Nonlinear Processes
in Geophysics
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Discussions

Interactive comment on "On the possibility of precursors of earthquakes in VLF range observed by DEMETER Satellite" *by* D. K. Sondhiya et al.

D. K. Sondhiya et al.

deepsondhiya@gmail.com

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I this paper we are trying to analyse the VLF signal during EQs preparation process which start few weeks before the commencement of EQs. Many publications give detail description of this process during the EQs, therefore, to reduce the length of paper we are not giving much information of this process. Main emphasize of this paper is to introduce new method for the analysis of VLF data and find some signatures of EQs. Also the vital information related to EQs and its characteristics is already given in Table – I

Response for specific comments

Figures The Figures are prepared well with sufficient font size but due to resize during

the setting process the figure size got reduced.

Introduction We have revised the Introduction according to your comments.

Theoretical framework

In equation 1, the parameter psi denote the Mother wavelet which is "Morlet" in our case. Now, we have mentioned it in manuscript.

Now, we have corrected the equation for the bispectrum (p981 line).We re-written the phase relation equation (p982 line 2) in simpler form according to your suggestion.

Results and discussion We have checked all orbits for 15 days for all the EQs taken under consideration. For the first EQ that occurred on September 26, 2008 significant variations were found only on September 17. It is not possible to show all observations. We are using three EQs of same magnitude to confirm and relate that these effects are most likely due to seismic activities.

Now we have mentioned that all the orbits taken under consideration were during day time and also it is mentioned it in the manuscript.

In Figure one red line has no physical significance it only shows some type of error in observed data. Outside the redline data content some error and it was not taken in over calculation.

Figure 1a shows the spectrogram of figure (p983 line 22-25). The left panel of figure 1b is the wavelet power spectrum. We have prepared it with advanced wavelet method which is called microscope of signal analysis and able to show minor changes in frequencies.

In figure 1a time scale in ms.

The parameter chi (p984 line 10) stand for Chi square distribution.

We have deleted the line 13-14 from p984.

We are using bispectrum (p984 line 16) to show the wave –wave interaction process during the time of observed data which is closely relate to turbulence phenomena.

In Figure 1d we have calculated the slope of figure which confirms that which kind of turbulence appears here.

Figure 2 shows very slight variation and all other parameters show significant variation for this particular EQ.

It is drawn using SWAN (Software for waveform analysis). If we increase the size of the figure it should be clear.

Red line is used to show that the values of skew and kurtosis peaks at the same time which is a clear sign of phenomena of intermittence which is a sign of turbulence during the earthquake.

Summary: We are using three EQs of nearly same magnitude and found that analysis shows same result for all. This provides sufficient evidence those effects are most likely due to EQ preparation process. We have also checked all the lighting and geomagnetic activity and found that they are quiet during the time of analysis.

Please also note the supplement to this comment:
http://www.nonlin-processes-geophys-discuss.net/1/C439/2014/npgd-1-C439-2014-supplement.pdf

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Interactive Discussion

Discussion Paper