

Swarm DISC: New Products and Services

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Introduction

Swarm DISC - the *Data, Innovation and Science Cluster* - is a consortium of expert partners supporting the exploitation of the Swarm mission based on an ESA contract.

The objective of Swarm DISC is to foster an ecosystem of new innovative data products or services enhancing the return on investment with respect to the Swarm scientific results.

Swarm DISC will collect ideas from the scientific community and publish Invitations To Tender of behalf of ESA for selected ideas, for a series of new potential projects targeted at evolving the Swarm mission outcome, according to a formal procurement procedure.

The long term ambition is to expand the consortium of institutions engaged in exploitation of Swarm to maximize the scientific outcome.

First Call for Ideas

The first Call for Ideas was issued in June 2016.

A total of 29 ideas were submitted and evaluated by the Swarm DISC Board of Representatives (SDBR).

Based on this evaluation, 4 open Invitations to Tender have been published by Swarm DISC. Several ideas have been recommended by SDBR for ESA consideration in relation to the definition of the mission Exploitation Programme for 2017 – 2021, and some ideas are considered for direct implementation in the existing Level 2 processing chain.

Authors who have permitted publication of their titles are listed below:

| Name | Institution | Title | Name | Institution | Title |
|-------------|-------------|---|-----------|-------------|--|
| Alken | CIRES | Ionospheric Current Strengths | Kartalev | BAS | Synoptic global modelling of ionosphere electrodynamics assimilating SWARM data |
| Balasis | NOA | Swarm ULF Wave Index | Kuvshinov | ERDW | Radial conductivity distribution from crust to mid mantle |
| De Michelis | INGV | Characterization of ionospheric turbulence level by Swarm | Kuvshinov | ERDW | 3-D conductivity model of the mantle using satellite, land-based and sea-bottom observations |
| Dunlop | STFC/RAL | Coordinated FACs from joint Cluster-Swarm observations | Laundal | UIB | Global empirical model of the high-latitude ionospheric current system |
| Dunlop | STFC/RAL | Two spacecraft FAC correlations and orientations | Lomidze | UoC | Ion temperature from a physics-based data-driven model |
| Dunlop | STFC/RAL | Enhanced ring current description from joint Swarm-Cluster observations | Olsen | DTU | Oceanic Magnetic Tides |
| Encarnação | DUT | Gravity field models derived from Swarm GPS data | Olsen | DTU | Strength and Location of the Polar Electrojets |
| Finlay | DTU | A Swarm Virtual Observatory (VMO) Network for Monitoring Core Field | Svitlov | LUH | Accelerometer characterization |
| Hoque | DLR | Topside ionosphere and plasmasphere electron density reconstruction | Thomson | BGS | Magnetic Monitoring of Space Weather Hazard to Satellites in the South Atlantic Anomaly |
| Hulot | IPGP | Swarm Delta | Velimsky | CUP | Ocean-generated Tidal Magnetic Field De-aliasing Model |
| Heilig | MFGI | Equatorward boundary of small scale FACs as a proxy for the midnight plasmapause position (Plasmapause index) | Xiong | GFZ | S4: A GPS amplitude scintillation index derived from Swarm satellites |
| Jackson | ETHZ | 4D variational data assimilation from Swarm using a quasi-geostrophic velocity field | Xiong | GFZ | The auroral boundaries derived from Swarm field-aligned current signatures |
| Juusola | FMI | Complementary data for Swarm: real-time maps of equivalent currents and auroras from MIRACLE | | | |

Invitations To Tender currently open

Swarm DISC ITT 1.1

Title: **"Swarm as a gravity field mission"**

Budget: 100.000 Euro

Publication Date: 2017-02-27

Closing Date: ~~2017-04-20~~ 2017-05-09

Swarm DISC ITT 1.2

Title: **"Strength and location of the auroral electrojets based on Swarm data"**

Budget: 100.000 Euro

Publication Date: 2017-03-06

Closing Date: 2017-04-27

Swarm DISC ITT 1.3

Title: **"Production and visualization of a climatological model of high-latitude ionospheric and field aligned current systems"**

Budget: 100.000 Euro

Publication Date: 2017-02-27

Closing Date: 2017-04-20

Swarm DISC ITT 1.4

Title: **"Ionospheric irregularities and fluctuations based on Swarm data"**

Budget: 100.000 Euro

Publication Date: 2017-03-14

Closing Date: 2017-05-04

Please visit http://space.dtu.dk/swarm_disc_itts for more information

Second Call for Ideas

Swarm DISC intends to publish the next Open Call during the spring of 2017 for Ideas for Products or Services.

The call will not be targeting scientific research, but rather the implementation and operation of sufficiently mature and validated methods that will enhance the scientific outcome of the Swarm mission.

Please visit http://space.dtu.dk/swarm_disc_itts for more information, and sign up for the Swarm DISC notification newsletter, to receive notification of new calls for ideas or publication of new Invitations to Tender by Swarm DISC.

