

FAA to NWS Research to Operations (R2O) Process

Presented to: FPAW Fall 2023 Meeting

By: Danny Sims, Aviation Weather Division

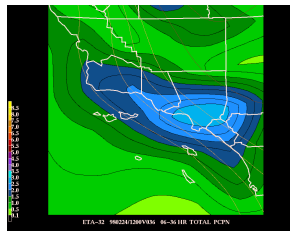
Date: 15 November 2023



**Federal Aviation
Administration**

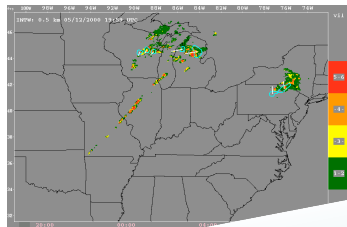
AWRP 20+ Year History of Success

1998: 40KM; 2002: 20KM;
2005: 13KM



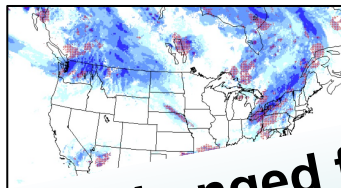
Rapid Update Cycle
(RUC)

2001



NCEP

2002: CIP; 2004: FIP; 2011:
FIP Severity; 2012: CIP/FIP
RAP



2003: Aviation Digital Data
Service (ADDs);
2016: aviationweather.gov



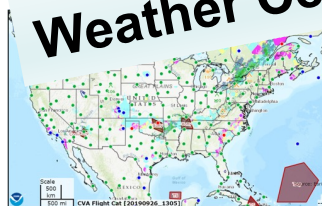
web-based Products

2003: GTG; 2010: GTG2 (Mid-
Levels);
2015: GTG3 (MtnWv & Low Lvl);
2019: GTG-N (Experimental)



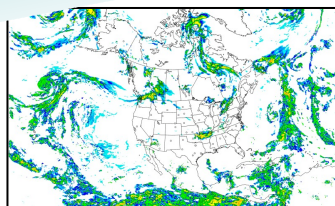
Turbulence Forecasts

2005



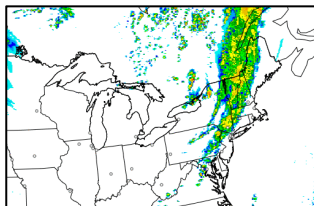
Helicopter Emergency
Medical Services

2010, 2020



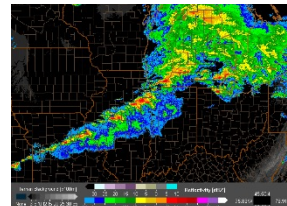
Rapid Refresh
(RAP)

2014; Updated 2016,
2018, 2020



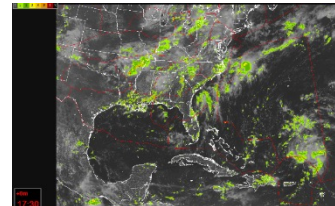
High-Resolution Rapid
Refresh (HRRR)

2014



Multi-Radar, Multi-
Sensor (MRMS)

2017



Offshore Precipitation
Capability (OPC)

**But the transition paradigm has changed from directly to Aviation
Weather Center to NCEP Centralized Operations (NCO)**



Federal Aviation
Administration

Developed a Process

- **Document the transition process**
- **Take into account multiple phases**
- **Joint FAA-NWS development**
 - NWS HQ, AWC, EMC, NCO, MDL
 - NCAR review
- **Version 1.0 finalized January 2023**

