



Common borders. Common solutions.

Assessment on dynamics of coastline changes

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Study areas



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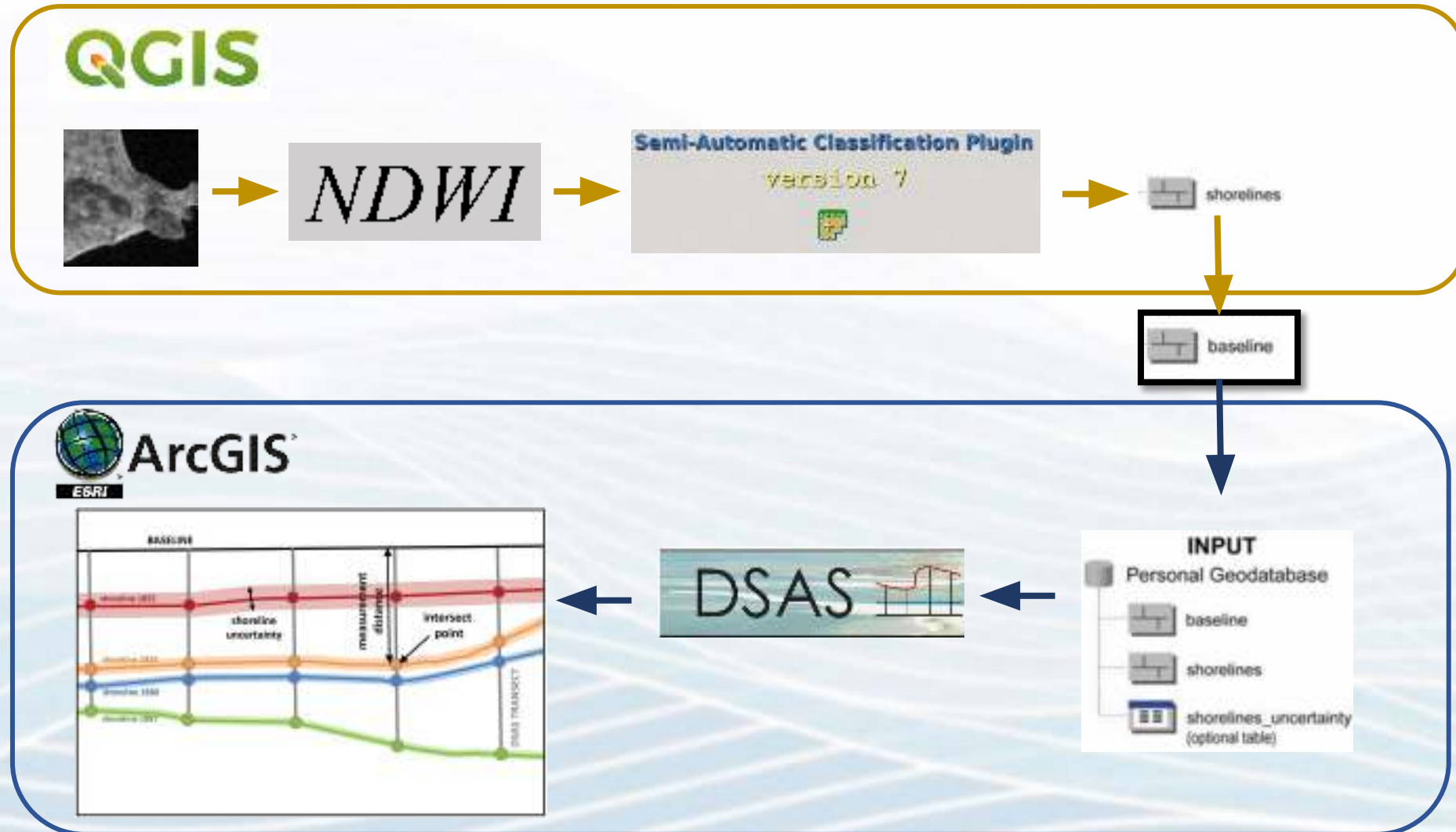


