

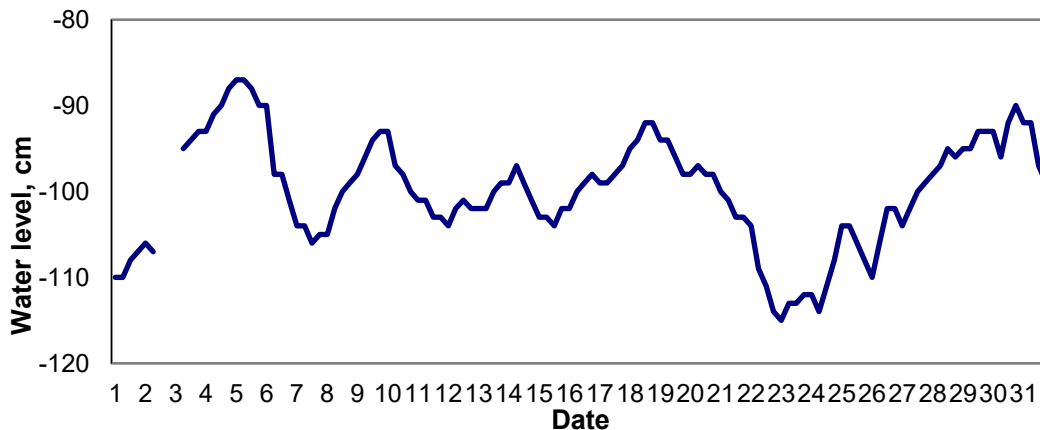


**MINISTRY OF ECOLOGY AND NATURAL RESOURCES
OF THE REPUBLIC OF KAZAKHSTAN
RSE «KAZHYDROMET»**

RESEARCH CENTER

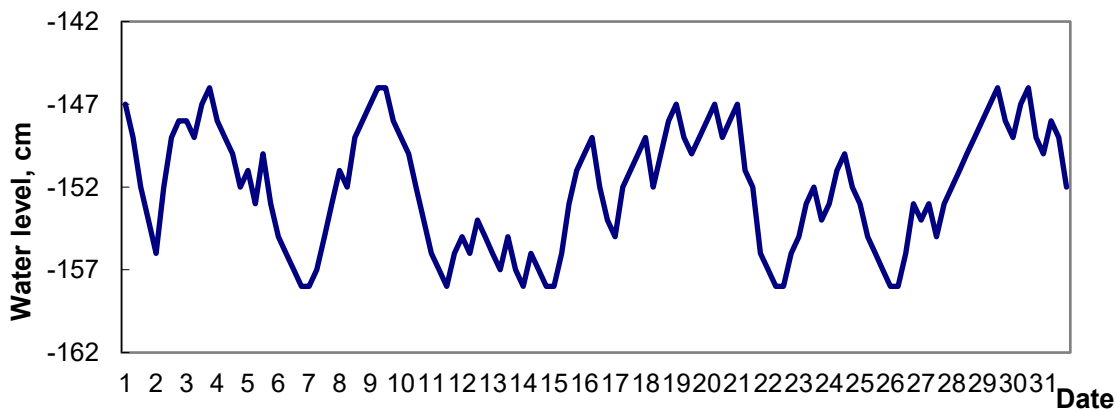
**OVERVIEW OF UP SURGE AND DOWN SURGE EVENTS
in January 2025**

Peshnoy



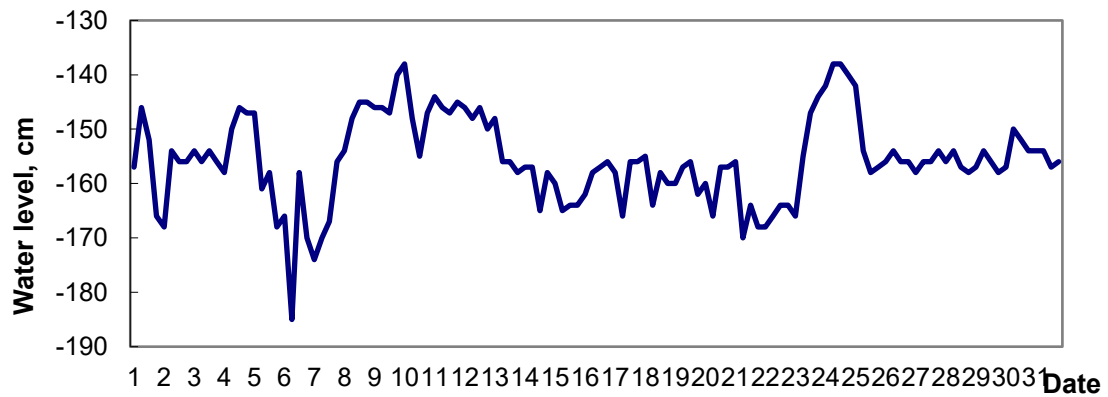
The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month varied from minus 29.15 m BS to minus 28.87 m BS.

