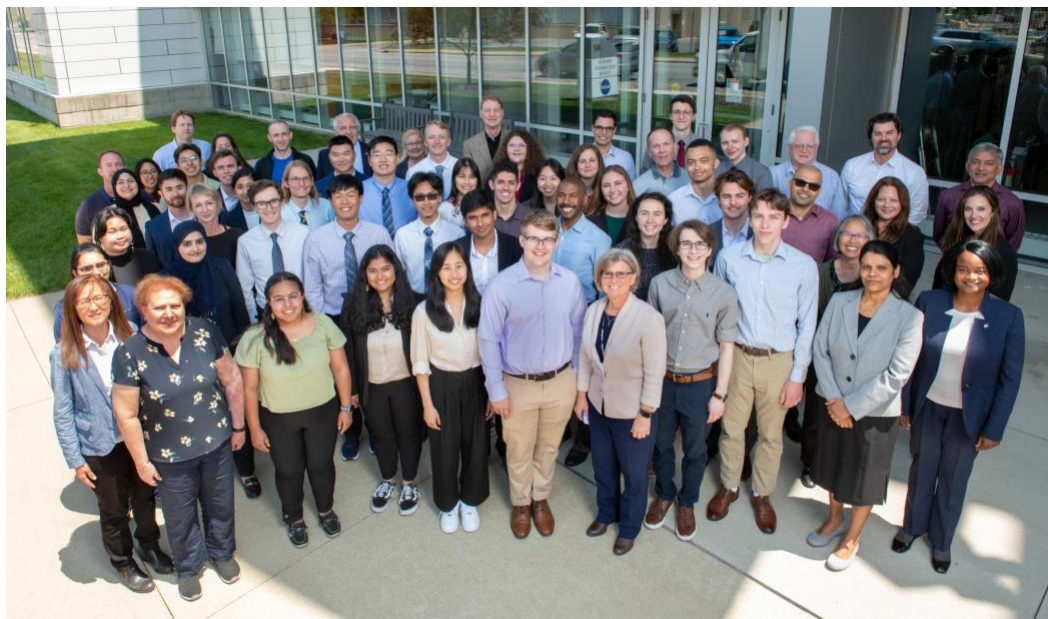# 2024: GATEWAYS TO BLUE SKIES COMPETITION

ADVANCING AVIATION FOR NATURAL DISASTERS

The Gateways to Blue Skies competition is managed by the National Institute of Aerospace (NIA) on behalf of the National Aeronautics and Space Administration (NASA)

2024 BLUE SKIES: ADVANCING AVIATION FOR NATURAL DISASTERS

Change Log

- 17 October 2023: Notice of Intent (NOI) Submission Deadline was changed from October 16, 2023 to Rolling (until 11:59 PM Eastern on February 27, 2024).
- 10 January 2024: A new hi-res photo or graphic requirement was added to the Proposal and Video Submission & Technical Paper Submission sections.
- 12 March 2024: Finalist teams will not need to bring a printed poster to the 2024 Blue Skies Forum. Instead, the submitted digital file will be displayed on a flat-screen TV via USB drive (Page 18). Teams will not need to provide their own USB drive.

NASA Aeronautics & University Innovation Project Overview

NASA's Aeronautics Research Mission Directorate (ARMD) conducts research that generates concepts, tools, and technologies to enable advances in our Nation's aviation future. ARMD programs facilitate a safer, more environmentally friendly, and efficient national air transportation system.

As a program within NASA ARMD, the University Innovation Project (UI) funds university-led innovation to address system-level challenges in NASA Aeronautics' strategic plan, which guides the Aeronautics programs. This is done through NASA-complementary, independent, alternative, and multi-disciplinary research. The main UI research opportunities include the University Leadership Initiative (ULI), the University Student Research Challenge (USRC), and the Gateway to Blue Skies Competition.

Gateways to Blue Skies Competition Overview

Blue Skies expands engagement between universities and NASA's University Innovation Project, industry, and government partners by providing an opportunity for multi-disciplinary teams of students from all academic levels (i.e., freshman, sophomore, junior, senior, and graduate) to tackle significant challenges and opportunities for the aviation industry through a new project theme each year. The competition is guided by a push toward new technologies as well as environmentally and socially conscious aviation.

Through the 2024 Blue Skies Competition, collegiate-level student **teams will conceptualize applications of new and existing capabilities that can be deployed through aviation to aid in one of the management phases of a selected natural disaster.** This challenge seeks to investigate aviation-related capabilities that, if developed further or approached differently, could play a major role in modernizing existing disaster management practices, thereby mitigating loss of life, property, and/or natural resources due to natural disasters. Initial participation involves a conceptual study, submission of a 5-7 page proposal, and creation of a video summarizing the team's proposal.

Based on the review of proposal submissions, up to 8 teams may be chosen as finalists to develop an 8-10 page final technical paper, an infographic summarizing their concept, and to present their findings in a competitive review during the Gateways to Blue Skies Forum at NASA's Ames Research Center. Teams are limited to not less than 2 students and not more than 6 students, plus one (1) faculty advisor. Each finalist team will receive a monetary award to facilitate full finalist participation. Internship opportunities with NASA's ARMD serve as the competition prize for members from the winning team.

2024 Competition Theme Background/Context

The number and cost of weather and climate disasters are increasing globally due to a combination of increased exposure (i.e., more assets at risk), vulnerability (i.e., how much damage a hazard of given intensity – wind speed, or flood depth, for example – causes at a location), and the fact that climate change is increasing the frequency of some types of extremes that lead to billion-dollar disasters. In 2022 alone, the United States experienced 18 separate weather and climate disasters costing at least $1 billion, including winter storms/cold waves, wildfire, drought/heat wave, flooding, tornado outbreaks, tropical cyclones, and severe weather/hail events. (More context: National Climate Assessment 2018, Climate.gov). As of May, there were already seven confirmed 2023 weather/climate disaster events in the United States with losses exceeding $1 billion. Since 1980, the U.S. has sustained over 355 weather and climate disasters with an average of 363 deaths per year. (Source: NOAA).

