

GLONASS stations to be placed in Antarctica

Krasnoyarsk scientists including the SibFU Professor Yuri Fateev have taken part in an expedition to Antarctica aimed at installation of the GLONASS measuring stations developed jointly by the Siberian Branch of the Russian Academy of Sciences, Siberian Federal University and “Radiosvyaz” enterprise.

The first expedition reached the Novolazarevskaya and Progress stations and lasted from 16th December 2014 to 12th January 2015; shortly after it the second one visited the Bellingshausen station from 16th to 25th February 2015. Both trips became possible thanks to the involvement of Krasnoyarsk scientists into a long-term nationally-supported program “Maintenance, development and exploitation of the GLONASS system in 2012-2020”.

The participants of the expedition were:

- SibFU Prof **Yuri Fateev**, Doctor, Doctor habil in Technical Sciences;
- Dr **Andrey Krotov**, Candidate of Science Degree in Physics and Mathematics (PhD), engineer of the “Informational Satellite Systems” corporation;
- representatives from the Arctic and Antarctic Scientific Research Institute (St.-Petersburg).

The expedition was led by the vice-chair of the Krasnoyarsk board of the Siberian Branch of the Russian Academy of Sciences, Prof **Valery Vladimirov**, Doctor, Doctor habil in Technical Sciences.

The purpose of the expedition was installation of the GLONASS measuring systems in Antarctica which are developed jointly with SibFU experts. A ground-based control set is essential for proper functioning of the whole navigation system for the country which accounts for 28 space devices with 4 still kept in reserve.

Installation of the system in Antarctica will help reduce the gap in processing satellite data almost by 4 times, currently it is about 6 hours. It will also improve some navigation characteristics: coverage of the orbits’ arches with measurements, longitude and latitude span of receiving stations.



The idea of placing the GLONASS stations in Antarctica was expressed by Prof **Vladimirov** 10 years ago: *“The measuring stations have been installed on the territory of Russia only, thus we’ve only been able to monitor less than a half of the GLONASS satellites’ orbits. As soon as the Antarctic stations start to function it will become possible for us to control over 90 % of the satellites’ orbits which will lead to a significant rise in the precision of the system”.*

Prof **Fateev** said that the current stage is about preliminary works. *“Since the Antarctic “summer” lasts from December till March and it is the only period when you can reach there, so far the preliminary works have begun only at the Novolazarevskaya and Progress stations. As for the Bellingshausen station, the freight was delivered there only in March restricting us to initial planning works. Next year we are going to equip the stations with provisional block-containers and satellite communication sets”, — Professor noted.*



Assembling of the navigation equipment at the Novolazarevskaya and Progress stations will start in 2 years. Simultaneously the equipment delivery will be in progress to the three more stations: Bellingshausen, Mirny and Russkaya. The works on piloting the measuring stations are supposed to be completed by 2020. Further on it is planned to bring annually maintenance teams which will make sure

the station equipment works properly in Antarctica.

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