Report to the Tenth Session of the IOC Group of Experts On the Global Sea Level Observing System (GLOSS)

Chilean Sea Level Network: Current State

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Introduction

Since 1941, the Hydrographic and Oceanographic Service of the Chilean Navy (SHOA) has established a sea level network that presently comprises 19 sea level recorders covering a long coast of more than 4000 kilometers in the mainland, as well as in some islands and in the Antarctic Continent (see fig.1).

During 1999 an extensive hardware upgrading process was initiated. It considered the deployment of 18 data collecting platforms with satellite transmission data capabilities (VAISALA model 555C) and 1 self-contained platform (AANDERAA model 3634) that replaced most of the old dry purged recording tide gauge. However due to logistic problems caused by the short daily radiation providing inadequate energy for battery charging and damages suffered by the DRUCK sensor because of sea storms, the Vaisala platform in San Pedro sea level station was changed during March 2006 by one Aanderaa data collecting platform. At the moment, Rada Covadonga, (Lat. 63º 19'S ; Long. 57º 55'W) and San Pedro, (Lat. 47º 43'S ; Long. 74º 54'W) are the only sea level stations operating with AANDERAA devices.

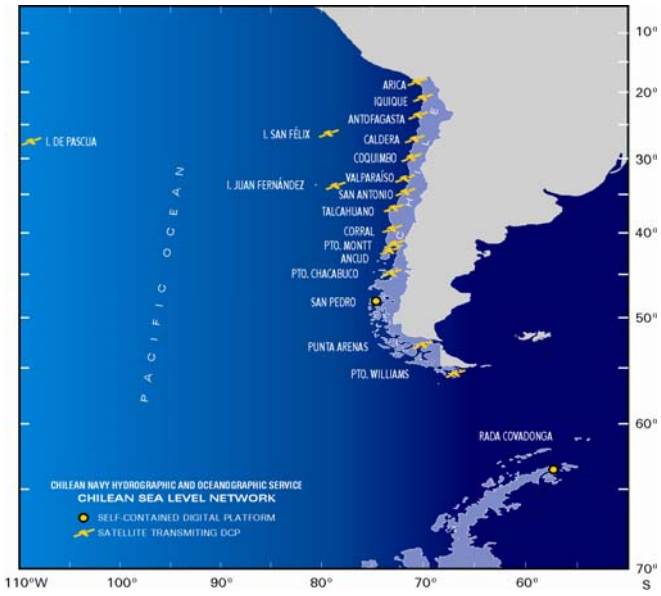

Figure 1 : Chilean Sea Level Network

Status of GLOSS Stations in Chile

The eight Chilean stations that have been considered in the GLOSS core network are as follows :

GLOSS ID.	Location	Status
137	Easter Island Lat : 27º 09' S Lon: 109º 27' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX 1830 Two acoustic sensors Aquatrak • Record Spans : 1970 – 2006 • Gaps : 1980 ; 1982 ; 1983 • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC
174	Antofagasta Lat : 23º 39' S Lon: 70º 24' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX 1830 • Record Spans : 1970 – 2006 • Gaps : • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC
175	Valparaíso Lat : 33º 02' S Lon: 71º 37' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX 1830 Two acoustic sensors Aquatrak • Record Spans : 1944 – 2006 • Gaps : 1971 - 1981 • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC • CGPS data up to 2004, has been sent to UH-IGP
176	J.Fernández Island Lat : 33º 37' S Lon: 78º 50' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX1830 • Record Spans : 1985 – 2006 • Gaps : • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC
177	San Félix Island Lat : 26º 17' S Lon: 80º 07' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX 1830 • Record Spans : 1989 – 2006 • Gaps : • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC

GLOSS ID.	Location	Status
178	P.Montt Lat : 41º 29' S Lon: 72º 58' W	• Field Unit : Currently VAISALA 555C • Sea Level Sensor : Currently Differential Pressure Transducer DRUCK PTX 1830 • Record Spans : 1945 – 2006 • Gaps : • Monthly Height Data up to 2006, has been sent to PSMSL • Hourly Height Data up to 2006, has been sent to UHSLC
180	D.Ramírez Island Lat : 56º 30' S Lon: 68º 43' W	• Non – Operational (closed in 1998) • Record Spans : 1991 – 1997 • Gaps : • Monthly Height Data up to 1997, has been sent to PSMSL • Hourly Height Data up to 1997, has been sent to UHSLC
189	P. Soberanía (Prat Base) Lat : 62º 29' S Lon: 59º 38' W	• Non – Operational (closed in January 2004) • Record Spans : 1984 – 2003 • Gaps : • Monthly Height Data up to 2002, has been sent to PSMSL • Hourly Height Data up to 2002, has been sent to UHSLC

Remarkable issues

GLOSS 137

Easter Island holds our standard configuration of sensors and also has been equipped with two acoustic sensors since 2002 under responsability of the University of Hawaii.

GLOSS 174

Antogafasta holds our standard configuration of sensors.

GLOSS 175

Valparaíso holds our standard configuration of sensors. This station is also equiped with a shaft encoder and two acoustic sensors since 1998 under responsability of the University of Hawaii.

The old bench mark number 7 was removed. Two new bench marks were installed in the vicinity.

GLOSS 180

Diego Ramirez Island is a non-operational station. Equipment was removed during 1998 after informing NOAA about logistic problems in maintaining SHOA's permanent personnal staff on this island.

GLOSS 189

Puerto Soberanía is a non-operational station. The Aanderaa instrument was removed in January 2004 as mentioned above and relocated to Rada Covadonga.

Data Streams

Chile contributes to GLOSS maintaining adecuate data streams to GLOSS archiving Centres.

We have delivered the data up to 2006 according the 3 main data streams in GLOSS:

1) Monthly mean Sea Level to PSMSL
2) Hourly Heights in delayed mode to UHSLC
3) Fast Higher frequency to UHSLC
   Data collected at all the Chilean stations are being downloaded in near real-time by UHSLC.

Future Plans

The implementation of an alternative system for real time data transmission using a Wide Area Network, considering a shorter transmission interval basically as a contribution to the National Tsunami Alarm System operation.

Towards the end of 2007, two VEGA radar sensors will be installed as a pilot plan to analyze the feasibility of incorporating a secondary sea level sensor while maintaining a Differential Pressure Transducer sensor as the primary sea level sensor.

During the first semester of 2008, we will initiate the replacement of the VAISALA 555C model (discontinued by the factory) by the new MAWS 110 model.

Apply for DCP transmission slots through GOES satellite system considering transmissions every 15 minutes or less.