

The environmental impact of the war
on the Black Sea

Round-Table Discussion

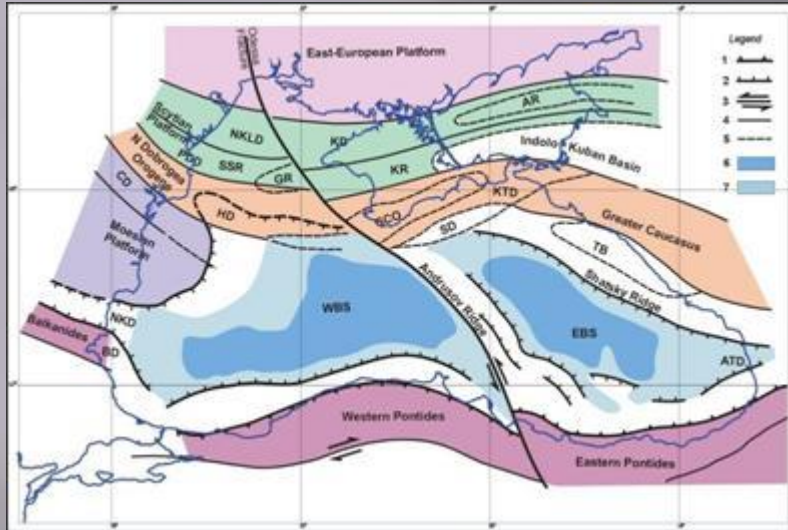
**COASTAL EROSION AND
SEDIMENTATION IN THE
BLACK SEA**

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Geological and geographical background



Tectonic sketch of the Black Sea Region (after Dinu et al., 2003; Panin et al., 1994)

Black and Azov Seas estuaries (limans):

- 1 – Dnieper-Bug; 2 – Utlutsky;
- 3 – Dniester; 4 – Sasyk (Kunduk); 5 – Molochniy;
- 6 – Tiligulskiy; 7 – Shagany; 8 – Alibey;
- 9 – Sasyk-Sivash; 10 – Khadgibey; 11 – Berezanskiy;
- 12 – Kuyalnik; 13 – Donuzlav; 14 – Aigulskiy;
- 15 – Budakskiy; 16 – Aktaskoe; 17 – Krasnoe;
- 18 – Uzunlarskoe; 19 – Zbruevskiy Kut;
- 20 – Kirleutskoe; 21 – Tobechikskoe; 22 – Karachaus;
- 23 – Kijatskoe; 24 – Staroe (Tuzly); 25 – Kojakskoe.

