Development of NOAA Precipitation Portal - PrecipWatch

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Background

- Timely, centralized access to precipitation data is essential for operational nowcasting and rapid decision support.
- Current NESDIS satellite precipitation products suffer from latency and fragmented access pathways, limiting their utility for real-time applications.

Objectives

Establish a unified portal, consisting of a core processing system and a user-friendly web interface to streamline access to various weather datasets for users.

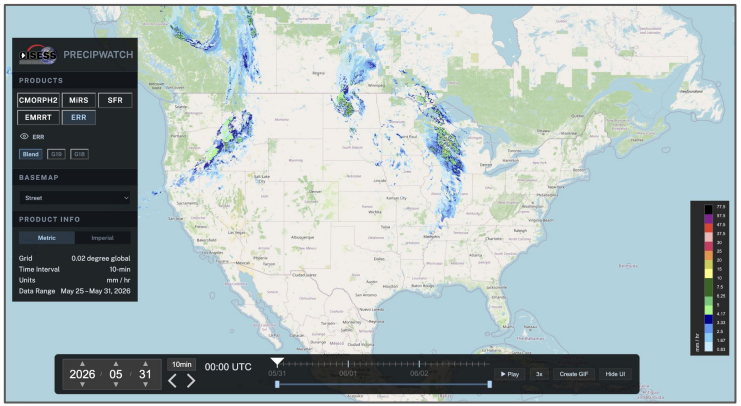


Figure 1: Example of ERR data on PrecipWatch website UI

Future Work

- Optimize tile rendering to support caching and parallelization, reducing latency and supporting near-real-time updates.
- Expand product, satellite, and temporal coverage.
- Develop a universal colormap to standardize color mapping across products for consistent cross-product comparison.

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Data Processing

- Processed and extracted satellite-derived precipitation data.
- Applied color maps to represent precipitation intensity.
- **Gridded products (CMORPH2 - Pingping Xie, ERR - Veljko Petkovic)** were mapped directly onto their regular spatial grids.
- **Swath products (MiRS - Shuyan Liu, SFR - Jun Dong, EMRRT)** were processed according to their irregular satellite observation geometry.
    - Preserves the spatial distribution and geometry of satellite observations.

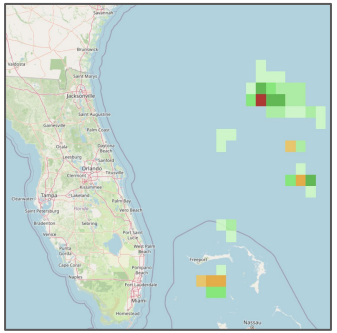


Figure 2: Example of processed CMORPH2 data

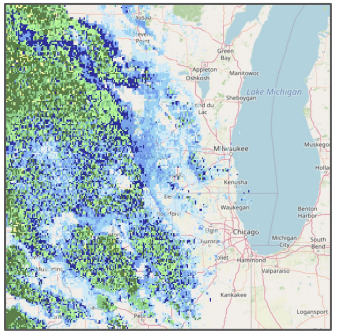


Figure 3: Example of processed ERR data

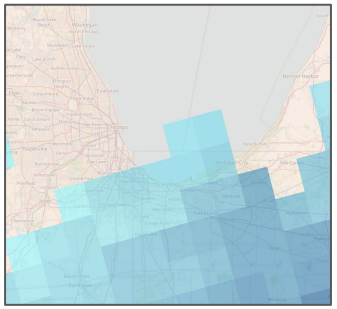


Figure 4: SFR data processed by PrecipWatch

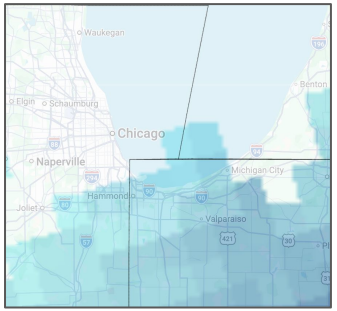


Figure 5: SFR data processed by current SFR website

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Web Interface

- Interactive map for spatial and temporal visualization of processed precipitation data for each product.
- Users can compare across precipitation retrieval algorithms (*CMORPH2 - Pingping Xie, SFR - Jun Dong, MiRS - Shuyan Liu, ERR - Veljko Petkovic, EMRRT*) and their corresponding satellites.
- Date and time controls allow users to analyze temporal variations in precipitation.
- Legend provides color-coded precipitation values, with exact values retrievable by selecting a location on the map.
- GIF export functionality allows users to generate animated visualizations of precipitation data over a selected time range.

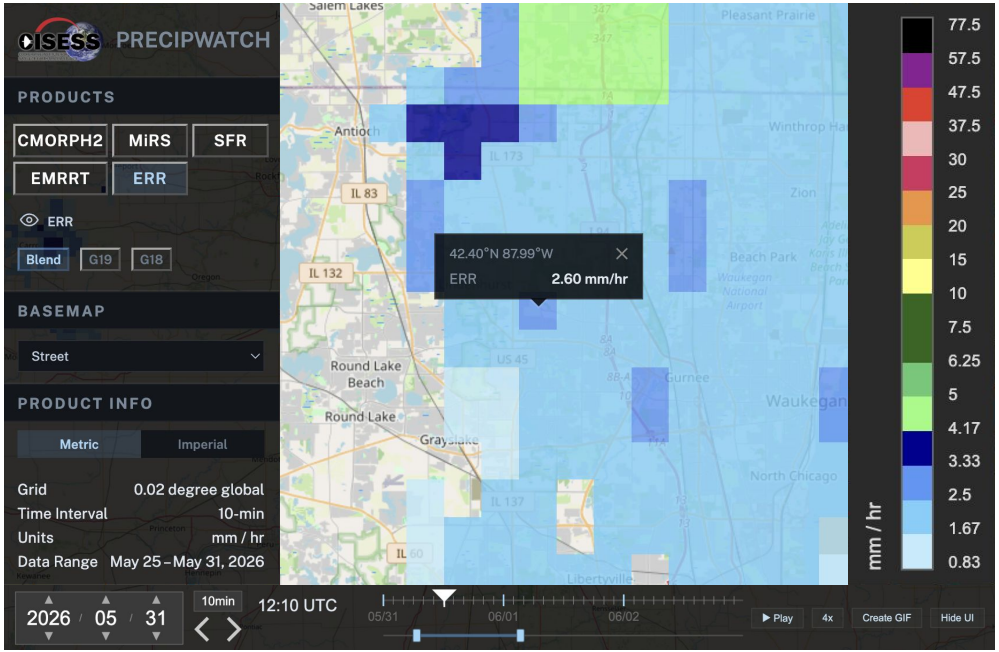


Figure 6: PrecipWatch UI with features enlarged

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