

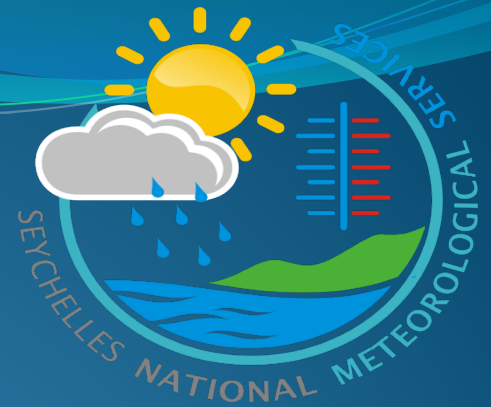
IOC-GLOSS-IOTWS

Training Course for Operators of Sea Level Stations *Bangkok, Thailand, March 17-21, 2014*

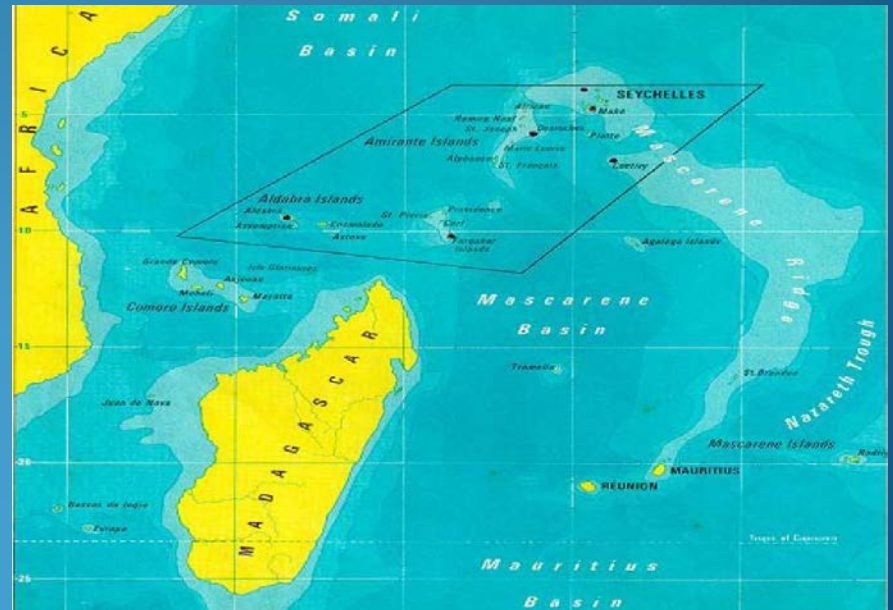
Presenter : Dodin/Jean-Paul, Jeremie

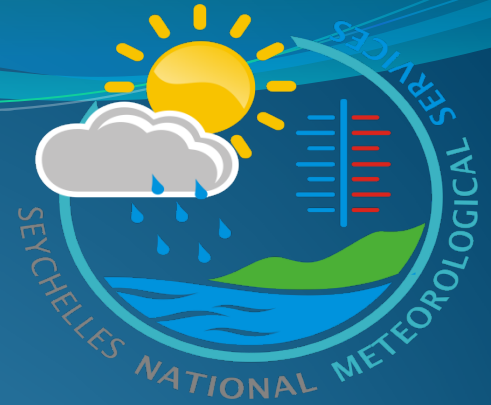
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Located just south of the Equator, the Seychelles archipelago is made up of 115 islands scattered over an exclusive economic zone covering an area of 1,374,000 square kilometers. Forty-one of the islands are granitic and are all found within a radius of 50 kilometers from the main granitic island. The remaining 74 islands are coralline, Aldabra being the furthest located 1150 kilometers to the south-west.



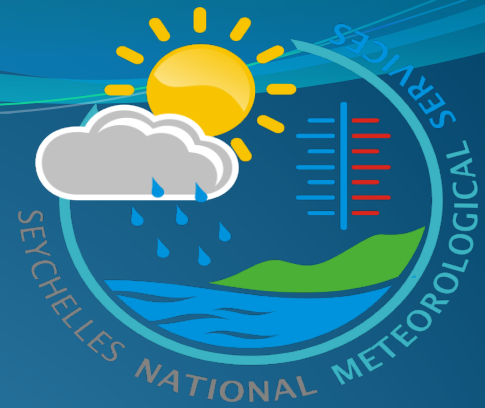


Sea-level measurements in Seychelles dates back to 1962 for Port Victoria. The float stilling-well was back then maintained by the Port Authority of the colonial government.

