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Update on MAGDAS Activities in Africa and Around the Globe during ISWI

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The Space Environment Research Center (SERC), Kyushu University has deployed the MAGnetic Data Acquisition System (MAGDAS) at 54 stations along the 210- and 96-degree magnetic meridians (MM) and the magnetic Dip equator, and three FM-CW radars along the 210o MM during the International Heliophysical Year (IHY; 2005-2009) and the International Space Weather Initiative (ISWI; 2010-2012) (see <http://magdas.serc.kyushu-u.ac.jp/> and <http://magdas2.serc.kyushu-u.ac.jp/>). The deployment of MAGDAS began in Africa in the Year 2006, with installations along the dip equator in three countries. In 2008, the 96 Deg. MM Chain was established, running from Hermanus to Fayum. In 2010, a major upgrade was performed on the equatorial stations of MAGDAS. The goal of MAGDAS project is to become the most comprehensive ground-based monitoring system of the earth's magnetic field. It does not compete with space-based observation. Rather, this ground-based network complements observation from space. To properly study solar-terrestrial events, data from both are required.

This project intends to get the MAGDAS network fully operational and provide data for studies on space weather. By analyzing these new MAGDAS data, we can perform a real-time monitoring and modeling of the global (e.g. Sq, EEJ) current system and the ambient plasma mass density for understanding the electromagnetic and plasma environment changes in geospace during helio-magnetospheric storms. In order to examine the propagation mechanisms of transient disturbances, i.e., sc/si, Pi 2, and DP2, relations of ionospheric electric and magnetic fields are investigated by analyzing the MAGDAS magnetic data and the Doppler data of our FM-CW ionospheric radar.

In this paper, we will present update on MAGDAS activities in Africa and around the globe, several scientific results obtained by MAGDAS project, and a coordinated near-earth satellite and MAGDAS observations for space weather during ISWI.

Keywords: the MAGnetic Data Acquisition System (MAGDAS), FM-CW radar, the International Heliophysical Year, the International Space Weather Initiative