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NASA's Geospace Dynamics Constellation (GDC) mission: a multi-spacecraft mission to explore the ionosphere-thermosphere

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The Geospace Dynamics Constellation (GDC) is NASA's next strategic Living With a Star mission. GDC's goals are: 1) Understand how the high-latitude ionosphere-thermosphere system responds to variable solar wind/magnetosphere forcing; and 2) Understand how internal processes in the global ionosphere-thermosphere system redistribute mass, momentum, and energy.

Planned for launch by the end of the decade, GDC will use six identical observatories, each identically instrumented to fully characterize the magnetospheric drivers of the I-T system as well as the global response of the ionized and neutral gases. GDC will do this with a series of orbital configurations that will enable it to study the widest range of spatial and temporal scales to date, ranging from hundreds of kilometers and several seconds to tens of minutes, and extending through the regional to the global scale.

This poster presents GDC's current status, measurement capabilities, sampling scheme, and model development efforts and show how GDC will fit into the larger Heliophysics ecosystem, by 1) obtaining critically needed scientific observations; 2) providing a source for real-time space weather and situational awareness, as well as retrospective studies to further the science of space weather; 3) serving as a "strategic hub" for other space-based and ground-based efforts that want to leverage GDC to perform complementary science.