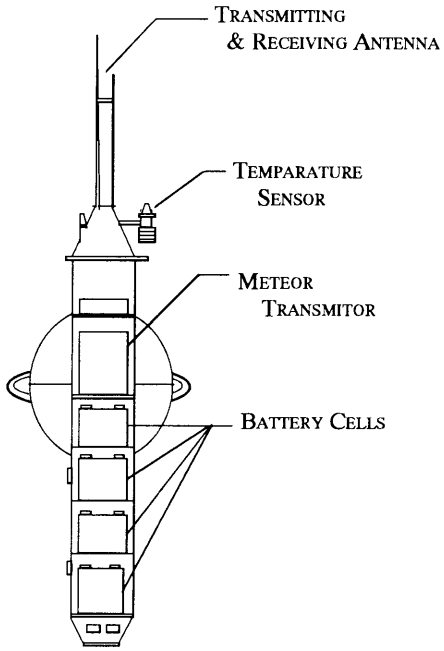
TRANSMISSION OF OCEAN OBSERVATION DATA BY UTILIZING METEOR BURSTS

JHD has been carrying out trial experiments to develop ocean data communication system by utilizing meteor bursts; which is designed to transmit oceanographic data observed with surface drifters to the land station in near real-time.

The whole globe has more than 10 million meteorites per second intruding into the atmosphere. Most meteorites over 10^{-7}g generate pillar shape ionized gasses called "meteor bursts" at altitude levels of 80-100 km due to the friction with the air. Meteor bursts are typically continued to 15 km, rarely up to 50 km in length, 0.5-4 m in diameter.

Meteor bursts make it possible to communicate and exchange data with remote stations located over the horizon (< 2,000 Km), since they work as effective reflectors for low-VHF, which is not reflected at normal ionosphere, until it diffuses within at most a few seconds. The major purpose of JHD experiments is to apply this technology to data acquisition from remote drifters around Japan in the near real-time basis.

The latest experiment in October 1996 was successful to send a part of the oceanographic data observed with a drifting buoy including surface and subsurface temperature and GPS positioning data, through meteor burst communication. JHD will continue the experimental study to examine the reliability of transmission, to collect the information on system performance, and to make a proposal of a practical operational system.



Observation buoy for Meteor Transmission