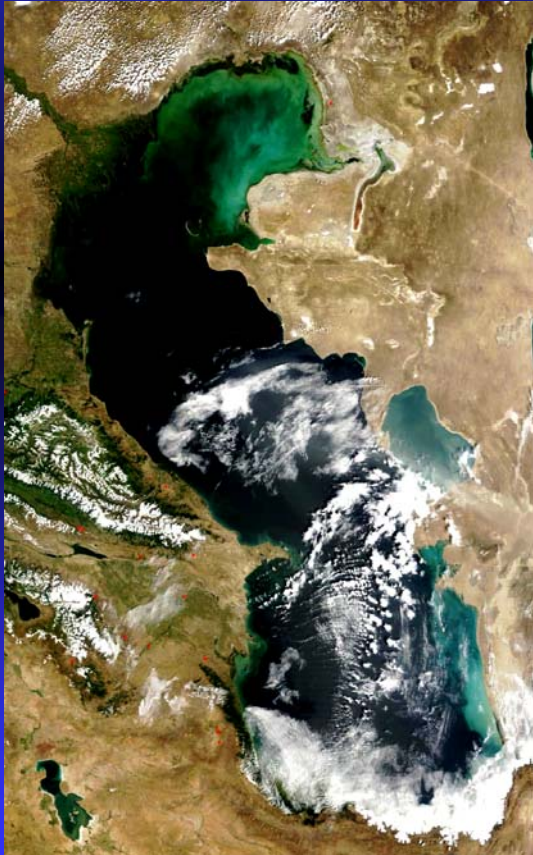


Ecological zoning of the Caspian Sea



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Characteristics of the Northern Caspian

The Caspian Sea is subdivided into three parts: Northern, Middle and Southern.

Northern Caspian differs from the others by lower salinity and large shallow water area. There is an area of mixing river and marine waters, which plays an essential role in processes of transport and sedimentation of chemical compounds entering into the Caspian Sea with the Volga flow.



- Part of the Volga Delta and Northern Caspian is the Astrakhan Biosphere Reserve of global importance. In the region there are fifteen rare bird species listed in the Red Book of the Russian Federation. Relict plant species occur in this area together with at least twenty endemic fish subspecies.



- There are spawning grounds, migration routes and feeding areas of semi-migratory and migratory fishes including the most commercially valuable sturgeons

