

Advancing Weather Monitoring with Animation Techniques

Prepared by

Mohamed Abdelkader¹, Jorge Bravo¹, Marouane Temimi¹, and Jibin Joseph²

¹Civil, Environmental, and Ocean Engineering Department, Stevens Institute of Technology

²School of Civil Engineering, Purdue University

mabdelka@stevens.edu

FAIR Science in Climate

Objective

This advanced module aims to enhance the capabilities of participants in employing satellite data for dynamic weather visualization. Participants will learn to manipulate, analyze, and animate geospatial datasets to create visual representations of weather patterns, enhancing both scientific understanding and data presentation skills.

Overview of Steps

Introduction to Tools and Techniques: Participants will familiarize themselves with the key tools and computational techniques necessary for handling and processing satellite imagery.

Weather Animation Using HydroEstimator Data: This section delves into using HydroEstimator data for precipitation mapping and animation, illustrating the movement and intensity of rainfall.

Weather Animation Using GEOS-R Data: Focuses on employing GEOS-R satellite data to visualize atmospheric conditions in high resolution, highlighting techniques for animating cloud movements and other meteorological phenomena.

Instructions

- **Navigating the Notebooks:** Start with the "Introduction to Tools and Techniques" to build a foundational understanding. Progress through the notebooks sequentially to develop a comprehensive skill set in satellite data animation.
- **Executing the Exercises:** Carefully follow the step-by-step instructions in each notebook. Execute the provided code and adjust parameters to explore different visual outputs.
- **Consulting the PDF Solutions:** Refer to the solution documents for detailed explanations and guidance on the expected results. These documents serve as a vital resource for verifying outcomes and understanding complex concepts.
- **Applying Skills to New Data:** Encouraged to apply the learned techniques to different datasets or parameters to explore further and enhance learning.
- **Resource Utilization:** Leverage additional resources linked within the notebooks and PDFs to expand your knowledge and troubleshooting capabilities.