

WP4. Assessment of the responses of regional geochemistry, soil morphology, coastal erosion and water quality to the extreme events in coastal zones.

Seminar on Sep 20,
2011



Work status and progress during the 1st half of 2011

- The study was focused on the coastal morphology of the seashores within the European part of Russia
- Morphogenetic and morphodynamic maps for the sea coasts (scale 1:1000000)
- Newly developed uniform legends

Morphogenetic maps

Legend

Types of coasts

- The coasts not changed or poorly changed by coastal processes
- The coast changed by wave processes
- Coasts created at prevalence of not wave factors
- Coasts created by anthropogenic factors

The coasts not changed or poorly changed by coastal processes

- 1. Initially-tectonic
- 2. Erosion-denudation

The coasts changed by wave processes

a) erosional, actively collapsing

- 3. In hard bedrocks
- 4. In cemented sedimentary rocks
- 5. In weakly cemented sedimentary rocks
- 6. Thermal erosion coasts

The coasts changed by wave processes

b. erosional coasts with inactive cliff

- 7. In hard bedrocks
- 8. In cemented sedimentary rocks
- 9. In weakly cemented sedimentary rocks
- 10. Thermal erosion coasts, inactive

The coasts changed by wave processes

c. erosion-accretion coasts

- 11. erosion-accretion coasts, indented and graded

d. accretion coasts

- 12. with beaches
- 13. lagoon coasts

Coasts created at prevalence of not wave factors

- 14. mud-flats (tidal and wind-surge made)
- 15. deltaic

Coasts created by anthropogenic factors

- 16. Technogenic

Morphodynamic Maps Legend

- CHARACTER OF COAST
- ADDITIONAL FEATURES AND PARAMETERS OF COAST
- THE PROCESSES COMPLICATING COAST DEVELOPMENT
- HYDROMETEOROLOGICAL DATA

CHARACTER OF COAST

- 1. Retreating
- 2. Accreting, advancing forward
- 3. Stable
- 4. Coasts with a variable mode

ADDITIONAL FEATURES AND PARAMETERS OF COAST

- 5. Height of a coastal bluff
- 6. Cliff in strong bedrocks
- 7. Cliff in loose rocks
- 8. Modern speed of cliff retreat, figures
- 9. Presence of coastal aeolian forms
- 10. Bench, boulder-pebble residual platform

THE PROCESSES COMPLICATING COAST DEVELOPMENT

- 11. Influence of tides
- 12. Influence of wind surges
- 13. Slope processes: landslides, taluses, collapses and solifluction
- 14. Coastal vegetation (reed, fields of algae)
- 15. Influence of protective constructions
- 16. Resultant direction of alongshore sediment transport
- 17. Prevalence of cross-section sediment drift

