

# EUROVOLC

## European Network of Observatories and Research Infrastructure for Volcanology

### Deliverable Report

#### D3.3 Survey of Outreach Tools

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## Summary

The subtask 3.2.1 gathers selected outreach material from various EUROVOLC partners with the aim of creating a collection to be tested by the focus group activities in subtask 3.2.2. Nine EUROVOLC partners have responded to the dedicated survey designed for this subtask and reported in appendix (UK Met Office; Department of Civil Protection and Emergency Management, Iceland; Icelandic Meteorological office; University of Iceland; Istituto Nazionale di Geofisica e Vulcanologia - Osservatorio Etneo (INGV-OE) and Osservatorio Vesuviano (INGV-OV), Italy; Institute of Geology and Mineral Exploration, Greece; Centro de Informação e Vigilância Sismovulcânica dos Açores (CIVISA), Portugal; Institut de Physique du Globe de Paris (IPGP), France; University of Geneva, Switzerland); out of these nine partners, five have also provided selected material. In this report, material has been divided into 1) outreach material for the general public; 2) material for educational activities (primary school to university level); and 3) material for training/educational activities (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups). In order to facilitate the selection of material for the focus group activities (subtask 3.2.2), two tables have been compiled to summarize the outreach material that has been made available by the partners (i.e. outreach material for the general public and material for educational activities - primary school to university level). No material for training/educational activities (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups) has been provided.

## 1. Introduction

This report represents the first subtask of task 3.2 of WP3, which aims at improving knowledge transfer and public engagement through involvement of local stakeholders. Outreach and educational resources on volcano topics are fragmented and include a large variety of material that can be found in libraries, schools and websites. In this context, as part of subtask 3.2.1 we have developed a survey (see Appendix 1) in order to identify and summarize existing outreach and educational resources, such as videos, posters, leaflets, books, and material for classroom experiments, resulting from previous activities of EUROVOLC partners and compile them in a single report. Even though only a selection of outreach material has been discussed by individual partners, the overall collection represents a good overview of existing outreach resources in Europe and, therefore, can be used as a basis for the work to be carried out in D3.4.

Nine out of 18 partners responded to the survey (50%) and 5 partners (28%) provided various material that can be tested for the final outreach toolbox. In fact, in subtask 3.2.2 selected outreach and educational resources will be tested and evaluated by dedicated focus groups. The evaluation process will assess the type of educational/outreach approach that best fits the needs of different stakeholders and highlight some specific requests for material or activities that should be implemented in order to integrate the proposed set. Based on the evaluation outcomes, a new outreach resource set, the “EUROVOLC outreach box”, will be developed as part of subtask 3.3.3. Below we briefly describe available material classified based on typology: 1) outreach material for the general public; 2) material for educational activities (primary school to university level); 3) material for training/educational activities (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups)

## 2. Outreach material for the general public

### 2.1 UK Met Office, UK

Seminars: Occasional seminars to local geological societies are given. (Note: most of our outreach activities are on the weather and climate). There is the Crown Copyright on any Met Office material. However, no material was provided. General information about the London VAAC can be found at this link: <https://www.metoffice.gov.uk/aviation/vaac/>, including a leaflet explaining how the NAME model is used for volcanic ash modelling within the VAAC: [https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/5/dispersionleaflet\\_volcanicash0914.pdf](https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/5/dispersionleaflet_volcanicash0914.pdf)

The Met Office’s public YouTube channel has two relevant videos produced for the public on:

- Volcanic ash modelling: <https://www.youtube.com/watch?v=yFvied3niCo>
- The London Volcanic Ash Advisory Centre: <https://www.youtube.com/watch?v=QvD39DCjEts>

### 2.2 National Commissioner of the Icelandic Police (NCIP), Department of Civil Protection and Emergency Management, Iceland

Seminars, training programs, science day, other activities. NCIP is engaged in various outreach activities for the general public that include:

1) The web page [www.almannavarnir.is](http://www.almannavarnir.is) is the primary means of information and dissemination. Most of the material is in Icelandic but core information is also published in English, French and Polish (close to 10% of the population in Iceland is of Polish origin).

2) Facebook is also used to quickly reach large numbers with important information quickly (<https://www.facebook.com/Almannavarnir/>). It is not unusual for posts on Facebook to get 3,000 views within an hour and around 10,000 views within 24 hours. The post that got the greatest number of views over the past year or so had close to 29,000 views. Most of the material in Facebook is in Icelandic but if the message concerns people's safety information is also posted in English. The information only posted in Icelandic usually is related with daily work.

3) Pamphlets and booklets on specific hazards are also published. Most are only in Icelandic, but some are also published in other languages. All of these are available on the official web page ([www.almannavarnir.is](http://www.almannavarnir.is)).

4) Scientific papers, book chapters and scientific reports are also regularly published on volcanic hazards, response and emergency management. Many of these are available to the public on the official web page ([www.almannavarnir.is](http://www.almannavarnir.is)).

5) Meetings with the general public are also organized to provide information on specific hazards or the response to specific hazards. Some of these meetings are in areas affected by volcanic eruptions and some are organized also during volcanic eruptions. Participation in these meetings ranges from a few dozen people to several hundreds. Sometimes meetings have the same agenda in different locations over one or two days so that the local population does not have to travel too far for the meetings and also to limit the number of participants in each location; In fact, smaller meetings generate more questions and comments from the general audience. In most cases these meetings are run by NCIP but the relevant research institutes (e.g. Institute of Earth Sciences at the University of Iceland, Icelandic Meteorological Office) provide experts who participate and give talks as well as answer questions. The age of participants at these meetings ranges from infants to the elderly.

