

Comments on manuscript se – 2019 – 87 “Extrusion dynamics of deep-water volcanoes”, by Qiliang Sun, Christopher A-L. Jackson, Craig Magee, Samuel J. Mitchell and Xinong Xie

May 15, 2019

The article is well written. It deals with the description of deep-water volcanoes structure, plumbing system, and lava flows. The method to extract information from the system is 3D seismic imaging. In an hard investigating enviroment such underwater volcanoes the problem posed by Nature are significant errors affetting the definition of all measurements. It is noteworthy the effort the Authors made to quantify area, thickness and volume of lava flows. The final sections on the interpretation of the results are complete. Each statement is supported by several hypothesis that the Authors criticize justifying their level of acceptability.

Minor Observation are reported below.

1 Minor Observation

pag. 1, line 18 I expect that your investigation is carried out with passive seismic imagine, if so, it would be important to state that, considering the wide range of earthquakes that usually occurs in the region you are investigating.

pag. 2, line 34 I think that a general reader would be interested to know the importance to give such attention to submarine eruptions. Just a quick summary of the potentiality of your study. Any implication for hazard? Just to ask.

pag. 3, line 60 I am curious to know why did you choose these two volcanoes and not other ones.

pag. 6, line 115-116 Could you please explanate (I am not an expert on the subject) the words “Bin spacing is 25 m”. Furthermore, why the interval of interest of frequencies is 0-400 ms two-way time (twt) of ~ 40 Hz?

Table 1 Unit of measure should be written as in Table 2.

Table 2 How do you justify the computation of diameter from the area assuming it is a circle?

Fig. 2 (b) In caption D/T, DT, RHOB, and RC are mentioned but not indicated in Fig.2(b).

pag. 8, line 175 For a better understanding, I would replace the “-” with a “.”, the same for the other Seismic Facies.

pag. 10, line 206 Put the deg on 15: $15.0^\circ \pm 3.6^\circ$.

pag. 11, line 226 Is it possible to assign an error to the ~ 14 km² area?

pag. 11, line 234 As for pag. 10, line 206.

- pag. 11, line 239** Every measurement has an error, or is \sim , why the 9.2 km long lava flow channel has been defined without uncertainty?
- pag. 11, line 241** As for pag. 10, line 206.
- pag. 12, line 245** As for pag. 10, line 206.
- pag. 15, line 317** As for pag. 10, line 206.
- pag. 16, line 334** As for pag. 10, line 206.
- pag. 16, line 337** How is lava viscosity of 9–38 Pa computed?
- pag. 16, line 351** Is it “controls” or “control”?
- pag. 17, line 363** It would be interesting to give an estimate of the cooling rate of underwater lavas. If possible.
- pag. 19, line 417** I would rephrase into “can play a critical role in understanding”.