

# COORDINATING COMMITTEE ON HYDROMETEOROLOGY AND POLLUTION MONITORING OF THE CASPIAN SEA (CASPCOM)

## Information Bulletin #2

1 August 2011

In November 2010 the experts of CASPCOM work group prepared an Information Bulletin ([http://www.caspcom.com/files/CASPCOM\\_bulletin\\_1.pdf](http://www.caspcom.com/files/CASPCOM_bulletin_1.pdf)) on abnormally sharp decrease of the sea level in the period of June - October, which amounted to 30-35 cm (according to observation data at the posts located along the whole sea coastline).

The sea level fall was conditioned by the decrease of the Volga discharge volume, which made 200 km<sup>3</sup> in 2010 (86 km<sup>3</sup> in Q2 of 2010) or 80% of the average values for the period 1961 - 2010, and the increase in water evaporation as a result of abnormally hot summer.

As a result of dramatic seasonal decrease of the sea level, it was supposed that in 2010 the sea level would decrease by 7-9 cm as compared to the previous year, and in 2011 it would fall by 15-20 cm as compared to 2010. The bulletin pointed to the strong probability that the level would continue falling in 2012.

In April 2011 the Hydrometeorology Center of Russia issued a bulletin devoted to the level of the Caspian Sea and the forecast of its changes. The data on the sea level received from national hydrometeorological organizations of the Caspian states were used in the preparation of the bulletin.

The bulletin of the Hydrometeorology Center of Russia shows that the average annual level of the Caspian Sea in 2010 decreased by 9 cm as compared to 2009 and reached the absolute of -27.25 m (75 cm). On the basis of the Volga discharge forecast in the second quarter, which was expected to be normal or slightly lower, the specialists supposed that the sea level in 2011 would fall by 20-23 cm as compared to 2010. The bulletin shows that the trend of sea level decrease might last before 2016.

The data presented in Hydrometcenter bulletin made it possible to specify that the average sea level in the second half of 2010 (June - December) decreased by 40 cm, i.e. the average monthly rate of sea level fall made 6.7 cm (fig. 1).

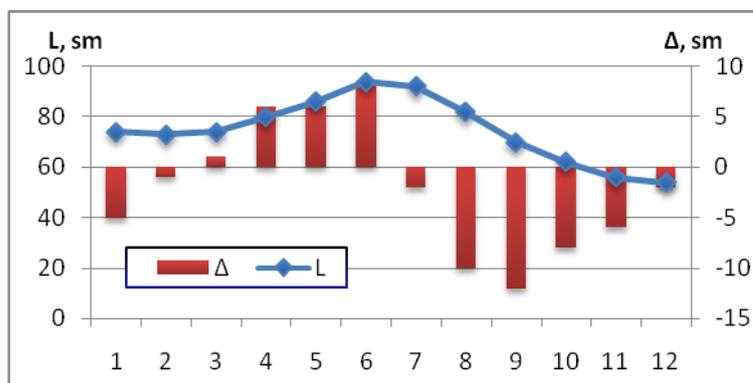


Fig. 1. Seasonal changes of the average level (L, cm) and its monthly increment (Δ, cm) in 2010. The average sea level is calculated by data received at posts Baku, Oil Rocks, Makhachkala, Fort-Shevchenko, Guvly-Mayak and Kara-Bogaz-Gol).

The unstable condition of the sea level in 2011 enabled CASPCOM work group to exchange further information. As a result, it was determined that the average sea level in the first half of the year (January - June) at most posts decreased by 20-25 cm as compared to the same period last year (21 cm in Baku, 23 cm at Oil Rocks and Makhachkala, 25 cm in Fort-Shevchenko and 21 cm in Aktau). This difference was greater in the North Caspian (Kulaly island, Tyuleniy

island) - it made 25-30 cm; on the southern Iranian coast the difference was smaller than in the sea on average (15-20 cm).

Judging by the water discharge from Volgograd power station, the volume of the Volga discharge in the second quarter was by  $10 \text{ km}^3$  lower than last year. Although the summer is not so hot as last year, the air temperature on almost all the coastline exceeded the norm by several degrees.

