Automation of Hong Kong Voluntary Observing Ships

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Normally, meteorological observations on board Voluntary Observing Ships (VOS) are taken manually every 3 to 6 hours by crew members.   To meet the increasing need for timely and high quality meteorological observations over the oceans, national meteorological services commenced operating Automatic Meteorological Observing System (AMOS) on board VOS since the early 2000∅s.   There are now more than 300 VOS (about 10% of the total number of VOS) installed with different types of AMOS in operation worldwide (Figure 1).   These vary from basic drifting buoy transmitting from the deck of a ship; to complex systems with many sensors, which log data and transmit it in real time.   Some AMOS transmit at intervals of one minute, some hourly and some three hourly, and the communications method varies from coastal cellular communications to satellite communications.
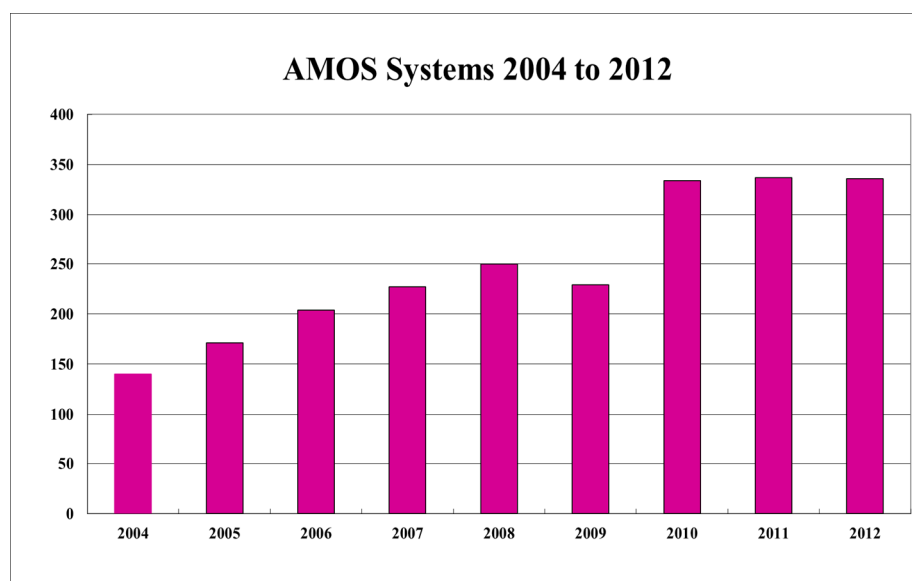

Figure 1. Number of VOS installed with AMOS

In Hong Kong, the first VOS of this kind was implemented in collaboration with the United Kingdom Meteorological Office in January 2013 (Figure 2).   Using satellite and the Global Telecommunications System of World Meteorological Organization, hourly meteorological observations taken by the AMOS on board the Hong Kong VOS are disseminated to users over the world.

Figure 2. The first AMOS installed on board a Hong Kong VOS

With experience gained in operating the first Hong Kong VOS with AMOS on board, a drifting buoy normally deployed to drift over the ocean for continuous automatic collection of meteorological data was modified into a simple AMOS and installed by Hong Kong Observatory on board another Hong Kong VOS for taking hourly weather observations automatically in December 2013 (Figure 3).

For the benefits of the marine community, the Observatory will continue to recruit more VOS with AMOS operating on board.
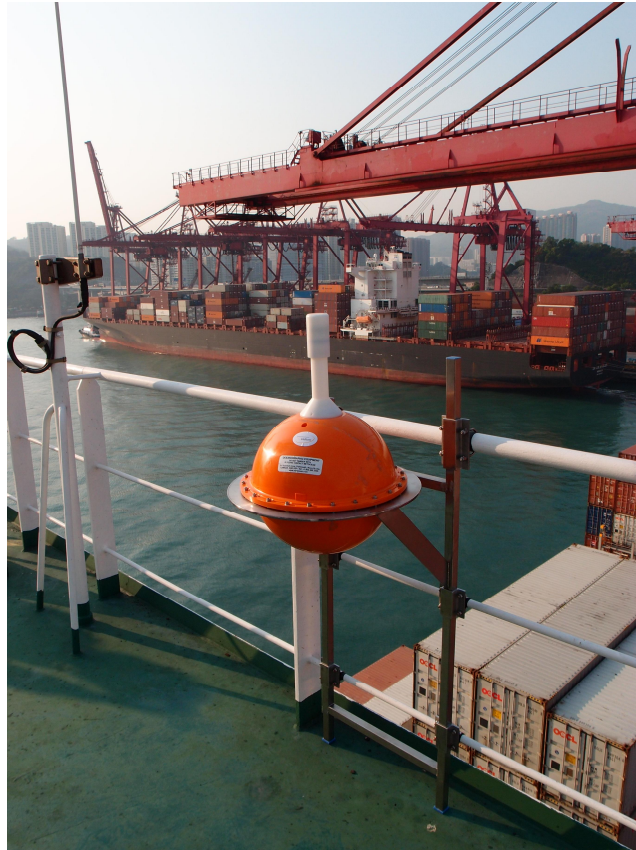
Figure 3. A drifting buoy installed on board a Hong Kong VOS for automatic meteorological observations