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Interactive comment on "Very high-resolution terrain surveys of the Chã das Caldeiras lava fields (Fogo Island, Cape Verde)" *by* Gonçalo Vieira et al.

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Dear Dr Bianca Wagner, Thank you very much for the detailed review, comments and suggestions of our manuscript on the "Very high-resolution terrain surveys of the Chã das Caldeiras lava fields (Fogo Island, Cape Verde) submitted to ESSD. We hope that with the significant changes we have made to the manuscript, following your comments, but also integrating the comments from other three reviewers and from the public discussion, the manuscript is now in good shape to be accepted for publication in ESSD. We attach the RC2-supplement file with our replies to your questions and you may see them implemented in the .doc file with the track changes. Our sincere thanks for the time you have put into this review. Best wishes, Gonçalo Vieira

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Please also note the supplement to this comment:
https://essd.copernicus.org/preprints/essd-2020-289/essd-2020-289-AC2-supplement.pdf

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Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-289, 2020.

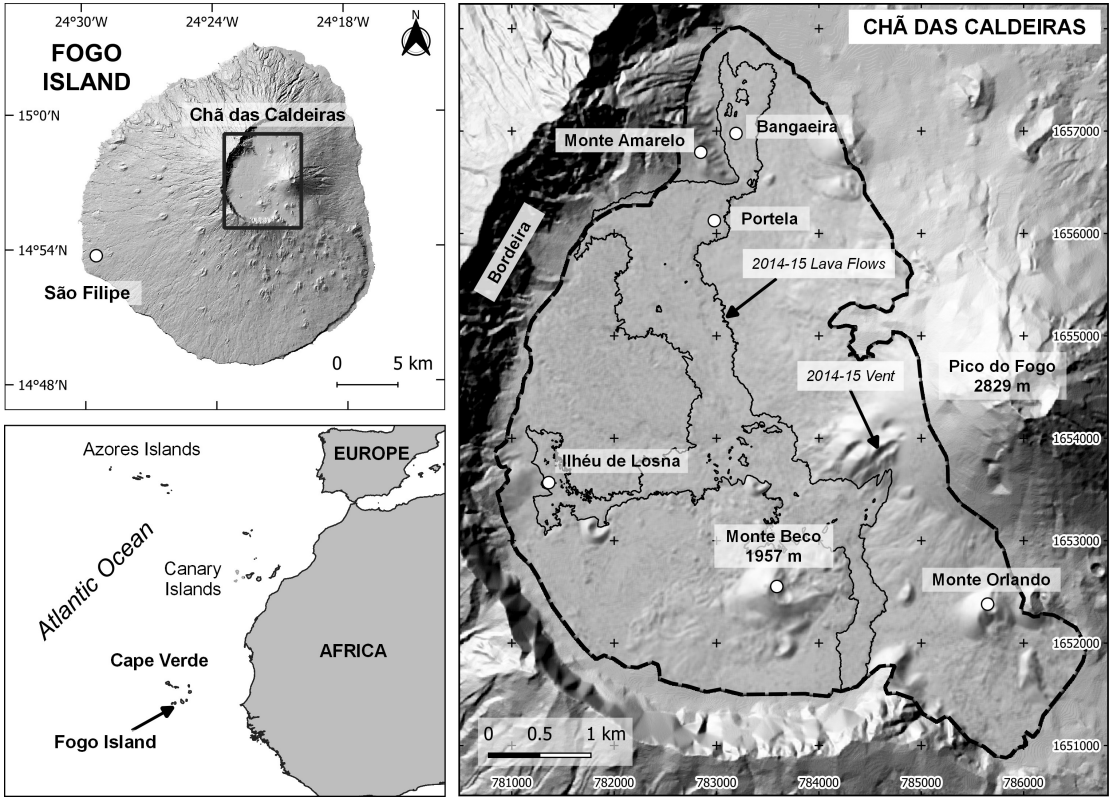

Fig. 1. Figure 1 – Location of the Chã das Caldeiras and of the surveyed area (dashed line) in Fogo Island (Cape Verde). The 2014-15 lava flows are limited by a thin black line. Shaded relief derived from the

