Report of the Russian Federation to the 12th Session of the IOC Group of Experts on the Global Sea Level Observing System

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GLOSS stations reporting delayed - mode data

According to the definition of the GLOSS Core Network-2010 the Russian part of the GLOSS sea-level gauge network consists of 12 coastal stations (Table 1):

Table 1. Russian GLOSS Core Network stations

CODE	LAT	LON	NAME	DATA IN PSMSL
231	14^0 15' E	78^0 04' N	BARENTSBURG (SPITSBERGEN)	1948 - 2009
312	80^0 39' E	73^0 32' N	DIKSON	1950 - 1997
97	20^0 29'E	54^0 42' N	KALININGRAD	1926 - 1986
25	93^0 01' E	66^0 33' S	MIRNY (ANTARCTICA)	-
274	33^0 03' E	68^0 58' N	MURMANSK	1952 - 2009
92	150^0 42' E	59^0 44' N	NAGAEVO BAY	1957 - 2009
93	158^0 39' E	52^0 59' N	PETROPAVLOVSK-KAMCHATSKY	1957 - 2009
98	39^0 04' E	44^0 06' N	PORT TUAPSE, BLACK SEA	1917 - 2009
309	173^0 11' W	64^0 30' N	PROVIDENYA	1951 - 1983
99	62^0 35' E	76^0 14' N	RUSSKAYA GAVAN	1953 - 1993
313	128^0 45' E	71^0 40' N	TIKSI	1949 - 2009
90	145^0 52' E	44^0 01' N	YUZHNO KURILSK	1948 - 1994

On the regular basis, once per year the Russian oceanographic data center (RNODC) in Obninsk (Kaluga region) provides the monthly mean values of a sea level from the active stations to the Permanent Service for Mean Sea Level (PSMSL). The monthly mean values of a sea level from PETROPAVLOVSK-KAMCHATSKY station the RNODC sends every month to the University of Hawaii Sea Level Center in Honolulu.

Not all of the earlier claimed Russian GLOSS stations are active. Shortly, the list of the national GLOSS stations reporting delayed-mode (climatic) sea level data is planned to be reviewed.

An overview of the GPS height reference technology at the GLOSS network

Unfortunately, no one station in Russia has a sea-level gauge along with GPS-receiver. However, in recent years short-term measurements of heights and horizontal coordinates of benchmarks near points of sea level observations at Caspian and Baltic seas were carried out with the help of GPS/GLONASS-receivers.

Historical monthly mean sea-level data

The history of sea level observations in Russia and the Former Soviet Union at coastal hydrometeorological stations extends over many tens and even hundreds of years. As a result of such long time series, rich observational material has been collected. However, most of the data collected before the wide use of computers is stored in a paper form until present. In the RNODC the data from sea level observations at all seas surrounding Russia are represented in electronic form only for the period from 1977 until present.

At the same time in the frames of various projects in a few institutes of the Russian Federal Hydrometeorology and Environmental Monitoring Service significant efforts have been done towards sea level data collection and transformation of the early data into electronic form. This work is far from the end now, however, a lot of the early data were digitized.

A lot of historical monthly mean sea-level data from Russia were delivered to the PSMSL. In total the data from 113 Russian stations are now (as of October 2011) in the database of the PSMSL.

Real-time sea level data

Earlier there were two Russian stations at the Baltic Sea (Kronstadt and Saint-Petersburg) which were reporting real-time sea level data to BOOS. Since April 2010 one more Russian station was added to BOOS. This station (shown in Fig.1 with the nearby lightning rod) was installed in the bay of the Hogland Island in the Gulf of Finland of the Baltic Sea in 2009 and was commissioned for operational work by the St. Petersburg Center for Hydrometeorology and Environmental Monitoring. The gauge device used at this station is the Russian-manufactured wave, sea-level, atmospheric pressure and temperature recorder GMU-2 with hydrostatic pressure quartz sensor. The location of the station and a sample of its data series are given in Fig. 2 while Fig. 3 demonstrates a good coherence of the Hogland data with those obtained at the nearest Estonian station.

Fig. 1. The above-water part of the autonomous sea-level gauge system at the Hogland Island in the Baltic Sea with the input unit for recording hydrographic information from submerged sensors and transmitting it to servers in St. Petersburg and Moscow via cellular communication.