6) A video on Katla was produced, called „Katla volcano – Red alert“ . The video was produced in 2004 and revised in 2010. Narration and interviews are in Icelandic and there are sub titles in English. The quality of the current video available on-line is poor (240p) but a better resolution version will be available soon.

7) Press releases are published during unrest and hazard events. Status reports/fact sheets are compiled and published as needed, usually daily during eruptions but much less frequently at other times. Interviews with media are regularly given both at national and international level.

Links to examples of material (all of this material is available in Icelandic):

Katla video with English sub-titles: <https://www.youtube.com/watch?v=ji-yY3OmAZY>

Katla pamphlet:

- in Icelandic: <https://www.almannavarnir.is/utgefid-efni/neydarupplýsingar-vegna-jokulhlaupa-fra-myrdalsjokli/>
- in English: <https://www.almannavarnir.is/utgefid-efni/eruption-emergency-guidelines-katla-in-myrdalsjokull/>
- in Danish: <https://www.almannavarnir.is/utgefid-efni/forholdsregler-for-turister-ved-vulkanudbrud-i-katla/>
- in French: <https://www.almannavarnir.is/utgefid-efni/consignes-de-securite-pour-les-touristes/>
- in German: <https://www.almannavarnir.is/utgefid-efni/warnungsinformation-im-falle-eines-vulkanausbruches-in-katla-myrdalsjokull/>

- in Spanish: <https://www.almannavarnir.is/utgefid-efni/informacion-para-turistas-erupcion-volcanica-en-el-glaciar-myrdalsjokull/>

Katla poster in six languages: <https://www.almannavarnir.is/utgefid-efni/katla-myrdalsjokull/?wpdmdl=22272>

Press release (example) on a Civil Protection scientific advisory board meeting on unrest in Katla in November 2016: <https://www.almannavarnir.is/english/the-scientific-advisory-board-meet-today-because-of-the-seismic-unrest-in-katla/>

Articles in scientific journals (examples):

<https://www.almannavarnir.is/utgefid-efni/volcanic-hazards-in-iceland/>

<http://www.nat-hazards-earth-syst-sci.net/10/407/2010/nhess-10-407-2010.pdf>

Status report from Bárðarbunga eruption (example): <http://avd.is/en/wp-content/uploads/2014/09/29082014-Status-Report-Bardarbunga-English.pdf>

Air quality guidelines volcanic SO<sub>2</sub> exposure: <https://www.almannavarnir.is/utgefid-efni/health-effects-of-short-term-volcanic-so2-exposure/?wpdmdl=22644>

Presentations at conferences and seminars etc. (samples):

[http://earthice.hi.is/sites/jardvis.hi.is/files/Pdf\\_skjol/eyjafjallajokull\\_katla\\_west\\_hazardassessment\\_summary\\_2006.pdf](http://earthice.hi.is/sites/jardvis.hi.is/files/Pdf_skjol/eyjafjallajokull_katla_west_hazardassessment_summary_2006.pdf)

[https://www.securityresearch-cou.eu/sites/default/files/Agust%20G\\_Supersite\\_Iceland-2018-06-06\\_Brussels-CoU-V1.pps%20%5BCompatibility%20Mode%5D.pdf](https://www.securityresearch-cou.eu/sites/default/files/Agust%20G_Supersite_Iceland-2018-06-06_Brussels-CoU-V1.pps%20%5BCompatibility%20Mode%5D.pdf)

Sign to warn about volcanic hazard: <https://www.almannavarnir.is/utgefid-efni/hekla-hekluskilti/?wpdmdl=22273>

### 2.3 Icelandic Meteorological office (IMO), Iceland:

Participation in meetings with national and local Civil Protection groups and other volcanological institutes to inform the public living next to active volcanoes about the status of nearby volcanoes in unrest and the possible hazards they can generate. Interviews on radio, television and newspapers to inform the general public during volcanic crises. Selected products include:

1) Catalogue of Icelandic Volcanoes, CIV (<https://www.Icelandicvolcanoes.is>): The CIV, established in 2015 is an interactive web resource with detailed information about the 32 active volcanoes in Iceland (English; Icelandic version under construction), their characteristics, eruption history and hazards. Maps of calderas and their fissure swarms, lava flows, volcanic ash distributions are presented. The site is intended to serve the general public, scientists and stakeholders. The CIV is a collaboration of the Icelandic Meteorological Office (the state volcano observatory), the Institute of Earth Sciences at the University of Iceland, and the Civil Protection Department of the National Commissioner of the Iceland Police, with contributions from a large number of scientists and experts in Iceland and elsewhere. The Catalogue is edited by E. Ilyinskaya (2011-2015), G. Larsen, M. T. Gudmundsson and B. Óladóttir (from 2018) and the list of authors is found at: <http://www.icelandicvolcanoes.is/v20180621/addInfo.html?page=Contributors>. Use of material published in the CIV should reference the authors of the individual chapters/volcanoes. IMO plans to make download of material possible in 2019.

