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Investigation of Pc5 geomagnetic pulsations on two-dimensional network of stations

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Based on data from a two-dimensional network of magnetic stations, a detailed study of geomagnetic pulsations Pc5 with a frequency of ~2.8 MHz, which arose in the afternoon sector against the background of a magnetic storm on August 27, 2014, was carried out. Two-dimensional distributions of magnetic field components Pc5 on the earth's surface were constructed in two intervals (at the beginning of the storm and during the period of maximum magnetic activity). It has been established that ionospheric Pc5 sources (Hall current vortices) have an elliptical shape with a larger axis in the south-north direction. At the beginning of the magnetic storm, the center of a single burst of Pc5 pulsations was located at a geomagnetic latitude of ~67.5° (L ~ 6.8 Re) and shifted westward at a speed of ~0.7 km/s. The estimated size of this ionospheric source is ~150 km in the west-east direction and ~330 km in the south-north direction. During the maximum period of a magnetic storm, Pc5 pulsations are created by two ionospheric sources following one another. These ionospheric sources have a more elongated elliptical shape with axes in the west-east direction ~250 km and in the south-north direction ~680 km. The centers of these sources shifted by 4° to a more southern geomagnetic latitude ~63.5° (L ~ 5 Re) and moved westward at a speed of ~1.7 km/s.