than one onshore earthquake precursors are noticed. Heat wave, rainfall associated with strong winds are the most common onshore earthquake precursors. Wildfires over lakhs of acres, deadly tornadoes, snowfall, snow storms and rainfall associated with dominant in one region, so all epicenter zones are not generated same onshore atmospheric anomalies. Each and every earthquake onshore precursor generated from a corresponding earthquake epicenter zone. Based on the previously observed and recorded data base catalogue, onshore earthquake precursors generated first and followed by earthquakes at localized epicenter zone. When seasonal weather changes are repeating every year at same places means then the seismic anomalies are also strongly related with seasonal variation.

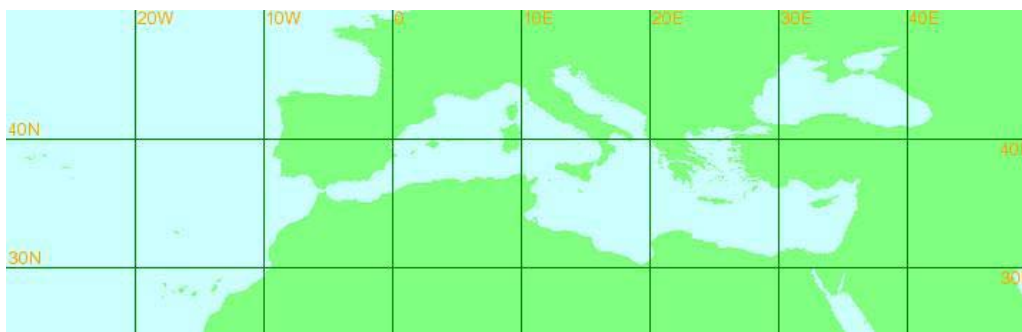
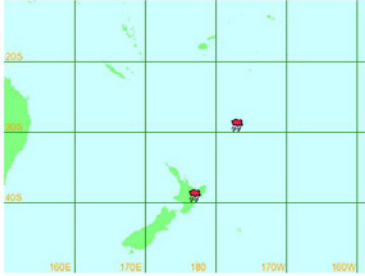




Figure 1:

Table 1: Samples of rainfall location and earthquakes direction.

Country	Rainfall location (star icon represents)	Earthquake location/epicenter zone direction
Peru	<p>April 03, 2021 Bolivia (14.31S 67.38W)</p>	<p><b>To the west of rainfall</b> April 20, 2021 Near coast of Central Peru M4.8/12.60S ; 76.69W M4.3/15.49S ; 75.40W</p>
Chile	<p>April 25, 2021 Paraguay (22-25S 55-58W)</p>	<p><b>To the west of rainfall</b> May 02, 2021 Offshore Coquimbo, Chile M5.7/30.06S ; 71.50W</p>
Italy	<p>April 13, 2021 NE Italy (45.68N 12.10E 46m)</p>	<p><b>To the south of rainfall</b> April 16, 2021 Adriatic Sea M4.2/43.24N ; 14.45E</p>
Greece	<p>April 25, 2021 Greece (38.96N 24.48E 28m)</p>	<p><b>To the south of rainfall</b> May 02, 2021 Southern Greece M4.3/36.60N ; 23.03E</p>

<p>New Zealand N</p>	<p>April 21, 2021 New Zealand N (38.65S 177.98E 5m)</p> 	<p><b>To the east of rainfall</b> April 28-29, 2021 Off E. coast of N. Island, NZ M5.4;4.6/37.72S ; 179.66E</p> 
<p>New Zealand S</p>	<p>April 26, 2021 New Zealand SW (44.66S 167.91E 6m)</p> 	<p><b>To the South of rainfall</b> May 02, 2021 Auckland Islands, NZ Region M4.5/49.83S ; 163.96E</p> 
<p>Andaman and Nicobar Islands</p>	<p>April 03, 2021 Andaman Island, India (11.66N 92.71E 79m)</p> 	<p><b>To the east of rainfall</b> April 21, 2021 Andaman Island, India M4.6/10.54N : 93.99E</p> 

## Methodology

### How to predict earthquakes?

With the help of daily rainfall/snow fall map, the star icons represent the amount of rainfall and snowfall and location in geological coordinates. In this empirical observational earthquake prediction study rainfall amount equal or greater than 50mm are used to predict of impending earthquakes magnitude 4-6+.

The essential features required to predict earthquakes are: the foremost important for earthquake prediction is Direction of epicenter zone and onshore earthquake precursor, location and time and magnitude frame.

- The direction from which onshore earthquake precursor (all form of atmospheric seasonal weather anomalies) originated would be the direction of earthquake epicenter zone.
- Onshore earthquake precursor (rainfall is the best) and its location is best to identify the impending earthquake location.
- Location: Equal or within 5° latitude and within 15°

longitude or 15° longitude and within 15° latitude from onshore earthquake precursor location. It varies from region to region.

