Dynamical Neutral Atmosphere-Ionosphere Coupling
(Phase A)
Frequently Asked Questions

Note: Unless stated otherwise, all relevant information provided in the Step-1 FAQ apply in the Step-2 competition. Those questions are not repeated in this document.

Last updated 10/23/2024 – Click here for the downloadable version

Categories of Questions

Change Log		
Rev.	**Date**	**Description of Changes**
00	8/23/2024	Added S-1, S-2, T-1, M-1 through -3.
01	8/29/2025	Added T-2.
02	9/16/2024	Added T-3, T-4, M-4, M-5, C-1, P-1, P-2, O-1.
03	10/22/2024	Added T-5, T-6, T-7, M-6, P-3.

Science

S-1. The Phase A PIs were directed that "[i]nvestigations shall not interact with the GDC project during their Phase A activities." This prohibition leads to the following sub-questions:

1. **Who are the "investigators" mentioned in this guidance? Does this mean that Phase A team members that are part of the GDC project must withdraw from GDC?**
2. **What kinds of interactions are prohibited?**
3. **Does NASA expect Phase A teams to update their CSRs based on GDC updates since the DYNAMIC AO was released?**

NASA provided this direction so that there was not either a) an appearance of unequal access to information, or b) an expectation that Phase A teams update their CSR based on information not provided by NASA as part of the DYNAMIC solicitation. This leads to the following answers to the sub-questions:

1. The direction stated a restriction on the investigation, not individuals. An individual that interacts with the GDC project as part of their GDC-specific responsibilities or as a member of a GDC-led community coordination group is not affected by this restriction as long as the interactions remain GDC-specific.
2. Investigations shall not interact with the GDC project during their Phase A activities. DYNAMIC Phase A team members acting on behalf of their Phase A team, or otherwise discussing the DYNAMIC investigation with the GDC project, represents the investigation interacting with the GDC project.
3. No. The GDC planning details that DYNAMIC Phase A teams are expected to incorporate will be conveyed by NASA as part of the DYNAMIC solicitation and associated homepage. A DYNAMIC Phase A team that attempts to gain a competitive advantage by incorporating GDC planning details not conveyed by NASA as part of the DYNAMIC solicitation should expect to be examined for leveraging non-public information. NASA does not intend to conduct any refinement or redefinition of the scope of the DYNAMIC science from the decadal survey. The 2013 Solar and Space Physics Decadal Survey described the meaning of "lower-atmosphere weather" in its discussion of the DYNAMIC science investigation (p. 99 of that document).

S-2. The Phase A PIs were directed to "submit with their Concept Study Report a quantification of the impact to the investigation if GDC data are not available during DYNAMIC science operations." However, this information would be outside of the Phase A evaluation criteria. This leads to the following sub-questions:

1. Who will have access to this information?

2. How is NASA planning on using this information?

This impact quantification is discussed in the Criteria and Requirements (C&R), under Appendix L.19. This leads to the following answers to the sub-questions:

1. NASA and the Phase A evaluation team.
2. The use of this information is described in C&R Appendix L.19. It is input to NASA's programmatic considerations.

Technology

T-1. Does NASA have more information on the GFE Auroral Imager for incorporation into the Phase A studies? If not, is there an expectation of when that information will be provided?

No. NASA will convey information as soon as it is available. In the meantime, Phase A teams should proceed with the planning information provided with the AO.

T-2. A new *DYNAMIC System Interface Specification* (SIS) has been posted to the Program Library, as NASA stated at the Phase A kick-off meeting. This Rev 2 of the SIS includes updated requirements over the Step-1 version. In particular, Appendix

B describes environments that may be harder to meet and may require design changes. This leads to the following sub-questions:

1. **Can Concept Study Reports describe a design consistent with the Step 1 version of the SIS and postpone assessment of the Rev 2 implications until Phase B?**
2. **Will NASA provide additional funding beyond the cost cap for these changes?**
3. **How should any such changes be documented in the CSR?**

The SIS has been updated in Step 2 to provide general clarification of existing requirements, as well as updates to Appendix B (*Encompassing Launch Environments*) and Figure 6.2. These updates reflect the latest data available. Even though it may impact the mission design, representing launch vehicle environments as accurately as possible is in both NASA's and a project's interest for implementation. This leads to the following answers to the sub-questions:

1. No. Concept Study Reports must address full compliance with all requirements in the DYNAMIC SIS Rev 2.
2. No. Compliance with the DYNAMIC SIS Rev 2 is part of the baseline PI-Managed Mission Cost subject to the same Cost Cap or Adjusted Cost Cap as described in the AO.
3. The Final version of the *Criteria and Requirements for the Phase A Concept Study Report* (C&R) document will include provision for an optional Appendix, which Concept Study Teams can use to summarize the impact that the environments update has had on their mission design, if any. The appendix will include a requirement similar to the following. Please consult the C&R, when published, for the final wording.

