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HERMES-3rd Open Workshop

COASTAL ZONE MANAGEMENT AND CLIMATE CHANGE AT LOCAL SCALE: THE HERMES PROJECT APPROACH

COASTAL EROSION IN ALBANIA

Klodian Zaimi

ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ
DEMOCRITUS UNIVERSITY OF THRACE

Wednesday, July 3, 2019
IGEWE Main Building, Don Bosko nr.60, Tirana

The project is co-funded by the European Union and National Funds of the participating countries

Introduction to the Institute of GeoSciences, Energy, Water and Environment

The Institute of GeoSciences, Energy, Water and Environment is a national research unit that operates under the umbrella of the Polytechnic University of Tirana. From the organizative viewpoint it is designed in four main departments, each of them containing up to three research units. These departments are:

Department of Climate and Environment

Department of Geology

Department of Seismology

Department of Water Economy and Renewable Energy

Photo :IGEWE

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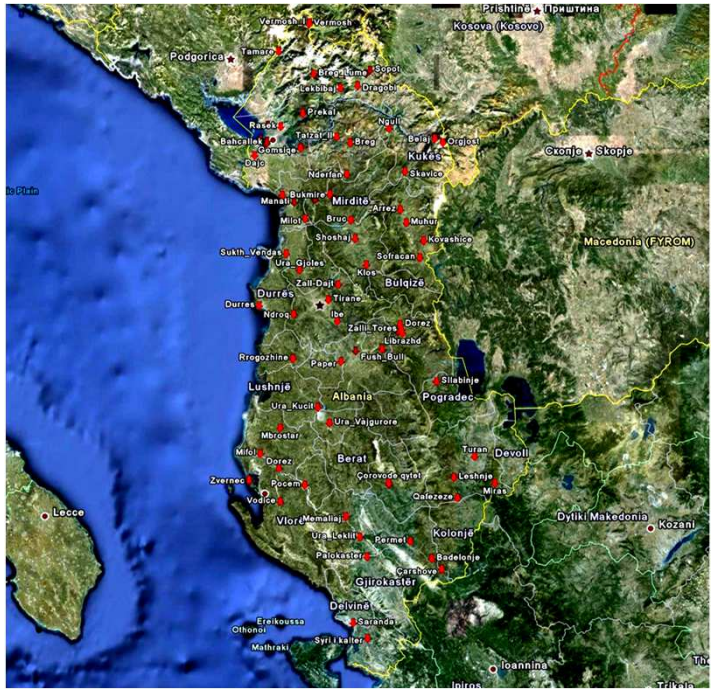
Current infrastructure, of Department of Water Economy and Renewable Energy

The current table shows the hydrological observation network of *IGEWE*:

Type of station	**Number of stations**
Hydrological observations (manual)	105
Automatic hydrological stations	20
Coastal observation stations (automated)	4



