
ENSCO
Ideas to Reality®

MetWise®

Turn-Key and Cloud-Based Options of AWIPS II

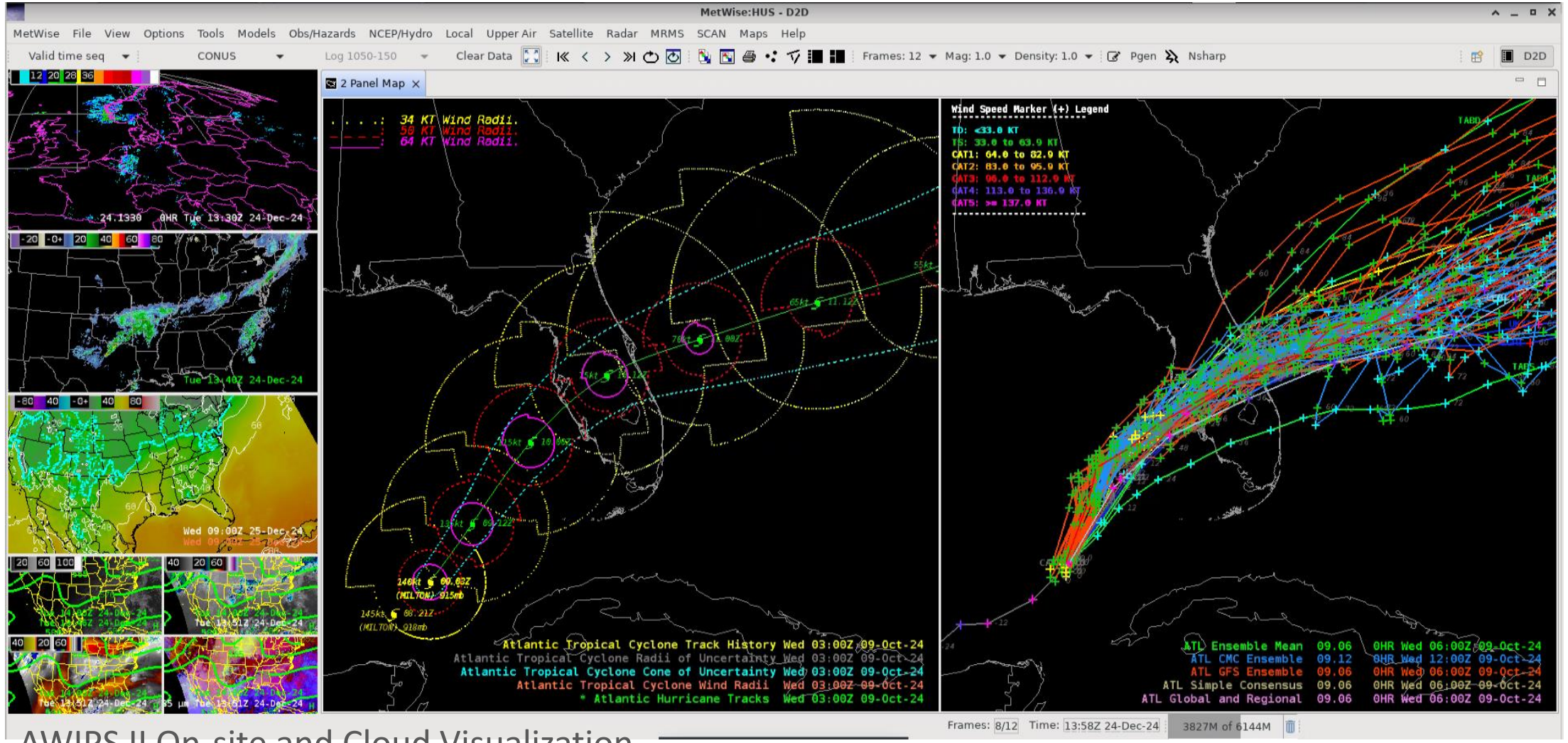
Justin Balbierer
Raymond Yip
Dr. Chasity Wright

What is MetWise®?