Methodology Workflow

**PONTOS Training of trainers
webinar
08-09 December 2020**

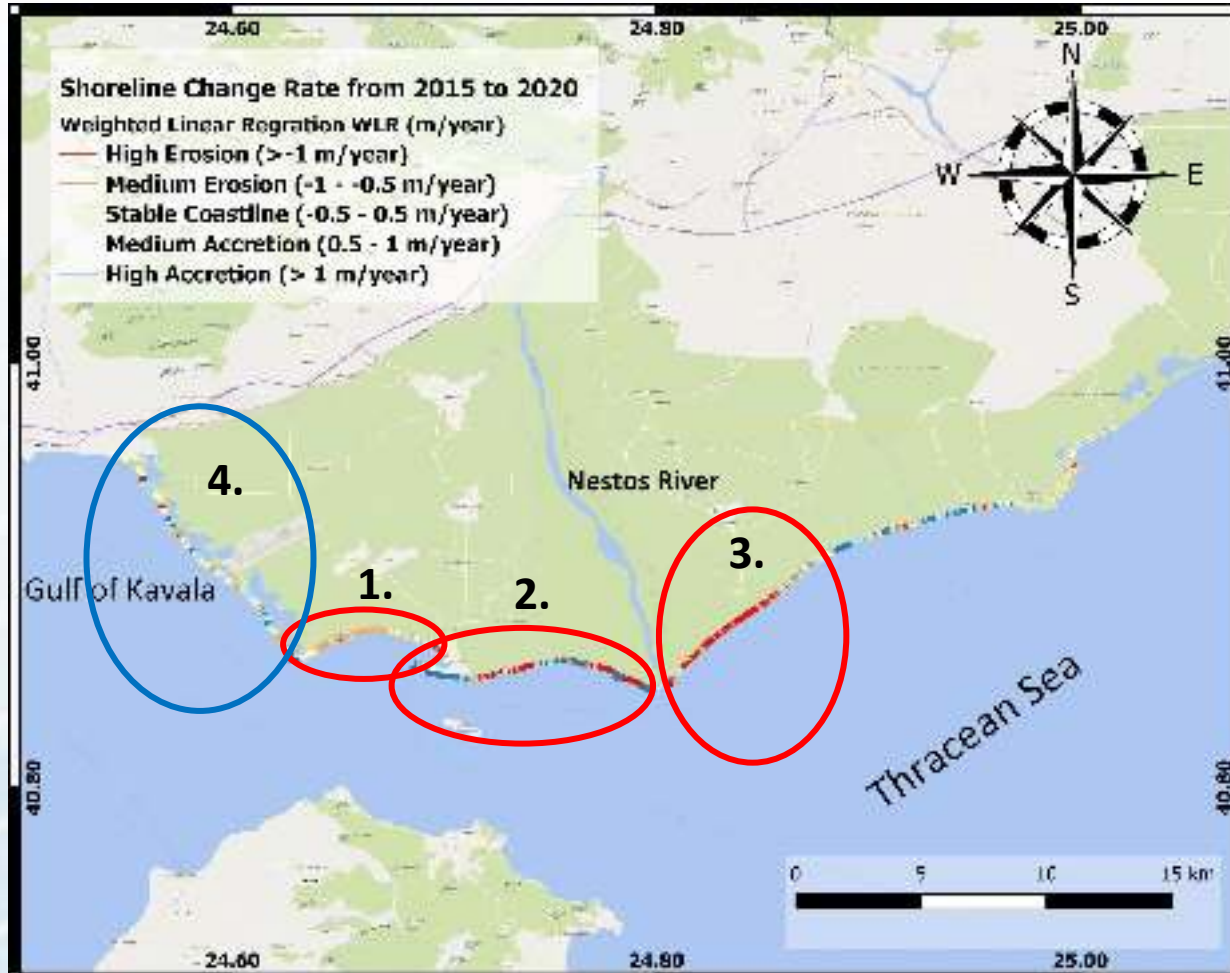


Methodology workflow



Indicative Results

Greek Study site - Coastal erosion hotspots



Number of satellite images:

- 7 images – Landsat 4-5 and 8
- 6 images – Sentinel 2.