HYDROMETEOROLOGICAL DATA

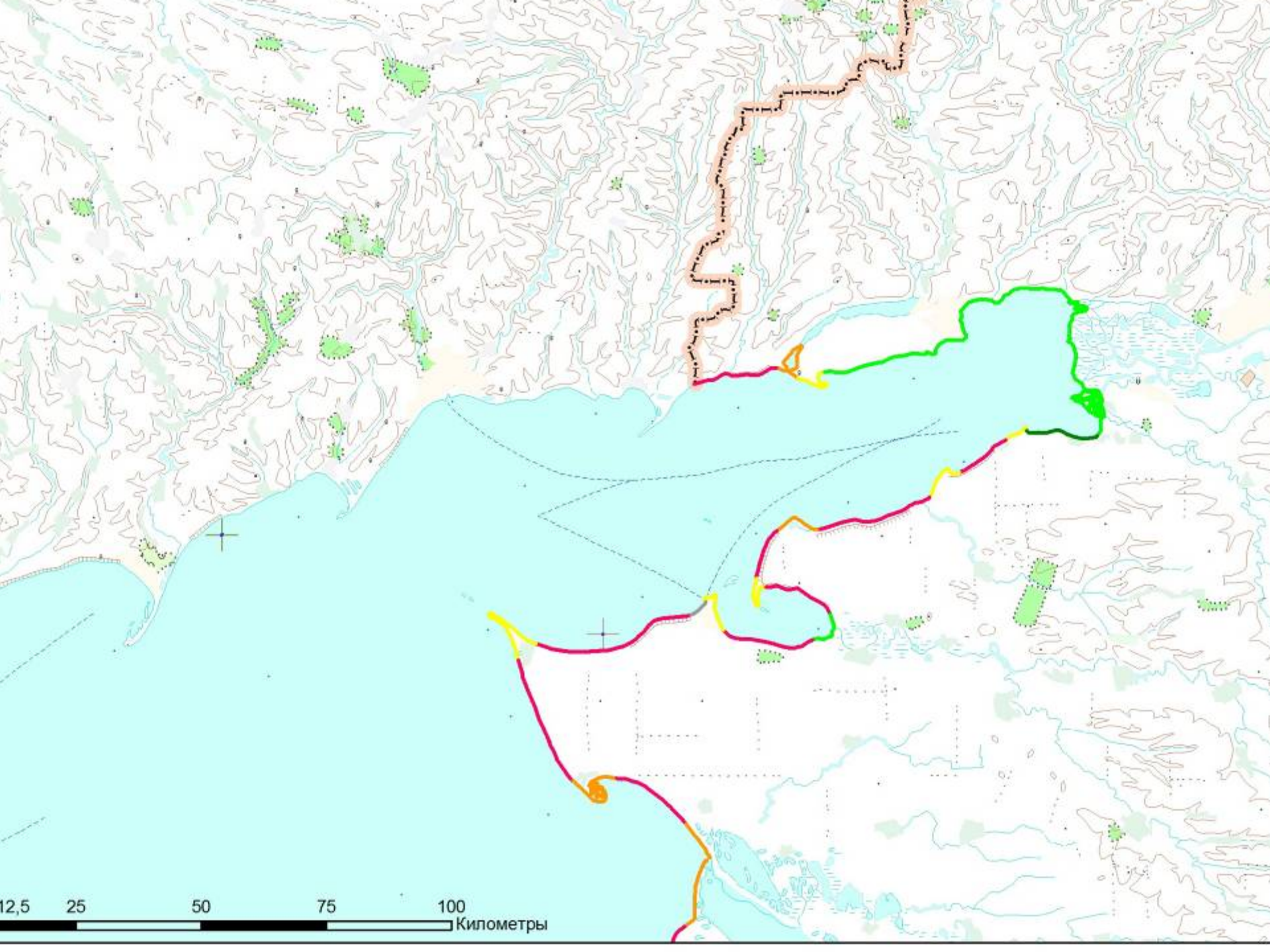
- Wind and wave roses
- The maximum speeds of a wind
- Quantity of storms
- Mean annual energetic resultant value of a wave mode
- Duration of the ice-free period
- Amplitude of the sea level change
- Volumes of a water and sediment river discharge



