proceedings

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MDPI

Geoscientific Research for Natural Hazard & Risk Assessment

Analysis of mass slope movements on rocky sea cliffs: a distributed natural hazard in the Safi region, Morocco

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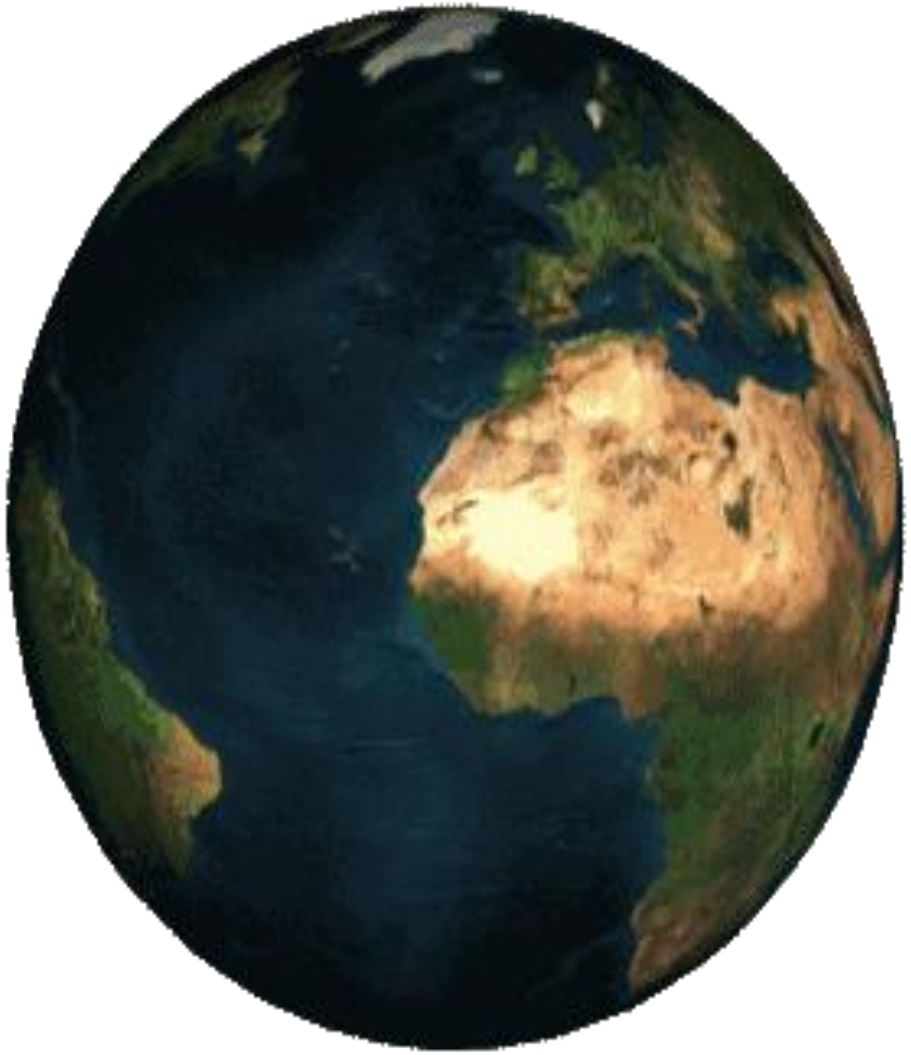
