## **DO MEGAFLOODS RESET MOUNTAIN VALLEYS?**



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## DO MEGAFLOODS <u>RESET</u> MOUNTAIN VALLEYS?

## **SWEEPING EROSION**

Removes fractured bedrock from channel Removes available sediment from hillslopes

## **SPOILER:**

It's complicated...

Photo: hichoslew

## FLOODS IN THE EASTERN HIMALAYA



Gyala Peri 7294 m

2285 m Yarlung River

Photo: hichoslew

## **FLOODS IN THE EASTERN HIMALAYA**



Gyala Peri 7294 m

ancient megafloods, 10<sup>6</sup> m<sup>3</sup>/s

modern outburst floods, 10<sup>5</sup> m<sup>3</sup>/s

2285 m Yarlung River

modern monsoon floods, 10<sup>4</sup> m<sup>3</sup>/s

Photo: hichoslew

## DO MEGAFLOODS <u>RESET</u> MOUNTAIN VALLEYS?

## **SWEEPING EROSION**

Removes fractured bedrock from channel Removes available sediment from hillslopes





# Removed bedrock likely does not make it too far downstream in a single megaflood





## DO MEGAFLOODS <u>RESET</u> MOUNTAIN VALLEYS?

## **SWEEPING EROSION**

Removes fractured bedrock from channel Removes available sediment from hillslopes

### Shear stresses are variable on the hillslopes









Material is likely removed from the hillslopes throughout the flood

### A megaflood both removes and adds material to the hillslopes



## **DO MEGAFLOODS RESET MOUNTAIN VALLEYS?**

Fractured bedrock likely removed from channel during a megaflood, **but might not be moved out of the Himalaya** Hillslope material likely moved, **but not necessarily removed**.

### Megafloods will change the landscape, but "reset" might not be the best way to describe it.



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