Study the Biopotential Parameter For Detection Of Seismic And Enviornmental Changes In Indian Region

Rudraksh Tiwari¹, Vijay S Katta¹, Vinod Kumar Kushwah¹, Mulayam Singh Gaur¹, Priti Dimri²
¹ Department of Physics, Hindustan College of Science & Technology, Farah, Mathura, India
Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Lucknow, U.P. India
² Department of Computer Science and Applications, G.B. Pant Engineering College, Ghurdauri, Pauri-246194(Uttarakhand)

ABSTRACT

The changes in the magnetic flux generated (electric, magnetic and electromagnetic waves) on the surface of earth due to sudden changes is a matter of discussion. These emissions occur along the fault line generated due to geological and tectonic processes. When sudden changes occur in the environment due to seismic and atmospheric variations, these sensing was observed by creatures and human bodies because the animals and trees adopt the abnormal signals and change the behavior. We have analyzed the changing behavior of recorded signal by live sensors (i.e. banyan tree). So we use the deep rooted and long age’s banyan tree. Banyan tree (long ages) in which root has been working as a live sensor and record the geological and environmental changes. We record the low frequency signals which propagated through solar-terrestrial environment affect directly the root system of the banyan tree and changes has been observed by live sensors. Then, VLF signal may propagate to the earth-ionosphere waveguide. We have also analyzed the different parameters of live cells which is inbuilt in latex of the tree, so we record the dielectric parameters of green stem latex and found some parameters i.e., dielectric constant (ε) and dielectric loss (ε') of various trees to verify these natural hazards and found good correlation. Therefore, we can say by regularly monitoring the bio-potential signal and dielectric properties of banyan tree we can able to find the precursory signature of seismic hazards and environmental changes.

Keywords: Dielectric Constant; Dielectric loss; Earthquake; Latex; Seismo-electromagnetics

1. Introduction

An earthquake is a very devastating phenomenon of earth surface which occurred due to sudden moment of plate tectonic theory. Earthquake prediction is a new area of research which serves us a promising tool in finding the natural hazard which helps us in minimizing loss of life and property. It is very difficult to identify the seismic signals originated which led to the precursory signature of earthquake. When rocks collide with other rocks, low level electromagnetic waves originated in the vicinity of prone area, which when detected helpful in predicting the precursory signature and than we are able to define the time, place and magnitude of earthquake. Scientists have difficulty in predicting and analyzing such low level electromagnetic waves. These abnormal signals are originated before every natural hazard like before the initiation of active volcanoes, landslides, earthquakes, hurricane and tsunami. Here, we focus on seismic electric signals or activities, which consist of series of waves originated before the commencement of earthquakes in several areas in the country. Certain green plants, such as Mimosa pudica, Venus flytraps and banyan trees which are deep rooted and old ages are very sensitive to electric signals. These trees observed the environmental changes and which we use as the indicate source of seismic activity. Therefore, we require a system, with the help of which we can able to define the precursory signature of any seismic activity. It has been reported in previous research that ground based observations of ultra-low frequency signals and very low frequency signals (0.01-10 Hz) shown the
pre-cursory signature of earthquakes was studied by A.C. Fraser Smith [1, 2]. Many researchers have reported earthquake precursors from ground based observations of Ultra-Low Frequency (ULF) such as measured by A.C. Fraser Smith [1]. They reported the results of measurements of low frequency magnetic noise by two independent monitoring systems prior to the occurrence of the Ms = 7.1 Loma Prieta earthquake of 17 October 1989. Their measurements cover 25 narrow frequency bands in the more than six-decade frequency range 0.01 Hz–32 kHz, with a time resolution varying from a half hour in the ULF range (0.01–10 Hz) to one second in the ELF/VLF range (10 Hz - 32 kHz). The ULF system is located near Corralitos, around 7 km from the epicenter. The ELF/VLF system is located on the Stanford campus, about 52 km from the epicenter. However, the ULF data have some distinctive and anomalous features. First, a narrow-band signal appeared in the range (0.05–0.2) Hz around September 12 and persisted until the appearance of the second anomalous feature, which consisted of a substantial increase in the noise background starting on 5 October and covering almost the entire frequency range of the ULF system. Third, there was an anomalous dip in the noise background in the range (0.2–5) Hz, starting one day ahead of the earthquake. Finally it is the most compelling; there was an increase to an exceptionally high level of activity in the range (0.01–0.5) Hz starting approximately three hours before the earthquake. Further, while the systems were sensitive to motion, seismic measurements indicate that there were no significant shocks preceding the quake. Thus, the various anomalous features in our the data and in particular event the large-amplitude increase in activity starting three hours before the quake may have been magnetic precursors. The results of precursory signature by electromagnetic emissions were reported by Hayakawa [3]. The electromagnetic phenomena of ground based observations abrupt low frequency signals was measured by P. Varotsos and K. Alexopoulos [4]. These signals have also been recorded by M. B. Gokhberg [5] with high frequency receivers. The propagation characteristic of low frequency signals during and before the time of seismic activities recorded by various authors [6-8]. The characteristics of ultra-low frequency signals have less contamination, low skin depth and low attenuation propagated in seismic swarm reported by Park et. al., [9]. He explained mechanism with mathematical modeling and found that the low frequency signals propagates through large distance from epicenter has been received by resistivity of signal 1000 ohm meter for surrounding rock and 10 ohm meter for a 500 meter wide by 20 km deep fault and the mechanism of ultra low frequency signals of electromagnetic field generation based on micro fracturing mechanism whose creation and relaxation of charges at the walls of opening cracks ion from earthquake was explained by O.A Molchanov and M. Hayakawa [10]. This phenomenon is also verified by A. Benardi, I.L. Gufeld, M. Hayakawa, Y. Kopytenko [11-14]. They have been investigate thoroughly by different mechanisms, recording technique and found that the ULF range frequency is very prominent for seismic activity research. In the last couple of years the seismic activity has been generated unoccaissionally and destroyed huge life and property. The various theory and mechanism have been produced to record the precursory signature of seismic activity by various researcher and this theory was approved by different experiential verifications. Among them one mechanism is adopted in this paper for precursory study of seismic activity. The mechanism of electromagnetic energy on latex involves the transport of the electrical charges by the ions present in the biomass cell wall and cellulose. Once, the electromagnetic energy is encountered the latex, randomly oriented dipoles in dielectric material align themselves in a direction opposite to applied external electric field. The molecule absorbs the energy stored as potential energy. By the mechanism of ionic conduction and dipole rotation, polar molecules vibrate and produce kinetic energy and the dielectric properties can be studied on the energy that is being reflected, transmitted through the surface and absorbed by the materials. Each type of energy is specified with its term. Dielectric constant (ε) is the ability of material to store electric energy reported by S. Ramasamy and B. Moghtaderi [15]. Dielectric loss (ε') is the characteristic of material to convert the electromagnetic energy into heat is clearly explained by A. A. Salema [16]. The relationship of these two values is represented by equation as follows:

$$\varepsilon^* = \varepsilon - j\varepsilon'$$

where \(\varepsilon^*\) is the complex dielectric constant, while \(\varepsilon\) and \(\varepsilon'\) are the real and imaginary part of complex dielectric constant [15]. Loss tangent is the ratio of dielectric loss to dielectric constant. Omar and his group explained the
attenuation of microwave power in materials which resulted in heating has been compiled and characterized EFB (Empty Fruit Bunch) for pyrolysis using microwaves as an alternative heating source[17]. EFB has been taken from a local oil palm mill was subjected to fuel, chemical and dielectric property analysis. Notably, high water content is an advantage in microwave heat-in gas water is a good microwave absorber, which results in fast drying. The dielectric properties of EFB were observed to be proportional to the moisture content. However, low values of both dielectric constant and loss of dried EFBs would require the addition of microwave absorbers for pyrolysis reaction. The dipole rotation is depended on several factors such as moisture, frequency and fiber directions were discussed by I. Hussein [18].

The study of dielectric properties of oil palm shell, oil palm fiber, empty fruit bunch, hardwood (Acacia mangium, Swietenia macrophylla and Maescpsis eminii) and switch grass [16-19] were reported by various authors and found the same type correlation. In this paper, we will discuss the low frequency signals generated through collision of ground particles and propagate through earth medium and receive by latex in the form of potential difference, which is received by (EPR-3531) Electronic Poly Recorder and determines the internal characteristics of latex i.e. the form of waves which will give the amplitude and intensity of the signal. We also calculated dielectric properties like dielectric constant, dielectric loss of the latex which verifies and shows a very good correlation with seismic activities.