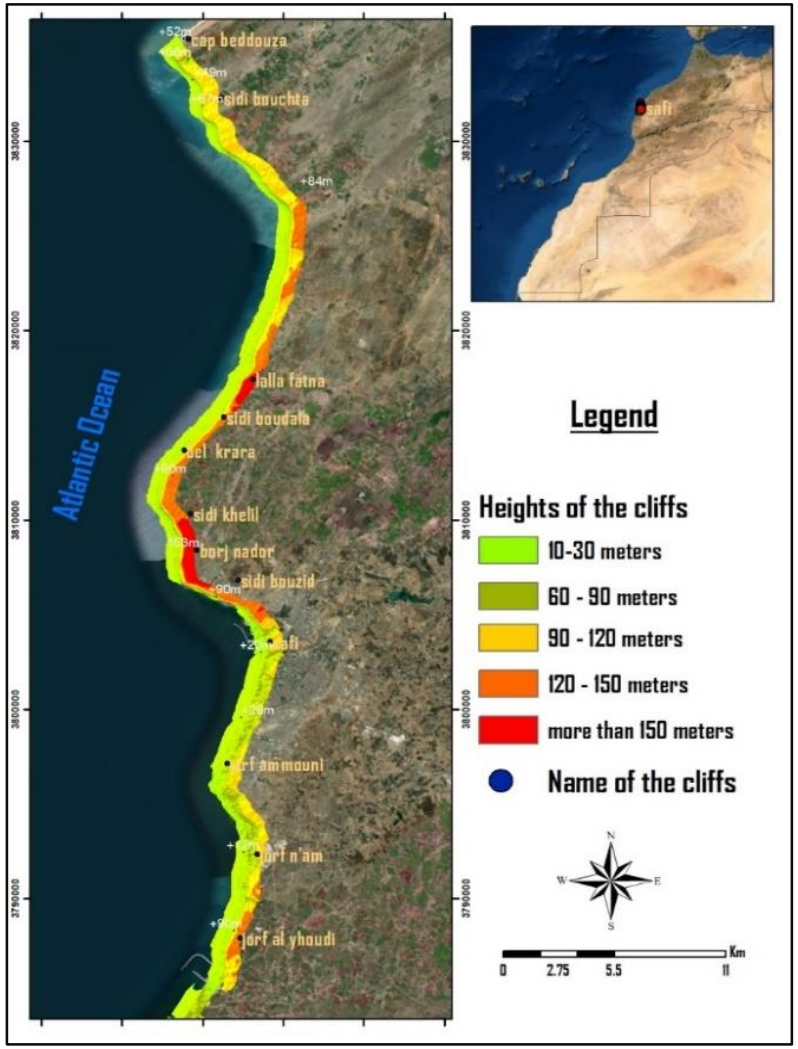
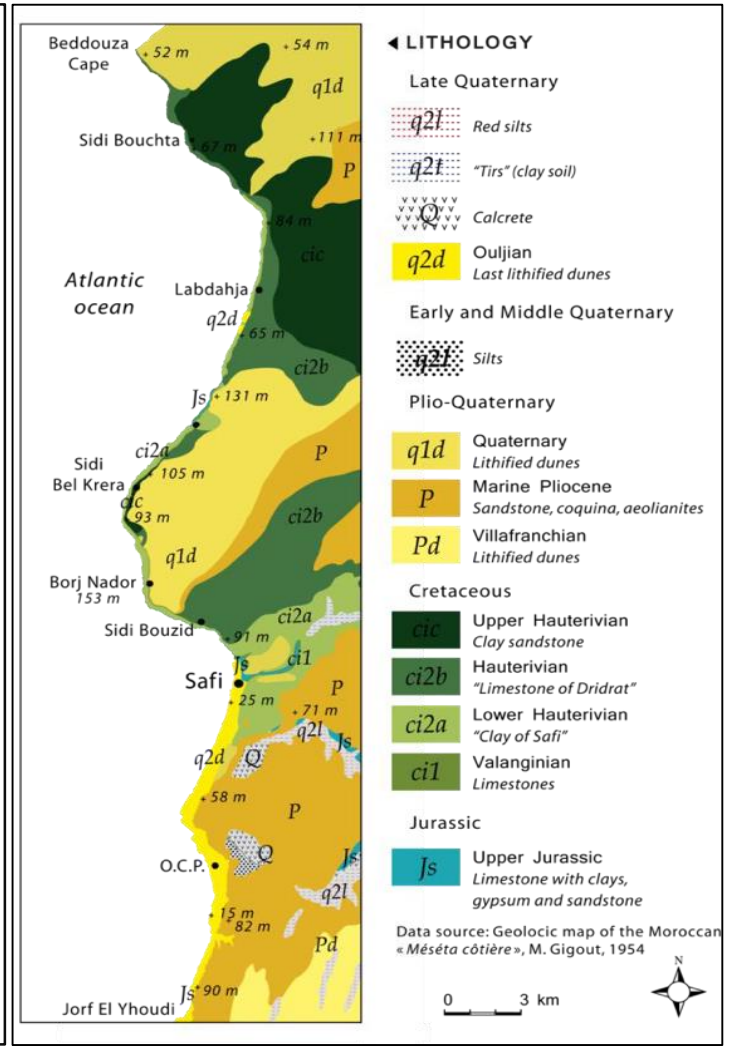
- ✓ The rocky and cliffy coasts would represent nearly 80% of the coastal line.
- ✓ These spaces are coveted by human societies.
- ✓ This considerable geomorphological heritage, unfortunately, is subject to a continuous degradation.