As climate change increasingly influences the frequency and severity of natural disasters on a global scale, opportunities to contribute at the intersection of technological advancement, aviation, and natural disasters grow in both number and importance. NASA Aeronautics is dedicated to expanding its efforts to assist commercial, industry, and government partners in advancing aviation-related systems that could help prepare for natural disasters, lessen their impacts, and speed up recovery efforts.

Current technology utilized on or with aviation platforms for disaster management is often outdated. Opportunities exist to improve currently deployed systems and/or implement technologies or technology applications from other places to modernize aviation's capabilities in natural disaster work. An example of this is how NASA's Advanced Capabilities for Emergency Response Operations (ACERO) program is using drones and advanced aviation technologies to improve wildland fire coordination and operations. Current aerial firefighting operations are limited to times when aircraft have clear visibility – otherwise, pilots run the risk of flying into terrain or colliding with other aircraft. That means aircraft are grounded during the night and during periods of heavy smoke. Drones can help expand the window of time available for aerial suppression because they can be safely operated by pilots on the ground. Using drones for aerial suppression operations would reduce safety risks to pilots and make aerial wildfire operations more effective. However, adoption among first responders and emergency management personnel is slow, with barriers including outdated tools and systems, lack of trust in the technology, lack of reliability of the technology in austere environments, interoperability with other technologies, and cost.

Similarly, conditions exist along the gamut of natural disasters where improvements to existing aviation-based systems or new systems and technologies could greatly improve the impact of our natural disaster management. Examples include, but are not limited to:

- artificial intelligence
- remote sensing
- reconnaissance
- autonomy
- robotics
- data collection, management, and dissemination

- airspace management to mitigate hazardous response conditions
- rapidly identifying areas in need of relief
- logistics and relief delivery
- resource allocation and tracking
- common or share operating picture (ground crews, pilots, incident command, etc.)

2024 Competition Theme Description and Details

In the 2024 Blue Skies Competition, teams will conceptualize, in terms of feasibility and viability, aviation-related system(s) that can be applied by 2035 to one phase of management of a chosen type of natural disaster. Teams are encouraged to consider high-potential technologies and systems that aren't currently mainstream or highly regarded as becoming mainstream in the future. Proposing teams will:

1. **Assess the situation:** Select one type of natural disaster (see list for examples) and one phase of disaster management to focus on (preparation, response, or recovery). For the selected type of natural disaster, assess its current impacts, the people involved in the disasters' management, and aviation-related operations and technology currently utilized. Given today's environment, and the fact that many disasters are getting worse, more frequent, and more impactful, identify the predicted needs and demands of the future that can be met with aviation-related solutions.
   a. Many emergency response professionals believe that there is no one proposed concept that will be applicable for all different natural disasters or can be applied universally across disaster management phases. As such, it is more important to focus on one specific disaster and a disaster phase rather than providing concepts that could be applied generally for all disaster phases.
   b. Teams are not limited to the list of examples and are encouraged to select a type of natural disaster they are passionate about or that may affect them regionally or personally.
2. **Identify a use case & propose a solution:** Conceptualize and justify a system(s) that can be applied to a specific — team-identified — aviation use case and is deployable by 2035.
   a. Teams may consider adopting **new** technologies, proposing **updated** technology applications, **integrating** technologies used elsewhere, making **better use** of existing technologies, **evolving** organizational practices to better employ technologies, etc.
   b. Consider the operational context surrounding the system, i.e., those impacted by the technology, decisions made from information collected (and who makes the decision), what part of the process is the technology improving, etc.
3. **Conceptualize implementation:** Provide an overview and concept of operations (ConOps) of the system(s) addressing the team-identified disaster management use case(s). Concepts must consider:
   a. Minimal barriers to adoption/use (i.e. effectiveness, simplicity, high reliability, user-friendliness)
   b. Cost/return on investment
   c. Support system requirements
   d. Connectivity constraints (lack of internet, power, GPS, etc.)
   e. Challenges posed by adverse environmental conditions (wind, rain, smoke, etc.)
   f. Interoperability with existing people, processes, organizations, solutions, and technologies
   g. Expected improvement over existing practices
4. **Chart a path to deployment:** Conduct analysis of the pathway and timeline to implementation for the system(s) by 2035, including, but not limited to: technology readiness levels, training, customer/stakeholder operational integration, and opportunity/barrier analysis (technology/development, policy and regulations, risks, etc.).

Teams are highly encouraged to contact appropriate stakeholders or emergency response professionals to better understand the impacts of a selected type of natural disaster and its management approach gaps that may be addressed through aviation-related systems.

Eligibility

The Gateways to Blue Skies competition is open to full-time or part-time undergraduate and graduate students at an accredited U.S.-based community college, college, or university. Teams may also include senior capstone students, clubs, and/or multi-university teams. Multi-disciplinary teams and Minority Serving Institutions are highly encouraged to apply!

University Teams Must Include:
- At a minimum, teams must contain one faculty advisor with a college/university affiliation at a lead U.S.-based institution, and 2 U.S. citizen (or lawful permanent resident) students from that lead U.S.-based college/university who work on the project and present at the culminating Blue Skies Forum.
- Team size is limited to a maximum of 6 student team members.
- A faculty advisor is encouraged to attend the Forum with each team.

Special Eligibility Considerations
- An individual may join more than one team.
- A faculty advisor may advise more than one team.
- A university may submit more than one proposal.
- Team members may not be a federal employee acting within the scope of employment (this includes co-op students with civil servant status).
- The expectation is that Blue Skies projects are student-led initiatives (i.e., students are doing the work).
  - Faculty take on the role as mentors, and if a team is selected as a finalist, help manage any monetary awards sent to the university.