2. Experimental set-up and ionospheric data

We have installed the three channel Electronic poly recorder (EPR-3531) for receiving the bio-potential signals in the form of waveform. The system has been installed in rural area nearby active fault region (Mathura-Faridabad ridge) which is far away from artificial and manmade noise and characteristic of latex has been identified by LCR Hi-Tester Meter to analyze the dielectric properties like Dielectric Constant (ε), Dielectric Loss (ε’) of latex material from deep rooted trees. (i.e. banyan trees of different ages) and simultaneous observation is taken by Terrestrial Antenna which was installed on our three stories college building which is near to recording station of bio-potential signals. We have examined the real time data with different data of ionosphere i.e., magnetic storm data and earthquake data and found correlation between seismic and atmospheric activity simultaneously which we will discuss later in result section.

Electronic Poly-recorder (EPR- 3531)          Hi-Tester Meter (3235-50)

Figure 1. Showing the Electronic Poly recorder to measure the bio-potential and LCR Hi-Tester Meter for measuring the dielectric properties.

In order to measure the level of the signal strength at bio-potential antenna, we have taken the observations of the natural D.C. potential with respect to banyan tree using a digital multimeter model no. MAS830L from 01May, 2017 to 30 July, 2017. We found that the bio-potential increased from 10 to 50 mV from May 2017 to 31 July, 2017 on the occasion of seismic events before and after the occurrence of earthquake. The root of tree works as an antenna system to record the amplitude variation of signal generated in mV. It means, when the signal strength was larger than 200 μV/m at the antenna, then the amplitude was enhanced as compared to the regular signal. We recorded the enhanced signal (around 30-45 mV) during the Rohtak earthquake. The signal at the antenna was assumed to propagate through the earth-ionosphere waveguide from the epicentral region of three earthquakes during which there was not much
attenuation. These signals were observed in the form of signal bursts of varying amplitude in months which have been mentioned earlier in the paper, as observed at Farah, Mathura region, and were correlated with seismic activity data. The observations were taken in rural area and the bio-potential antenna was made by inserting silver electrodes in a banyan tree, some 100 years old. It has been found that during the days of seismic activity, the biopotential data is dominated by the emission from a seismic source, while during non-seismic days, the data has been observed in normal potential, which is around 5-10 mV. Now we made the calculation of attenuation suffered by seismo-electromagnetic signals at a frequency of 3 KHz for a model of the earth’s crust in which the signal propagated from the source region in the middle layer to the top layer of the earth’s crust, through the upper layer during the precursory surface of any seismic activity. We have analyzed the data of bio-potential, terrestrial and magnetic storm from 01May, 2017 to 30July, 2017 and done the statistical analysis of data and found that the seismic activity which will help us in predicting the natural hazards. In this analysis the bio-potential signals was enhanced due to occurring of seismic activity but not more enhanced in terrestrial antenna recording signals during the precursory time. We have taken the data of earthquake from India Meteorological Department website chosen the local and regional earthquake which is nearby around 1000km and low depth and high magnitude. The signal received by bio-potential and terrestrial antenna both, the enhancement of amplitude in terrestrial antenna received at the same time as that of bio-potential. The more enhanced terrestrial signals is eliminated by low pass filter with MATLAB software.

![Bio-potential signal 01 June, 2017](image)

**Figure 2.** Showing the signal bursts of varying amplitudes recorded by Bio-potential Antenna recorded at Mathura.

3. Results and discussion

When any seismic activity occurred under the ground the emission has been responded with abrupt changes in amplitude, polarization ratio, statistical analysis at the time of event, before and after the occurrence of seismic activity and verified the atmospheric signals which is only recorded in terrestrial antenna not recorded in ground based sensors, now for more authentication we have started the bio-potential study by electronic poly recorder and the internal characteristic has been analyzed by LCR Hi-Tester Meter whose output is given the real mechanism of generation of seismic activity which will discuss later. We have analyzed the data of bio-potential by deep rooted banyan tree and found that the abnormal amplitude signal was enhanced during and before the seismic activity was greater from the mean value. The amplitude variations of the transient change of potential difference (bio-potential) are shown by solid lines (blue colour) in figure 2 and comparison with seismic activity data was discussed in figure 8 which verified, that the signal has been generated under the ground and give the explanation of atmospheric signals and bio-potential
respectively. In figure 3 we see the signal bursts of varying amplitudes recorded at monitoring station by terrestrial antenna. We have plotted the amplitude (mV) on Y-axis and real time recorded on x-axis for 24 hours on 01 June, 2017. The area shown by blue color lines are the signal and spikes are the noises. Terrestrial antenna measures the coupling of atmosphere-lithosphere-ionosphere. It is clear that the signal bursts recorded by terrestrial antenna was not the original frequency because it is a mixture of different attenuations by various sources like aeroplane, some building noises, reflection of bird and manmade disturbances. So we can say that the signal received by the terrestrial antenna was not desirable signal for authentication of a seismic activity in sub-continent region. Terrestrial antenna receive the signals are the source for indication of environmental variation and seismic hazards.