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Fig. 2. Figure 2 – The Chã das Caldeiras and Pico do Fogo during the 2014-15 eruption. View towards the southeast with the ‘a’ÄĄ lava flows of 2014-15 in the foreground, evidencing a very irregular and inacces

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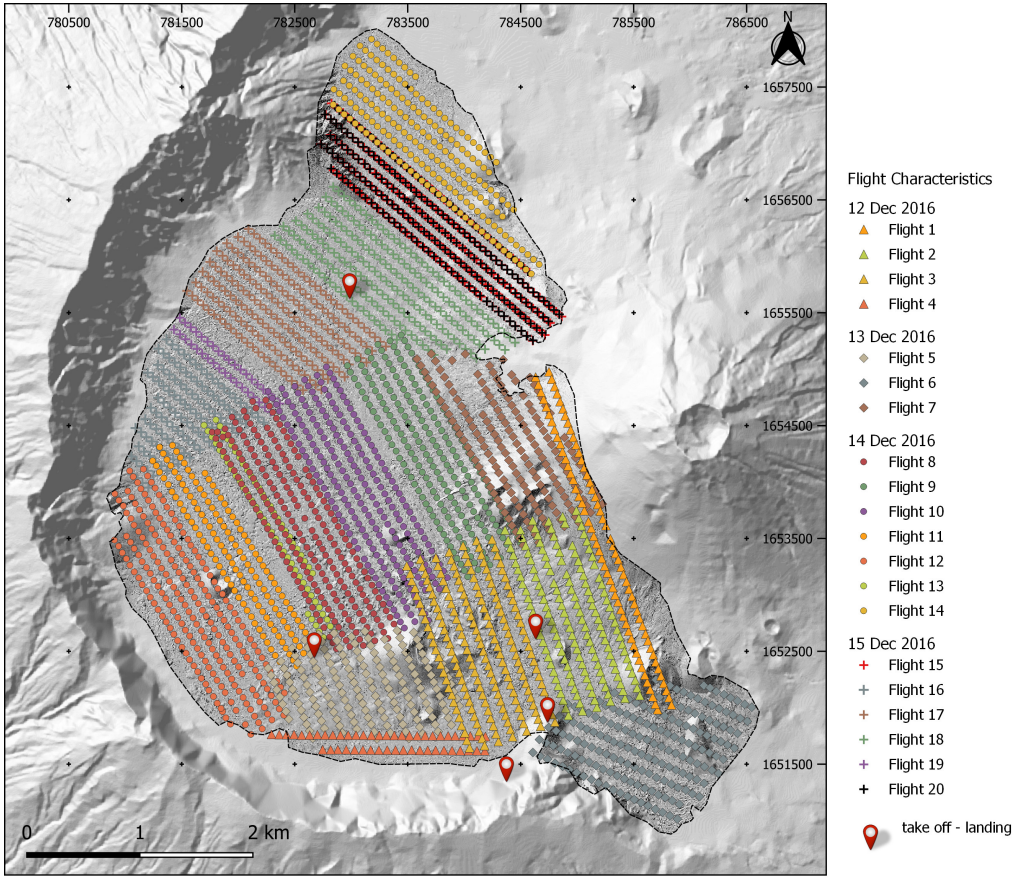

Fig. 3. Figure 3 – General characteristics of the aerial survey of the Chã das Caldeiras with the geolocation of the photographs according to the flights and take-off and landing locations. Shaded inside the

