

# **Concept of creating the Atlas of the Caspian Sea and its coasts**

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# **Our initiative**

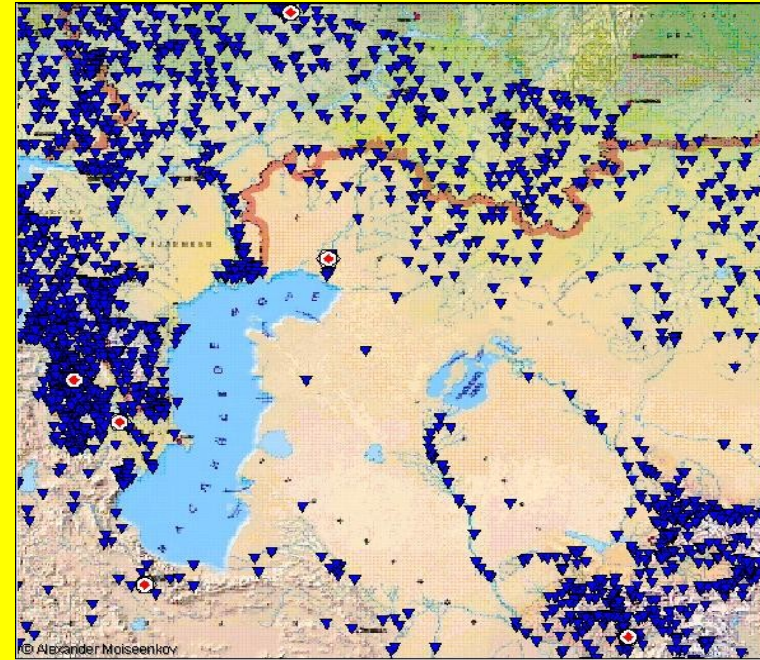
I would like to present to your attention an initiative of two major scientific research institutions working on the problems of the Caspian Sea from the Republic of Azerbaijan and the Russian Federation , which we hope will fit the mandate and scope of the Tehran Convention, and could be carried out under its auspices.

The Institute of Geography of the Azerbaijan National Academy of Sciences and the Institute of Geography of the Russian Academy of Sciences have the honour to propose the development of the Atlas of the Caspian Sea (electronic and paper version), which aims to be a product of international scientific collaboration among the five Caspian states. The Atlas should serve the purpose of collecting and maintaining a comprehensive data on the state of the environment of the Caspian Sea and lay the scientific foundation for the environmental monitoring programme and implementation of other provisions of the Convention and its Protocols.

# Why the Atlas of the Caspian Sea and its coasts?

The catchments area basin of the Caspian sea is 3,5 million in km<sup>2</sup>, that approximately 10 times is larger than the surface area of the sea, covers territories of eight states: Azerbaijan, Armenia, Georgia, Kazakhstan, Iran, the Russian Federation, Turkmenistan and Turkey. Population lives in the basin of Caspian Sea from these countries is about 100 million people. Through the territories of these states run more than 130 rivers into Caspian Sea and does not run from it a single river.

Around Caspian sea it is located five states: Azerbaijan, Iran, Kazakhstan, the Russian Federation and Turkmenistan. Population on a coastal zone of Caspian Sea is about 16 million.