Hence we should expect that the monthly rate of sea level decrease in the second half of 2011 will be similar to that of the last year. In this case, according to the estimates (Fig. 2), the average sea level in 2011 will fall by 25-30 cm as compared to the average annual level of 2010 and will reach the mark of -27.50 m absolute (50 cm).

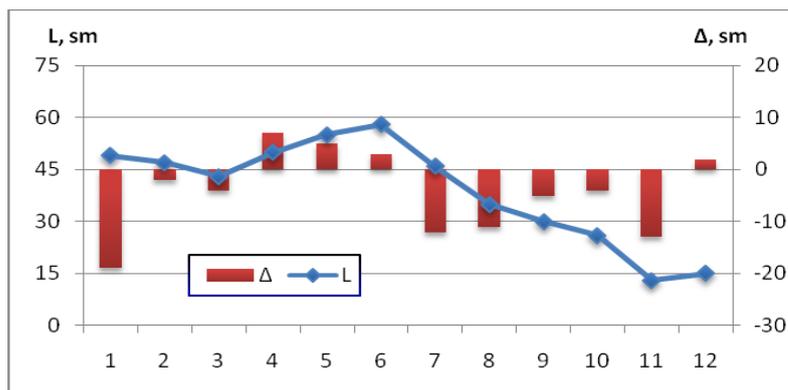


Fig. 2 Actual (January - June) and probable (July - December) changes of the sea level (L, cm) and its monthly increment ( $\Delta$ , cm) in Makhachkala. Actual increment observed in the second half of 2010 serves as an analogue of monthly increment in the second half of 2011. These analogues help to determine the expected changes of the sea level in the second half of the year.

Stable sea level fall started in 2006. From 2006 to 2010 the sea level fell by 35 cm. There is enough ground to suppose that in 2011 the sea level will decrease by 60 cm as compared to 2006. During the period of instrumental observations (since 1990), this situation can be compared only to the early 30s of the past century. It should be noted that in the period 1931 - 1941 the sea level fell by 170 cm.

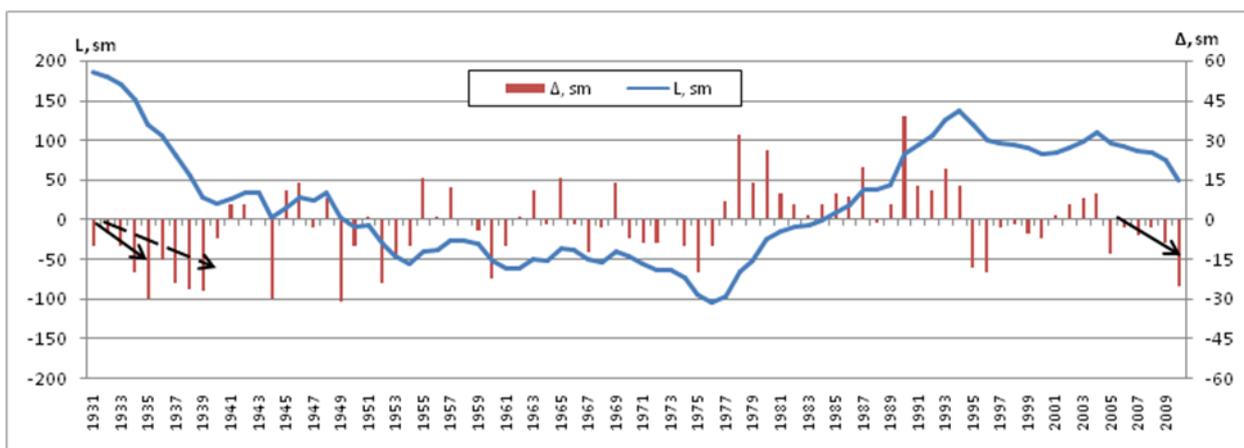


Fig. 3. Long-term changes of the Caspian Sea level (L,cm) and its annual increment ( $\Delta$ , cm), including 2011 (forecast).

It's still hard to judge the probability of re-occurrence of the situation that was observed 80 years ago. However the probability that the sea level will fall to -28.00 m absolute in the following 3-4 years is quite high. Judging by the history of the Caspian Sea, we can't but note that this mark is critical for the Caspian Sea ecosystem and the marine economy.