Time period:

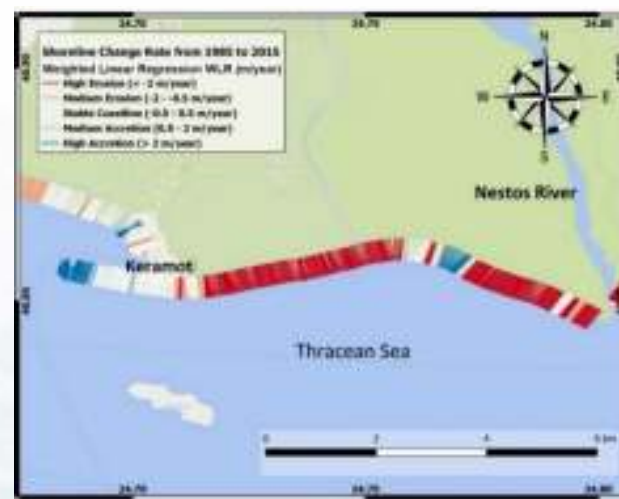
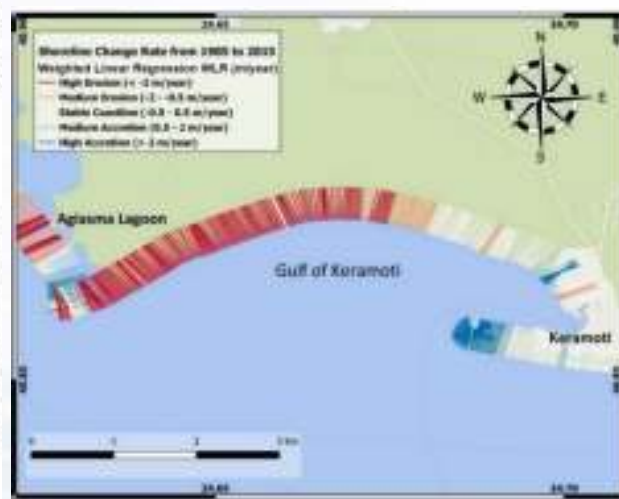
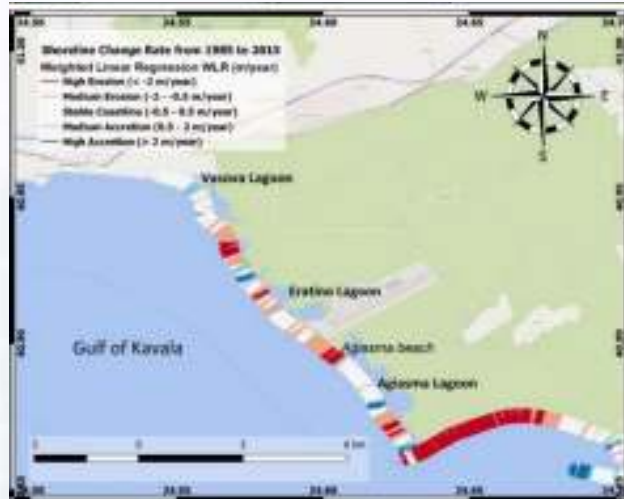
- 1985-2015, every 5 Years
- 2015-2020, every year

Validation method:

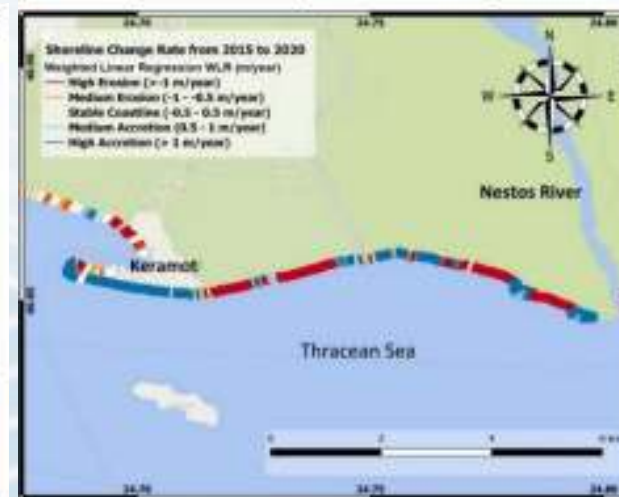
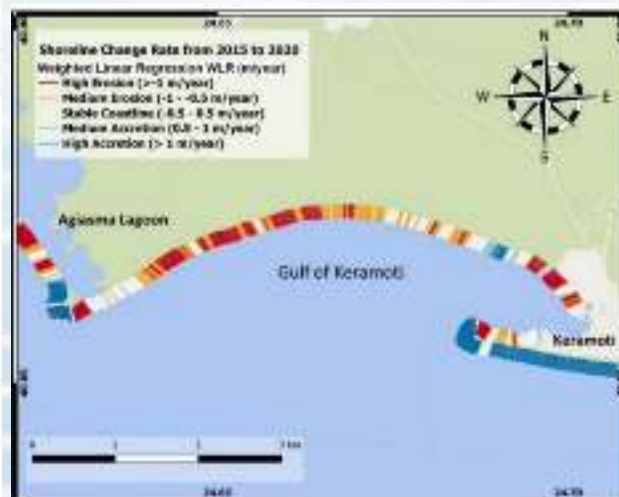
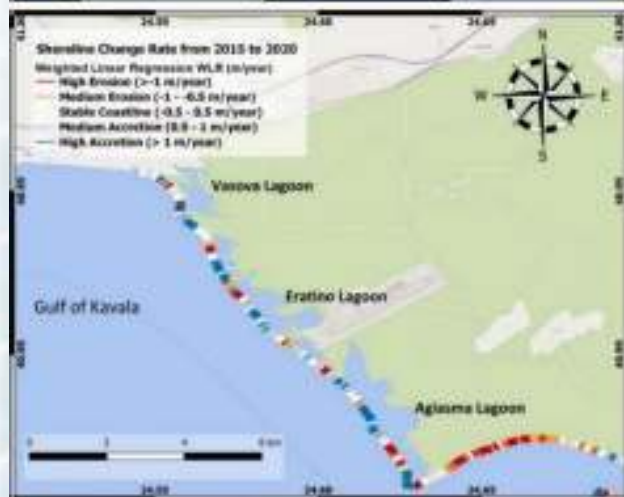
- Higher resolution satellite image
- Drone image

