



Session Solar Physics, Inner Heliosphere, and Cosmic Rays

Presentation type: Oral () Poster () No preference ()

Running web-based model chains via ESA's Virtual Space Weather Modelling Centre

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Abstract

The ESA Virtual Space Weather Modelling Centre (VSWMC) project was defined as a long-term project, and now is approaching the final stages of deployment to final users. The VSWMC system was designed and developed in such a way that it enables models to be installed locally or to be geographically distributed, while they can be coupled and run remotely using the central system web interface. The objectives and scope of this new project include maintaining the current operational system, the efficient integration of 11 new models and many new model couplings. Many new couplings have also been implemented which can be used interactively.

The 11 new models that have been integrated are Wind-Predict (a global coronal model from CEA, France), the Coupled Thermosphere/Ionosphere Plasmasphere (CTIP) model, Multi-VP (another global coronal model from IRAP/CNRS, France), the BIRA Plasma sphere Model of electron density and temperatures inside and outside the plasmasphere coupled with the ionosphere (BPIM, Belgium), the SNRB (also named SNB3GEO) model for electron fluxes at geostationary orbit (covering the GOES 15 energy channels $>800\text{keV}$ and $>2\text{MeV}$) and the SNGI geomagnetic indices Kp and Dst models (University of Sheffield, UK), the SPARX Solar Energetic Particles transport model (University of Central Lancashire, UK), Spenvis DICTAT tool for s/c internal charging analysis (BISA, Belgium), the Gorgon magnetosphere model (ICL, UK), and the Drag Temperature Model (DTM) and operations-focused whole atmosphere model MCM being developed in the H2020 project SWAMI

Additionally, automatic daily end-to-end (Sun to Earth) simulations are made available to all VSWMC users. For further development, there is a clear need for a broader use of the coupling toolkit and front-end GUI, in order for the operating system to become more robust and user-friendly. In this presentation, we will provide an overview of the state-of-the-art, including the newly available model couplings and daily model chain runs, and demonstrate the system.

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