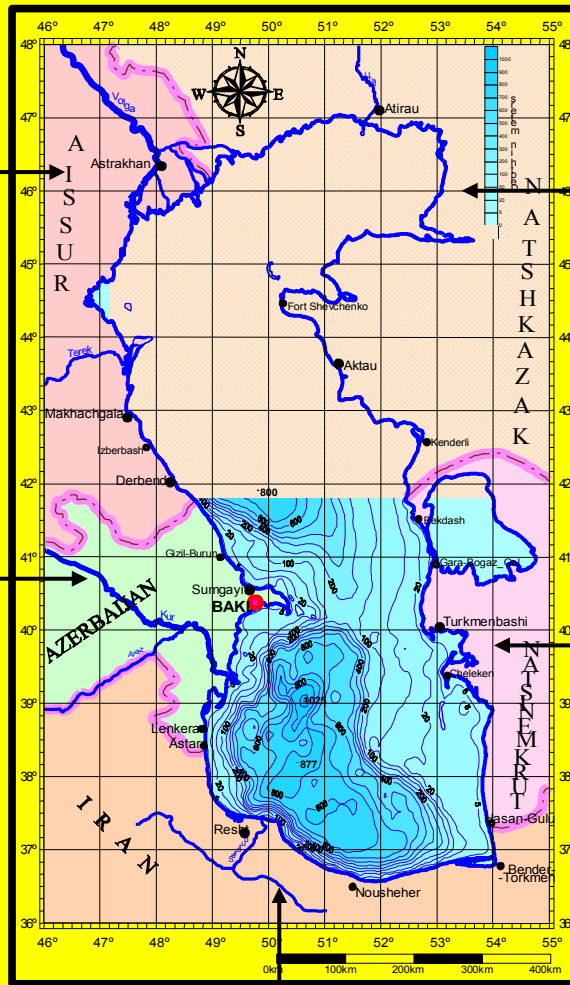
Basin of the Caspian Sea. Dark blue triangles is station of measurement of sediments.

## RUSSIA

Capital: Moscow  
Area: 17,075,200 km<sup>2</sup>  
Population: 150 million.  
Varied natural resources  
RSFSR was formed on 7 November 1917.  
Part of the USSR from 30 December 1922.  
The Russian Federation was formed in 12 June 1991. Member of NIS since 21 December 1991.  
Member of United Nations since 24 December 1991, membership has continued as the Russian Federation.

## AZERBAIJAN

Capital: Baku  
Area: 86,600 km<sup>2</sup>.  
Population: 8 million.  
Natural resources - oil, gas, iron, nonferrous metals, aluminium.  
The Azerbaijan Democratic Republic was proclaimed on 28 May 1918.  
Azerbaijani SSR was proclaimed on 28 April 1920. Part of the RSFSR since 12 March 1922 and became a USSR republic on 5 December 1936.  
The second independent state was formed on 28 May 1991. Member of the NIS since December 1991.  
Member of the United Nations since 2 March 1992.



## ISLAMIC REPUBLIC OF IRAN

Capital: Tehran  
Area: 1,648,000 km<sup>2</sup>.  
Population: 58.6 million.  
Natural resources - oil, gas, iron, copper.  
Named Persia until 1935.  
Became Islamic Republic of Iran in April 1979.  
Member of the United Nations since 24 October 1945.

## KAZAKHAKHSTAN

Capital: Astana  
Area: 2,171,300 km<sup>2</sup>  
Population: 17.4 million.  
Natural resources - oil, coal, iron, manganese, gold, uranium, bauxite, Nonferrous metals.  
Kirgisian ASSR was formed in the structure of the RSFSR on 26 August 1920 and renamed as Kazakhian ASSR on 19 April 1925. Became USSR republic on 5 December 1936. Independent Kazakhstan was formed on 16 December 1991.  
Member of NIS since 21 December 1991.  
Member of United Nations since 2 March 1992.

## TURKMENISTAN

Capital: Ashgabad  
Area: 488,100 km<sup>2</sup>.  
Population: 4.1 million.  
Natural resources - gas, oil, coal, salt.  
Turkmenian SSR was formed within the structure of the USSR on 27 December 1924. Became independent on 27 October 1991.  
Member of NIS since 21 December 1991.  
Member of the United Nations since 2 March 1992.

Proceeding from the above said and according to its geographical location the Caspian Sea may be called a **climatic and ecological indicator** of the large area of the planet called the Caspian region of Earth. All large-scale changes, for example, rise of temperature of climate, going in the planet this or that way finds its attraction in water level and in ecosystem of the Caspian Sea.

The ecological problems of Caspian Sea and its coasts are consequence of the whole history of extensive economical development in the countries of the region. And at the same time both the long-term natural changes (age-old sea level fluctuations, changes of a climate), and the social and today's social-economic problems (economical crises, regional conflicts, development of oil extraction) must be added to it.

Many projects were executed with support of various international funds and programs as CRDF, SFP, FP-6 and FP-7, Copernicus and so on. For example: CASPIAN ENVIRONMENTAL AND INDUSTRIAL DATA & INFORMATION SERVICE; Climate change and ecosystem of the Caspian Sea, model study; VALUE ADDED SATELLITE ALTIMETRY FOR COASTAL REGIONS (ALTICORE); Multi-disciplinary Analysis of the Caspian Sea Ecosystem at all.

