

ALa Venta



Samaria Carrizal Villahermosa 222 1.3 Viejo

137 0.5 Macuspana

World's largest Holocene beach ridge system

Ample sandy sediment supply towards the Usumacinta-Grijalva delta coast has resulted in the formation of a sequence of over 500 parallel beach ridges at exceptionally high accumulation rates of $\sim 3 \text{ Mm}^3/\text{yr}$.

1986

Sandy sediment source?

El Chichon Beach ridges contain high amounts of volcaniclastic sediments, therefore we hypothesize that eruption products of the nearby El Chichón volcano are potentially an important sediment source.

El Chichón's 1982 eruption

Plinian eruption; deposition of 1.1 km³ DRE easily erodible and transportable tephra fall deposits equivalent to ~**1600 Mm³** clastic sediment. El Chick ón 29 June 1996

37 0.4

Gardena 514 5.1 Carrizal

latan

haddal



Palenque was blanketed by volcanic ash.

Pabris flow deposits filled the Platapar

Debris flow deposits filled the Platanar and Magdalena river valleys.





191

Materials and methods

Erosion of volcaniclastic sediments stored in the river valleys draining the volcano was determined for its last eruption in 1982. Landsat and Lidar images and a field visit were used for the geomophological mapping of the 1982 'event terrace' and volume estimates of eroded deposits are based on the comparison of the digital elevation model constructed for 1984 and 2007.

	total deposited	eroded		erosion rate
	Mm ³	Mm ³	%	Mm ³ /yr
Magdalena	26.7	17.5	66	0.7
Platanar	16.1	9.9	61	0.4
total	42.8	27.4	64	1.1

Results

- Only 2.7 % of the ~1600 Mm³ of clastic sediment produced by the 1982 eruption was deposited as debris flow in the Magdalena and Platanar river valleys;
- 64% of the deposits is transported downstream within the first 25 years;
- during the first decades after an eruption volcaniclastic sediments of El Chichón volcano contribute significantly to the sediment budget of the Grijalva river.

AT I T PI PETERIN YLLITAN



Conclusion Other sediment sources has to be sought for. Suggestions?

Reference: Smid, E., 2015. Amount of eroded sediment originating from the Platanar and Magdalena rivers (Tabasco, Mexico), since the eruption of El Chichón in 1982. Bsc thesis. Utrecht University.

Acknowledgement: INEGI is thanked for providing the LIDAR data.



grant 821.01.007