

Kamodo's Satellite Constellation Mission Planning Tool

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Kamodo provides a functional model-agnostic interface to a growing collection of Heliophysics model outputs. The CCMC, in collaboration with the Geospace Dynamics Constellation Science Team, has recently developed Kamodo's satellite constellation mission planning tool to perform reconstructions in any pair of dimensions, including time. The 'reconstruction' tool enables users to fly any 4-dimensional grid of satellites through a given model data set, reconstructing what the given constellation would observe during the mission. This capability facilitates determination of what satellite configuration is best for a given science question, even allowing comparison across multiple models. This tool, written in Python, is built upon Kamodo's flythrough tool, which in turn depends on a growing network of model-specific interfaces. Since each model interface is designed with model-agnostic syntax, the flythrough tool and the satellite constellation mission planning tool also feature model-agnostic syntax. In this work, we will describe the basic analysis choices available in the tool and provide a variety of sample workflows. The tool is freely available at <https://github.com/nasa/Kamodo> for the public. We invite the community to use the reconstruction tool and adapt the provided workflows for their mission planning, and to contribute their own workflows to share with others.

To be submitted to as a talk/poster to one of the sessions below:

SA015 - Leveraging Multi-Point and Multi-Source Observations to Advance Frontier ITM Science, <https://agu.confex.com/agu/fm22/prelim.cgi/Session/161686>

SM002 - Advancing Space Weather Research and Mission Development: OSSEs, OSEs and Related Methods, <https://agu.confex.com/agu/fm22/prelim.cgi/Session/160057>