CURRENT AND PENDING (OTHER) SUPPORT INFORMATION

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person.

*NAME: Delene, David

PERSISTENT IDENTIFIER (PID) OF THE SENIOR/KEY PERSON: https://orcid.org/0000-0002-3733-6021

*POSITION TITLE: Research Professor and Aerospace Research Fellow

*ORGANIZATION AND LOCATION: University of North Dakota, Grand Forks, North Dakota, United States

Proposals/Active Projects

***Proposal/Active Project Title:**	REU site: Interdisciplinary Renewable and Environmental Collaborative (IREC)
***Status of Support:**	Current
Proposal/Award Number:	
***Source of Support:**	National Science Foundation
***Primary Place of Performance:**	Grand Forks, North Dakota
***Proposal/Active Project Start Date: (MM/YYYY):**	09/2026
***Proposal/Active Project End Date: (MM/YYYY):**	08/2029
***Total Anticipated Proposal/Project Amount:**	$427,651

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2027	0.6
2028	0.9
2029	0.9

***Overall Objectives:**

A National Science Foundation supported Research Experience for Undergraduates (REU) program that gives research opportunities to undergraduate students with an interest in Chemistry. Participants work alongside UND faculty and students on interdisciplinary summer research projects at the intersection of chemistry, chemical engineering, and atmospheric sciences. Students also receive training in science communication and community outreach.

***Statement of Potential Overlap:**

None

***Proposal/Active Project Title:**	*HRI* Atmospheric Ice Interactions with Hypersonic Flow Environments
***Status of Support:**	Current
Proposal/Award Number:	
***Source of Support:**	Office of Naval Research
***Primary Place of Performance:**	Grand Forks, North Dakota
***Proposal/Active Project Start Date: (MM/YYYY):**	08/2026
***Proposal/Active Project End Date: (MM/YYYY):**	07/2029
***Total Anticipated Proposal/Project Amount:**	$930,000

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2027	1
2028	1
2029	1

***Overall Objectives:**

Hypersonic vehicles encounter ice crystal aggregates when flying through clouds, which cover approximately one third of Earth's surface. Vehicle nose tips can be significantly damage by the ice aggregates. Damage potential is related to ice aggregate size and mass; however, there is a lack of reliable environmental measurement to determine if ice aggregates impact as a single large particle or disintegrate into clusters of monomers when traversing a vehicle's shockwave. The research goal is to create a new method to assess ice aggregate impacts to hypersonic vehicles using flow in a controlled environment.

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:**	Building Capacity for High-Quality Short-Term Programs: Undergraduate Experiential Learning and Data Skills Pathway
***Status of Support:**	Current
Proposal/Award Number:	IRB0007029
***Source of Support:**	Department of Education
***Primary Place of Performance:**	Grand Forks, North Dakota
***Proposal/Active Project Start Date: (MM/YYYY):**	01/2026
***Proposal/Active Project End Date: (MM/YYYY):**	12/2029

***Total Anticipated Proposal/Project Amount:** $1,555,848

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2026	4
2027	4
2028	4
2029	4

***Overall Objectives:**

The project designs, implements, and institutionalizes a Data Skills Pathway that is anchored in the existing, credit-bearing Department of Atmospheric Sciences that has historically focused on analyses of large data sets. The Data Skill Pathway is open to all undergraduate students from across the University who want a structured experiential learning experience that focuses on addressing real-world problems. The Data Skills Pathway is an active learning experience that meets key structural expectations for future Workforce Pell eligibility, including a defined length, delivery by an accredited institution, and alignment with high-skill, high-wage, in-demand occupations. The Data Skills Pathway focuses on occupations of data analyst, operations analyst, and data technician which require both technical skills (statistical analysis, visualization and programming) and soft skills (critical thinking, problem-solving, communication, and business acumen).

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:** Research Infrastructure: MRI: Track 1 Acquisition of Pyrolysis-Gas Chromatograph with a High-Resolution Mass Spectrometer (Pyr-GC-HR-MS)

***Status of Support:** Current

Proposal/Award Number:

***Source of Support:** National Science Foundation

***Primary Place of Performance:** University of North DAkota

***Proposal/Active Project Start Date: (MM/YYYY):** 07/2025

***Proposal/Active Project End Date: (MM/YYYY):** 06/2028

***Total Anticipated Proposal/Project Amount:** $804,139

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2026	2

Year	Person Months
2027	2
2028	2

***Overall Objectives:**

Obtain observations of the chemistry of atmospheric aerosols for several fog event to determine effects on fog formation, duration and dissipation.

