

## The Piton de la Fournaise Volcanological Observatory (IPGP)

### 1. Description of the infrastructure offered for the first call

<b>Name and acronym of RI</b>	<b>Name:</b> Observatoire volcanologique du Piton de la Fournaise
	<b>Acronym:</b> OVPF
<b>Main contact person</b>	<b>Name:</b> Arnaud Lemarchand
	<b>Email:</b> <a href="mailto:arnaudl@ipgp.fr">arnaudl@ipgp.fr</a>
<b>List of individual installations and facilities</b>	<ol style="list-style-type: none"> <li>1. Access to the data-banks</li> <li>2. Access to the Piton de la Fournaise volcano</li> <li>3. IT resources</li> <li>4. Pool of mobile instruments: <ol style="list-style-type: none"> <li>a) one high-resolution thermal camera</li> <li>b) two mobile GNSS receivers</li> <li>c) one miniDOAS</li> <li>d) one mobile multi-gas survey unit</li> </ol> </li> </ol>

### 2. Description of the installations and facilities offered for the first call

<b>Name of the installation</b>	<b>OVPF</b>
<b>Contact person</b>	<b>Name:</b> Aline Peltier
	<b>Email:</b> <a href="mailto:peltier@ipgp.fr">peltier@ipgp.fr</a>
<b>Location</b>	<b>Address:</b> 14 RN3 - Km 27 97418 La Plaine des Cafres, La Réunion
	<b>Country:</b> France
<b>Detailed description of the installations and facilities</b>	<ol style="list-style-type: none"> <li>1. <b>Access to the data-banks</b> The observatory acquires, and has acquired, very long times series of geophysical and geochemical data since late 1979. OVPF maintains currently a network of over 100 permanent stations in the field dedicated to the monitoring of the volcanic activity (40 seismometers, 24 GNSS receivers, 10 tiltmeters, 3 extensometers, 3 gas stations measuring CO<sub>2</sub> in the soil, 3 Novac DOAS gas stations, 1 multigas station, 8 cameras (1 InfraRed), 3 rain gauges). Users can access to the data-banks of one of the most active hot-spot volcano of the earth: seismic waveforms, catalogues of seismic events, GNSS and deformations data, and gas data.</li> <li>2. <b>Access to Piton de la Fournaise</b> The OVPF staff has a very long experience in the design, installation, and maintenance of monitoring field equipment on the volcano and thus many developments have been achieved to optimize and adapt field stations to the harsh environment of the volcano (rain: up to 15 meters per year). The director of the observatory is also in charge of getting agreements from the “Parc National” when new equipment is deployed in the field and from the “Prefecture” during eruptive periods. Assistance in</li> </ol>

	<p>instrument installations on the volcano is a service organized by the OVPF staff. It includes i) the authorizations from the « Parc National » and ii) the design and the installation of the field stations. OVPF maintains a communication network to transmit in real time data of its own field stations toward the observatory. This communication backbone can also transmit data of a pool of punctual instruments installed on the volcano so long as it does not disrupt communication for the volcano monitoring, and as long as a large throughput is not needed. To ensure that the quantity of data to transmit does not exceed the capacity of the communication network (&gt;1 Go per day), the observatory implements short state-of-health messages to check if a station is still running. Users can access to the Piton de la Fournaise volcano for the installation of remote stations or field measurements. Users can access to the field communication network (Wi-Fi) if their request does not exceed the capability of the observatory. Users must discuss and negotiate with the observatory, the technical feasibility of a service for data transmission. At La Réunion, users have the possibility to request helicopter transport to survey the volcano or bring heavy equipment in the field. The observatory does not provide any equipment for permanent installation on the volcano.</p> <p><b>3. IT resources</b></p> <p>IT engineer has the possibility to set up one virtual machine in the cluster of the observatory servers to run acquisition software or data processing software if the request of users does not exceed the capability of the observatory. Due to the limitation of internet access at the observatory, data transmission from the observatory towards outside organizations cannot be guaranteed. Users have access to one office, and the IT team provides them internet connection and access to a videoconference system to remain connected to remote teams and a virtual machine for data processing.</p> <p><b>4. Pool of instruments</b></p> <p>In La Réunion one high-resolution thermal camera, two mobile GNSS receivers, one miniDOAS, and a mobile multigas survey unit, are scientific equipment that users can access.</p>
<b>Scientific support offered</b>	<p>Training for the use of the installation: None.</p> <p>Duration of the training course: Not applicable.</p> <p>Number of scientist supporting the activity: 2.</p> <p>Type of scientific support: None.</p>
<b>Technical support offered</b>	<p>Training for the use of the installation: None.</p> <p>Duration of the training course: Not applicable.</p> <p>Number of technicians supporting the activity: 2.</p> <p>Type of technical support: Two technicians or engineers can support fieldwork to install and/or design field stations and to carry out campaign measurements.</p>
<b>Safety</b>	<p>Training offered: Safety in the field Cyclone and volcanic emergency procedures.</p>