Albanian Hydrological network

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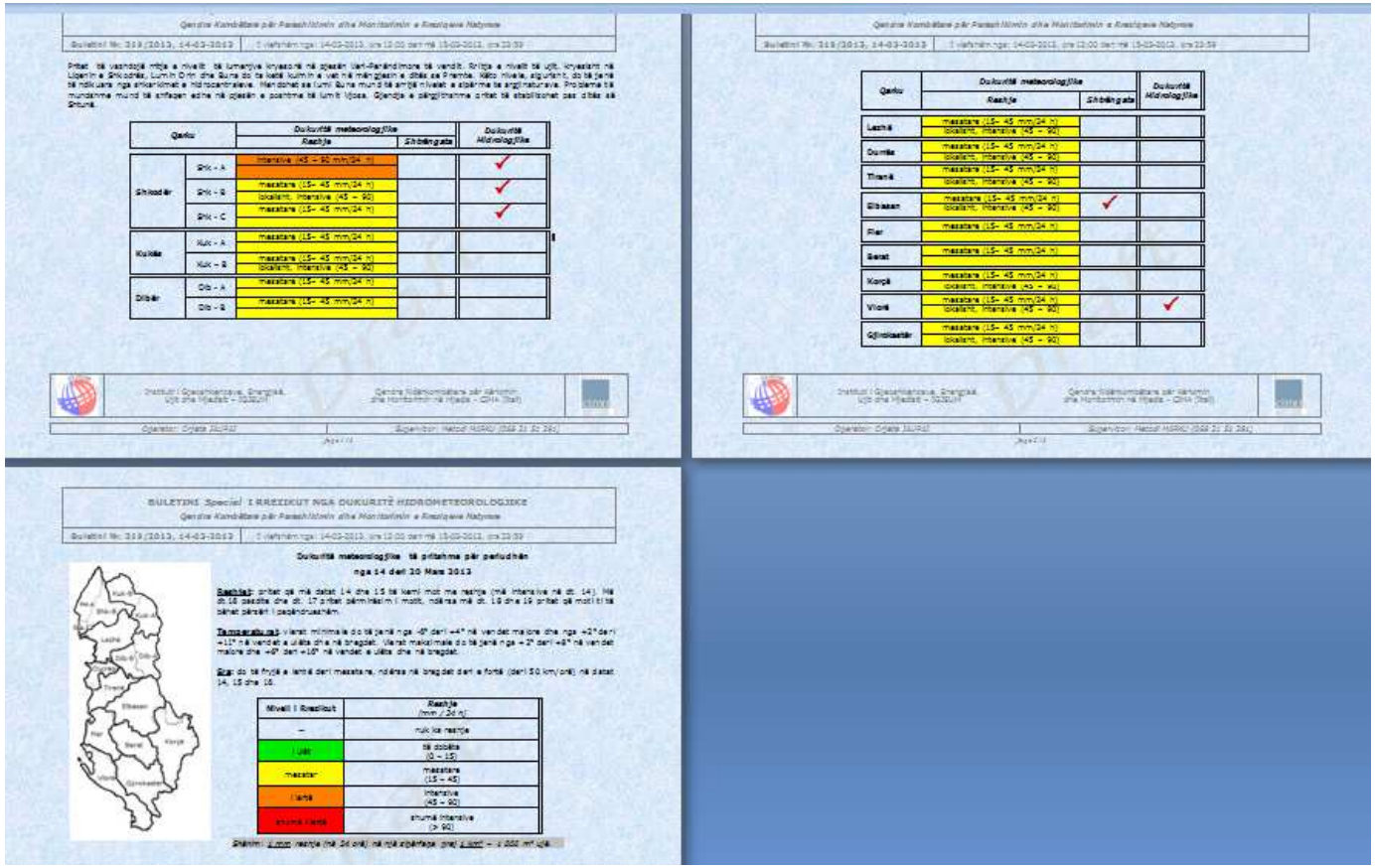
Buletin



Qendra Kombëtare për Parashikimin dhe Monitorimin e Rreziqeve Natyrore

Buletini Nr. 319 (2013), 14-03-2013 | I vlefshëm nga: 14-03-2013, ora 12:00 deri më 15-03-2013, ora 23:59

Qarku | Dukuritë meteorologjike: Rasht je | Shtëngata | Dukuritë Hidrologjike

Qarku		Dukuritë meteorologjike: Rasht je	Shtëngata	Dukuritë Hidrologjike
Shkodër	Shk - A	intensive (45 – 90 mm/24 h)		✓
	Shk - B	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		✓
	Shk - C	masatare (15- 45 mm/24 h)		✓
Kukës	Kuk - A	masatare (15- 45 mm/24 h)		
	Kuk - B	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		
Dibër	Dib - A	masatare (15- 45 mm/24 h)		
	Dib - B	masatare (15- 45 mm/24 h)		

Qendra Kombëtare për Parashikimin dhe Monitorimin e Rreziqeve Natyrore

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Qarku	Dukuritë meteorologjike: Rasht je	Shtëngata	Dukuritë Hidrologjike
Lezhë	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		
Durrës	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		
Tiranë	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		
Elbasan	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)	✓	
Fier	masatare (15- 45 mm/24 h)		
Berat	masatare (15- 45 mm/24 h)		
Korçë	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		
Vlorë	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		✓
Gjirokastër	masatare (15- 45 mm/24 h) lokalisht, intensive (45 – 90)		