In 1986, the “Brigade Hydrographique et Topographique de Seychelles” installed a new tide-gauge in Victoria at the Port. It was a QR 16, mechanical autographic type. A year later on 12 August 1987, it was moved to within the headquarters of the Seychelles Coastguards and maintained by the navy personnel.

In 1991 the University of Hawaii Sea level Center (UHSLC) which was carrying forward the objectives of the Tropical Oceans Global Atmosphere (TOGA) Sea Level Center, decided to install an automatic tide-gauge on Mahe , Seychelles.

The objective was to prepare a scientifically valid, well documented archive of hourly, daily, and monthly sea level values in standardized formats that would be readily available to the public and scientific communities.



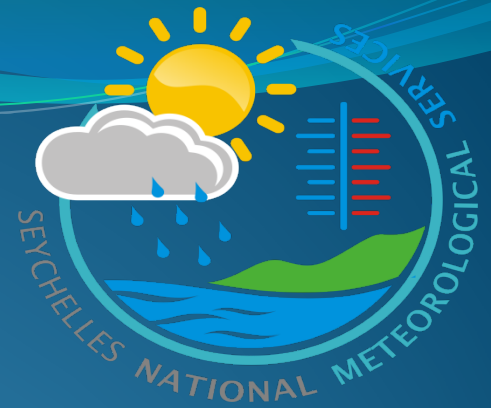
The tide gauge was installed at the International airport at Pointe La Rue and is being maintained by the personnel of the Seychelles Meteorological Services. It has been in continuous operation since January 1993 and provides reliable sea-level measurements directly to GTS via satellite.



1993



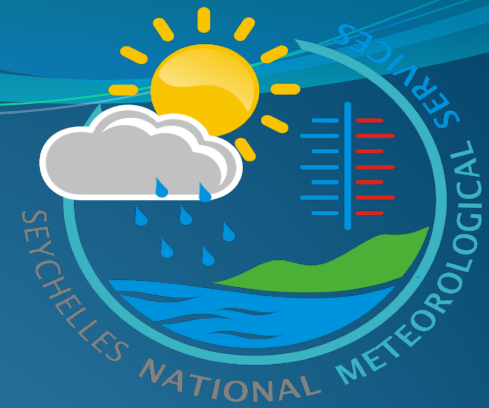
2014



In the aftermath of the December 2004 tsunami which also affected the Seychelles considerably, it was decided that a second tide gauge station be installed in the North of the Seychelles Archipelago and Denis Island was identified as the ideal location.



Denis Island Tide gauge was installed in 2008-2009 through financial support of the UNDP, and involved the Seychelles National Meteorological Service (NMS) and Seychelles Department of Risk & Disaster Management (DRDM).



Technological Overview

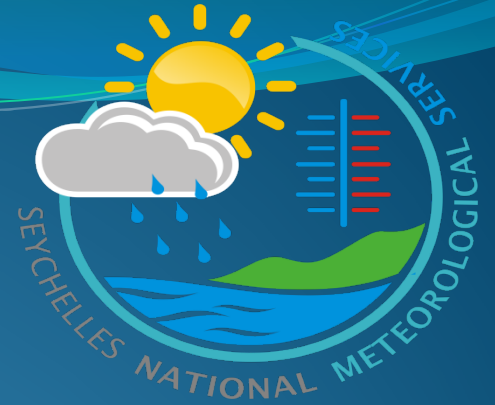
- Pt. Larue Tide Gauge (*Station ID: 12FD90D0*)
- Denis Island Tide Gauge (*Station ID: 26B7620C*)

The tide gauges incorporates modern day instrumentations and technology.