- Distance from onshore earthquake precursors: usually within 15° Epicenter zone(s) are in permanent geological coordinates only precursor areas vary in exceptional cases.
- Time interval between onset of precursors and earthquakes: within 1-15 days, vary in exceptional cases.
- Magnitude: usually 4-6 also depend on the severity of the weather anomalies and site geological condition.

### Direction of future earthquake location

All form of atmospheric weather anomalies are the precursor to earthquakes. There are different form of weather anomalies at different location of epicenter zones. Every epicenter zone generated more than one atmospheric weather anomalies. Most common weather anomalies are heat, rainfall associated with strong winds. Among the all form of weather anomalies rainfall location best to identify the future earthquake location.

As generalized, all form of weather anomalies are generalized as onshore earthquake precursors (Table 1).

## Results

### Peru and Chile (Table 2)

**Peru:**

**Number of Islands:** More than 25

**Number of seasonal variations:** Peru has two seasons as summer and winter, but as the rainy/wet season ('summer') which runs from December to March, and the dry season ('winter') which runs from May to September.

**Number of Epicenter zones:** 8

1) Northern Peru; 2) Near coast of Northern Peru; 3) Central Peru; 4) Near coast of Central Peru; 5) Southern Peru; 6) Near coast of Southern Peru; 7) Peru - Ecuador border; 8) Peru - Brazil border.

Direction of Earthquakes (Epicenter zones) to the west of rainfall (Table 2a and 2b).

**Chile:**

**Number of Islands:** 5,000 rocky islands.

**Number of seasonal variations:** There are four seasons in most of the country: summer (December to February), autumn (March to May), winter (June to August), and spring (September to November).

**Number of Epicenter zones:** 21

1) Tarapaca, Chile; 2) Offshore Tarapaca, Chile; 3) Off the coast of Tarapaca, Chile; 4) Antofagasta, Chile; 5) Coquimbo, Chile; 6) Offshore Coquimbo, Chile; 7) South coast of Coquimbo, Chile; 8) Valparaiso, Chile; 9) Offshore Valparaiso, Chile; 10) Region Metropolitana, Chile; 11) Offshore O'Higgins, Chile; 12) Libertador O'Higgins, Chile; 13) West Chile Rise; 14) Araucania, Chile; 15) Los Lagos, Chile; 16) Off coast of Antofagasta, Chile; 17) Atacama, Chile; 18) Maule, Chile; 19) Bio-Bio, Chile; 20) Magallanes, Chile; 21) Off coast of Aisen, Chile.

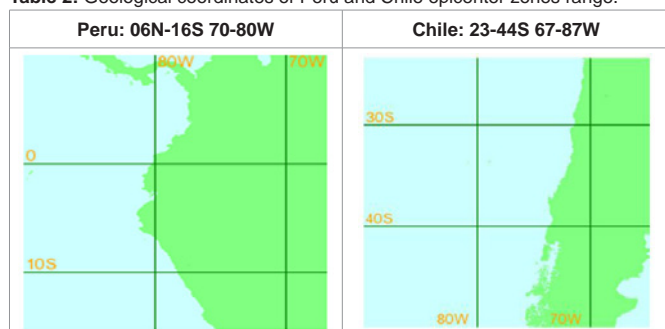
Direction of Earthquakes (Epicenter zones) occurs to the west of rainfall (Table 3 and 3a).

### New Zealand

**Number of Islands:** 600

**Number of seasonal variations:** The rains are distributed throughout the year, with a dry summer season, in the months

**Table 2:** Geological coordinates of Peru and Chile epicenter zones range.



**Table 2a:** Samples of rainfall followed by earthquakes in previous years in Peru.

Precursor (rainfall) Area	Area of Epicenter zones 06N-16S 70-80W
Ecuador 0.01-0.06N to 02S 76 & 79.36W Peru 05-08S 74-76W	Northern Peru 04-06N 74-76W
Ecuador 00 55-02S 75 & 78-79W Peru 03,05&08S 73-74 & 76W	Near the coast of Northern Peru 05,08S 79-80W
Peru 03-11S 66-73W Colombia 04 10S 69 57W Brazil 01-10S 45,55-56,58,61,67,69&72W Bolivia 14S 66-67W	Central Peru 08-14S 73-76W
Bolivia (11,13-19S 51,62,64-67E) Brazil (12-19S 46,52,56-58W Peru (12-13S 69&71W Peru 12-15S 69-70,74W	Near coast of Central Peru 11-16S 73-77W
Bolivia 13-14S 63-68W Peru, Brazil & Bolivia 13-16S 62,54-67W	Southern Peru: 15-16S 70-72W
	Near the coast of Southern Peru 15-16S 73-74W

between December and February. Snow: Snow typically appears during the months of June through to October, though cold snaps can occur outside these months.

