18th Session of the IOC Group of Experts on the Global Sea Level Observing System (GLOSS)

Panama

March 2025

RUSSIAN FEDERATION NATIONAL TIDE GAUGE NETWORK

Intergovernmental Oceanographic Commission

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RUSSIAN FEDERATION NATIONAL TIDE GAUGE NETWORK

Russian Federation national sea level network is maintained by the Federal Service for Hydrometeorology and Environmental Monitoring Russian Federation (**Roshydromet**)

The Russian state marine tide gauge network consists of **118** active stations, which are located at the coast and islands of **13 seas** surrounding Russia and at the Russian coast of the Pacific Ocean

56

Continuous sea level measurements using float pressure gauges, including digital floating pressure gauges in sedimentation wells and pressure gauges with submersible hydrostatic pressure sensors

62

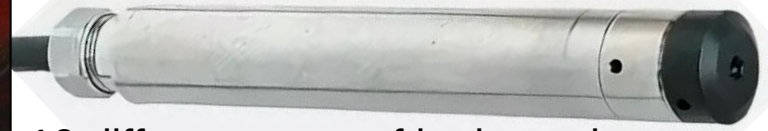
Sea level measurements with only the help of tide poles are carried out 3-4 times a day

26

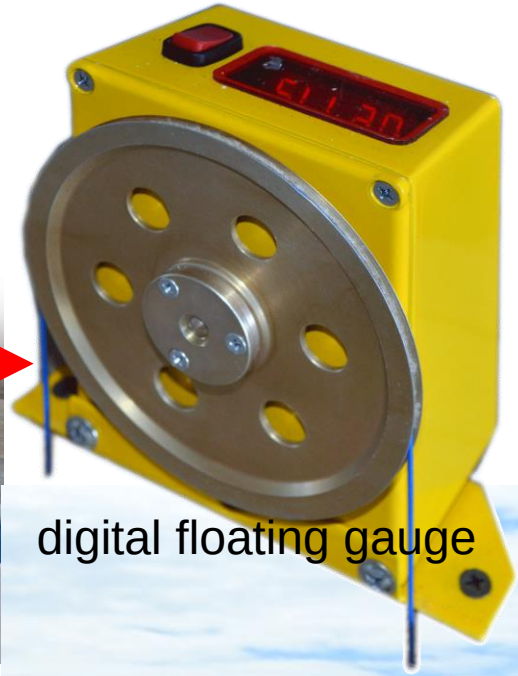
Stations of Tsunami

THE GAUGE DEVICES USED IN SEA LEVEL MONITORING STATIONS

The tide poles at Yuzhno-Kurilsk station



10 different types of hydrostatic pressure gauges are used at the Russian state network (5 – of Russian and 5 or more – of foreign production)