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:**	Unveiling Ice Crystal Chain Aggregates in Winter Storms: Contextualization using In-situ and Remote-sensing Observations
***Status of Support:**	Current
Proposal/Award Number:	80NSSC25K7971
***Source of Support:**	National Aeronautics and Space Administration
***Primary Place of Performance:**	Grand Forks, North Dakota
***Proposal/Active Project Start Date: (MM/YYYY):**	05/2025
***Proposal/Active Project End Date: (MM/YYYY):**	05/2027
***Total Anticipated Proposal/Project Amount:**	$399,995

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2026	3
2027	3

***Overall Objectives:**

The project's aim is to advance the understanding of the aggregate formation process by creating a storm relative location map of chain aggregates. The project uses the cloud probe, in-situ measurements (CPI, PHIPS, 2D-S, HVPS3 probes) on the P-3 aircraft to determine the amount of chain and non-chain aggregates observed. Remote sensing observations (CPL, CRS, EXRAD, ground radar, and GOES 16) are used to put the location into the larger context of the winter storm. By utilizing the complete IMPACT field project dataset, a storm relative map of chain aggregates is developed. The chain aggregate location map enables conceptual testing of different possible formation processes.

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:**	Atmospheric Methane Observations and Analysis in Western North Dakota
***Status of Support:**	Current
Proposal/Award Number:	
***Source of Support:**	Department of Energy
***Primary Place of Performance:**	Grand Forks, ND
***Proposal/Active Project Start Date: (MM/YYYY):**	01/2025
***Proposal/Active Project End Date: (MM/YYYY):**	09/2027
***Total Anticipated Proposal/Project Amount:**	$714,703

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2025	1.13
2026	2.13
2027	1.13

***Overall Objectives:**

A research aircraft is used for a field deployment in the time frame of 2025-2026 to obtain methane concentrations and atmospheric conditions in the oil and gas development area near Williston, North Dakota. A top-down estimate of methane emissions using a mass balancing technique is applied to the collected data set.

Special Note: The proposal is marked "Current" because the proposal was accepted in January 2025; however, the award has not been executed and work on the project has not begun. The Person-months are based on the proposal and will be adjusted once the award has been executed. Work is on-going to execute the award and begin the project.

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:**	Observational Evidence for the Importance of Droplet Temperature to Primary Ice Nucleation at Cloud Edge Regions Across Relative Humidity Environments
***Status of Support:**	Pending
Proposal/Award Number:	NNH25ZDA001N-FINESST
***Source of Support:**	National Aeronautics and Space Administration
***Primary Place of Performance:**	Grand Forks, North Dakota

***Proposal/Active Project Start Date: (MM/YYYY):** 05/2027

***Proposal/Active Project End Date: (MM/YYYY):** 05/2030

***Total Anticipated Proposal/Project Amount:** $150,000

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2027	0.01

***Overall Objectives:**

Previous analyses of in-situ observations on the cloud edge have focused on measuring ice crystal concentration and describing the entrainment-mixing regime. In contrast, the objective of the proposed research is to conduct an observational analysis of the relationship between temperature and primary ice crystal formation at the cloud edge region. The analysis results should elucidate the importance of the theoretical results of the single-droplet model to the production of ice in atmospheric clouds. Specifically, how important and under what conditions is it necessary to use the steady state temperature of droplets, instead of the ambient temperature, for modeling ice formation in atmospheric clouds. The project addresses the science question, “Is steady state droplet temperature a better predictor of primary ice nucleation at the cloud edge region than ambient temperature?”

***Statement of Potential Overlap:**

Current NNH25ZDA001N-FINESST proposal.

