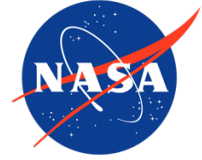


National Aeronautics and Space Administration



**Geospace Dynamics
Constellation (GDC)
Measurement Capabilities**

**for proposals in response to the
DYNAMIC AO**

Version 1.0

Published March 2023

This document accompanies the Announcement of Opportunity (AO) for the Dynamical Neutral Atmosphere-Ionosphere Coupling (DYNAMIC) mission and provides the Geospace Dynamics Constellation (GDC) Measurement Capabilities that are discussed in Section 5.1.2.1, *Use of GDC Measurements*, of the DYNAMIC AO.

The full capabilities of the GDC instrument complement have not been published at the time of this document's release. However, the GDC instrument performance is expected to meet or exceed the parameters initially included in the GDC investigation solicitation (Appendix P, SALMON-3 AO). The table of the GDC Physical Parameter available for use in response to the DYNAMIC AO is given on the next page.

Information on assumptions for the GDC constellation during DYNAMIC science operations can be found in Section 5.1.4, *Baseline and Threshold Science*, of the DYNAMIC AO.

Table GDC-1. GDC Physical Parameters

Reference Number	Physical Parameter	Dynamic Range	Accuracy	Precision	Sample Rate	
1	a	Thermal ion velocity, perpendicular to B (vector)	± 5000 m/s	20 m/s	20 m/s	1 / sec
	b	Thermal ion velocity, parallel to B	± 2000 m/s	20 m/s	20 m/s	
2		Thermal plasma density	$10^2 - 10^7$ cm ⁻³	Larger of 100 cm ⁻³ or 10%	Larger of 100 cm ⁻³ or 1%	
3		Thermal ion temperature	500 – 4000 K	Larger of 100 K or 10%	Larger of 50 K or 5%	
4		Thermal ion composition (relative), by species	1 – 32 AMU	Larger of 100 cm ⁻³ or 1%	Larger of 100 cm ⁻³ or 1%	1 / 3 sec
5	a	Neutral wind, horizontal (in-track)	± 1500 m/s	20 m/s	10 m/s	
	b	Neutral wind, horizontal (cross-track)	± 1500 m/s	20 m/s	10 m/s	
	c	Neutral wind, vertical (cross-track)	± 150 m/s	20 m/s	10 m/s	
6		Neutral gas number density	$10^7 - 10^{10}$ cm ⁻³	10%	2%	
7		Neutral gas temperature	400 – 2000 K	Larger of 50 K or 10%	Larger of 25 K or 2%	
8		Neutral gas composition, by species	1 – 40 AMU	Larger of 10^4 cm ⁻³ or 5%, per species	Larger of 10^4 cm ⁻³ or 5%, per species	
9		Auroral electrons energy / pitch angle distribution (downgoing)	Energy range 0.05 – 20 keV, dE/E < 20%, Pitch Angle resolution 10°, Energy flux range 0.1 – 100 mW/m ²		1 / sec	

Note: All GDC Physical Parameters are to be measured at the GDC spacecraft.

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