

Correction

# Correction: Chen, Y., et al. Long-Term Subsidence in Lava Fields at the Piton de la Fournaise Volcano Measured by InSAR: New Insights for Interpretation of the Eastern Flank Motion. *Remote Sens.* 2018, 10, 597

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The authors wish to make the following corrections to this paper [1]:

## 1. The Abstract

The sentence “One of the previous studies revealed an instability of the Eastern Flank since the March–April 2007 eruption related to post-emplacment lava subsidence. However, it was only a preliminary investigation.” may induce confusion about the processes affecting the Eastern Flank. Therefore, this sentence was changed to “One of the previous studies revealed that the post-emplacment lava subsidence played a role in the observed Eastern Flank motion by conducting a preliminary investigation.”.

## 2. The text

(1) The words “deformation(s)” were changed to “displacement(s)” throughout the text.

(2) In Section 1, the sentence “It erupted 34 times and emitted nearly 500 Mm<sup>3</sup> of magma” was changed to “It erupted 25 times and emitted nearly 450 Mm<sup>3</sup> of magma”.

The “to be” in the last sentence of the second paragraph was changed to “been”.

(3) In the caption of Figure 1, the “(modified from Servadio [9])” was added before the “:” in the first sentence. As a result, it was changed to “Location of lava flow fields emplaced between 1998 and 2007 at Piton de la Fournaise, superimposed on a shaded relief map with the main areas mentioned in the paper, modified from Servadio [9]:”. As a result, “9. Servadio, Z. Apports de l’imagerie à haute résolution spectrale et spatiale dans les bilans de volume et les bilans radiatifs au Piton de La Fournaise. Ph.D. Thesis, Université de la Réunion, La Réunion, France, 2011.” was added in the References section. Therefore, the subsequent reference numbers moved backwards successively.

(4) In Section 2.1, the first paragraph, the word “IGS” was changed to “IGN (French National Geographic Institute)”.

In the third paragraph, the following sentence “The uncertainties of the displacements estimated by calculating the average standard deviations of the displacements in non-displacement areas are

3.9 cm and 3.1 cm for the E-W and U-D components respectively.” was added before the sentence “A good agreement between the resultant InSAR time series and GNSS measurements has been reached.”

(5) In the caption of Figure 2, the sub-sentence “The dashed blue curve in (b) indicates the eastern limit of the October 2010 affecting area” was changed to “The dashed blue curve in (b) indicates the eastern limit of the area affected by the October 2010 eruption”.

The sentence “F1 and F2 (black lines) represent the rough location of two structures inferred from this study.” was changed to “F1 and F2 (black lines) represent the approximate location of two structures discussed in this study.”. The same with the Caption of Figure 3.

(6) In Section 2.3, the first paragraph, the sentence “One is a 25 m resolution DEM from aerial photogrammetry in 1997 and the other is measured via airborne LiDAR surveying in 2008 with a 7.5 m resolution.” was changed to “One is a 25 m resolution DEM produced by IGN from aerial photogrammetry in 1997 and the other is measured via airborne LiDAR surveying in 2008 with a 5 m resolution.”

The sentence “Given that lava is the main product of Hawaii eruptions” was changed to “Given that lava flow is the main product of Hawaiian eruptions”.

The sentence “It is reasonable to some extent according to the previous studies carried out by Chaussard [15] and Bato et al. [19]. The former used the difference of DEMs to estimate the thickness of the October 2010 lava flow at Piton de la Fournaise. The latter also used the height change to represent the lava thickness at the Paricutin volcano, even though ash and pyroclastic are expected to account for up to 30% of the total deposit thickness.” was changed to “It is reasonable to some extent according to the previous study carried out by Chaussard [16], who used the height change to represent the lava thickness at the Paricutin volcano, even though ash and pyroclastic are expected to account for up to 30% of the total deposit thickness.”.

The sentence “The uncertainty of thickness of the lava flows was estimated to be 0.97 m by calculating the average standard deviation of the thickness in the areas without any emplacements of lava flows.” was added at the end of the paragraph.

(7) In Section 3, the first paragraph, the sentence “Thus, the displacement due to post-lava emplacement processes should be largely vertical and negligibly horizontal.” was changed to “Thus, the displacement due to post-lava emplacement processes should be largely vertical and horizontally negligible (except for some local areas with steep slope).”

(8) In Section 4.1, the word “evinces” was changed to “evidences”.

