

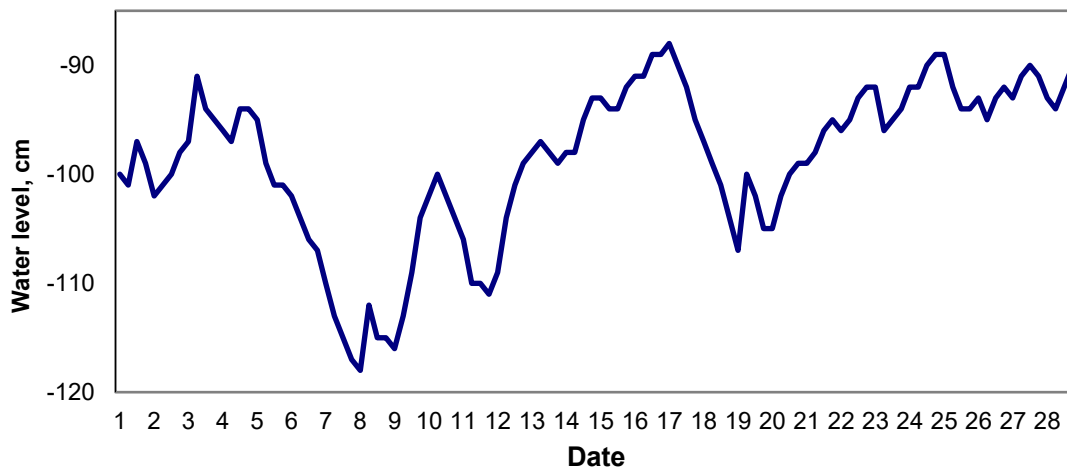


**MINISTRY OF ECOLOGY AND NATURAL RESOURCES  
OF THE REPUBLIC OF KAZAKHSTAN  
RSE «KAZHYDROMET»**

**RESEARCH CENTER**

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

**Peshnoy**



| Date     | Level rise, cm | Level fall, cm | Prevailing wind direction, rhumb | Maximum wind speed, m/s |
|----------|----------------|----------------|----------------------------------|-------------------------|
| 05-08.02 |                | 17             | northeast                        | 10                      |
| 09-10.02 | 16             |                | northeast                        | 6                       |
| 17-19.02 |                | 19             | north, northeast                 | 8                       |

- On 05-08 February, a sea level drop by 17 cm was observed from minus 29.01 m BS to minus 29.18 m BS. The wind speed reached 10 m/s, predominantly northeast;

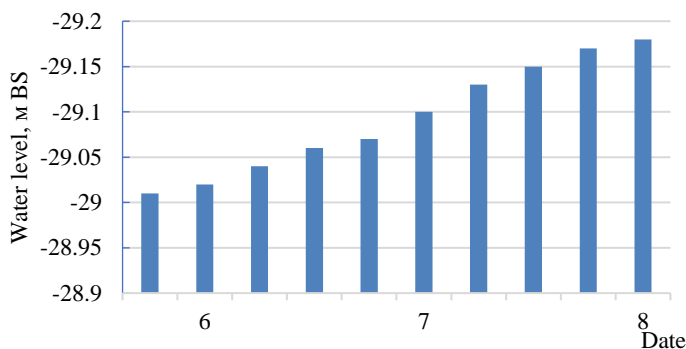


Figure. Graph of sea level changes in Peshnoy on February 05-08, 2025.

- On 09-10 February, a sea level rose by 16 cm was observed from minus 29.16 m BS to minus 29.00 m BS. The wind speed reached 6 m/s, predominantly northeast;

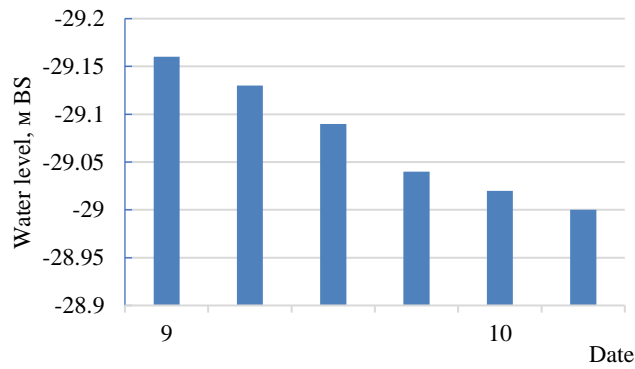


Figure. Graph of sea level changes in Peshnoy on February 09-10, 2025.