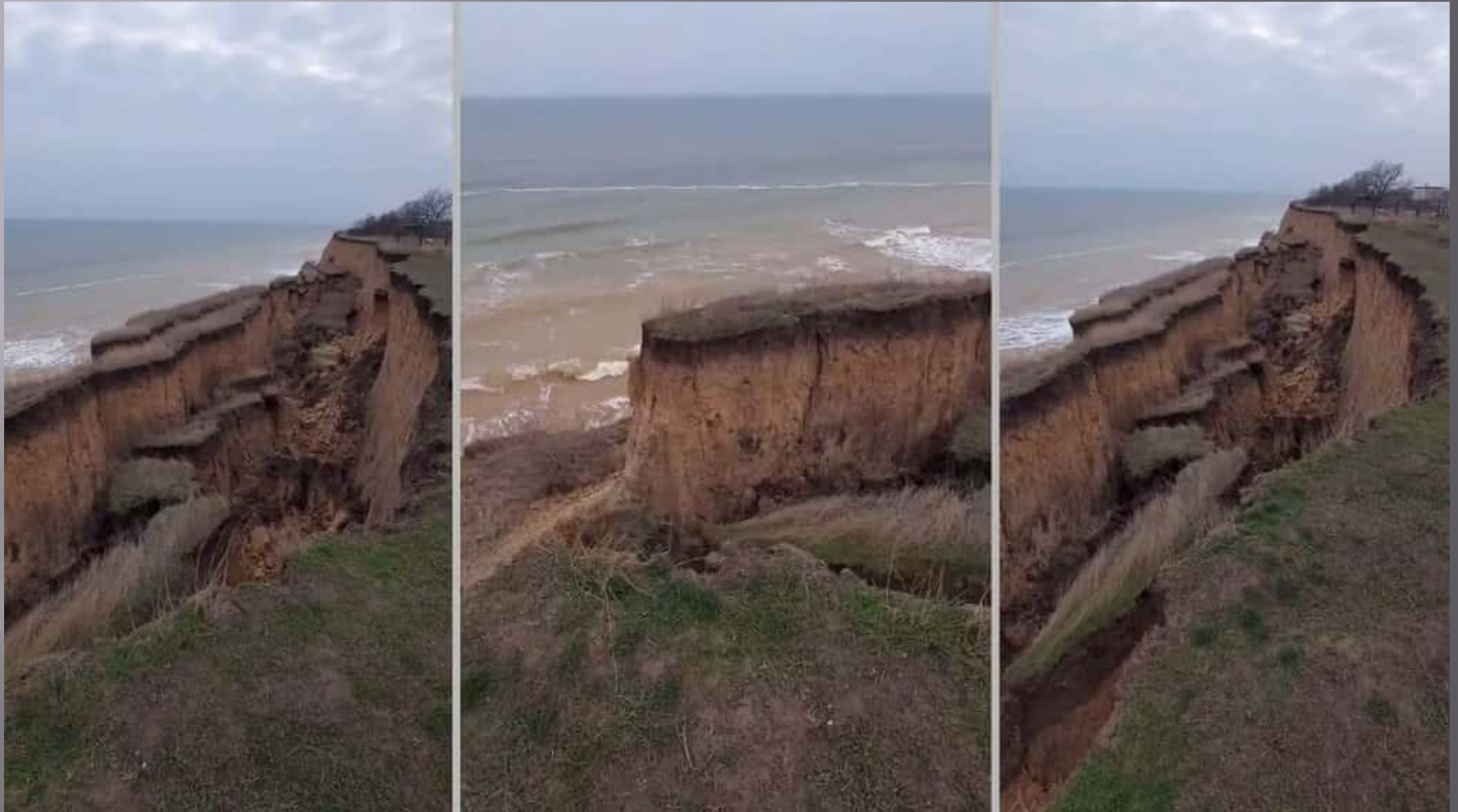
The Black Sea Basin



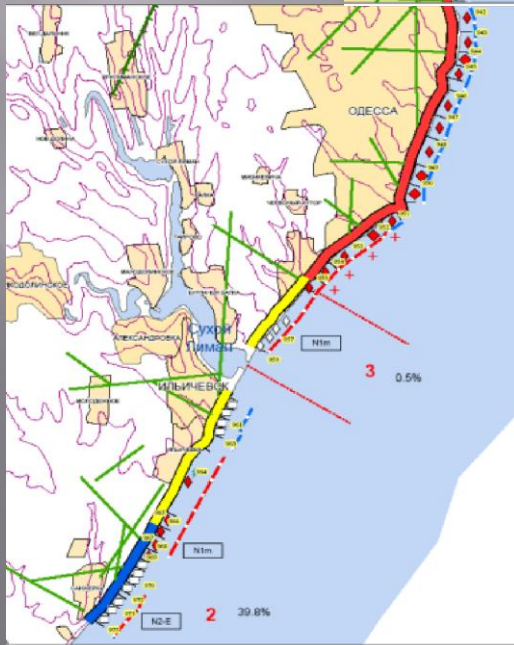
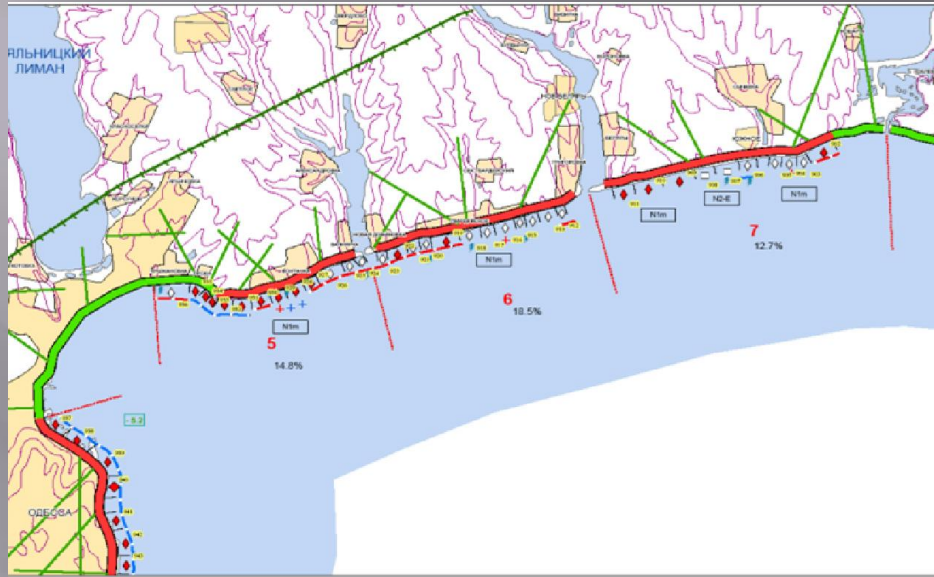
Landslide 02.10.2018 (dymskaya.net)