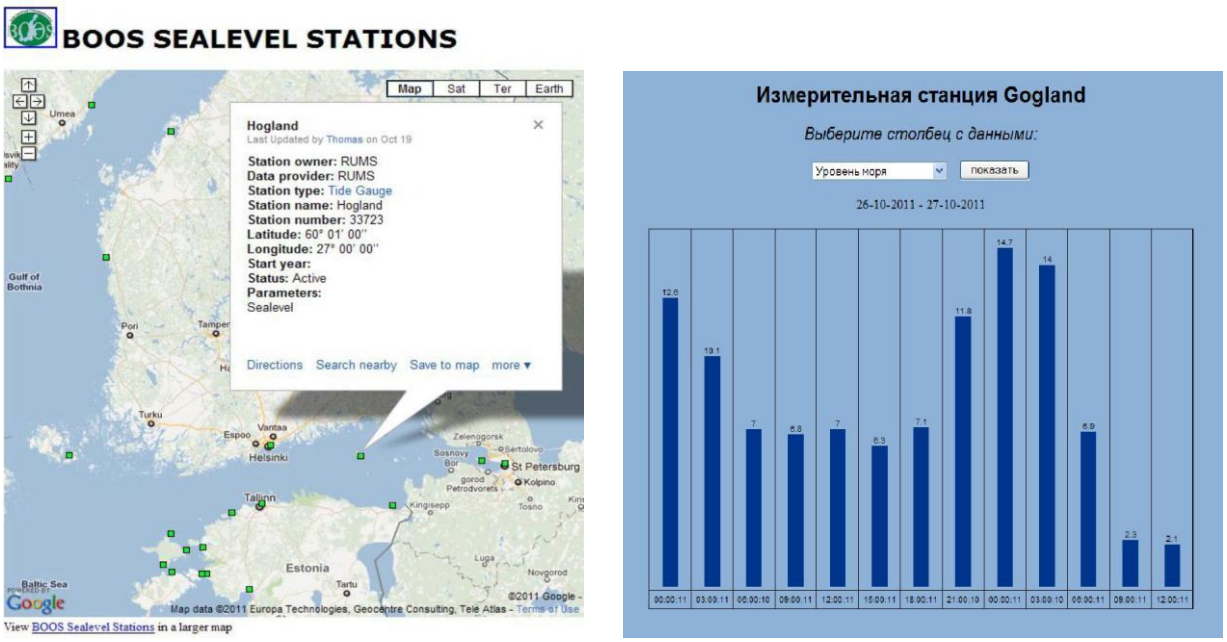

Fig. 2. Location of the Hogland sea-level gauge station (on the left) and graph of sea level at the Hogland Island on 26-27.10.2011 (on the right).

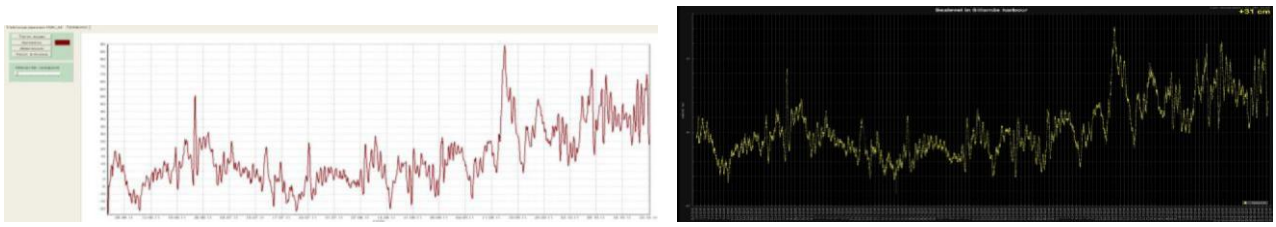

Fig. 3. Variation of sea level at the Hogland Island (on the left) and in the Estonian port Sillamae (on the right) from 1.06 to 23.10.2011.

Real-time data from 7 Russian stations at the Far Eastern Seas are accessible through a web service of IOC: http://www.ioc-sealevelmonitoring.org/map.php (Fig. 4).

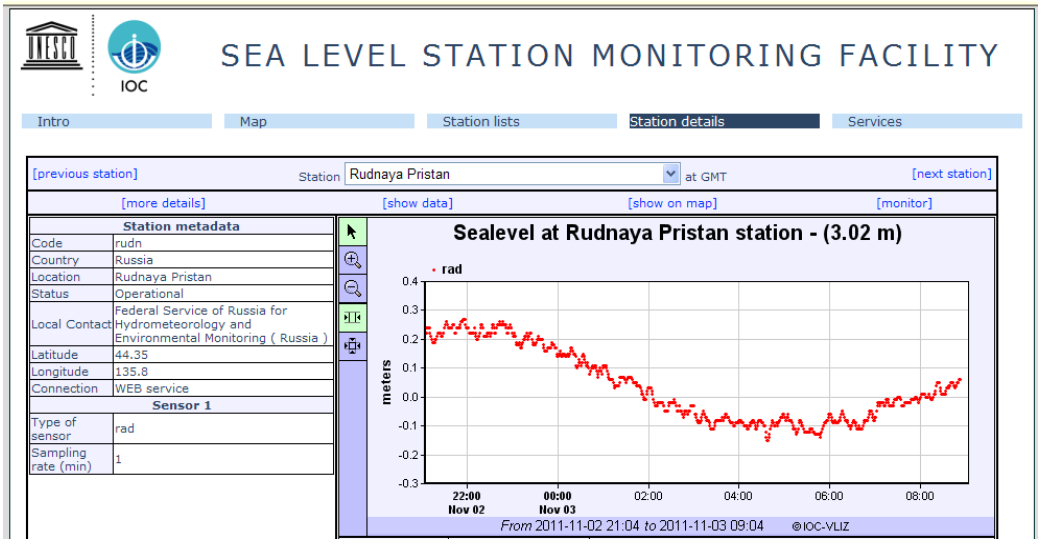

Fig. 4. Real-time data from Rudnaya Pristan at Japan Sea in the IOC Sea Level Operation Facility.

Recently, a network of sea-level gauge stations of the Russian Tsunami Warning System was established at the Russian coasts of the Far Eastern Seas. Stations produce real-time data at a 1 minute interval. Though the network is targeted to Tsunami warning, some of these stations could be also included into the GLOSS real-time network in accordance with the GLOSS technical standards. Currently, this issue is under consideration.

National contact points of Russian Federation for sea-level observations and GLOSS

Dr. Oleg NIKITIN,
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- contact point for sea-level observations in seas of the European part of Russia (Baltic, White, Azov, Black and Caspian sea)

Dr. Igor ASHIK,
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- contact point for sea-level observations in Arctic seas (Barents, Kara, Laptev, East-Siberian and Chukchi sea)

Dr.Youri VOLKOV,
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- contact point for sea-level observations in Far-Eastern seas (Bering, Okhotsk and Japan sea) and Pacific Ocean

SOI, AARI and **FEHRI** are responsible for periodical inspections and quality control of sea-level measurements made by regional and local subdivisions of the Russian Hydrometeoservice in the above listed seas.

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