

2023 FINAL REPORT

NDCMP

NORTH DAKOTA CLOUD MODIFICATION PROJECT

Pilot & Meteorologist Internship Programs



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Cover artwork courtesy of Sheila Fryer, Graphic Artist, ND Department of Water Resources

Introduction

The Pilot Internship Program (PIP) and the Meteorology Internship Program (MIP) are designed to prepare qualified students for a professional career through participation in a summer intern position with the North Dakota Atmospheric Resource Board (NDARB) during the North Dakota Cloud Modification Project (NDCMP).

The Atmospheric Resource Board in cooperation with the University of North Dakota's John D. Odegard School of Aerospace Sciences (UND) have long recognized their shared roles in providing appropriate experience for students and young professionals. During the 2023 NDCMP, eight qualified young people worked as interns on a full-time basis. The NDARB internships are an important milestone for the students, enabling them to gain unique insight and experience and to have important responsibility directly in their field of interest. NDARB constantly seeks to improve its training process and the entire internship experience. The knowledge and skills acquired by the students enhance the development and stature of an emerging workforce.

History

The Pilot Internship Program (PIP) began in 1974 with a \$274,000 grant from the National Science Foundation to the University of North Dakota for an "experimental project for training pilots in weather modification." The program was instantly successful, enrolling 70 students through the fall semester of 1976. That year, the ND Weather Modification Board (now Atmospheric Resource Board) entered into contract with UND to employ 14 interns on its summer cloud seeding program. By the mid-1980's, the Bureau of Reclamation ceased to fund the program. The NDARB continued funding the program until 2003, when funding was no longer available. The Board did continue the program by making internships available, however, only on a volunteer basis. Funding was restored for the program during the 2005 Legislative Assembly.

A Memorandum of Understanding between NDARB and UND outlines the responsibilities of both entities to create an opportunity to prepare students for a professional career through participation in a summer intern position. Specific criteria are required to be eligible for the PIP. At the completion of the 2023 program, the program has provided training and experience for 407 pilots.

The NDCMP Meteorology Internship Program began in 1996 and to date has provided hands-on radar, operations and forecasting experience for 73 meteorology undergraduates and graduates.

Program Description

The following presents an outline of the program, its objectives, design, and main delivery components.

Program Objectives

- Encourage students to expand their education beyond the classroom.
- Enable students to sample actual situations and prepare for Pilot-In-Command (PIC) and Radar Meteorologist duties.
- Develop professional work habits and improve interpersonal skills of students.
- Establish a pool of potential professional employees who have demonstrated their abilities to assume in-command responsibilities.

Qualifications

Candidates for the MIP must be at least an undergraduate pursuing a degree in meteorology or atmospheric sciences. Applicants must apply and are scored and rated for selection by NDARB.

Candidates for the PIP must be at least an undergraduate pursuing an Aviation-related degree at UND. Applicants must apply and are scored and rated for selection by NDARB and UND.

Selection criteria for the PIP includes:

- Ratings: must have multi-engine commercial instrument rating completed by April 30.
- Motivation: class attendance, extra credit work, and overall enthusiasm for fieldwork.
- GPA: Complete the Applied Weather Modification class.
- Flight hours: total and multi-engine time.
- Related work experience.

Since 2018 due to a lack of applicants who were in the Applied Weather Modification class or had taken the class previously, NDARB accepted applications from UND student pilots who did not take the class. Preference was given to students who are in the class or have taken it in the past.

Program Design

The PIP is designed for the primary benefit of the persons placed on the program including multi-engine flight hours (number of hours dependent on weather conditions), Instrument

Flight Rules (IFR) and adverse weather flight experience, and operations experience for future employment as weather modification Pilots-In-Command (PIC).

The MIP is designed for the primary benefit of providing hands-on radar experience, real-time weather observations, weather forecasting experience, and operations experience for future employment as weather modification radar meteorologists.

