



CDPP 3DView web-service for SMILE SXI synthetic X-ray observations

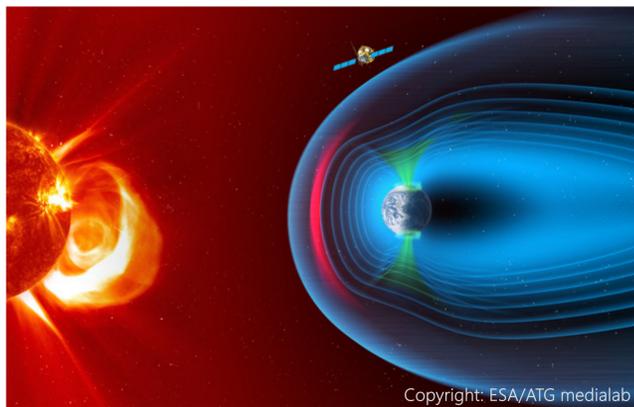
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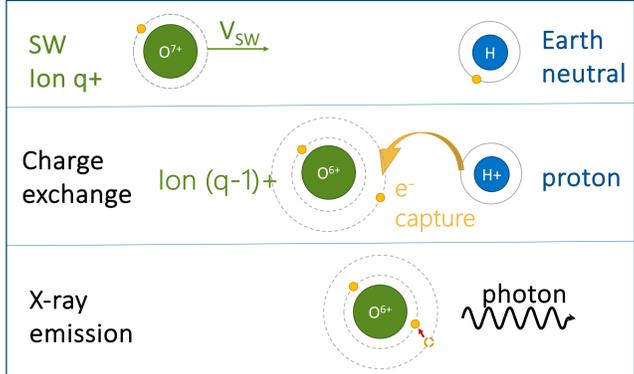
UMR 8190 - www.latmos.ipsl.fr

Solar Wind Charge eXchange (SWCX) X-ray imaging of magnetospheres

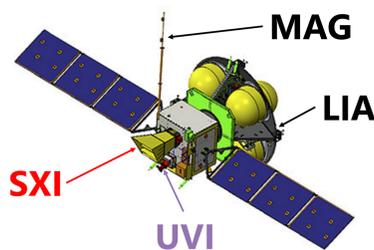
Solar Wind (SW) ions compressed in the magnetosheath, charge-exchange with planetary neutrals, illuminating the interface region and frontier surfaces (bow shock, magnetopause, cusps) in X-rays.



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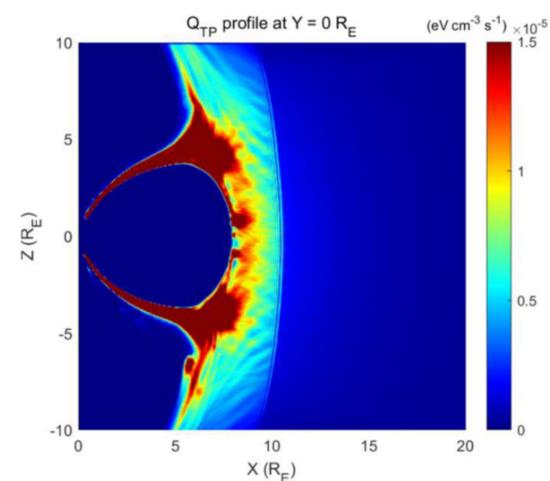
The Solar wind Magnetosphere Ionosphere Link Explorer (SMILE)



An ESA-CAS collaboration, SMILE will be the first mission to investigate the solar-terrestrial interaction globally. It will combine soft X-ray imaging (SXI) of the dayside magnetopause and polar cusps, with simultaneous UV imaging (UVI) of the auroras, and in-situ monitoring of the SW and magnetosheath plasma conditions (LIA, MAG).

Modeling efforts

The SMILE Modeling Working Group (MWG; <https://smile.alaska.edu/>) strives to collect and homogenize the parameters of various simulations and provide synthetic observations to help interpret the future SMILE data. We have developed the LATMOS Magnetospheric Test-Particle (LaMTeP) code to complement the traditional MHD approach (see talk by Xu et al.).



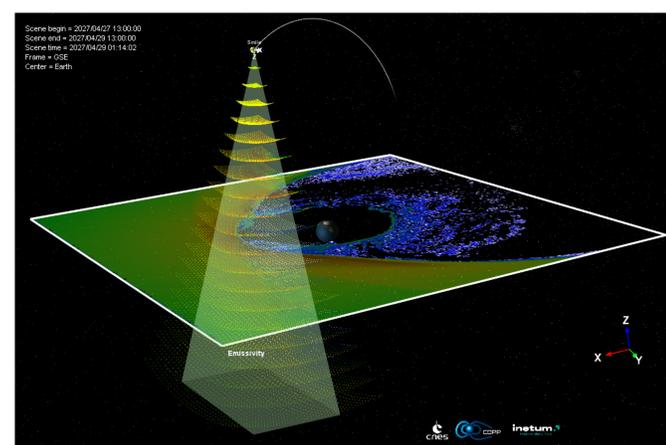
SWCX emissivity cut calculated with the LaMTeP code

3DView SXI X-ray map projection tool

Objective :

CDPP/3DView web-service to visualize an X-ray flux map for SMILE observing configurations and propose a 3D scene to facilitate the understanding of the geometry of the observation.

1. Loading emissivity cubes
 - a. Each user has the possibility to upload a 3D cube (for the moment netcdf format)
 - b. loading a cube from an online catalogue (ex: LatHyS catalogue <http://impex.latmos.ipsl.fr/LatHyS.htm>)
 - c. Future development: Accessing SXI observation catalogue from ESA archive (L4 data archive)
2. Calculation of the projected X-ray intensity - Based on the SXI simulator (Sembey & Read, U. Leicester)
 - a. Time interval of the scene \Rightarrow spice kernels provide corresponding S/C location and attitude.
 - b. Specification for FOV integration, integration path size, path step etc.



3. Visualisation Windows

- a. New window with 2D X-ray map (simulated or from SXI observations), projection of magnetopause location (e.g. Shue et al.)
- b. 3D auxiliary visualisation scenes: (3D magnetosphere, Emissivity cut planes etc.)

4. Saving the data/models – possibility to save the 2D map figure, and/or export the numerical data (ascii, votable)