Special Notes Regarding Foreign Nationals
Foreign Nationals (FNs) attending the proposing U.S.-based university can participate on a Blue Skies Competition Team, with notable exclusions. ***Due to NASA security restrictions and policies, FNs will not be able to attend culminating Blue Skies Forum events that take place on-site at a NASA Center (including tours). FNs are also ineligible for the internship prize.*** There will be no exceptions to this policy. FNs can, however, participate in any portions of the culminating Blue Skies Forum that take place off-Center.

Foreign Universities: Ineligible
Because this is a NASA-sponsored competition, eligibility is limited to universities in the United States. **Foreign universities are not eligible to participate in the Blue Skies Competition.**

Dates and Deadlines

Note: All deadlines must be met by 11:59 PM Eastern Time on the date specified below, unless otherwise indicated.

DATE	DESCRIPTION
Rolling Previously October 16, 2023	Notifications of Intent (NOI) submissions deadline (non-binding)
October 25, 2023	Deadline to submit questions in advance for 1st Q&A Session
November 2, 2023	Q&A Session #1 for interested teams (3:30-5:00 PM Eastern Time)
January 25, 2024	Q&A Session #2 for interested teams (3:30-4:30 PM Eastern Time, Open-Call Format)
February 27, 2024	Deadline to submit Proposal and Video
March 26, 2024	Teams are notified of their selection status
April 29, 2024	Deadline for Online Registration and Payment for the Gateways to Blue Skies Forum
April 29, 2024	Deadline for Hotel Reservations at Gateways to Blue Skies Group Rate
May 13, 2024	Deadline to submit Final Technical Paper & Infographic
May 27, 2024	Deadline to submit Presentation/Chart Deck Files (Noon Eastern Time)
May 30-31, 2024	2024 Gateways to Blue Skies Forum at NASA's Ames Research Center

(Click image below to expand in web browser.)

Notice of Intent

Notice of Intent Deadline: Rolling until the Proposal & Video Submission Deadline (11:59 PM Eastern Time February 27, 2024)

Interested teams are strongly encouraged to submit a Notice of Intent (NOI) to compete by the deadline to stay informed of competition news, and for program managers to ensure an adequate number of proposal reviewers. Teams are limited to one NOI. Teams who submit an NOI by the deadline will receive an exclusive invitation to participate in the Q&A sessions with judges prior to the proposal due date and will receive all competition updates. NOIs submitted by the deadline will be reviewed, and teams with concepts outside of competition parameters will be notified. NOIs do not need to be comprehensive, are non-binding, and intended concepts may change prior to proposal submission.

To complete the brief NOI form, visit the Blue Skies Competition Details website.

The following information will be requested on the NOI submission form:

- Name of College or University
- Partnering universities (if any)
- Project title (if known)
- Contact information for the faculty advisor and student team lead
- Contact information for additional advisors/team members (if applicable)
- Synopsis (high-level overview) of the proposed concept (limited to 1,500 characters), including type of disaster and disaster management phase selected.

Optional (but requested) items:
- Where do you seek information about available academic opportunities / academic competitions?
- Please suggest other avenues for competition awareness (i.e., specific database listing, newsletter distribution, etc.)
- What made you want to participate in this competition?

Proposal and 2-Minute Video

Proposal and Video Submission Deadline: 11:59 PM Eastern Time on February 27, 2024

Submitting teams represent and warrant that the team is the sole author of the submission, that the submission is wholly original, that it does not infringe on any copyright or any other rights of any third party of which the team is aware, and that the electronic proposal and video submission are free of malware. Teams may not have any portion of their submissions created by non-team members, which includes the use of tools such as Generative AI.

PROPOSAL GUIDELINES

Proposal Expectations

Robust proposals are expected, which demonstrate a strong basis of research analysis. The Gateways to Blue Skies judging panel will be seeking well-developed concepts that have strong potential for future development and/or near-term implementation. **Special emphasis is placed on innovative systems and/or applications.** The proposal should reflect the total scope planned for the final paper. **Permitted length is a minimum of 5 pages and maximum of 7 pages.**

Required Proposal Elements:

Utilize the Checklist for a Successful Proposal to ensure your proposal is complete prior to submitting. ****Note, there is a new requirement for a hi-res photo or graphic of all or part of your concept to be uploaded to FormSite upon submittal.**

Cover Page (Excluded from page limitation)

- Proposals must include a cover page with the following information:
    - University name
    - Project title
    - Team Photo and/or Individual Photos labeled with the full names of all team members [including faculty advisor(s)] along with major course of study and academic level of each student (undergraduate or graduate).
    - OPTIONAL, but encouraged: A graphical depiction of proposed concept.
- IMPORTANT: Faculty advisor signature of review and approval on the Cover Page, preferably e-signed through document software.
    - **Note: Submissions without a valid faculty signature will be deemed non-compliant and will not be reviewed.**
- Teams should reference the sample Cover Page when submitting proposals. Sample can be found on the "Proposal" section of the 2024 Challenge Details webpage.

Quad Chart (Excluded from page limitation)

- A Quad Chart is a form of technical documentation used to briefly describe a concept or innovation through writing, illustration and/or photographs. It is a useful tool for decision making and should accurately and succinctly represent the proposal. **Teams must insert the provided Quad Chart Template as an image into their proposal.** Quad charts must address:
    - A project summary
    - An image/graphic of part or all of the concept
    - A description of the team composition
    - Proposed deployment timeline
- Proposers must use the Blue Skies Proposal Quad Chart Template when submitting proposals. Template can be found on the "Proposal" section of the 2024 Challenge Details webpage.

Abstract/Summary (Excluded from page limitation)

Include a brief summary (no more than 2 paragraphs) of the selected natural disaster type, disaster management phase, team-identified use case, proposed aviation-related system(s), and the approach being used to incorporate the technology into operations. Include an overview of the anticipated challenges and opportunities of integrating the proposed systems into operations, that will be expanded upon in the proposal.