Qendra Kombëtare për Parashikimin dhe Monitorimin e Rreziqeve Natyrore

Buletini Nr. 319 (2013), 14-03-2013 | I vlefshëm nga: 14-03-2013, ora 12:00 deri më 15-03-2013, ora 23:59

BULETINI Special I RREZIKUT NGA DUKURITË HIDROMETEOROLOGJIKE

Dukuritë meteorologjike të pritshme për periudhën
nga 14 deri 20 Mars 2013

Rasht: pritet që më datat 14 dhe 15 të kemi mot me reshje (më intensive në dt. 14). Më dt.16 pasdite dhe dt. 17 pritet përmirësim i motit, ndërsa më dt. 18 dhe 19 pritet që moti të jetë përsëri i paqëndrueshëm.

Temperaturat: vlerat minimale do të jenë nga -6° deri +4° në vendet malore dhe nga +2° deri +11° në vendet e ulëta dhe në bregdet. Vlerat maksimale do të jenë nga +2° deri +8° në vendet malore dhe +6° deri +16° në vendet e ulëta dhe në bregdet.

Era: do të frysë e lehtë deri mesatare, ndërsa në bregdet deri e fortë (deri 50 km/orë) në datat 14, 15 dhe 16.

Nivelli i Rrezikut	Reshje (mm / 24 h)
–	nuk ka reshje
I ulët	të dobëta (0 – 15)
mesatar	mesatare (15 – 45)
i lartë	intensive (45 – 90)
shumë i lartë	shumë intensive (> 90)

Shënim: 1 mm reshje (në 24 orë) në një sipërfaqe prej 1 km² = 1 000 m³ ujë

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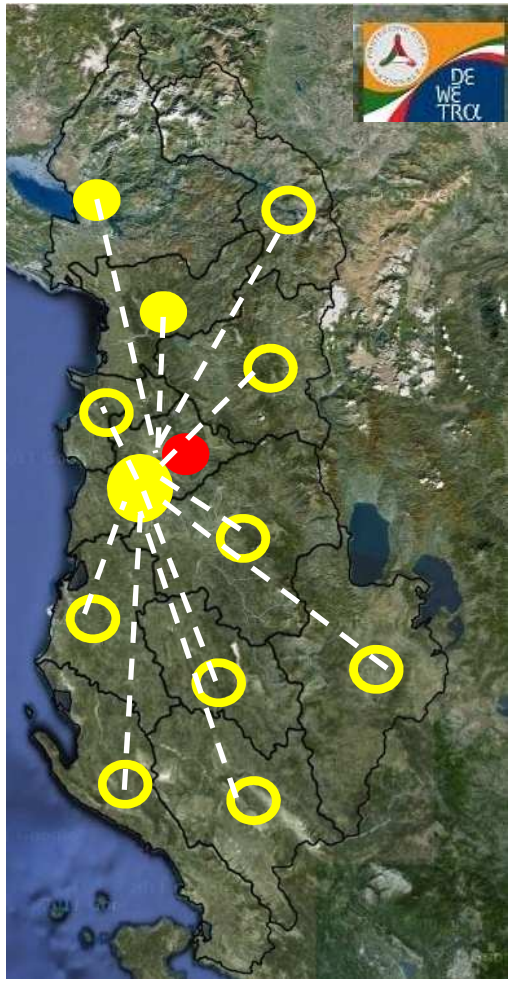
National Center for Forecasting and Monitoring of Natural Risks (IGEWE)