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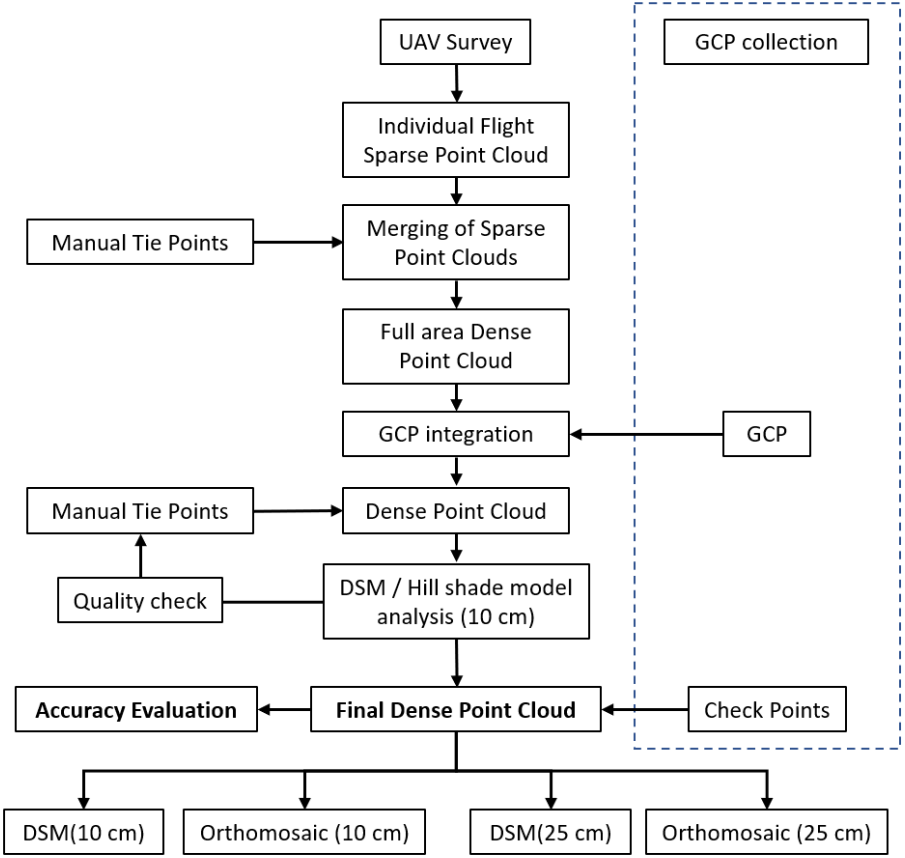

Fig. 4. Figure 4 – Work flow from the field survey to the generation of the DSMs and orthomosaics.

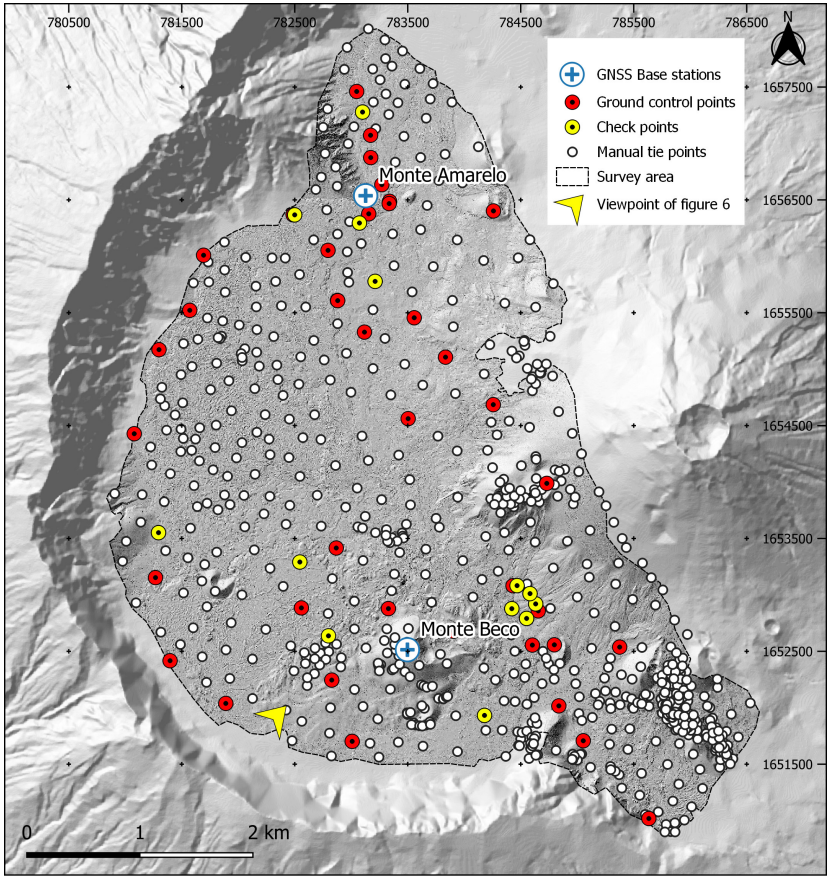

Fig. 5. Figure 5 – Ground control points used for the model and for the accuracy evaluation (check points), manual tie points used to improve the point cloud accuracy and location of the GNSS base stations se