Same place 10.03.2026

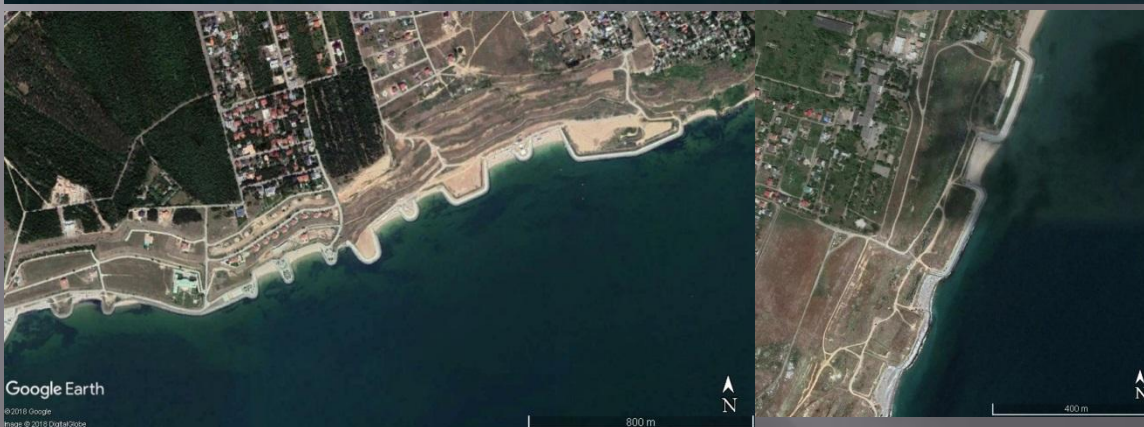
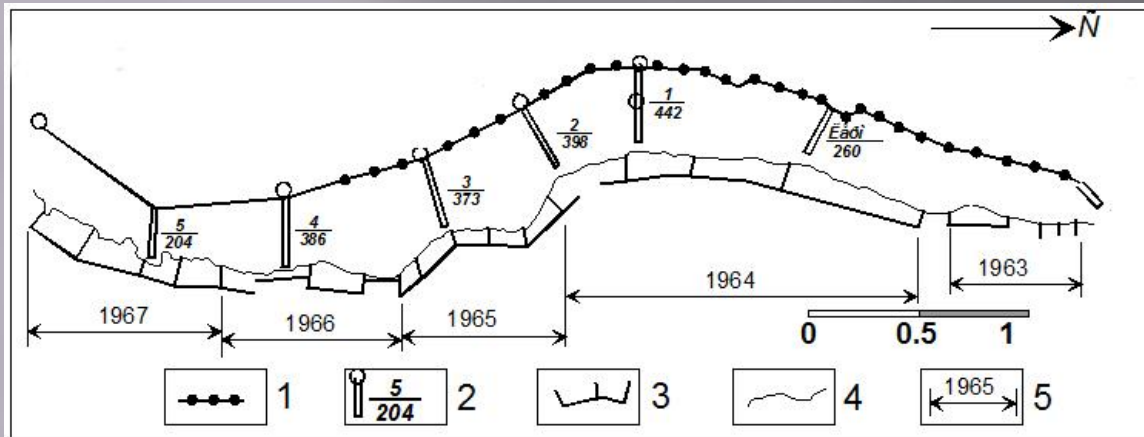