But unfortunately they have a fragmentary, not regular character. That also it is important to note that, till now the Caspian countries have no joint project.

The latest session, held in Baku, of the International Association of Academies of Sciences' Joint Scientific Council on fundamental geographic problems adopted a decision (the Baku Declaration), which included the following provisions:

"... To further promote coordination of fundamental geographic research ... to expand the range of scientific cooperation, including the promotion of joint geographic research on the basis of existing and future international agreements (on the Caspian Sea, the Caucasus, etc.);

-In the framework of cooperation between Caspian countries, it is necessary to develop an interstate programme of comprehensive studies of the Caspian Sea, and to prepare an Atlas of the Caspian region (in electronic and paper versions), and to that end, to establish a research consortium of scientists from Russia, Azerbaijan, Kazakhstan, Turkmenistan and Iran ...;

- To initiate the elaboration of inter-state strategies for biodiversity conservation in the Caspian region, and the interstate programme of environmental monitoring of the Caspian Sea, which will allow to fully preserve its natural environment in the framework of the acting 'Caspian Convention...'"

The meeting launched the development of proposals and concepts for an integrated general geographic atlas of the Caspian Sea and its coasts.

The Atlas would be an important result of international scientific cooperation in the Caspian region, as well as an implementation example for the Caspian Convention and other international multilateral and bilateral agreements on the Caspian Sea. It would also showcase the unity of goals and objectives of interstate cooperation on the study and preservation of the Caspian Sea.

# **Concept of creating the Atlas**

1. Work on the Atlas should involve scientists and experts from Russia, Azerbaijan, Kazakhstan, Turkmenistan and Iran on equal terms.

2. A major international research programme, bringing together all Caspian littoral states, and involving experts and scientists from other countries in the process of thematic map preparation, should form the basis of Atlas development planning. Therefore, relevant United Nations organizations, the GEF, the World Bank, and convention secretariats should be contacted to launch the negotiation process.

3. The subject of Atlas mapping should be the Caspian Sea and the coastal strip width (50-100 km - upon agreement), reflecting the possible influence of the sea on landscapes, and the possible impact of land-based objects, lower reaches of rivers, and river deltas on the state of the sea.

4. Substance-wise the Atlas could include the following sections:

(a) general geography;

(b) physical geography (nature and resources);

(c) economic geography;

(d) environment (nature conservation);

(e) history and culture (initial geographical descriptions, archaeology, cultural heritage, memorial sites);

(f) international cooperation, international projects, including in the framework of the Caspian Convention



5. A set of thematic maps in each section must be agreed upon by the participating countries, but in general might be given to one of the parties for preparation and development.
6. Creation of the Atlas in 'hard copy' and 'geoportal' (electronic) forms would be a conceptually innovative feature of the Atlas.
7. With regard to the scope of representation, plot development, and data collection a hierarchy of scales is proposed, from basin-wide to regional and local (individual objects).
8. For sections reflecting the state of the climate, waters, nature, economy, environmental protection it is suggested to actualize mapping plots and utilize new statistical primary and synthetic information collected on the basis of current natural, socio-economic, remote space, and environmental monitoring.
9. Certain plots in each section would feature maps showing the latest trends of physical geography and economic geography indicators (state of nature, economy and population) of the Caspian region as a whole, including the materials of the 5<sup>th</sup> IPCC report, 2<sup>nd</sup> Assessment Report on Climate Change of the Russian Federation, etc.
10. A separate block should be allotted in the Atlas to satellite data which reflects the current state of the sea and the coastal strip, but using satellite imagery for illustrative purposes will be quite appropriate.
11. It is clear that in different countries, information support for Atlas development may differ, but that does not mean that the individual thematic maps should have 'blind spots'. By agreement among developers, national fragments of a map may be completed via extrapolation.

12. For demographic, ethno-geographic and economic geography maps, primary information will be collected at the national level, but statistical data of international organizations, if agreed with the member states, can be used.