Joint FAA-NWS Research to
Operations (R2O) Process
Governance Document

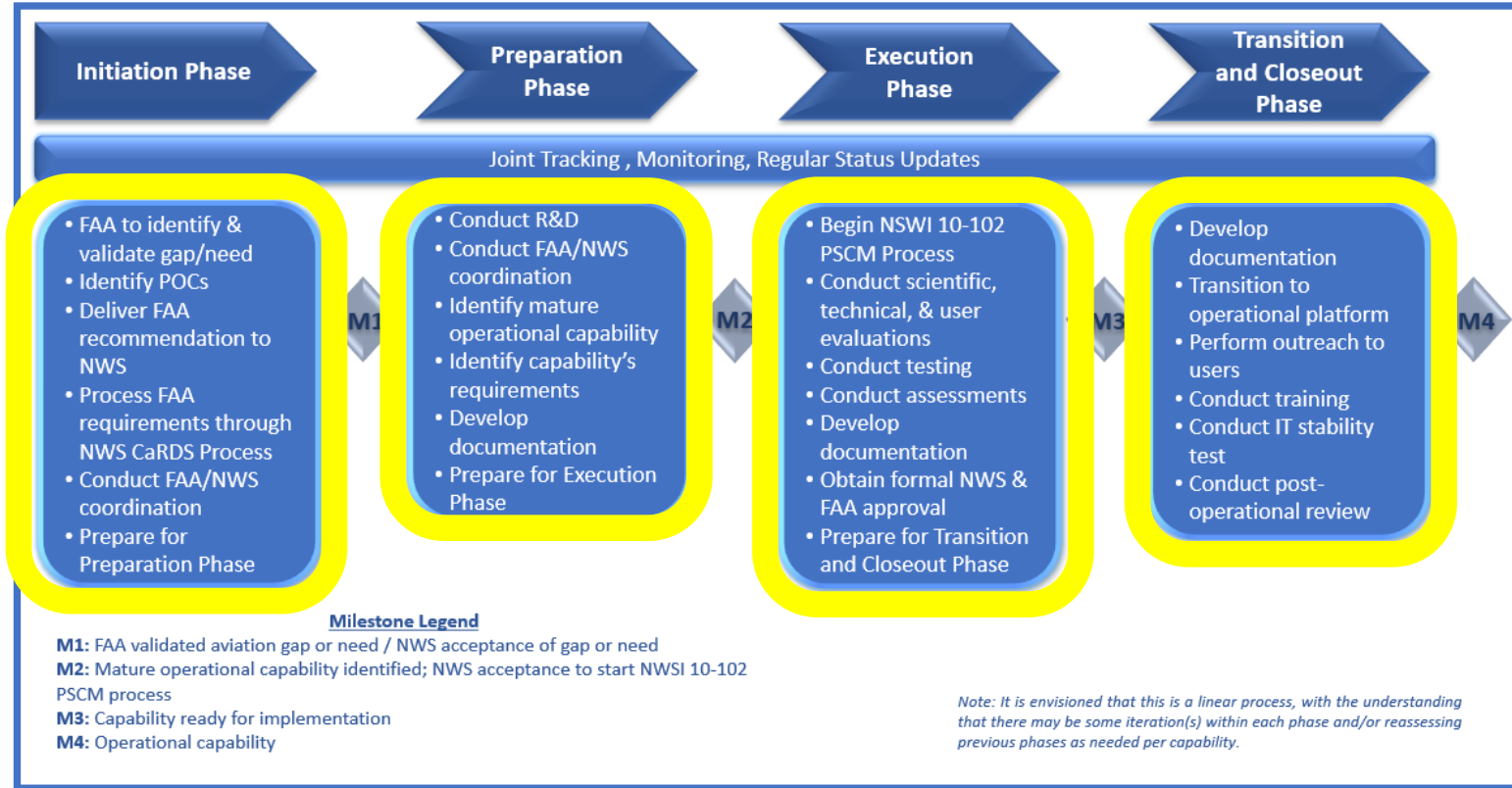
Version 1.0



January 6, 2023

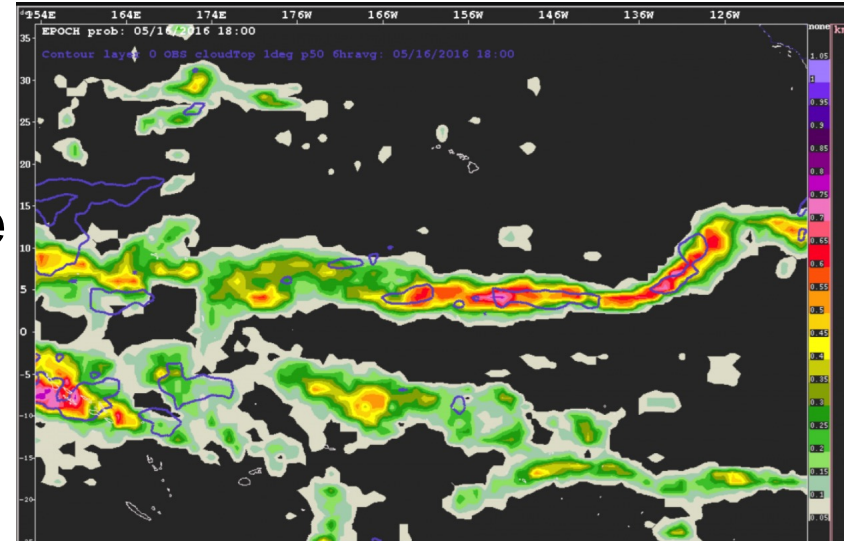


Joint FAA-NWS R2O Process



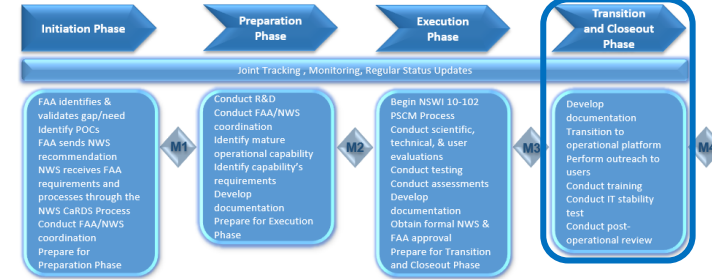
An Example - EPOCH

- Ensemble Prediction of Oceanic Convective Hazards
- Probabilistic forecast guidance up to 36 hours for World Area Forecast Centers
- Implemented into NWS operations on 20 June 2023
- A team effort with FAA, NWS, NCAR



EPOCH Status

Ensemble Prediction of Oceanic Convective Hazards (EPOCH): Provide better convective weather forecasts for oceanic airspace and World Area Forecast System (WAFS)



Project / Capability	POCs	Implementation Platform	Resources <i>grey = complete</i> <i>green = available/scheduled</i> <i>yellow = pending approval</i> <i>red = on hold or denied</i> <i>bold = current phase</i>	Funding <i>grey = complete</i> <i>green = approved & available</i> <i>yellow = pending approval</i> <i>red = on hold or denied</i> <i>bold = current phase</i>	Schedule <i>grey = complete</i> <i>green = on track</i> <i>yellow = delayed/at risk</i> <i>red = on hold</i>	Overall Status <i>grey = complete</i> <i>green = on track</i> <i>yellow = delayed/at risk</i> <i>red = on hold</i>	Additional Notes Dependencies, delay reasoning, resource expectations, progress of assessments/testing/evaluations/etc.
EPOCH	FAA: Jason Baker NWS: Rob Hepper	WCOSS stand alone	Initiation Phase	Initiation Phase	Milestone 1 completion: 10/2020	Complete	FAA sent formal letter on 10/8/2020.
