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The ASPIS prototype: the Database, the Web App, and the Python Package

The prototype of the scientific data centre for Space Weather of the Italian Space Agency (ASI) called ASPIS (ASI SPace Weather InfraStructure) has been recently developed and validated by the CAESAR (Comprehensive Space Weather Studies for the ASPIS prototype Realization) project.

The ASPIS prototype unifies multiple Space Weather (SWE) resources (data and models) through a flexible and adaptable architecture to allow scientists to perform studies across the SWE-related fields, e.g., adopting an integrated approach, encompassing the whole chain of phenomena from the Sun to the Earth up to planetary environments or parts of it.

This work presents the solutions adopted for the architecture and the functions defined on the prototype to cope with the challenging requirements of searching heterogeneous datasets, as well as the first results of creating the ASPIS prototype. The database handles the heterogeneity of metadata and data while storing and managing the interconnections of various space weather events. The pilot database is complete, installed at ASI, and accessible through different user interfaces, including a graphical web interface and an advanced Python module called ASPISpy, which have been specifically developed to facilitate data discovery, access, and analysis.

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