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 James

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:** 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
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:	
***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.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:** Improving North Dakota Thunderstorm Forecasting using Machine Learning Neural Network

***Status of Support:** Current

Proposal/Award Number:

***Source of Support:** State of North Dakota

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

***Proposal/Active Project Start Date: (MM/YYYY):** 08/2024

***Proposal/Active Project End Date: (MM/YYYY):** 06/2025

***Total Anticipated Proposal/Project Amount:** $131,892

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

Year	Person Months
2025	0.5

***Overall Objectives:** To use boundary layer observations to improve forecasting of Thunderstorm on short time scales.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:** Interdisciplinary Renewable and Environmental Chemistry Research Experience for Undergraduates (REU)

***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):** 05/2023

***Proposal/Active Project End Date: (MM/YYYY):** 04/2026

***Total Anticipated Proposal/Project Amount:** $390,000

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

Year	Person Months
2023	0.5
2024	0.5
2025	0.5

***Overall Objectives:** This National Science Foundation supported Research Experience for Undergraduates (REU) program gives research opportunities to undergraduate students with priority to students from tribal colleges and other primarily undergraduate institutions. 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:** Investigating the Formation and Impacts of Ice Crystal Aggregates on Hypersonic Vehicles

***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):** 02/2023

***Proposal/Active Project End Date: (MM/YYYY):** 01/2026

***Total Anticipated Proposal/Project Amount:** $750,000

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

Year	Person Months
2023	0.75
2024	1
2025	0.25

***Overall Objectives:** The research goal is to create a new method to assess ice aggregate impacts to hypersonic vehicles, which involved understanding the bonding strength of monomers that make up ice crystal aggregates and how they pass through hypersonic boundary layers.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:**	Collaborative Research: Comparison between In-situ and Polarimetric Radar Hail Observations in Convective Storms
***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):**	08/2022
***Proposal/Active Project End Date: (MM/YYYY):**	07/2026
***Total Anticipated Proposal/Project Amount:**	$277,610

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

Year	Person Months
2022	0.5
2023	1
2024	1
2025	0.5

***Overall Objectives:** The objective is to document the in-situ hail observations with the polarimetric radar signatures and use the aircraft hail observations to compute expected polarimetric radar signatures and compare them to actual radar signatures observed from the same storm volume. Varying the approximations and parameters used in the calculations and comparing the calculated to the actual radar returns will provide insight into how hail shapes, orientation, sizes and concentrations influence radar signatures. The key aspect of this proposal is the comprehensive analysis of a large volume of airborne in situ hail data from 18 missions conducted during 9 different campaigns, that have not been analyzed so far.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:**	IMPACTS (Investigation of Microphysics & Precip for Atlantic Coast-Threatening Snowstorms)
***Status of Support:**	Current

Proposal/Award Number: 80NSSC19K0328

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

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

***Proposal/Active Project Start Date: (MM/YYYY):** 01/2019

***Proposal/Active Project End Date: (MM/YYYY):** 12/2025

***Total Anticipated Proposal/Project Amount:** $1,106,088

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

Year	Person Months
2023	2
2024	1
2022	1
2021	0.25
2020	1
2019	1

***Overall Objectives:** The University of North Dakota is responsible for the acquisition and processing of data from the cloud microphysics probes, which are mounted on the NASA P-3 aircraft.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:** Development of a New-Generation of Airborne Electric Field for In-Situ Measurements

***Status of Support:** Pending

Proposal/Award Number:

***Source of Support:** NSF TTP

***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:** $929,377

*** 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:** The project develops the next generation of electric field mills for obtaining science quality measurements of ambient electric field vectors from aircraft. The project develops a prototype instrumentation system for deployment on research aircraft. The prototype design focuses on future deployment on a wide range of aircraft platforms to enable more efficient and safe flight operations.

***Statement of Potential Overlap:** Current Proposal.

***Proposal/Active Project Title:** REU site: Interdisciplinary Renewable and Environmental Collaborative (IREC)

***Status of Support:** Pending

Proposal/Award Number:

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

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

***Proposal/Active Project Start Date: (MM/YYYY):** 04/2026

***Proposal/Active Project End Date: (MM/YYYY):** 03/2029

***Total Anticipated Proposal/Project Amount:** $427,651

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

Year	Person Months
2026	0.3
2027	0.3
2028	0.3

***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:** Adaptive Hygroscopic Cloud Seeding with Powdered Seeding Agents

***Status of Support:** Pending

Proposal/Award Number:

***Source of Support:** UAE Research Program for Rain Enhancement Science

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

***Proposal/Active Project Start Date: (MM/YYYY):** 01/2026

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

***Total Anticipated Proposal/Project Amount:** $300,000

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

Year	Person Months
2026	2.5
2027	2.5
2028	2.5

***Overall Objectives:** The project develops methods for deployment of an Aerosol Particle Sizer (APS) and Cloud Droplet Probe (CDP) on seeding aircraft to enable routine atmospheric observations of the environment that can be used for adaptive hygroscopic cloud seeding operations. The APS provides aerosol concentrations for both the accumulation (< 1 μm) and dust (> 1 μm) modes, while the CDP measure differences in clouds due to changes in cloud condensation nuclei concentrations. The Adaptive Observations System (AOS, APS/CDP coupled to the CWIP) is evaluated during the project's field deployment to test powdered seeding dispersion using operational cloud seeding aircraft. Additionally, the concentration and size distribution of powdered seeding dispersion is measured in the laboratory to provide a comparison to atmospheric measurements.

***Statement of Potential Overlap:** None.

***Proposal/Active Project Title:** Markov-Chain Radiative Transfer Formalism for Investigating Cloud Microstructure with LiDAR

***Status of Support:** Pending

Proposal/Award Number:

***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):** 04/2028

***Total Anticipated Proposal/Project Amount:** $579,225

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

Year	Person Months
2026	0.5
2027	0.5
2028	0.5

***Overall Objectives:** To use Markov-chain radiative transfer to develop an improved formalism of LIDAR observations of cloud micro-structure as indicated by in-situ observations.

***Statement of Potential Overlap:** None.

Certification:

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

I also certify that, at the time of submission, I am not a party to a malign foreign talent recruitment program.

Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Delene, David in SciENcv on 2025-09-10 07:15:37