The body of the proposal must (5-7 pages):

1. Assess the situation
2. Identify a use case and propose a solution
3. Conceptualize implementation
4. Chart a path to deployment

It is imperative that teams address all the criteria listed in the Theme Description and Details **section above**, in summary form if necessary due to space limitations. If needed, placeholders may be left for analysis not yet completed, but must be well justified and relevant. Proposing teams should clearly identify their assumptions and provide the justifying rationale to support them.

NOTE: The bulk of the proposal should focus on Items 3 and 4. It is up to each team to prioritize space allocation to formulate the best proposal for the judges' consideration. A good rule of thumb is to provide enough information to justify your vision for 2035 deployment, but allocate more of your available space to the analysis of that vision. The proposal should be a clear articulation of the intended path forward, should the team be selected as a finalist.

Appendices, if needed (Excluded from page limitation)

Appendices are to be used for references and calculations ONLY. Judges are **not obligated** to read beyond the stated page limit; therefore, all pertinent information should be included in the main body of the paper.

Proposal Tips

- Start with a big picture view of your natural disaster/management phase, its impacts and challenges, and team-identified use case to frame your concept and rationale. Consider the proposal page limit when determining the appropriate level of analysis details (i.e., higher systems level analysis).
- A strong proposal will make a compelling argument convincing judges of a concept's feasibility and viability. TBD placeholders should be well-justified, relevant and not overused/abused.
  - If results/details are not available yet, or are still being finalized, it is valuable to indicate that they are forthcoming and how they will be determined. If not mentioned, judges may assume it is not being addressed.
- A picture is worth a thousand words and can convey a lot of information. Images for the proposal are a plus where appropriate. Show us your innovation! (Please do not include illegible hand-drawn sketches).
- Consider multiple facets of the issue, utilizing a multi-disciplinary approach to provide a well-rounded concept & analysis.
- Consider including team members from a variety of disciplines.
- Utilize all the available page space.
- Report quality is considered in the judges' scoring. Poor grammar, typographical errors, etc. do not reflect well on your team and will be penalized.
- Make use of published papers and reports available to you. Information sources may include: FAA, FEMA, NOAA, NASA Open Source, the NASA Technical Report Server, etc.

Proposal Formatting Guidelines

Teams are responsible for the formatting and appearance of their proposal. Figures and tables must be embedded and therefore must be in digital format. We recommend teams use image files with a minimum dpi of 150.

- Proposal must be a minimum of 5 pages and a maximum of 7 pages.
  - The Cover Page, Quad Chart, Abstract, Table of Contents (if used), and Appendices are excluded as a part of the total page limit. They do not count toward the minimum or the maximum page limitations.
  - References should be included as an appendix and will not count toward the minimum or maximum page limits. **Appendices are to be used for references and calculations ONLY.**
    - Note: Judges are not obligated to look at anything beyond the listed page limit, including the appendices. Include important details in the body of your proposal to ensure they are reviewed.
    - There is no preference in citation formatting, but references must be formatted uniformly and correctly. Simply listing a link to the source is not acceptable.
  - Papers should be single-spaced and single column.
  - Margins should be a standard 1" (2.54 cm) all the way around (top, bottom, left, and right).
  - Use of information graphics, tables, and charts are highly encouraged where appropriate (a well-conceived graphic can convey multiple pages worth of text and convey a deeper understanding of the problem and solution).
- Please use fonts common to Macintosh and PC platforms, i.e., Times, Times New Roman, Helvetica, or Arial for text; Symbol for mathematical symbols and Greek letters.
- Font size should be 11 or 12 pt. (including in all tables, charts, and graphs).
- Use "University Name – 2024 Blue Skies Proposal" as naming convention

VIDEO GUIDELINES

Video Expectations

As a part of the proposal submission process, teams will be required to include a 2-minute video. The video should introduce the team, concept, and value proposition. It additionally provides an opportunity to augment the proposal with animation, graphics, or other creative ways of showcasing unique aspects of the proposed concept. Teams should avoid using a PowerPoint/presentation style approach.

- To address the value proposition: Before investing in a product, program, or research, stakeholders want to understand the vision for the concept, the problem it seeks to solve, the scale of the problem (i.e., market size), the product and what makes it unique, and the path for implementation. The Heilmeier Catechism represents the potential thought process of a stakeholder who is considering proposal funding.

Video Formatting Guidelines

- Videos are limited to a maximum length of 2 minutes.
- Videos should be uploaded to YouTube. Teams will provide their video's YouTube URL on the online proposal submission form. Other types of video files will not be eligible for consideration.
- Videos need to be publicly viewable via a link. Videos should be "Unlisted" or "Public" on YouTube.
  - Troubleshooting Tip: YouTube accounts sometimes need to be verified prior to being able to fully upload videos. If your video is stuck in the "processing" stage, check to make sure your YouTube account is verified.
- Include university name and project title in text at the front of the video.
- All team members should appear in the video, if possible (still images are OK)
- Do not use music or images which may violate copyright law. NASA nor NIA can approve the use of copyrighted material. You may use images created by NASA.

PROPOSAL AND VIDEO EVALUATION CRITERIA

The 2024 Blue Skies Scoring Matrix outlines how proposals will be evaluated. The proposal and video together can earn a maximum of 100 points.