Sensors / Measurement Specifications:			
Sensor type	Sensor Product Type	Transmit / Reporting Interval² (min)	Averaging Interval³ (min)
1. Pressure sensor	GE Druck PTX1830	sample every 3 seconds	every minute
2. Radar sensor	VEGA	Sample every 3 minutes. Sample is an average of the last 3 minutes	internal sample is an average of last 3 minutes
3. Switches	UH Sea Level Center Reference Level Switch	Sample every 30 seconds	every hour
4. Temperature Sensor	Sutron	Sample every 30 minutes	no averaging
5. Encoder	Sutron SDR	Sample every 5 minutes. Sample is an average of the last 5 minutes.	interval sample is an average of the last 5 minutes

SUTRON data loggers are being used for recording measurements from the different sensors and transmissions are conducted with the use of SUTRON satellite transmitter.

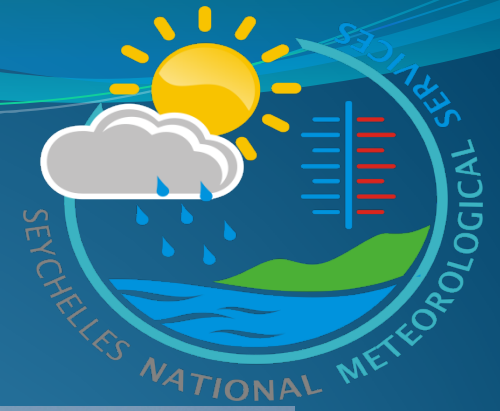


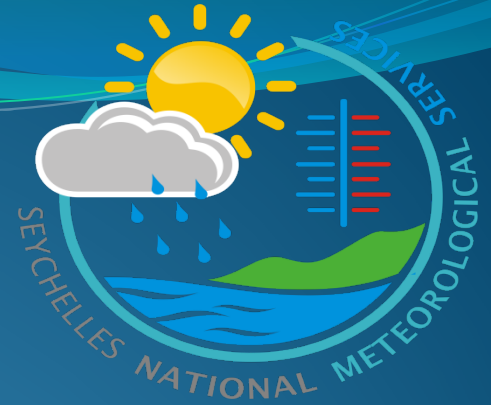


Both tide gauges are equipped with water temperature sensors and the Denis island tide gauge is also fitted with a Vaisala weather sensor (WXT520) and records the following parameters for meteorological purposes;

- Average wind speed (Knots) and direction
- Air temperature (°C)
- Relative Humidity (%)
- Atmospheric pressure (hPa)
- Rain accumulation (mm), duration (sec)



