

THE IMPACT OF STORM ALEX ON THE VIEVOLA CATCHMENT: A QUANTITATIVE ANALYSIS OF SEDIMENT VOLUME AND MORPHOLOGICAL CHANGES IN THE ROYA RIVER TRIBUTARIES

Raphaël KERVERDO¹ raphael.kerverdo@sorbonne-universite.fr [0009-0008-8984-0749](https://orcid.org/0009-0008-8984-0749), Christian GORINI¹ [0000-0003-3123-4822](https://orcid.org/0000-0003-3123-4822), Sara LAFUERZA¹ [0000-0003-2126-6505](https://orcid.org/0000-0003-2126-6505), Alain RABAUTE¹ [0000-0003-1369-0218](https://orcid.org/0000-0003-1369-0218), Didier GRANJEON² [0000-0002-1457-6671](https://orcid.org/0000-0002-1457-6671), Rémy DESCHAMPS² [0000-0002-0888-3456](https://orcid.org/0000-0002-0888-3456), Eric FOUACHE³ [0000-0002-5392-0615](https://orcid.org/0000-0002-5392-0615), Mina JAFARI, Pierre-Yves Lagrée [0000-0002-3931-6622](https://orcid.org/0000-0002-3931-6622)

¹*Institut des Sciences de la Terre de Paris (ISTeP), Sorbonne Université, CNRS-INSU, 75005 Paris, France*

²*IFP Energies Nouvelles, Rueil-Malmaison, France*

³*Laboratoire Médiations, Institut de Géographie, Sorbonne Université, Paris, France*

⁴*Institut Jean le Rond d'Alembert, Sorbonne Université, Paris, France*

Corresponding author : Raphaël KERVERDO raphael.kerverdo@sorbonne-universite.fr

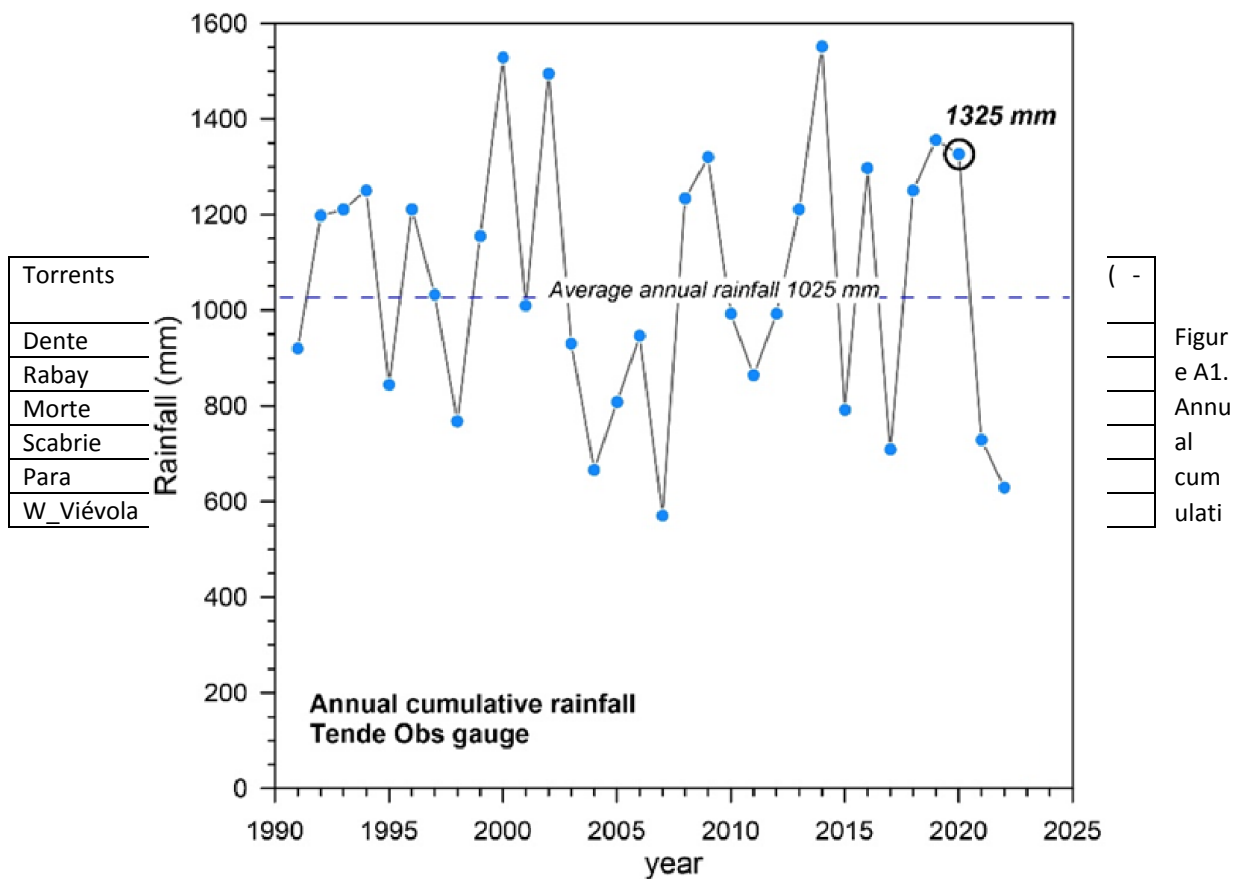
Supplementary data

Table A1 : Data used to calculate volume mobilized during the Alex storm. Most of the data comes from the IGN (Institut Géographique National, French geographical survey). UAV data was acquired during 3 field

Type	Name	Source	Types of acquisition	Date	Resolution
Images Infrared false colors (IRC)	BD Ortho IRC [®]	IGN	Aerial images	2017	20cm/pixels
Ortho-images	BD Ortho [®]	IGN	Aerial images	2017	20 cm/pixels
Ortho-images	BD Ortho [®]	IGN	Aerial images	July 2020	20cm/pixels
Ortho-images	BD Ortho Express [®]	IGN	Aerial images	October 2020	20cm/pixels

campaigns in March, June and October 2023 in the case of this study.