Kulaly, island



The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month varied from minus 29.58 m BS to minus 28.46 m BS.

Fort-Shevchenko



Date	Level rise, cm	Level fall, cm	Prevailing wind direction, rhumb	Maximum wind speed, m/s
01-02.01.2025		22	westerly	6
06.01.2025		19	northwest	3
07-08.01.2025	29		southeast	8
10.01.2025		17	southeast	7
23-24.01.2025	17		east southeast	15

- On 01-02 January, a sea level drop by 22 cm was observed from minus 29.46 m BS to minus 29.68 m BS. The wind speed reached 6 m/s, predominantly westward;

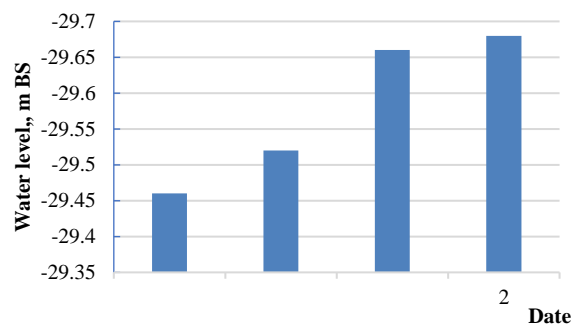


Figure. Graph of sea level changes in Fort-Shevchenko on January 01-02, 2025.

- On 06 January, sea level drop by 19 cm from minus 29.66 m BS to minus 29.85 m BS. The wind speed reached 3 m/s, predominantly northwestward;

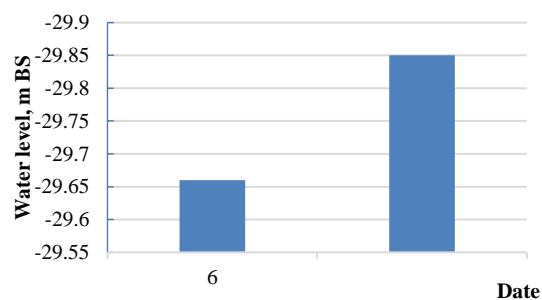


Figure. Graph of sea level changes in Fort-Shevchenko on January 06, 2025.

- On 07-08 January, a sea level rose by 29 cm was observed from minus 29.74 m BS to minus 29.45 m BS. The wind speed reached 8 m/s, predominantly southeastward;

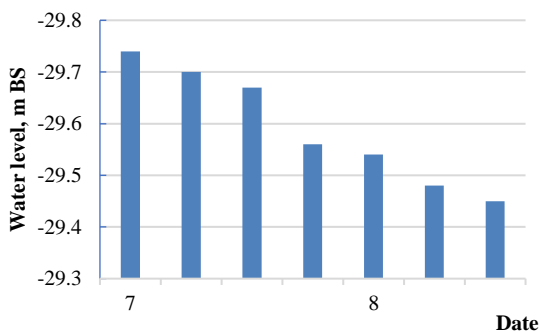


Figure. Graph of sea level changes in Fort-Shevchenko on January 07-08, 2025.

- On 10 January, a sea level drop of 17 cm was observed from minus 29.38 m BS to minus 29.55 m BS. The wind speed reached 7 m/s, predominantly southeastward;

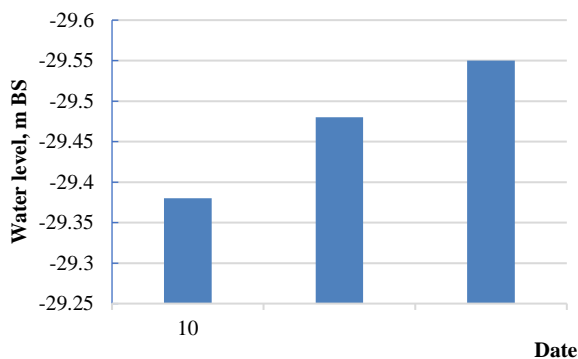


Figure. Graph of sea level changes in Fort-Shevchenko on January 10, 2025.

