

# The Observation of VHF Long-distance Propagation using the AIS

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The AIS (Automatic Identification System) is a shipboard broadcast system that acts like a transponder. The system operates in the VHF maritime band around 160MHz and automatically sends the information, which includes name, call sign, position, speed, heading, and so on, about the ship. The position reports update as often as every 2-10 seconds. Each AIS system consists of VHF transmitter and receivers, and a standard marine electronic communications link (IEC61162/NMEA0183) and sensor systems. Position and timing information is normally derived from a navigation satellite system (e.g. GPS) receiver. Other information is electronically obtained from shipboard equipments through standard marine data connections.

The AIS data for 19 days, which are obtained by the Tokyo Wan Traffic Advisory Service Center of Japan Coast Guard for May - July, 2004, are used for the feasibility study of the use of AIS system for the study of VHF propagation. Our results show that (1) the longest propagated distances of the AIS radio wave are obviously changed with the day of observation, (2) the AIS radio wave carries over the horizon and the longest propagated distance is longer than 300 km every day, (3) the propagated distance is sometimes longer than 1000km.