

River terrace height and width analysis

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3. Data Description

Valley bottoms generally grow wider with greater water discharge and in softer lithologies (Brocard & Van der Beek, 2006; Langston & Temme, 2019; Limaye, 2020; Montgomery, 2002; Schanz & Montgomery, 2016; Suzuki, 1982; Tomkin et al., 2003). However, the order-of-magnitude scatter in this relationship suggests other currently unknown controlling parameters. Specifically, to investigate the role of valley height on valley width, we analyzed valley widths and heights preserved in paired alluvial terrace sequences associated with Quaternary climate change. Terrace cross sections were compiled from the literature and widths and heights were measured in Adobe Illustrator. The results are summarized in this dataset.

Only terrace cross sections that had at least three terrace levels (at least one of which was paired), covered both sides of the valley, and had absolute values for width and height were considered. These criteria resulted in twelve terrace cross sections from nine different publications (Bookhagen et al., 2006; Colombo et al., 2000; Hu et al., 2017; Pazzaglia & Brandon, 2001; Poisson & Avouac, 2004; Ray & Srivastava, 2010; Rigsby et al., 2003; Tofelde et al., 2017; Wang et al., 2017). The terrace cross section for the Quebrada del Toro in Argentina (Tofelde et al., 2017) was extracted from the TanDEM-X digital elevation model.

For each terrace level in each cross section, the valley width, W , the total height of the valley, H , and the height of each terrace, h , were determined. Distances were measured on the original images in Adobe Illustrator and converted to real distances using reference measurements along the axes. For unpaired terraces, W was measured where the terrace height meets the opposite valley wall.

4. File description

Column header	unit	Description
First author		First author of publication of which terrace cross sections were extracted
Year		Year of publication of which terrace cross sections were extracted
Place		Name of the river that formed the terrace sequence
Location latitude (°)	DD,dddd	Latitude in WGS84 in decimal degrees
Location longitude (°)	DD,dddd	Longitude in WGS84 in decimal degrees
Catchment area (km ²)	km ²	Calculated catchment area upstream of terrace location
Terrace name (original)		Name of each terrace level as given in the original publication
Paired (1=yes, 0=no)		Indication whether terraces were preserved as paired (=1) or unpaired (=0) terraces
Age of terrace as given in original publication (ka)	ka	Ages of the individual terrace level, if provided in the original publication
Measured valley height, H (mm)	mm	Height of valley at the time when a terrace was the active floodplain. Heights were measured to a reference surface, normally the highest terrace. Height values were measured in Adobe Illustrator in mm.
Measured valley width, W (mm)	mm	Width of valley as preserved by each terrace level. Heights were measured in Adobe Illustrator in mm.
Measured terrace height above modern channel (mm)	mm	Height of terrace riser of each individual terrace. Measured in Adobe Illustrator in mm.
Height reference (mm)	mm	Reference measurement in Adobe Illustrator along the y-axis in order to convert measured height in mm to real height in m.
Height reference (m)	m	Real distance in m covered by the reference measurements in Adobe Illustrator according to axis labels.
Width reference (mm)	mm	Reference measurement in Adobe Illustrator along the x-axis in order to convert measured width in mm to real width in m.
Width reference (m)	m	Real distance in m covered by the reference measurements in Adobe Illustrator according to axis labels.
Calculated valley height, H (m)	m	Calculated height of valley in m, if measured valley height in mm are upscaled based on the height reference measurements in mm and m.
Calculated valley width, W (m)	m	Calculated width of valley in m, if measured valley width in mm are upscaled based on the width reference measurements in mm and m.
Calculated terrace height above modern channel (m)	m	Calculated height of terrace tread above modern channel in m, upscaled based on the height reference measurements in mm and m.
Terrace height above modern channel in publication (m)	m	Measured height of terrace treads above modern channel in m, if provided in the original publication.

5. References

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