National Sea Level Report of Seychelles

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1.0 Background

The Seychelles National Meteorological Services is presently the main organization responsible for Oceanographic Observations under the GCOS programme. The only oceanographic observations are tide, sea level monitoring and sea temperature measurement (GLOSS). Further marine and oceanographic activities are carried out by other organizations, such as Seychelles Centre for Marine Research and Technology (SCMRT), (which was developed from the Shoals of Capricorn programme), Seychelles Coast Guard (SCG) and Seychelles Fishing Authority (SFA). Presently, Seychelles does not have any programme that supports Voluntary Observing Ships (VOS), Ship of Opportunity Programme (SOOP), and Automated Shipboard Aerological Programme (ASAP), drifting buoys, and moored buoys and sub-surface buoys (Argo Floats).Figure 1 shows Seychelles as part of the global sea level network.

1.1 Tide Gauges (GLOSS)

The Pointe La Rue tide gauge was installed on 11th January 1993 and located at 04° 40.3'S and 055° 31.7'E. The tide gauge with GLOSS No. 273, Toga I053, NODC II 30054502 replaced the old tide gauge located at the Port Victoria. It is a float/well, Handar 436-A, Encoder 436-B. It samples every one minute and transmit the data to University of Hawaii every 15 minutes.

The gauge was a contribution of the University of Hawaii Sea Level Centre in Honolulu as part of the network to monitor sea level globally (fig 1). It was installed by personnel from the University of Hawaii. It is now under the responsibility of the Meteorological Office.

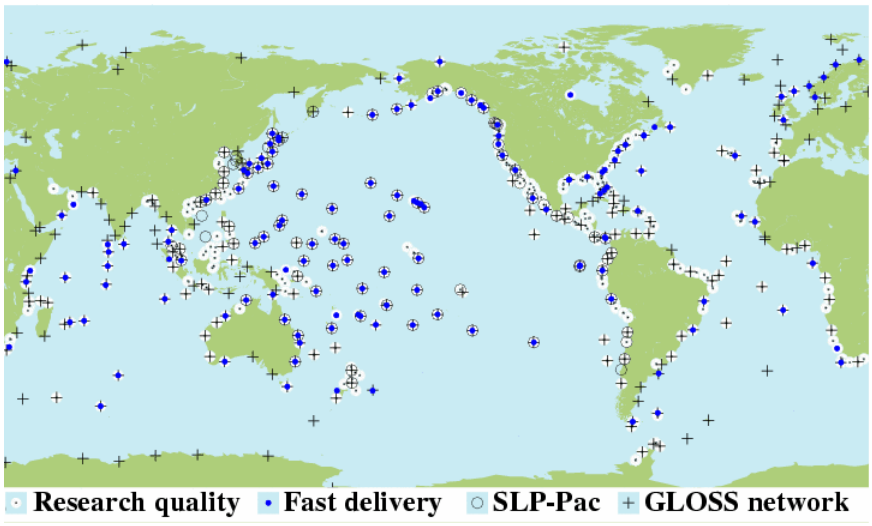

Fig 1: Seychelles as part of the global Sea level network

Fig 2: GLOSS tide gauge location at the Seychelles International Airport

Fig 3: GLOSS tide gauge location at the Seychelles International Airport indicated by the red circle

It has been in continuous operations since January 1993 and provides real-time, reliable sea-level measurements directly to UHSCL via satellites. The data are immediately disseminated worldwide on the World Meteorological Organization (WMO) Global Telecommunication for Meteorological Data Distribution (MDD).The data sets are submitted annually to the World Data Centre-A for Oceanography. The archive of daily and monthly data is also maintained on line with access through the World Wide Web and FTP. Figure 4 shows a birds eye view and close up (fig 4) of the tide gauge located on a small jetty at the Seychelles International Airport.

Fig 4: GLOSS tide gauge at Seychelles International Airport

1.2 Sea Level data from University of Hawaii

Fig 5 below illustrates the different types of data which can be viewed and downloaded from the University of Hawaii website