2) IMO home page, volcanic eruptions: [www.vedur.is/skjalfar-og-eldgos/eldgos/](http://www.vedur.is/skjalfar-og-eldgos/eldgos/) (Icelandic); <https://en.vedur.is/earthquakes-and-volcanism/volcanic-eruptions/> (English). Information and regular news updates during the eruptions at Holuhraun 2014-2015, Grímsvötn 2011, Eyjafjallajökull 2010 and short articles on their status. The Icelandic version also has information

about the ongoing unrest at Öraefajökull volcano. Access to information, news and updates on older volcanic eruptions (Icelandic): Grímsvötn 2004, Hekla 2000, Grímsvötn 1998 and Gjálp 1996 is available at <http://hraun.vedur.is/ja/eldgos/>. During volcanic eruptions a link to the eruption site, with all relevant information for the event is highlighted on the frontpage of IMO's web-site. An updated web version with volcano information is in progress.

3) Science-night: An event organized on 28/9/2018 by the Icelandic Research Fund, RANNÍS open to the general public. The event was in form of an exhibition in one of the largest exhibition halls in Iceland (Laugardalshöll, Reykjavík). Admission was free of charge. IMO presented the natural hazard monitoring, main scientific projects and gave hands-on experience with seismic and hydrological measuring devices used in the natural hazard monitoring. Participation in the RANNÍS science fair in several previous years, where Power point presentations were shown and hands on presentations of instrumentation.

4) Participation in a one-day conference commemorating 100 years since the latest Katla eruption. The conference, which was held in the town Vík in October 2018 was organized by the Icelandic Geoscience Society in collaboration with other Icelandic Institutions and focussed on the general public.

5) YouTube channel from IMO with videos on the Bárðarbunga 2014-2015, Grímsvötn 2011 and Eyjafjallajökull 2010 eruptions: <https://www.youtube.com/user/vedurstofan>, (Icelandic-English)

## 2.4 University of Iceland

Seminars, training programs, science day, meetings with local stakeholders and population living next to volcanoes:

University of Iceland staff involved in EUROVOLC has been involved in providing various information to the public on volcanic hazards in Iceland, including numerous meetings for local population near volcanoes and numerous appearances in media (TV, Radio, Web).

Examples of meetings include:

Kirkjubæjarklaustur, SE-Iceland – town-hall meeting 8 February 2018: *Skaftárkatlar – myndun og þróun 1938-2015. Horfur á næstuárum. (Skaftá Cauldrons, formation and evolution 1938-2015.*

*Outlook for the next few years.)* Magnús Tumi Guðmundsson, Eyjólfur Magnússon, Þórdís Högnadóttir og Finnur Pálsson Hvolsvöllur, Laugaland, Hella, S-Iceland, town-hall meetings 21-22 February 2018: *Eldgos og jökulhlaup – hver er staðan í dag? (Volcanic eruptions and jökulhlaups – what is the current status?).*

Vík í Mýrdal, S-Iceland, town-hall meeting 20 March 2018: *I. Eldgos og jökulhlaup – hver er staðan? II. Kötluhlaup og Vík í Mýrdal (I. Volcanic eruptions and jökulhlaups – what is the current status?, II. Katla jökulhlaups and Vík).* Magnús Tumi Guðmundsson.

Examples of material on the web for Icelandic population include:

News: related to Öraefajökull unrest:

- <http://www.visir.is/g/2018180819039/meta-hversu-langt-gjoskuflodur-oraefajokli-gaetinnad>
- <http://www.visir.is/g/2018180819438/fyrri-eldgos-i-oraefajokli-munoflugri-en-adur-var-talid>
- <http://www.visir.is/g/2018180729147>

- <http://www.visir.is/g/2018180809013>
- <http://www.vf.is/frettir/nytt-mat-a-eldgosava-a-reykjanesi-/83452>
- <http://www.visir.is/g/2018181009296>
- <https://www.mbl.is/frettir/innlent/2018/05/12/goshaetta-til-stadar/>

Interviews with Ármann Höskuldsson:

- <https://kjarninn.is/frettir/2018-02-19-jardskjalftahrinan-ovenjulegog-oslitin/>
- <https://www.mbl.is/frettir/innlent/2018/02/19/hrinan-mjog-ovenjuleg/>
- <http://www.vf.is/frettir/met/85321>
- <http://www.vf.is/frettir/verulegar-likur-eru-a-hraungosi-areykjaneskaga/84219>

Radio

- <http://www.ruv.is/spila/klippa/thorvaldur-thordarson-um-jardva-areykjanesi>
- <http://www.visir.is/k/clp61645>

News

- <http://www.visir.is/g/2018180809013>
- <http://www.visir.is/g/2018180819438/fyrri-eldgos-i-oraefajokli-munoflugri-en-adur-var-talid>

Web material in English:

- FUTUREVOLC web site:  
<http://futurevolc.hi.is>
- Catalogue of Icelandic Volcanoes:  
<http://icelandicvolcanoes.is>
- Selected reports from the FUTUREVOLC project:
- Report on forensic analysis of the Eyjafjallajökull and Grímsvötn communication and risk management response across Europe  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d3\\_1\\_submitted.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d3_1_submitted.pdf)
- Information for EU-MIC (European Union Monitoring and Information Centre, Disaster Assistance Agency) and scenarios for major events  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d3\\_2\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d3_2_to_submit.pdf)
- Mapping best practice in the dissemination of scientific data and information from the scientific community to stakeholders  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d3\\_3\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d3_3_to_submit.pdf)
- Earthquake location in a three-dimensional structure  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d5\\_5\\_to\\_submit\\_without\\_appendix\\_d.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d5_5_to_submit_without_appendix_d.pdf)
- Volcanic gas and river water chemistry  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d5\\_3\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d5_3_to_submit.pdf)
- CGPS observations of glacier movements during jökulhlaups and high-precision mapping of icequakes  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d6\\_1\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d6_1_to_submit.pdf)
- Near-real-time correlation of high-rate geodetic data and seismic data  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d6\\_4\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d6_4_to_submit.pdf)