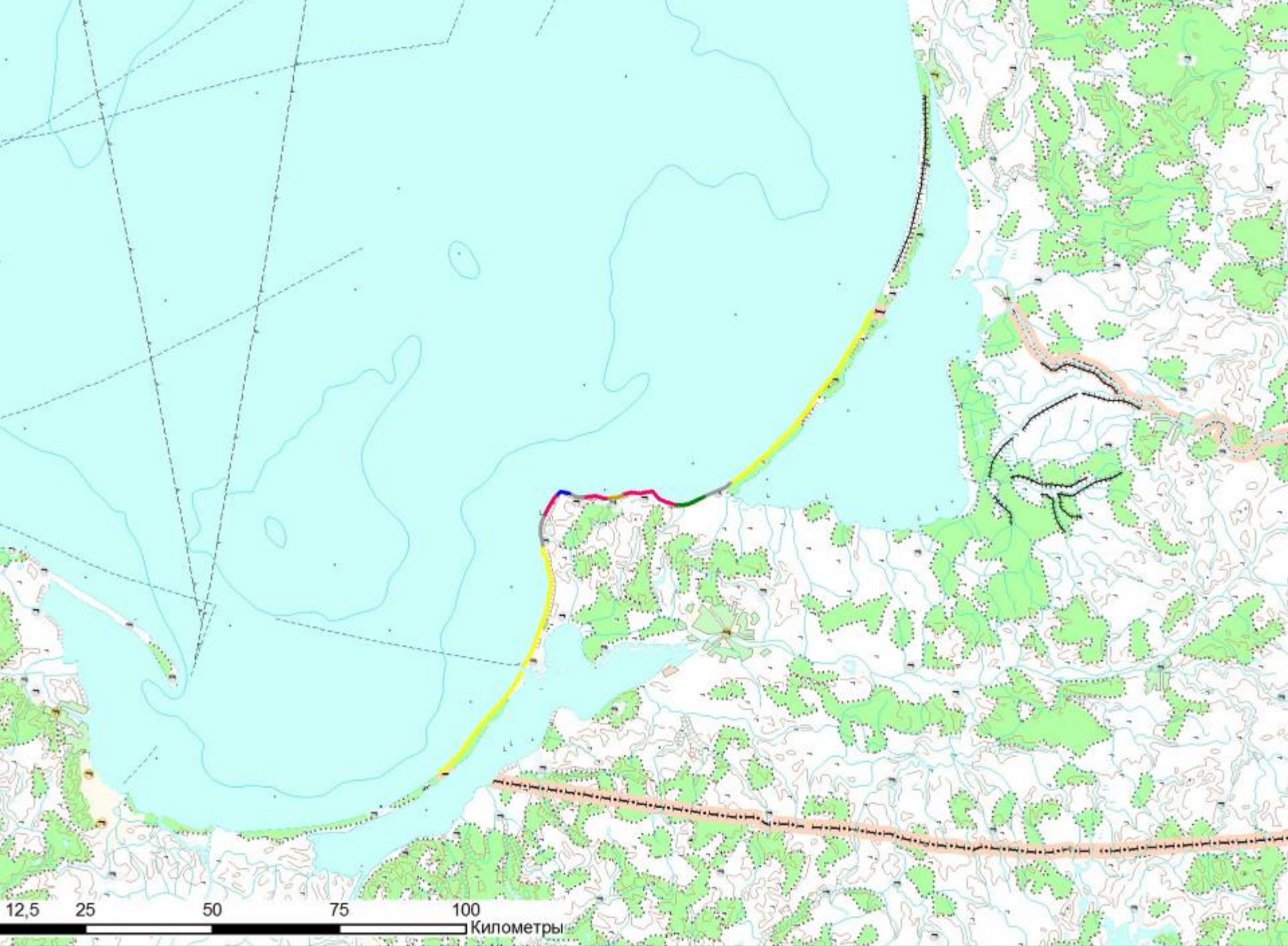


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12,5 25 50 75 100 Километры



Interaction with other Working Groups

- Spatial analysis of factors influencing the present state and evolution of the seashores
- We need a forecast of climatic, oceanographic and hydrologic parameters for the coastal areas

Publications relevant to NRAL

EGU General Assembly 2011

- “Natural Risk of Geochemical Transformation of the Caspian Coastal Zone due to the Rapid Sea Level Changes” by Nikolay Kasimov et al.
- “Environmental Geochemistry of the Volga Delta” by Mikhail Lychagin et al.

Activities in the 2nd half of 2011 (A)

Spatial analysis of factors influencing the present state and evolution of the seashores

- It includes a spatial analysis of such factors as the coastal morphology, climatic features, presence of permafrost, underground water level and salinity, soil texture etc., influencing the present state and evolution of the seashores. It should be resulted in a series of maps of the complex zoning for the coastal areas of the Caspian, Black, Azov, Baltic, White, and Barents Sea (scale 1:1000000).

Activities in the 2nd half of 2011 (B)

Comprehensive zoning of the EPR seashores due to the degree of sensitivity to various kinds of the extreme events.

- We plan to develop methodological frameworks for the seashore zoning according to the responses of regional geochemistry, soil morphology, coastal erosion and water quality to the extreme events in coastal areas. Basing on the frameworks we shall prepare maps of the comprehensive zoning for the EPR coastal areas due to the degree of sensitivity to various kinds of the extreme events (scale 1:1000000).