Training Opportunity for Belgian Trainees

Reference	Title of Training Opportunity	Duty Station
BE-2020-OPS-SWb)	**Operational Space Weather Monitoring**	**ESOC**

Overview of the unit's mission:

ESA's Space Safety Programme has the overall aim to detect, predict and assess threats from space and their potential risk to life, property and infrastructure. The Space Weather Office under Space Safety Programme Office is addressing those risks associated to the activity of our Sun with the goal of providing owners and operators of critical spaceborne and ground-based infrastructure timely and accurate information that will enable mitigation of the adverse impacts of space weather. ESA's Space Weather Office is responsible for defining and implementing European space based observation systems to enable operational space weather services. It is also responsible for pre-operational developments and R&D activities geared towards fulfilling the needs of European space weather service users.

Overview of the field of activity proposed:

Monitoring of the Earth's and Sun's environment is an essential task for the now- and forecasting of Space Weather and the modelling of interactions between the Sun and the Earth. Due to the asymmetry and complexity of Earth's magnetosphere, the involved particle environment and its dynamics, it is necessary to capture the state of the magnetic field and the particle distribution in a sufficiently large number of sampling points around the Earth, such that it allows state-monitoring and modelling of the involved processes with sufficient accuracy and timeliness.

ESA is implementing a space weather monitoring system, including the establishment of a Distributed Space Weather Sensor System (D3S) to observe the effects of solar activity within Earth's magnetosphere. An important aspect for the realisation of observation systems for Space Safety is the need of high reliability, sufficiently long lifetime and low data latencies because the data will be used in operational purposes. Two precursor hosted payload missions of D3S have been realised with a radiation monitor and a magnetometer flying on two different GEO satellites providing near-real time information on current space weather conditions and an additional radiation monitor will fly on a GEO mission in 2021.

The project in this training opportunity will develop software tools for the monitoring of space weather instrument performance, data validation and space weather conditions in near-real time, which will be used to support the operations of the hosted payload missions. You will also directly be involved in the mission operations and operations planning of the hosted payload instruments in coordination with the hosting satellite operators.

Required education:

- Master-level degree in physics or engineering preferably with experience and interest in software development;
- Technical knowledge: C/C++, data visualization**;**
- Good interpersonal and communication skills;
- Ability to work in a multi- cultural environment as part of a team;
- Fluency in English and/or French, the working languages of the Agency; A good proficiency of English is required;
- Belgian nationality is a mandatory condition.

European Space Agency
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