- Height and paths of eruptive products  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d8\\_3\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d8_3_to_submit.pdf)
- “Showcasing” FUTUREVOLC results & outputs  
[http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv\\_d\\_10\\_6\\_to\\_submit.pdf](http://futurevolc.hi.is/sites/futurevolc.hi.is/files/Pdf/Deliverables/fv_d_10_6_to_submit.pdf)
- Selected FUTUREVOLC YouTube videos:
- FUTUREVOLC: Volcanoes, hazard and FUTUREVOLC -Freysteinn Sigmundsson  
<https://www.youtube.com/watch?v=x0Cjy5qnAok>
- FUTUREVOLC: How we see magma: Advances in detecting and interpreting earthquake patterns - Kristín Vogfjörð  
<https://www.youtube.com/watch?v=-K-5rz6SER8>
- FUTUREVOLC: Deformation and its role in joint interpretation of volcano behaviour - Andy Hooper  
[https://www.youtube.com/watch?v=7\\_hsXPOo05o](https://www.youtube.com/watch?v=7_hsXPOo05o)
- FUTUREVOLC: The types of eruptions, different behaviour, different hazards - Ármann Höskuldsson  
<https://www.youtube.com/watch?v=KSD6yOO2xMs>

Others:

Iceland: The Natural Laboratory for Volcanology -Freysteinn Sigmundsson  
[https://www.youtube.com/watch?v=uia0xLk\\_KYo](https://www.youtube.com/watch?v=uia0xLk_KYo)

Dissemination in Indonesia:

Pedisgi2018, Bandung Indonesia.

<https://twitter.com/pedisgi?lang=en>

web: <http://geophys.unpad.ac.id/pedisgi2018/>

The Icelandic Web of Science (Vísindavefurinn): <https://www.visindavefur.is/>. A web site established at the University of Iceland in 2000, where the public can read and post questions about a wide range of scientific topics, including geosciences. Questions are answered by scientists at the University of Iceland. There are already 650 geosciences topics, many of which are in volcanology ([https://www.visindavefur.is/vegna\\_thess.php?id=19](https://www.visindavefur.is/vegna_thess.php?id=19)). In Icelandic, with a more limited English version.

## 2.5 National Parks, UNESCO Geoparks and Eldheimar eruption museum, Iceland

**2.5.1 Vatnajökulsþjóðgarður National Park:** Established in 2008, the park operates a website (<https://www.vatnajokulsthjodgardur.is/>) (Icelandic and English), where information can be found about the Park’s main features, including volcanoes within the Park. Information about some of Iceland’s most active volcanoes can be found at:

Öræfajökull volcano:

<https://www.vatnajokulsthjodgardur.is/en/areas/skaftafell/interpretation-and-knowledge/about-oraefajokull>

Askja volcano:

<https://www.vatnajokulsthjodgardur.is/en/areas/odadahraun/interpretation-and-knowledge/about-askja>

Kverkfjöll volcano:

<https://www.vatnajokulsthjodgardur.is/en/areas/odadahraun/interpretation-and-knowledge/about-kverkfjoll>

Laki fissure:

<https://www.vatnajokulsthjodgardur.is/en/areas/laki-eldgja-langisjor/interpretation-and-knowledge/about-laki>

Eldgjá fissure:

<https://www.vatnajokulsthjodgardur.is/en/areas/laki-eldgja-langisjor/interpretation-and-knowledge/about-eldgja>

Bárðarbunga fissure swarm:

<https://www.vatnajokulsthjodgardur.is/en/areas/nyidalur-vonarskard-tungnaaroraefi/interpretation-and-knowledge/about-tungnaaroraefi>

**2.5.2 Katla Geopark:** <http://www.katlageopark.com/>, (Icelandic and English). A UNESCO Global Geopark focusing on volcanic hazard, education and science. The park operates a visitor center in Vík and publishes information on their web site about Katla, Eyjafjallajökull and other volcanoes within the Geopark in southern Iceland, their eruptions and their hazards.

**2.5.3 Reykjanes Geopark:** <http://www.reykjanesgeopark.is>, (Icelandic and English) A UNESCO Global Geopark since 2015. The park operates a visitor center in Reykjanesbær and operates a web site with information about volcanic craters and geothermal areas within the Geopark.

**2.5.3 Eldheimar Museum:** <http://eldheimar.is> (Icelandic, English, German). An interactive museum commemorating the volcanic eruption on Heimaey, Vestmannaeyjar in 1973. The museum/exhibit is operated by the Vestmannaeyjar township and provides a detailed account of the eruption and its effects and destruction of parts of the town and the evacuation of the over 4000 inhabitants. Only general information is available on the web.

Additional visitor centers focusing on Icelandic volcanoes are operated by private enterprises, where information and displays on volcanoes and volcanic eruptions are presented. The displays are often constructed with expert advice from Icelandic volcanologists. Example are the visitor centers at Hekla volcano (<https://www.south.is/is/south/place/heklacentre>) and at Eyjafjallajökull volcano (<https://lavacentre.is/>).