(9) In Section 4.2, the sentence “The significant discrepancies of the June 2000, Oct 2000, June 2001, and Nov 2002 lava fields suggest that the potential processes might have accounted for a larger portion of observed rather than post-lava emplacement processes.” was changed to “The significant discrepancies of the June 2000, Oct 2000, June 2001, and Nov 2002 lava fields suggest that the potential processes might have accounted for a larger portion of the observed signals rather than post-lava emplacement processes.”

The sentence “This suggests the role potential processes played on the 2000 lava fields could dominantly affect the pattern of observed deformation.” was changed to “This suggests the potential processes could have played a dominant role in the pattern of the observed displacement affecting the 2000 lava fields.”

(10) In Section 4.3, the sentence “As previously discussed in the work of Chen et al. [22]” was changed to “As previously discussed in the work of Peltier et al. [7], Froger et al. [13] and Chen et al. [23]”.

The sentence “According to the spatial variation of the displacement of lava fields revealed in this study,” was changed to “According to the spatial variation of the displacement of lava fields revealed in this study and the investigation of previous studies,”

The sentences “Significant differences in observed deformation between the Aug 2004 lava field and the other four in the EFA (Figure 9) suggests one inclined structure/fault could underlie between the Aug 2004 and the June 2001 lava fields (as indicated in Figures 2 and 3, F1). Taking into account

the red rectangle deformation area, another structure could be located along the deformed boundary, as indicated by F2 in Figures 2 and 3. This inference is practically supported by previous research. The geographical location of the northern structure (F1) suggested by this study is approximately coincident with a previously recognized normal fault [32]. The location of structure F2 coincides generally with a sharp feature observed by Froger et al. [12], who proposed it could be also related to a normal fault that was activated during the March–April 2007 eruption.” was changed to “A structural feature (F1, as indicated in Figures 2 and 3) has been previously identified by early researches [13, 33]. The significant difference in observed displacements between the Aug 2004 lava field and the other four in the EFA (Figure 9) also suggests an inclined structure/fault could underlie between the Aug 2004 and the June 2001 lava fields. Another structure located along the deformed boundary (F2 in Figures 2 and 3) was suggested by Froger et al. [13] that it could be related to a normal fault activated during the March–April 2007 eruption. It is also supported by the observations of this study by taking into account the red rectangle displacement area indicated by F2 in Figures 2 and 3.”

### 3. The List of Authors And Affiliations

All the corrections above were made based on the comments from Dr. Jean-Luc Froger, Dominique Remy, José Darrozes, Aline Peltier, who have made valuable contributions by improving the presentation of the paper. Dr. Nicolas Villeneuve provided the DEM and lava flow contours. Unfortunately, his contribution was not explicitly acknowledged in the original paper. Therefore, the list of the authors and their corresponding affiliations were changed as follows:

**Yu Chen**<sup>1,2,\*</sup>, **Kefei Zhang**<sup>1,3</sup>, **Jean-Luc Froger**<sup>4</sup>, **Kun Tan**<sup>1,\*</sup>, **Dominique Remy**<sup>2</sup>, **José Darrozes**<sup>2</sup>, **Aline Peltier**<sup>5</sup>, **Xiaojun Feng**<sup>6</sup>, **Huaizhan Li**<sup>1</sup> and **Nicolas Villeneuve**<sup>5</sup>

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## 5. Author Contributions

Updated version: Yu Chen conceived and designed the experiments; Yu Chen performed the experiments and analyzed the results. Kun Tan, Kefei Zhang, Xiaojun Feng contributed to the logic development of the scientific presentation, the structure, the interpretation of the results and the review of the manuscript. Jean-Luc Froger, Dominique Remy, José Darrozes, Aline Peltier contributed to the review of the paper. Jean-Luc Froger provided the SAR data. Aline Peltier provided the pre-processed GNSS data. Kefei Zhang and Huaizhan Li contributed to the English writing and polishing work. Kefei Zhang and Kun Tan sponsored the publishing charge. Nicolas Villeneuve provided the DEM and the lava flow contours. Yu Chen wrote the paper.

The changes do not affect the scientific results. The original manuscript will be updated on the article webpage. The authors would like to apologize for any inconvenience caused to the readers by these changes.

## References

1. Chen, Y.; Zhang, K.; Tan, K.; Feng, X.; Li, H. Long-Term Subsidence in Lava Fields at Piton de la Fournaise Volcano Measured by InSAR: New Insights for Interpretation of the Eastern Flank Motion. *Remote Sens.* **2018**, *10*, 597. [[CrossRef](#)]



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