13th Session of the IOC Group of Experts On the Global Sea Level Observing System (GLOSS)

Liverpool, 30 Oct. ~ 1 Nov. 2013

National Report of Republic of Korea

Chang Minchol, Ko Jimin

Korea Hydrographic and Oceanographic Administration (KHOA)

Address: #351, Haeyang-ro, Yeongdo-gu, Busan, 606-806, Republic of Korea

Email: chamic@korea.kr

Tel: +82-51-400-4231

1. National Sea Level Observation Network

The Korea Hydrographic and Oceanographic Administration (KHOA) has been being operated 85 Korea Oceanographic Observation Network (KOON) since 2001 and will extend to 90 stations in 2013. The network contains 47 tide stations around the Korean peninsula for sea level monitoring, and 35 stations of them supply data to the PSMSL (Permanent Service for Mean Sea Level), which is a component of the UK Natural Environment Research Council (NERC). The details are shown in Figure 1 and Table 1 below:

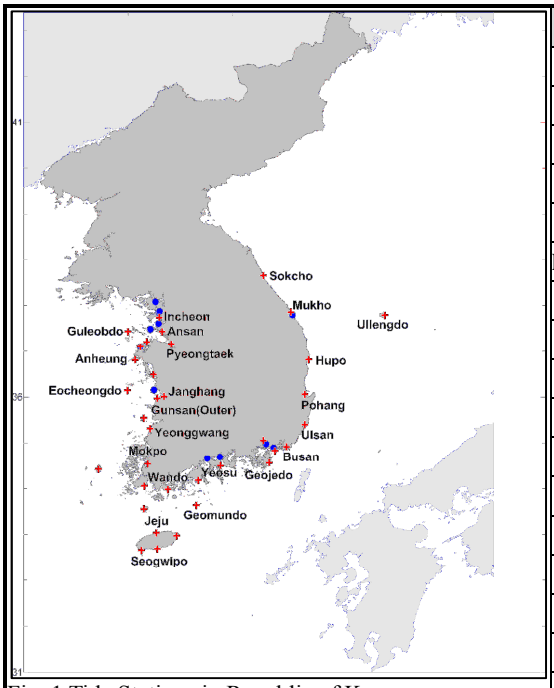

Fig. 1 Tide Stations in Republic of Korea
Red cross : registered at global network of tide gauge of the PSMSL / Blue circle : the rest of tide stations

St. Name	Lat.	Lon.	St. Name	Lat.	Lon.
Anheung	36° 40′	126° 07′	Jindo	34° 22′	126° 18′
Ansan	37° 11′	126° 38′	Masan	35° 12′	128° 35′
Boryeong	36° 24′	126° 29′	Mokpo	34° 46′	126° 22′
Busan	35° 05′	129° 02′	Moseulpo	33° 12′	126° 15′
Chujado	33° 57′	126° 18′	Mukho	37° 33′	129° 06′
Daeheuksando	34° 41′	125° 26′	Pohang	36° 02′	129° 23′
Daesan	37° 00′	126° 21′	Pyeongtaek	36° 58′	126° 49′
Eocheongdo	36° 07′	125° 59′	Seongsanpo	33° 28′	126° 55′
Gadeokdo	35° 01′	128° 48′	Seogwipo	33° 14′	126° 33′
Geojedo	34° 48′	128° 41′	Sokcho	38° 12′	128° 35′
Geomundo	34° 01′	127° 18′	Tongyeong	34° 49′	128° 26′
Goheung	34° 28′	127° 20′	Ulleundo	37° 29′	130° 54′
Guleobdo	37° 11′	125° 59′	Ulsan	35° 30′	129° 23′
Gunsan	35° 58′	126° 33′	Wando	34° 18′	126° 45′
Hupo	36° 40′	129° 27′	Wido	35° 37′	126° 18′
Incheon	37° 27′	126° 35′	Yeonggwang	35° 25′	126° 25′
Janghang	36° 00′	126° 41′	Yeosu	34° 44′	127° 45′
Jeju	33° 31′	126° 32′			

Table 1. Information of tide stations registered at PSMSL(WGS84)

2. Tide Gauges of KHOA

The purpose of sea level observations by the Korea Hydrographic and Oceanographic Administration (KHOA) is to prevent coastal disasters caused tsunami and storm surge. In addition, it is to manage the ocean vertical datum that is basic data for coastal development and harbor construction projects and tide prediction. However, it is recently used to monitor long-term sea level rise caused by global warming.