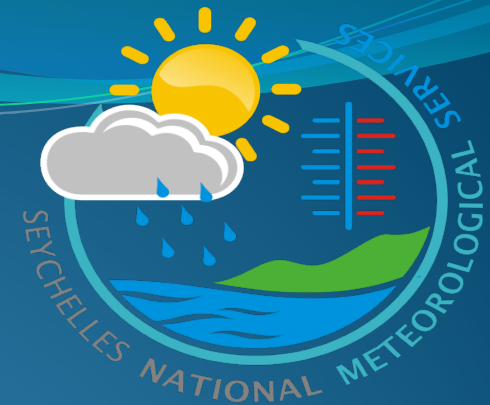




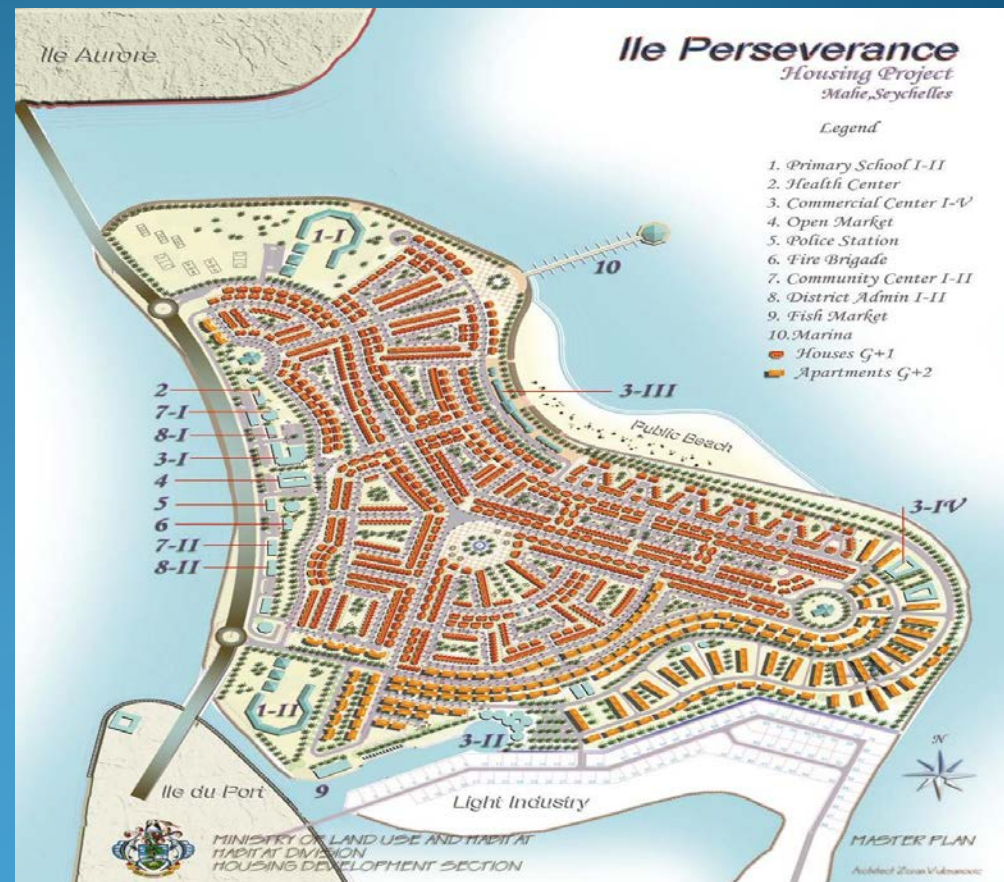
The tide gauge data are collected by the University of Hawaii Sea Level Centre UHSLC, processed and made available in support of climate research at <http://uhslc.soest.hawaii.edu/data/download/rq>

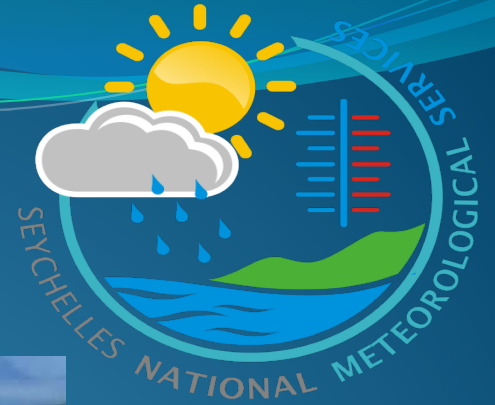
The data can also be accessed via the sea level station monitoring facility website <http://www.ioc-sealevelmonitoring.org>

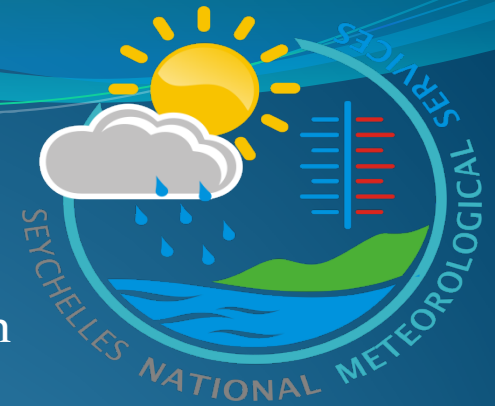
The permanent service for mean sea level website <http://www.psmsl.org/>



