National Report of Trinidad and Tobago

Tide Gauge Network

June, 2017

Prepared by

- Rameez Persad, Institute of Marine Affairs, Hilltop Lane, Chaguaramas, Trinidad. rpersad@ima.gov.tt
- Dwight Nanan, Hydrographic Unit, Lands and Mapping Division, Frederick Street, Port of Spain. dwightnanan@hotmail.com

Trinidad and Tobago Tide Gauge Network

Tides and their associated tide gauges are installed, operated and maintained in Trinidad and Tobago by the Trinidad and Tobago Meteorological Service, the Institute of Marine Affairs and the Hydrographic Unit (Lands and Mapping Division).

The Trinidad and Tobago tide gauge network consists of the following operational gauges:

1. Port of Spain, Trinidad
2. Cedros, Trinidad
3. Scarborough, Tobago
4. Charlotteville, Tobago

Additions to the network which are currently being installed are at:

1. Point a Pierre, Trinidad
2. Toco, Trinidad
3. Pigeon Point, Tobago

Figure 1 is a map of the tide gauge network in Trinidad and Tobago

All the existing tide stations, and the planned stations use the Microcom GTX loggers and transmit via GOES satellite. The gauges at Port of Spain, Cedros, Charlotteville and Scarborough log and transmit raw water levels, water temperature and atmospheric pressure. The planned additional gauges will log water

levels, water temperature, wind speed and direction, atmospheric pressure, rainfall, humidity, air temperature and solar radiation. The meteorological parameters will be measured through the use of a Vaisala WX510 sensor. All data will be uploaded via GOES satellite.

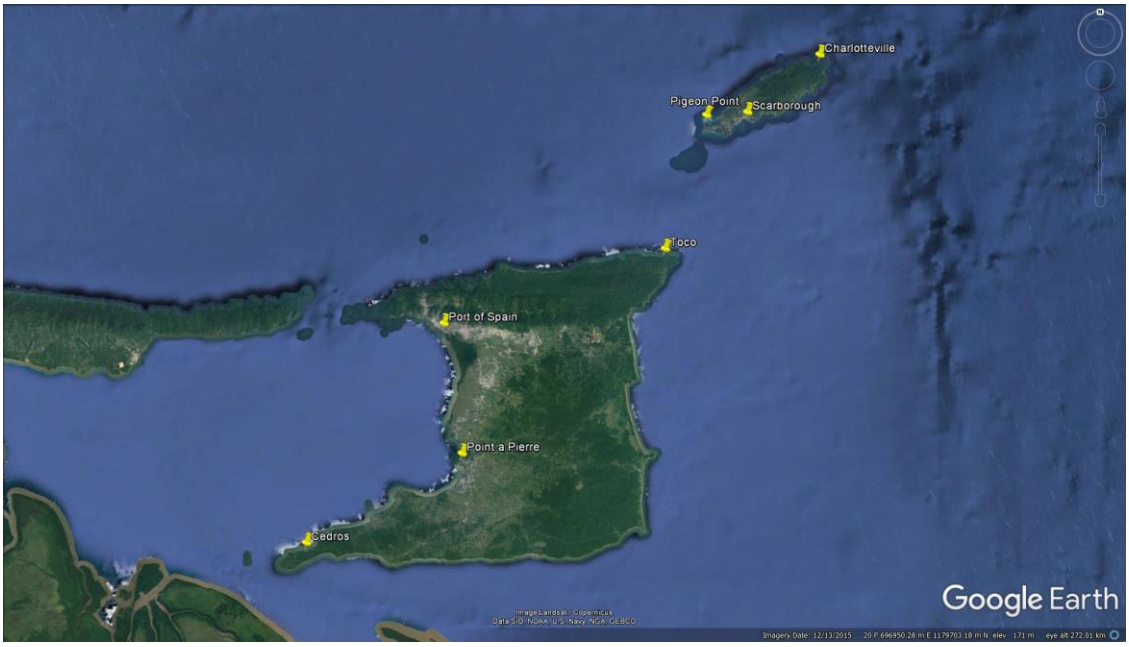

Figure 1 Trinidad and Tobago Tide Gauge Network

Name:	**Port of Spain**
Station Code:	Ptsp
Lat	10.65
Long	-61.51666
Date Installed	2010

