S1.05 Information Technology for Sun-Earth Connection Missions

Lead Center: GSFC

A large number of multiple-spacecraft missions are planned for the future of SEC science. Cost-effective implementation of these missions will require new information technology: tools, systems and architectures for mission planning, implementation, and operations; and science data processing and analysis that facilitate scientific understanding. Specific research areas of interest for these SEC multi-spacecraft missions include the following items below.

Information Technology for Cost-Effective Mission Planning and Implementation

Tools or systems are needed that improve the system engineering, integration, test, and synchronous operations of semiautonomous multispacraft missions with intermittent contact and large communication latencies; automated approaches to onboard science data processing and reactive onboard instrument management and control; and tools that capture and represent scientific objectives as preplanned and reactive onboard autonomous drivers.

Data Analysis

Items of interest in this area focus on innovative approaches and the tools necessary to support space and solar physics virtual observatories (physically distributed heterogeneous science data sources considered as a logical entity).

Tools are needed for enabling automated systematic identification, access, ad hoc science analysis, and distribution of large distributed heterogeneous data sets from space and solar physics data centers; and technologies and tools supporting inclusion of individual researcher provided, ad hoc, science analysis modules as a component of search criteria for remote data mining at space and solar physics data centers.