## 2.6 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Etneo (INGV-OE), Italy

INGV-OE has been involved in several outreach events. An example is the “Med-Suv An EC Project for the Implementation of the Italian Supersites” video co-prepared by INGV and ESA. The video is accessible on YouTube (<https://youtu.be/kCIURjbF3DE>), with an embedded link on the MED-SUV website: <http://med-suv.eu/spip.php?rubrique32> (more details in annex).

## 2.7 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Vesuviano (INGV-OV), Italy

Power-point presentations, posters, science day, temporary and permanent exhibitions. Outreach, education and communication activities deeply involve the Osservatorio Vesuviano, producing mainly Power-point presentations and posters for Science day or Science Festival. Furthermore, a permanent exhibition is set at the Osservatorio Vesuviano Museum, which is visited yearly by 10,000 people, mainly schools.

### 2.8 Institute of Geology and Mineral Exploration (IGME), Greece

Power point presentations, leaflets, books, web resources; <https://www.santorini.net/ismosav/>.  
Lecture presentations for Santorini inhabitants regarding Santorini volcano hazard and risk, since 1992, at Phira town, Thira, Greece, in various congress halls of schools. Leaflets and power-point presentations are available.

### 2.9 Centro de Informação e Vigilância Sismovulcânica dos Açores (CIVISA), Portugal

Science day, Noite Europeia dos Vulcões (European Volcanoes Night), 29 September, 2017. General public provided a positive feedback and suggested that the initiative should be repeated in 2018.

### 2.10 Institut de Physique du Globe de Paris (IPGP), France

Seminars, science day, outreach activities for the general public, medias releases.  
The Piton de la Fournaise observatory (OVPF-IPGP) works in close collaboration with the regional museum "La Cité du Volcan", a museum dedicated to volcanology and to the Piton de la Fournaise volcano. This museum is located in the same village. Several times a year (5 on average) staff members from the Piton de la Fournaise observatory give talks for the general public (about 1-hour duration). During eruptions, the museum and the Piton de la Fournaise observatory organise press conferences. Once a year the observatory participates in the French science day in collaboration with this museum. Very good feedback (oral and press feedbacks). Volcano status reports are often published, daily during eruptions, and monthly (or during main changes in the recorded signals) at other times. The reports are published on-line. The web page <http://www.ipgp.fr/fr/ovpf/observatoire-volcanologique-piton-de-fournaise>, and notably the page dedicated to the activity <http://www.ipgp.fr/fr/ovpf/actualites-ovpf>, is the primary means of information and dissemination. Most of the material is in French but core information and monthly reports are also published in English (<http://www.ipgp.fr/en/ovpf/volcanological-observatory-of-piton-de-fournaise>). Facebook and twitter are also used (<https://www.facebook.com/ObsVolcanoPitonFournaise/> - <https://twitter.com/obsfournaise?lang=fr>). Posts on Facebook get an average of 10,000 views. The posts that have gotten the greatest number of views had close to 150,000 views (start of the last eruption). Material is in French. Interviews with media are regularly given at local, national and international level (hundreds during eruptions), as well as participation in reports for TV (national and international).

### 2.11 University of Geneva (UNIGE), Switzerland

Science day: The University of Geneva is involved in many outreach activities. In particular, here we present a game (RISKLAND) used during La Nuit de la Science to raise awareness towards natural risks, including volcanic risk (<http://www.ville-ge.ch/lanuitdelascience/>). This tool has been adapted from the one provided by the United Nations Office for Disaster Risk Reduction, UNISDR which is available in multiple languages (<https://www.unisdr.org/we/inform/publications/2114>).

**Table 1. Summary table of available outreach material provided by partners**

Institution	NCIP, Iceland	IMO, Iceland	University of Iceland	National and Geoparks, Iceland	INGV-OE, Italy	INGV-OV, Italy	UNIGE, CH
Provided material	Websites, videos	Websites, videos	Websites, videos, ppts	Websites and exhibition	Video, leaflet, poster	Exhibition	Risk game
Languages	E, S, F, G, Ic, D	E, Ic	E, Ic	Ic, E, G(exhibition)	It (with subt. in E)	It	F
Intellectual property	No	No	No	No	No	No	No

Languages: D= Danish, E= English, F=French, G= German, Gr= Greek, Ic= Icelandic, It= Italian, P=Portuguese, R=Romanian, S=Spanish

### 3. Material for educational activities (primary school to university level)

#### 3.1 UK Met Office, UK

Occasional seminars (Crown Copyright on any Met Office material)

Occasional invited seminars at Universities. We are involved in teaching on the Convective and Volcanic Clouds Training School, which was established in 2015. Seminars are scientifically focused. No material has been provided even though training School presentations may be available, it should be discussed with the organizers of the school (<http://www.cvctrainingschool.org/school/>).

For the UK National Science Week in 2013, we produced an educational activity called eVACuate. This involves videos, exercises and tasks related to an imaginary eruption of FitzRoy's Peak volcano on Green Island. There are tasks involving basic calculations, some graph drawing and simple dispersion and weather principles. At the time this was publicly available. It is our intention to make this available at a later stage.

#### 3.2 National Commissioner of the Icelandic Police (NCIP), Department of Civil Protection and Emergency Management, Iceland

Power-point presentations, leaflets, posters, booklets, web resources.

