



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

**CASPIAN SEA WEEKLY BULLETIN №1**

*5 January, 2024, Friday*



*Fig.1 NASA/GSFC space images of the Caspian Sea, January, 1, 2024*

**FORECAST OF LEVEL AND SURGE PHENOMENA IN THE MIDDLE  
PART OF THE CASPIAN SEA ON January 04 - 09, 2024**

**SEA LEVEL.**

In the period from January 04 - 09, the sea level is expected to fluctuate around the mark of minus 29.16 m BS. The range of fluctuations in sea level is from minus 28.75 m to minus 29.62 m.

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

**SURGERY PHENOMENA.**

In the area of Fort-Shevchenko, Aktau, Fetisovo and Makhachkala, surge events are not expected, sea level fluctuations will not exceed **15 cm**.

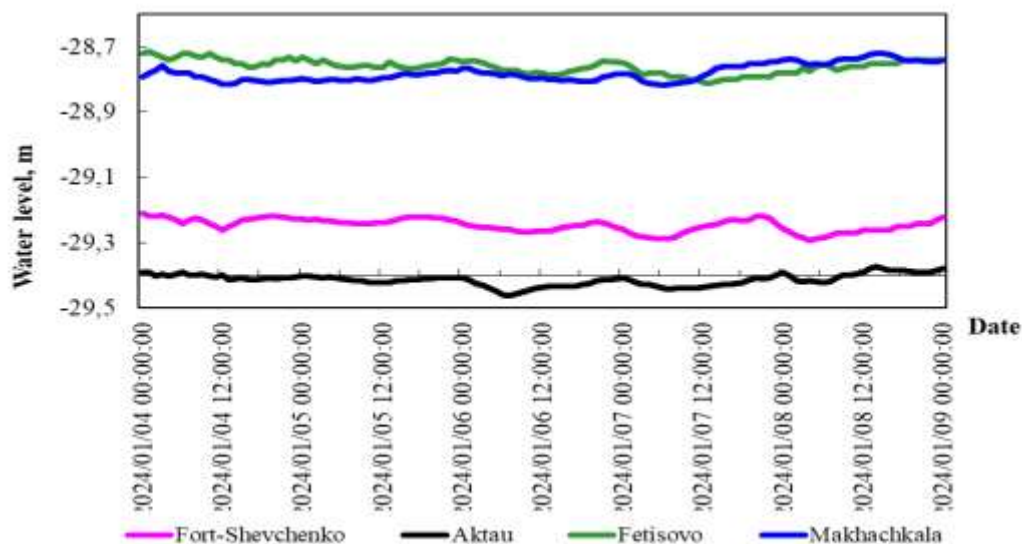


Fig. 2 Forecast of sea level in the points of the Middle Caspian

### 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>-139</b> (-29,39)	2024/01/06 14:00:00	<b>-153</b> (-29,53)	2024/01/08 01:00:00	<b>-144</b> (-29,44)
Aktau	<b>-150</b> (-29,50)	2024/01/05 00:00:00	<b>-162</b> (-29,62)	2024/01/05 18:00:00	<b>-156</b> (-29,56)
Fetisovo	<b>-75</b> (-28,75)	2024/01/05 10:00:00	<b>-85</b> (-28,85)	2024/01/06 10:00:00	<b>-80</b> (-28,80)
Makhachkala	<b>-75</b> (-28,75)	2024/01/06 23:00:00	<b>-94</b> (-28,94)	2024/01/04 00:00:00	<b>-84</b> (-28,84)

GMT\* - Greenwich Mean Time

#### Review

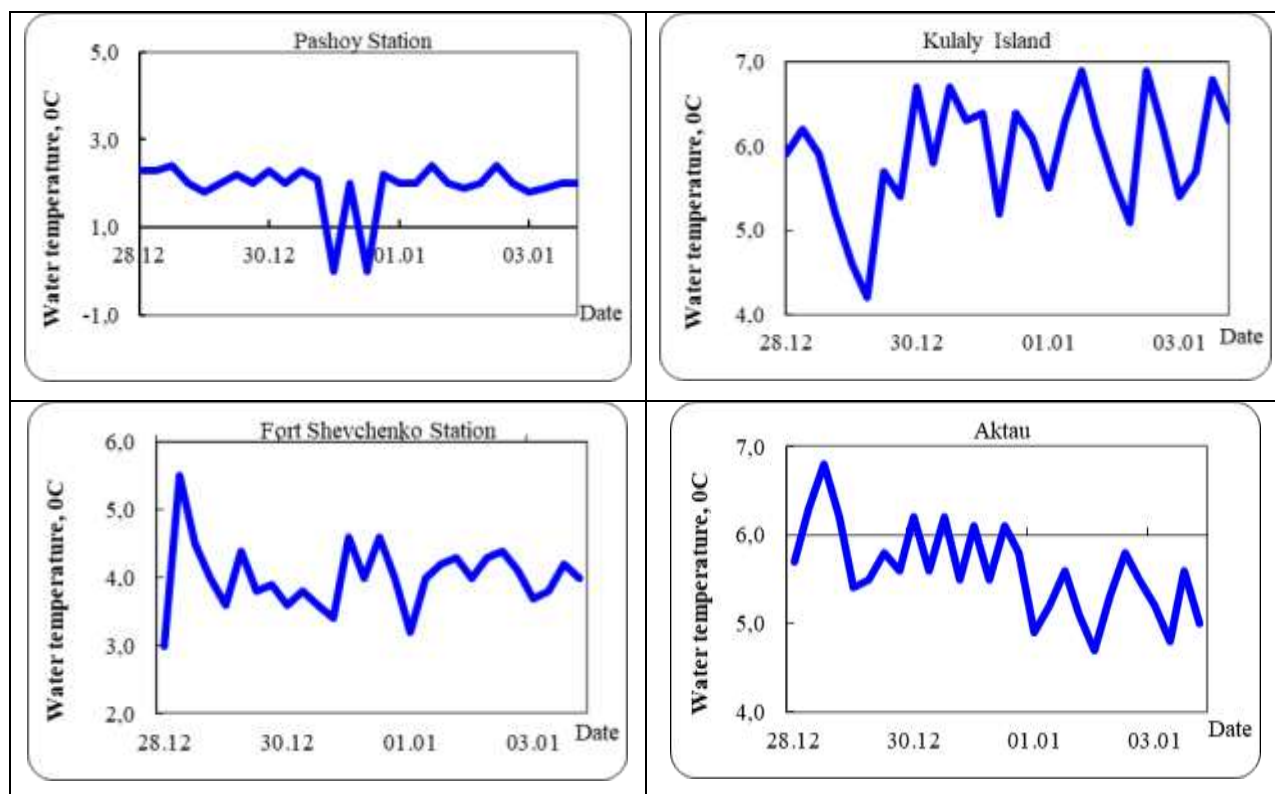
#### *Caspian Sea water stage from December 28 – January 03, 2024*

The mean sea level was minus 29,17m 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 29.17 m, the maximum - minus 28.63 m, the minimum - minus 29.70 m.

*Review of ice conditions in the Caspian Sea,  
December 28 – January 03, 2024*

According to satellite images (Figure 1) and operational data from marine stations and posts along the northern coast of the Caspian Sea, ice cover formation is observed.



*Fig. 3 Water temperature varies according operative data from Caspian Sea stations*

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

	<b>Rise/Fall, cm</b>	<b>Characteristic***</b>	<b>Consequences</b>
<b>Up surge</b>	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
<b>Down surge</b>	-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

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

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