2025 Workshop: How does GDC Science address the new decadal survey?

Long title
How does GDC Science address the new decadal survey?
Conveners
Katelynn Greer
Bea Gallardo LaCourt
Olga Verkhoglyadova
Austin Coleman (student)
katelynn.greer@lasp.colorado.edu
Description

The Geospace Dynamics Constellation (GDC) is a mission to study the coupling between the magnetosphere and the ionosphere/thermosphere system. GDC will address crucial scientific questions pertaining to (1) understand how the high latitude ionosphere-thermosphere (IT) system responds to variable solar wind/magnetosphere forcing and (2)understanding how internal processes in the global ionosphere-thermosphere system redistribute mass, momentum, and energy. GDC will be the first mission to address these objective on a global scale due to its use of a constellation of spacecraft (6) that enable simultaneous multi-point observations. In this session we will have a panel discussion of relevant guiding questions, focus areas and observational needs outlined in the new Decadal Survey (https://nap.nationalacademies.org/catalog/27938/the-next-decade-of-disc...). This will be followed by short presentations describing how GDC science addresses the Decadal Survey guidelines and how progress will be made. We are interested in insights of both the Ionospheres-Thermospheres-Mesospheres panel as well as the Magnetospheres panel reports. We suggest presentations to adopt the language of the Decadal Survey for explaining their GDC relevant science

Agenda

Speaker	Topic	
4:00-4:05	Katelynn Greer	Welcome & Introduction

4:05-4:25 Rebecca Bishop GDC Update

4:25-4:45 Phil Erikson Decadal Survey

4:45-4:55 Austin Coleman

4:55-5:05 Cheng Shen Multi-scale geomagnetic forcing and ionospheric and thermospheric disturbances

5:05-5:15 Josh Petit WACCMX simulations based on different solar radiation parameterizations

5:15-5:25 Katie Garcia-Sage Space weather efforts for the GDC mission

5:25-5:35 Shantanab Debchoudhury Near-simultaneous measurements of ionospheric densities measured by the Langmuir probes onboard the two LLITED CubeSats

5:35-6:00 Katelynn Greer Discussion

For virtual participation, please use the login details below:

https://alaska.zoom.us/j/81524127801

Justification

The GDC mission was recommended by the 2013 Heliophysics Decadal Survey and the 2024 Decadal Survey again found that the mission was foundational for the forward progress of heliophysics science, saying the panel “strongly affirms the value of GDC science and the
importance of this mission in advancing the understanding and prediction of space weather.” This mission requires extensive community engagement for its success. This is an opportunity for the community to help craft the ecosystem of system science that will be achieved with GDC throughout the geospace system. Given the wealth of observations the CEDAR and GEM communities work with, there are ample opportunities for collaboration which may lead to insights into coupling of atmospheric regions, coupling of the ionosphere, thermosphere and magnetosphere, wave dynamics, electrodynamics, vertical energy transfers, composition anomalies,

radiation belts, ring current, cold plasma, and the implied dynamics of the magnetosphere, thermosphere, and ionosphere.

Related to CEDAR Science Thrusts:
Encourage and undertake a systems perspective of geospace
Explore exchange processes at boundaries and transitions in geospace
Explore processes related to geospace evolution
Fuse the knowledge base across disciplines in the geosciences
Workshop format
Short Presentations
Panel Discussion
Keywords
GDC, thermosphere, ionosphere, magnetosphere
Focus Group and Group Leader

MESO - Bea Gallardo-Lacourt

View PDF