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Introduction/Motivation

Brasil, the largest country in South America, is bordered by a coastline of more than 7,400 km in extent. Economic, scientific and other activities linked to the sea explain the need of an appropriate understanding of this complex environment. Among others, the study of sea level monitoring is a good example of a research activity which provides important and useful information.
Recognizing the importance of the study of sea level, the Diretoria de Hidrografia e Navegacao (DHN), the Brazilian institution designated as coordinator of ocean research in the country, started in 2002, to develop an Implementation Plan for the Gloss Brasil Program.
Aerial view of DHN, in Rio de Janeiro
The Implementation Plan for the Gloss Brasil Program

- The main objective of this Plan is to join efforts of the most relevant Brazilian Institutions that carry out some kind of sea level monitoring, research and application activity. Each member will have its own responsibilities in maintaining one or more sea level stations as well as in making available quality-controlled data for the international sea level centers. The complete group of Brazilian Institutions, which are taking part in this Implementation Plan, is composed by:
(The Implementation Plan for the Gloss Brasil Program...)

1 - Diretoria de Hidrografia e Navegação (DHN)- (coordinator)
2 - Centro de Hidrografia da Marinha (CHM)
3 - Instituto Brasileiro de Geografia e Estatística (IBGE)
4 - Instituto Oceanográphico da Universidade de São Paulo (IOUSP)
5 - Centro de Estudo do Mar da Universidade Federal do Paraná (CEM)
6 - Coordenação de Programas de Pós Graduação em Engenharia da Universidade Federal do Rio de Janeiro (COPPE)
7 - Fundação Universidade do Rio Grande (FURG)
8 - Instituto de Pesquisas Hidroviárias (INPH)
9 - Gerência Geral do Porto de Ponta da Madeira (Companhia do Vale do Rio Doce)
10 - Terminal Especializado de Barra do Riacho - PORTOCEL
11 - PETROBRAS
## Local Sea level Network

<table>
<thead>
<tr>
<th>Station</th>
<th>Responsible</th>
<th>Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fortaleza</td>
<td>IBGE</td>
<td>To be installed</td>
</tr>
<tr>
<td>Suape x Maceio x Natal</td>
<td>TBD</td>
<td>To be installed</td>
</tr>
<tr>
<td>Fernando de Noronha</td>
<td>CHM</td>
<td>To be installed</td>
</tr>
<tr>
<td>Salvador</td>
<td>IBGE - CHM</td>
<td>Active(*)</td>
</tr>
<tr>
<td>Barra do Riacho</td>
<td>PORTOCEL</td>
<td>Active (*)</td>
</tr>
<tr>
<td>Ilha Fiscal</td>
<td>CHM</td>
<td>Active</td>
</tr>
<tr>
<td>Ilha Trindade</td>
<td>CHM</td>
<td>Being installed</td>
</tr>
<tr>
<td>Cananéia</td>
<td>USP</td>
<td>Active</td>
</tr>
<tr>
<td>Imbituba</td>
<td>IBGE</td>
<td>Active (*)</td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ponta da Madeira</td>
<td>CVRD</td>
<td>Active (*)</td>
</tr>
<tr>
<td>Macaé (Imbetiba)</td>
<td>IBGE/Petrobras</td>
<td>Active (*)</td>
</tr>
<tr>
<td>Rio Grande</td>
<td>FURG</td>
<td>To be re-installed</td>
</tr>
</tbody>
</table>
Data Acquisition and Processing Methodology:

In order to follow the GLOSS standards regarding data acquisition and processing, two systems, developed in Brasil, are being evaluated by DHN, UFRJ and IBGE.

These systems are:

- DIGILEVEL;
- MARESCAN.
Ilha Fiscal, Barra do Riacho, Salvador and Macae sites have installed not only the float/well arrangement with an analog recorder but also a DIGILEVEL gauge. This is a result of a research work developed by UFRJ. It resembles an electronic tide staff with sensors spaced 1 cm apart along a staff that is housed in the stilling well.
Digilevel

Control Unit and Data Collector
Ilha Fiscal
setembro a dezembro/2002

Data

Alturas em cm
Linear Fit
Ilha Fiscal : Conventional (x) X Digilevel (y)

Correlation= 0.86
MARESCAN

The CHM is evaluating the software MARESCAN as a tool for scanning analog rolls. This software is easy to use with and has built in quality control checks.
Conclusions and Future Work

During the last seven months, since the beginning of the Implementation Plan for the Gloss Brasil Program, some considerable efforts can be noticed. Salvador site became operational on December 2002 and its data is now under evaluation to be considered in GLOSS standards; Field work was performed in the Oceanic Island of Trindade in order to prepare the structure to receive the equipments for installation of a sea level station. These equipments are expected to be installed by the second semester of 2003.

Also Imbituba, Macaé, Ponta da Madeira and Barra do Riacho sites are being prepared to become effective GLOSS stations.
(Conclusions and Future Work...)

The site in the northeast coast, between Salvador and Fortaleza, as well as Fernando de Noronha station will have its installation processes discussed by July, 2003 and are also depending on the acquisition/donation of new gauges. The DHN will provide training courses to tide station observers and technicians of other Brazilian institutions.

It would be very useful if some data acquisition, processing and archiving course could be provided by the GLOSS community or by the PSMSL to the members of the Brazilian institutions that take part of the GLOSS-Brasil Program.

The process of evaluation of MARESCAN and DIGILEVEL systems will continue and these systems are expected to became useful to the Brazilian community shortly.
Afro-America Gloss News:
http://www.mares.io.usp.br/aagn/ind.html

END