Location and geological map of the study area

latitudes : 32° 00’ 00” et 32° 40’00”, longitudes : 08°40’00” et 09°20’00”.

Température moyenne annuelle est de 19.0 °C

précipitation moyenne de 350 mm

691983 habitants (2014)

Topographic maps
Aerial photos

Georeferencing
Reference line definition

Digitalization
Baseline creation
Transect creation
Automatic DSAS calculations
*NSM / *Epr
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Field work on risk areas

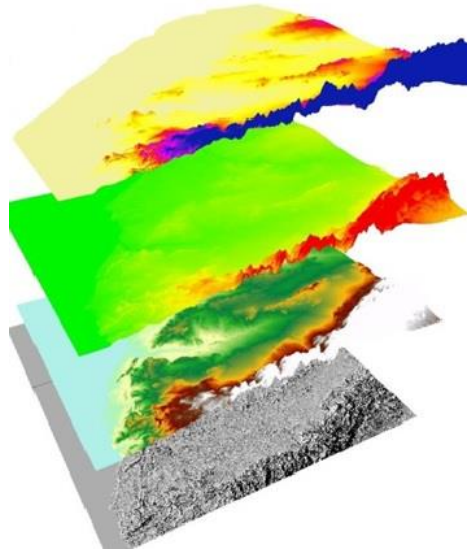
Characterization of the types of ground movements.

