

# JOB OFFER

THE ROYAL OBSERVATORY OF BELGIUM SEEKS A COLLABORATOR  
EXPERIENCED IN SITE CHARACTERISATION

## EPOS-BE scientific collaborator experienced in site characterisation

The Seismology-Gravimetry section of the Royal Observatory of Belgium (ROB) is looking for an early career and dynamic collaborator for the seismological branch of the BELSPO EPOS-BE project. This one-year (+ renewable) position is open at the post-doctoral level, but candidates who can prove enough knowledge on the following are still eligible (e.g. Engineering studies).

### Context

The ROB's existing seismic and accelerometric observation infrastructure must be included in EPOS in order for the international seismological research community to get open access to research-proof seismic waveform data from the BE network. The BELSPO EPOS-BE project targets to:

- Replace short-period seismic stations by the installation of newly acquired broadband equipment at key locations in Belgium;
- Perform a full site characterisation of selected seismic stations of the Belgian seismic network, with a priority on the broadband and accelerometric stations.

### Function

The candidate will be responsible for the site characterisation of network stations, hereby helped by the permanent researchers and technicians of the section. Tasks to perform for each site can be summarised as:

- Compiling all available data (geology, geomorphology, topography, geotechnical information, soil classes, etc.)
- Conducting field surveys to measure:
  - H/V spectral ratios (HVSr)
  - Recording surface waves using passive seismic array techniques
  - If needed, complemented with active seismic profiling, electrical resistivity tomography or other non-invasive geophysical methods.
- Computing key parameters:
  - Wavefield polarization
  - Resonance frequency
  - Rayleigh ellipticity
  - A site's Love and Rayleigh dispersion curve
  - Shear-wave velocity ( $V_s$ ) profile
- Producing information sheets on network stations including:
  - 1D velocity models obtained through dispersion curve inversion
  - $V_{s30}$  and bedrock  $V_s$
  - Frequency dependent polarizations, evaluating the influence of topographical or local geological effects

As final product, an evaluation of site conditions using earthquake data needs to be performed which are needed to better correct instrumental records and to select appropriate GMPEs. This task will be performed in collaboration with the scientific staff of the section. The obtained site characterisation sheets will be implemented in European databases (e.g. SERA-seismology, ORFEUS).

### Competence Profile

To meet the EPOS-BE site characterisation goals, the candidate must:

- Be independent, motivated, and capable to lead field surveys with colleagues and technicians
- Have strong field experience using the aforementioned survey techniques with emphasis on seismic array techniques
- Have an extensive knowledge of the processing, inversion and interpretation of HVSr and seismic array data, using the Geopsy software or equivalent
- Demonstrate proficiency in producing scientific reports and respecting deadlines
- Hold a driving license (B)
- Show knowledge of or be ready to learn basic French and/or Dutch

### Additional competences

- Proficiency in Python and Obspy.

### Applications and information

- Applications and contact: Michel Van Camp ([mvc@oma.be](mailto:mvc@oma.be); + 32 2 373 02 65)
- Applications (CV and motivation letter) are welcome until **May 31 2019** included.
- The Belgian Seismic Network: <http://seismology.be>
- The Royal Observatory of Belgium: <http://observatoire.be>
- Living in Belgium: <https://www.expatica.com/be/about/basics/an-introduction-to-living-in-belgium-469849/>

