

Continuous 3-component geomagnetic observation in Yona, Okinawa Prefecture at the research and education facility of University of the Ryukyus

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University of the Ryukyus and National Institute of Information and Communication Technology (NICT) are implementing an on-land continuous 3-component geomagnetic measurement as the joint project "Study and development on the geomagnetic-variation measurement in the subtropical area" at Yona, Kunigami Village, Okinawa Prefecture, one of the research and education facilities of the university. The location is 26.76 degrees north and 128.22 degrees east, 12m altitude. The purpose of this study of NICT is to detect the geomagnetic effect due to the space-environment variation such as the solar activity, whereas University of the Ryukyus is aiming at establishing the method of calibration of offshore geomagnetic survey data around the Ryukyu Islands. Geomagnetic horizontal component, declination and vertical component are observed and recorded at this station every one minute. Data from April 1996 up to October 2011 are available as of now although there are several periods of lack of observation. After that, the magnetometer was updated in 2016 and the observation was re-started.

The authors are showing some results of a trial analysis of the on-land geomagnetic observation in 2011. The geomagnetic total force intensity shows a variation of daily variation with 30nT in amplitude, although more than 100nT change takes place corresponding the solar activity due to the occurrence of sunspots (based on the National Astronomical Observatory observation). The result of the spectrum analysis of the data in 2011 shows the peaks of at, 15, 5, 2, 1.3, and 1 day periods.

Geographic Survey Institute of Japan (GSI) is also collecting 3-component geomagnetic data in Okinawa Prefecture, at 26.630 degrees north, 128.127 degrees east, 140m altitude in Higashi Village. Both NICT and GSI data shows positive correlation approximately. However, the NICT values are about 120nT smaller and the change rate shows by about 1.3 times larger compared with GSI values.

Keywords: on-land continuous geomagnetic measurement, calibration of surface-ship geomagnetic data