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Data assimilation tool to reconstruct particle flux measurements

Sebastien A. Bourdarie (1), Vincent Maget (1), Didier Lazaro (1), Ingmar Sandberg (2,3)

(1) ONERA The french aerospace lab, Space Technology Department, Toulouse cedex 4, France (Sebastien.Bourdarie@onera.fr, (33) 562252756, (2) IAASARS, National Observatory of Athens, Penteli, Greece, (3) Faculty of Physics, University of Athens, Athens, Greece

In the framework of the EU-FP7 MAARBLE project, the Salammbô code and an ensemble Kalman filter is being used to reproduce the electron radiation belt dynamics during storms:
(1) The ONERA data assimilation tool has been improved to ingest count rates instead of flux when the instrument response function is available. As an example, the ESA/SREM radiation monitor has complex response functions (proton and electron events are mixed, and for a given specie the instrument responds to a broad range of energies with different efficiencies) which makes very challenging to get fluxes out of count rates.
(2) INTEGRAL/SREM, GIOVE-B/SREM, XMM/ERMD and GOES/SEM data assimilation is performed to reproduce with high fidelity the electron belt dynamics during magnetic storms.
(3) Because the outputs of the tool are phase space densities, it is then possible to reconstruct INTEGRAL/SREM and GIOVE-B/SREM fluxes time series.
In the present talk, an overview of the data assimilation tool will be given. The advantage of using assimilation tool to reconstruct particle flux measurements will be discussed.
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