Map of abrasion and landslides distribution on the Black Sea coast



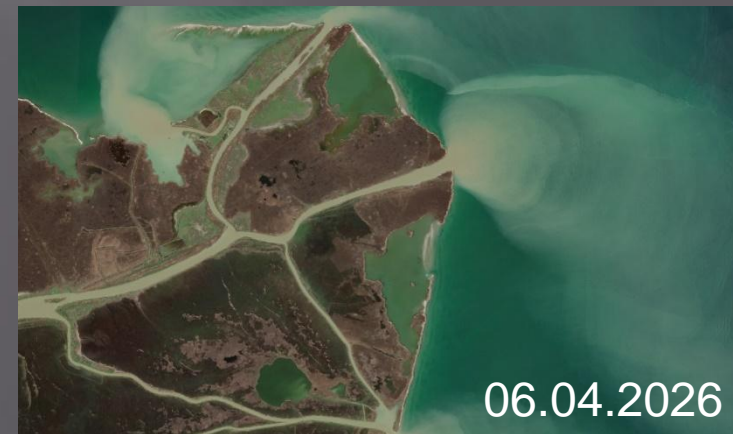
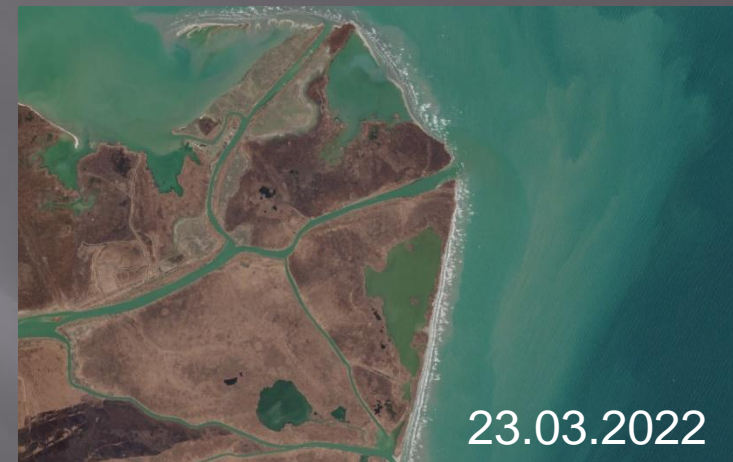
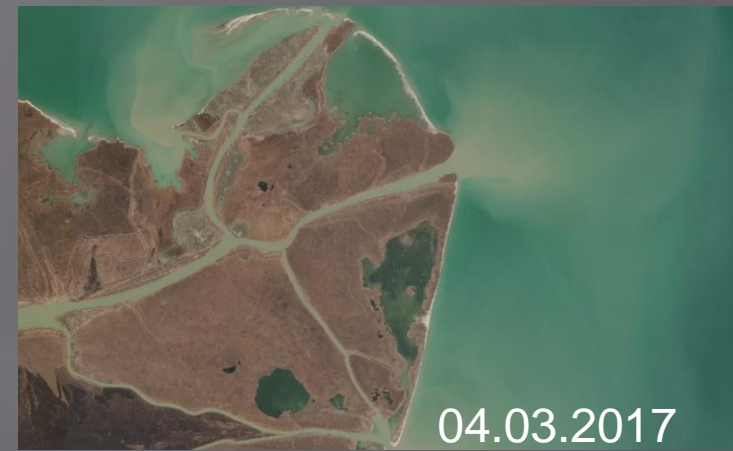
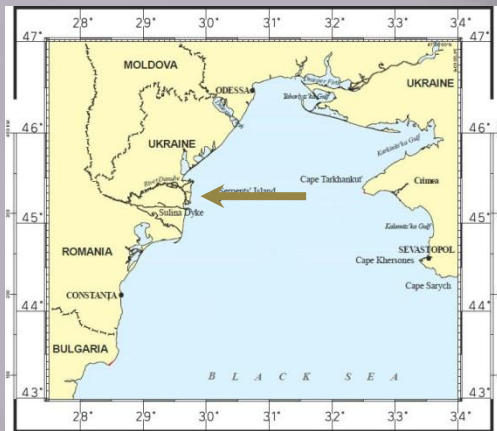
- The first edition was prepared in 2001;
- The main author – Regional State Geological Survey “Prichernomorgeologiya”;
- ONU specialists were involved in this work;
- Annual observations of coastal areas are carried out until now

Coast protection



- Comprehensive coast protection system has been created in Odessa;
- That system includes terracing of slopes, chain of underwater and overwater breakwaters and seawalls, artificial beaches aggradation, underground drainage gallery construction, organization of surface runoff on the slopes.
- Modern coast protection structures have been constructed in last years before war.

Sedimentation processes in coastal zone. (Danube delta, “0 kilometer”)



Danube sediment discharge is 51,7 Mt/yr (multiannual mean discharge before damming the River Danube after Bondar (1991); Panin (1996)).

Danube forms the second largest delta in Europe.

Average velocity of growth is 40 m/yr.

For comparison sediment discharge of:

Dniester – 2,5 Mt/yr;

Dnieper – 2,12 Mt/yr;

South Bug – 0,53 Mt/yr

Conclusions:

- ▣ North-western coast of Black Sea has several specific features:
 - Main rivers (Dniester, Dnieper, Southern Bug) flow into the Black Sea through estuaries. Only the Danube flows into the Black Sea through a large delta;
 - As the result, big amount of river sediments collected in estuaries or in the Danube delta;
 - The main source of sediments for North-Western part of the Black Sea is abrasion and coastal landslides;
 - Different environments (abrasion, transitional, sedimentary) are located at close range in the Black Sea coastal zone.
- ▣ The full-scale war has led to the suspension of systematic research on abrasion and sedimentation processes along the Black Sea coast, severely limited coastal protection measures, and intensified destructive coastal processes.

Thanks for your attention!