ENSCO's suite of meteorological products ranging from product visualization, data research, and NWP

- MetWise Enterprise and MetWise Net
  - Services that utilize the AWIPS II baseline software as a starting point, configured for efficiency and customized with value-add features
- MetWise Predict
  - NWP including end-to-end WRF and MPAS solutions for standard atmospheric fields and chemistry dispersion
- MetWise Live
  - Custom, as-needed visualization tools that utilize Python, R, Java, and C/C++ to display critical information in near real-time

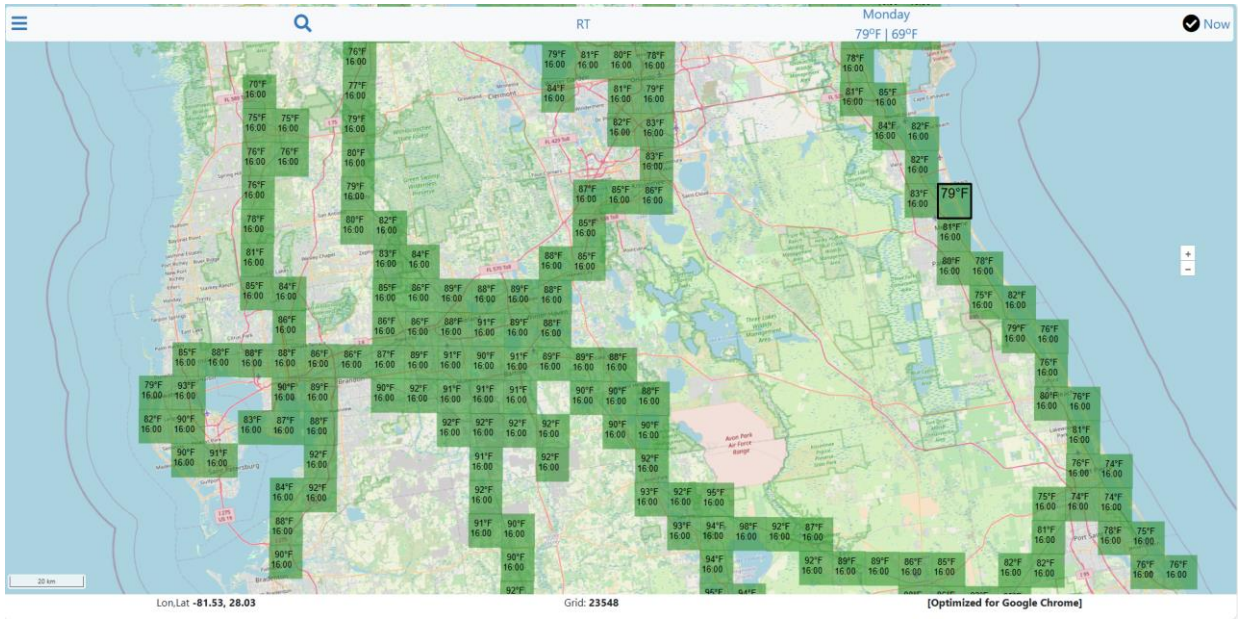
MetWise® Enterprise and Net



AWIPS II On-site and Cloud Visualization

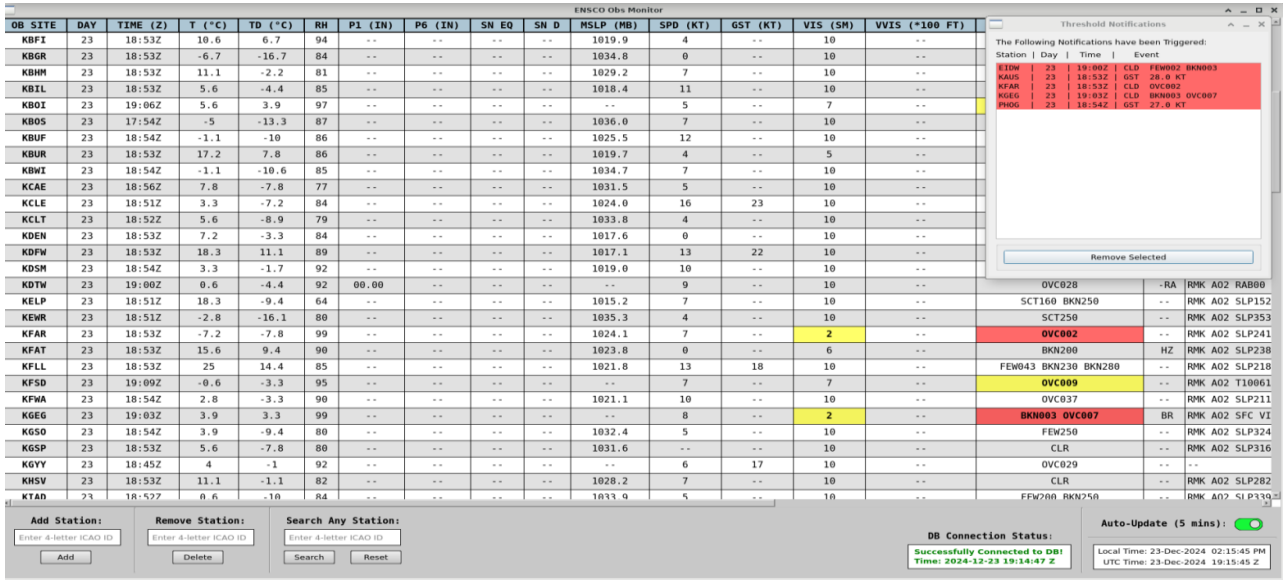


MetWise® Predict



ENSCO Rail Temperature Visualization for AMTRAK

MetWise® Live



OB SITE	DAY	TIME (Z)	T (°C)	TD (°C)	RH	P1 (IN)	P6 (IN)	SN EQ	SN D	MSLP (MB)	SPD (KT)	GST (KT)	VIS (SM)	VVIS (*100 FT)			
KBFI	23	18:53Z	10.6	6.7	94	--	--	--	--	1019.9	4	--	10	--			
KBGR	23	18:53Z	-6.7	-16.7	84	--	--	--	--	1034.8	0	--	10	--			
KBHM	23	18:53Z	11.1	-2.2	81	--	--	--	--	1029.2	7	--	10	--			
KBIL	23	18:53Z	5.6	-4.4	85	--	--	--	--	1018.4	11	--	10	--			
KBOI	23	19:06Z	5.6	3.9	97	--	--	--	--	--	5	--	7	--			
KBOS	23	17:54Z	-5	-13.3	87	--	--	--	--	1036.0	7	--	10	--			
KBUF	23	18:54Z	-1.1	-10	86	--	--	--	--	1025.5	12	--	10	--			
KBUR	23	18:53Z	17.2	7.8	86	--	--	--	--	1019.7	4	--	5	--			
KBWI	23	18:54Z	-1.1	-10.6	85	--	--	--	--	1034.7	7	--	10	--			