**Number of epicenter zones:**

**North Island of New Zealand:** 6

1) Kermadec Islands, New Zealand; 2) South of Kermadec Islands, New Zealand; 3) Off E. coast of N. Island, NZ; 4) East of North Island, New Zealand; 5) North Island of New Zealand; 6) Cook strait, New Zealand.

**South Island of New Zealand:** 4

1) Canterbury; 2) South Island of New Zealand; 3) Off E. coast of S. Island, N.Z; 4) Off W. coast of S. Island, NZ.

Direction of Earthquakes (Epicenter zones) occurs to the East of rainfall (Table 4-4b).

### Italy and Greece

Epicenter zones area.

Italy: 36-46N 07-16E






Greece: 34-40N 20-40E (Figure 1).

**Italy:**

**Number of Islands:** The territory of Italy consists of the Appenine Peninsula and roughly 450 islands. The country's biggest island, which at the same time constitutes its largest administrative region, is Sicily.

**Number of seasonal variations:** Officially spring is during the months of March, April and May in Italy. Summer is from June through to August. Autumn is during the months of September, October and November and winter is from December to February.

**Table 2b:** Samples of rainfall followed by earthquakes in 2021 in Peru.

Rainfall Location	Earthquake Location
February 09, 2021 Bolivia (11.03S 68.78W) (16.26S 62.46W) February 12, 2021 Bolivia (17.80S 60.73W) Brazil (16.66S 49.25W) February 22, 2021 Bolivia (13.06S 64.81W) (13.30S 64.70W) (15.71S 63.10W /700mm)	February 28, 2021 Near coast of Southern Peru M5.5/17.57S ; 72.54W 
March 06, 2021 Bolivia (11.00S 66.11W) (13.76S 65.43W) (14.91S 65.60W)	March 14, 2021 Southern Peru M4.2/17.42S ; 69.85W  Near coast of Central Peru M4.0/14.32S ; 75.95W 
April 02-03, 2021 Bolivia (14.31S 67.38W)	April 20, 2021 Near coast of Central Peru M4.8/12.60S ; 76.69W M4.3/15.49S ; 75.40W  April 22, 2021 Southern Peru M4.2/15.61S ; 72.66W 

**Table 3:** Samples of rainfall followed by earthquakes in previous years in Chile.

Rainfall Location	Earthquake Location
Argentina 22-23,26-2,29S 55,58-61,63,65W Paraguay 22-25S 49,54-57,60,63W Paraguay:23,25S 54,57W Argentina:27S 58W Brazil: 28-29S 55-57W Uruguay:33S 55W	Antofagasta, Chile 23-25S 67-69W Coquimbo, Chile 30-31S 71W
Argentina, Uruguay, Paraguay & Brazil (27-36S 52-64W)	Maule:35S 75-76W Offshore Maule, Chile: 35-36S ; 72-73W Valparaiso, Chile: 32-33S 70-71W Maule, Chile: 35.776°S, 71.253°W
Argentina 31,33-34S 68W	Offshore Valparaiso, Chile: 32-33S 71-72W Offshore Libertador O'Higgins, Chile: 33-34S 71-72W
Argentina 36-37S 57 & 61W Brazil, Argentina, Uruguay & Chile (34-37S 54,56,59-60,,63,72,78W)	Bio-Bio, Chile: 37.617°S, 73.440°W Offshore Bio-Bio, Chile: 38.151°S, 73.730°W
Argentina:35,38S 60,62W Chile:33,36S 70,72W	Southeast of Easter Island: 35-36S 98,100,103W Araucania, Chile: 38-39°S, 72-73°W
Argentina:34,36S 57-58,64W Chile:39S 73W Argentina & Uruguay (30-36S 54-59,63W)	Off coast of Aisen, Chile 44-45S 75-78W West Chile rise: 40-44S 81,87,91W South Sandwich Islands 55-61S 25-28W
Chile & Argentina 45-46S 71-72W Chile & Uruguay 62S 58-59W 60S 44W Argentina 41,51S 68-69W	Drake passage: 57-58S 65-66W Scotia Sea 60-61S, 31,41,45,47,51W

**Number of Epicenter zones: 6**

- 1) Northern Italy; 2) Central Italy; 3) Sicily, Italy; 4) Southern Italy; 5) Adriatic Sea; 6) Tyrehenian sea.

Direction of Earthquakes (Epicenter zones) occurs to the South of rainfall (Table 5a-5c).