   "Requirement CS-150 If applicable, this appendix shall summarize any impact on the mission design from the updated launch vehicle environments in the DYNAMIC SIS, Appendix B and Figure 6.2. This assessment will be for the CSR mission design, compared against how the mission design would have been under the previous SIS."

T-3. The SIS in Appendix C states that "standard LV-provided payload separation system" is included in the Rideshare launch standard service. The SIS requirement 6.3.3.1 provides three examples of "commonly used separation systems". This leads to the following sub-questions:

1. **Do the three examples listed in 6.3.3.1 represent the full list of "standard LV-provided payload separation systems"?**
2. **Can a Concept Study Report describe a separation system different from the ones on that list?**

The SIS applies to rideshare missions under the NLS-II contract and is based on do-no-harm principles, which include NASA flight qualification standards for separation systems. This leads to the following answers to the sub-questions:

1. Yes, for the purposes of the DYNAMIC AO.
2. Concept Study Teams who intend to propose the use of a non-standard separation system must contact the POC listed in AO, Section 5.9.2.1, with a description of

their separation requirements. The LSP POC will provide information on the feasibility of the proposed approach and, if feasible, any additional cost(s) that the Concept Study Team is responsible for. Additional costs for the non-standard separation system, as listed by LSP, must be included as part of the PIMMC under WBS 8.0.

T-4. What does NASA define as critical flight events for Class D projects?

NASA does not change the definition of critical flight events by risk class. The AO in Section 5.2.7 summarizes the NPR 8705.4 definition of critical flight events. NPR 8705.4A, available in the Program Library, states the expectations for each risk class regarding telemetry coverage during critical flight events.

T-5. The DYNAMIC AO offers a $10M incentive for investigations that accommodate a government-furnished Auroral Imager (AI) and the Step-1 Q&A T-1 states that two Auroral Imager units will be provided. This leads to the following sub-questions for Step 2:

1. **Are Concept Study Teams limited to the accommodation decisions they made in Step 1 regarding the AI?**
2. **Does accommodation of the AI require accommodation of both potential units?**

The terms of the AO, including the $10M incentive for accommodation of the Auroral Imager, remain unchanged in Step 2 unless they have been superseded by a specific requirement in the *Criteria and Requirements for the Phase A Concept Study Report* (C&R) document. This leads to the following answers to the sub-questions:

1. No. Concept Study Reports can contain changes from the Step-1 proposals provided that they remain compliant with AO and C&R terms. The Adjusted AO Cost Cap applied to CSRs, including the AI $10M incentive, can be re-calculated in Step 2 based on the CSR's mission concept.
2. No. Step-1 Q&A T-1 indicated the maximum that could be provided by NASA, not the number of AIs that an investigation was required to accommodate. Accommodation of a single AI would also qualify for the $10M incentive, regardless of the number of flight systems.

T-6. The Auroral Imager (AI) Accommodation Parameters and Measurement Capabilities document dated March 2023 states that "[f]urther details on the auroral imager characteristics and capabilities will follow during Phase A," but those have not been provided at this time. This leads to the following sub-questions:

1. **When will the update to the Auroral Imager accommodation parameters be provided?**
2. **Will a structural model and a thermal model of the AI be provided?**
3. **Will commissioning, calibration, and science observation requirements be provided?**

No update is available on the AI technical characteristics at this time. This leads to the following answers to the sub-questions:

1. Concept Study Teams should not anticipate an update during Phase A. The technical parameters in the Step-1 version of the document will hold for the duration of Phase A. Evaluation of the AI accommodation will take into consideration the limited information that has been made available.
2. No structural or thermal model of the Auroral Imager will be provided during Phase A. Where information is needed to achieve a Phase A level of spacecraft design, Concept Study Teams who propose to accommodate the AI are expected to make conservative, reasonable assumptions consistent with the parameters in the Program Library document and to document these assumptions in the CSR.
3. Commissioning, calibration, and science observation requirements for the AI will not be provided during Phase A. Within their concept of operations, Concept Study Teams who propose to accommodate the AI are expected to make allocations for the AI that are conservative, reasonable, and consistent with the parameters in the Program Library document and to document these assumptions in the CSR.

