

Interactive comment on “InSAR observations of the 2009 Racha earthquake, the Republic Georgia” by E. Nikolaeva and T. R. Walter

Anonymous Referee #1

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Reviewer comments:

The paper contains a good analysis and tries to provide an explanation to the Earthquakes phenomena using InSAR and modelling techniques, but at the end of the Discussion the author tries to avoid responsibilities because of the input data used in their analysis. My main question is: why have not you chosen more SAR data?

In order to derived faults and give explanations of the 1991 Earthquake you may be sure that you did your best with the data selection and processing.

Further analysis and comments are required to answer the following questions.

More comments:

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Abstract 1) Justify the election of the SAR data. Why had not been chosen other sensors with larger coverage? 2) Authors used many ambiguous comments in abstract, (i.e line 16: in good agreement) Data and Methods: 3) Line 1, page 4701: The SRTM at 90m resolution was subtracted. This must be rephrase (i.e: the phase component associated to the topography present in the scene, was removed from the interferograms using the SRTM 90m data) 4) Line 9 page 4701: mentioned the atmospheric delay subtracted. However, ALOS PALSAR data has not suffer much of this atmospheric but hte ionospheric effects are more important

Results: InSAR: 5) Figure 3 e-g does not exist. Please review figure numeration. 6) Extra figures needed. Wrapped interferograms are more important to identify error and noise in the interferograms, since the unwrapped are also interpolated, not allowing to identify error sources and other effects present. 7) Authors use again ambiguous comments such as good quality (line 12 page 4702) and slightly poor quality (line 20 page 4702). How do you quantify that? Could you please explain and correct the text accordingly? 8) Please generate more interferograms covering the area using other slave image. The effect you mentioned that can be interpreted as earthquake induced deformation can be an effect present due to one single SLC image used in all the interferograms (as you mentioned the slave image, line 17 page 4702)

Discussion: 9) Comment the sentence: "based on InSAR data, we can assume that the fault plane may be shallower to the surface". How can you support this afirmation? 10) Line 25,26 page 4704 : "Limitations mainly may come from the quality and quantity of the InSAR data". Why had you chosen only ALOS PALSAR data? Should not you have chosed all the available SAR data over the area in order to not have limitations due to input data? Why have not you explorer the same procedure using also Envisat ASAR, TerraSAR-X or RADARSAT data?

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 4695, 2015.

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