National Operative Centre

Operative Centre at the Prefecture of Shkodra and Lezha

Operative Centre at the prefecture levels



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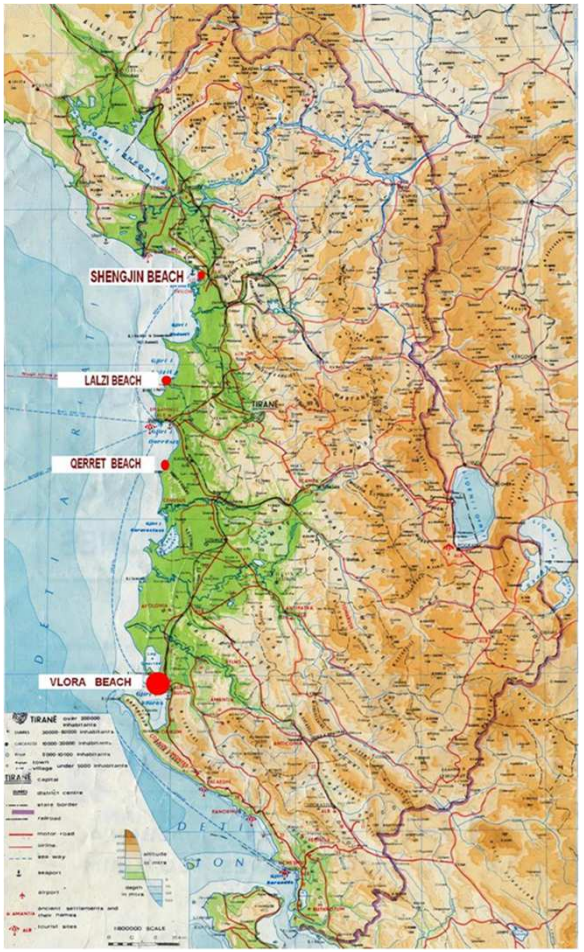
Coastal Erosion in Albania

Nowadays coastline on the Adriatic Sea is entered in a new phase of its evolution: in that of impoverishment of beaches and intensification of coastal erosion process as a result of combination of natural and human factors. Although a quantitative evaluation of the coastal erosion it is not available, its impact on the Albanian coast is evident in areas such as: Shengjini Beach, Patogu Beach, Lalzi Beach, Qerret Beach, Semani beach, and the Old Beach in Vlora. Coastal erosion is damaging the functional structure of beaches and their tourist landscape



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The democracy consolidation in Albania has carried out a socio-economic development which found, and will find , great interests on coastal areas. The construction of infrastructures and the tourism activities development have contributed to the landscape alteration with negative consequences on both the morphologic equilibrium and the sediment dynamic. The variation of transported sediment volumes caused by human activities and the evolution of the river outlets strongly affected the sediment dynamic along the littoral zone . In order to take these actions up, the starting point is the knowledge of the complex phenomena governing the coastal dynamic of the Albania.

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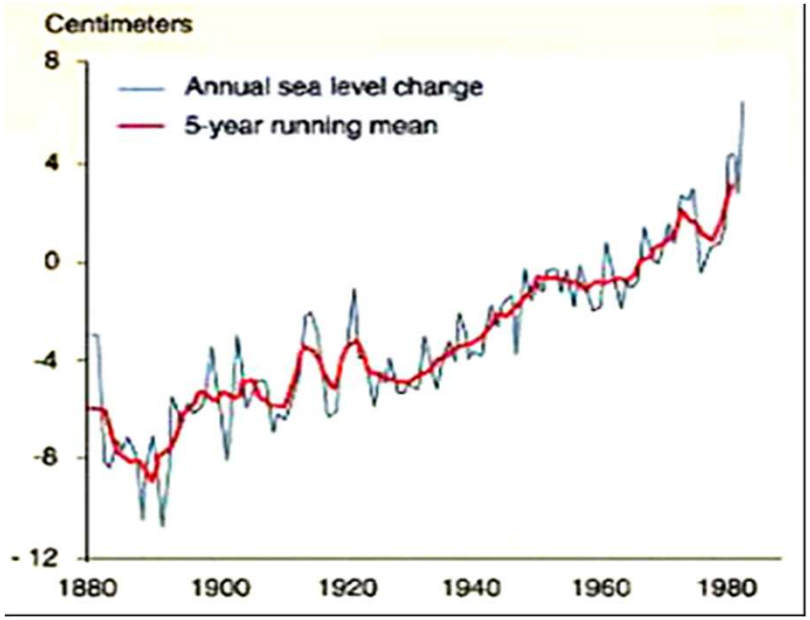
Global warming causes sea-level rise as oceans expand and makes storm patterns more energetic. Consequently it will affect most of the world's coastlines through inundation and increased erosion. Sound predictions of the development of these hazards over the next century are needed in order to manage the resulting risks. Coastal flooding is somewhat easier to predict than erosion since inundation can be estimated using coastal contours. However its prediction is not trivial since inundation may be followed by rapid reshaping of the shoreline by, amongst other things, waves, tidal currents and human interventions.



