



**MINISTRY OF ECOLOGY, AND NATURAL  
RESOURCES OF THE REPUBLIC OF KAZAKHSTAN  
«KAZHYDROMET», RSE  
SCIENTIFIC RESEARCH CENTER**

**CASPIAN SEA WEEKLY BULLETIN №9**

*03 March, 2023, Friday*



*Fig.1 NAGA/GSFC space images of the Caspian Sea, February, 24, 2023*

**FORECAST OF LEVEL AND SURGE PHENOMENA IN THE MIDDLE  
PART OF THE CASPIAN SEA ON March 02-07, 2023**

**SEA LEVEL.**

In the period from March 02-07, the sea level is expected to fluctuate around the mark of minus 28.94m BS. The range of fluctuations in sea level is from minus 28.70m to minus 29.43m.

Figure 2 shows a graph of the predicted sea level values at various points in the Middle part of the Caspian Sea.

**SURGE PHENOMENA.**

In the area of Fort-Shevchenko, Aktau, Fetisovo and Makhachkala, surge events are not expected, sea level fluctuations will not exceed **10 cm**.

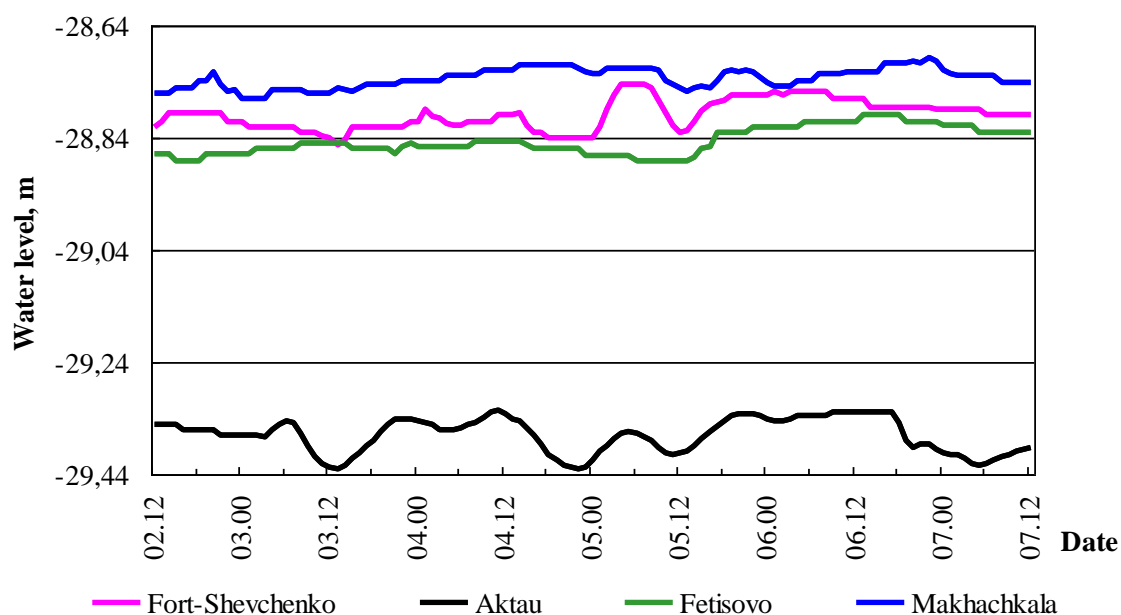


Fig. 2 Forecast of sea level in the points of the Middle Caspian