![Terrestrial Signal 01 June, 2017](image)

**Figure 3.** Showing the signal bursts of varying amplitudes recorded by Terrestrial Antenna recorded at Mathura.

The amplitude variations of the transient change of potential difference between two electrodes were obtained by inserting the electrodes in tree (bio-potential) with time was shown in **Figure 2**. The signal enhancements have two possibilities. One is that the amplitudes were enhanced due to some changes in the atmosphere. (i.e., seasonal variation and disturbed magnetic storm data) and the second possibility is that the amplitude are enhanced due to change in potential difference between two electrodes generated prior or during and after the earthquakes. The reason of the amplitude enhancements (bio-potential) is that they are due to movement of tectonic plates which create the pressure (in the form of energy) due to friction (i.e., dipping process of two plates with subduction zone and micro fracturing process). So, when any seismic activity occurred within 1000 Km region at a shallow depth, the pressure has been produced and released in the form of energy, when the energy has been come out near the root of old-age tree, the potential has been changed abruptly. This phenomenon is responsible for the enhancement of amplitude of bio-potential data. **Figure 2** representing the signal received by Electronic Poly Recorder (EPR-3531). The signal received was further analyzed by MATLAB Software which was authentification of the signal received by terrestrial antenna on the same date and time. The signal received was less destructible, less noise and without attenuation of the obstructs and easily received by inserting electrodes in deep rooted banyan tree which denotes the concentration of xylem and phloem was received in the graphical form with the help of EPR-3531. The signal received by terrestrial antenna and bio-potential antenna are verified by the study of dielectric properties of Banyan tree (100 yrs), Banyan tree (50 yrs) and Akkaua tree (10yrs). We have also analyzed dielectric properties of latex of different trees to verify the terrestrial and bio-potential signal received. It is proved that when two types of latex is available from two types of trees one is lower edge and shallow depth and other is old age and deep rooted. As we know that when the age of the tree succeeds, then the latex of the tree becomes more concentrated in comparison to lower age tree. The similar type of analysis has been recorded on human blood by M.S. Gaur [20]. When electromagnetic wave energy is just near the circular radius of tree, the root absorbs electromagnetic energy which directly affects the latex and the loss has been increased due to
increase of frequency, this mechanism is similar to human nature of all circumstances with pressure of different ages. We have also analyzed the dielectric properties of green stem latex and found some parameters like Dielectric Constant (ε) and Dielectric Loss (ε') of various trees and found very good correlation with online seismic activities which may be a precursory signature of hazards. As we see in the fig.4, the dielectric constant (ε) of Banyan Tree (100 yrs.), Banyan tree (50yrs), Akkaua Tree (10yrs) is decreasing with the increase in frequency (Hz). Once the energy is encountered the latex of tree, randomly oriented dipoles in dielectric material aligns themselves in a direction opposite to applied external electric field. The external electric field is generated by collision of ground particles due to generated the pressure by any seismic activities. The molecule absorbs the energy and store as potential energy. By the mechanism of ionic conduction and dipole rotation, polar molecules vibrate and produce kinetic energy. Dielectric properties can be studied on the energy that is reflected, transmitted through the surface and absorbed by the materials. Each type of energy is specified with its term. Dielectric constant (ε) is the ability of material to store electric energy. When frequency was increased from 1 to $10^5$ Hz, dielectric constant was decreased. The result depicted that electric field of Hi-Tester Meter affected the interaction of latex and electromagnetic waves. When the frequency increased, a continuous varying electric field was created. This varying electric field created polarization in Latex. Dipole moment in latex gradually decreased as frequency increased. So, dipole had shorter time to realign itself according the oscillating electric field$^{[2,21]}$. Conductive effect of electromagnetic wave heating also diminished quickly in high frequency $^{[9]}$. Hence, dielectric constant which indicated the ability of material to store electric energy decreased.