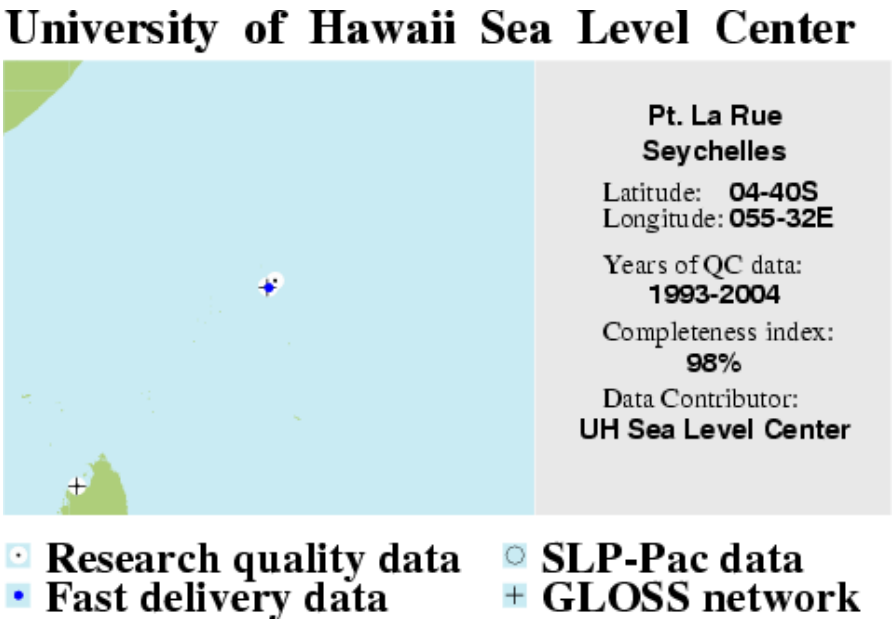

Fig 5: Interactive website at University of Hawaii for Seychelles sea level data

For example research quality data at Pt. La Rue consist of monthly, daily and hourly data sets. Figure 6 shows a plot of the monthly sea level data at the Seychelles International Airport.

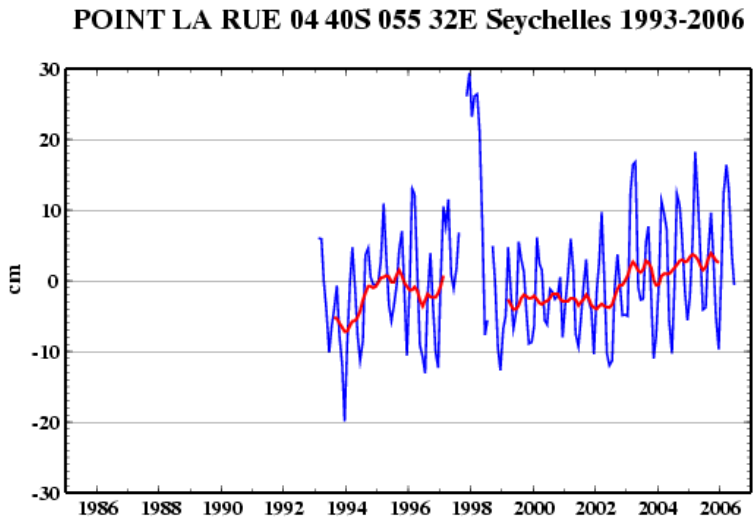

Fig 6: Monthly sea level data at the Seychelles International Airport from1993

1.3 Replacement of Floating Tide Gauge

It was already planned for the existing floating tide gauge instrument to be replaced in early 2006.The 26th December 2004 tsunami damaged further the jetty foundation of the tide gauge (fig 7). The tsunami signal was successfully detected by the floating tide gauge (fig 8). In line with the global initiative, a new tide and more 'tsunami sensitive' gauge was installed (fig 9) by the University of Hawaii. It is part of the Indian Ocean tsunami Warning System. It consists of a radar, pressure and floating sensor. The radar sensor samples every 1 second and averages the data over one minute. The pressure and the float sensors measure every 1 minute interval. The data is transmitted every 15 minutes to Hawaii University through the Meteosat 7, and GOES satellite. Fig 10 shows the real time data of the new GLOSS tide gauge from the University of Hawaii website.

It will run parallel with the existing tide gauge for a period of 12 months for calibration purposes. A building structure helps to house the new instrument.

