NASA and ESA Develop New Advanced Modeling Tool Using Systems Tool Kit

AGI Software Suite Provides Strengthened Analysis and Visualization

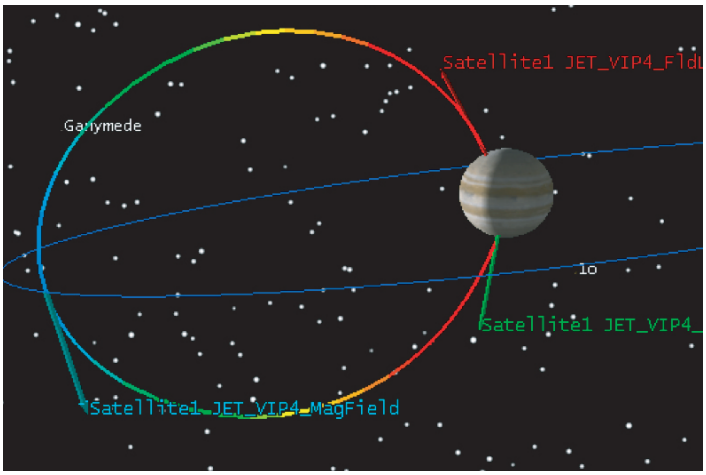
ONE TOOL: The Europa Jupiter System Mission (EJSM)—a joint international mission between NASA and ESA—will explore the Jupiter system to find out how gas giants and their planets evolve.

When the team needed geometric analysis and visualization of different magnetic field models, NASA's JPL team developed an STK plug-in. The result—the Jupiter Environment Tool (JET)—lets users visualize different magnetic field models of Jupiter using integrated rendering methods.

MULTIPLE REQUIREMENTS: The team needed geometric analysis and visualization for the magnetosphere, rings, dust, small bodies, the radiation field, satellite atmospheres, plasma and neutral tori, and radiation dose estimation. STK's accurate rendering of celestial bodies, object management, and graphics primitives provided such additional capabilities as area and line-target generation from footprint oval primitives, the addition of magnetic-field and field-line/central-body intersection vectors, and custom templates for reports and graphs.

"I knew that with STK, we could easily develop custom user interface plug-ins through an API. Beyond just Jupiter, we've shown that the plug-in can be extended to other planets and satellites. Basically any central body that is within STK—if you have a magnetic field model for it—the plug-in can be adapted to render that magnetic field."

— ERICK STURM, ENGINEER, NASA JPL



When NASA JPL needed geometric analysis and visualization of Jupiter magnetic field models for the Europa Jupiter System Mission, they built a custom user interface plug-in to STK. With the Jupiter Environment Tool (JET), users can visualize the different magnetic field models of Jupiter through various rendering methods that are fully integrated within STK's 3D Window. The plug-in serves as a proof-of-concept for further environment model integration.

MANY BENEFITS: Developers began by integrating three magnetic field models into the plug-in before creating an integrated user interface window, toolbar and context menu. The plug-in can display field lines, plane contours, flux-tube footprint ovals, and spherical-sector contours—with numerous customization options. JPL in-house development integrated Jovian magnetic field models into STK as a proof-of-concept for further environment model integration.

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