Proposal Evaluation Criteria (80 Points Total)

Proposals will be judged based on:

- **Situation Assessment:** Sound technical / scientific / engineering analysis, evaluation, and rationale of the selected type of natural disaster and its impacts, disaster management phase, team-defined use case/opportunity for impact, and aviation-related system(s) proposed to address the opportunity, indicating thorough and proper analyses conducted or to be conducted. (Max 20 points)
- **Concept of Operations Overview:** Clear depiction of systems integration approach, including an understanding of integration factors and necessary trades: simplicity, cost/ROI, support system requirements, connectivity constraints, limitations posed by environmental conditions, expected improvements over existing practices, and interoperability with existing people, organizations, solutions, and technologies. (Max 20 points)
- **Implementation Analysis:** Sound analysis of pathway and timeline to implementation by 2035, including, but not limited to: technology readiness levels, training, barrier analysis, customer/stakeholder operational integration, etc. (Max 15 points)
- **Innovation:** Of proposed aviation-related system to disaster management (i.e., creative re-use of an existing technology, a novel approach or proposed system, an improvement to a process that substantially and measurably lowers cost or improves efficiency and/or safety). (Max 15 points)
- **Proposal Compliance:** Proposal complies with all proposal requirements [i.e., inclusion of all required sections (as stated in the Overview and Competition Theme Description) and forms; adherence to format and page count requirements] (Max 5 points)
- **Composition/Grammar/Cohesion:** Paper utilizes excellence in the English language, grammar, and composition to effectively convey concepts. (Max 5 points)

Video Evaluation Criteria (20 Points Total)

- **Relevance to Proposed Concept:** Video enhances/highlights aspects of the team's concept(s) and/or increases understanding of chosen natural disaster, disaster management phase, team-determined use case, and proposed aviation-related system(s). (Max 10 Points)
- **Value Proposition:** Video provides clear, compelling argument for investment. (Max 5 points)
- **Overall Impression:** Video content is aesthetic, organized, and flows. Viewers can easily follow the material. (Max 5 Points)

-- See next page for information about submitting the proposal and video --

SUBMITTING THE PROPOSAL AND VIDEO

To upload your proposal and video (.pdf files and link), please visit the Blue Skies Competition Details website.

No revisions will be accepted after submission, so proof your proposal and video files carefully before submission. If there are any technical problems with the content of your proposal or video (for example, your file was corrupted or a URL link was broken), we will try to contact you immediately, be sure to provide up-to-date contact information on the submission form.

Late submissions will not be accepted, and the submission form will close promptly at midnight.

The following information will be requested on the Proposal and Video Submission Form:

- College/University name
- University or Industry partners (if any), including contact information
- Project title
- Faculty advisor & student team lead contact information
- Team Member Information (Academic Major and Year in School)
- Survey Questions
  - How did your team hear about the Gateways to Blue Skies Competition?
  - List all departments and organizations from your college/university that contributed to your proposal.
    - *e.g., College of Engineering – Chemical, Engineering Policy; College of Architecture – Urban Planning; Department of Art; AIAA Student Chapter*
- File upload for PDF proposal document
  - Use "University Name – 2024 Blue Skies Proposal" as naming convention
- URL link for team's public or unlisted YouTube video
  - Note: Video MUST be "Unlisted" or "Public." Private videos are not publicly viewable and may result in disqualification.
  - Use "2024 Blue Skies Proposal: University, *'Project Title'*" as naming convention.
- A high-resolution photo or graphic of all or part of your concept, with a minimum dpi of 300
- A 2-3 sentence synopsis of the proposed concept (max 600 characters)
- Confirmation of original work, including signature, signee's name, title, and email address
- W9/Vendor Form for the primary proposing university (to be completed by the accounting department at the university). NOTE: A completed IRS W9 Form is an acceptable substitution.
  - Use "2024 Blue Skies – University – W9" as naming convention.
- Mailing address and POC contact info for finalist stipend checks. Use format:
  - Attn: POC Name (if applicable)
  - University, Department/Office
  - Mailing Address
  - Mailing Address 2
  - City, State, Zip
- Stipend Mailing Address Point of Contact Info (Name, Phone, Email)
- Acceptance of the Blue Skies Intellectual Property and Media Release statements
- Proposal Process Feedback:
  - What excites you about this competition?
  - Did your team experience any challenges while preparing your proposal submission?
  - Please share improvements your team might suggest to facilitate initial competition participation.

    o   Share anything else your team would like us to know about your experience with the Blue Skies Competition thus far.

W9/Vendor Form and Stipend Mailing Address Information

- As part of the proposal and video submission, teams will be required to submit a completed W9/Vendor Form and provide university contact and mailing information for stipend checks, should the team be selected as a finalist.
- A W9/Vendor Form for the primary proposing university must be completed by the accounting department at the university.
  - Please download, complete, and submit this Template Vendor W9 Form.
  - W9/Vendor Form must be completed/dated in the same year as the proposal submission.
  - **NOTE:** A completed IRS W9 Form is an acceptable substitution.
- Mailing address and POC contact info for stipend checks. Stipend checks may only be mailed to a valid university contact who can handle the funding according to university policies and procedures (they cannot be directed to a student). **This is for use only if a team is selected as a finalist.** Use format:
  - Name
  - Attn: POC Name (if applicable)
  - University, Department/Office
  - Mailing Address
  - Mailing Address 2
  - City, State, Zip
- Stipend Mailing Address Point of Contact Info (Name, Phone, Email)

Intellectual Property (IP) and Media Release

Proposers must acknowledge that they have read and agree to abide by the full Intellectual Property and Media Release Statements. An excerpt is included below.

Intellectual Property - Summary

In addition to any rights granted to NIA Recipients, as applicable, recipients of monetary awards under the Gateways to Blue Skies (Blue Skies) Competition agree to grant to NASA and the Federal Government, as the source of awards funding, the Rights in Data and Patent Rights set forth in detail below. In summary, awardees agree to grant to NASA and the Federal Government (i) a license to use, distribute, reproduce, perform, display, and prepare derivative works, any data first produced by recipient in carrying out recipient's responsibilities under this award in which the recipient asserts copyright, or data for which copyright ownership was acquired under the grant for Federal purposes and to have or permit others to do so for Federal purposes only, and (ii) a license to practice or have practiced for or on behalf of the United States any invention of the recipient conceived or first actually reduced to practice in the performance of work under this award if recipient chooses to retain title to such invention, and NASA may elect to obtain title or patent such invention if recipient chooses not to do so, all as set forth more particularly in the below Rights in Data and Patent Rights provisions.

