Meter (DWDM) was developed in order to measure directional wave spectra in deeper water by applying the Doppler principle.

The Japanese coastal wave observation and analyzing system has been operated since 1970 by the Ports and Harbor Bureau, Ministry of Transport and its associated agencies including PHRI under the name of NOWPHAS (National Ocean Wave information Network for Ports and HArbourS, Nagai *et al.*, 1994). Figure 25 illustrates the NOWPHAS offshore stations at present where wave characteristics have been recorded. Then the collected data were analyzed at PHRI. Based on these data, long term variations of sea state and mean sea level rise, and tsunami records have been reported occasionally.

The Coastal Development Institute of Technology (CDIT) was founded in 1983 as an incorporated nonprofit organization operating under the auspices of the Ministry of Transport. The Wave Information Center was established in 1995 in order to provide users with wave information. Thus the Coastal Oceanographic and Meteorological Information System (COMEINS) was developed. This system offers processed information of waves and weather information on an on-line and realtime basis. The sources of the above information are PHRI, JMA (Japan Meteorological Agency) and JWA (Japan Weather Association). As mentioned above, PHRI makes wave observations at 51 offshore stations, and JMA also makes wave observations at 10 stations. Therefore the realtime wave data at 61 stations are supplied to CDIT with wave and wind forecast information from JMA. These oceanographic and meteorological data are transmitted to end-users' displays through exclusive telephone lines. In addition to the above, local wave forecasting service is also available.

6. Dissemination of Coastal Engineering Knowledge

Coastal engineering research activities and coastal engineering works have progressed at a high rate during the past forty years. It is believed that the following important events contributed very much to promoting coastal engineering in Japan as a whole. These events are the Tenth International Conference on Coastal Engineering in Tokyo in 1966 and the Twenty-Fourth International Conference on Coastal Engineering in Kobe in 1994. The former conference can be regarded as the first international conference in Asia in our field, which gave strong influence in encouraging young coastal engineers in Japan and in promoting their research activities. The recent conference contributed very much in introducing the present state of coastal engineering in Japan to coastal engineers from various countries.

In addition to the above, it should be mentioned that the Nearshore Environment Research Center (NERC) Program was conducted in the period of 1975 to 1980 as a multi-institutional research program as stated in the previous section. A lot of field observation data of nearshore waves, nearshore currents, and sediment transport were presented in conjunction with the papers by members of the NERC Program.

Dissemination of available knowledge on coastal engineering discipline has effectively been done in Japan through the annual Japanese Conference on Coastal Engineering and the International Conference on Coastal Engineering. In the case of the NERC Program, international exchange of information was made with Nearshore Sediment Transport Study (NSTS) Program in the United States (Seymour, 1989) in order to encourage beneficial interaction between these two programs during the course of study.

7. Concluding Remarks

In this chapter, the history and heritage of coastal engineering in Japan are described briefly. As stated previously, coastal engineering in Japan entered a new era in 1953. Hence the period under discussion was divided into two periods, namely pre-dawn and post-dawn period. For the pre-dawn period, limited number of contributions were described with their historical background. In contrast, in the post-dawn period, many papers have appeared particularly in the conference proceedings, and it was beyond the author's capacity to review all of them. Hence the subjects and related contents in this chapter are based on the author's personal selection.

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