ESA's FLEX Data Innovation and Science Cluster (DISC)

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Résumé

FLEX (FLuorescence EXplorer) is ESA's 8th Earth Explorer mission. The mission aims to provide an insight of the photosynthetic activity of vegetation by characterising its full energy balance (i.e., incoming radiation, reflected light, surface temperature, and fluorescence). Flying in tandem with Sentinel-3, FLEX will provide advanced biophysical products to understand photosynthetic activity with potential applications into stress detection and food productivity. In the last 4 years, several activities have been carried out spanning the development of FLEX core Level-1B (L1B) and Level-2 (L2) mission products, their validation with simulated data generated by an end-to-end mission performance simulator (E2ES), FLEX-related field campaigns, and processing of in-situ data. We recently started the activities for the implementation of FLEX Ground Segment within the so-called Data Innovation and Science Cluster (DISC), a team of scientists and technical experts in various domains related to the FLEX mission that will ensure efficient mission operations to provide the best data quality and will involve potential users of the FLEX data through outreach activities. The activities to be carried out by the FLEX DISC will encompass the following: (1) consolidating the prototype of L2 processor and industrialising it into an Instrument Processing Facility (IPF), (2) developing a collaborative platform that allows to bring FLEX users and algorithms to data, (3) developing tools to monitor the quality of the FLEX data products (Level-0 to L2), (4) design and implement a calibration/validation during commissioning phase and regular operation, (5) monitoring the FLEX data quality and maintaining calibration/validation, and (6) implementing evolutions of the processing algorithms to ensure state-of-the-art data products. The goal of this presentation is twofold: (1) giving an overview of ESA's FLEX mission and products; and (2) describing the DISC project from its objectives to the consortium and on-going activities & results.

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