Environmental problems of the region

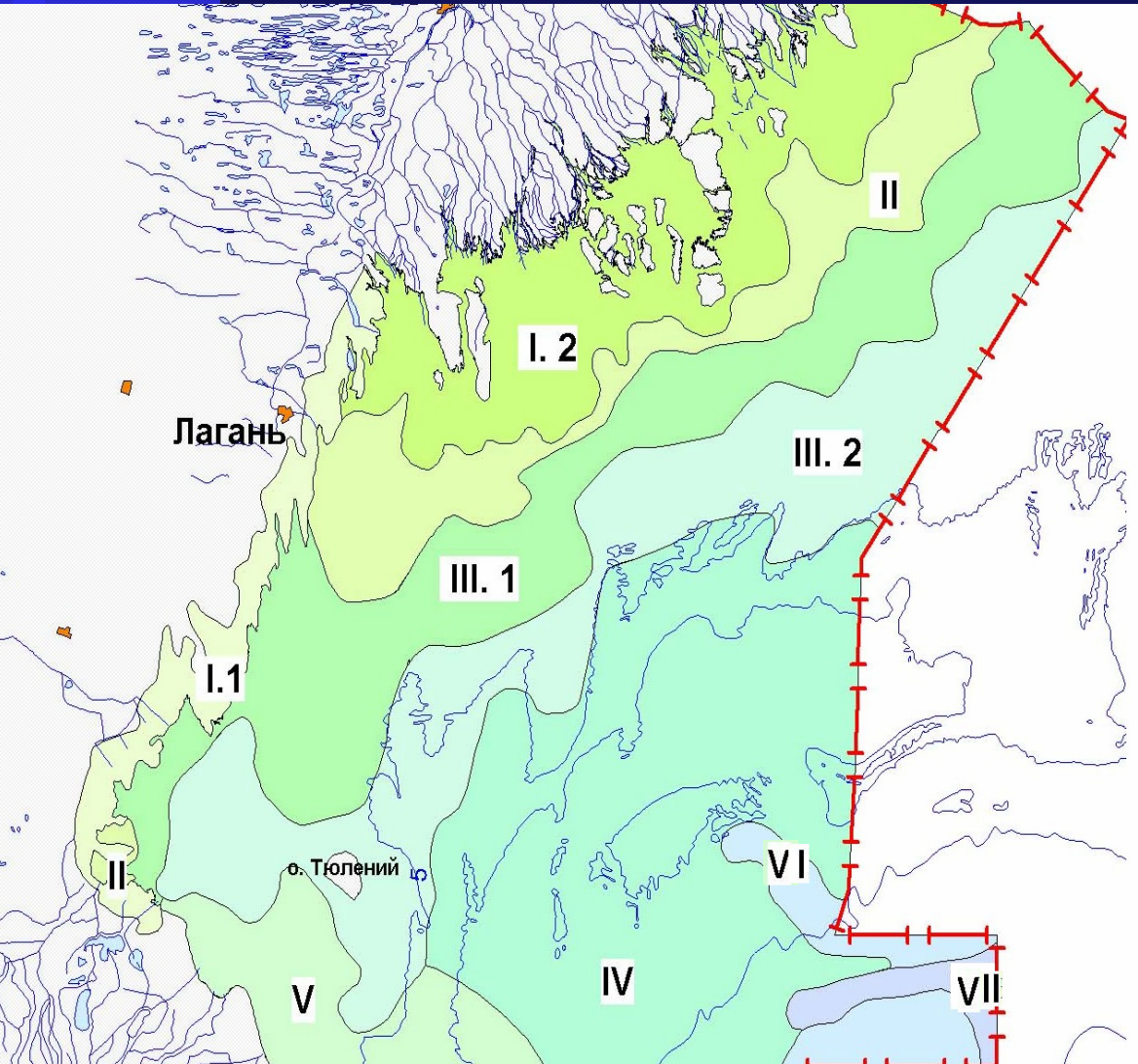


- Threats to unique biodiversity,
- Decline in commercial fish stocks;
- Marine pollution