**Greece:**

**Number of Islands:** There are 6,000 or so islands scattered around the Aegean and Ionian Seas.

**Number of seasonal variations:**

**Rainfall season:** Most of the island's rain occurs during the winter months, from October through March.

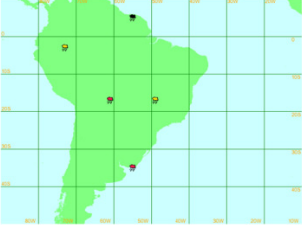



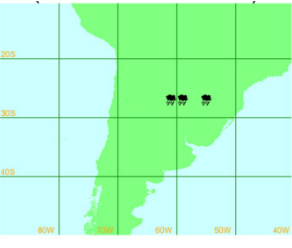

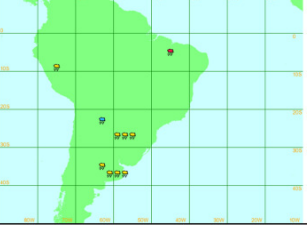



**Snowfall season:** During the winter much of Greece may have snow, and much snowfall can be expected in the higher mountains of Greece.

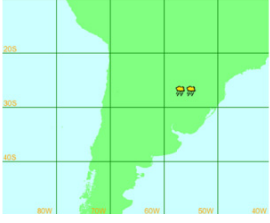

**Summers in Greece:** Usually very hot, and in July and August temperatures usually reach 30 to 35°C, but sometimes even 40°C and more.

**Number of Epicenter zones: 9**

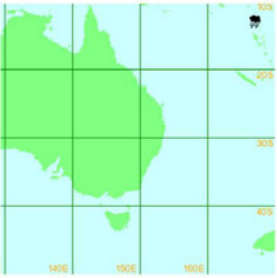
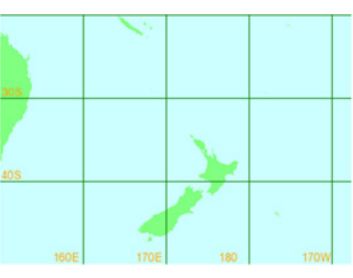
- 1) Kerkira region, Greece; 2) West of Nidri, Greece; 3) Aegean

**Table 3a:** Samples of rainfall followed by earthquakes in recent times in Chile, 2021.

<p>February 12, 2021 Uruguay (34.86S 55.10W 28m)</p> 	<p>February 23, 2021 Coquimbo, Chile M4.6/31.75S ; 71.61W</p> 
<p>March 13, 2021 Argentina (24.38S 65.08W 905m) (24.85S 65.48W 1221m)</p> 	<p>March 28, 2021 Salta, Argentina M4.3/24.07S ; 66.98W</p> 
<p>March 21, 2021 Argentina (26.73S 60.48W 93m) (26.20S 58.23W 60m) (27.36S 55.96W 125m)</p> 	<p>March 27, 2021 Antofagasta, Chile M4.0/23.32S ; 69.17W</p> 
<p>March 27, 2021 Argentina and Paraguay (22.65S 63.81W 450m) (26-27S 55-59W 52m)</p> 	<p>April 04, 2021 Offshore Atacama, Chile M4.6/28.95S ; 71.95W</p> 
<p>April 06, 2021 Argentina (27.45S 59.05W 52m)</p> 	<p>April 17, 2021 Offshore Coquimbo, Chile M4.9/30.42S ; 72.22W</p> 

<p>April 16, 2021 Paraguay (26.18S 56.35W) (26.93S 55.20W)</p> 	<p>April 21, 2021 Off coast of Antofagasta, Chile M4.8/21.38S ; 71.36W</p> 
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**Table 4:** Precursor area and epicenter zone area of New Zealand.

Precursor Area	Epicenter Zone
Australia: 27-46S 138-153E New Zealand: 34-46S 169-178E	New Zealand: 27-48S 165-179E/W
	

**Table 4a:** Samples of rainfall followed by earthquakes in previous years in New Zealand.

Precursor Area	Epicenter Zone
Australia:27-46S 138-153E New Zealand:34-46S 169-178E	New Zealand
Australia 27-33S 149-153E New Zealand 37-39S 176-178E	Kermadec Islands, New Zealand 27-30S 175-179E
Australia: 28-37S 144,147-153E, New Zealand: 34-39S 172-178E Heavy rain in Sydney & northern Victoria and east Gippsland: 35-38S 138,141,144,146,148-150E	Kermadec Islands: 27-30S 176-178W South of Kermadec Islands: 32-35S 176-179E/W
New Zealand: 35,37-38S 174,176-177E 37S 176E	Raoul Island, Kermadec Isl, NZ: 30.025°S 177.639°W
<ul style="list-style-type: none"> <li>• South Australia, burned</li> <li>• Fire in East Gippsland</li> <li>• Whale washed up Newport beach in Sydney</li> </ul>	Off E. coast of N. Island, New Zealand: 37-38S 177-179E
Australia 37.56S 149.90E New Zealand: 36-43S 169-174E	North Island of New Zealand 38-40S 175-177E
Australia: 30-42S 139-151E New Zealand: 37-45S 169-173E 42-46S 166-170E	South Island of New Zealand: 42-45S 167-175E
Wellington, NZ: 39, pilot whales stranded on NZ S Isl's Australia (Tasmania) 38-42S 145-148E New Zealand 46 10S 166 38E Forest fire in south-western Victoria, NZ	Off W. coast of S. Island, N.Z 45-48S 165-168E