	Duration of the safety training course: 2 hrs.
	Safety equipment provided: helmet, walkie-talkie, health field safety kit.
<b>Available accommodation facilities at infrastructure or nearby</b>	The volcanological observatory of Piton de la Fournaise is composed of three different buildings. The first one is the garage for the four-wheel drive vehicles and the mechanical workshop. The second is a house, where the observatory's archives are stored and where the staff has lunch. The last building is the observatory itself with offices for the 12 permanent staffs, an electronic lab, an IT space, a situation room dedicated to monitoring the volcano's activity and to crisis management. The observatory has an agreement with the nearby university of Le Tampon to house visitors in student bedrooms and offer accommodation. Be aware: this accommodation is located at about 17 km far away from the observatory. The users can assess to i) an office with an Internet connection, ii) a video-conference system and iii) one 4 wheels drive vehicle. The observatory does not provide desktops or portable computers to users.
<b>Available space/electricity/internet connection access for external users</b>	Users have access to one office, and the IT team provides them internet connection and access to a videoconference system to remain connected to remote teams.
<b>Administrative support offered</b>	The administrative staffs deal with the accommodations for users and the travel tickets. If users brought equipment the staff also helps clearing customs.
<b>Other</b>	<p>Even if the observatory is an operational structure, the usual open hour is 8h-18h the working days. Exceptionally and under request and conditions (for instance, isolated works prohibited) and in agreement with the head of the observatory, it can stay accessible 24/24h every day of the year. There is no restriction in accessing the structure for invited users. The modalities of access are negotiated with the observatory to set up in advance the date, technical requests to evaluate if the observatory is able to satisfy them. The fieldwork and access to the observatory would be integrated into the planning of the observatory, which is scheduled on a weekly basis and subject to last minute changes depending on volcano activity or unrest, and associated constraints, staff requisitions, and field access restrictions. The users must not interfere in the observatory management and in the crisis management. They must not communicate with the media about any activity concerning the local telluric events. Users should follow the IAVCEI guidelines published in:</p> <ul style="list-style-type: none"> <li>• Newhall C, Aramaki S, Barberi F, Blong R, Calvache M, Cheminee J-L, Punongbayan R, Siebe C, Simkin T, Sparks RSJ, Tjetjep W) (1999) Professional conduct of scientists during volcanic crises. Bull Volcanol 60:323–334.</li> <li>• IAVCEI task Group on Crisis Protocols (G. Giordano, R. Bretton, E. Calder, R. Cas, J. Gottsmann, J. Lindsay, C. Newhall, J. Pallister, P. Papale, L. Rodriguez) (2016) Toward IAVCEI guidelines on the roles and responsibilities of scientists involved in volcanic hazard</li> </ul>

	evaluation, risk mitigation, and crisis response. Bulletin of Volcanology 78:31, DOI 10.1007/s00445-016-1021-8.
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### 3. Access modalities and call parameters of the services offered only for the first call

Installation	Accesses per call (in unit)	Max n. of users per project	Max n. of projects per call
1. Access to the data-banks	8 days	2	1
2. Access to the Piton de la Fournaise	9 days	2	1

### 4. Financial support offered to the users

Installation	Max reimbursable travel cost (in euro)	Max reimbursable daily subsistence cost (in euro)	Further maximum reimbursable costs (in euro)
1. Access to the data-banks	1,500	30	3,160
2. Access to the Piton de la Fournaise	1,500	30	3,160

### 5. Risk management

- a. **Expected condition that can make the installation unavailable/inaccessible:** The main risks are damages after cyclones, and volcanic activities that often generate constraints, staff requisitions, and field access restrictions. The observatory is usually understaffed on month in winter (mid-July to mid-August) and in summer (end-December to end-January) during annual scholar vacations. These periods and the raining seasons (November to April) as well are not recommended for an access to users.
- b. **Functionality of the installation/facility offered, before the access:** All the installations are already available.
- c. **Conditions to re-schedule the access to the same installation due to force majeure:** The modalities of access would be re-negotiated with the observatory to set up the date and technical requests.