Data collection

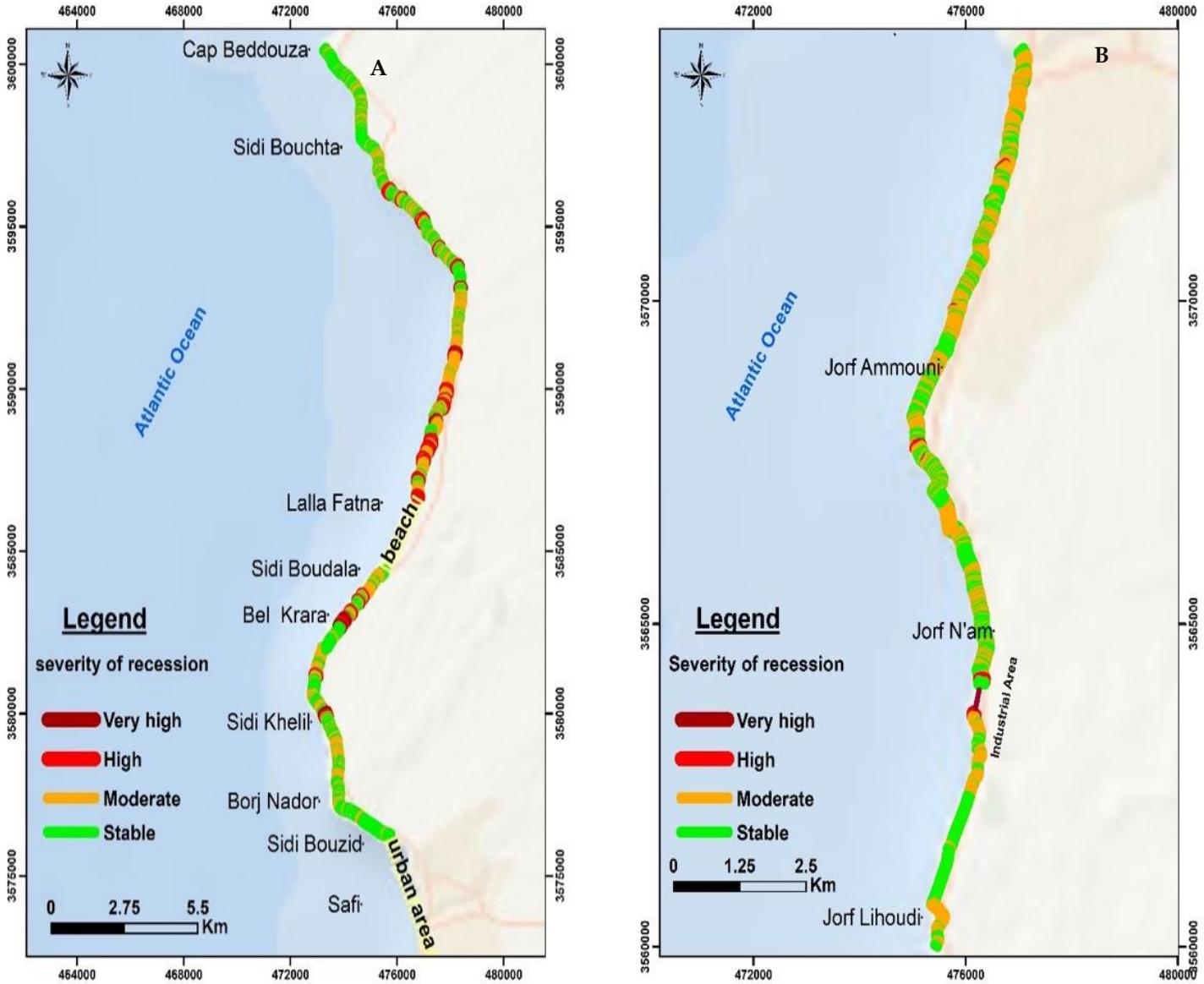
Pre-processing

Data creation & calculations

Evolution of cliff morphology

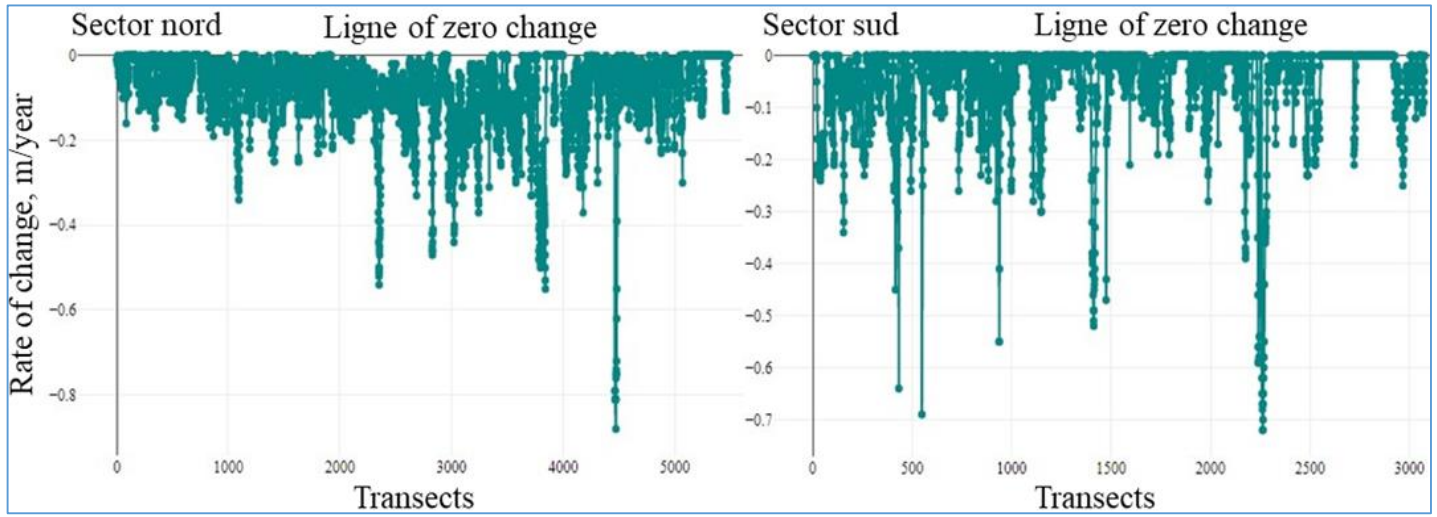