## FORECAST VALUES OF SEA LEVEL FLUCTUATIONS AT VARIOUS POINTS OF THE KAZAKHSTANI COAST

Point name	Maximum		Minimum		Average
	Level, sm (m BS)	date, time, GMT*	Level, sm (m BS)	date, time, GMT*	Level, sm (m BS)
<b>Middle Part</b>					
Fort-Shevchenko	<b>-75</b> <b>(-28,75)</b>	2023/03/05 04:00:00	<b>-85</b> <b>(-28,85)</b>	2023/03/03 13:00:00	<b>-80</b> <b>(-28,80)</b>
Aktau	<b>-133</b> <b>(-29,33)</b>	2023/03/04 10:00:00	<b>-143</b> <b>(-29,43)</b>	2023/03/03 12:00:00	<b>-137</b> <b>(-29,37)</b>
Fetisovo	<b>-80</b> <b>(-28,80)</b>	2023/03/06 13:00:00	<b>-88</b> <b>(-28,88)</b>	2023/03/02 15:00:00	<b>-85</b> <b>(-28,85)</b>
Makhachkala	<b>-70</b> <b>(-28,70)</b>	2023/03/06 20:00:00	<b>-77</b> <b>(-28,77)</b>	2023/03/03 00:00:00	<b>-73</b> <b>(-28,73)</b>

GMT\* - Greenwich Mean Time

### Review

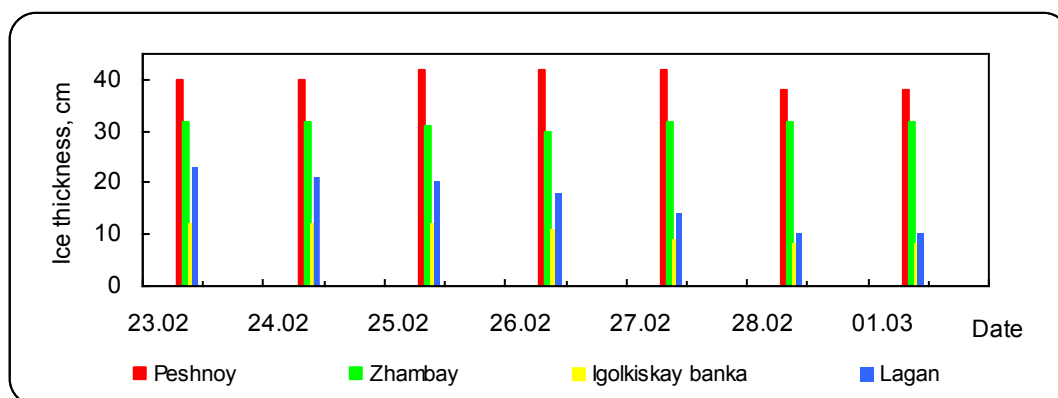
#### *Caspian Sea water stage from February 23, March 01, 2023*

The mean sea level was minus 28,62m on the Caspian Sea shallow part covered by ice.