Ortho-images	Study data	Study acquisition	UAV Cover	2023	1cm/pixels
DSM	MNS Correl®	IGN	Correlation by ortho-images	2020	0,50cm/pixels
DTM	RGE Alti®	IGN	LiDAR, Radar, Correlation aerial images	2008 to 2018	1m
LiDAR	LiDAR HD	IGN	LiDAR	2021	>10 pts/m ²



Annual cumulative rainfall over 31 years for the Tende rain gauge. Hourly data sourced from Météo France. The blue circle surrounding the bridge corresponds to the year of the flood.

Table A2 : Calibration values obtained from $DSM_{2021} - DSM_{2020}$ for the studied valleys in vegetated areas.

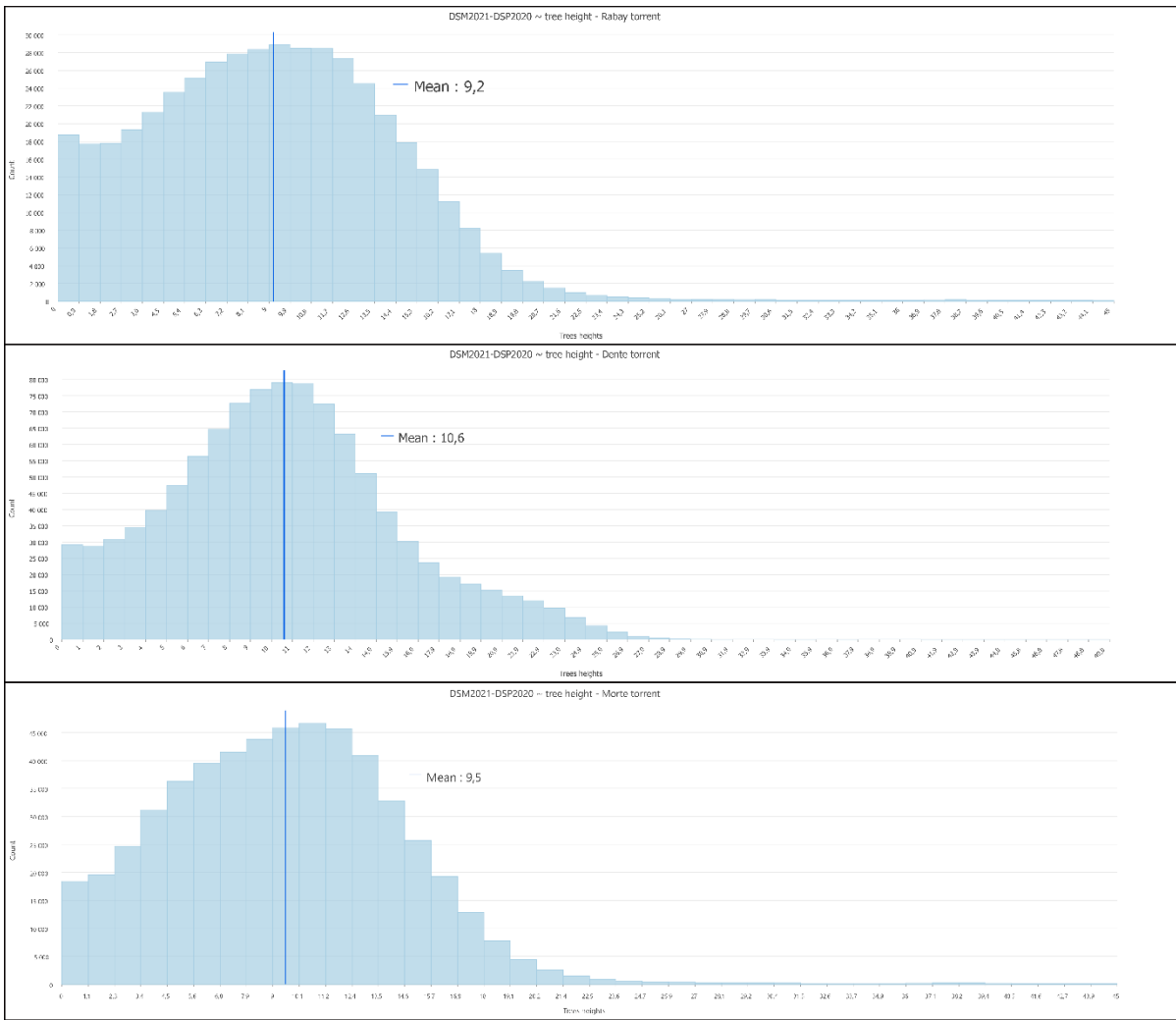


Figure A2 Trees heights distributions from three different valleys : Morte, Dente and Rabay. The values of the mean height tree show in table 3 are extracted from this range of data.