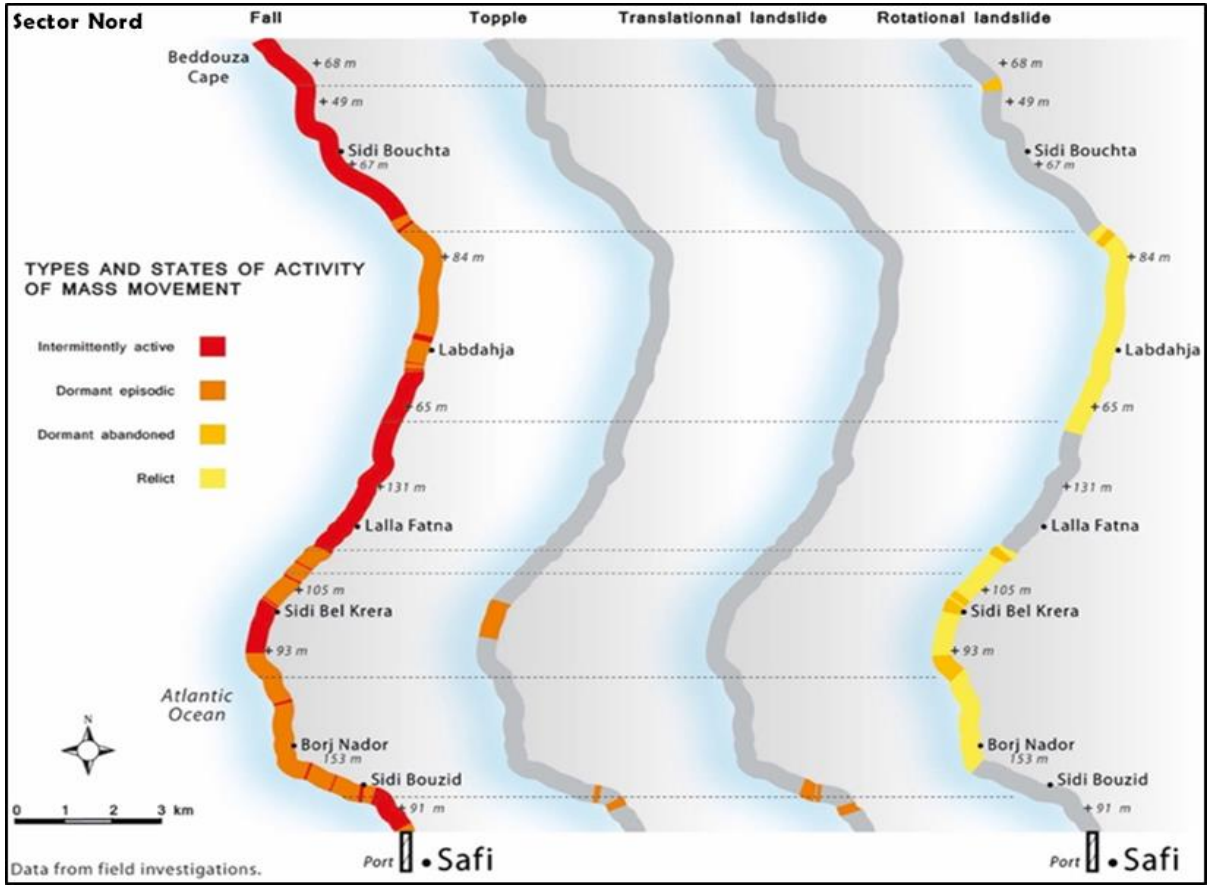
Spatialization of recession severity in the high cliffs for the northern (A) and southern (B) sectors