- On 23-24 January, a sea level rose by 17 cm was observed from minus 29.55 m BS to minus 29.38 m BS. The wind speed reached 15 m/s, predominantly southeastward;

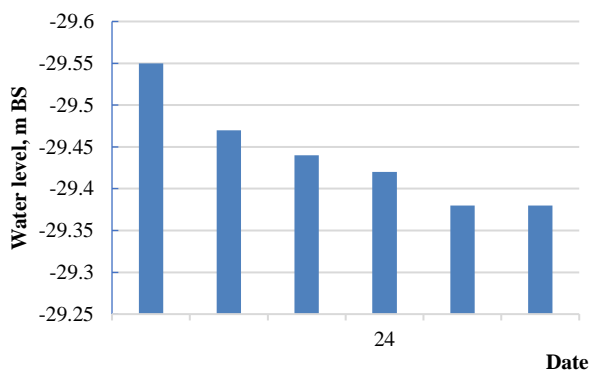
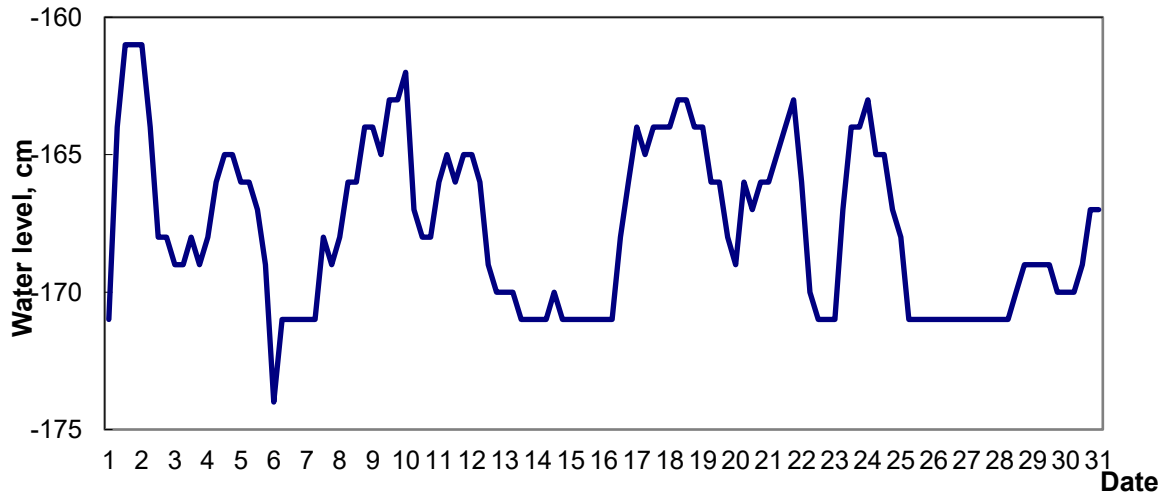


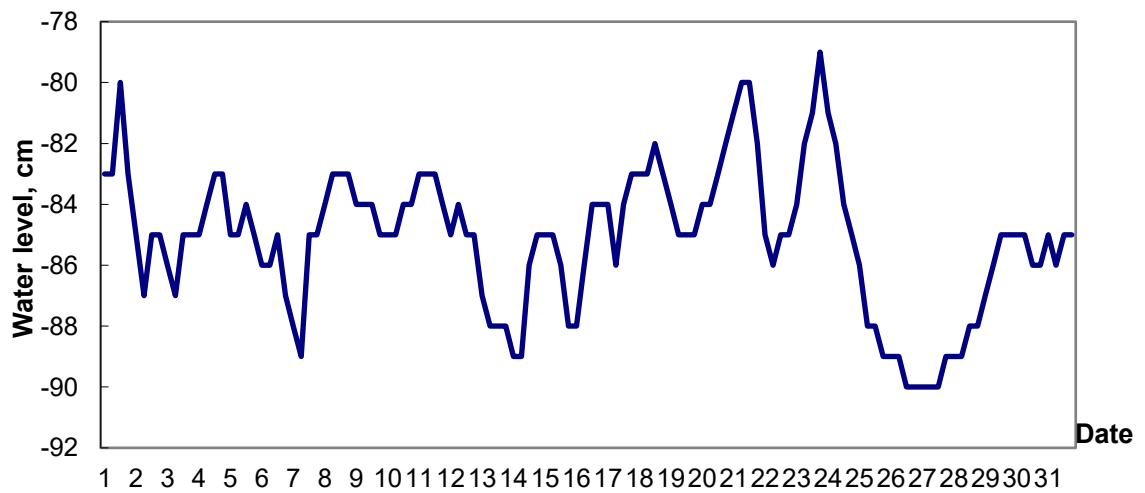
Figure. Graph of sea level changes in Fort-Shevchenko on January 23-24, 2025.