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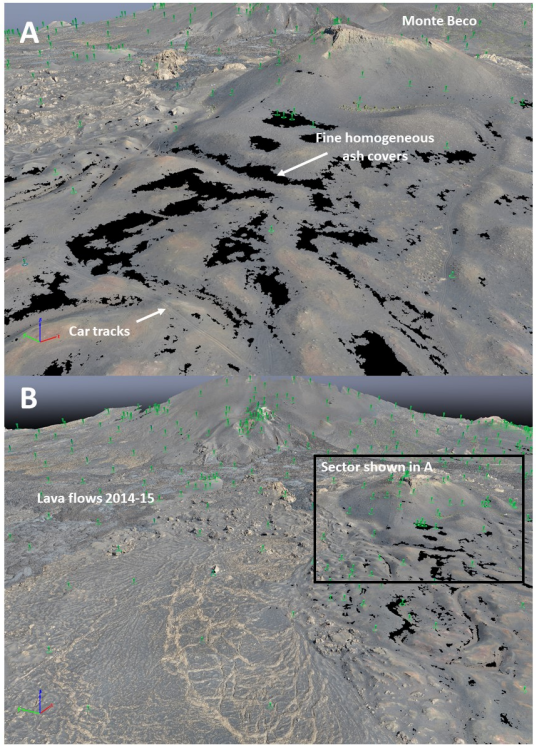

Fig. 6. Figure 6 – Examples of the quality of the 3D dense point cloud. A. Low quality areas in ash surfaces close to Monte Beco (car tracks for scale), B. Most of the point cloud shows dense point coverage a

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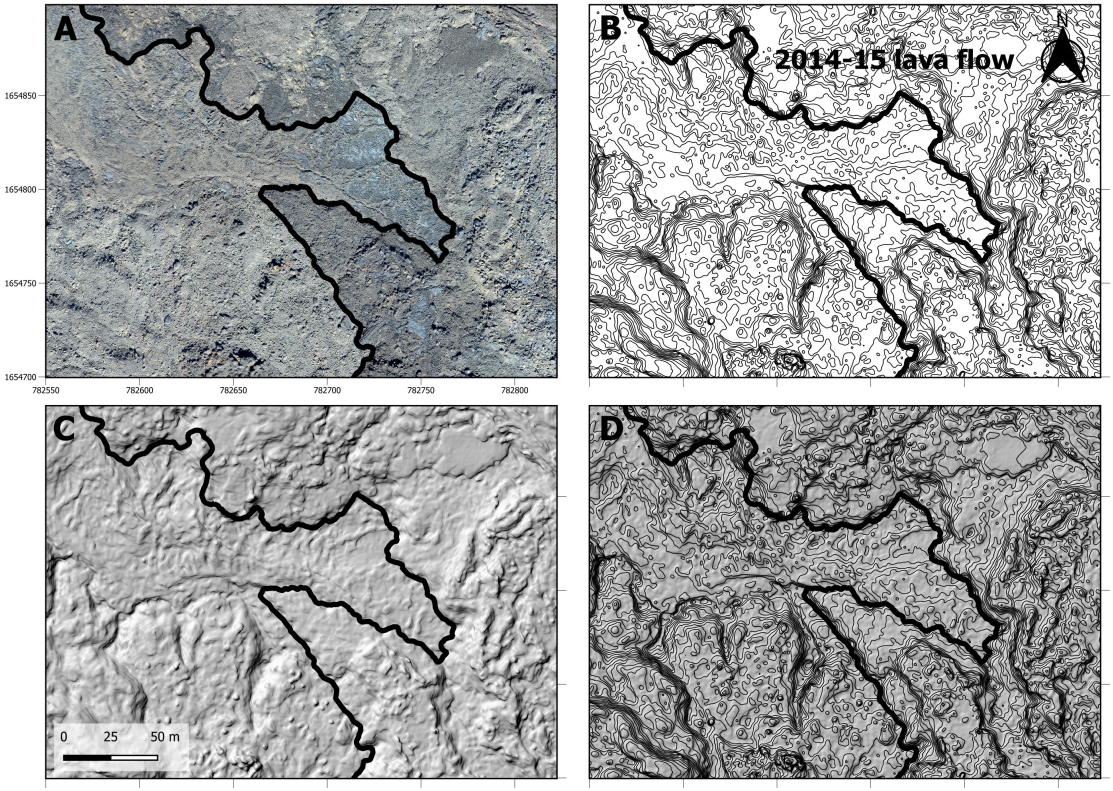