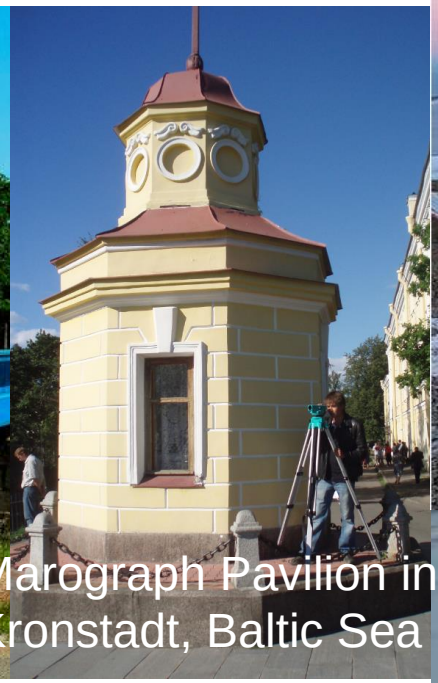
digital floating gauge

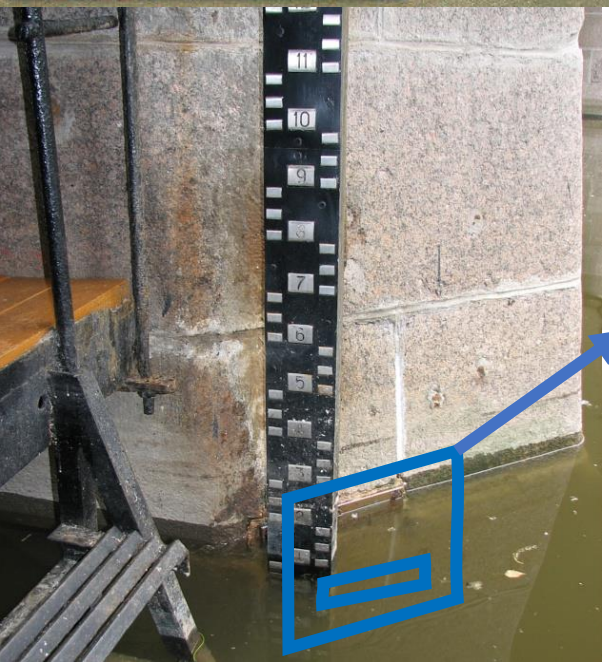
The gauge devices used in sea level monitoring stations:

- poles (mostly) and piles;
- float operated gauges (including digital floating gauges) in stilling wells;
- gauges with submerged hydrostatic pressure sensors.

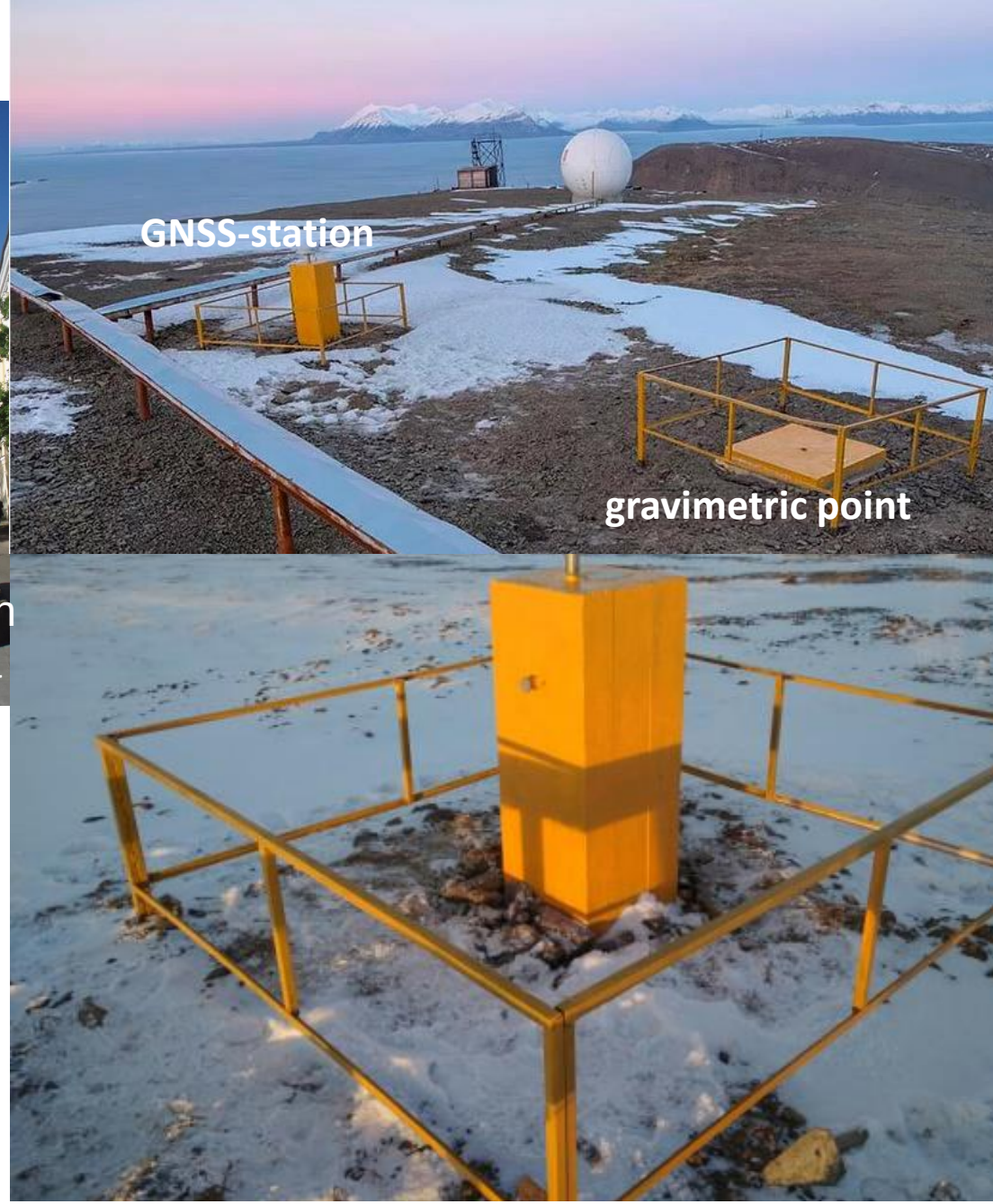
The tide sensors located in the operational availability zone from the regional centers of the Roshydromet, where timely repairs are carried out, are most stable.