**Table 4b:** Samples of rainfall followed by earthquakes in 2021, New Zealand.

<p>March 23, 2021 New South Wales 32S 147E March 22, 2021 <b>Worst flooding in decades continues for eastern Australia</b> The Australian government has declared a natural disaster across portions of New South Wales as torrential rainfall continues to inundate the region. The hardest-hit areas Port Macquarie this is a once-in-a-century flooding event.</p>	<p>March 23, 2021 South of Kermadec Islands, New Zealand M4.1/32.80S ; 179.41E</p> 
	<p>March 26, 2021 Pacific Antarctic Ridge M5.8;5.5/62.43S ; 161.56W</p> 
	<p>March 31, 2021 Kermadec Islands M5.1/29.18S ; 176.29W April 01, 2021 Kermadec Islands, New Zealand M6.3/29.98S ; 177.69W M5.7/30.02S ; 177.57W April 07, 2021 Kermadec Islands M6.0;5.8;5.6/28.88S ; 176.47W</p> 
	<p>April 10, 2021 Kermadec Islands M4.9/31.52S ; 179.89W Off E. coast of N. Island, NZ M4.9/37.48S ; 179.89W East of North Island, New Zealand M4.0/ 37.70 S ; 179.71 E</p> 

**Table 5a:** Samples of rainfall followed by earthquakes in previous years in Italy (Central Italy).

Rainfall Location	Earthquake Location
Italy (38,40 & 42N 13-14,16-17E) (64-118mm at 5 stans) Italy (M) (40-41N 08-09,12,14,17E) (51-93mm at 4 stans)	Central Italy: 43.38N ; 12.52E
Slovenia (45.76N 14.20E 989mm)	Central Italy; 42.92N ; 13.12E
Italy (42.43N 14.20E)	Jan/Central Italy; 42.53N ; 13.28E

Sea (E of Greece); 4) Ionian Sea (W of Greece); 5) Southern Greece; 6) Dodecanese Islands, Greece; 7) Dodecanese Is.-Turkey border reg; 8) Crete, Greece; 9) Greece

Direction of Earthquakes (Epicenter zones) occurs to the South of rainfall (Table 6a to 6e).





**Andaman and Nicobar Islands**

Number of Islands: 572

**Table 5b:** Samples of rainfall followed by earthquakes in previous years in Italy (Southern Italy).

Rainfall Location	Earthquake Location
Italy(S) (41.05N 15.23E 360mm) S Italy (39.58N 15.88E 54mm)	S Italy: 41.43N ; 14.43E
Italy (40.65N 17.95E 50mm) Libyan Arab Jamahiriya (32.08N 12.55E 59mm) (31.86N 10.98E 325mm)	Southern Italy: 41.68N ; 14.82E Sicily, Italy: 38.19N ; 15.57E
SW Italy (39.58N 15.88E 62mm)	S Italy: 39.812°N 16.003°E. Sep/M 5.3 (4.6;4.1)
Italy(S) (38 12N 15 33E 59mm)	Greece: 38.71N ; 22.73E
S Italy (39N 16 & 18E) (57-75mm)	Sicily, Italy: 36.72N ; 15.07E
Italy(S) (37 43N 13 26E 52.2mm)	Sicily & Southern Italy: 36.38-39N ; 14-15E

**Table 5c:** Samples of rainfall followed by earthquakes in 2021, Italy.

Rainfall Location	Earthquake Location
<p>January 31, 2021 NE Italy (43.68N 10.38E 6m)</p> 	<p>February 24, 2021 Adriatic Sea M4.3/42.70N; 17.96E</p> 
<p>March 10, 2021 Italy (40.85N 14.30E 72m) (41.56N 14.65E 807m)</p> 	<p>March 27, 2021 Adriatic Sea M5.5;4.1;4.1;4.0/42.67N;16.37E April 07, 2021 Adriatic Sea M4.1/41.50N; 19.39E</p> 

**Table 6a:** Samples of rainfall followed by earthquakes in previous years, Greece Aegean Sea.

Precursor Area 39-42N 22-29E	Epicenter zone area 39-40N 25-26E
July 09,2013 Bulgaria (42 12N 25 20E 68m)	Aegean Sea 40.36N ; 25.97E
Turkey (W) (40 58N 28 49E 200.2mm)	Aegean Sea: 39.711°N, 25.630°E
Turkey (NW) (40 11N 29 04E 55.4mm) Greece(NE) (39 55N 25 14E 50.0mm)	Aegean Sea; 39.62N ; 25.55E

**Number of seasonal variations:** Monsoon or rainy season, lasting from June to September. The season is dominated by the humid southwest summer monsoon, which slowly sweeps across the country beginning in late May or early June.

