

UPDATE 4 St. Eustatius - November 2019

Webpage

In the past months KNMI has developed a webpage dedicated to the volcanoes of St. Eustatius and Saba. You can find this webpage at: <http://www.knmidc.org/volcanoes/>. It contains information about the monitoring and setting of the volcanoes and the monitoring data can also be viewed. Please feel free to make suggestions for improvements!

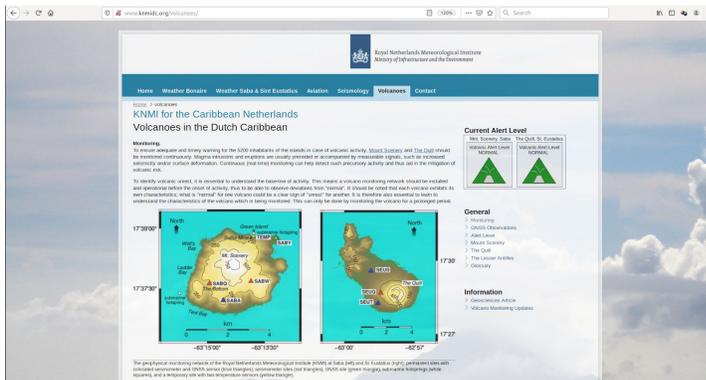


Figure 1. Screenshot of [knmidc.org/volcanoes](http://www.knmidc.org/volcanoes)

Seismic data

KNMI is working on a system to automatically locate earthquakes in the Caribbean region, similar to the automatic earthquake detection in Groningen. In the meantime it would help us greatly if you could ask residents to fill in this form when they have felt an earthquake:

<https://www.knmi.nl/nederland-nu/seismologie/aardbevingen/melden>.

Thanks to the continuous support of EUTEL, the airport management and George Works the three seismometers (called “SEUG”, “SEUS” and “SEUT”) are functioning well and produce data of good quality for the purpose of detecting earthquakes. As an example, a magnitude 6 earthquake north-west of Puerto Rico on September 24, 2019, around 03:23:40 UTC, was recorded by all stations with measured ground velocities up to 0.5 mm/s (see Figure 2).

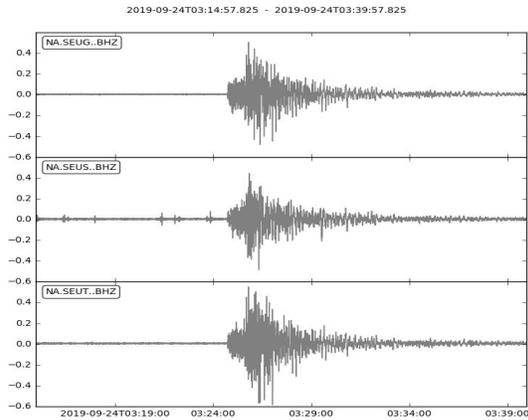


Figure 2: Seismic recordings of the vertical ground velocity in mm/s measured by seismic stations SEUG, SEUT and SEUS due to an earthquake near Puerto Rico (source: USGS).

GNSS data

The two GNSS stations, at the EUTEL facility at dove road (called “SEUT”) and at the airport (called “SEUS”) have been functioning as expected. For each instrument we calculate the daily position very precisely. The result is plotted in a graph as a point, and by adding a new data point to the graph each day a time series is formed (see Figure 3). Station SEUT has been operational since January 2018 and hence has a longer time series than station SEUS, which became operational in February 2019.

Changes through time can be viewed in the time series for three components:

1) horizontal East-West, 2) horizontal North-South and 3) vertical Up-Down.

Uncertainties for each point are a few mm for the East and North component and up to a few cm for the Up component. The data show a horizontal movement towards the NE for both stations. This movement is due to well-known plate tectonics whereby the North and South American plates subduct underneath the Caribbean Plate.

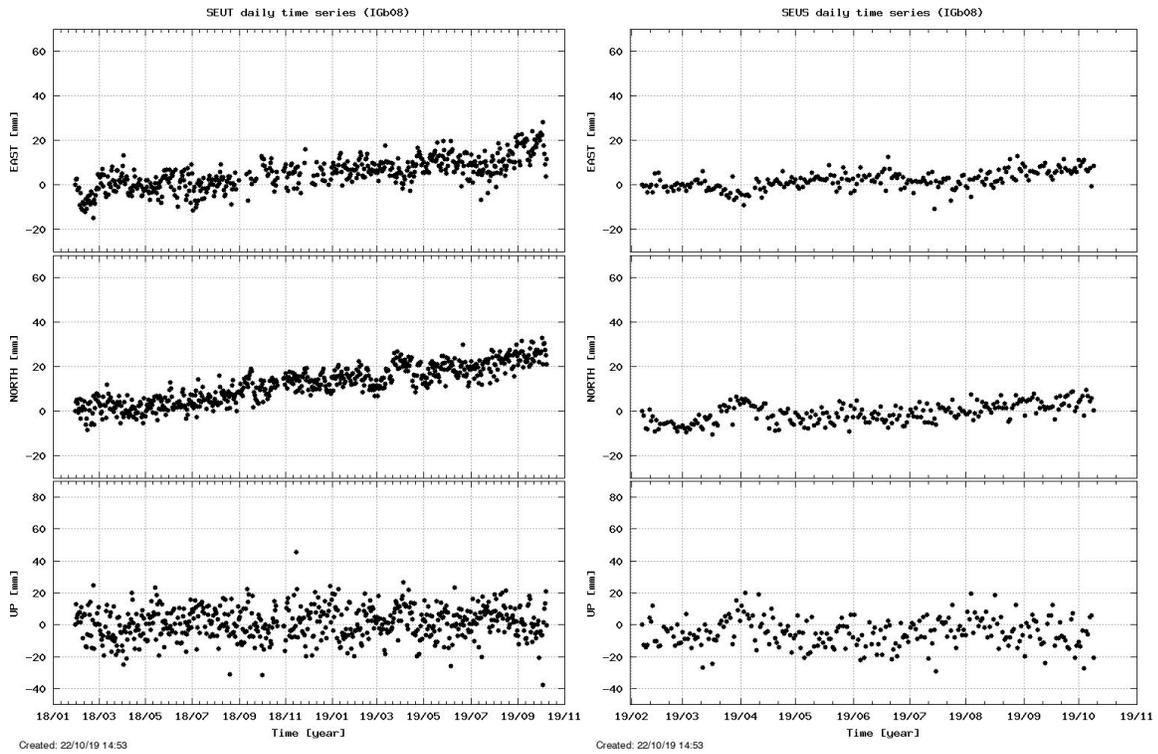


Figure 3: GNSS data from stations SEUT and SEUS.

A third GNSS installation is planned for 2020 at the Botanical gardens. Preparations for this installation are ongoing and will be finalised when a team from KNMI visits St. Eustatius in January 2020. We hope to see you then!