Dielectric loss (ε') is the ability of material to convert the electromagnetic energy into heat. Dielectric losses of all the trees used in study were increasing when the frequency increased from $10^3$ to $10^5$ Hz. Beyond $10^4$ Hz, the dielectric loss was slightly increased with the increasing of frequency. This dielectric loss trend was observed due to electrical conductivity of long ages Banyan Tree (100 yrs), Banyan Tree (50 yrs), Akkaua (10yrs) was different at varying frequency as reported in an earlier study (Salema et al., 2013). When the seismic activity occurs the dielectric loss increases because the electromagnetic waves diminish the latex of tree as reached in contact with deep rooted trees like Banyan Tree. Figure 4 deals with the study of dielectric properties of different tree roots. For more authentication of results received by both antenna’s we have started the dielectric study of latex obtained from various trees like Banyan Tree (100yrs), Banyan Tree (50yrs) and Akkaua Tree (10yrs). We have seen that dielectric constant of 100 yrs Banyan tree is more in comparison to other age tree. Banyan tree is deep rooted and the roots are reached to the faults created by movement of tectonic plates which is the basic cause of disaster. Hence, we can say that if we regularly monitor the dielectric properties of banyan tree than, we are in a position to make the statement regarding natural disaster.

![Figure 4. Dielectric Constant of Latex of Banyan Tree (100yrs), Banyan Tree (50yrs) and Akkaua Tree (10yrs).](image-url)
We know that these variations in latex in the form of potentials difference have the similar type of activity as in human’s blood \textsuperscript{[20]}. Figure 5 reveals the study of dielectric loss measured by Hi-Tester Meter. We have analyzed the comparative study of dielectric loss at various frequencies. Dielectric loss of banyan tree (100 yrs) is less in comparison to other trees at same frequency taken under study. Dielectric Properties of the latex of the Banyan Tree (100 yrs), Banyan Tree (50 yrs), Akkaaua tree (10yrs) shows a resemblance with the seismic activity and if we monitor the dielectric properties at regular intervals of time, they may help in giving the precursory signature of seismic hazards. Further, study and more real time data has been required to give the correct explanation for the prediction of earthquake.

In Figure 6, the map shows the position of Delhi-Himalayan belt and the fault region on Main boundary fault. This actual fault line created around 1880 an impact of big earthquake. These signals were observed in the form of signal burst of varying amplitude in recent time whose date have been mentioned earlier in this paper, as observed at Farah, Mathura region and were correlated with seismic activity data which was discussed earlier case by case. The observations were taken in rural area and the bio- potential antenna was made by inserting silver electrodes in a banyan tree, around 100 yrs. old. As the guidelines of model calculation of B.R. Arora and B.P. Singh\textsuperscript{[22]} model, we have considered two flat values of conductivities, $10^{-2}$ S/m for the upper layer and $10^{-4}$ S/m for the middle layer and calculate attenuation of magnitudes for all emissions between Ultra low frequency signals and very low frequency signals. We have taken the conductivity model of upper layer conductivity range V.A. Tsarev and V. Sasaki\textsuperscript{[23]}. They suggested that the range of the upper layer is $10^{-2} \to 10^{-1}$ S/M with the lower basement conductivity around $10^{-2}$ S/M. They also suggested that the attenuation for ELF (Extremely Low Frequency) range of signals is between 3 Hz and 30 kHz but increases steeply for ULF to HF signals. The model of electromagnetic signal propagation through seismic faults activity as a waveguide is similar to earth-ionosphere waveguide developed by S.P. Kingsleys \textsuperscript{[24]}. Since there exist a long distance fault known as M B F (Main Boundary Fault) at the northern base of the Himalayan belt, extending between north west and north east India and the seismic activity was occurred in nearby 500 km radius range. It is found that active fault of Mathura-Faridabad total region is considered to MBF so we have recorded the signal in very precise time.
Figure 6. Map showing the position of Delhi-Himalayan belt and the fault region on Main boundary fault.

Figure 7. Map showing the earthquake of magnitude 5 Richter scale taken from IMD, Delhi.

The information of earthquake we have taken from Indian Meteorological Department website which shows that the seismic activity was occurred on 01-June, 2017 at Longitude 76.7 E and Latitude 28.8 N. The map of seismic activity in Indian region showing the earthquakes with preferred latitudes and longitudes and the location of receiving station marked by an asterisk and earthquakes marked by star is presented in Figure 7. The low frequency signal penetrates the earth surface and propagates the ionosphere and received by terrestrial antenna. So, many earthquakes are occurred at several regions in the above mentioned time period but we have chosen the strong magnitude earthquake in reference of receiving enhanced signal and the signal is verified by various analysis and giving clear indication of precursory signature of seismic activity.
4. Statistical analysis of data

