3D outcrop modelling as a tool for GSSP promotion and communication: A case study from Spain and Italy.

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Abstract

A great effort has been made by the geoscience community (IUGS, ICS) in recent years to identify, enhance and give visibility to Geological Heritage Sites, the volume on "the First 100" Geological Heritage Sites being a good example. During the COVID-19 pandemic, *in situ* field activity was strongly affected, but this scenario greatly encouraged the development of 3D virtual field analogues. In order to adapt to these circumstances, the International Subcommission on Paleogene Stratigraphy (ISPS) adopted an innovative approach to make GSSPs and geoheritage sites available worldwide, using digital techniques such as photogrammetric surveys to construct 3D models.
Given the travelling restrictions at that time, we focused on two different areas in Spain (Zumaia and Gorrondatxe sections) and three areas in Italy (Massignano, Bottaccione and Monte Cagnero sections). These geosites are the most significant outcrops of the Paleogene GSSPs. To this end, we used the UAV-based photogrammetry technique for constructing 3D models. The work was done in several steps: collecting photos by Unmanned Aerial Vehicles (UAVs), photogrammetric processing, 3D modelling and uploading to the website using the Cesium 3D platform.

The 3D outcrops, together with a short video of the investigated area, are now available at the ISPS website (https://www.paleogene.org/) and are accessible for the scientific community and the general public. The models will be continuously updated with the incorporation of newly produced material and information. This new approach will contribute to the promotion and dissemination of geo-education.
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Keywords: Geosites, GSSP, digitalization, online exploration, 3D models

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