KCAE	23	18:56Z	7.8	-7.8	77	--	--	--	--	1031.5	5	--	10	--			
KCLE	23	18:51Z	3.3	-7.2	84	--	--	--	--	1024.0	16	23	10	--			
KCLT	23	18:52Z	5.6	-8.9	79	--	--	--	--	1033.8	4	--	10	--			
KDEN	23	18:53Z	7.2	-3.3	84	--	--	--	--	1017.6	0	--	10	--			
KDFW	23	18:53Z	18.3	11.1	89	--	--	--	--	1017.1	13	22	10	--			
KDSM	23	18:54Z	3.3	-1.7	92	--	--	--	--	1019.0	10	--	10	--			
KDTW	23	19:00Z	0.6	-4.4	92	00.00	--	--	--	--	9	--	10	--	OVC028	-RA	RMK A02 RAB00
KELP	23	18:51Z	18.3	-9.4	64	--	--	--	--	1015.2	7	--	10	--	SCT160 BKN250	--	RMK A02 SLP152
KEWR	23	18:51Z	-2.8	-16.1	80	--	--	--	--	1035.3	4	--	10	--	SCT250	--	RMK A02 SLP353
KFAR	23	18:53Z	-7.2	-7.8	99	--	--	--	--	1024.1	7	--	2	--	OVC002	--	RMK A02 SLP241
KFAT	23	18:53Z	15.6	9.4	90	--	--	--	--	1023.8	0	--	6	--	BKN200	HZ	RMK A02 SLP238
KFLL	23	18:53Z	25	14.4	85	--	--	--	--	1021.8	13	18	10	--	FEW043 BKN230 BKN280	--	RMK A02 SLP218
KFSD	23	19:09Z	-0.6	-3.3	95	--	--	--	--	--	7	--	7	--	OVC009	--	RMK A02 T10061
KFWA	23	18:54Z	2.8	-3.3	90	--	--	--	--	1021.1	10	--	10	--	OVC037	--	RMK A02 SLP211
KGEG	23	19:03Z	3.9	3.3	99	--	--	--	--	--	8	--	2	--	BKN003 OVC007	BR	RMK A02 SFC VI
KGSO	23	18:54Z	3.9	-9.4	80	--	--	--	--	1032.4	5	--	10	--	FEW250	--	RMK A02 SLP324
KGSP	23	18:53Z	5.6	-7.8	80	--	--	--	--	1031.6	--	--	10	--	CLR	--	RMK A02 SLP316
KGYY	23	18:45Z	4	-1	92	--	--	--	--	--	6	17	10	--	OVC029	--	--
KHSV	23	18:53Z	11.1	-1.1	82	--	--	--	--	1028.2	7	--	10	--	CLR	--	RMK A02 SLP282
KTAD	23	18:52Z	0.6	-10	84	--	--	--	--	1033.9	5	--	10	--	FEW200 BKN250	--	RMK A02 SLP339

