

Nat. Hazards Earth Syst. Sci. Discuss., community comment CC1  
<https://doi.org/10.5194/nhess-2020-408-CC1>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on nhess-2020-408

Sylvain Barbot

---

Community comment on "Three-dimensional deformation field analysis of the 2016 Kumamoto Mw 7.1 earthquake" by Qingyun Zhang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-408-CC1>, 2021

---

The paper "Three-dimensional deformation field analysis of the 2016 Kumamoto Mw 7.1 earthquake" by Zhang et al. provides a technical, straightforward methodology to combine either multiple InSAR data or heterogeneous InSAR and geodetic datasets to build a 3-component displacement map for earthquakes. The technique is well known, being used for almost two decades. The paper is technically correct, but its novelty is questionable.

Line 55, azimuthal InSAR is also described in

Barbot, S., Hamiel, Y. and Fialko, Y., 2008. Space geodetic investigation of the coseismic and postseismic deformation due to the 2003 Mw7. 2 Altai earthquake: Implications for the local lithospheric rheology. *Journal of Geophysical Research: Solid Earth*, 113(B3).

Line 356: I do not see a justification for the vertical fault. Modeling of the deformation indicates north-dipping faults. See

Moore, J.D., Yu, H., Tang, C.H., Wang, T., Barbot, S., Peng, D., Masuti, S., Dauwels, J., Hsu, Y.J., Lambert, V. and Nanjundiah, P., 2017. Imaging the distribution of transient viscosity after the 2016 Mw 7.1 Kumamoto earthquake. *Science*, 356(6334), pp.163-167.