**Number of Epicenter zones:** 2

Direction of Earthquakes (Epicenter zones) occurs to the East of rainfall (Table 7-7d) (Figure 2).

**Table 6b:** Dodecanese Islands, Greece-2014 (January-June).

Turkey (W): (37-38N 23,27-28E) (52-80mm)	Dodecanese Islands, Greece: 35-36°N 26-27°E
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**Table 6c:** Crete, Greece.

Precursor Area	Epicenter Zone Area
Greece(SE) (35 29N 24 07E 77mm)	Crete, Greece: 34.571°N, 24-25°E
Greece (37 42N 26 55E 60.0 mm)	Crete, Greece: 34-36°N, 23-24,26°E
Greece (S) (37N 21-22E)(56-60mm) SW Turkey (37 02N 27 26E 57mm)	Crete, Greece: 34-35N ; 23,26E Central Mediterranean Sea: 35.32N ; 22.58E Southern Greece: 37.36N ; 23.02E

**Table 6d:** Greece West.

Geological coordinates of precursor area: 38-46N 15-21E	Geological coordinates of epicentre zone area: 36-40N 19-22E
Macedonia Greece (W) (41 06N 20 49E 50mm)	Greece: 40.14N ; 21.84E
Albania (40 28N 19-20E)(55- 64mm)	Kerkira region, Greece: 39.864°N, 19.747°E
Yugoslavia (43-44N 20-21E) (55-70mm at 5 stans) Italy (41 03N 15 14E 52mm)	W of Nidri, Greece: 38.696°N 20.535°E
Bosnia and Herzegovina (43 21N 17-18E 65.3mm) Yugoslavia (42 26N 18-19 & 21E 80mm) Croatia(Greece W) (42 34N 18 16E 53.2mm) Macedonia (41 45N 22 11E 74mm) Greece(N) 40 27N 21 17E 345mm) Greece (W) (38 37N 20 46E 329.9mm)	Greece (SW): 38.675°N, 21.121°E 38.03N ; 21.35E
Bosnia and Herzegovina (43-44N 16-17E 124.2mm) Croatia (44 06N 15 21E 52.2mm), Yugoslavia (42 46N 18 57E 68mm )	Ionian Sea: 37.334°N, 20.811°E
Croatia (42 34N 18 16E 56.8mm) Bosnia and Herzegovina (43 21N 17 48E 65.5mm)	Greece: 37-38°N, 22-23°E
Yugoslavia (42N 18-19E) Croatia (42 34N 18 16E 76.5mm)	Southern Greece: 36.515°N, 22.917°E

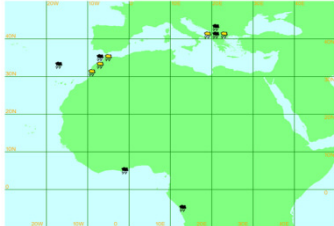



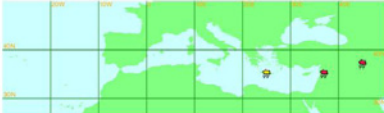



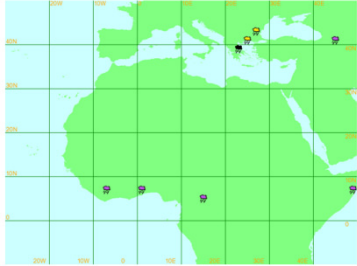



### Conclusion

Both atmospheric weather anomalies and earthquakes are repeating every year at same places to the corresponding epicenter zones with respect to the position of the orbital motion of the earth.

This empirically observed earthquake research prediction study provides the strong evidence of connection between atmospheric weather anomalies and earthquakes.