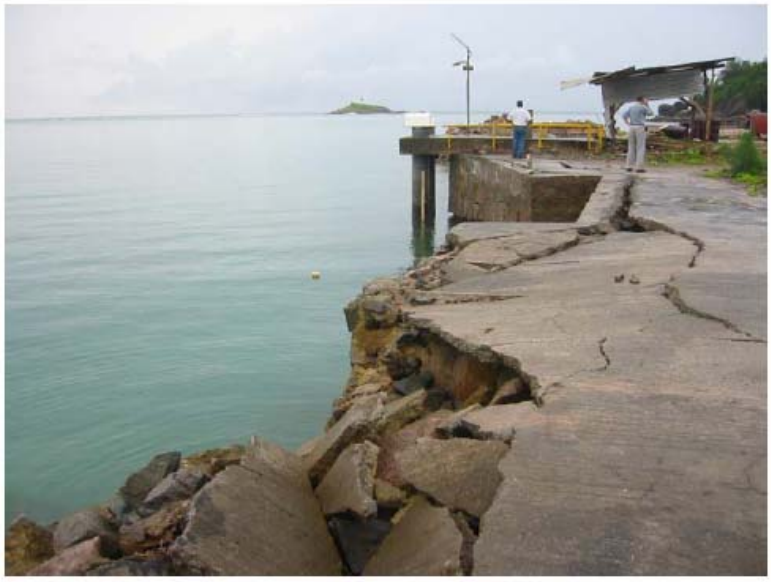

Fig 7: Structural Damage by the tsunami, 2005

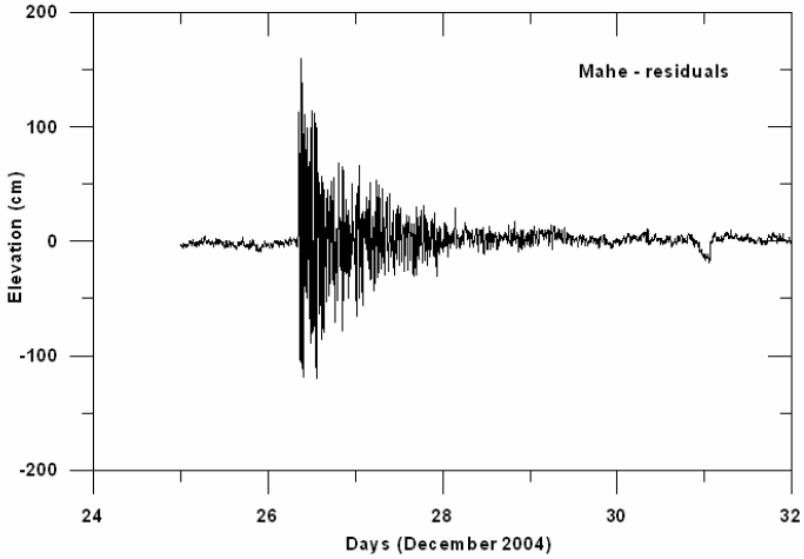

Fig 8 : Residual of tide signal showing tsunami wave

Fig 9: Building housing new tide gauge as part of the Indian Ocean Tsunami Warning System

Real time data can also be viewed from the interactive website. An example of real time data is shown in fig 7. One can also view the sea level data for the previous 4 days.

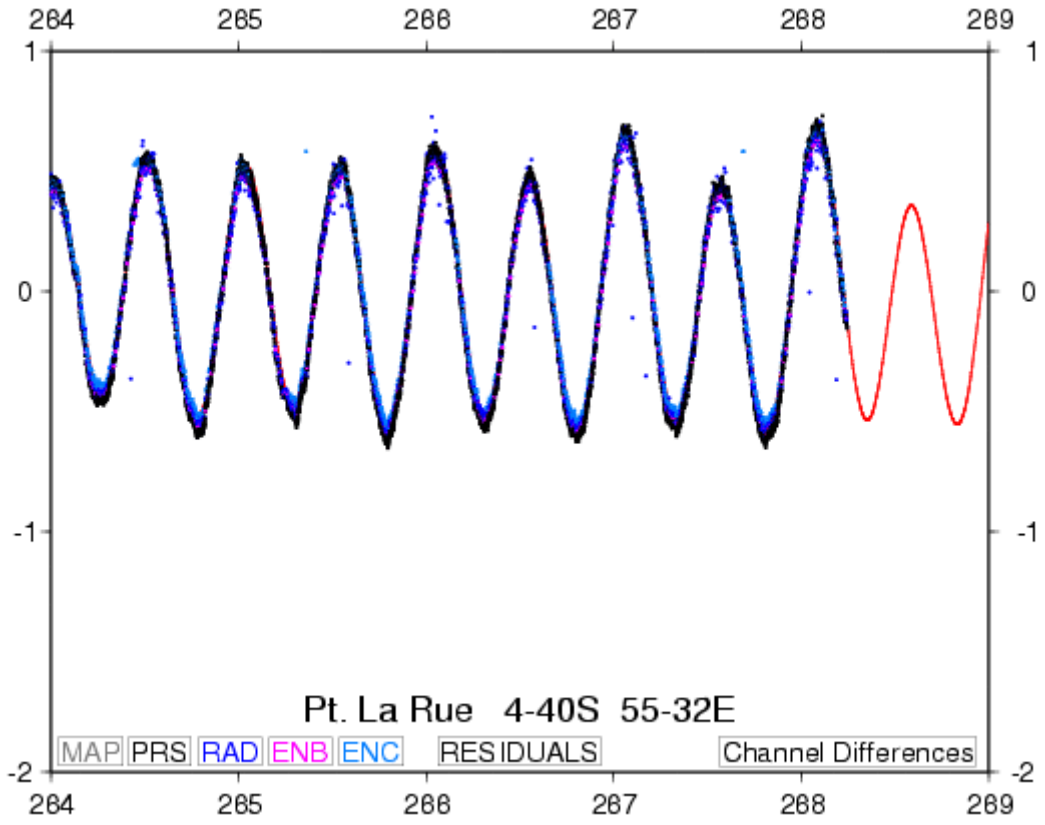

Fig 10: GLOSS new radar, pressure and float sensor at the Seychelles International Airport.