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Representing fault evolution by animating a drone 3D model with computer game software (Boconó Fault, Venezuelan Andes).

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This presentation describes a workflow to enhance the 3D model of a geological outcrop cut across by a regional strike-slip fault located in the Venezuelan Andes.

This fault (Boconó Fault) has been active since the Early Holocene time and has affected the landscape by displacing the rivers course and the geometry of ancient glacial moraines.

One of these moraines (Los Zerpa) was studied in detail in 1983 by geologist C. Schubert, who described its evolution with a series of hand drawn panels.

In 2015 the same area was acquired by the author with a drone survey and rendered as a digital 3D model. More recently the same model has been improved by adding also the interpretation made in the 80's, adapted to 3D in the form of geometrical elements (lineaments and surfaces) and animations showing the different stages of evolution.

The fault model can now be publicly accessed over the internet and the users can observe and animate its evolution in 3D and understand the geological processes more intuitively (https://riccardorocca.github.io/home/Los_Zerpa.html).

This result has been achieved by editing the original model with free software which is more typically used for computer games, namely "Blender" (a 3D editor) and "Sketchfab" (a publishing platform for 3D models). Furthermore, the "Sketchfab" display can be programmed in Javascript, adding widgets that allow the users to interact with the scene by hiding/showing/moving specific elements of the model.

This workflow is proposed as an example that can be applied to other 3D models of geological faults and other geological features, so that the geological concepts can be represented more intuitively and made accessible to a large audience. With these improvements the models would be a more valuable support to, for instance, published papers and virtual field-trips.