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Interactive comment on “A wireless sensor network for monitoring volcanic tremors” by R. Lopes Pereira et al.

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Dear Editor,

I reviewed the manuscript NHESS-2013-212 by Lopez Pereira et al.

I found the basic idea of the manuscript, which is creating a wireless sensor network for monitoring volcanic tremors, very interesting. The work is in general well written, but verbose in some part describing the system components, while not adequate the Section 5 describing the feasibility and performance test of the system.

Please in the following you may find the list of issue for which I think the authors should clarify.

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1) The main aim is to create a system able to locate magma movements causing seismic tremor. This task is challenging because the tremor signals might be very small. This means that the recording system must be very sensitive. I found missing in the manuscript a detailed discussion concerning the instrumental noise of the ADC&sensor combination selected for the system and its performance on the field recording seismic tremor. The internal noise of the ADC in fact might considerably decrease the available effective dynamic range available for the recording of the seismic tremors. In particular, I suggest the Authors to show the comparison of their new system with a standard seismic station (broadband + 24 bit commercial ADC). 2) At the end of paragraph 1, the section 4 is not introduced. 3) I Despite in general I regret to suggest papers where I am co-author, I think that the Authors might have advantage and inspiration of some of the tests and solutions adopted for the developing of the SOSEWIN System, a wireless seismic system for earthquake early warning purpose. Hence, I suggest: a) J. Fischer, J.-P. Redlich, J. Zschau, C. Milkereit, M. Picozzi, K. Fleming, M. Brumbulli, B. Lichtblau, I. Eveslage. A wireless mesh sensing network for early warning. *Journal of Network and Computer Applications*, Volume 35, Issue 2, March 2012, Pages 538–547. b) Picozzi, M.; Milkereit, C.; Parolai, S.; Jaekel, K.-H.; Veit, I.; Fischer, J.; Zschau, J. GFZ Wireless Seismic Array (GFZ-WISE), a Wireless Mesh Network of Seismic Sensors: New Perspectives for Seismic Noise Array Investigations and Site Monitoring. *Sensors* 2010, 10, 3280-3304. doi:10.3390/s100403280. c) Fleming, K., Picozzi, M., Milkereit, C., Kuehnlentz, F., Lichtblau, B., Fischer, J., Zulfikar, C., Ozel, O., and the SAFER and EDIM working groups (2009). The Self-Organising Seismic Early Warning Information System (SOSEWIN). *Seismological Research Letters*, Vol. 80, N 5 September/October 2009, pp 755-771, doi: 10.1785/gssrl.80.5.755. 4) Section 3.3.5 puzzled me. While I understand that it is very important to know the time lost for the data telemetry within the network, from the description of the CLOWDE algorithm it seems that it is focused on defining the time to be assigned to the data in the sink node. Way to do this very critical operation at the sink node and not directly in the ADC at each station at the moment the data are created? On this issue, I suggest the Authors to look the SeedLink

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protocol, which is becoming a worldwide standard in the seismological community and seismological instrument manufactures. 5) As I said, I found section 5 not adequate. Tests concerning the performance on the field of the system should be shown.

In conclusion, I suggest major revision.

Sincerely Matteo Picozzi

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 4305, 2013.

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