

VHF Long-distance Propagations observed at Kure using the AIS

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The AIS (Automatic Identification System) is a shipboard broadcast system that acts like a transponder. This system operates in the VHF maritime band around 160MHz and automatically sends the information about the ship. The position reports update as often as every 2-10 seconds. Position and timing information is normally derived from a navigation satellite system (e.g. GPS) receiver.

We have been making the observation of VHF propagations using the AIS at Japan Coast Guard Academy, in Kure-city, Hiroshima, since June, 2005. Long distance propagations over several hundreds of kilometers, however, had not been observed from 2005 through 2006. The receiver antenna was changed from a whip antenna to a Yagi-Uda antenna with a RF amplifier in March, 2007 and several long-distance propagations were observed in summer, 2007. It is supposed that ionospheric extraordinary phenomena, such as sporadic E layer, caused these long-distance propagations, because every case was occurred in daytime in summer. These results would prove a usefulness of the AIS system for the ionospheric observation. Our observation system is a simple and cheap system, consists of an AIS receiver, an antenna and a personal computer. Thus, the observation of VHF propagations using the AIS will contribute to a large area observation of ionospheric extraordinary phenomena, if we make observations using such a system at many sites.