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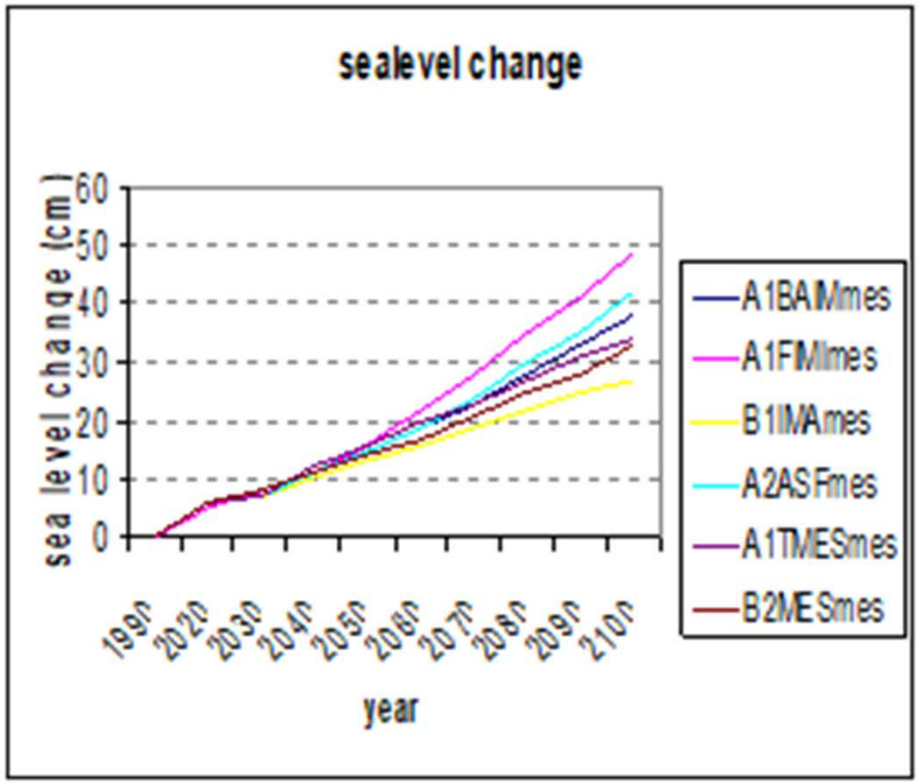
Understanding of coastal morphological response to climate change and sea-level rise is quite underdeveloped. This is partly because the timescales over which concern of its effects are greatest (annual to centennial) falls between the small scales addressed by most numerical models and the large sales described in the conceptual models of geomorphologists. An additional problem is that the type of model often used to bridge this gap, which is based on extrapolation of historic behaviour, is inappropriate if the climate changes.



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Analyses are based on the multi-annual data derived from existing cartography and recent satellite images .

In order to assess the evolutionary trends in this area during the last 50 years, the cartography relevant to 1971 at 1:50.000 scale, and the most recent official cartography relevant to 1986 at 1:25.000 published by the Albanian Military Institute of Topography which covered the area between the Patok lagoon and port of Shengjin, were taken into account.

