Long Title: NASA Data Pathways: Activating Community Participation in NASA Atmospheric Science Through Undergraduate Internships and Public Engagement in the Upper Midwest

Short Title: NASA Data Pathways

Proposed Start Date: 10/01/2026

Proposal End Date: 09/30/2031

Program Element: ROSES-2025, F.6 Science Activation Program (SciAct), NNH25ZDA001N-SciAct

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Summary (4000 Characters Maximum)
The NASA Data Pathways project will create a structured, paid undergraduate research internship program that engages students in hands-on work with NASA airborne and satellite atmospheric data to study locally relevant phenomena with community impact in the Upper Midwest (e.g., severe weather, winter hazards, visibility, and environmental variability). Students will actively use NASA data by completing mentored projects and translating results into short, plain-language stories and learning resources that partners can reuse. The objectives are to: (1) increase students' skills and confidence in using NASA data to answer scientific questions; (2) strengthen interest and preparedness for NASA-related career pathways; (3) produce and share student-created videos/presentations that communicate NASA science and diverse pathways; and (4) expand NASA science engagement across the Upper Mid-West through sustained partnerships with local and regional community organizations. A structured, paid model reduces financial barriers for students who must work for pay and supports persistence and career development.

The project aligns with SciAct by focusing on learning through authentic participation. It will advance SciAct objectives by improving NASA Earth science understanding and data-driven inquiry, building career-relevant skills through real NASA data projects and products, and strengthening partnerships with schools, informal learning sites, and community organizations. Activities will be co-designed with partners for relevance and accessibility, and the team will actively participate in SciAct coordination and cross-project learning.

NASA Data Pathways will build on UND's existing Data Skills Pathway, where students take an orientation course that leads to internship opportunities. Students gain access to computing tools, learn data workflows, obtain datasets, quality assure raw data, conduct analyses, create plots, and document work by doing a small mini-project. After succeeding at the orientation course, students are well prepared for a paid internship (~6-10 hours/week). With SciAct support, we will add NASA-focused internships. The NASA Data Pathway interns will produce a documented analysis notebook/workflow and a community-ready NASA data story package (short video + one-page activity/data story). Public engagement will be done through events hosted with community partners such as local rural schools, libraries, museums/informal learning sites, and other organizations, with a focus on underserved communities. Each semester, interns will help lead at least one partner event where community members explore NASA images and data, learn what it means, and connect it to local weather, environmental questions and STEM careers. The largest community interaction with NASA data will likely be a newly developed community science project where people will classify ice crystal images as either (1) a single crystal, (2) an aggregate, or (3) a chain-like aggregate. We have millions of such images available from NASA field projects, and the community science project will expand our labeled dataset for use in training a Convolutional Neural Network.

Evaluation will be led by an independent external evaluator using a mixed-methods approach and will be used to improve the program each term. We will track: (1) participation and reach (number of applicants, interns selected and completing the program, partner sites, events, community participants, and locations reached); (2) intern outcomes using pre/post surveys (NASA-data skills, confidence, and interest in NASA/STEM careers); (3) quality of intern products using simple rubrics (correct use of NASA data, clarity, relevance, and accessibility); (4) program implementation using mentor logs and end-of-term surveys; and (5) community outcomes using short exit surveys and partner surveys on usefulness and fit.