Name:	**Cedros**
Station Code:	Cdtt
Lat	10.0940528
Long	-61.8654833
Date Installed	2012

Name:	**Scarbrough**
Station Code:	Scar
Lat	11.1667
Long	-60.7333

Date Installed	2010

Name:	**Charlotteville**
Station Code:	Chrl
Lat	11.316667
Long	-60.55
Date Installed	2010

Details of each station are

Name of Station	**Port of Spain**
Communications	GOES
GOES PID	A9C000B6
WMO Header: N/A	SOTD10
GOES Channel	79
Transmit Period	1 hour
Sampling Rate	10 minutes
GLOSS Station ID	203
DCP	Microcom
GPS (timing)	Yes
GPS (high precision for positioning)	No
Sensor #1	Radar
Met Sensors	None

Figure 2 Port of Spain Tide Gauge

Name of Station	**Cedros**
Communications	GOES
GOES PID	A9C013C0
WMO Header: N/A	SOTD10
GOES Channel	79
Transmit Period	1 hour
Sampling Rate	10 minutes
GLOSS Station ID	
DCP	Microcom
GPS (timing)	Yes
GPS (high precision for positioning)	No
Sensor #1	Pressure
Met Sensors	None

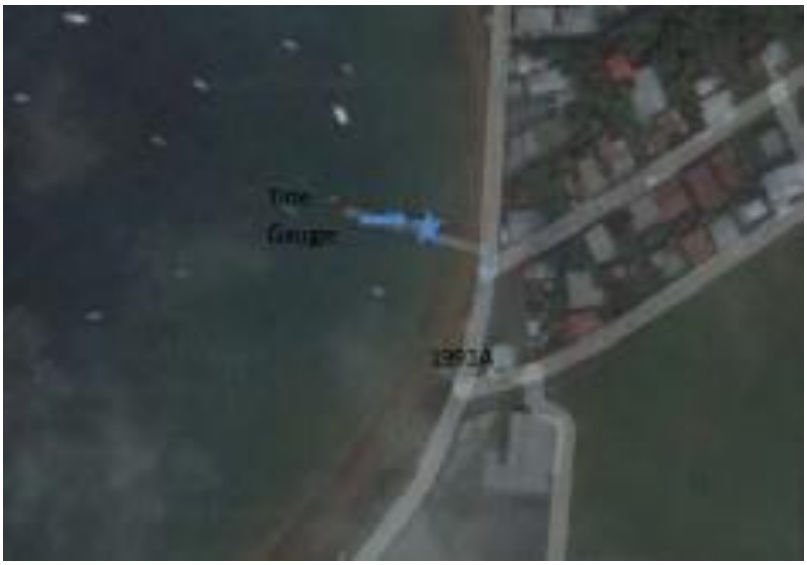

Figure 3 Cedros Tide Gauge

Name of Station	**Scarbrough**
Communications	GOES
GOES PID	A9C0352C
WMO Header: N/A	SOTD10
GOES Channel	79
Transmit Period	1 hour
Sampling Rate	10 minutes
GLOSS Station ID	
DCP	Microcom
GPS (timing)	Yes
GPS (high precision for positioning)	No
Sensor #1	Radar
Met Sensors	None

Figure 4 Scarborough Tide Gauge

Name of Station	**Charlotteville**
Communications	GOES
GOES PID	A9C043BC
WMO Header: N/A	SOTD10
GOES Channel	79
Transmit Period	1 hour
Sampling Rate	10 minutes
GLOSS Station ID	
DCP	Microcom
GPS (timing)	Yes
GPS (high precision for positioning)	No
Sensor #1	Pressure
Met Sensors	None