HEIGHT DATUM





Heights of all benchmarks in Russia are measured from the **KRONSHTADT DATUM** (plate with a horizontal line in the stone bridge abutment in Kronshtadt) which was equal in past to the long-term mean level of the Baltic Sea in the region of Kronshtadt



GNSS-station at Barinsburg station

SCIENTIFIC AND METHODOLOGICAL SUPPORT

Four scientific institutes of the Roshydromet by region of responsibility:

The State Oceanographic Institute, Moscow (SOI)

The Arctic and Antarctic Research Institute, Saint-Petersburg (AARI);

The Far-Eastern Hydrometeorological Research Institute, Vladivostok (FERHRI)

The Caspian Marine Scientific Research Centre, Astrakhan (KaspMnitz)

Russian standards for measuring sea level

In 2023, SOI, together with AARI and RODC updated the national standard for inspections of the marine network by scientific institutes and regional centers of the ROSHYDROMET. The updated standard regulates the procedure for inspection of automatic tide sensors, as well as the form of technical file of station. This technical file contains all the necessary meta-information about the station, measuring devices, heights of all benchmarks, etc.

RUSSIAN GLOSS CORE NETWORK STATIONS

Station	Gloss number	PSMSL
Barentsburg (Spitsbergen)	231	1948-2023
Dikson	312	1950-2012
Kaliningrad	97	1987-2023
Mirny (Antarctica)	25	-------
Murmansk	274	1952-2023
Nagaevo Bay	92	1957-2023
Petropavlovsk-Kamchatsky	93	1957-2023
Port Tuapse, Black Sea	98	1917-2023
Providenya	309	1951-1983
Russkaya Gavan	99	1953-1993
Tiksi	313	1949-2010
Yuzhno Kurilsk	90	1948-1994

- – active sea level station + GNSS-station;
- – active sea level station;
- – problems with sea level measurements + GNSS-station;
- – problems with sea level measurements;
- – closed sea level station.

For many years on the regular basis, once per year RNODC sends monthly mean values of a sea level from the active Russian GLOSS stations to the Permanent Service for Mean Sea Level (PSMSL). From Petropavlovsk-Kamchatsky station RNODC also sends monthly mean values of a sea level every month to the Hawaiian University in Honolulu.

RUSSIAN GLOSS CORE NETWORK STATIONS

Sea level data from the stations are collected by 15 regional centers of the ROSHYDROMET and in 1-2 years after preliminary processing and quality control are delivered to the **RODC – All-Russia Research Institute of Hydrometeorological Information – World Data Center of the ROSHYDROMET**, the city of Obninsk, Kaluga region.

