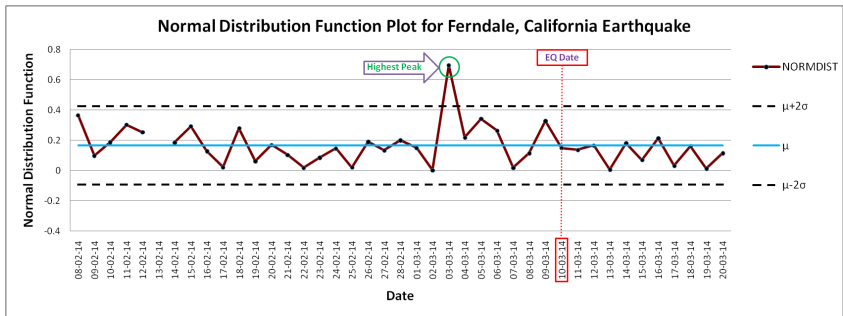


# Normalized Distribution Function: A Statistical Analysis of Surface Temperature for the Investigations for Seismic Precursor During the Large Ferndale, California Earthquake (M=6.8)

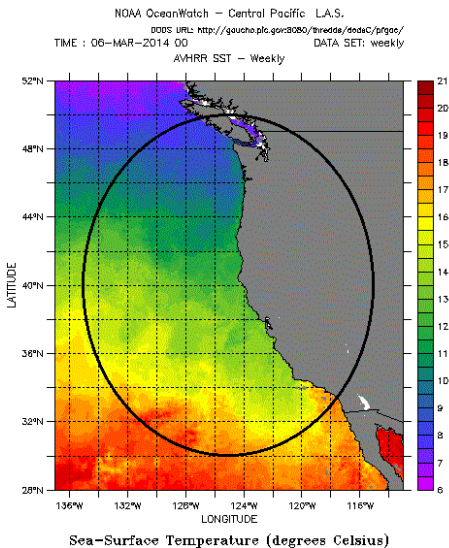
R. Shrivastava, D.D.K. Sondhiya, D.S. Raghuwanshi and P.A.K. Gwal

Space Science Laboratory, Department of Physics and Electronics, Barkatullah University, Bhopal 462026, India; +91 975-517-9093, E-mail: raj106rahul@gmail.com

In the present study we have analyzed the surface temperature variations during the major and large ( $M \geq 6$ ) earthquake in Northern California region for the investigation of possible connection between surface thermal anomaly and seismic activities. For this intention, the probability mass normal distribution function methodology has been used during the Ferndale, California earthquake ( $M=6.8$ ) occurred on March 10, 2014. In the surface air temperature enormous increase in normal distribution function has been recorded on March 3, 2014 as filtered with  $\mu \pm 2\sigma$ , which is showing the strong precursor for this seismic activity. Similar anomalous disturbances have also been shown in thermal infrared images from satellite. The surface air temperature data has been taken from the American Samoa Observatory ( $14.2474^\circ$  S &  $170.5644^\circ$  W) and satellite based thermal infrared weekly images have been taken from the NOAA Ocean Watch for 41 days time window. The anomalous behavior of surface temperature prior to seismic activity is mainly because of the ionization of air in the earthquake preparation area due to radon exhalation.



**Figure 1.** Daily normal distribution function plot from February 8, 2014 to March 20, 2014 during the Ferndale, California earthquake.



**Figure 2.** Satellite thermal infrared image from March 6, 2014 to March 12, 2014 during the Ferndale, California earthquake. [Image Courtesy: NOAA Ocean Watch].