Erosion and Accretion hotspots

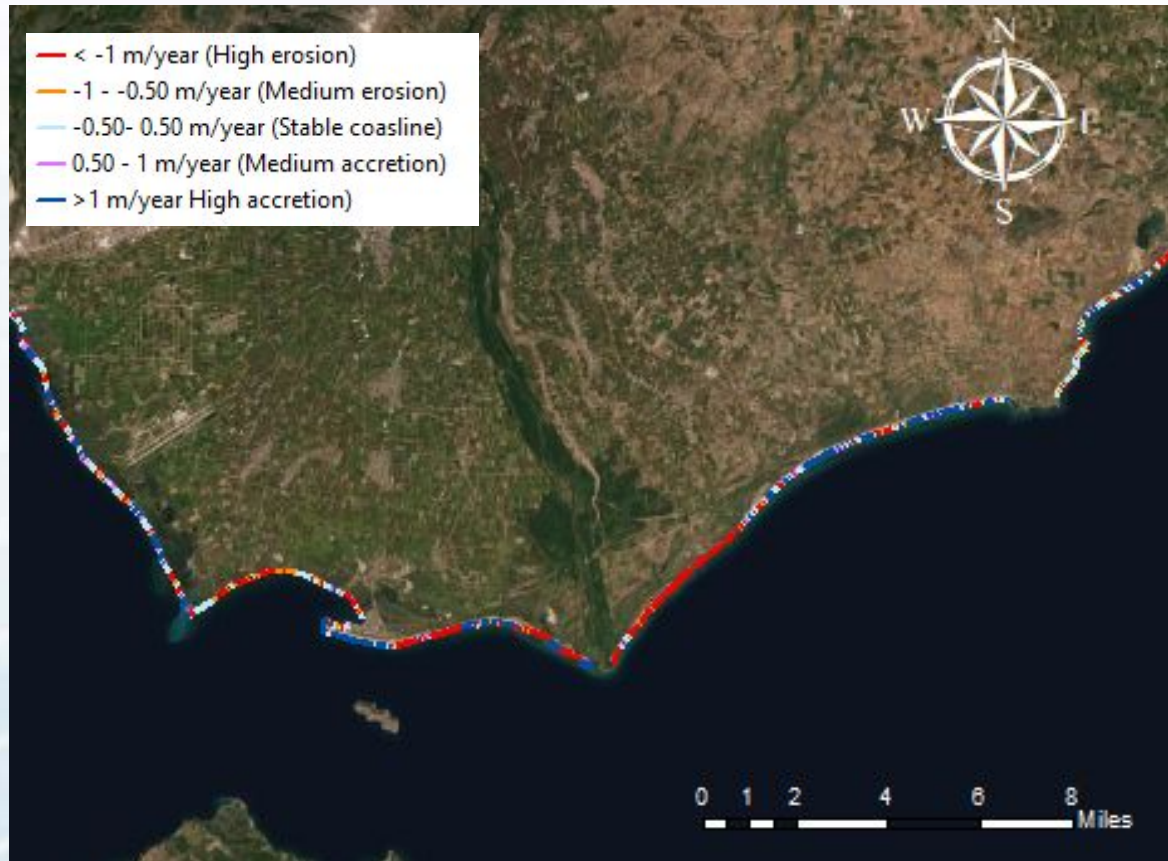
1985-2015



2015-2020



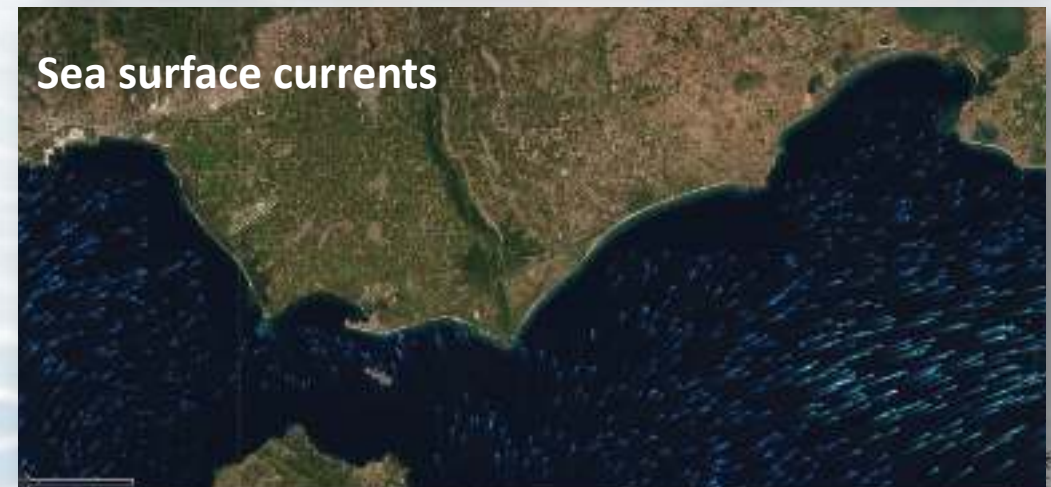
Results for the Greek study site



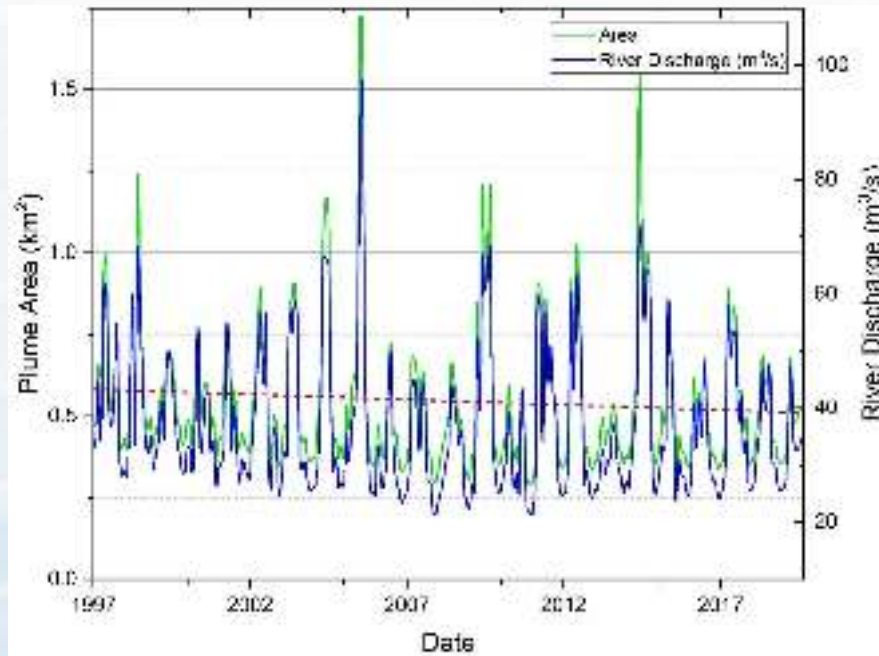
Wave action



