Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2022-OPS-SWb)	**Space Weather Monitoring Missions**	**ESOC**

Overview of the mission:

ESA's Space Safety Programme is aiming to detect, predict and assess threats from space and their potential risk to life, property and infrastructure. The Space Weather Office in the Space Safety Programme 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.

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 vicinity. 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 as 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. Serval additional hosted payload flight are in preparation with additional radiation monitors flying on GEO missions in 2022 and missions planned for the lunar environment in 2024/25. In addition to hosted payload missions ESA is studying options for dedicated small satellite constellations.

You will contribute to various aspects of the implementation of D3S:

- consolidation of the D3S observation requirements,
- instrumentation development targeting D3S measurement requirement needs,
- mission development for hosted payloads and small satellites
- preparation of the monitoring of the hosted payloads and their data of ongoing and upcoming missions.

Required education and skills:

- Master's degree in a technical or scientific discipline
- Good interpersonal and communication skills
- Ability to work in a multi-cultural environment, both independently and as part of a team
- Fluency in English and/or French, the working languages of the Agency