Same earthquake prediction method applied for same and different places of different continents; similar results observed. This method also best suitable to warn individual and populations of

**Table 6e:** Few Samples of rainfall followed by earthquakes in 2021, Greece.

<p>January 08, 2021 Albania N of Greece (40-42N 19-20E 354m) Bulgaria NE of Greece (40.46N 19.48E 5m)</p> 	<p>January 12, 2021 Greece M5.1 ; 4.6; 4.5; 4.1/38.39N ; 22.05E</p> 
<p>January 20, 2021 Dodecanese Islands, Greece M4.6/37.86N ; 26.75E</p> 	<p>February 24, 2021 Crete, Greece M4.1/35.58N ; 26.60E</p> 
<p>February 17, 2021 Greece S (35.18N 25.31E 336m/405mm)</p> 	<p>March 03, 2021 Greece M6.3; 5.2; 5.1; 5.0; 4.9; 4.4; 4.0/39.75N; 22.20E</p> 
<p>February 21, 2021 Greece (38.90N 22.40E 144m)</p> 	<p>April 27, 2021 Dodecanese Is.-Turkey border reg M4.1/36.45N ; 27.16E Dodecanese Islands, Greece M4.0/37.80N ; 26.99E</p> 
<p>April 20, 2021 Bulgaria (42.66N 26.31E) (41.65N 25.36E 331m) Greece (38.90N 22.40E 144m)</p> 	<p>May 05, 2021 Dodecanese Is.-Turkey border reg M4.4/36.38N; 27.61E</p> 
<p>April 24-25, 2021 Greece (38.90N 22.40E 144m) (38.96N 24.48E 28m)</p> 	<p>May 02, 2021 Southern Greece M4.3/36.60N; 23.03E</p> 



**Table 7:** Geological coordinates precursor area and epicenter zones.

Precursor Area	Area of Epicenter Zones
<b>Andaman</b> 08-21N 72-102E	10-18N 92-95E
<b>Nicobar Islands</b> 06-11N 75-101E	06-09N 92-95E

**Table 7a:** Samples of rainfall followed by earthquakes in previous years, Andaman Island.

Precursor Area	Epicenter Zone
Andhra Pradesh, S India (For Andaman) (16-17N 82-83E) (146mm) India (19.08N 82.03E 56mm)	May/M 5.9 Bay of Bengal: 18.24N ; 88.05E
India; Jagdalpur (19 05N 82 02E)	Andaman Islands, India: 14.427°N, 93.417°E
Andaman Islands: 11 40N 92 43E Tropical Cyclone Three Wind: 40 MPH - Location: 15.9N 87.7E Flood in India	Andaman Islands, India: 13.851°N, 93.655°E (8-11 days)
Orissa (20-21&23N 85-87E), Andhra Pradesh (17&26N 83&88E).	Andaman Islands, India: 12-13°N, 95°E
Tropical Cyclone Lehar 08.1N 97.1E; wind: 85mph	Andaman Islands, India: 11.45N ; 93.63E
Cold wave conditions over south Indian states Tamilnadu and North Interior Karnataka.	SE of Port Blair, Andaman Islands, India: 10.619°N, 94.117°E.
Heavy rain in different parts of Tamilnadu, S India. Temperature crosses 100°F in four districts. (08 29N 76 57E) and (11 40N 92 43E) S India (12-13N 74,77 & 80E) (11 40N 92 43E)	Andaman Islands, India: 10.601°N, 93.889°E

earthquakes.

Epicenter zones generated onshore earthquake precursors are identifiable, observable, verifiable and testable for any seismic regions.

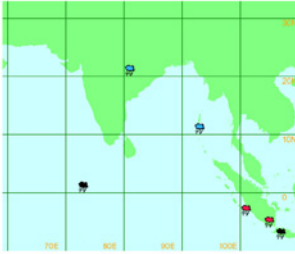



This empirical research based on observed and measured phenomena from actual experience.

### Acknowledgment


I whole heartedly submitted my findings that beneficial to the entire humankind at the feet of great saint, His Holiness Maha Maha Periyava. I would like to pay my greatest regards to (late) Prof. Dr. K.V Gopalakrishnan, IIT, Madras, Mrs. Vasantha Gopalakrishnan, Mr. K.V.G. Sundararaman, Oracle, New Delhi, India, Mrs. Padma, California, USA, Dr. P. Srinivasulu, SERC, CSIR, Madras (Retd), Mrs. Malayhi Srinivasan, V. D. Nagarajan, N. Malarkodi Nagarajan, (late) M. Kalidas Managing Director, KEL, Tiruchi, Tamilnadu (I was worked in the Mechanical Destructive Lab) India and my parents; wife P. Bhuvanewari , my daughters P. Aparna and P. Aravindh and well-wishers for their affectionate support to my continuous hectic 35 years of earthquake prediction study and 12 years of continuous data observations of both atmospheric weather changes and earthquake events, though they are not experts in this field.