The programs are designed for positive, active involvement of the interns. The decision whether or not to allow each pilot intern to fly the airplane (from left or right seat) rests with the PIC. In the case of the MIP, the supervising Radar Meteorologist determines when a meteorologist intern is qualified to run operations during a mission. It is most beneficial if the interns receive direct, hands-on experience. In general, the assignment of each intern is to learn the duties of his/her supervisor/mentor. This includes the following areas of involvement:

- Conduct of seeding missions according to project guidelines.
- Detailed record-keeping of all missions.
- Seeding equipment maintenance.
- Visual surveillance of the weather.
- Representing the project to the public.
- Duties that will meet project objectives as directed by NDARB.

Support and Supervision

The NDCMP is a 24/7 project for 92 days, or longer if an extension occurs, and ongoing communications are vital. Each intern was assigned a Supervisor/Mentor who offered guidance, encouragement, and general counsel. An “always-available” policy enabled the interns’ access to individuals at any time for answers to questions, accept feedback, and help with project objectives. This policy created an environment in which the interns felt comfortable asking questions, and aided in keeping the interns productive, no matter what time of the day or night.

Orientation & Pre-project Training

Orientation and training were accomplished for the ND Cloud Modification Project Ground School on May 24 through 26, 2023. All project personnel were required to attend. During Ground School, the interns received a detailed overview of cloud seeding science and technology, and information that clarified their specific tasks and roles on the NDCMP, including operations, policy, rules and regulations.

Accountability

Daily, participants were required to document the number of hours worked using the agency's web-based time-reporting system. At the end of the workweek, the supervising PICs or meteorologists reviewed, commented and approved the interns' hours, which were forwarded to NDARB via email. The comments served to track performance and the time entry provided a database of official hours worked for Fair Labor Standards Act and payroll purposes.

ARB full-time staff made multiple visits to field locations to check on quantity and quality of work, receive and make suggestions and criticisms, and consider adjustments to the program.

Continuing Development

Participants were encouraged to become involved in networking with NDARB and contractor employees. Sharing information on work experiences and performance is critical to the professional development and growth of the individual. Feedback on the intern's progress was provided as a professional development tool and to provide clarification of NDARB's expectations of what constitutes quality performance on the job.

Approximately two months into the internship, the supervisors/mentors conducted peer-review evaluations of the participants and discussed the results with them. The interns were also asked to evaluate the internship program. The program manager and chief meteorologist then visited with each intern and offered comments and critical suggestions for improvement and further development. At this time, comments were also received from the interns regarding possible changes and improvements to the program for the future.

Legal Considerations

Interns of the NDARB are temporary unclassified employees and were paid at the rate of \$15.84 per hour. The NDARB workweek is from Monday at 12:00 a.m. to Sunday at 11:59 p.m. Any overtime hours worked within the workweek required prior authorization. Internship employees were covered under the agency's Workforce Safety policy.

Program Information

During the 2023 NDCMP, the 5 PIP interns worked a total of 2,201.75 hours. These hours were spent at weather briefings, operations flight missions, chemical mixing and inventory, record keeping, aircraft and seeding equipment maintenance, alert status prior to launch, and public relations.

Intern pilots are rotated through the Watford City location to give all a chance to experience high-altitude turbo-prop aircraft operations.

The 3 MIP interns worked a total of 1,350.03 hours. These hours were spent at weather briefings, forecasting, assisting with operations flight missions, radar watch, record keeping, and public relations. All project personnel are responsible for “weather watch” at all times during the project.

Each intern meteorologist was given the opportunity to rotate through the two radar locations. This gave each intern a chance to experience operations in each district.

Most intern participants had completed their internship and left the project by mid-August to return to college.

2023 Participants

Pilot Interns & Field Site:

Christian Chederquist, Seed 1, Bowman
Rasam Shaaeli, Seed 2, Bowman
Kieran Viggiano, Seed 4, Stanley
Austin Krause, Seed 5, Williston
Laura Standen, King Air Rover

Meteorologist Interns & Field Site:

Eliza Fries, Bowman
Danielle Harr, Stanley
Cody Cameron, Stanley

Recommendations

The following are recommendations from students for consideration for future efforts:

Meteorology Internship Program

- Earlier communication on location assignments and project information before project begins, relating mostly to making living and travel arrangements.