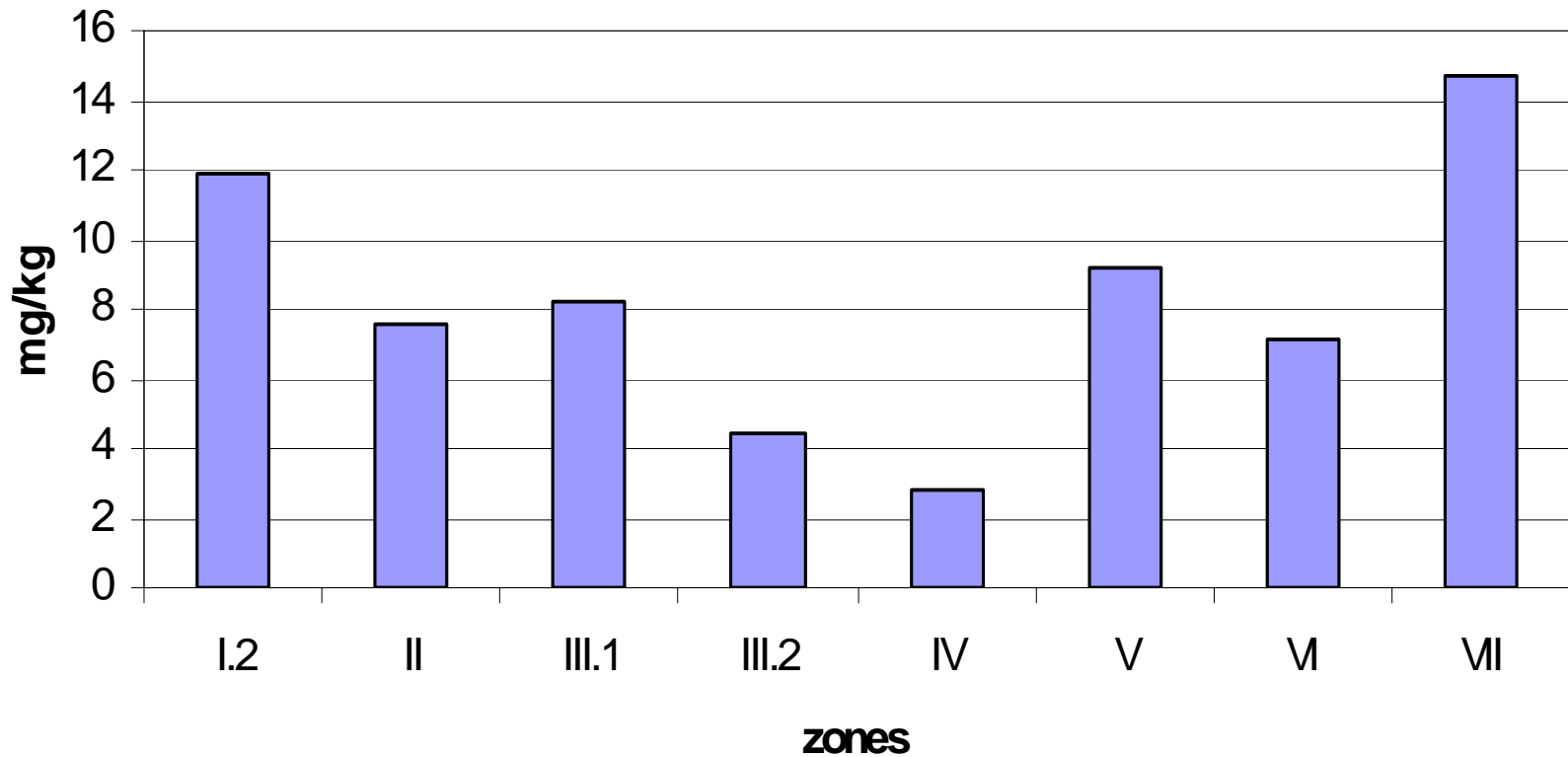
In the near future anthropogenic pressure on the marine and coastal environment will increase considerably because of planned development of all kinds of human activities, including offshore oil and gas reserves exploitation that may bring essential damage to the ecosystem by large-scale pollution of the sea area and its productive grounds.

