PROBLEMS OF MEASUREMENT OF VERTICAL MOVEMENTS BASED ON THE RESULTS OBTAINED IN THE GEODETIC METHODS OF THE INTERNATIONAL GEODYNAMIC SERVICE (IGS)

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Annotation: In this articleYou can get information about the steps and types of several observational activities related to tracking the movement of the Earth. Conducting a comprehensive comparative analysis of the vertical and horizontal motion of the earth is emphasized as a fundamental research of the available information.

Keywords: radius of gyration, speed, density, displacement, vertical, horizontal movement, gravity, gravity, etc

ПРОБЛЕМЫ ИЗМЕРЕНИЯ ВЕРТИКАЛЬНЫХ ПЕРЕМЕЩЕНИЙ НА ОСНОВЕ РЕЗУЛЬТАТОВ, ПОЛУЧЕННЫХ ГЕОДЕЗИЧЕСКИМИ МЕТОДИКАМИ МЕЖДУНАРОДНОЙ ГЕОДИНАМИЧЕСКОЙ СЛУЖБЫ (МГС)

Аннотация: В этой статье вы можете получить информацию об этапах и видах нескольких наблюдательных мероприятий, связанных с отслеживанием движения Земли. Проведение комплексного сравнительного анализа вертикального и горизонтального движения Земли подчеркивается как фундаментальное исследование имеющейся информации.

Ключевые слова: радиус вращения, скорость, плотность, перемещение, вертикальное, горизонтальное движение, гравитация, гравитация и др.

INTRODUCTION

The study of the parameters of the Earth's rotation is currently being studied by scientific research institutes within the framework of the International Earth Rotation Service (IERS). IERS was established in 1988 by the International Union of Geodesy and Geophysics and the International Astronomical Union.

MATERIALS AND METHODS

The mission of IERS is to collect astronomical data on the international parameters of the Earth's rotation, including:

1) Calculation of coordinates and velocities of satellites in space geodesy methods and determination of base coordinate system, such as ITRF2014.
2) Determination of transition parameters between sky and ground support systems.
3) Find the parameters of the Earth's rotation
4) Monitoring of solid body deformation of the earth.
5) Monitoring of surface water variation, sea level, glacier movement.
6) Determination of orbits using Earth satellites.
7) Ionosphere monitoring, etc.

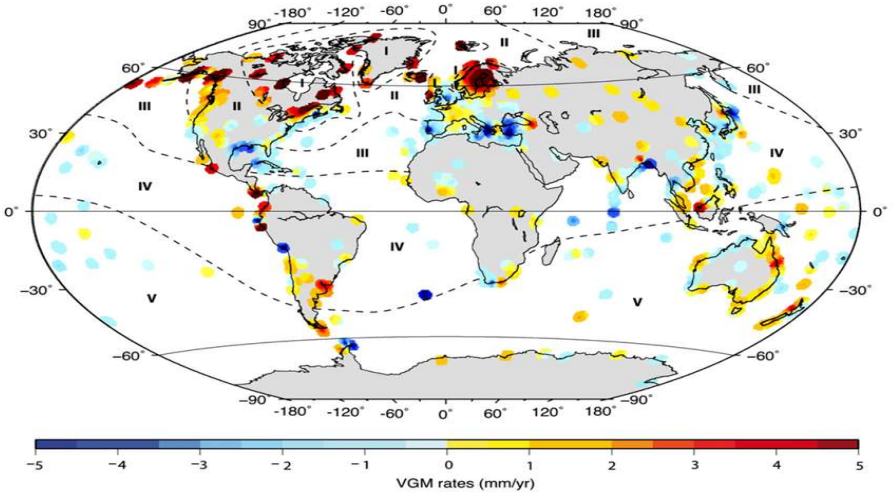
The received information is stored in an archive and is publicly communicated to consumers.

IERS consists of several control centers and includes various observation techniques. Among them are VLBI (High Longitudinal Baseline Interferometry), SLR, LLR (laser location of the moon and satellites). Each technique provides its own coordinate solution, and their

generalization provides solutions for reference coordinate systems, tectonic plate models, and so on.

RESULTS AND DISCUSSION

The International GPS Service (IGS), operating under the auspices of the International Geodetic Association (IAG), officially began operations on January 1, 1994 after a successful pilot project in 1992-1993. IGS is a member of the Federation of Astronomical and Geophysical Analytical Services (FAGS) and operates in close cooperation with the International Earth Rotation Service (IERS).



Vertical rotation speed of the Earth.

The main task of the IGS is to support and provide geodetic and geophysical scientific research through GPS measurements. The widespread use of satellite technology has challenged IGS to provide GPS measurements and other data for government and commercial operations. IGS also develops and implements international standards and specifications for satellite measurements and encourages their use. IGS products support scientific research in the following areas:

Implementation of the International Terrestrial Reference Frame (ITRF)

Solid Earth Deformation Monitoring

Earth rotation monitoring

Monitoring changes in the hydrosphere (sea level, ice sheets, etc.)

Determining the orbit of a scientific satellite

Monitoring of the Earth's ionosphere and troposphere

Time and frequency transmission

IGS' operating products include accurate GNSS satellite ephemeris, station positions and velocities in the global GNSS network, EOP (polar motion and velocities, daylight), and station and satellite clock solutions. Other products derived from the CDDIS GNSS database include tropospheric zenith path delay (ZPD) estimates (both dry and wet components) and global ionospheric maps. IGS think tanks currently provide daily position and speed data for CDDIS; until mid-2012, these decisions were issued weekly. Analysis centers provide data on station positions, velocities, length of day (LOD), and positions and velocities of the X, Y poles, as well as decisions about the location of the geocenter. The IGS Reference System Coordinator extracts

these solutions and creates a combined product, which is then archived in CDDIS in SINEX format. These combined solutions are considered official IGS products that contribute to the International Terrestrial Reference System (ITRF).

Decision summary files are provided by think tanks, in which they describe their analysis methods and strategies, and list processing statistics. Descriptions of the AC analysis procedures and models used are available on the IGS website.

All IGS GNSS work products, including station location solutions, are available in subdirectories of the GPS week. Station position and velocity files are stored in the Solution Independent Exchange (SINEX) format.

CONCLUSIONS

In 2009 and 2013, IGS initiated "reprocessing campaigns" (repro1 and repro2 respectively). IGS think tanks re-processed GNSS data from the global network of IGS stations (1994 to 2007 for repro1, 1994 to 2012/2013 for repro2) to create a fully consistent set of products using the latest models and updated processing. strategies.

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