Nat. Hazards Earth Syst. Sci. Discuss.,
doi:10.5194/nhess-2017-55-RC2, 2017
© Author(s) 2017. CC-BY 3.0 License.

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Active tectonics of the onshore Hengchun Fault using UAS DTM combined with ALOS PS-InSAR time series (Southern Taiwan)" *by* Benoit Deffontaines et al.

Anonymous Referee #2

Received and published: 15 March 2017

This paper characterizes the Hengchun and Kenting faults in southern Taiwan using a very high resolution digital elevation model acquired by unmanned aerial vehicles and new PSI interferometric data obtained from ALOS images. Their work emphasizes that the two active faults were not precisely known before in terms of its locations and regional tectonics. They carried out this work to better characterize the segments of an accretionary wedge-related active faults and hopefully to update the current understandings of these active faults on land.

I think the paper is generally clearly written, though some typographic or grammar errors can be found here and there, which should be easily corrected. Their work has also demonstrated that the new findings from the high resolution topography and

ALOS images are indeed necessary to update the active faults that may potentially lead to significant earthquakes in the region, where a nuclear power plant is present nearby.

In view of its new contribution to the characterization of the Hengchun and Kenting faults in Taiwan and the proposed potential roles that they may play in the accretionary wedge, the work should be worthy of publication following a minor revision to perfect its presentations.

Here are some comments and suggestions for the authors.

1. The authors can elaborate on the section on high resolution digital terrain model acquired form UAS, which is an important part of the work and deserves to be more detailed. This addition can be accompanied by revision of Figure 3 (see comment #6) to clearly present the information of the UAS derived images.

2. Page 7, line 6-8: It may not be appropriate to state that the Hengchun Fault is not only a creeping fault by referring to work in progress. Please either present more of the data and reasoning, or leave out this inference for not jumping to conclusions.

3. The section on conclusions and perspectives is inappropriately long, and actually, some of the content is most suitable for the discussion section. Please leave the conclusions section for the most important findings of the work, that is, the UAS mapping result, PSinSAR result, and tectonic interpretations for clarity and ease of reading for the readers.

4. Figure 1: The abbreviated words HeF and KeF need to be indicated in the caption text. Inconsistent wordings are present, for example, Hill and hill in the figure, Fig.1C and Fig.1c in the caption.

5. Figure 2: Please label some local topographic features in the blank figures for clarity.

6. Figure 3: The caption text of Figure 3 is unclear and should be rewritten to state more clearly what these images represent in an orderly, straight forward manner. The

images should also be labeled with words for clarity as to avoid misreading the true intention to show. Where are the active tectonic scarps? Where are the left lateral offset of tributaries on a glacis? Where is the deformed elongated mud diapir? And where is the nuclear power plant? These are not well indicated in the images and a clear presentation of these features is important for readers.

7. Figure 4: The legend at the bottom of the figure is not clear and can be removed. Instead, please label these panorama views with simple text, so that the readers will understand what features you are pointing to.

8. Figure 5: . . . red compass “gives” the scale . . .; . . . red arrow “reveals” the thrusting . . .

9. Figure 6: Labeling some local topographic features in the morphostructural map can be helpful for readers to understanding the significance of the map. Also, the colors in the map seem inconsistent with the legend examples.

10. Figure 10: The caption says that one may note the general coherence of the topographic displacements. But the coherence is not clear based only on the selected profiles that are drawn on the diagram. One possible way to reveal the coherent topography would be using a swath profile approach to represent a wider zone of the topography. Otherwise, it is hardly clear to conclude the coherence in the diagram.

11. Figure 11 & 12: Clear legends for the figures are needed.

12. Figure 13: This should be the most important contribution of the work. However, the details in the figure are not clear enough. Also, the pink area on the lower right corner of the figure is strange and may not show up what the authors might want to indicate in the caption. A revision of the figure is strongly advised by adding more information presented in the paper, including minor lineaments, labeling meaning texts, and a more realistic view of the block diagram to conclude the paper’s contribution.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2017-55,

2017.