All deliverables provided to NASA under the Challenge, in NASA's sole discretion, may be publicly released in conjunction with any announcements concerning the Challenge.

Media Release

The recipients of monetary awards under the Blue Skies Competition ("Teams") agree to give permission to be recorded, photographed and/or videotaped by or for NIA, NASA or their representatives or designees for the purpose of announcements and other outreach or informational purposes, including public announcements, concerning the Challenge.

The Teams further give permission to NIA, NASA or their representatives or designees to use, reproduce, prepare derivative works, publish, distribute to the public, perform publicly, and/or publicly display all deliverables, including excerpts and any ancillary material, which may include each team participants' names, affiliations (schools), images, voice, and/or likeness es. NIA or NASA may distribute the materials, including excerpts therefrom, and any ancillary material through a variety of media in existence now or in the future, including but not limited to print, television, websites, radio, or any other means. NASA may also permit a third party to exercise NASA's rights, including but not limited to the right to display or distribute the recording, including excerpts therefrom, and any ancillary material, in any manner NASA deems appropriate.

The teams also understand that this permission to use each participant's name, image, voice and/ or likeness in such materials is not limited in time and team participant will not receive compensation for granting this permission.

Teams acknowledge that NASA has no obligation to use any participant's name, affiliation, image, voice, and/or likeness in any materials produced by NASA, but if NASA so decides to use them, each participant waives the right to inspect or approve any such use.

Teams hereby unconditionally release NASA and its representatives from any and all claims and demands arising out of the activities authorized under this Media Release.

-- Final deliverables overview commences on next page --

Deliverables for Finalist Teams

Final Technical Paper & Infographic Submission Deadline: 11:59 P.M. Eastern Time on May 13, 2024

Presentation Files Submissions Deadline: Noon Eastern Time on May 27, 2024

Teams who are selected to attend the 2024 Blue Skies Forum will be required to:
- Submit an 8–10-page final technical paper
- Submit an infographic summarizing technical paper concepts
  - Submit a digital poster file **in addition to** bringing a full-size printed poster for display during the Forum's poster session (48" x 36")
- Submit a chart deck to support a 25-minute presentation with an additional 20 minutes of Q&A, to be delivered at the Blue Skies Forum

Team members registered to attend the annual Forum must plan to participate in all mandatory Forum activities, with teams subject to penalties and/or returning their stipend if this criteria is not met.

Submitting teams represent and warrant that the team is the sole author of the final submission, that the submission is wholly original, that it does not infringe on any copyright or any other rights of any third party of which the team is aware, and that the electronic proposal and video submission are free of malware. Teams may not have any portion of their submissions created by non-team members, which includes the use of tools such as Generative AI.

FINAL TECHNICAL PAPER GUIDELINES

Final Technical Paper Expectations

The final technical paper should be treated as a stand-alone document, being read by someone who has never read the initial proposal. While a certain amount of overlap is to be expected, the final technical paper should be reflective of the team's entirety of findings in the competition period. It should expound upon initial findings in the proposal and take into consideration the final paper details as listed, evaluation criteria, and judge feedback. It should be robust, creative, well-researched, and well-justified. **The Final Technical Paper should be a minimum of 8 pages and a maximum of 10 pages. It should pay careful attention to composition, grammar, and cohesion.**

The Final Technical Paper Should Include:

Finalist teams will develop an 8–10-page final research paper that includes the following, at a minimum:

A Cover Page (not included in the page count), which must include:
- University name
- Project title
- Team and/or individual photos with full names of all team members, including academic Level (graduate or undergraduate) and major
- Faculty advisor's full name(s) and discipline
- OPTIONAL, but encouraged: A graphical depiction of your concept
- Teams should reference the sample Final Technical Paper Cover Page when submitting final papers.

Abstract (not included in the page count)

Include a brief summary (no more than 2 paragraphs) of the final technical paper, including conclusions and key findings. Note areas in which the final paper expands upon previous work, summarizing those additional details.

The body of the final technical paper should (8-10 pages):

- Clearly articulate the situation assessment, use case and proposed solution, concept of operations, path to deployment and all justification analyses conducted.
- Expand analyses of proposed concept according to Theme Description & Details and Final Deliverables Evaluation Criteria, incorporating judge feedback.
- Include conclusions and key findings.

Appendices, if needed (not included in the page count)

Appendices are to be used for references and calculations ONLY. Judges are **not obligated** to read beyond the stated page limit; therefore, all pertinent information should be included in the main body of the paper.

Faculty Advisor Attestation

The Final Deliverables Submission Package includes a PDF file upload for the Faculty Advisor Approval Attestation Template.

- o **Note: Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.**
- o Use "University Name – 2024 Blue Skies Faculty Attestation" as file naming convention

Final Technical Paper Formatting Guidelines:

Teams are responsible for the formatting and appearance of their final technical paper. Figures and tables must be placed in the file and therefore must be in digital format. We recommend teams use image files with a minimum dpi of 150.

- Papers should be single-spaced and formatted as a single column.
- Margins should be a standard 1" (2.54 cm) all the way around (top, bottom, left, and right).
- The final technical paper should be a minimum of 8 pages and a maximum of 10 pages.
  - o The Cover Page, Abstract, Table of Contents, and Appendices are excluded as part of the total page limit. They do not count toward the minimum or maximum page limitations.
  - o References should be included as an appendix and will not count toward the minimum or maximum page limits. **Appendices are to be used for references and calculations ONLY.**
    - Note: Judges are not obligated to look at anything beyond the listed page limit, including the appendices. Include important details in the body of your paper to ensure they are reviewed.
    - There is no preference in citation formatting, but references must be formatted uniformly and correctly. Simply listing a link to the source is not acceptable.
- Please use fonts common to Macintosh and PC platforms, i.e., Times, Times New Roman, Helvetica, or Arial for text, Symbol for mathematical symbols and Greek letters.
- Use of information graphics, tables, and charts are highly encouraged where appropriate (a well-conceived graphic can convey multiple pages worth of text and convey a deeper understanding of the problem and solution).
- Font size should be either 11 or 12 pt (including in all tables, charts, and graphs).
- Final technical papers must be submitted as PDF files.
- Use "University Name – 2024 Blue Skies Final Technical Paper" as file naming convention.