Fig. 7. Figure 7 – Example of manual delineation of the lava flow by making use of the: A. Orthomosaic, B. Elevation contours with 50 cm interval, C. Hill shade model, D. Hill shade model and elevation contou

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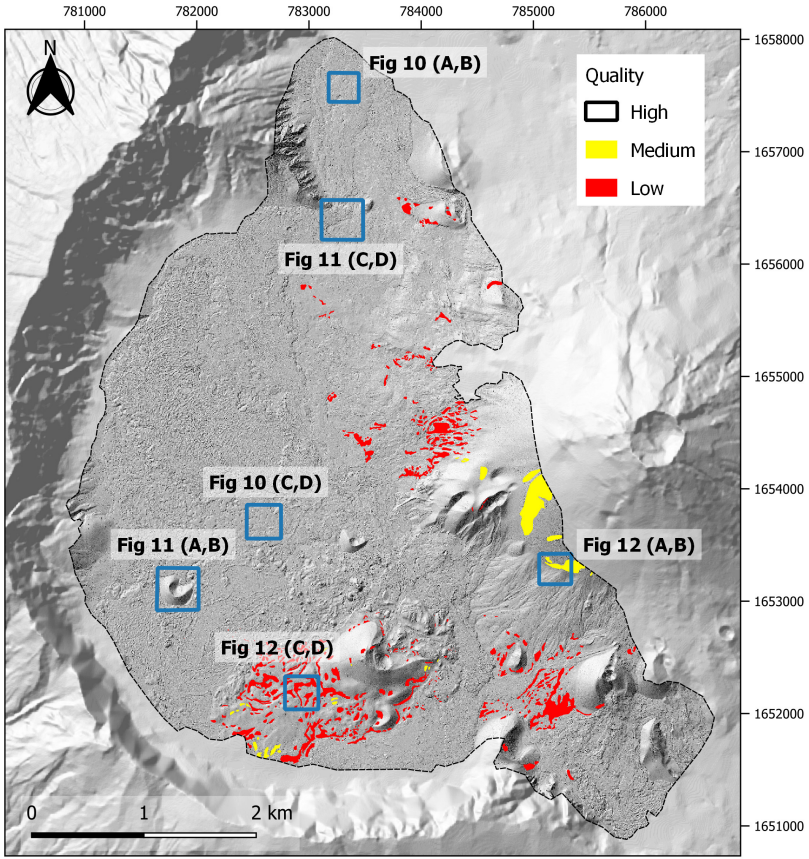

Fig. 8. Figure 8 – Assessment of the quality of the dense point cloud and digital surface model in the Chã das Caldeiras and location of the sectors shown in figures 8 to 10. Shaded relief outside the surveye

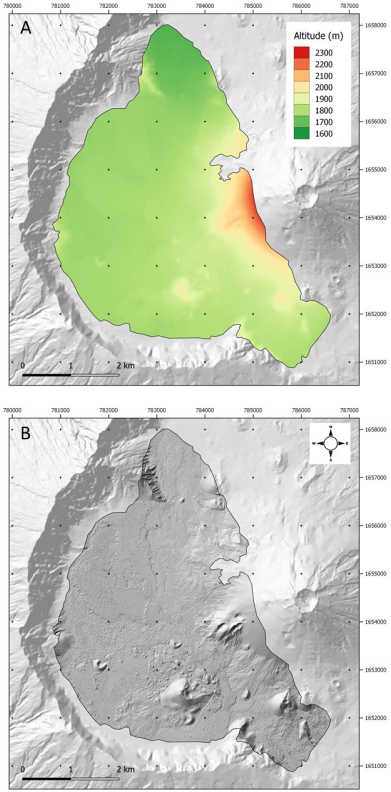

Fig. 9. Figure 9 – Digital surface model of the Chã das Caldeiras (A) and DSM shaded relief model (B). The surveyed area is overlaying the DEMFI (2010) 5 m DEM.