#### 3.3 Icelandic Meteorological office (IMO), Iceland

Power-point presentations, visits to the natural hazards monitoring room: Visits to the monitoring room by high school students occur a few times a year. The school Menntaskólinn v. Hamrahlíð visits every other year and some groups at University level from England and USA.

#### 3.4 University of Iceland:

Power point presentations, visits: Visits of schools from abroad to University of Iceland.

### 3.5 Institute of Geology and Mineral Exploration (IGME), Greece

Power point presentations: Presentations and lectures in primary and secondary schools on Santorini, as well as lectures to University school groups visiting Santorini, in Greek and English, since 1992.

### 3.6 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Etneo (INGV-OE), Italy

Information visits to INGV-OE (seminars and visits to monitoring room), Power point presentations, videos, books, leaflets, posters, experiments.

ScienzAperta - one week every year; educational tours every Thursdays of the year from September to June at INGV – OE, in Italian or English language, that include the visit at the control room; meetings occasionally organized at schools of all levels. Positive feedback was received during these activities; the students are curious to know researcher's job and naturalistic and geological heritage, for example like the volcanoes. They are also engaged when instruments for monitoring are explained (e.g. seismometer, thermal camera, infrasonic sensor). Furthermore, an interactive poster was developed, which uses the augmented reality ("I vulcani siciliani e le loro manifestazioni"). The INGV-OE have produced two documentary videos:

- "L'eruzione perfetta" (<https://www.youtube.com/watch?v=s4npMwFiPi8>) and
- "Non chiamarmi terremoto" (<https://www.youtube.com/watch?v=Ny12bhH3zDw>).

In the framework of the MED-SUV Project educational and information posters and leaflets in multilingual versions and a video were produced:

<http://med-suv.eu/spip.php?rubrique37>

<https://www.youtube.com/watch?v=kCIURjbf3DE>

### 3.7 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Vesuviano (INGV-OV), Italy

Power point presentations, books, leaflets and posters:

INGV-OV has participated in many projects mainly or partially dedicated to education or outreach, which include:

Activity 1: EDURISK: project developed in collaboration between INGV-OV and the Italian Civil Protection. It is dedicated to schools (primary schools) with the aim of providing teachers with tools on seismic and volcanic phenomena/hazard/risk knowledge. Since 2005 the activities have involved about 5,000 teachers and more than 70,000 students in 14 Italian regions. In the framework of EDURISK, educational material has been produced and training courses for teachers have been developed, also dipping into their knowledge and experiences. All the educational material is multilingual (English, French, Spanish is available at: [www.edurisk.it/materiali/](http://www.edurisk.it/materiali/)).

Activity 2: RACCE: project funded by the EU Civil Protection (2011 -2012) to develop material for (primary and secondary schools). The project focused on raising awareness, improving knowledge on natural hazards (seismic and volcanic hazards) simultaneously educating various groups (teachers, parents, volunteers and civil protection operators) on the best practices and state-of-the-art responses. RACCE also addresses the emotional consequences of natural hazards. Educational material such as guides for teachers, posters and suggested classroom activities are available in multiple languages at: <http://racce.nhmc.uoc.gr/en/xrh/usefullfiles.html>.

### 3.8 Centro de Informação e Vigilância Sismovulcânica dos Açores (CIVISA), Portugal

Visits, posters, leaflets:

Activity 1: Information visits to CIVISA facilities. School (primary, secondary, university) visit the CIVISA facilities during all the year. The main language is Portuguese, but some visits are also performed in English. The professors that organize the visits provided positive feedback.

Activity 2: Educational and information posters and leaflets in the framework of MED-SUV Project (same as for INGV-OE): "Os vulcões e os seus riscos", printed on 14 June 2016, Portuguese (<http://med-suv.eu/spip.php?rubrique37>)

Activity 3: Educational leaflet to give to students during visits to CIVISA seismic network, information about seismic risk: "Visita à Rede Sísmica do Centro de Vulcanologia e Avaliação de Riscos Geológicos – CVARG", Portuguese.

### 3.9 Institut de Physique du Globe de Paris (IPGP), France

Seminars, training programs: Part of staff members are academic lecturers/professors and thus teach at university levels. Some staff members also give talks at primary level (as voluntary) - Main language: French.

### 3.10 University of Geneva (UNIGE), Switzerland

Activity with primary school of Vulcano island (Italy) (3rd, 4th and 5th class) (script of the activity for children and a descriptive video for adults is provided)

School exercise that involves a mix of laboratory and theatrical activities to raise awareness of volcano and emergency management issues. Positive feedback was received (7 years of activity).

**Table 2. Summary table of available educational material provided by partners**

Institution	INGV-OE, Italy	INGV-OV, Italy	INGV-OV, Italy	CIVISA	UNIGE, CH	UNIGE, CH
Provided material	Videos	RACCE educational material	EDURISK educational material	poster leaflets	Script	Video
Educational level	primary and secondary schools	primary and secondary schools	primary schools	primary and secondary schools	primary schools	university
Languages	E, F, G, It	E, F, It, R	It	P	It	E
Intellectual property	Yes	Yes	yes	No	No	No

Languages: D= Danish, E= English, F=French, G= German, Gr= Greek, Ic= Icelandic, It= Italian, P=Portuguese, R=Romanian, S=Spanish

#### **4. Material for training/educational activities (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups)**

- For this part, partners provided information on their activity but no material -

##### 4.1 National Commissioner of the Icelandic Police (NCIP), Department of Civil Protection and Emergency Management, Iceland

Seminars, training programs, public information meetings in local communities or specific local groups (e.g. local stakeholders and local civil protection)

Training programs are run in on-scene incident command, regional incident command and in national crisis coordination. In all of these training courses at least a lecture on volcanic hazards is given and sometimes the exercises on these courses focus on the response to volcanic eruptions. The youngest participants at these courses are around 20 years old and the oldest participants have been around 70 years old. These courses run from 3 to 5 days.