***Proposal/Active Project Title:** Analysis Relating In-Cloud Electric Field Measurements to Radar Reflectivity and Ground-Based Electric Field Mills

***Status of Support:** Pending

Proposal/Award Number: NNH25ZDA001N-FINESST

***Source of Support:** National Aeronautics and Space Administration

***Primary Place of Performance:** Grand Forks, North Dakota

***Proposal/Active Project Start Date: (MM/YYYY):** 01/2027

***Proposal/Active Project End Date: (MM/YYYY):** 12/2028

***Total Anticipated Proposal/Project Amount:** $100,000

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2027	0.01

***Overall Objectives:**

The in-cloud electric field data from CapeEx19 field project, an airborne field research campaign conducted in

The in-cloud electric field data from CapeEx19 field project, an airborne field research campaign conducted in Florida during the summer of 2019. CapeEx19 deployed a research aircraft equipped with various microphysical probes, as well as an array of six rotating-vane electric field mills. The deployed electric field mills were built by NASA for airborne measurements that require low-noise, high-sensitivity, and wide-dynamic range measurements. Surface electric field data is available from the Kennedy Space Center's Advanced Ground-Based Field Mill (AGBFM) network, a set of 31 functional electric field mills arranged around the Kennedy Space Center grounds. Additional, there are several radar around the Kennedy Space Center. There is the Cape Weather Surveillance Radar (WSR), which is a C-band dual-polarized Titan Doppler Radar (TDR 43-250). Also, there is the National Weather Service (NWS) Melbourne radar. The objective is to combine the CapeEx19 in-cloud electric fields with the radar and surface observations to improve forecasting for rocket launches and enable more rocket flights to be conducted at the Kennedy Space Center.

***Statement of Potential Overlap:**

Current NNH25ZDA001N-FINESST proposal.

***Proposal/Active Project Title:** Detecting Cloud Seeding Effects using Observations in Qatar

***Status of Support:** Pending

Proposal/Award Number:

***Source of Support:** Qatar Ministry of Environment and Climate Change

***Primary Place of Performance:** Grand Forks, North Dakota

***Proposal/Active Project Start Date: (MM/YYYY):** 05/2026

***Proposal/Active Project End Date: (MM/YYYY):** 12/2027

***Total Anticipated Proposal/Project Amount:** $3,924,166

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2026	4
2027	6

***Overall Objectives:**

The scientific evidence and operational experience produced by this project will inform the design of Qatar's national cloud seeding program, enabling evidence-based decisions on optimal seeding methods, target cloud types, seasonal operational windows, and cost-effectiveness of precipitation enhancement. The project also establishes the institutional knowledge, trained personnel, and operational infrastructure necessary for Qatar to sustain a long-term national weather modification capability, which would position Qatar as a regional leader in scientifically grounded precipitation augmentation.

***Statement of Potential Overlap:**

None.

***Proposal/Active Project Title:**	Ice Crystal Chain Aggregate Occurrence in Cirrus Cloud Anvils and Implications for Hypersonic Flight Operations
***Status of Support:**	Pending
Proposal/Award Number:	
***Source of Support:**	Department of Defence
***Primary Place of Performance:**	University of North Dakota
***Proposal/Active Project Start Date: (MM/YYYY):**	01/2016
***Proposal/Active Project End Date: (MM/YYYY):**	12/2028
***Total Anticipated Proposal/Project Amount:**	$798,229

*** Person Months per budget period Devoted to the Proposal/Active Project:**

Year	Person Months
2026	3
2027	3
2028	3

***Overall Objectives:**

To analyze all flights from the CapeEx19 field project using previously determined methodology to obtain a statistically robust representation of chain aggregate occurrence in cirrus cloud anvils. Furthermore, consistency is identified between the chain aggregate observation and the current theoretical understanding.

***Statement of Potential Overlap:**

None.

Certification:

I certify that the information provided is current, accurate, and complete. This includes, but is not limited to, information related to current, pending, and other support (both foreign and domestic) as defined in 42 U.S.C. § 6605.

In accordance with Section 10632 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19232), each individual identified as a senior/key person must certify that they are not a party to a malign foreign talent recruitment program.

Research Security Training Requirement for Federal Award Personnel: In accordance with Section 10634 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19234), each individual identified as a senior/key person must certify that they have completed the requisite research security training that meets the requirements specified in Item 2 of Important Notice No. 149 within 12 months prior to proposal submission.

Certified by Delene, David in SciENcv on 2026-11-02 15:16:23