Aquatic landscape zoning

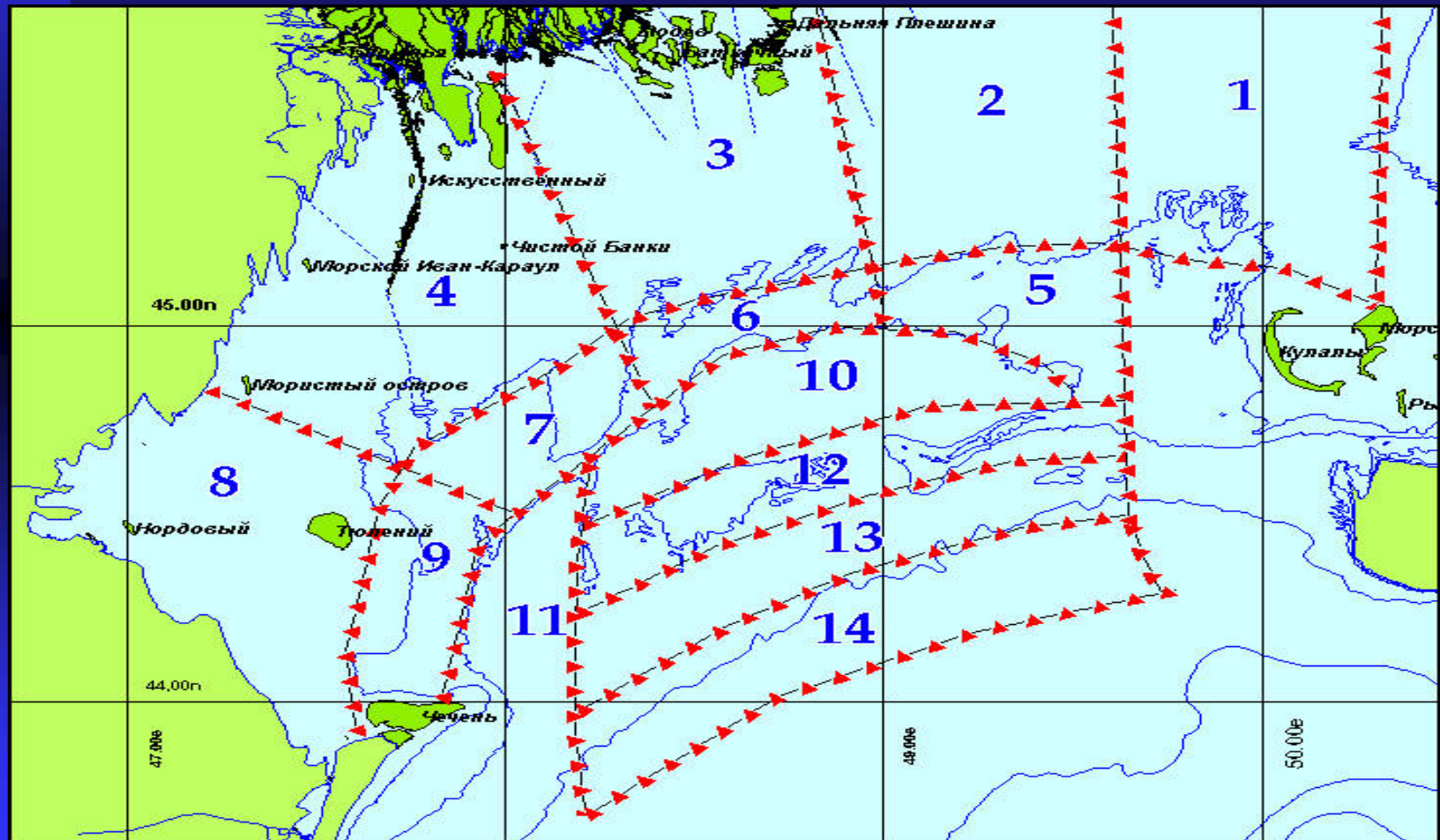


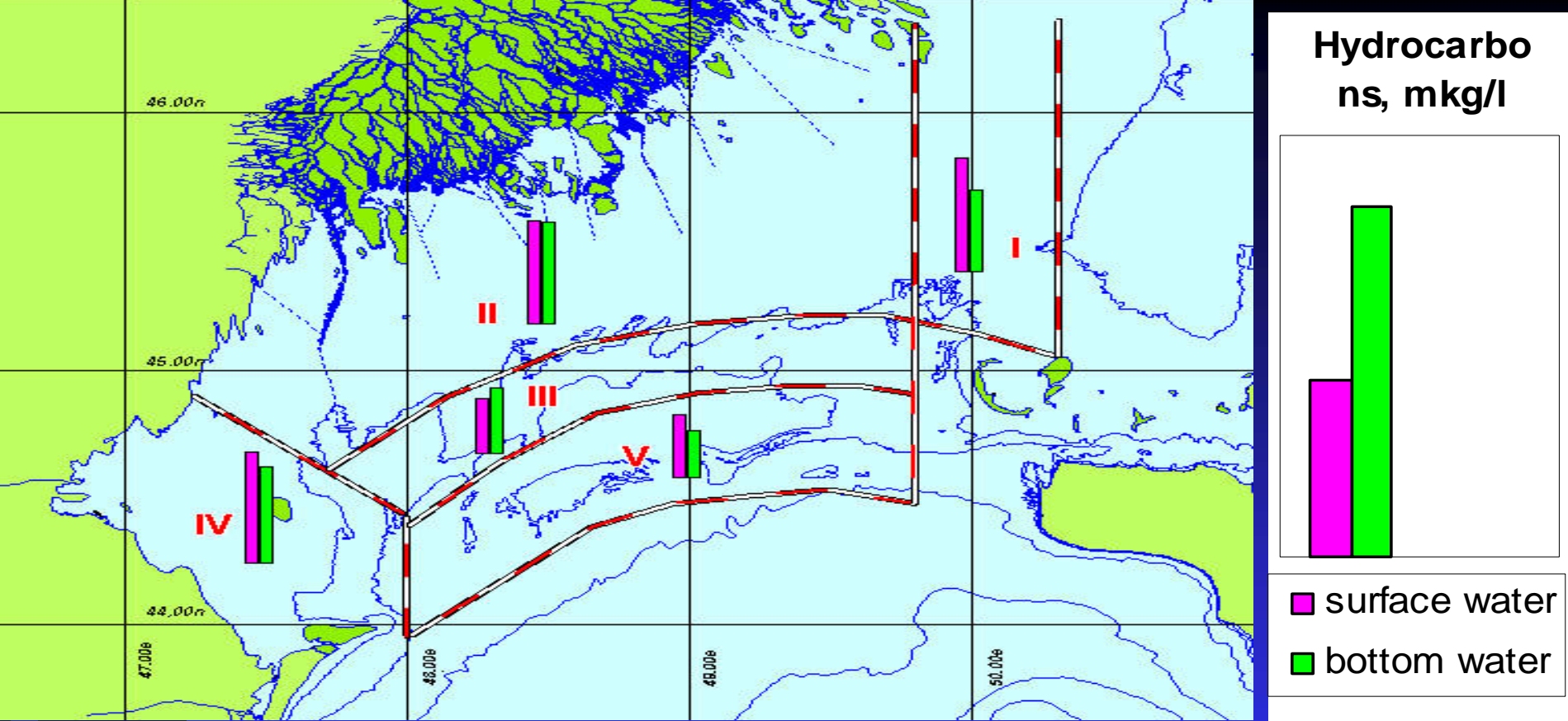
- Seven zones were revealed
- They differ from each other by lithological features, processes of particular matter migration and structure of benthos communities

Hydrocarbons concentration in bottom sediments



Zoning by pollution data





I – the Kulalinsky threshold;

