

Interactive comment on “Comment on “Ultra low frequency (ULF) electromagnetic anomalies associated with large earthquakes in Java Island, Indonesia by using wavelet transform and detrended fluctuation analysis”, by Febriani et al. (2014)” by F. Masci and J. N. Thomas

Anonymous Referee #2

Received and published: 9 October 2015

General Comments: In this comment, Masci and Thomas (M&T) investigate the claims by Febriani et al. (2014) that they show changes in ULF magnetic field data at Pelabuhan Ratu in West Java that could be related to the M7.5 Tasikmalaya earthquake south of Java, Indonesia, on 2 September 2009 at an epicentral distance of 135 km.

C1968

This earthquake occurred a few weeks later. No changes are reported by Febriani et al. (2014) coincident with the time of the earthquake when primary energy release occurred.

M&T test the reality of these claims by repeating the Febriani et al. (2014) analysis results as summarized in Febriani et al.-Fig 9. M&T show in their Fig. 1 that each of the parameters used by Febriani et al. (2014) (α , SZ /SY calculated with the minimum energy method and SZ /SY calculated without the minimum energy method) either tracks (e.g. “ α ”) or inversely tracks (all others), Dst, the equatorial geomagnetic field disturbance field, and also the more global averaged Kp disturbance index, for that matter. If data during large global disturbances were removed from the Febriani et al.-Fig. 9 plot, the plots for each parameter would be relatively flat. The M&T case could have been made even stronger if they had used a much longer time series of data to test for significance of these parameters against long-term earthquake data for this region though it is unlikely that the conclusions would change but it would show another fundamental flaw in the Febriani et al. (2014) paper.

Thus, this comment shows that the claims by Febriani et al. (2014) that they found a relationship between the parameters “ α ” and “SZ /SY” and the M7.5 Tasikmalaya earthquake are likely unfounded. The comment is important since, without such checks and attempts to replicate the various claims made and hypotheses proposed (particularly in the field of earthquake prediction), science cannot progress. I would strongly support publication of this paper after response to the minor comments and suggestions listed below and expect that it will be a very useful contribution to this field.

Detailed Comments:

This paper is generally well researched and well written with few errors. Minor suggestions are:

[1] P5667, L8: Replace “the global geomagnetic activity level” with “global geomagnetic disturbances” [2] P5668, L3: Insert reference “(Johnston, 2015)” after “stops.”

C1969

since this is a direct quote from this paper. [3] P5668, L10: Move reference “Thomas, 2009a, b” to follow “Campbell, 2009;” so these references are in chronological order. [4] P5668, L11: Replace “the geomagnetic activity” with “the frequent disturbances in the geomagnetic field”. [5] P5668, L13: Replace “consistent” with “convincing and always recurring” [6] P5668, L20: Replace “an empirical” with “Dobrovolsky et al.’s (1979) empirical”. [7] P5668, L26: Replace “in Fig. S1 was derived using not actual precursors” with “shown in Fig. S1 was taken from Febriani et al. (2014) and was not derived from undisputed precursors” [8] P5669, L4: Replace “vertical and horizontal magnetic field components” with “the vertical and each horizontal magnetic field component”. [9] P5669, L8: Replace “furtherly” with “further”. [10] P5669, L18: Replace “is α ” with “ α is” [11] P5670, L14: Replace “scale” with “scales”. [12] P5670, L25: Replace “component, therefore” with “component. Therefore” [13] P5671, L8: Replace “and” with “nor” [14] P5671, L23: Replace “on planetary scale” with “on a planetary scale”. [15] P5672, L10: Replace “too closely related with the geomagnetic ΣKp index to be considered of seismogenic origin” with “closely related to the geomagnetic ΣKp index and are unlikely to be of seismogenic origin”

Reference Johnston, M.J.S. (2015), On earthquake fault failure, 25th IUGG General assembly, P121, IUGG-1001, Prague, Czech Republic, June 22-July 2, 2015.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 5665, 2015.