##### 4.2 Icelandic Meteorological office (IMO), Iceland

Power-point presentations are given to visiting stakeholder groups or given on-site at the stakeholder location. Presentations listed in Chapter 2 given on-site to the public living next to volcanoes also apply to educating local Civil Protection groups. Interaction/education of national Civil Protection occurs in meetings a few times per year, more frequently during volcanic unrest and crisis. Regular meetings with the National Civil Aviation service provider (ISAVIA) take place four times a year a year, or more frequently depending on volcanic activity.

IMO operates and participates in monthly VOLCICE exercises, together with ISAVIA and the UK Met Office, where first response to volcanic hazards at different volcanoes are tested. The Volcanic Aviation Colour Code, describing the activity status of Icelandic volcanoes is an important tool in the exercises as well as in real events. Communication of information in these events follow existing contingency plans of IMO and specific predefined protocols from ICAO. VOLCICE exercises are followed up by a debriefing meeting with ISAVIA.

Information flow to airlines and pilots is through the IMO web at: <https://www.vedur.is/skjalftar-og-eldgos/eldgos/> (Icelandic) or <https://en.vedur.is/earthquakes-and-volcanism/volcanic-eruptions/> (English), or through telephone interaction.

Reports on hazards due to volcanogenic subglacial floods (jökulhlaups) from Öraefajökull and Katla have recently been published. The reports are available on the IMO web site at: <https://www.vedur.is/vatnafar/haettumat-floda/jokulhlaup/markarfljotsaurar-oraefajokull/> (Icelandic) and: <https://en.vedur.is/hydrology/hazard-risk-assessments/glacial-outburst-floods/markarfljotsaurar-oraefajokull/> (English) and will eventually be disseminated through the CIV web site. The reports are an important educational resource for national and local Civil Protection agencies. Similar reports on volcanic hazard in Vestmannaeyjar and on Reykjanes peninsula (where the international airport is located) will be published in 2019 and will also be disseminated through the IMO web site and eventually the CIV web site. A report on explosive volcanic hazard is in production and expected to be completed in spring 2019, when it will also be disseminated through the IMO web site and the CIV web site. These reports are part of larger risk assessment project for Icelandic volcanoes, which IMO is working on in co-operation with the

University of Iceland and Icelandic Civil Protection. In the coming years, final results will be published in reports similar to those mentioned above. These are all fundamental for the education of national and local hazard managers.

#### 4.3 University of Iceland

Seminars, training programs.

#### 4.4 Institute of Geology and Mineral Exploration (IGME), Greece

Power point presentations: Lectures and presentations for touristic stakeholders, local agencies, local civil protection and volunteering groups, since 1992, for Santorini volcano hazard and risk.

#### 4.5 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Etneo (INGV-OE), Italy

Educational tours that include a visit to the control room and seminars (Power-point presentations, videos, books, posters).

#### 4.6 Istituto Nazionale di Geofisica e Vulcanologia Osservatorio Vesuviano (INGV-OV), Italy

Training courses for volcanological guides, volunteers and technicians from Neapolitan Municipalities are periodically carried out, also in collaboration with Italian Civil Protection.

#### 4.7 Institut de Physique du Globe de Paris (IPGP), France

Seminars, training programs: The Piton de la Fournaise volcano observatory is involved in training of the mountain guides of La Réunion island (with training concerning the volcano, the geology of the island, etc...).



APPENDIX 1

EUROVOLC - WP3 (subtask 3.2.1) – Online survey of outreach tools

This survey is the first subtask of task 3.2 of WP3, which aims at improving knowledge transfer and public engagement through involvement of local stakeholders. Outreach and educational resources on volcano topics are fragmented and include a large variety of material that can be found in libraries, schools and websites. With this survey we want to identify and summarize existing outreach and educational resources, such as videos, posters, leaflets, books, and material for classroom experiments, resulted from previous activities by EUROVOLC partners and compile them in a single report; material will also be collected in a dedicated public space on BASECAMP (see link below). In subtask 3.2.2 selected outreach and educational resources will be tested and evaluated by dedicated focus groups. The evaluation process will assess the type of educational/outreach approach that fits better the needs of different stakeholders and highlight some specific requests for material or activities that should be implemented in order to integrate the proposed set. Based on the evaluation outcomes, a new outreach resource set, the “EUROVOLC outreach box”, will be developed as part of subtask 3.3.3.

**Questionnaire sections:**

This questionnaire is divided into 3 sections:

- section 1: on the outreach for the general public
- section 2: educational activity (primary school to university level)
- section 3: training/educational activity (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups)

**File upload:**

After you have submitted your survey please upload your outreach material (and any supplementary documentation) on the dedicated space organized in BASECAMP for this specific subtask WP3\_OUTREACH\_SURVEY:

<https://3.basecamp.com/3946342/buckets/6571527/vaults/1105728917>.

If you have any questions, please send an email to [cerg@unige.ch](mailto:cerg@unige.ch)

Partner Name: .....

Institution Name: .....