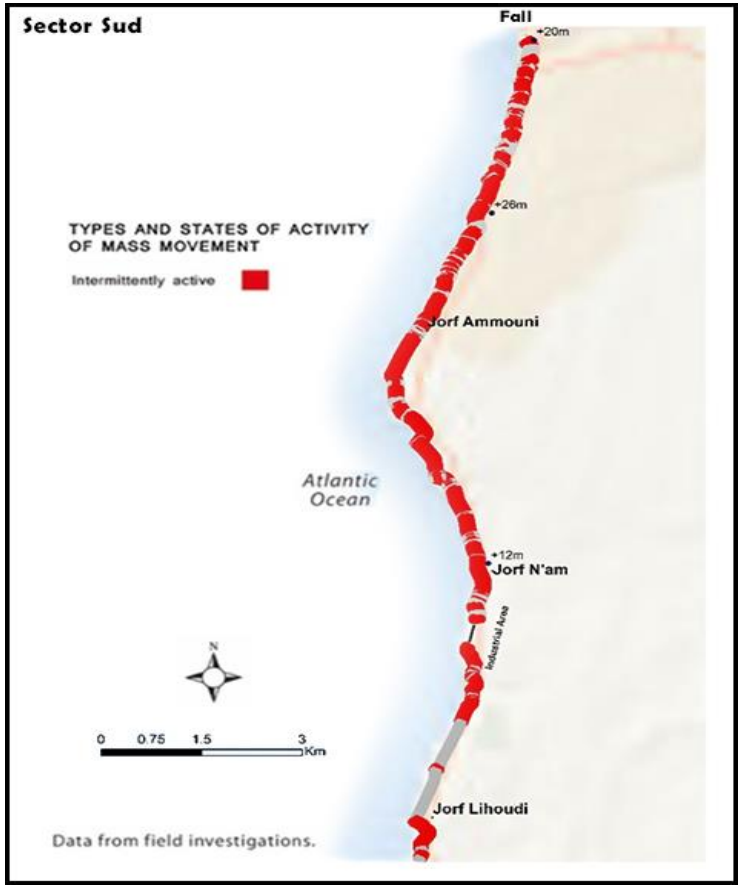


northern sector	southern sector	
Total transect number	5492	3078
Total transects that record erosion	4561	1608
Total transects that record stable	931	1470
percent of transects with erosion data	83%	52%
percent of transects with stable data	17%	48%
Shoreline length (km)	27 km	17 km
Mean regressive shoreline change rate (m/year)	-0.08 (m/year)	0.04 (m/year)

Evolution of the position of the high cliff line between 1954 and 2020 (erosion/stable),







Spatialization of mass movement types and activity states in the northern and southern sector

This work advocates the establishment of a reliable, homogeneous, frequent and perennial monitoring of coastal dynamics and the agents and processes responsible.