

Modernizing the AMS K-12 Teacher Professional Development Model for Contemporary Learning Needs

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Program Overview

- DataStreme, initiated in the mid-1990s, aimed to provide real-time weather data to K-12 educators
- Visionary approach by Dr. Ira Geer using emerging internet technology for geoscience education
- Focus: Teacher empowerment, professional respect, and impact on K-12 education



Program Foundations

- **Project Atmosphere (1992)**
  - Master teacher training via NWS Training Center
- **DataStreme Atmosphere**
  - Accessible during fall/spring semesters
  - Local Implementation Teams (LITs) to mentor teachers
  - Tools included real-time weather data, NOAA resources, and Daily Weather Summaries

AMS American Meteorological Society | Education

Project Atmosphere

- Interpret and analyze near real-time weather maps and data
- Collaborate with other science teachers
- Gain credible educational materials









In partnership with: Pennsylvania Western University | NOAA

Program Expansion

- Addition of NSF, NOAA, and NASA-supported courses:
  - **Water in the Earth System (2001–2008)**
  - **Ocean (2006–present)**
  - **Earth's Climate System (2009–present)**
- Over 20,000 teachers trained; influence extends to 200,000 educators and millions of students



Program Modernization and Transition

- **Transition to PennWest (2017)**:
  - Incorporation of Learning Management System (LMS)
  - Recognition through post-baccalaureate certificates and Certified AMS Teachers (CAT) designation
- **Modern Tools**:
  - Learning Management System (D2L)
  - Zoom
  - AMS eBooks integration
- Credentialing
  - Post Baccalaureate Certificate
  - Certified AMS Teacher (CAT)



Drivers for Continued Modernization

- NOAA Education priorities
  - Need for modern, inclusive pedagogical model
  - Broadening course participation and reaching underserved communities
- AMS K-12 Teacher Needs Analysis Survey
  - Interviews with educators about what they need from teacher PD programs like DataStreme
  - Distilled interviews into 23 specific PD needs for survey - completed by 223 teachers in fall 2023
  - Most important elements of PD - hands-on activities, concrete takeaways, accurate science

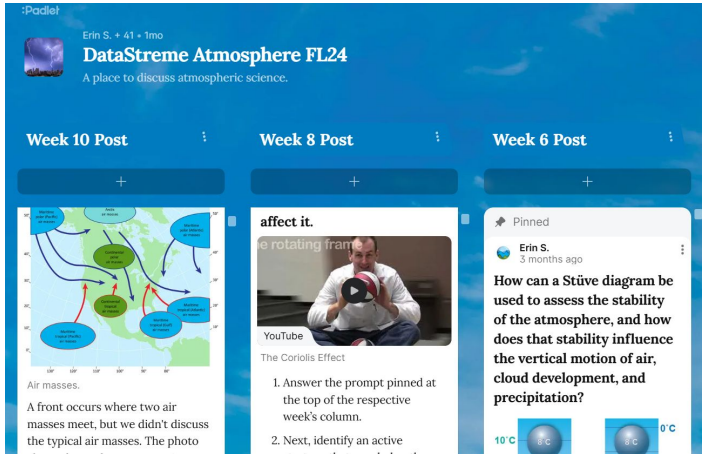
	Overall		
	Average Rank	St. Dev.	Freq of #1 Ranks
Number of Responses	*186*		
Hands-On Activities: Engaging teachers with interactive activities, allow them to be a student.	7.06	5.54	24
Authentic Science Experience: Providing real-world science experiences and applications.	8.10	6.14	26
Interactive Classroom Materials: Using materials that promote active learning and engagement.	8.87	6.08	13
Up-to-Date Science Content: Keeping the curriculum current with the latest scientific findings.	9.25	6.05	15
Content Relevant to Student Lives: Making content relatable, practical, and significant to students.	9.56	6.01	9
Use and Concrete Takeaways for Students: Focusing on immediate usefulness for students.	9.59	6.18	8
Concrete Takeaways for Teachers: Focusing on immediate usefulness in teaching.	9.72	6.51	14
Project-Based Activities: Encouraging learning through hands-on projects.	10.32	6.09	8
Field Trips and Experiential Learning: Incorporating practical, real-world, unique experiences.	11.30	6.81	7
Intellectual Rigor and Growth: Educator personal growth regarding science.	11.89	5.78	4
Graduate Level Course Credit: Offering credit that counts towards advanced education.	12.49	7.01	15
Collaborate With Other Educators: Fostering collaboration and idea sharing among teachers.	12.65	6.05	5
New Technologies: Introducing and utilizing cutting-edge technologies in teaching.	12.97	6.35	3

Further Advancement & Re-Tooling

- Goals of modernization:
  - Accessibility and inclusivity
    - Revised course manuals and investigations
    - Prioritized underserved communities via new application process, echoing Dr. Geer’s core vision
  - Mentoring teams refocused on specific engagement:
    - Pedagogy
    - Content
    - Navigation