I would like to show my whole-hearted gratitude to (late) Dr. V. Shantha, Chairman, Adyar, Cancer Institute, Chennai. Dr. Venkatraman Radhakrishnan, Department of Medical Oncology, Dr. Aravind Krishnamurthy, Department of Surgical Oncology, and B. Gopinath, Adyar Cancer Institute (WIA), Chennai, India where I am taking the best medical treatment and helping me to get second lease

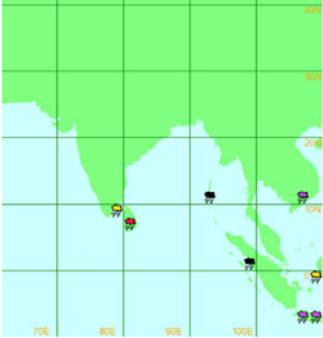

**Table 7b:** Samples of rainfall followed by earthquakes in 2021, Andaman, India.

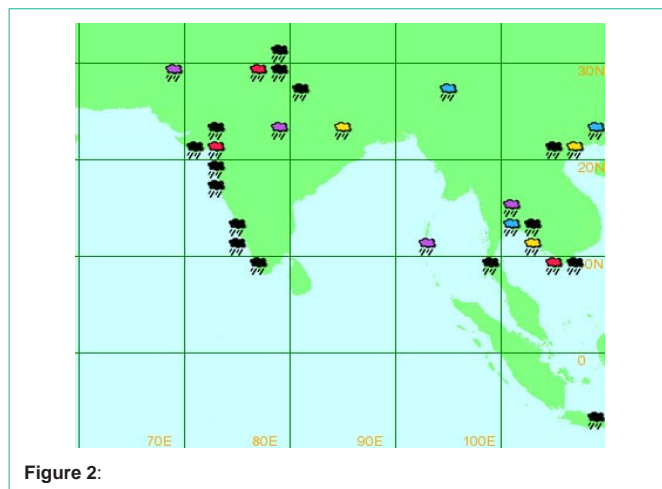
<p>February 09, 2021 Andaman, India (11.66N 92.71E 79m) February 15, 2021 N India (22.00N 80.70E 581m) Andaman (10.58N 92.55E 5m)</p> 	<p>February 16, 2021 Andaman Isln, India M4.6/12.20N ; 94.66E</p> 
<p>April 03, 2021 Andaman Isln, India (11.66N 92.71E 79m)</p> 	<p>April 21, 2021 Andaman Isln, India M4.6/10.54N ; 93.99E</p> 

**Table 7c:** Samples of rainfall followed by earthquakes in previous years, Nicobar Islands, India.

Precursor Area	Epicenter Zone
Sri Lanka & S India	Nicobar Islands, India
S India, Sri Lanka & Thailand (06-08 & 10N 79,81 & 99-101E) Tropical Cyclone: 09.8N 83.8E; wind: 75mph Sri Lanka & India (06-09N 76-80E) Heat wave above 100F condition prevails in S. India for 5 days.	Nicobar Islands, India: 9.75N ; 93.02E 6.18N ; 95.41E
S India Kozhikode: 11 15N 75 47E Sri Lanka: 06 02N 80 13E Sri Lanka (06-07N 79-81E) S India, Kerala (08-09N 73&76E).	07-09°N, 93-94°E 6.648°N, 95.614°E
March 18, 2014 Andhra Pradesh, South India: The Seshachalam forests, where a fire broke out in the forested Tirumala hills. Reports of a second fire are also doing the rounds. So far about 400 hectares of forest cover has burnt to ashes. Mar.19,2014 Sri Lanka (06.11N 81.13E 80.5mm)	06-08°N, 92-93°E
	March 21, 2014 M 6.3 (5.4; 5.3; 5.0; 4.9; 4.6; 4.5; 4.4; 4.3; 4.2; 4.1) Nicobar Islands, India: 7.71N; 94.22E

**Table 7d:** Samples of rainfall followed by earthquakes in 2021, Nicobar Islands, India.

April 21, 2021 Arabian Sea (08.30N 73.15E 2m) Sri Lanka (06.03N 80.21E 18m) April 16, 2021 Sri Lanka (07.71N 81.70E 12m) (06.98N 81.05E /858mm) May 04, 2021 Sri Lanka (06-07N 80-81E)	May 05, 2021 Nicobar Islands, India M4.9/8.70N; 94.21E
	



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/>); (<http://www.emsc-csem.org/Earthquake/world/M4/>); [www.wunderground.com/hurricane](http://www.wunderground.com/hurricane).

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of life to serve this humanity.

I also immensely grateful to Dr. Michael Blanpied, NEPEC Secretary, USGS and Dr. Jerney Zechar, CSEP, USA for sharing their pearls of wisdom during the course of this observational research and Dr. Jeremy Zechar, who arranged his students to test my hypothesis. Also, my sincere thanks to Prof. Dr. R. Chandramohan, Research Advisor, Vidhyaa Giri College of Arts and Science, Puduvayal-Tamilnadu State, India and Prof. Dr. A.T Ravichandran, Department of Physics, National College, Tiruchi, Tamilnadu, India for valuable suggestions in this observation research study.