T-7. The DYNAMIC SIS, in Requirement 6.3.2.1, states "[i]f your design requires protrusion outside the cube volume, please provide rationale for evaluation and consideration in the proposal or CSR". What types of protrusions are acceptable?

NASA does not pre-define acceptable or unacceptable protrusions. However, the volume limitations in the SIS are driven by the need to fit within the launch vehicle fairing and for clearance to other payloads accommodated on the same ESPA ring. Small protrusions outside of the cube volume are easier to accommodate in the plane of the ESPA ring (the X-Z plane, as labeled in the SIS) and farther away (in the radial direction; X, as labeled in the SIS) from the payload's interface to the ESPA port. Protrusions may not impact the payload's ability to fit within the fairing.

Management and Schedule

M-1. Will NASA request a Phase B proposal at the same time as the CSR submission?

That information is not available for release at this time. The contract process was planned to expedite the Phase A on-boarding. NASA will not finalize the Phase B Bridge proposal process until that is completed. When NASA does finalize that process, a significant consideration will be not unduly burdening the Phase A teams.

M-2 The Phase A PIs were told that they "should expect the Phase A contract to have a longer period of performance than for other NASA concept studies." When will the schedule be finalized?

The contract schedule and period of performance is set when the contract is finalized. NASA will alert the relevant individuals if a modification to that period of performance is required.

M-3. The Phase A PIs were instructed to "anticipate the need for flexibility in the ramp-up and conduct of Phase B activities, potentially in both FY25 and FY26." This leads to the following sub-questions:

1. **Is NASA able to provide specific scenarios that the Phase A teams can start planning for now?**
2. **Is Phase B ramp-up was delayed, would NASA expect the flight system to still be delivered by the date provided in the AO?**

That guidance was provided due to the recent budget environment. This leads to the following answers to the sub-questions:

1. No. NASA does not currently have additional planning information and does not wish for teams to start planning for any specific scenario.
2. No. If a project incurs a delay due to a NASA action, then NASA would discuss the schedule impacts.

M-4. The DYNAMIC AO set a development schedule based on the CSR due date of January 2025. With the CSR due date now set in May 2025, will the "no later than" requirement regarding the Delivery Readiness Date (DRD) shift from (the AO-specified) NLT 31 December 2028?

Yes. The final C&R will show a "no later than" DRD of NLT 31 May 2029.

M-5. Are the Phase A teams responsible for submitting a certified Phase B proposal? Question M-1 suggests that it will be requested after the Phase A contract process is completed.

The C&R, on page 3, states that NASA will negotiate the full Phase B contract after the down-selection decision. Question M-1 addresses the Phase B Bridge proposal only.

M-6. Who bears responsibility for launching spaceflight hardware produced as part of a Student Collaboration (SC)?

Two types of spaceflight hardware could be produced under a SC: 1) hardware integrated into the investigation's primary mission (*e.g.*, additional instrument, CubeSat physically integrated into a spacecraft), or 2) a separate spacecraft.

1. Hardware physically integrated into the mission would launch with the mission. In this case, the C&R requires that CSRs show how the SC hardware would fit together with the investigation's primary mission hardware into the NASA-provided access to space.
2. Launching separate spacecraft would be the responsibility of the project within their allotted SC funding. If eligible, projects may apply to NASA's CubeSat Launch Initiative (CSLI), but NASA does not guarantee that they will be accepted. If a SC is not accepted by CSLI or another provider, NASA does not commit to finding it another launch opportunity.

Cost

C-1. Does NASA expect CSRs to match a particular funding profile?

No, NASA does not expect CSRs to match a particular funding profile. CSRs are required to meet the Delivery Readiness Date within the AO cost cap. (See also Q&A M-4.)