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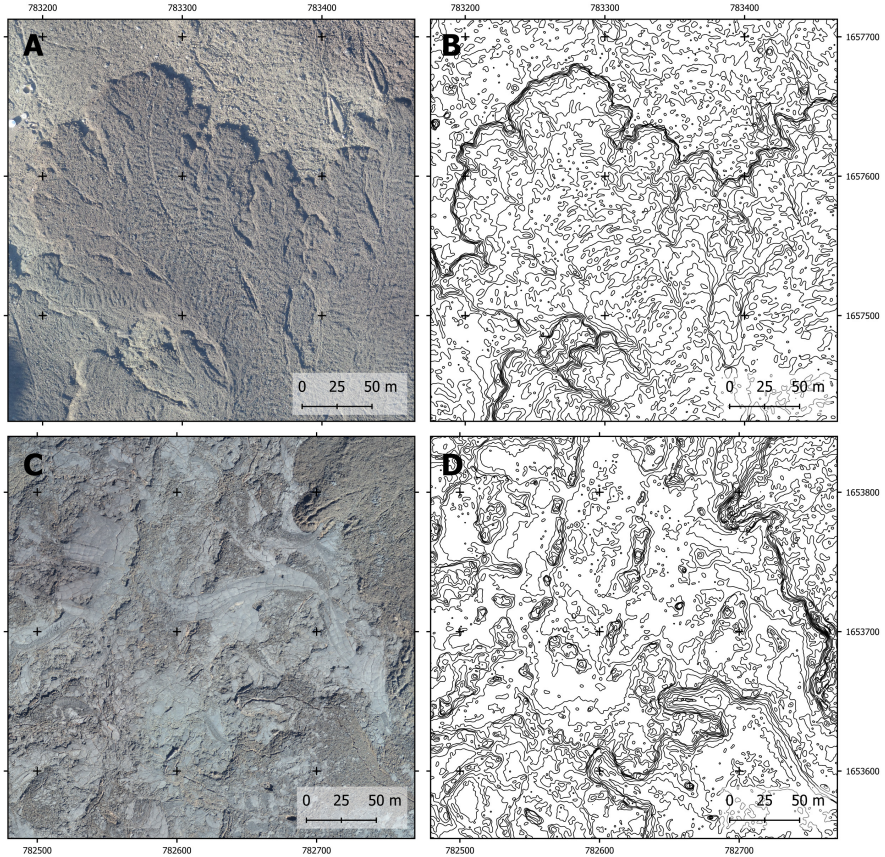

Fig. 10. Figure 10 – Examples of surfaces in the Chã das Caldeiras with high-quality results for the digital surface model, with orthomosaic for visualization (10 cm resolution) and contour lines derived from