- On 17-19 February, a sea level drop by 19 cm was observed from minus 28.88 m BS to minus 29.07 m BS. The wind speed reached 8 m/s, predominantly north northeast, north;

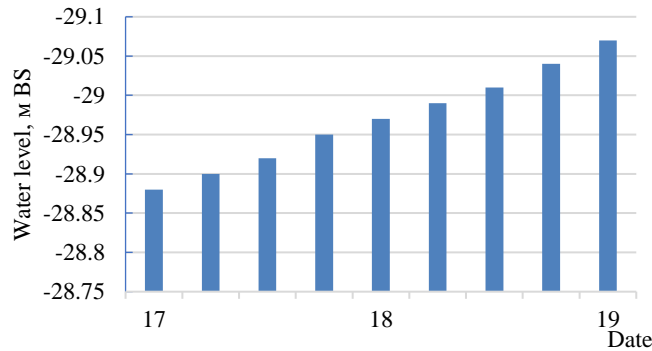
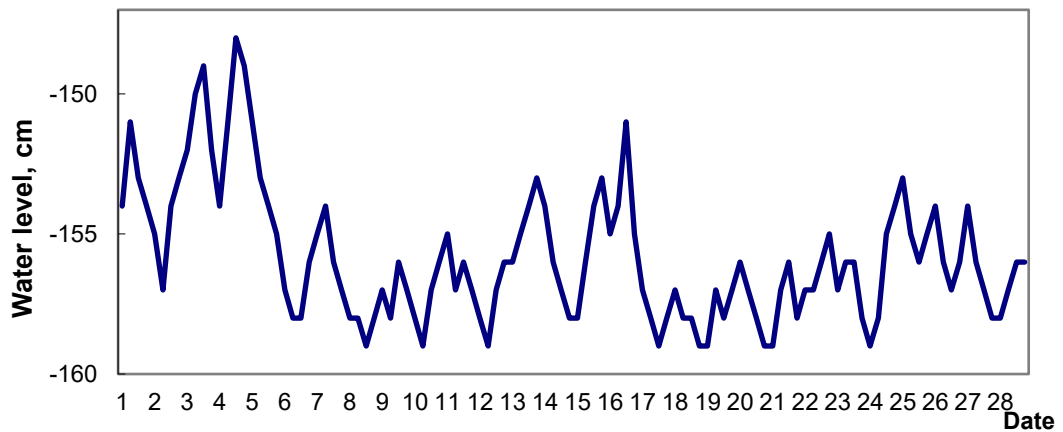


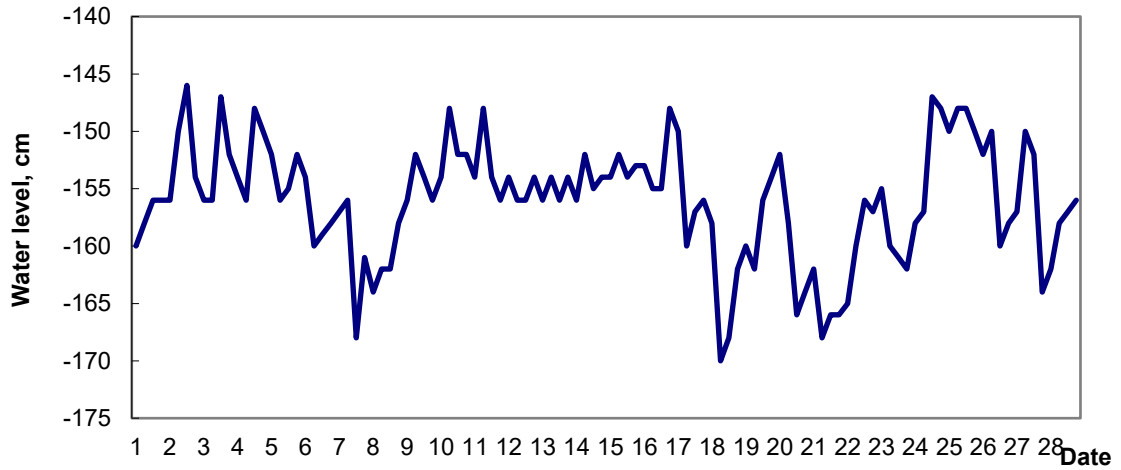
Figure. Graph of sea level changes in Peshnoy on February 17-19, 2025.

**Kulaly, island**



The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month varied from minus 29.59 m BS to minus 28.48 m BS.