Pilot Internship Program

- Earlier communication on location assignments and project information before project begins, relating mostly to making living and travel arrangements.
- Do a better job reaching out to the public and informing them about what we do and why it is important. Some ideas include hosting a dinner for the public (possibly at the Stanley Farmer’s Market), allowing crews to take aircraft to events such as nearby airport fly-ins and air shows, and more.
- Adopt glass cockpit airplanes, providing advanced silver iodide crushing tools and upgrading personal protective equipment.

Acknowledgements

NDARB wishes to thank the Radar Meteorologists and Pilots-In-Command for their efforts and assistance in serving as supervisors and mentors during the 2023 NDCMP Internship Programs. They are as follows.

Pilots-In-Command

Heinrich Adriaanse, Seed 1, Bowman
Brooke Buccowich, Seed 2, Bowman
Lucas Castro, Seed 4, Stanley
Jake Floyd, Seed 5, Williston
Ryan Starkey, Seed 7, Watford City

Radar Meteorologists

Jacob Azriel, Bowman
Ben Schaefer, Stanley

NDARB also appreciates the efforts of the following.

- Dr. David Delene, UND John D. Odegard School of Aerospace Sciences
- Mr. Jody Fischer, Vice President of Operations, Weather Modification, International
- Mr. Kirk Hamilton, Chief Pilot, Weather Modification, International
- Mr. Alex Sailsbury, UAS Operations Specialist, Weather Modification, International
- Mrs. Erin Fischer, Client Services Director, Weather Modification, International
- Mr. Jake Van Ornum, Documentation Specialist, Weather Modification, International
- Mr. Brady Wolkow, Client Services, Weather Modification, International
- Ms. Jordyn Carrabre, Relief Intern, Weather Modification, International

We would also like to congratulate Austin Krause (recipient of the 2023 Hans P. Ahlness Intern Award) for his dedication to the program, hard work, and ambition.

Attachments

- Intern Performance Evaluation
- Evaluation of Meteorology and Pilot Internship Program



**NORTH DAKOTA CLOUD MODIFICATION PROJECT
 INTERN PERFORMANCE EVALUATION**
 NORTH DAKOTA DEPARTMENT OF WATER RESOURCES
 ATMOSPHERIC RESOURCE BOARD
 SFN 61334 (8/2021)

The evaluating supervisor will complete the evaluation. We urge that each supervisor evaluate the intern's performance together with him/her. Please be candid. This joint evaluation is of paramount importance to the intern's professional and personal development. The evaluation will be a guide for counseling the intern. Additional space is provided for your comments. Please comment on any evaluation marked marginal or unsatisfactory.

Please place an "X" in the appropriate column for each characteristic.

Intern Name					Date	
Characteristics	Excellent	Very Good	Average	Marginal	Unsatisfactory	Not Applicable
Desire and willingness to take on new assignments						
Potential for further development						
Concern for needs of fellow employees						
Willingness to work through an assignment to completion						
Ability to communicate						
Quality of work						
Dependability						
Attitude (application to work)						
Attendance						
On-time						
Judgment						
Imaginativeness and resourcefulness						
Cooperation – willingness to get along with others						
Technical skills						
Interpersonal skills – general public						

Intern Name	Date
Narrative appraisal of performance	
Additional comments and/or recommendations	
I understand that this intern will have access to the information in this evaluation and that it is a public record. I have discussed this evaluation with the intern.	
Signature	Date



**NORTH DAKOTA CLOUD MODIFICATION PROJECT
INTERNSHIP PROGRAM EVALUATION**
NORTH DAKOTA DEPARTMENT OF WATER RESOURCES
ATMOSPHERIC RESOURCE BOARD
SFN 61335 (8/2021)

Name

Evaluation of: (Please place "X" in the first column and appropriate row.)