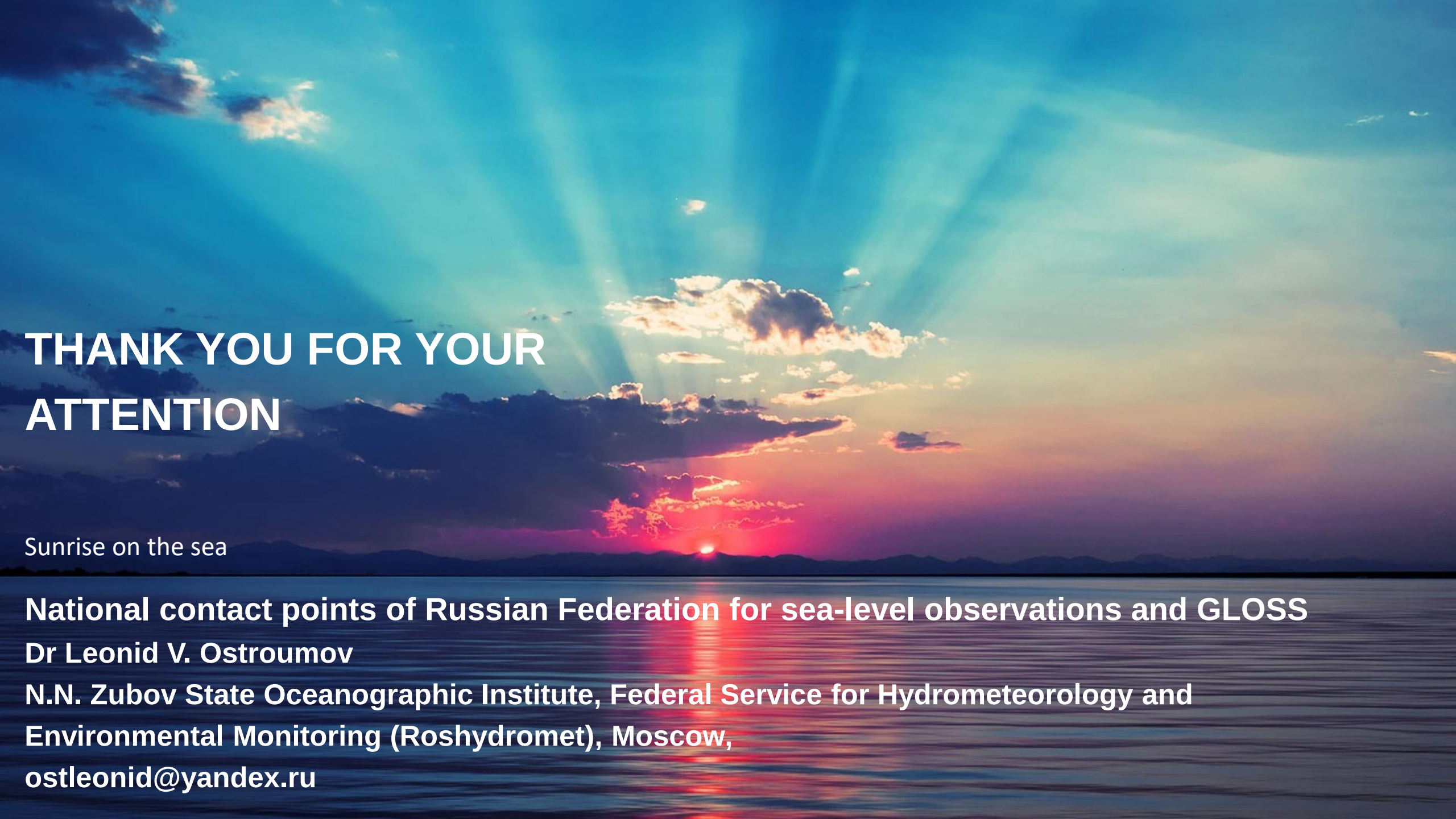
In October 2024, the pavilion with the stilling well and ladder were replaced at the Murmansk marine station, and the pole was reinstalled

New tide sensors have also been installed, which are undergoing testing.

DEVELOPMENT PLAN

In order to improve and develop the marine sea level monitoring network in the Russian Federation, it is advisable to adhere to the following plan.

1. To carry out special control over the preservation of the quantitative composition of existing marine sea-level observation stations.
2. To continue the restoration and repair of the observation infrastructure (mareograph pavilior and stiling wells)
3. To carry out a complex of works on the development and control of the reference poi system included in the infrastructure of the level stations; to level the reference points marine observation points to the Baltic normal height system 1977. Continue th development of the GNSS point network.
4. Continue installing automated level measuring instruments at marine observation points; ensure the smooth operation of automatic measuring instruments, to provide addition sensors for replacement during the metrological certification (verification).
5. To document the operation of tide gauges in accordance with developed national standards.
6. o consider a proposal to update the list of marine stations of the Russian Federatic participating in the GLOSS program.



THANK YOU FOR YOUR ATTENTION

Sunrise on the sea

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

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