KHOA first started tide observation at Mokpo in 1952. It is now operating 46 stations as of 2013(Yellow Sea: 22 stations, East Sea: 7 stations, Southern Sea: 18 stations)

KHOA uses float type tide gauges with digital encoders at 28 tide stations and micro-wave (9.4 ~ 9.8GHz) type tide gauges at 19 stations. Each tidal station measures tides, meteorological parameters, sea surface temperatures and salinity in real time (Figure 2 and Figure 3).

<Float Type>

<Microwave Type>

Fig. 2 Type of Tide Gauge

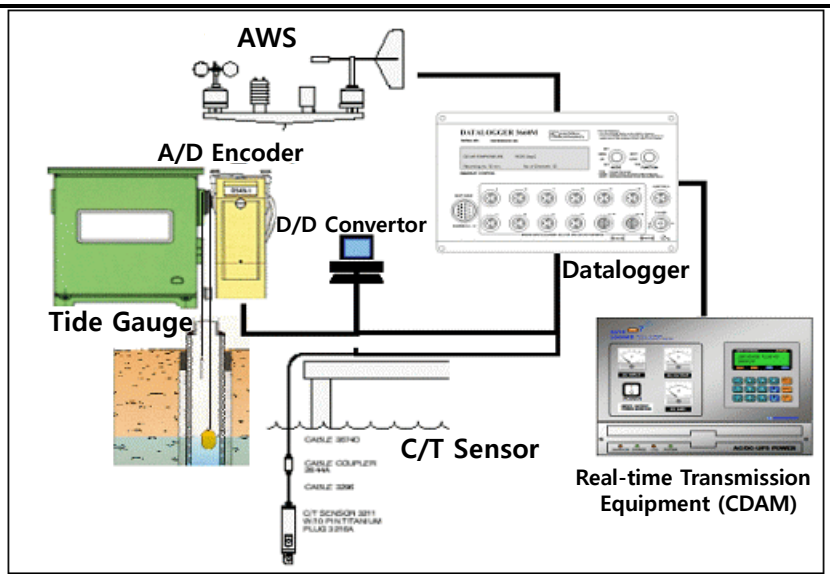

Fig.3 Sea Level Observation System

3. Monitoring Long-Term Sea Level Changes in Korea

Long-term sea level changes are monitored using the tide gauge. Figure 4 shows the time series representation of annual mean sea level. The average rate of the sea level rising is 2.60mm/yr (East Sea), 1.99mm/yr (Yellow Sea), 1.77mm/yr (Southern Sea) respectively from 1969 to 2012. Sea level along the coast of Korea was clear upward trend. Especially the rate of sea level rise near Jeju islands showed 4.67mm/yr (1969~2012) and it is obviously higher than the other areas. Therefore, monitoring long-term sea level changes is important for detecting the global warming.

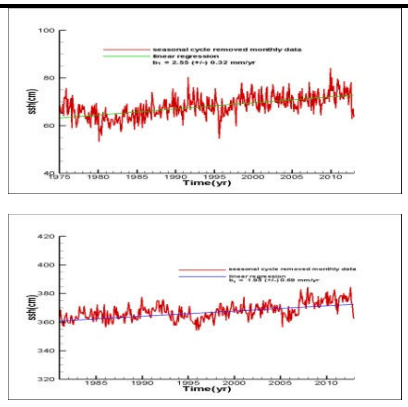

Fig.4 Time series reprentation of annual mean sea level at Busan(upper) and Gunsan(Outer)(lower)

4. Online Databank for Oceanographic Data (www.khoa.go.kr/k-goos)

   In December 2012, KHOA finally established K-GOOS (Korea Global Ocean Observing System) and linked it with NEAR-GOOS to implement international sharing of real-time ocean data. For the sake of data quality, the real time data of 22 stations (tidal stations and ocean stations) are available on this website, and users can download data of the last 72 hours. Furthermore, the location of stations is easily identified using GIS.

   Recently, the Korean government has been placing great importance on making the ocean data and information of the central government, local governments, and government agencies available to the public. A new product using real time oceanographic data combined with weather, transportation and health care information will create considerable commercial value. Therefore, KHOA plans to industrialize a variety of ocean information and generate visible achievements.