Royal Netherlands
Meteorological Institute
Ministry of Infrastructure and the Environment

What is KNMI?

The Royal Dutch Meteorological Institute (KNMI in Dutch) is the Dutch national weather forecasting service, which has its headquarters in De Bilt (Utrecht, the Netherlands). The primary tasks of KNMI are weather forecasting, monitoring of climate changes and monitoring seismic activity.

KNMI advises on and warns society to reduce risks in the field of weather, climate and seismology and to limit damage and injuries. With high-quality knowledge and technology plus an extensive observation network, KNMI offers products and services that contribute to the safety, accessibility, sustainability and prosperity of the Netherlands and the BES islands (Bonaire, St. Eustatius and Saba).

What is the role of KNMI on St. Eustatius?

The KNMI has multiple activities on Statia, such as:

1. Monitor tsunami warnings via the pacific tsunami warning center
2. Earthquake detection and analyses
3. Volcano monitoring
4. Weather observations and forecast including hurricanes

Where can you find information about KNMI's activities:

A lot of information can be found on https://www.knmidc.org/
Here you find for example the life recording of the seismometers https://www.knmidc.org/seismology/
The page also contains information about the volcano monitoring https://www.knmidc.org/volcanoes/

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What kind of work is done when KNMI visits the island?

The work of the team usually concerns maintenance of existing equipment. Weather sensors need to be replaced with newly calibrated ones, geophysical sensors need to be checked and cleaned, communication and data storage facilities may need (software) updates.

In some cases a bigger challenge is undertaken. In January 2021 for example, KNMI installed a stand-alone monitoring station in the botanical gardens (more info can be found in https://www.knmidc.org/volcanoes/ go to tab "information" and then Status report 5 St Eustatius). The location of this site was chosen so it covers the previously uncovered SE corner of the volcano. We usually also meet with the local government and interested parties to discuss future plans concerning KNMI activities and to keep them updated.

How are earthquakes detected and how is the volcano (the Quill) monitored:

At the moment the volcano is monitored with a network (see attached figure statia_map_large_oct_2020) which consists of:

* 4 seismometers (SEUS, SEUT, SEUG and SEUH) observing shaking of the ground
* 3 continuous GNSS sites (SEUS, SEUT and SEUH) observing deformation of the ground

Each sensor is shown on the map with a triangle. A blue triangle if there are both a seismometer and a GNSS sensor. A red triangle for a seismometer only and a green triangle for the newest installation which was set-up in January 2021.

What if I have a question about earthquakes, tsunamis or volcanoes?

You can approach the disaster team on St Eustatius.
KNMI is also willing to answer questions.

* Questions can be collected by the local government and then send as a batch for answering,
* or people can send them to me via e-mail directly
* Alternatively we could suggest sending questions through the contact form: https://www.knmi.nl/over-het-knmi/contact/contactformulier choosing "aardbevingen" and they will end up with me automatically.

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Why does the island need a monitoring network?

Magma intrusions and eruptions are usually preceded or accompanied by measurable signals such as increased seismicity and/or surface deformation. Continuous (real-time) monitoring can help detect such precursory activity and thus aid in the mitigation of volcanic risk.

To identify a change in volcanic activity, it is essential to understand the base-line of activity. This means a volcano monitoring network should be installed and operational before the onset of activity, thus to be able to observe deviations from "normal". It should be noted that each volcano exhibits its own characteristics; what is "normal" for one volcano could be a clear sign of "unrest" for another. It is therefore also essential to learn to understand the characteristics of the volcano which is being monitored. This can only be done by monitoring the volcano for a prolonged period.

Should I be concerned about all the volcanic activity in the region?

Currently several volcanoes in the Caribbean show increased levels of activity. This is not uncommon. For example in 1902 both Mt. Pelée, Martinique and La Soufrière, St. Vincent erupted. The Caribbean volcanoes are all formed by the same process: subduction at the plate boundary, but they do not share the same magma chamber, nor are they connected by long magma conduits. A volcanic eruption on one island can therefore not trigger an eruption on another island.

For more information on the activity of other Caribbean volcanoes see:

* http://uwiseismic.com/ and http://nemo.gov.vc/nemo/index.php/home/ welcome for Grenada, Grenadines, St. Vincent, St. Lucia, Dominica, St. Kitts and Nevis
* https://www.ipgp.fr/fr/ovsm/observatoire-volcanologique-sismologique-de-martinique-ovsm-ipgp for Martinique
* <https://www.ipgp.fr/fr/ovsg/actualites-ovsg> https://www.ipgp.fr/fr/ovsg/observatoire-volcanologique-sismologique-de-guadeloupe for Guadeloupe
* http://www.mvo.ms/ for Montserrat.