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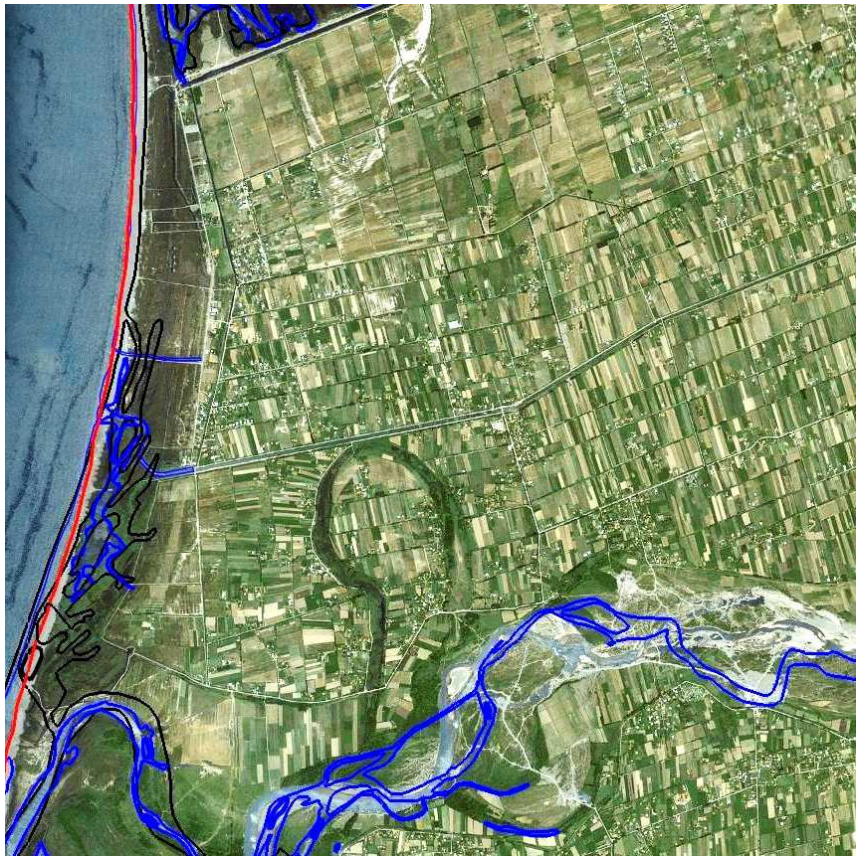