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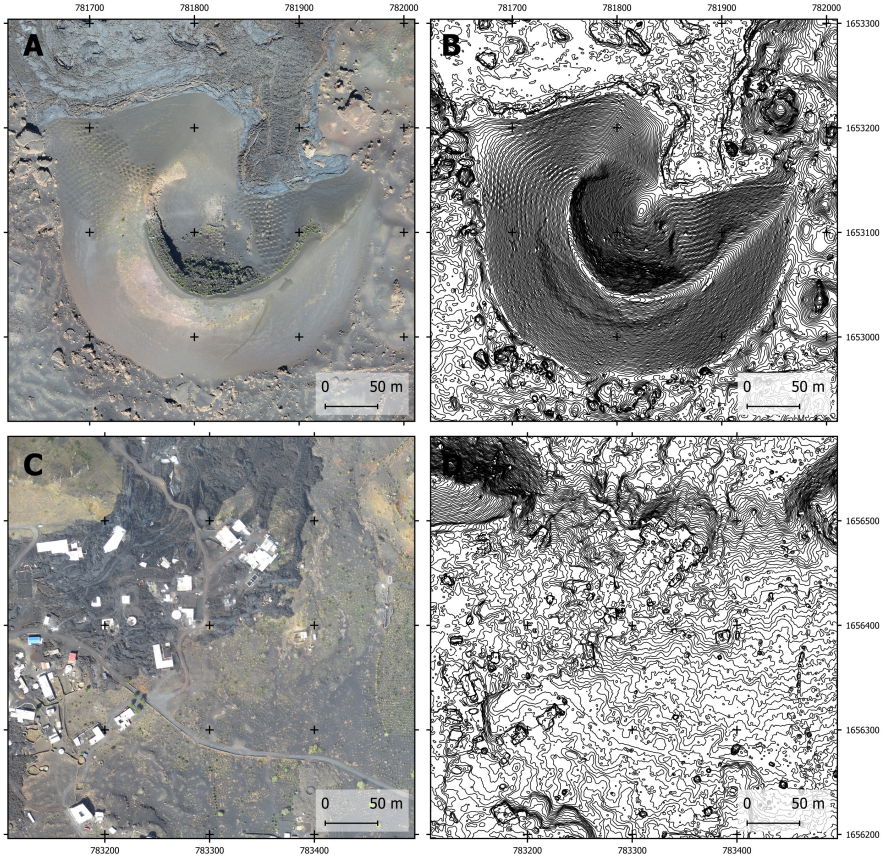

Fig. 11. Figure 11 – Examples of surfaces in the Chã das Caldeiras with high-quality results for the digital surface model, with orthomosaic for visualization (10 cm resolution) and contour lines derived from

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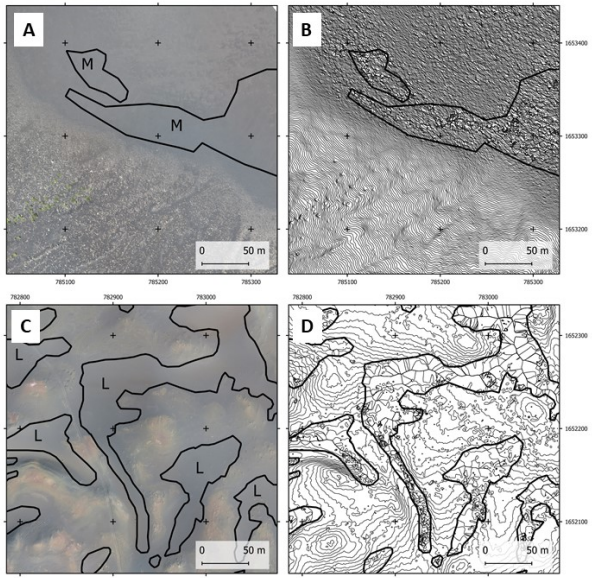

Fig. 12. Figure 12 – Examples of surfaces with medium and low quality. A and B: Steep slope covered with ash with medium-quality results (M) for the digital surface model, with orthomosaic (A, 10 cm resolution