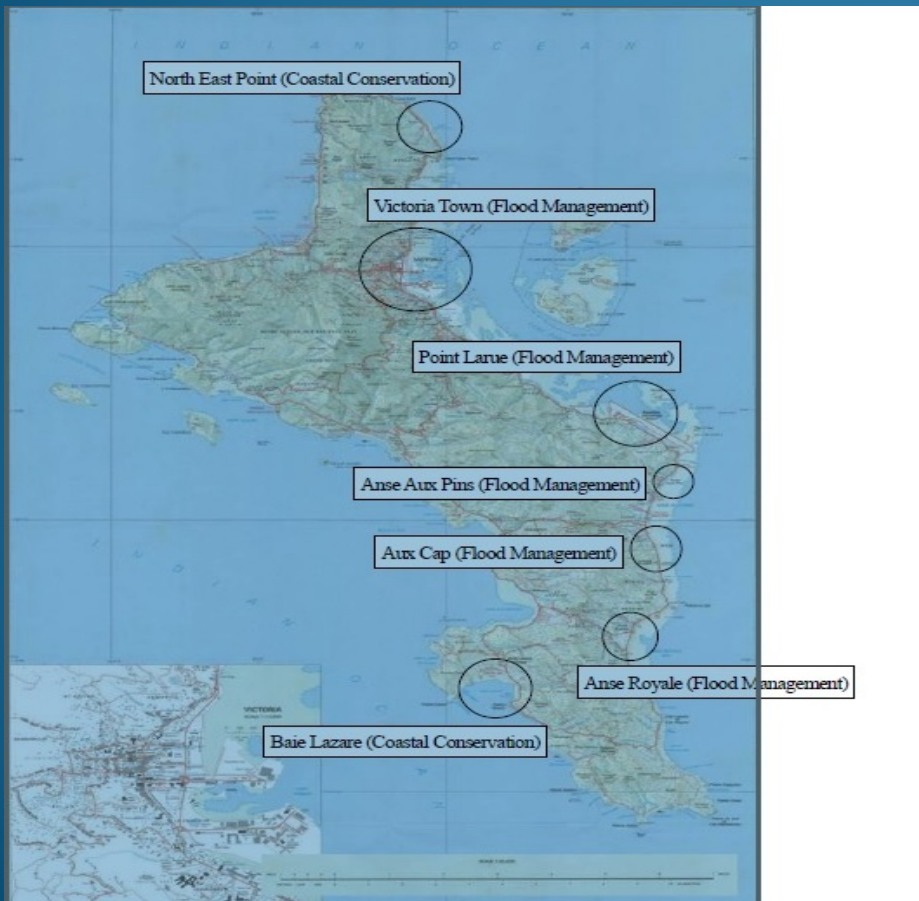
The gauges provides reliable data for long term sea level monitoring, tsunami monitoring, tidal prediction for Port Victoria, in coastal management research e.g. prior to reclamation projects.

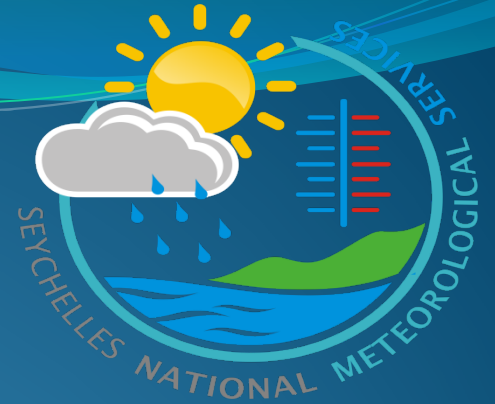






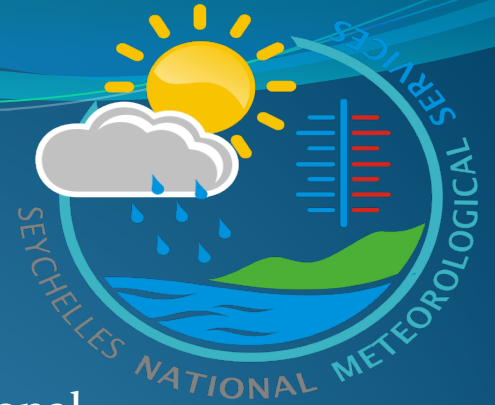
Lately tide gauge data has been use amongst other data in the study of flood control management in the Seychelles by foreign consultants.





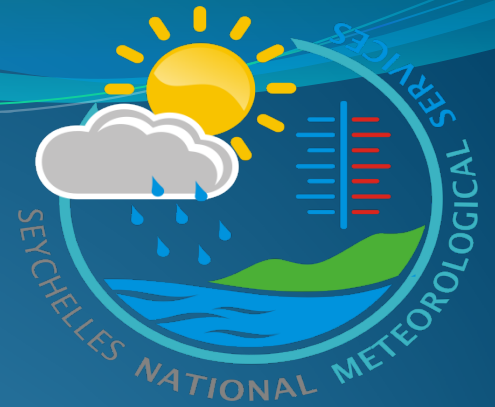
GPS/GNSS station in the Seychelles

The Seychelles National Meteorological service is currently hosting and maintaining the infrastructure for 2 receivers of the REGINA (REseau Gns pour l'Igs et la Navigation) and DORIS (Doppler Orbitography and Radiopositioning Integrated by Satellite) network operated by CNES (Centre National d'Etudes Spatiales) and IGN (Institut Géographique National) of France.