13. The question of disclosure or retaining of certain information for the Atlas is at the discretion of each of the participating countries. The common issues are borders, level of detail and scope of the mapping basis, projection, conversion, detailing, uniform GIS technology and software for the electronic version of the Atlas.

14. State borders should not become artificial boundaries of purely natural science plot maps: animal habitats, distribution of landscapes, vegetation and soil properties, so for the purpose of geographic diversity it is necessary to provide universal (common for all countries participating in Atlas development) international classification and typing schemes of the objects and phenomena to be mapped.

15. Since it will be interesting to see forecast maps in the Atlas, with regard to the future state of the sea, coasts, river estuaries, pollution, bird habitat distribution, state of the climate, etc. it is important to use a variety of models, including Commission IPCC climate, forward-looking scenes from the 2nd Assessment Report (2014) on the Russian Federation, forecasts of sea level, river flow, changes in distribution of selected species of plants and animals.

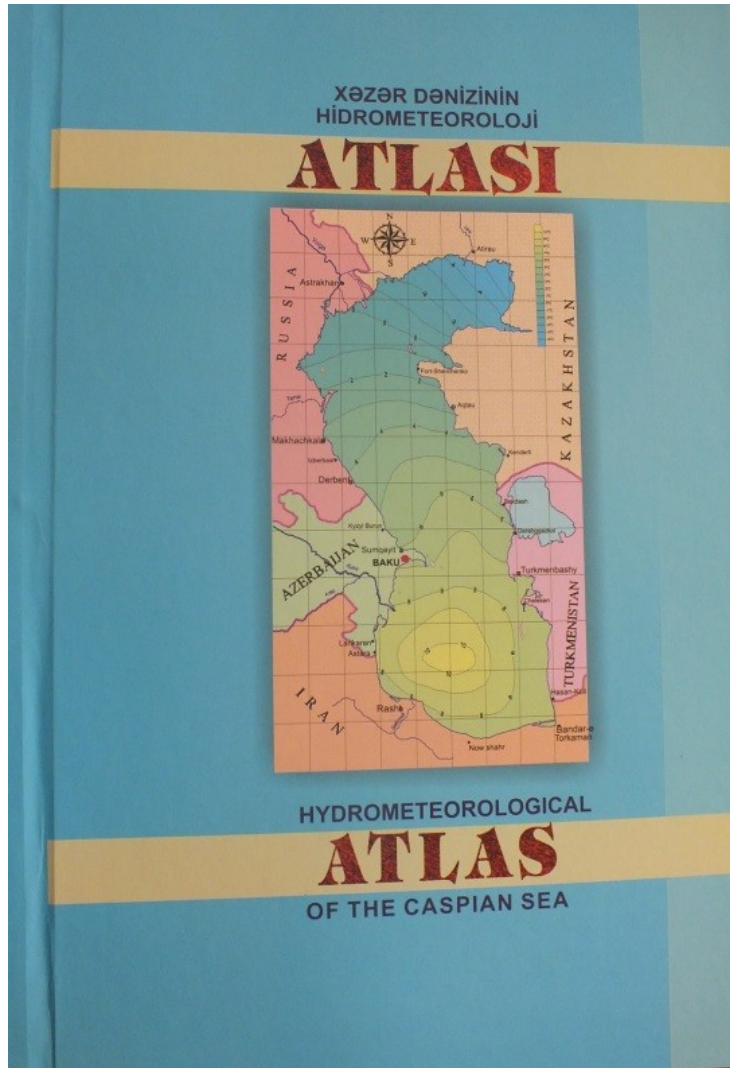
At the initial stage of collecting proposals for the Atlas it is necessary to implement strict academic and organizational measures:

- Selection of the coordinating country (recognizing the important strategic position of Azerbaijan, it is advisable to designate it as the Atlas coordinator);
- Establishment of an international editorial board of the envisaged section editors on the basis of consensus among countries, and definition of their activities;
- Signature of a five-party agreement confirming the content and structure of the Atlas sections;
- Assembling of the team
- Preparation and coordination of base maps for multi-scale model map plots, and development of a set of requirements to the mapping, illustrative, and text portion of an exemplary data sheet of the Atlas.