Proposal Evaluation

P-1. Section A of the C&R discusses the re-review of Form A if there are changes in the CSR that undermine the evaluation of the Step-1 proposal. Requirement CS-19 states that

> **"The Science Investigation section shall describe the science investigation as specified by Requirements B-16 through B-19 in Appendix B of the AO. If there are no changes from the Step-1 proposal, including no Form A or D Potential Major Weakness (PMW) clarifications, this section shall be reproduced identically from the Step-1 proposal, with a statement that there have been no changes. Such a statement may be inserted before the first page of this section or it may be included in Appendix L.18 of the CSR. Any updates to the original (submitted) Step-1 proposal section (including those made in response to Step-1 Form A and D PMW clarifications) shall be incorporated in the Science Investigation section of the CSR."**

This leads to the following sub-questions:

1. **Does updating the proposal text to reflect the Step-1 Form A/D PMW clarifications trigger a Form A/D re-review?**
2. **Does NASA expect CSRs to integrate the Step-1 PMW responses into the main proposal text or to keep them in their own subsection?**
3. **Does NASA expect the color coding of text to distinguish changes due to PMW responses from changes to address a Step-1 evaluation finding?**

The C&R document refers to the Step-1 proposal and the original (submitted) Step-1 proposal as separate documents. Section A (Scientific Merit of the Proposed Investigation) states that the basis for a re-review is changes to the Step-1 proposal. The "Evaluation Overview" at the Phase A Kick-off reminded the teams that NASA considers the Step-1 proposal to include updates provided in the PMW responses. Requirement CS-19 requires identifying changes to the original Step-1 proposal, and the *Science Change Matrix Example* (available in the Program Library) shows one method to do so. This leads to the following answers to the sub-questions:

1. No. The "Step-1 proposal" is the original (submitted) Step-1 proposal with the updates from the clarification process. Changes to the Step-1 proposal could trigger a Form A/D re-review.

2. NASA does not prescribe the method, but integration into the main proposal text is preferred. The Step-2 review panel will not have access to the Step-1 material (e.g., proposal, clarification responses), and separating the original (submitted) from the updated material in the CSR could have unintended consequences.
3. No. In the *Science Change Matrix Example*, NASA identified new changes (#1-2) with the same method as an update in the Step-1 clarification process (#3).

P-2. The C&R in Section L.11 states "NASA Interim Directive (NID) 7120.132 has been superseded by NPR 8079.1, but for this CSR evaluation, NID 7120.132 is still in effect". Are CSRs permitted to specify potential impacts that application of NPR 8079.1 after down-selection will have on the project?

The C&R does not require CSRs to include a description of the impact of NPR 8079.1 on projects because it is expected that the key driving requirements that affect mission design and project resources were already included in NID 7120.132. DYNAMIC Step-1 proposals were responsible for planning for compliance with NID 7120.132 per the AO, Section 4.6.4. However, CSRs are welcome to discuss any additional potential impacts in Appendix L.11.

P-3. Before NASA published the Final version of the *Criteria and Requirements for the Phase A Concept Study Report* (C&R) document, there was an "Updated Draft" C&R version posted at the time of the Phase A Kick-Off. How will NASA handle differences between the Updated Draft and Final versions?

The Final version of the C&R document forms the basis of the Step-2 competition and supersedes the Updated Draft version in its entirety. Concept Study Teams are responsible for reviewing the Final version of the document closely and adhering to its requirements. The changes include, but are not limited to, the following:

- Addition of Requirement 50A under Section F.6, which supersedes AO Requirement 102 regarding the “no later than” allowed for the delivery readiness date (consistent with Q&A M-4);
- Notes in Section F.2 that the DYNAMIC *System Interface Specification* (SIS) and the *Rideshare Accommodation spreadsheet* have been updated for Step 2 (consistent with Q&A T-2).
- Addition of Appendix L.29 related to the updated DYNAMIC SIS. Subsequent numbering is correspondingly incremented (consistent with Q&A T-2);
- Deletion of the sentence “Such commitments shall be submitted no later than the Site Visit.” from Appendix L.1;
- Requirement CS-112 text added back with a note that the requirement is deferred; and
- Listing of the deadline for Statements of Work (SOW) in the introduction for consistency with App. L.5.

The C&R is now under configuration control. Any future version will be marked "Amended" with every change tracked.

Proposal Submission

No questions received.

Other

O-1. The C&R states that "[t]he CSR evaluation process will include visits (either in person, virtual, or hybrid) by the evaluation team to each investigation team's chosen site, to hear oral briefings and, if needed, to receive updates and clarification of material in the CSRs. These briefings will be conducted approximately three months following submission of the CSRs". When will the site visit dates be confirmed?

The "Evaluation Overview" presentation at the Phase A Kick-off stated an expectation that the site visits would be confirmed in the November/December timeframe. If NASA decides to confirm the dates later than that, the Phase A teams will be notified.