Review of "On a report that the 2012 M = 6.0 earthquake in Italy was predicted after seeing an unusual cloud formation" by J. N. Thomas, F. Masci, and J. J. Love

General Comments:

In this paper, the authors investigate the claims by Guangmeng and Jie (2013) that they “predicted” the 20 May 2012 M = 6.0 earthquake in the Po Valley of northern Italy from satellite images of linear-cloud formations over the eastern Apennine Mountains of central Italy on 22-24 April 2012. The authors test the reality of a suggested correspondence between linear-cloud formations and earthquakes by taking four years of the same infrared satellite images used by Guangmeng and Jie (2013) for their “prediction” and the occurrence times of earthquakes with M ≥ 5 that occurred in and near Italy during this time. They search for a relationship between the occurrence of linear-cloud formations in this data set and earthquakes and find none. They suggest the more obvious explanation of linear-cloud formations in fault-generated linear topography is normal orographic cloud formation and that this has no relation to particular earthquakes. Clearly the author’s case could have been made even stronger if they had an even longer time series of infrared data to test against long-term earthquake data for this region though it is unlikely that the conclusions would change.

The author’s do point out that the basic requirements for a useful earthquake forecast are: (1) the magnitude range for the predicted earthquake, (2) the location and hypocenter range, (3) a specified time window in which the earthquake is expected to occur, and (4) demonstration of rejection of the null hypothesis that any apparent relationship of data claimed to be precursory to earthquakes did not happen by random chance. In addition, the authors could have pointed out that data claimed to be precursory to earthquakes should show a demonstrable causal relationship to earthquakes at the times of these earthquake. One way to do this is to show that coseismic changes in these data relate to distance from these earthquakes and the source mechanisms of the earthquakes. Note that the major

energy is released during earthquakes not before earthquakes. If coseismic changes that scale with earthquake mechanisms and distance do not occur, it is unlikely that these data have any physical relationship to subsequent earthquakes.

This paper shows that claims by Guangmeng and Jie (2013) that they "predicted" the 2012 M = 6.0 earthquake are likely unfounded. The paper 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 written with few errors. Minor suggestions are:

[1] P5890, L22: Replace "which" with "that"

[2] P5891, L17: Replace "What is interesting, however, is that 30 days later there was an M = 6.0 earthquake on 20 May 2012 (epicenter 44.80° N, 11.19° E)." with "What is interesting is that a M = 6.0 earthquake occurred 30 days later on 20 May 2012 in northern Italy (epicenter 44.80° N, 11.19° E)."

[3] P5894, L18: Replace "which" with "that"

[4] P5898, L6: Replace "Press et al., 1992" with "Press et al., 1996" as per references.

[5] P5902, Fig 2: Suggest scaling size of dots representing earthquakes with the energy of the earthquakes. Note that a M6 has energy 30 times greater than that of a M5.