INFOGRAPHIC GUIDELINES

Infographic Expectations

Finalist teams must provide a full-sized digital poster for display on flat-screen TVs during the Forum's poster session as well as on the Blue Skies website for remote viewing and archival purposes. Teams will not need to provide their own USB drive at the Forum. The poster session provides teams with an opportunity to expound upon important concepts in their presentations, and allows judges to ask questions for further clarification.

An infographic is a visual representation of information, data, or knowledge intended to present information quickly and clearly – see for example: 2022 and 2023 Best Infographic Winners.

Teams with the most successful infographic are often those that include a team member who excels in or is willing to learn graphic design.

The Infographic Should Include:

The purpose of the infographic is to visually depict the team's final paper. Someone looking at the infographic should be able to gain an overview and understanding of the opportunity space/team-determined use case in the selected natural disaster and management phase; the current solution, the proposed aviation-related solution, its projected improvements, and the conceptualized approach to deployment (including timeline, opportunities and challenges).
- The infographic should be easily understood by audiences from non-technical backgrounds, avoid technical jargon, and should be understood by a passerby with no verbal explanation.
- The infographic should incorporate a blend of both visual and textual information, with more emphasis on the visual aspect and avoiding lengthy blocks of text.
- The infographic should reflect only the information discussed in the final technical paper (i.e., it should NOT be used to add additional information that didn't fit within the 8-10 page final technical paper page limit).
- The infographic should convey technical paper elements in a visually compelling manner, demonstrating that attention was given to the use of color and artistic creativity, as well as the organizational flow of information (take us on a journey).

NOTES:
- A simple flow chart is not an acceptable infographic.
- An infographic is very different than a conference poster.
  - View infographic samples | View 2022 and 2023 competition infographics

Digital Infographic File Guidelines

Each team is required to submit the digital file of their infographic. Submitted digital infographic files will be displayed on the Gateways to Blue Skies Website. Infographic files should adhere to the following guidelines:
- Infographic file should be 9600 pixels x 7200 pixels (48" x 36").
- Infographic must be **formatted horizontally (landscape).**
- Images and graphs embedded should be "print-ready," with a minimum PPI of 300 whenever possible.
- Images and graphs should be clear, legible, and appropriately sized.
- Links or redirects in the body of the infographic are not permitted with the exception of references.
- File size limit is 100MB.
- Infographic should be submitted as a .PDF file.
- Infographic should include a small team identifier in bottom left-hand corner (i.e., University and/or team name; logo).
- Use "University Name – 2024 Blue Skies Infographic" as file naming convention.

FINAL EVALUATION CRITERIA

The 2024 Blue Skies Scoring Matrix outlines how the final technical paper, infographic, and presentation will be evaluated.

A panel of NASA and industry experts will evaluate and score the final competition components anew; the points from the proposal review process are used only for finalist selection purposes and have no bearing on teams' final scores. Final deliverables will be evaluated and judged based on adherence to the following, with a maximum of 100 points earned:

Final Technical Paper Evaluation Criteria (45 Points Total)

- **Situational Assessment and Concept of Operations Description**: Sound technical / scientific / engineering analysis, evaluation, and rationale of the selected natural disaster type and its impacts, disaster management phase, team-defined use case/opportunity for impact, and aviation-related system(s) identified to address the opportunity. Clear ConOps description, demonstrating thorough and proper research, practical applications, and realistic assumptions. (Max 10 points)
- **Implementation Analysis:** Comprehensive analysis of integration approach, including integration factors and necessary trades: simplicity, cost/return on investment, support system requirements, connectivity constraints, limitations posed by environmental conditions, expected improvements over existing practices, and interoperability with existing people, organizations, solutions, and technologies. (Max 15 points)
- **Timeline, Technology Readiness Level & Barrier Assessment:** Sound pathway to implementation by 2035, including, but not limited to: technology readiness levels, training, barrier analysis, customer/stakeholder operational integration, etc. (Max 10 points)
- **Compelling Key Findings:** Final paper makes a compelling case for concept implementation. (Max 5 points)
- **Expanded Analyses:** Clear highlight of changes made between proposal and final technical paper. (Max 5 points)

Presentation Evaluation Criteria (35 Points total)

- **Visual Presentation:** Quality of presentation slides (i.e., visuals, structure, appropriate use of slides for information, easy to follow). (Max 10 points)
- **Presentation Delivery**: Communication delivery and presence of integration and teamwork. (Max 10 points)
- **Q&A Response:** Quality of responses to questions from the judges. (Max 10 points)
- **Consistency with Final Paper:** Representative of the findings and work written in the Final Technical Paper. (Max 5 points)

Infographic Evaluation Criteria (20 Points Total)

- **Aesthetics, Creativity, & Organization:** Visually compelling; creative use of color, graphics, images, and/or photos; well laid out components that clearly overview the opportunity space/team-determined use case in the selected natural disaster and management phase; the current solution, the proposed aviation-related solution, and its projected improvements; and the conceptualized approach to deployment (including timeline, opportunities and challenges), with relevant supporting information. (Max 10 Points)
- **Technical Simplification**: Language and information are easily understood by all audiences, especially those in non-technical fields. (Max 5 Points)
- **Consistency with Final Technical Paper and Adherence to Infographic Requirements:** Representative of the findings and work written in the Final Technical Paper. (Max 5 Points)

SUBMITTING FINAL TECHNICAL PAPER AND INFOGRAPHIC FILES

To upload your final technical paper (.pdf) and infographic (.pdf), please visit the Blue Skies Competition Details website.

