

GLOBAL REFERENCE SYSTEM AND ITS LOCAL REALIZATION – RUSSIAN STATE COORDINATE SYSTEM GSK-2011

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The article highlights the issue of interpreting reference stations networks as a local realization of the global reference system. The substantiation of the proposed approach is given and its advantages are shown. The rationale for the proposed approach is given and its advantages are shown. In particular, the top block in the structure of the formation of the Russian state coordinate system (GSK-2011) is the fundamental astronomical and geodetic network. It is a regional realization of a global reference system. The creation of GSK-2011 was carried out with a focus on the global International Terrestrial Reference System (ITRS) however geodynamic processes affecting the displacement of reference points relative to the center of the Earth's masses play a different role in the time evolution of systems. Such processes in GSK-2011 are not subject to accounting, since the system was created to conduct various types of applied geodetic and cartographic activities in it. In this case, taking into account the constant change in the coordinates of reference points is almost never implied. In this regard, the asynchronous movement of the Russian state coordinate system (GSK-2011) with the global reference system (ITRS) began to lead to inconsistencies in the results of high-precision positioning performed at different times, by different methods. Based on this, the necessity to find a way of matching GSK-2011 to ITRS is urgent. The article presents the rates of change of the match parameters of the above-mentioned systems. These parameters make it possible to match the results of high-precision positioning performed in different reference systems using different methods of positioning for different epochs of the GNSS observations. The experiment carried out in the second part of the article confirms this.

Key words: coordinate system, coordinate system transformation parameters, Global Navigation Satellite Systems (GNSS), GNSS observations, GSK-2011, high-precision positioning, Precise Point Positioning technique, reference station, reference system.

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