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IHY to ISWI: Overview of Results from Geomagnetic Field Measurements in Africa Using MAGDAS

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From the International Heliophysical Year to International Space Weather Initiative, the Space Environment Research Centre of Kyushu University, Japan, installed 14 units of Magnetic Data Acquisition Systems MAGDAS over Africa. Magnetic records from these 14 stations have been employed in various research efforts to obtain interesting results hitherto unknown. Temporal and continental-spatial variation of Solar quiet daily Sq variation in the three geomagnetic field components H, D and Z have been investigated. H field experienced more variation within the equatorial electrojet zone. Day-to-day variability of Sq in H was examined. Twenty four (24) points analysis of numerical harmonic theory is applied to Sq in H, D and Z geomagnetic components in order to extract the amplitudes and the phase angles. A set of normalized percentage harmonics projects the influence of the contributions of each harmonic and the phase angles picture relative timing of their influence. Signature of the Equatorial electrojet over the African sector was identified and examined. The EEJ appear stronger in East than West Africa. Flow gradient do not follow a definite diurnal pattern. There is clear indication that equatorial ionosphere exhibits longitudinal variability. There exists variation in electromagnetic inductive from one station to another. A call is made for continuous deployment of magnetometers in Africa.

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