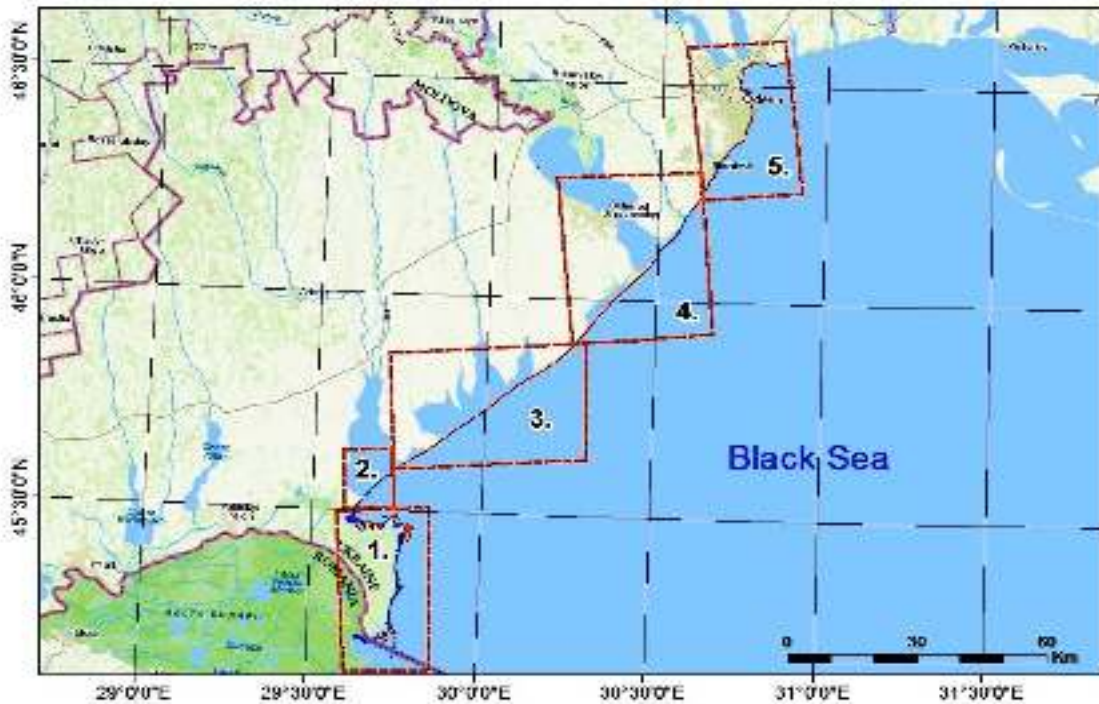
Sea surface currents



Impact of the dams on the Nestos estuaries



Ukrainian Study site - Coastal erosion hotspots



Number of satellite images:

- 6 images – Landsat 3-5,7
- 2 images – Sentinel 2.

