



IT Trends, Changes, and Benefits in the Weather Enterprise

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Demand for Weather Information

What is making it happen...

- Improved Weather Observations and Forecasts
 - Weather Modernization I (1990's)
 - Take weather forecasts seriously – improved forecasts
 - Weather Modernization II (2012 – 2025)
 - Human cannot process all the data – need more post-processing applicable to mission for automated decision-making



Growth in Weather Data and Information

Past, Current, and Future Weather Data Growth

- Data Growth (real-time)
 - 1990's satellite (GOES), radar (NEXRAD/TDWR), forecast models – 2 orders of magnitude
 - 2000 - 2011 radar (Level II), forecast models – 2 orders of magnitude
 - 2012 - 2025 satellite (GOES-R), radar (Dual Pol, MPAR), forecast models, observations (Network of Networks) – 2 or 3 orders of magnitude
- Bandwidth Growth (real-time)
 - Compression algorithms mitigate BW growth but not all
 - FAA increase NAS bandwidth from 56 kbps to 768 kbps in late 90's, mostly for NEXRAD weather radar products
- Storage Growth
 - Decision Support Tools require past, current, and forecasted data
 - Growth scale – many orders of magnitude (2015-2025)

IT Strategy Changes

Changes, Benefits, and Challenge...

- IT Model Strategy Changes
 - All the data all the time
 - The right data available all the time
- Benefits under IT Model Changes
 - New programs (like CSS-Wx, IDP) shrink demand in the amount of data to deliver the needed information (SOA, Registry/Repository, Data Caching, Predictive IT Modeling (data demand forecasting), etc.)
 - Reduces the costs for information sharing to the targeted user communities
 - Reduces storage costs
- Challenge
 - How to keep up with future data bandwidth and storage growth with *architecture that provides the agility to handle the growth* so only the relevant weather data is part of the data stream and storage