Saura



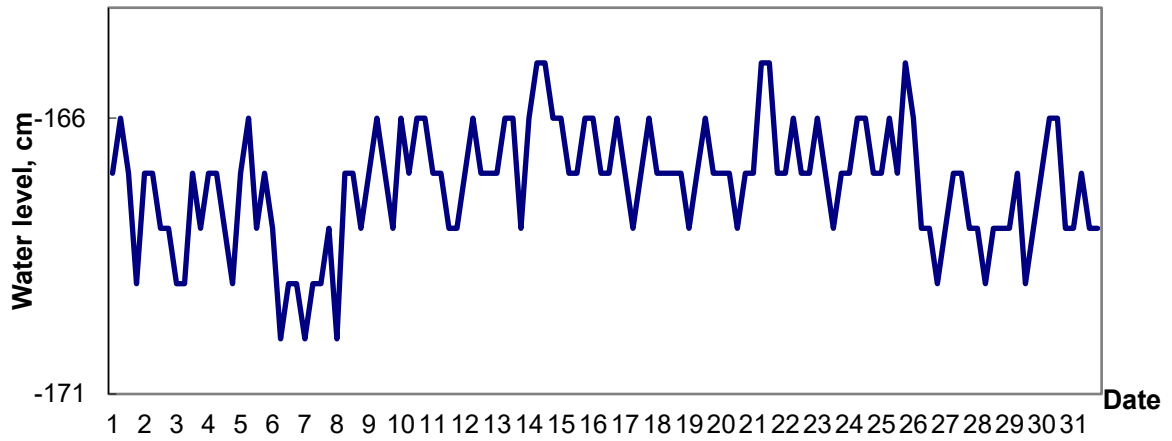
The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 29.74 m BS to minus 29.61 m BS.

Peschany



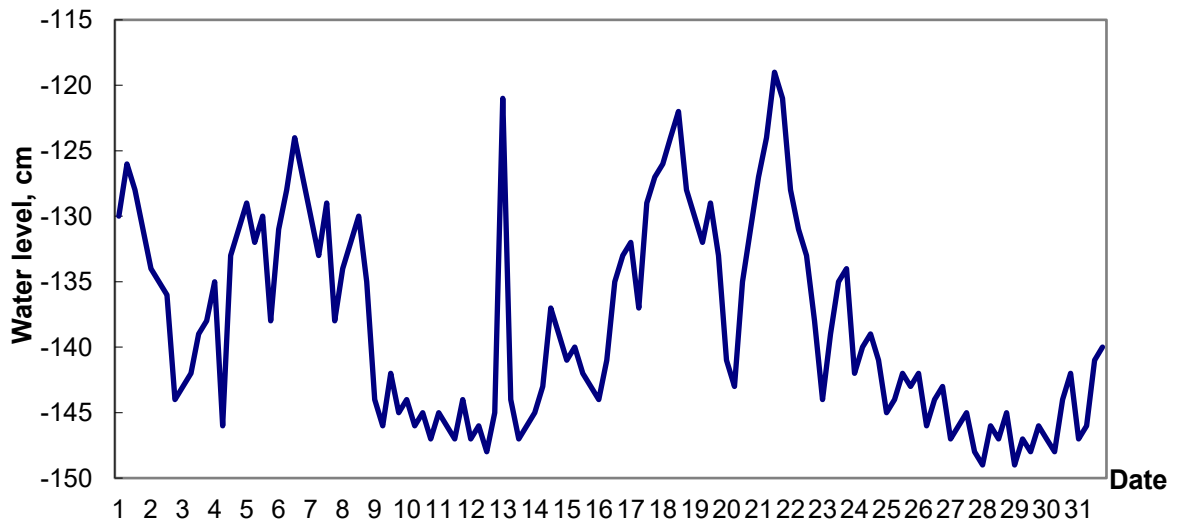
The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 28.9 m BS to minus 28.79 m BS.