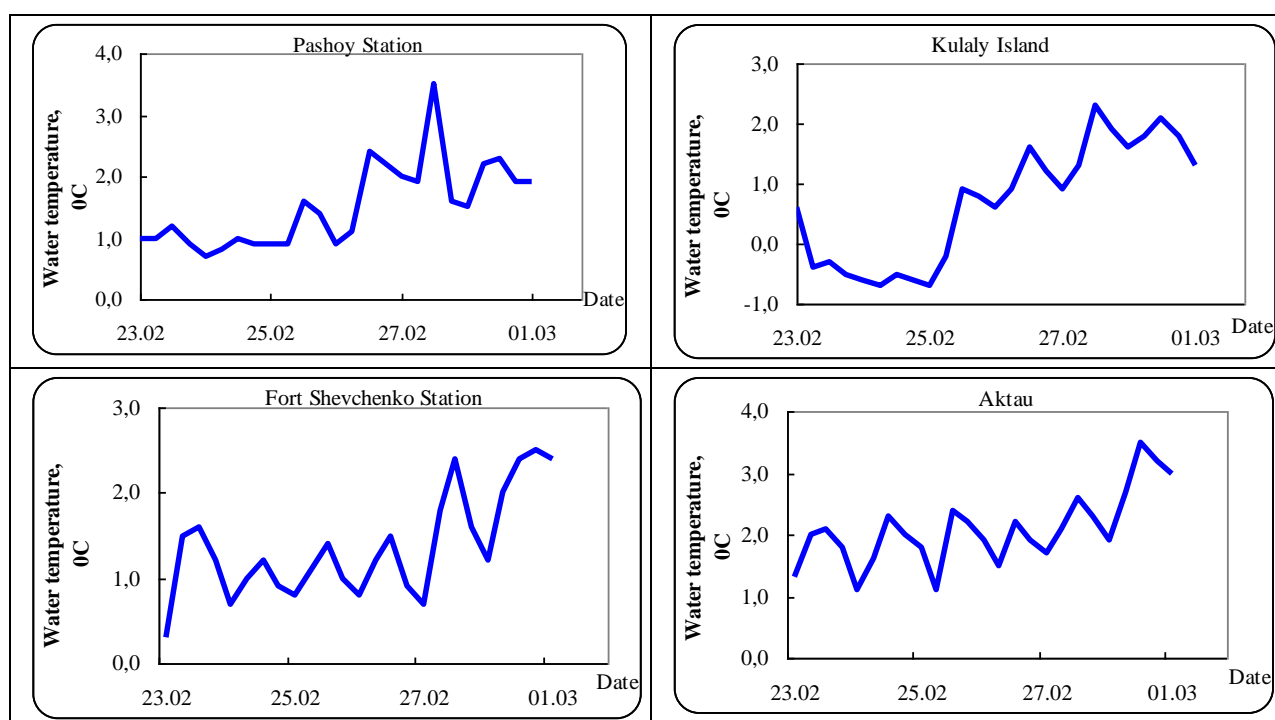
According to the operational data of the sea stations of Kazhydromet: Fort-Shevchenko, Aktau, Fetisovo and Roshydromet (Makhachkala), the average value of the level of the Caspian Sea, in its deep part, corresponded to minus 28.85m, the maximum - minus 28.57m, the minimum - minus 29.39m.

## *Review of ice conditions in the Caspian Sea, February 23, March 01, 2023*

According to satellite images (Figure 1) and operational data from marine stations and posts along the northern coast of the Caspian Sea, there is a gradual destruction of fast ice.



*Fig. 3 Ice thickness according to operational data of marine stations*



*Fig. 4 Water temperature varies according operative data from Caspian Sea stations*

# CRITERIA OF DANGER OF THE STORM SURGES IN THE NORTHEAST COAST

	Rise/Fall, cm	Characteristic***	Consequences
Up surge	50	Critical	Flooded coast area to 5 km
	65	Danger	Flooding and flooding of dams and buildings up to 10 km
	110	Especially danger	Flooding of the coast for more than 10 km, destruction of dams and buildings
Down surge	-50	Critical	worsening navigation conditions for small ships
	-65	Danger	Worsening of navigation conditions for small and medium-sized ships
	-100	Especially danger	Ships would be aground

\* The characteristics were computed by Hydrodynamic module MIKE 21 of Danish Hydraulic Institute. RSE "KAZHYDROMET" has the module adapted to Caspian Sea conditions. Data of sea level measurements (Fig.2-3) and pressure field numerical forecasting for 24–120 hours were used in computation.

\*\* At definition of characteristic marks local conditions were considered.

\*\*\* Critical – 50 % frequency, danger – 25 % frequency, especially danger– 2 % frequency. The calculation was carried out for the period 1940-2020 according to the data of Peshnoy station.

BS – Baltic System

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The bulletin was compiled by the Department of Hydrometeorological Research of the Caspian Sea

Address: 050022, Almaty, Abay Ave. 32, Tel. 2 55 84 06;

e-mail: [kaspy@meteo.kz](mailto:kaspy@meteo.kz)

Created by Vasenina Y.I.

Checked by Ivkina N.I.

When using materials of the bulletin the link to RSE "Kazhydromet" is obligatory

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