Outcomes & Ongoing Efforts

- Additional digital initiatives
  - Slack
  - Padlet

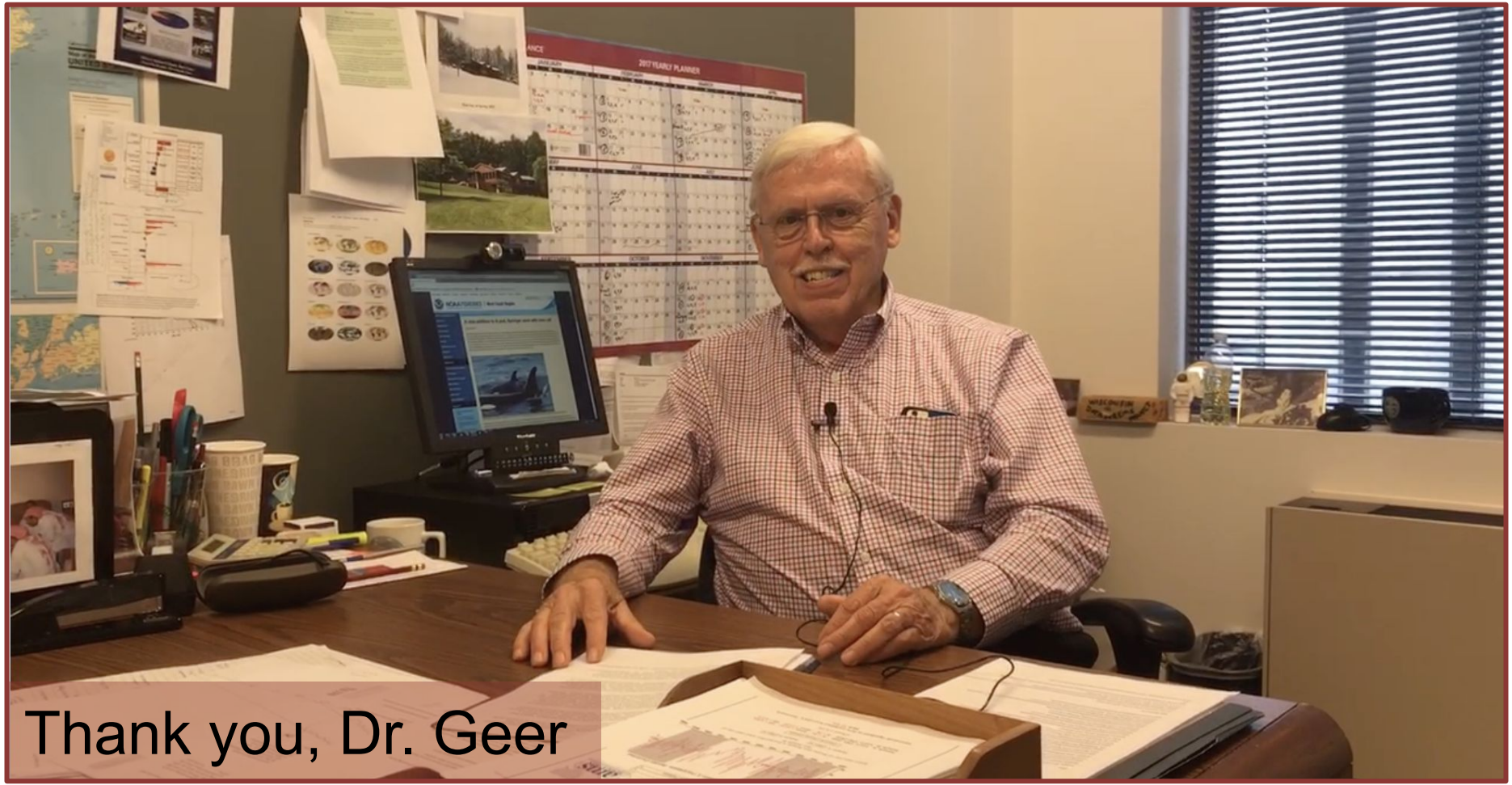


- Courses resumed in Fall 2024 under a refined model
- **Partnership with CIRES/CEEE**
  - Focused on data collection and program assessment for further refinement

CIRES

Conclusions & Acknowledgements

- AMS DataStreme maintains its legacy of:
  - Teacher support and professional growth
  - Grounding in data-driven, hands-on learning
  - Long-term influence on Earth system science education
- Key supporters:
  - NSF, NASA, NOAA (current funding: NOAA Award NA22SEC0080013)
  - Contributions from the family of Dr. Ira Geer


2017 YEARLY PLANNER
Thank you, Dr. Geer