	METEOROLOGY INTERNSHIP PROGRAM
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	PILOT INTERNSHIP PROGRAM
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This evaluation will be very important in determining the value of your work experience, both for yourself and for students who may wish to follow you in the same situation. The evaluation should be honest and indicate problems as well as your progress during the period. Please address your evaluative remarks so that your coordinator can discuss them with the organization to improve and maintain the program.

In what ways did your classes prepare you for your internship?

What other courses and/or work experience do you think would have helped you with this internship?

What was the most helpful thing your supervisor did to make you feel comfortable as a staff member?

In what manner has this assignment contributed to your professional development?

Prior to beginning your job, did the agency give you adequate information to start your project?

Do you consider the Internship Program relevant and meaningful to your short/long-term career interests?

List three things you plan to do differently as a result of this program.

How would you rate the educational value of your internship?	
<input type="checkbox"/>	Exceptional opportunity.
<input type="checkbox"/>	Worthwhile experience.
<input type="checkbox"/>	Generally not too useful, but might help some.
<input type="checkbox"/>	Probably of no value (please comment).
Comments	
How was the experience related to your major field or career goals?	
<input type="checkbox"/>	Very closely related.
<input type="checkbox"/>	Related through occasional assignments.
<input type="checkbox"/>	No relationship exists.
<input type="checkbox"/>	Not applicable (please comment).
Comments	
To what degree do you feel other employees supported the internship program?	
<input type="checkbox"/>	Atmosphere was openly supportive.
<input type="checkbox"/>	Accepted, but not openly supportive.
<input type="checkbox"/>	Generally not accepted or understood.
<input type="checkbox"/>	Non-supportive and potentially hostile.
<input type="checkbox"/>	Does not apply (please comment).
Comments	
How would you rate your salary in relation to requirements of position, your experience, and your academic level?	
<input type="checkbox"/>	Position paid comparably to full-time employees.
<input type="checkbox"/>	Position well paid.
<input type="checkbox"/>	Definitely underpaid for service expected.
<input type="checkbox"/>	Does not apply (please comment).
Comments	
Were the actual duties of the position commensurate with the job description?	
<input type="checkbox"/>	Experience closely matches that offered.
<input type="checkbox"/>	Experience mostly matches that offered.
<input type="checkbox"/>	Little relationship exists.
<input type="checkbox"/>	Extremely unsatisfactory (please comment).
Comments	
How did your technical skills apply to the position?	
<input type="checkbox"/>	Were more than adequate.
<input type="checkbox"/>	Were adequate.
<input type="checkbox"/>	Were less than they should have been.
Comments	

Did you receive a proper job orientation?	
<input type="checkbox"/>	Complete, accurate.
<input type="checkbox"/>	Somewhat related.
<input type="checkbox"/>	Had no meaning.
<input type="checkbox"/>	Does not apply.
Comments	
Evaluate your supervisor's willingness and capability of answering questions.	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
Evaluate your supervisor's availability when needed for questions, etc.	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
Evaluate your supervisor's receptiveness to new ideas you might have had?	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
How would you rate your relationship with supervisor?	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
What changes, if any, would you recommend in your internship?	
What other areas of experience would you like to acquire through this internship?	

Overall Rating	
	Excellent
	Very Good
	Average
	Marginal
	Unsatisfactory

NARRATIVE EVALUATION

The second part of the evaluation requires a narrative evaluation of the work that was done during the internship. Please include in the narrative the following topics:

- The role your position plays in the overall goals and mission of the project.
- Relationship of the position to the organization's structure.
- Academic classes that prepared you or fell short of preparing you for the job.
- Problem-solving techniques used.
- Communication skills used.
- Leadership skills used.
- Decision-making skills used.
- Administrative skills used.
- Agency staff assistance.
- Success and failure experienced.
- Any recommendations.

Your Narrative

Any photos, articles, etc. may be included with the evaluation. Please indicate properly the source of all such material.

I understand this evaluation and narrative will be used to evaluate the Internship program and is a public record.

Signature

Date