The DORIS has been operational in the Seychelles at the National Meteorological Service since June 2001 and was recently upgraded and slightly relocated for better coverage in 2012. The REGINA Trimble NetR9 GNSS Reference Receiver was installed within safe distance at the same site in 2012.





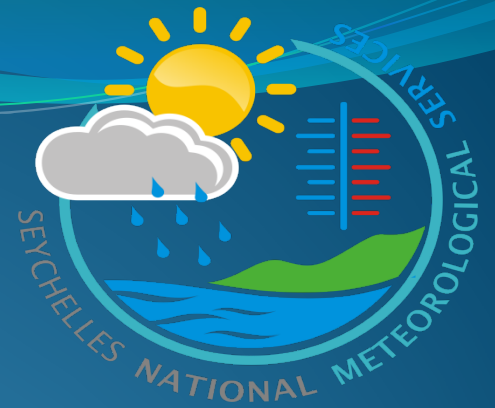
The REGINA & DORIS are both located in vicinity of and are referenced to the tide gauge bench marks.



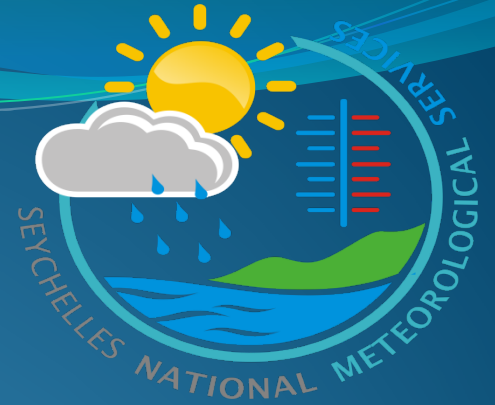
Pointe Larue
Tide gauge

REGINA

DORIS

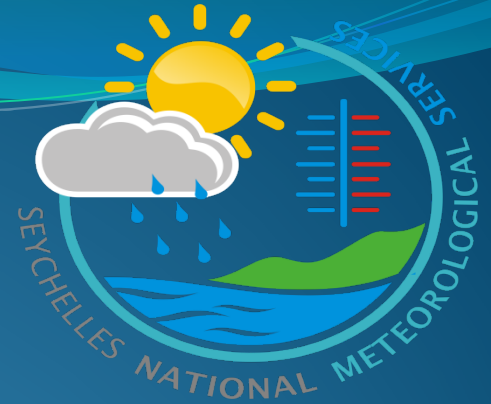


The stations are about 500 meters away from the tide Gauge station.



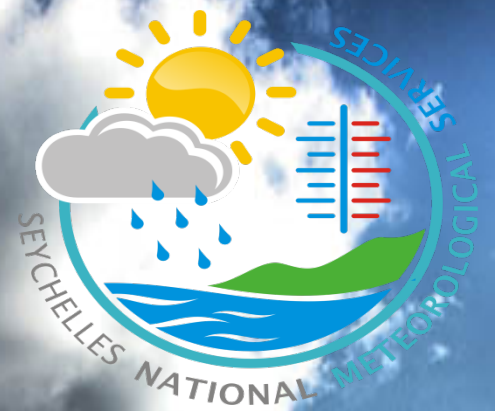
The REGINA Trimble NetR9 GNSS Reference Receiver data are not stored locally but rather push using File Transfer Protocol to IGN (French National Institute of Geographic and Forest Information) server via a dedicated internet connection.





The detailed DORIS site logs are available on the International DORIS Service (IDS) website at <http://ids-doris.org/network/sitelogs/station.html?code=MAHB> .

Access to data file and plots of time series of station positions are provided by IDS Analysis Centers at <http://ids-doris.org/network/ids-station-series.html#MAHB>



Thank You.