In Figure 8 we have applied the technique of statistical analysis to verify the data which has been recorded by biopotential sensor. We found that, the large enhancements in amplitudes from regular amplitude fluctuations, we have plotted the graph on the same scale and view the changes in all the data observed for the same period from positive to negative fluctuations. The amplitude variations of the transient change of potential difference (bio-potential) are shown by solid lines (blue colour) in the upper panel. Here, the amplitudes are passed within standard deviations during the whole period of analysis, and found a day (01 June 2017 and 28 July, 2017) when the amplitude was abnormally enhanced and we have taken rigorous analysis for this data, searching the possibilities of amplitude enhancement, the two possibilities have found of amplitude enhanced signals. One is that the amplitudes were enhanced due to some changes in the atmosphere. (i.e., seasonal variation and disturbed magnetic storm data) which is plotted in the bottom panel and the second possibility is that the amplitudes are enhanced due to change in potential difference between two electrodes generated prior to or during and after the earthquakes. The reason of the amplitude enhancements (biopotential) is that they are due to moment of tectonic plates which create the pressure (in the form of energy) due to friction (i.e., microfracturing process). So, when any seismic activity occurred within 1000 km region at a shallow depth, the pressure has been produced and released in the form of energy; when the energy has come and filled in previous fault line which are active, then the electromagnetic signals are moved in this fault and received out near the deep rooted old-age tree, which is worked as a live sensor. The precursory electromagnetic emissions have been generated before any seismic activity due to the inner particle of the earth (i.e. sand, which is associated with various element (i.e. Na, K, S, Au, Ag, Fe etc.) is colloide with each other by fracturing process, tectonic plate movement and electronic kinetic effect and energy has been accumulated in the form of emissions and propagate in near active fault channel so the biopotential is enhanced due to very complex region and other
enhancement which has been recorded on 28 July 2017 due to enhancement of magnetic storm data which is generated from sun and penetrate the ground surface of the earth and enhanced the bio-potential signal so the comparison of data with earthquake and magentic storm data are more required for verification of signals.

5. Conclusions

We have analyzed the data of bio-potential, terrestrial and magnetic storm from 01May, 2017 to 30July, 2017 and done the statistical analysis of data and found that the seismic activity which will help us in predicting the natural hazards. In this analysis the bio-potential signals was enhanced due to occurring of seismic activity and other one is enhanced due to magnetic swarm but not more enhanced in terrestrial antenna recording signals during the precursory time. The signal received by bio-potential and terrestrial antenna both, the enhancement of amplitude in terrestrial antenna received at the same time as that of bio-potential. The more enhanced terrestrial signals is eliminated by low pass filter with MATLAB software. The low frequency signal penetrates the earth surface and propagates the ionosphere and received by terrestrial antenna. So, many earthquakes are occurred at several regions in the above mentioned time period but we have chosen the strong magnitude earthquake in reference of receiving enhanced signal and the signal is verified by various analysis and giving clear indication of precursory signature of seismic activity. The earthquake magnitude has been given in the bio-potential data with a dark arrow. We also compare the Dielectric properties of 100 yrs Banyan tree, 50 yrs Banyan tree and 10 yrs Akkaua tree and found that Dielectric constant of 100 yrs Banyan tree is more in comparison to 50 yrs Banyan tree and 10 yrs Akkaua tree. We have compared dielectric Loss of 100 yrs Banyan tree, 50 yrs, Banyan tree and 10 yrs Akkaua tree and found that dielectric loss of 100 yrs Banyan tree is less in comparison to 50 yrs Banyan tree and 10 yrs Akkaua tree. It means the 100 yrs Banyan tree has more strength to sense the electromagnetic waves originating during and before the indication of any seismic hazards. This natural disturbance causes the relaxation process increase and produces the change in bio-potential from time to time in order to develop clear understanding of this process. We have conducted the experiment to measure relaxation process by means of dielectric properties. Consequently, we can say dielectric properties are also helpful in verifying the precursory signature of seismic activity. We conclude that when the higher magnitude signal or high energy signal reach in contact with latex of banyan tree roots. It absorbed the energy and latex is shrinking during the time of precursory signature of seismic hazards. We identify the different parameters which is correlated the mechanism of dielectric properties of materials i.e. similar to human blood. We have recorded the signal in Terrestrial antenna, Electronic Poly recorder and studied the dielectric properties of banyan tree which is verified by statistical analysis and found very good correlation between them. It means we are in a position to say that we predict the precursory signature of any seismic hazard occur in nearby fault region before the event to save the life of the people and future forecast.

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