Post-doctoral position at UCA (full time, 18 months)

Using Copernicus data for volcanic hazards characterisation, damage assessment and recovery monitoring

University Clermont Auvergne is offering a 18-months position for a Post-doctoral Research Assistant in Radar Remote Sensing, based in Clermont-Ferrand, France. The candidate will contribute to the research project "Risks of natural disasters and socio-economic vulnerability" IDEX/I-SITE CAP 20-25 funded by the French government since 2017 (http://i-site-clermont.fr/). The research challenge is interdisciplinary and headed by the Laboratoire Magmas et Volcans (LMV, https://lmv.univ-bpclermont.fr/fr/) and the Centre d'Etudes et de Recherche sur le Développement International (CERDI, http://cerdi.org/), two leading research centres at the University Clermont Auvergne in Clermont-Ferrand, France.

The project "Risks of natural disasters and socio-economic vulnerability" IDEX/I-SITE CAP 20-25 aims to build an innovative and integrative approach for mitigation of risks arising from natural hazards, with a particular focus on natural hazards related to volcanic activity.
One of the components of this integrative approach is a research project based on the intensive use of remote sensing data (in particular Synthetic Aperture Radar data) to provide more accurate metrics of:
- Natural hazard related to volcanic activity;
- Damages due to volcanic disasters.
- Post-disaster recovery.

The successful candidate will be responsible for developing and implementing new algorithms dedicated to volcanic hazards characterisation, damage assessment and recovery monitoring. These algorithms will be based on the exploitation of Copernicus data (Sentinel data and other contributing missions).

Tasks:
1) Developing algorithms based on the exploitation of Sentinel-1 and Sentinel-2 data in order to provide more accurate estimates of natural hazard related to volcanic activity, more accurate and useful maps of damages due to volcanic disasters and more accurate monitoring of the post-disaster recovery dynamics.

2) Establishing and implementing protocols based on the exploitation of information provided by very high resolution remote sensing data and / or by existing database and / or by ground truth campaigns to validate the results obtained from the Sentinel data.

3) Investigating procedures for an operational implementation of the algorithms developed in task 1).

4) Initiating or strengthening collaborations with existing projects or institutions that develop the use of remote sensing data for natural hazard and risk assessment.

5) Initiating or strengthening collaborations with scientific communities (Economic Sciences, Social Sciences, Mathematic, Information Sciences, etc...) or institutions (Rescue Services, ONG, insurance companies) that will be the end users of the product derived from remote sensing data.

Requirements:
* Solid background in Synthetic Aperture Radar (SAR) and in SAR data processing (InSAR, PS-InSAR, SBAS, Sentinel-IW processing, Amplitude Change Detection, Polarimetry, Coherent Change Detection, etc ...). Additional knowledge of other remote sensing domain (optical remote sensing, satellital stereo-photogrammetry, etc...) is welcomed.

* Working on the subdomain of natural hazard / natural disasters / risk assessment and / or on the subdomain of land use monitoring would be an advantage.

* PhD in Radar Remote Sensing. A record of publications would be an advantage.

* Experience with scientific computing (C / Matlab / Python) is required as well as a good experience with some InSAR processing chain (RoiPack, ISCE, Doris, Diapason, Gamma) and other usual radar and remote sensing data processing software (SNAP, ENVI, ...). Experience with using geolocalized data / geo-spatial analysis would be an advantage.

* Experience in PCA, ICA and Artificial Intelligence algorithms (Deep Learning) would be an advantage.

* Willingness to work in an interdisciplinary environment.

* Fluent English.

What we offer:
LMV offer an exciting research environment, with working groups and seminars. The full-time position is available for a duration of 18 months. The salary will be approx. €2,000 per month. In addition, the selected candidate will benefit from health insurance and social coverage. Clermont-Ferrand is a French provincial medium-sized town that offers a safe life environment close to the Natural Park of Auvergne Volcanoes (http://www.auvergnetourism.com). The University of Clermont Auvergne gathers 35,000 students with a strong international openness (http://en.ucaweb.new.uca.fr/)

Application and selection process:
Online applications only, till 31st of March 2018
Candidates must apply by sending the following documents to J.L.Froger@opgc.univ-bpclermont.fr (same contacts for further information) with in the subject "I-SITE Postdoctoral application":

1- A detailed curriculum vitae with the list of publications (copies of degree certificates)

2- A job market paper / a sample of written works.

3- A motivation letter exposing the understanding of the position, of the tasks and required skills.

4- Two recommendation letters / Two references.

Fully completed applications only will be examined by the research challenge / project Executive Committee. An equal opportunity policy in recruitment is applied and University Clermont Auvergne is committed to the European HRS4R policy.