Pictures, DEMs, and raw data relative to analogue accretionary wedges

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2. Citation

When using the data please cite:

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3. Data Description

This dataset includes raw data used in the paper by Reitano et al. (2022), focused on the effect of boundary conditions on the evolution of analogue accretionary wedges affected by both tectonics and surface processes; the paper also focuses on the balance between tectonics and surface processes as a function of the boundary conditions applied. These boundary conditions are convergence velocity and basal slope (i.e., the tilting toward the foreland imposed prior the experimental run). The experiments have been carried out at Laboratory of Experimental Tectonics (LET), University "Roma Tre" (Rome). The analogue material has been characterized and tested in previous works and in different laboratories (e.g., Graveleau and Dominguez, 2008; Graveleau et al., 2011; Strak et al., 2011; Guerit et al., 2016; Reitano et al., 2020, Mao et al., 2021; Garcia-Estève et al., 2021). Detailed descriptions of the experimental apparatus and experimental procedures implemented can be found in the paper to which this dataset refers. Here we present

- Pictures recording the evolution of the models.
- GIFs showing time-lapses of models.
- Raw DEMs of the models and Incision DEMs, used for extracting data later discusses in the paper.

3.1. Monitoring model evolution

We took digital images during the evolution of the experiments. These images are stored in the "2021-041_Reitano-et-al_Pictures_and_GIFs" folder.

3.1.1. Digital images

The qualitative evolution of the analogue models has been recorded using a digital oblique-view camera (Canon EOS 200D). Digital pictures have not been modified with other imaging software.

3.2. Data from models' surface

Laser scan provides a point cloud, composed by x, y, z coordinated of the points composing the model surface (the number of points is function of the laser resolution). The laser scans are converted to raw

DEMs, here stored in the "DEMs" folder. For making the file easily readable to GIS software, data are expressed in m (100 m = 1 mm, see scaling section in the main paper). Bottom left corner in the DEMs is randomly chosen to be $-70 \cdot 10^3$ m. No data values equal to -9999. Cell size is 100 m (1 mm in the models).

3.2.1. Incision and Mass Balance

The .txt files inside the "2021-041_Reitano-et-al_DEMs" folder named "CR****_dem**clip" has been used for producing Fig. 6, 8, 10, and S3 in Reitano et al. (2022). From these DEMs we calculated the Mass Balance, as described in the paper this repository refers to. The .txt files named "CR****_inc**ok" have been used for calculating the incision values shown in Fig. 5 and 7 in Reitano et al. (2022). To obtain incision maps and incision over time, the volume of material incised was computed by comparing the actual topography with the reconstructed non-eroded surface at every shortening step. The non-eroded surface has been calculated by creating an envelope surface using crest lines between valleys as constraints (e.g., Sembroni et al., 2016). The assumption is that crests do not erode. The results are then a minimum estimate of the amount of incision.

3.2.2. Channel longitudinal profiles and channel metrics

We extracted channel longitudinal profiles and channel metrics (concavity index, channels length etc., Supplementary Information in Reitano et al., 2021) using the MATLAB tool "TopoToolbox" (Schwanghart and Scherler, 2014). Data relative to channels have been extracted from the DEMs obtained by the laser scans, previously described.

4. File description

Data files are listed and described in the Excel file "2021-041_Reitano-et-al_List_of_files.xlsx"

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