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NATIONAL REPORT OF COSTA RICA

AUTHORS

Dr. rer. nat. Silvia Chacón-Barrantes,
Telephone +506-2277-3617
Fax +506-2277-3616
Cellphone +506-8309-6690
silviachaconb@gmail.com

Programa RONMAC, Departamento de Fisica,
Universidad Nacional,
Apdo. 86-3000 Heredia,
COSTA RICA

José Vega-Vega
Telephone +506 22773253
Fax +506 22773616
Cellphone +506 84522437
Email josevega10@gmail.com

MAPS

Yellow: tidal gauges currently installed.

Orange: tidal gauges to be installed during 2018.

Red: tidal gauge to be installed in March 2018.

GAUGES

Costa Rica currently has four tidal gauges, three at the Pacific Coast and one more at the Caribbean Coast.

In the following table are listed the stations, their code name, coordinates, status, sensors, record and transmission rates:

Name	***Code***	***Lat.***	***Lon.***	***Status***	***Sensors***	***Rec. Rate***	***Transm. Rate***
Los Sueños	losu	9.6499	-84.6663611	Temporary not transmitting	Pressure Aquatrak	1min	5min
Papagayo	papa	10.6420278	-85.656	Temporary not transmitting	Pressure Aquatrak	1min	5min
Quepos	quepo	9.4	-84.1666667	Operational	Pressure Radar	1min	5min
Limón (Caribbean coast)	limon, limn	10	-83.033333	Operational	Pressure Radar	1min	5min

The gauges in Limón and Quepos are from Sutron and were installed by the University of Hawaii Sea Level Center (UHSLC). UHSLC performs maintenance on them every couple of years. Basic maintenance is performed by RONMAC -UNAProgram more often.

The gauges in Los Sueños and Papagayo are from Campbell and have presented problems since their installation in 2014.

FUTURE GAUGES

In March 2018 a new gauge will be installed at Cocos Island, in the Pacific Ocean. This gauge was bought by the National Emergency Commission (CNE) and will be installed by UHSLC in collaboration with RONMAC-UNA Program and IMARES-UCR (Maritime Engineering, Rivers and Estuaries Unit, Engineering Institute, University of Costa Rica). The partnership with UHSLC was achieved through NOAA Tsunami Program. This gauge will have a radar and a pressure sensor and will operate with the same record and transmission rates as Quepos and Limon.

We have two more gauges to be installed in Puntarenas and Golfito, where gauges existed in the past. We have the sensors already and will deploy them during 2018.

GPS

GPS plays a small role directly in our tide gauges. It is used to keep the internal clock accurate and to keep the transmitter frequency accurate. More information can be found in the Sutron Satlink manual.

http://www.sutron.com/documents/satlink2-user-manual-2.pdf

The OVSICORI-UNA (Vulcanological and Seismological Observatory of Costa Rica from National University) owns a GNSS/GPS network of 49 continuous stations. Attached a KMZ file with location of the stations.

Data Availability

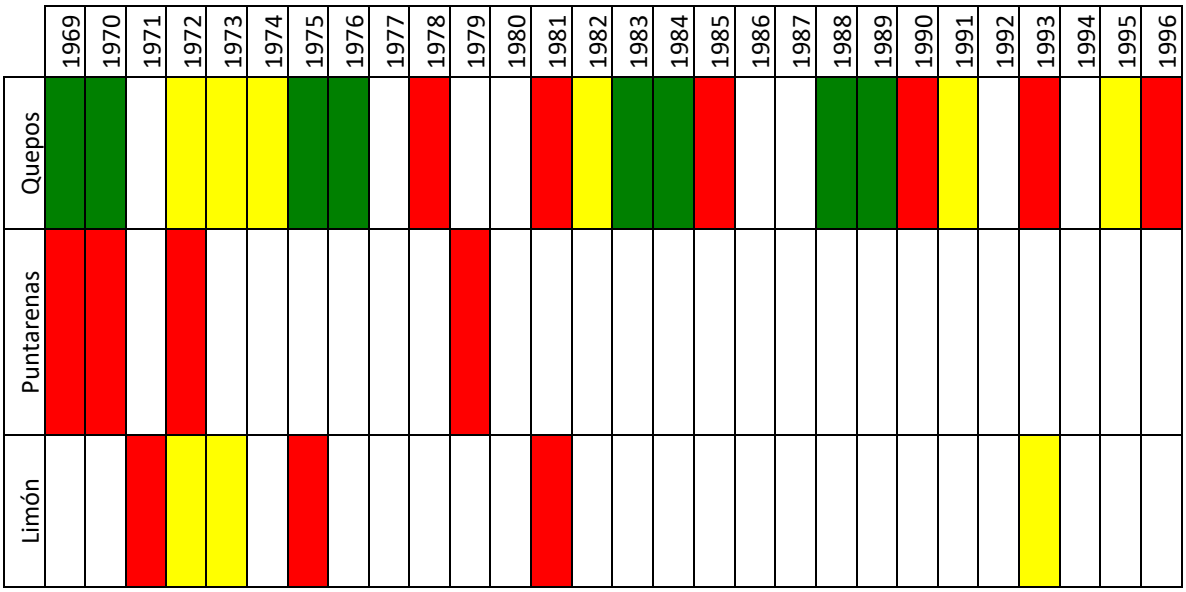
We have the following data:

Hourly averages:

- From 1940 to 1969 at Limón.
- From 1941 to 1969 at Quepos.
- From 1957 to 1969 at Puntarenas.

Paper rolls:

We have paper rolls for Quepos, Puntarenas and Limón, from 1969 to 1996. The following table shows data availability. Green cells show full year of data, yellow cells show more than 6 months of data, red cells show less than 6 months of data and blank cells show no data for the corresponding year.



Digital Data:

Quepos: 1999-2003, 2006-2007, 2009-present

Limón: 1997-2001, 2009-present

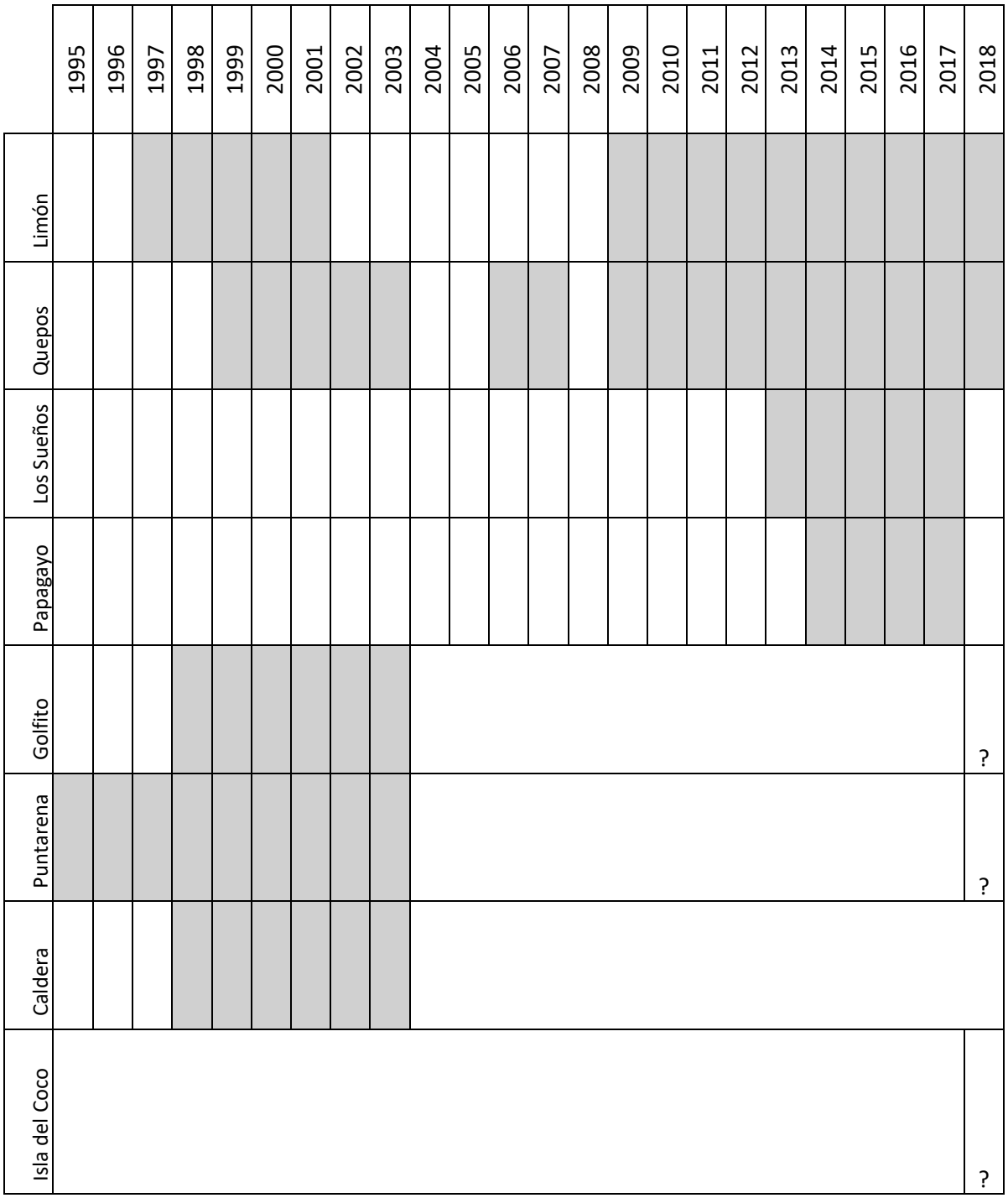
Los Sueños: 2013-present

Papagayo: 2014-present

Golfito: 1998-2003

Puntarenas: 1995-2003

Caldera: 1998-2003



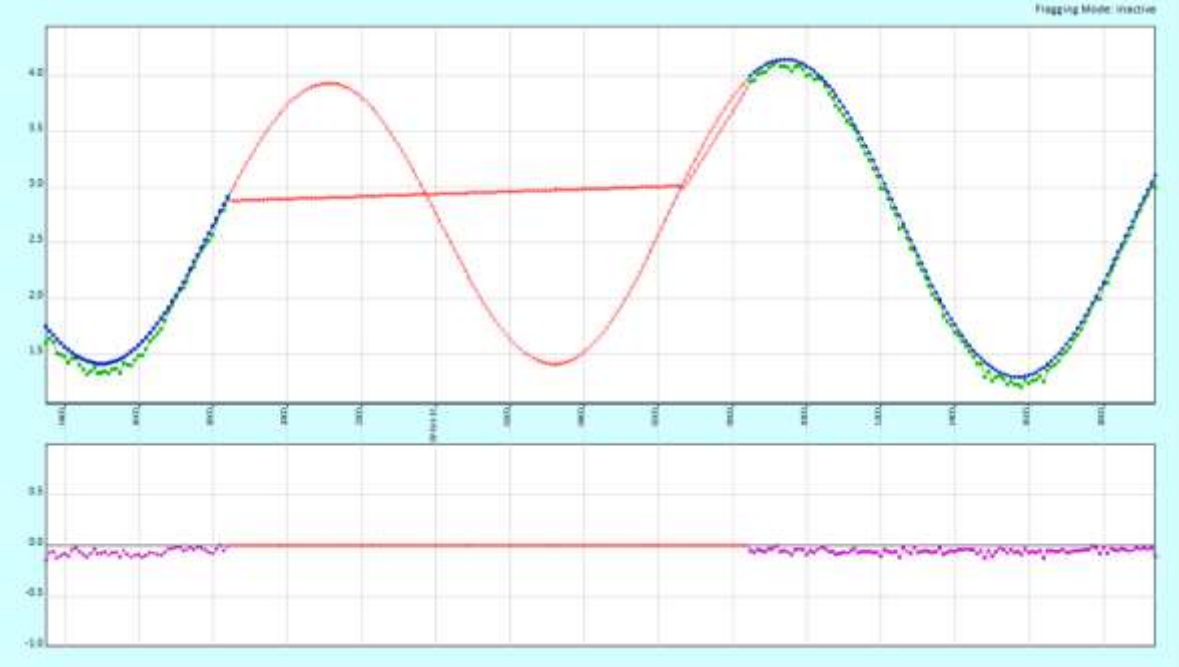
DATA PROCESSING:

Traditionally minimum data processing has been made, consisting only in calculating averages for annual trends.

Recently, tsunami processing has been made, consisting of detecting tsunami records based on dates of tsunamis affecting the Pacific Ocean and Caribbean Sea, and filtering of the records. Several records of historical tsunami were identified and published in:

Chacón-Barrantes S, Gutiérrez-Echeverría A (2017) Tsunamis recorded in tide gauges at Costa Rica Pacific coast and their numerical modeling. Natural Hazards 89(1), 295-311. doi: 10.1007/s11069-017-2965-5

Now, we will begin processing the sea level data on a regular basis and performing quality control:



FURTHER INFORMATION

With the Report's Authors.

All data is available for non-profit purposes. Please contact the Report's Authors.