**Fort-Shevchenko**



| Date          | Level rise, cm | Level fall, cm | Prevailing wind direction, rhumb | Maximum wind speed, m/s |
|---------------|----------------|----------------|----------------------------------|-------------------------|
| 23-24.02.2025 | 15             |                | west-southwest                   | 4                       |

- On 23-24 February, a sea level rose by 15 cm was observed from minus 29.62 m BS to minus 29.47 m BS. The wind speed reached 4 m/s, predominantly west-southwest;

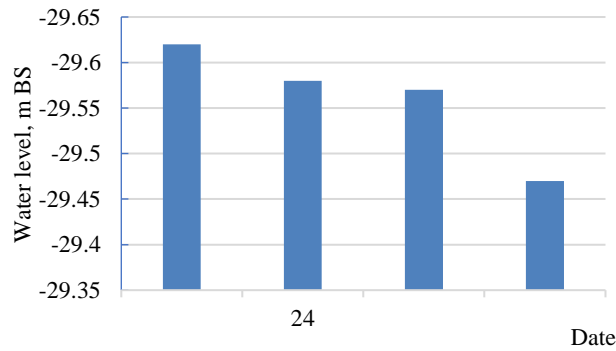
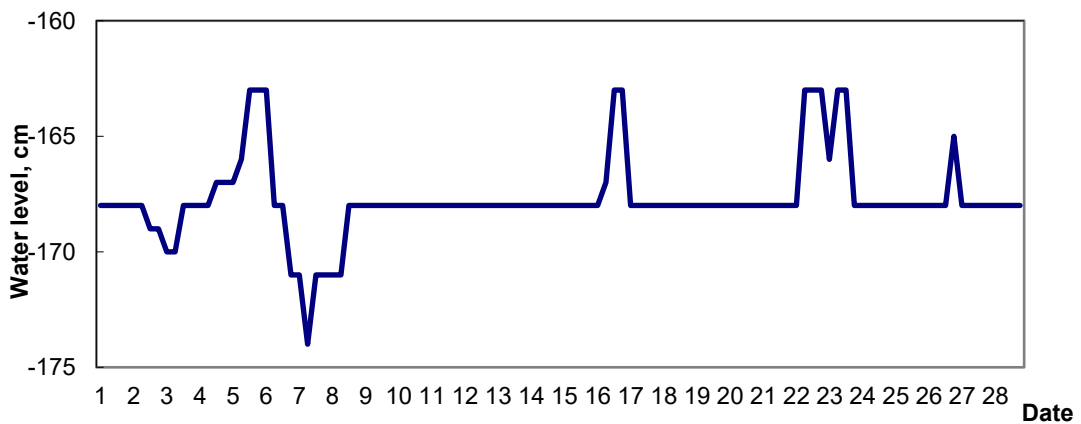


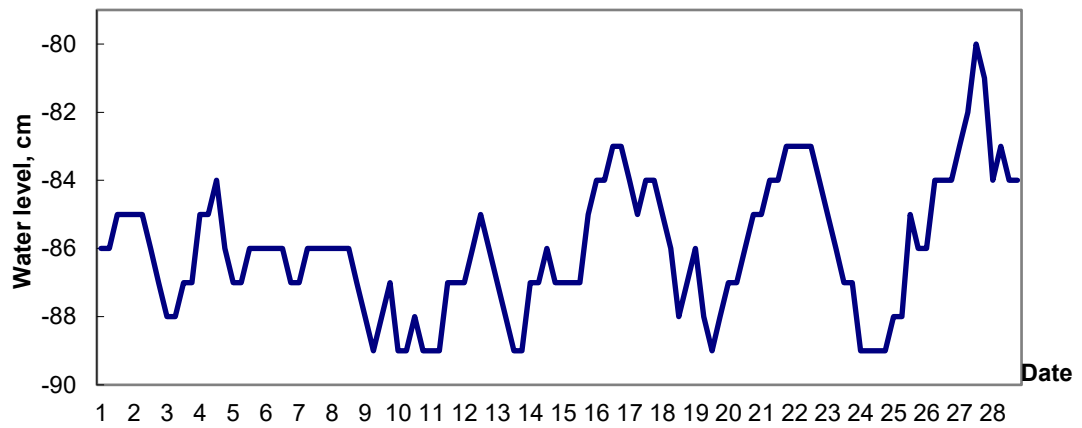
Figure. Graph of sea level changes in Fort-Shevchenko on February 23-24, 2025.