Time period: 1980-2020, every 5 Years

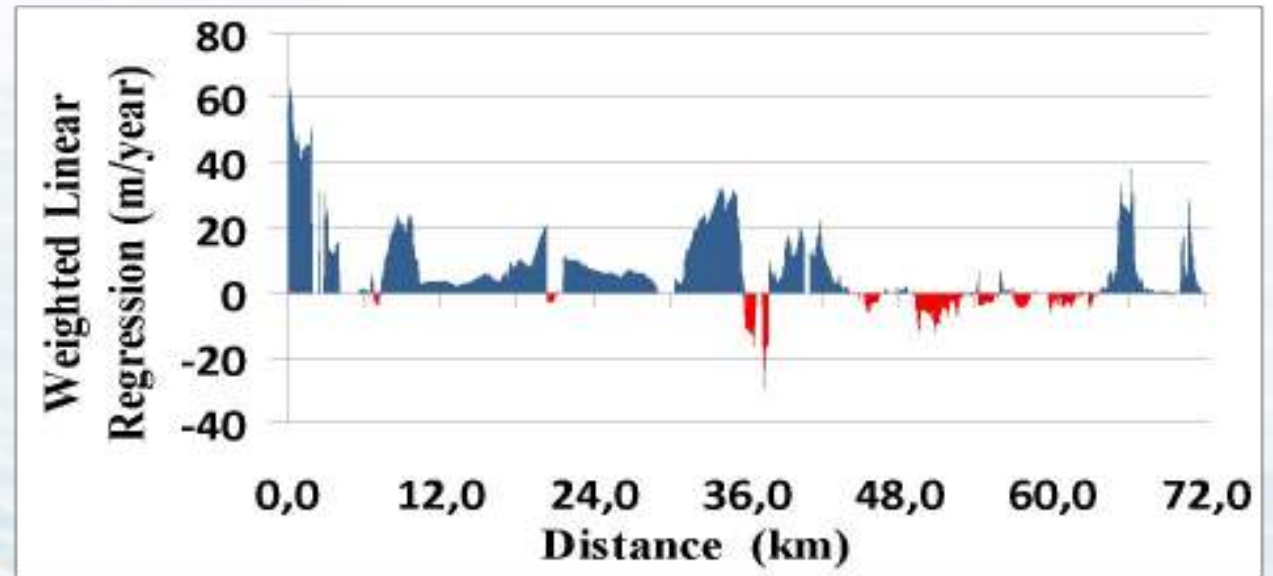
Validation method: not used



Ukrainian Study site - Coastal erosion hotspots

Dynamics of shoreline for 1980-2020

■ Erosion
 ■ Accretion



Georgia Study site - Coastal erosion hotspots



Number of satellite images analyzed

- Total 30 Images processed

Time period

- 1987-2013 Landsat 3-5, Landsat 8 - 5-year interval
- 2015-2021 Sentinel-2 - 2-years interval

Validation

- in-situ measurements
- higher resolution satellite image





 **Accretion**
 **Erosion**

Apkhazeti Region

1987-2013

Erosion: 54.28%
Accretion: 45.72%

2015-2021

Erosion: 56.57%
Accretion: 43.43%

Adjara, Guria, Samegrelo-Zemo Svaneti Region

1987-2013

Erosion: 22.21%
Accretion: 77.79%

2015-2021

Erosion: 33.89%
Accretion: 99.11%

1987-2013



Kodori river

2015-2021



Accretion is observed along the estuary of the Kodori river. Accretion rates reach 8.7 m/year, land accumulation is up to 197 m. More south is observed erosion with rate -4 m/year, shoreline retreat of up to 120 m.

Accretion rate reaches 23 m/year and land accumulation is up to 98 m. To the south, accretion is replaced by erosion. Erosion rate -5 m/year, shoreline retreat of up to 35 m. Compared to previous years erosion rate, it is almost the same, but the area is extended and stretches along 1.5 km of the coastline.

1987-2013



Anaklia

2015-2021



The coastline in the areas of the village Anaklia, south to the estuary of the Enguri River, depicts by higher erosion activity - 8.4 m/year. Land loss is up to 216 m.

Accretion processes are observed around the Enguri River estuary. Accretion rate 16 m/year. the sand accumulation of up to 100 m. To the south, accretion is replaced by erosion with the erosion rate -5m/year and land loss up to 35m.

1987-2013



Rioni river

2015-2021



The most significant accretion on entire shoreline is identified around the Rioni River delta. The accumulated land advances the coast by 475 m, and the accretion rate is 19.8 m/year. Erosion processes are observed south of the city of Poti. Erosion rate is about -4 m/year and the land loss reaches an average of 120 m.

During this 6-year period, significant accretion processes continued in the area surrounding of the Rioni River delta. Accretion rates reach 18 m/year and sand accumulation is up to 90 m. The erosion is also observed during this 6 year in this area. Erosion rate is -18 m/year and land loss of about 106 m.

Validation



	Landsat 8 OLI	Sentinel 2B
Correlation R^2	0.56	0.80

*The error is evenly distributed across all images, so the relative retreat of the shoreline via satellite images is reliable

Actions

Ukraine

Brainstorming event
July 6, 2021

1st training session
October 27-28, 2021

Georgia

PONTOS Brainstorming event

1st training session,
including field trip in coastal
area

Exchange information/data
with relevant scientific and
state institutions

Greece

PONTOS Training of trainers
Webinar
08-09 December 2020

PONTOS Brainstorming event
webinar
26 May 2021

1st training session,
including field webinar
October 2021

GEOTEE Training for flood and
erosion assessment Webinar
28 February 2022



Thank you for your attention!!!