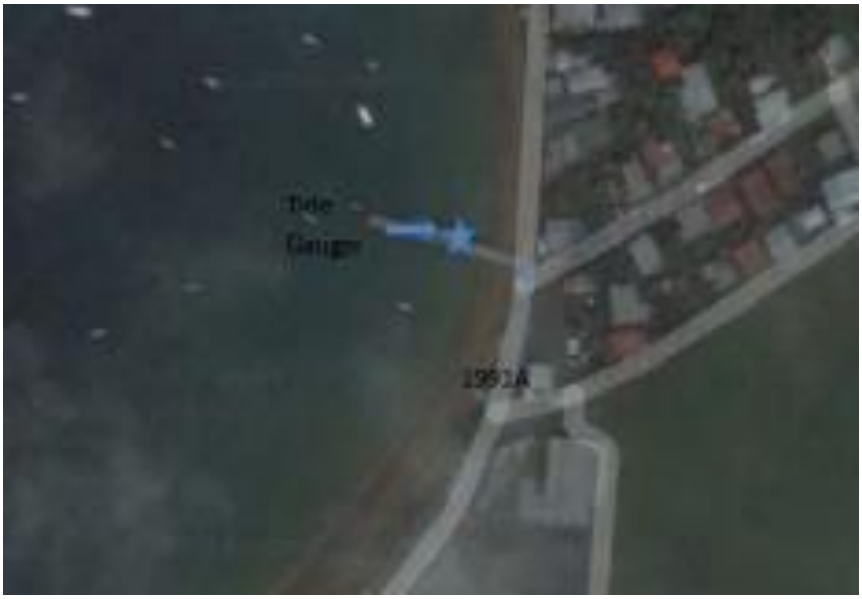

Figure 5 Charlotteville Tide Gauge

Data Accessibility

Data can be downloaded from the following websites for each site:

Port of Spain

http://www.ioc-sealevelmonitoring.org/station.php?code=ptsp

Scarborough

http://www.ioc-sealevelmonitoring.org/station.php?code=scar

Cedros

http://www.ioc-sealevelmonitoring.org/station.php?code=cdtt

Charlotteville

http://www.ioc-sealevelmonitoring.org/station.php?code=chrl

Notes:

At the time of this report the gauges at Cedros and Charlotteville were unresponsive and the situation is currently being rectified.

Data from the current stations can also be accessed in real time from the TideTools Software provided by the IOC.

Quality Control

Benchmarks were established at Port of Spain, Scarborough, Cedros and Charlotteville by the Hydrographic Unit (during 2010-2012) and at Toco and Pointe-a-Pierre by the Institute of Marine Affairs (2016). GPS observations were performed on all the benchmarks, and heights obtained to the Carib 97 and EGM 2008 geoidal models. Levelling was done between the benchmarks and the tide gauge sensors to obtain the vertical relationships. GPS observations and levelling are performed annually at each of the gauges.

To date no quality control procedures have been performed on the data, and the data is provided raw with the exception of levelling between the benchmarks and the sensors to ascertain whether slippage or straining of the sensors have occurred.

Applications of the tide gauge data:

- Obtaining mean values of MSL and CD planes at each of the sites
- References for other short term tidal observations
- Referencing hydrographic surveys

- Port and vessels use the real time tide data for navigation
- Real time and archived data for use by Ministries and Government agencies locally

Scientific Studies and publications;

- At least 3 circulations models for the Gulf of Paria have been developed using the datasets (with publications to follow)
- Two students from the University of the West Indies, St Augustine are about to submit PhD's that used the data with a third in progress (with publications to follow).
- Levelling around the island of Tobago using the Scarborough gauge as a reference.
- As part of the Caribbean Tsunami Warning Programme tide gauge network.