**Saura**



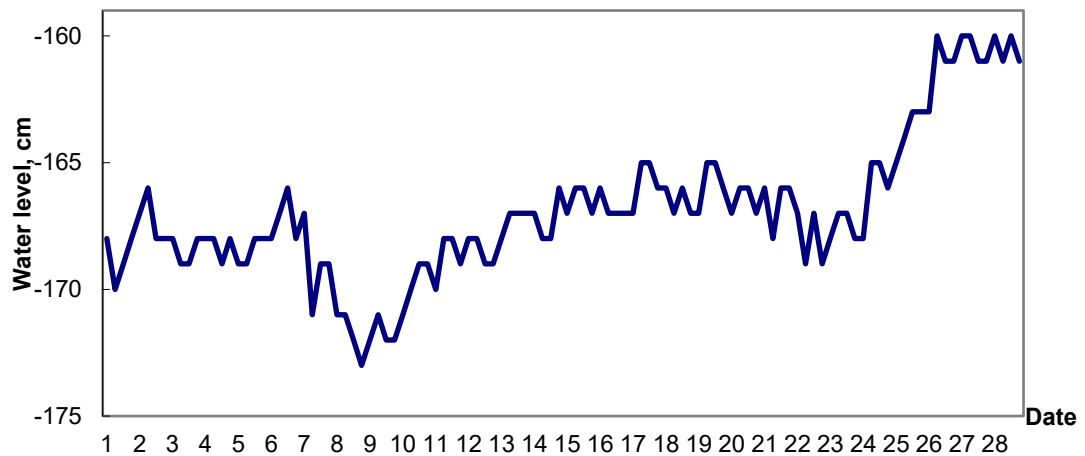
The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 29.74 m BS to minus 29.63 m BS.

**Peschany**



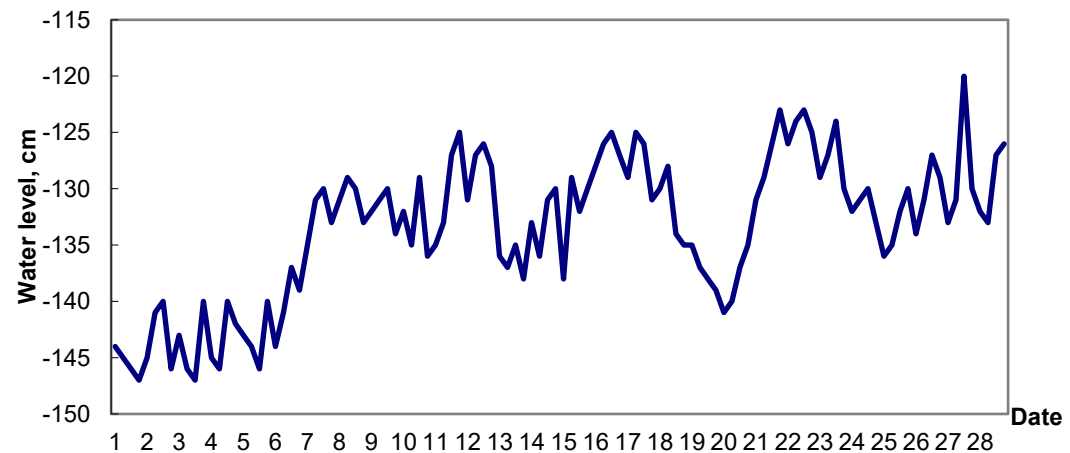
The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 28.89 m BS to minus 28.80 m BS.

**Aktau**



The runup and surge level fluctuations did not exceed 14 cm. The sea level change during the month fluctuated from minus 29.73 m BS to minus 29.60 m BS.

**Fetisovo**



| Date          | Level rise, cm | Level fall, cm | Prevailing wind direction, rhumb | Maximum wind speed, m/s |
|---------------|----------------|----------------|----------------------------------|-------------------------|
| 20-21.02.2025 | 18             |                | north-west                       | 10                      |

- On 20-21 February, a sea level rose by 18 cm was observed from minus 29.41 m BS to minus 29.23 m BS. The wind speed reached 10 m/s, predominantly north-west;

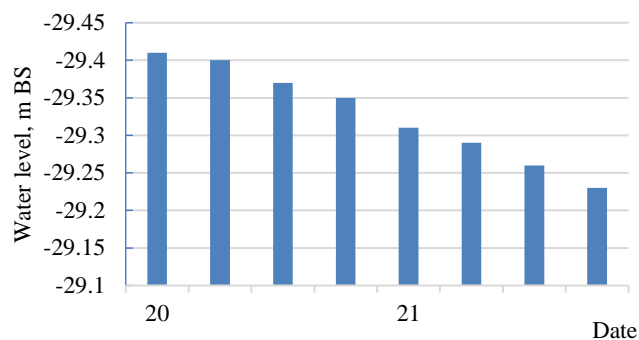


Figure. Graph of sea level changes in Fetisovo on February 20-21, 2025.

*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,<br>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

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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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