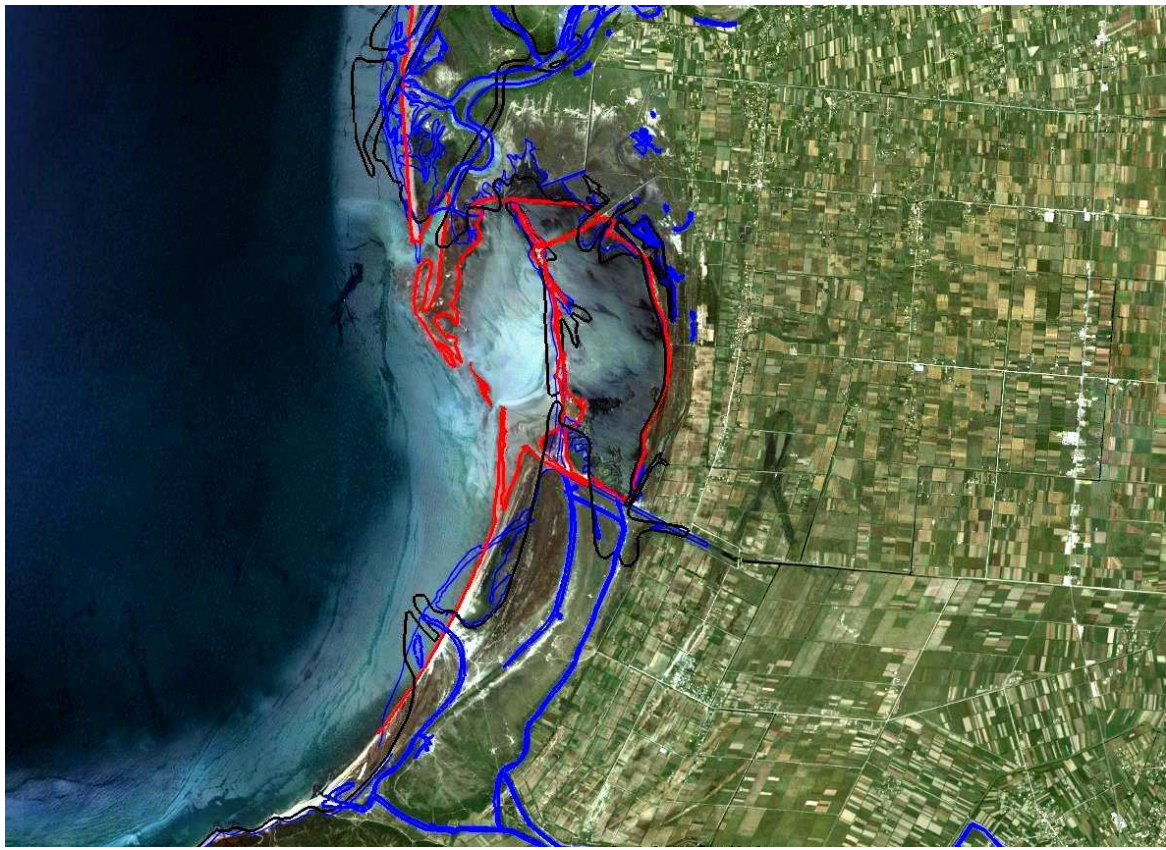

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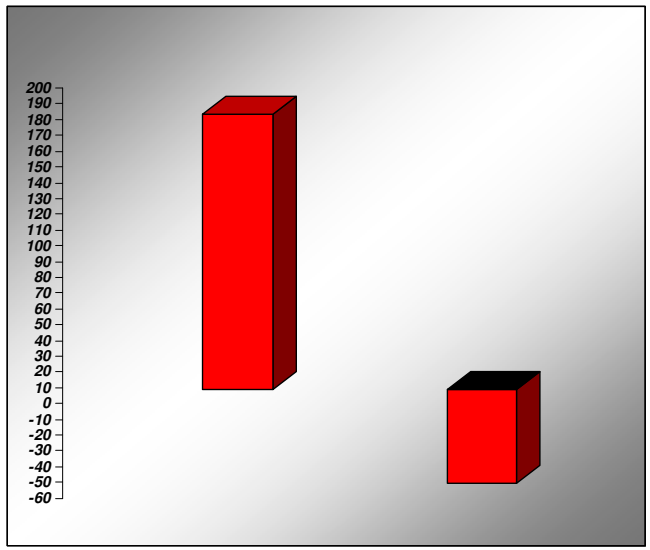

Extreme events observed for Shengjin station

Max	Min
175	-59

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CONCLUSION

To improve problematic of the coastal erosion in Albania are needed:
Developing and increasing the capacities to monitor and respond to climate change impacts in the coastal area at the institutional and community levels;
Integrating the coastal erosion risks into development programmes, plans and policies;
Implementing coastal erosion adaptation measures in the most risked areas;
Developing the capacity for lessons learned and best practices in other vulnerable areas in Albania.

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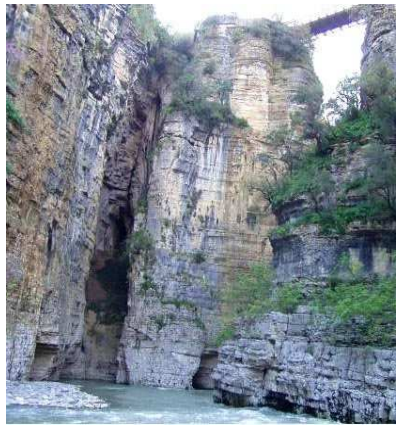

Thank you for your attention!