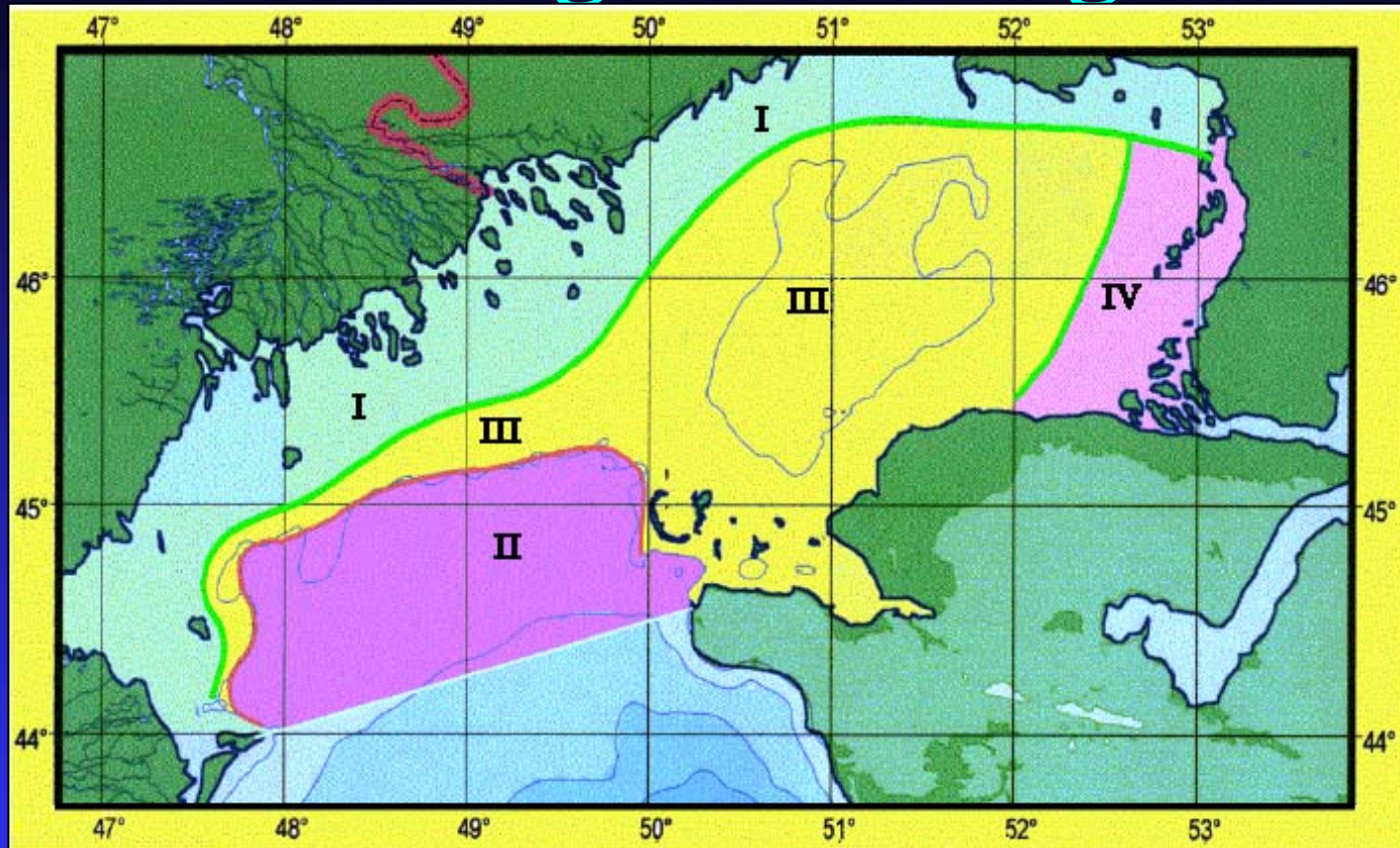
II - the shallow zone of the Volga river mouth area;

III - the depths overfall of the Volga mouth area;

IV – the Terek river mouth area;

V - the deep-water area located between the Northern and the Middle Caspian

Biological zoning



I - the water area of the Volga estuary and eastern part of the Northern Caspian from the coast to the depths of 6-8 meters

II – the deeper area of the western part of the Northern Caspian

III - the depth overfall (8-10 metres) in the western part of the Volga mouth area and the Ural furrow

IV - shallow waters in the east and south-east of the region

Conclusions

- The Volga River mouth area, especially its shallow waters, is the most vulnerable with regards to oil pollution;
- The activities that bring pollution to the marine environment should be excluded in this area.

Conclusions

The ecological zoning can become:

- an important tool in strategic planning of economic activities in the Northern Caspian
- a basis for developing environmental regulations to manage the kind and degree of anthropogenic impact on its water area.