

## Chilean Sea Level Network: Current State

The first methodical and permanent observations of the sea level in the coasts of Chile were obtained in the 40s. Ever since, the Chilean sea level network has gradually increased its number of stations, which are located fundamentally in the main ports of the country.

The great extent of the Chilean Coast and the difficult access to some areas in the southern coastline, have been the two main obstacles in extending the network to high latitudes. However, by the end of 1999 the network reached the number of 19 permanent sea level stations located in the mainland, as well as some islands and the Antarctic continent.

The interest to improve the quantity and quality of sea level data collected and the need for timely notifications of anomalous variations in the sea level, as a support to the decision-making process in relation to the National Tsunami Warning System, have been the main considerations that motivated the upgrading of the extensive sea level network.

The upgrading process was initiated in March 1999, and it consisted in the deployment of data acquisition platforms that replaced the dry purged pressure chart recording tide gauge (bubbler type). These new platforms with satellite transmission data capabilities were installed using a standard configuration that include sensors for water column pressure, atmospheric pressure, sea water temperature and air temperature (Figure 1).



Figure 1 : Puerto Montt sea level Gauge (GLOSS Code 178)

The sea level gauge stations of Puerto Chacabuco (Lat: 45° 28' S ; Long: 72° 50' W) and Punta Arenas (Lat: 53° 10' S ; Long: 70° 54' W) were the last ones in being replaced in march 2001 with the same instruments detailed above.

At the moment, Puerto Soberania, Antarctic, (Lat: 62° 29' S ; Long: 59° 38' W) is the only sea level station still operating with pressure chart recording tide gauge.

The current distribution of the Chilean Sea Level Network is illustrated in Figure 2.



Figure 2 : Chilean Tide Gauge Network

## Remarkable Sea Level Stations : San Pedro and Ancud

Some areas of the southern part of the Chilean Coast, from parallel 42°S down are very indented and generally not very populated, representing a severe inconvenience for the installation and operation of sea level stations. The technological advance experimented by the instruments used to monitoring sea level and its greater autonomy allowed the installation of two new tide gauge stations, covering a vast sector of the South American Coast that did not have permanent sea level observations before. The latest additions to our National Sea Level Network, corresponded to the stations of Ancud (Lat: 41° 52'S ; Long: 73° 51'W) and San Pedro (Lat: 47° 44'S ; Long: 74° 54'W) both located over the continental margin providing coverage of coastal sea level changes (see figure 3).

However, the stations of Ancud and San Pedro were not the first to be installed in the area. Since 1945 our Service has been operating Puerto Montt Station (Lat: 41° 29'S ; Long: 72° 58'W) located in an enclosed body of water (Reloncavi Sound). Later in 1993, Puerto Chacabuco station was installed near the head of a typical Chilean fjord. Both stations correspond to important Chilean ports.

Unfortunately, San Pedro Sea Level Station has operated with some interruptions, mainly due to the short daily radiation to provide adequate energy for battery charging. Recently during the last field trip in March 2001, this problem has been solved by our technicians.

On other hand Ancud has been working continuously ever since it was installed.

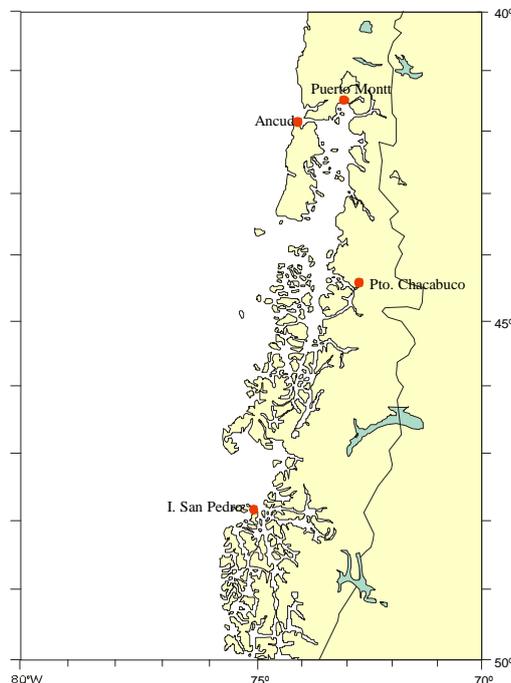


Figure 3 : New tide gauge stations