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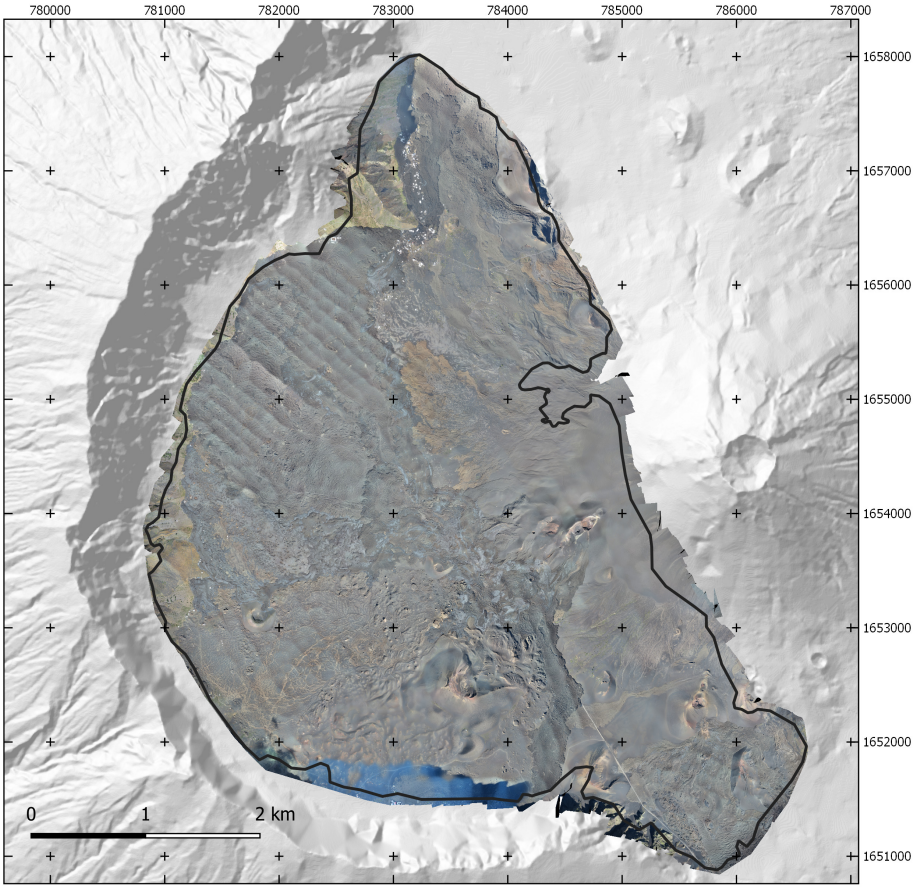

Fig. 13. Figure 13 – Digital orthophoto mosaic with 25 cm resolution of the Chã das Caldeiras. The quality of the point cloud is shown in Fig. 7. Shaded relief outside the surveyed area derived from the DEMFI

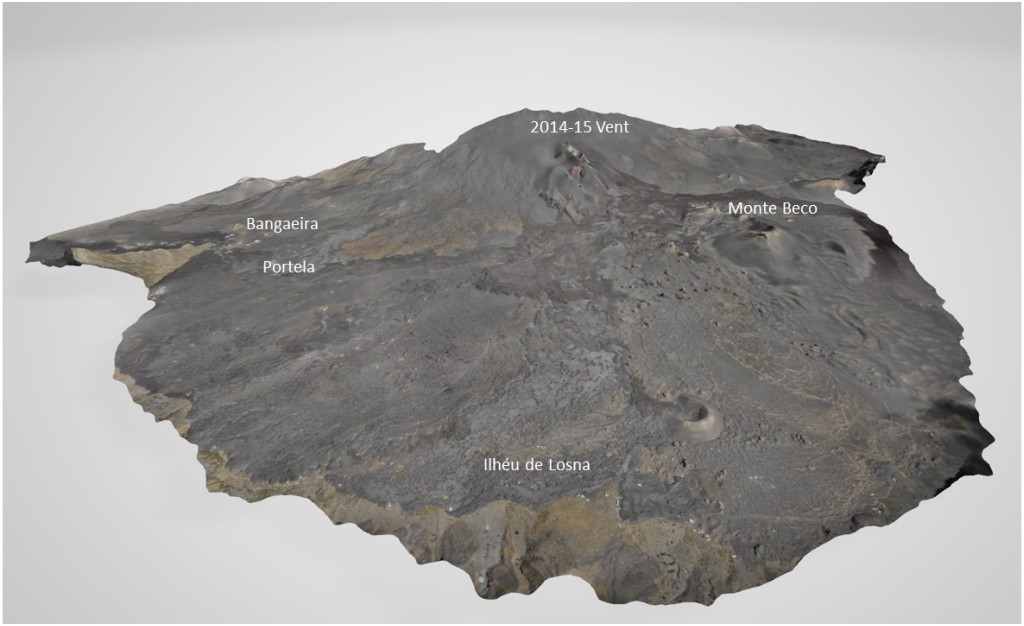

Fig. 14. Figure 14 – 3D visualization of the texture mesh of the Chã das Caldeiras.

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