No revisions can be accepted after submission, so please proof your final technical paper and infographic files carefully before submission. If there are any technical problems with the content of your final technical paper or infographic (for example, your file was corrupted or a URL link was broken), we will try to contact you immediately, so it is very important that you provide us with up-to-date contact information on the submission form.
Late submissions will not be accepted, and the submission form will close promptly at midnight.

The following information will be requested on the Final Technical Paper and Infographic Submission Form:

- College/University name
- Project Title
- Infographic Title
- Faculty advisor & team lead contact information
- Additional Faculty Advisor (if applicable) & Team Member information (including academic year and major)
- File upload for PDF final technical paper document
    - Use "University Name – 2024 Blue Skies Final Technical Paper" as file naming convention
- File upload for PDF infographic document
    - Use "University Name – 2024 Blue Skies Infographic" as file naming convention
- A high-resolution photo or graphic illustrating your concept, for purposes of promotion in online media outlets (minimum dpi of 300)
- IMPORTANT: PDF file upload for Faculty Advisor Approval Attestation using the provided template
    - **Note: Submissions without a valid Faculty Advisor Approval Attestation will be deemed non-compliant and will not be reviewed.**
    - Use "University Name – 2024 Blue Skies Faculty Attestation" as file naming convention
- A 2-3 sentence synopsis of the concept (max 600 characters)
- Confirmation of original work, including signature, signee's name, title, and email address
- Acceptance of the Blue Skies Intellectual Property and Media Release statements

PRESENTATION GUIDELINES

Presentations are limited to 25 minutes, followed by a 20-minute Q&A session with the judges. Presentations should reflect the final technical paper. **No new ideas or concepts may appear in the presentation that were not included in the final paper,** however, it is expected that teams will utilize the presentation to speak to the relevance and impact of the proposed system(s), provide additional context for solutions, and make inferences and extrapolations of their analyses. If errors were discovered after the paper was submitted, teams should take this time to address them. **Significant information discussed during the presentation that was not included in the final technical paper will be penalized in scoring.**

Presentations will be supported by a PowerPoint slideshow. Teams may choose who speaks and who doesn't speak during the presentation. However, all team members are encouraged to stand together at the front of the room during the presentation to be available to answer questions, even if they are not presenting. **Teams should be prepared to answer questions about their concept through a sound understanding of the technologies and capabilities introduced in their final technical paper.**

Presentation Files (.PPTX) must include:

- A cover slide that includes:
    - Project title
    - University name
    - Faculty advisor's name(s)
- Use "University Name – 2024 Blue Skies Chart Deck" as file naming convention

Slide readability

The presentation room may be very large. Ensure the font on your power point is large enough for those to see from the back of the room. Take advantage of high contrast options and avoid black screen backgrounds. Emphasize slide readability, especially for significant figures/calculations. Dark videos/animations and black backgrounds do NOT show well in the presentation room and should be avoided.

SUBMITTING THE PRESENTATION

To upload your team's presentation, please visit the Blue Skies Competition Details website.

Presentations must be submitted in PowerPoint format by the deadline using the online upload tool, prior to team check-in at the Forum (i.e., presentations on flash drives will not be accepted). Video and images should be embedded in the file, which should not exceed 100 MB. Revisions to these files will not be accepted after the noon deadline – no exceptions. Teams that do not submit a presentation by the deadline will be barred from presenting, and their stipends may be subject to return. Teams are encouraged to submit their final presentation files prior to travel.

Late submissions will not be accepted, and the submission form will close promptly at Noon EST on the deadline.

The following information will be requested on the Presentation Submission Form:

- College or University Name
- Project Title
- Faculty Advisor and Team Lead information
- Additional Faculty Advisor Information (if applicable)
- File Upload for Presentation Chart Deck Files
    - Submit a .pptx or .ppt file
    - Use "University Name – 2024 Blue Skies Chart Deck" as file naming convention

Participation Stipends

Teams selected to present at the Forum will receive an $8,000 monetary award to facilitate full participation in the Blue Skies Forum, held at NASA's Ames Research Center in Mountain View, CA in May 2024.

Prizes and Awards

Overall Competition Winner

NASA ARMD is setting aside up to 6 internships for students on teams that advance to the Blue Skies Forum, with first opportunities being presented to members of the winning team. **Internships must be taken within the academic year following the Forum.** Selections will be made first to students on the winning team(s) and will be based on the cumulative merit of each student's individual internship application and availability for fall, spring, or summer internships.

- Fall 2024: Late August/early September to mid-December (16 weeks)
- Spring 2025: Mid-January to early May (16 weeks)
- Summer 2025: Late May/early June to August (10 weeks)

Note: NASA internships have additional eligibility requirements:

- U.S.-citizenship.
- Cumulative 3.0 GPA (on a 4.0 scale).
- Undergrad and graduate students must be enrolled full-time in a degree-granting program at an accredited college or university.
  - Applicants transitioning between undergraduate and graduate pursuits are eligible **IF** they have graduated within 6 months and can demonstrate enrollment in the next-level academic pursuit.

Other Recognition Awards MAY Include

At the judging panel's discretion, the following awards *may* be awarded at the Blue Skies Forum. The following list is not exhaustive:

- First Place Overall
- Second Place Overall
- Best Technical Paper
- Best Infographic
- Best Presentation
- Most Creative/Innovative Concept

Contact Information

For Gateways to Blue Skies inquiries, please contact the Blue Skies Program Team at BlueSkies@nianet.org:

JANICE MILLER	GENEVIEVE EBARLE	STACY DEES	SHELLEY SPEARS

National Institute of Aerospace

National Institute of Aerospace

Gateways to Blue Skies Program Office
1100 Exploration Way
Hampton, VA 23666
BlueSkies@nianet.org
https://BlueSkies.nianet.org