			Preparation Phase	Preparation Phase	Milestone 2 completion: 10/2023	Complete	
			Execution Phase	Execution Phase	Milestone 3 completion: 08/2024	Complete	Hand off to NCO on 1/2023.
			Transition & Closeout Phase	Transition & Closeout Phase	Milestone 4 completion: 01/2025	Active	All testing has been completed and was transferred to NWS. It was put on operational production servers on 6/20/23. FAA distributed internal EPOCH memos and sent an external memo to the NWS Directors on 6/23/23.

R2O Projects – Status Overview

Status
On Track
At Risk / Delayed
On Hold
Complete

	Phase & Milestone Date			
	Initiation	Preparation	Execution	Transition & Closeout
EPOCH	10/2020	10/2023	08/2024	01/2025
C&V (Temporal Updates to LAMP)	07/2018	04/2023	04/2024	Q4/2024
C&V (LAMP – Onset & Cessation)	06/2019	10/2023	Q2/2025	Q4/2025
C&V (LAMP – High Resolution Nest for Ceiling Height)	02/2022	03/2023	On Hold	On Hold
GTG V4	mm/yyyy	Q3/2024	Q2/2025	Q4/2025
GTGN	01/2021	Q3/2024	Q3/2025	Q3/2026
GTG Global	mm/yyyy	Q4/2023	Q4/2025	Q4/2027?
FIP V2	mm/yyyy	04/2021	Q3/2024	Q2/2025
CIP V2	mm/yyyy	10/2023	Q1/2025	Q3/2025
CIP/FIP Droplet Size	08/2023	mm/yyyy	mm/yyyy	mm/yyyy



Still To Do

- **Continue to use the process**
 - Conducting quarterly R2O meetings
 - Currently tracking 10 distinct capabilities
- **Refinement to address gaps & shortfalls**
- **Develop process for transition to FAA systems**
- **Develop process for transition to industry**