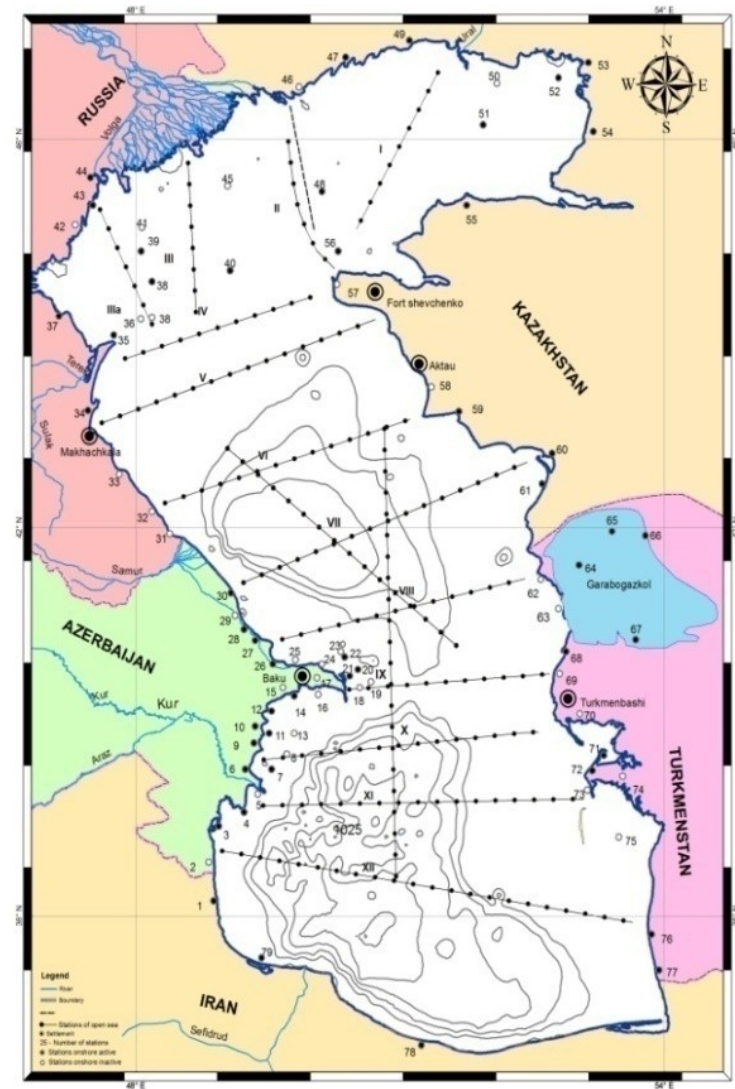
# **What we have?**

## **Hydrometeorological atlas of the Caspian Sea**

- I. Bases of the preparation of atlas and used materials**
- II. Brief information on the Caspian Sea and geomorphological maps.**
- III. Hydrology**
- IV. Meteorology**
- V. Interaction sea and atmosphere**
- VI. The Caspian Sea Level**
- VII. Database of hydrometeorological atlas of the Caspian Sea.**