**1. OUTREACH FOR THE GENERAL PUBLIC****1a) Have you and/or your institution been involved in outreach activity (general public)?** yes  no

If you say yes at question 1, please provide a description of general public / date of the event (from...to, year) / location (institution - city - country) / general title of the activity

.....

**1b) Approximate duration of each activity:** <1day  1-7 days  1 month  1 year  > 1 year**1c) Type of activity:** seminars  training programs  science day  others (explain .....**1d) Number of people involved in the activity (organization, delivery):** <10  <50  > 50**1e) Number of people attending:** <10  <50  <100  <1000  >1000**1f) Average age of people attending (years):**  <10  10-20  20-40  >40**1g) Have you produced multilingual material with this activity:**  yes  no**1h) If you have produced multi-language activity indicate which type:** ppt presentations  videos  leaflets  books  telephone apps  posters  
 experiments  web resources (provide link .....**1i) The dissemination resources are in which languages?** English  Spanish  French  German  Italian  Icelandic  Portuguese  
 Greek  others (explain .....**1j) If your material is not multi-language, in which language is it published?****1k) Have you received feedback on this activity? If yes please summarize in a few sentences (if you have a report please upload in BASECAMP together with the rest of material)**

.....

**1l) Please describe the material you have added to the EUROVOLC public space (number of files, file names, file size, file typology) or add a descriptive document to the outreach material you will upload in BASECAMP**

.....

If available, please provide the web link of the associated project within which the outreach/educational material has been produced

.....

**1m. Is / are specific Intellectual Property right/s applied to the resource?**  yes  no

If YES, please specify what kind of rights is/are applied and give/s the details (e.g. ownership, licences, etc) or add the relative document to the outreach material you will upload in BASECAMP

.....

**Other comments**

.....

## 2. EDUCATIONAL ACTIVITY (PRIMARY SCHOOL TO UNIVERSITY LEVEL)

**2a) Have you and/or your institution been involved in educational activity (primary school to university level)**  yes  no

If you say yes at question 2, please provide a description of education level (primary, secondary, university...)/ date (from...to, year) / location (institution - city - country) / general title of the activity (if any) / main language used

**2b) Approximate duration of each activity:**

<1day  1-7 days  1 month  1 year  > 1 year

**2c) Type of activity:**

seminars  training programs  others (explain .....)

**2d) Number of people involved in the activity (organization, delivery):**

<10  <50  > 50

**2e) Number of people attending:**  <10  <50  <100  <1000  >1000

**2f) Average age of people attending (years):**  <10  10-20  20-40  >40

**2g) Have you produced multilingual material with this activity:**  yes  no

**2h) If you have produced multi-language activity indicate which type:**

ppt presentations  videos  leaflets  books  telephone apps  posters  
 experiments  web resources (provide link .....)

**2i. The dissemination resources are in which languages?**

English  Spanish  French  German  Italian  Icelandic  Portuguese  Greek  
 others (explain .....)

**2j. If your material is not multi-language, in which language is it published ?**

.....

**2k. Have you received feedback on this activity? If yes, please summarize in a few sentences (if you have a report, please upload in BASECAMP together with the rest of material)**

.....

**2l. Please describe the material you have added to the EUROVOLC public space (number of files, file names, file size, file type) or add a descriptive document to the outreach material you will upload in BASECAMP**

.....

**If available, please provide the web link of the associated project within which the outreach/educational material has been produced**

.....

**3m. Is / are specific Intellectual Property right/s applied to the resource?  yes  no**

**If YES, please specify what kind of rights is/are applied and give/s the details (e.g. ownership, licences, etc) or add the relative document to the outreach material you will upload in BASECAMP**

.....

**Other comments:**

.....

**3. TRAINING/EDUCATIONAL ACTIVITY**

**3a) Have you and/or your institution been involved in training/educational activity (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups)**

yes  no

If you say yes at question 3, please provide a description of the training/educational activity (touristic stakeholders, local agencies: e.g. local civil protection, volunteering groups) / date of the event (from...to, year) / location (institution - city - country) / general title of the activity

.....

**3b) Approximate duration of each activity:**

<1day  1-7 days  1 month  1 year  > 1 year

**3c) Type of activity:**

seminars  training programs  others (explain .....

**3d) Number of people involved in the activity (organization, delivery):**

<10  <50  > 50

**3e) Number of people attending:**  <10  <50  <100  <1000  >1000

**3d) Average age of people attending (years):**  <10  10-20  20-40  >40

**3f) Have you produced multilingual material with this activity:**  yes  no

**3h) If you have produced multi-language activity indicate which type:**

ppt presentations  videos  leaflets  books  telephone apps  posters  
 experiments  web resources (provide link .....

**3i. The dissemination resources are in which languages?**

English  Spanish  French  German  Italian  Icelandic  Portuguese  Greek  
 others (explain .....

**3j. If your material is not multi-language, in which language is it published?**

.....

**3l. Please describe the material you have added to the EUROVOLC public space (number of files, file names, file size, file type) or add a descriptive document to the outreach material you will upload in BASECAMP**

.....

**If available, please provide the web link of the associated project within which the outreach/educational material has been produced**

.....

**3m. Is / are specific Intellectual Property right/s applied to the resource?  yes  no**

**If YES, please specify what kind of rights is/are applied and give/s the details (e.g. ownership, licences, etc) or add the relative document to the outreach material you will upload in BASECAMP**

.....

**Other comments:**

.....