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GLOBAL NAVIGATIONAL SATELLITE SYSTEMS: GLONASS AND GPS

МИРОВЫЕ НАВИГАЦИОННЫЕ СПУТНИКОВЫЕ СИСТЕМЫ: ГЛОНАСС И GPS

The objectives of the article are GPS and GLONASS navigation systems. They are mentally separated on the following parts: firstly, the description of GPS and GLONASS will be shown and the structures of both systems will be explained; secondly, the systems' status will be considered. The third idea is devoted to the research that will reveal the difference between Russian and American navigation systems.

In general, both navigation systems are similar. As for GLONASS, it is originally the development of Russian scientists. It has been developing since 1970s, in the former Soviet Union. The Russian denomination of GLONASS is «Global'naya Navigatsionnaya Sputnikovaya Sistema». Like GPS, GLONASS was a national military system, but a little bit later, it was offered to adopt it for a public use.

As for GPS, it is the development of the US Department of Defence. Either GLONASS or the GPS system suppose launching a series of satellites on the Earth's orbit. The standard arrangement is 21 satellites with three reserves. It is called "the standard constellation".

It will be spoken a few words about the history of the Russian navigation system. The first satellite in the GLONASS system was launched on the 12th of October in 1982 from the Baijkonur cosmodrome in Kazakhstan. The first launches were pre-operational.

The target of the research was the comparison of two satellite navigation systems. They are the Russian GLONASS and the American GPS (the same as NAVSTAR). People are supposed to think that GPS and NAVSTAR are two different navigation systems. But there are the similarities and differences between them. NAVSTAR is the English denomination of "The Navigation Satellite Providing Time and Range". While determining a coordinate couple, each system needs at least three satellites to find it out. That is the main similarity of the systems.

The second similarity is that the signal of both systems covers the whole Earth's terrain. It is not exactly correct. NAVSTAR's coverage is bigger than GLONASS's. The statement that NAVSTAR covers the whole territory of the Earth is true, but the same statement about GLONASS is false. The GLONASS system covers about 90% of the territory of Russia and about 60% of other countries.

The next difference between Russian and American navigation systems is about bands. The American and the Russian ones work in different bands. In fact, the GPS system is more common among people and it has more respect, than GLONASS has.

Table 1.

GLONASS and GPS (NAVSTAR): similarities and differences

GLONASS	GPS (NAVSTAR)
both systems need at least 3 satellites to find a signal;	
covers about 90% of the Russian territory and about 60% of the	covers the whole territory of the Earth;

territory of other countries;	
both systems use different bands.	

Thus, it would be added that the American navigation system is really more advanced and easier, but if you love your native country, you can promote GLONASS and make it better.

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