Bookcover for the “Hydrometeorological Atlas of the Caspian Sea



Map showing the location of hydrometeorological station

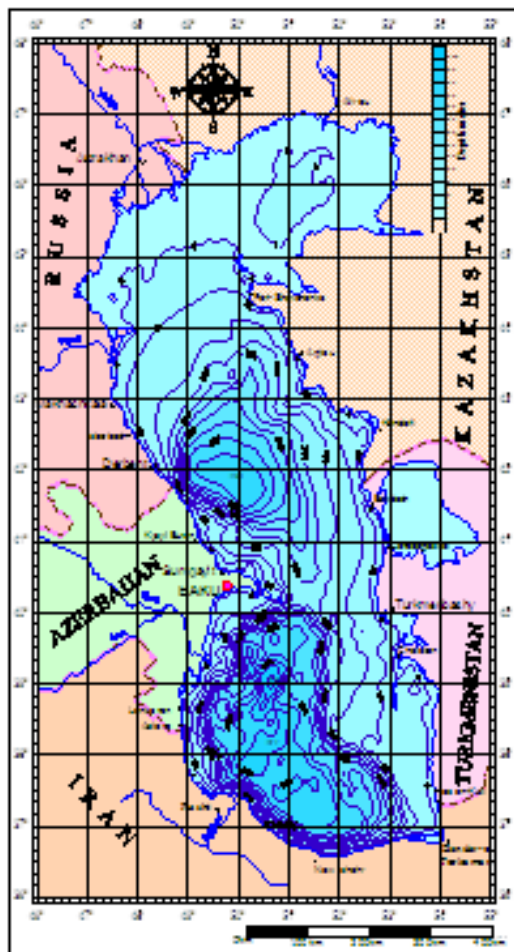


Figure 3. Bathymetric map of the Caspian Sea

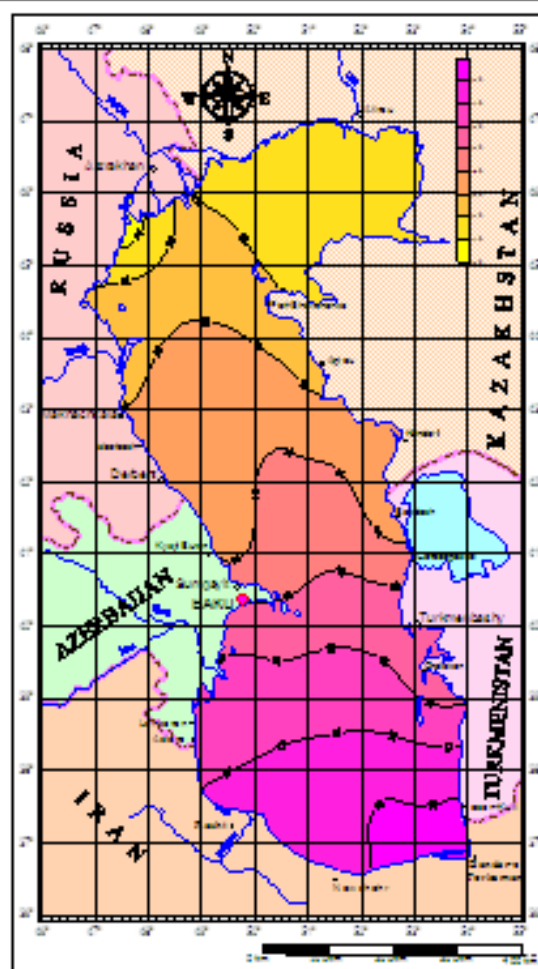


Fig. 4. The average annual temperature of surface water of the Caspian Sea

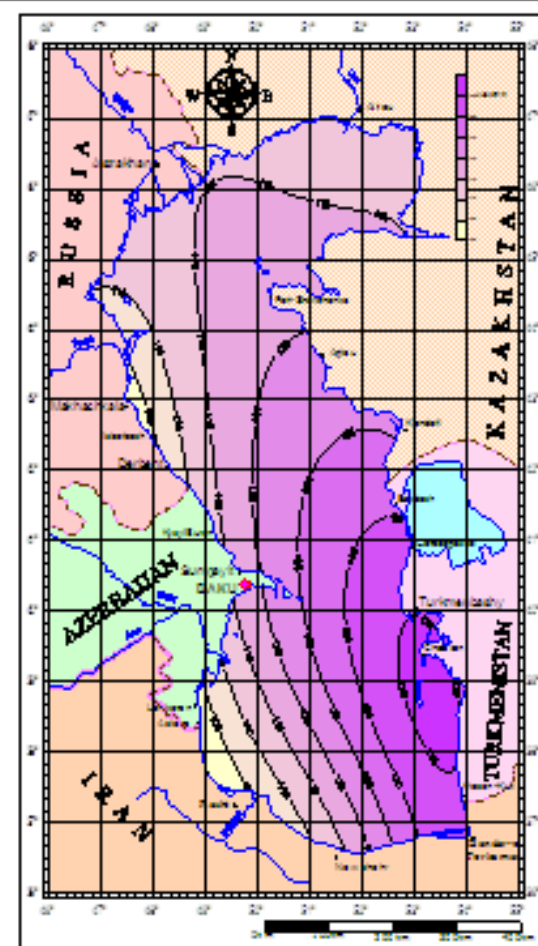


Fig. 5. Total annual radiation over the Caspian Sea

Thank you for attention!