Aktau



The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 29.7 m BS to minus 29.65 m BS.

Fetisovo



Date	Level rise, cm	Level fall, cm	Prevailing wind direction, rhumb	Maximum wind speed, m/s
01-02.01.2025		16	northwest, south	7
04-05.01.2025	17		southeast	11
08-09.01.2025		16	east, southeast	9
12-13.01.2025	27		east, southeast	5

- On 01-02 January, a sea level drop by 16 cm was observed from minus 29.28 m BS to minus 29.44 m BS. The wind speed reached 7 m/s, predominantly north-west, southward;

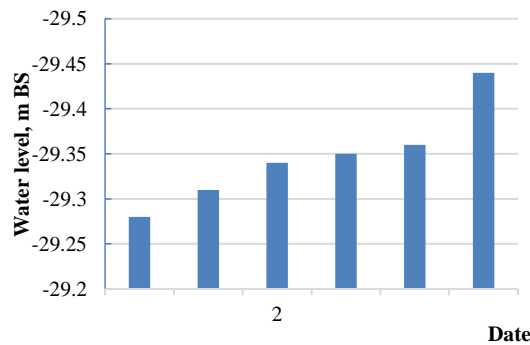


Figure. Graph of sea level changes in Fetisovo on January 01-02, 2025.

- On 04-05 January, a sea level rise by 17 cm was observed from minus 29.46 m BS to minus 29.29 m BS. The wind speed reached 11 m/s, predominantly south-easterly;

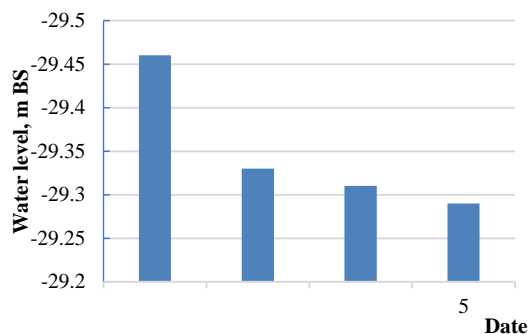


Figure. Graph of sea level changes in Fetisovo on January 04-05, 2025.

- On 08-09 January, a sea level drop by 16 cm was observed from minus 29.30 m BS to minus 29.46 m BS. The wind speed reached 9 m/s, predominantly eastward and south-easterly;

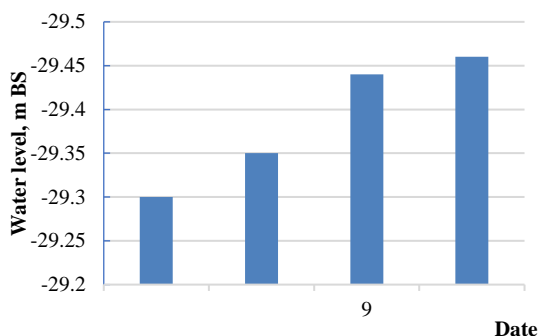


Figure. Graph of sea level changes in Fetisovo on January 08-09, 2025.

- On 12-13 January, a sea level rise by 27 cm was observed from minus 29.48 m BS to minus 29.21 m BS. The wind speed reached 5 m/s, predominantly eastward and south-easterly.

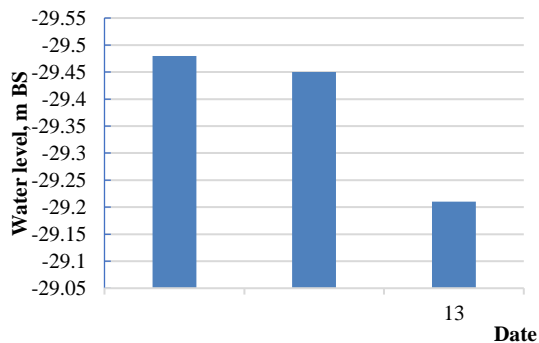


Figure. Graph of sea level changes in Fetisovo on January 12-13, 2025.

Note:

Analysis of the Zhanbay upsurge and downsurge events was not performed due to the receipt of hydrometeorological data with gaps.

STORM SURGE HAZARD CRITERIA FOR THE NORTHEASTERN COASTLINE

	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 calculated characteristics were obtained using the hydrodynamic module of the MIKE 21 Flow Model, adapted in RSE "Kazhydromet" to the conditions of the Caspian Sea. Data of sea level measurements 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

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