ENSCO Observation Monitor: Real-time updates for critical operations

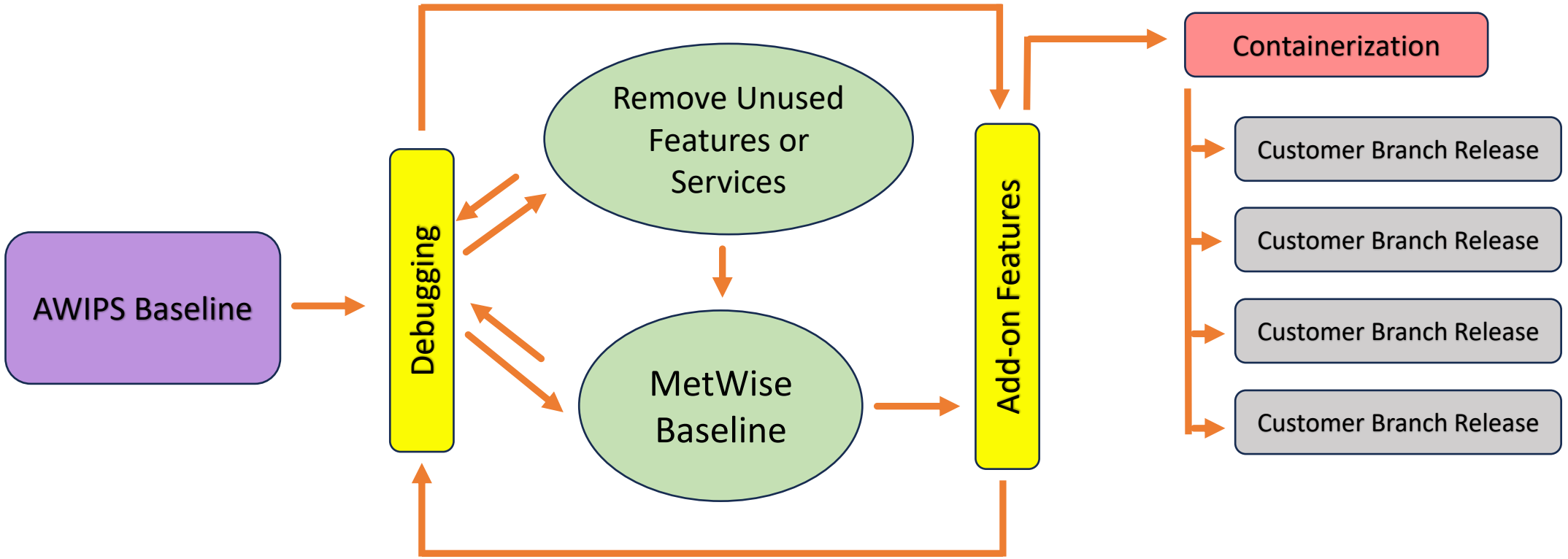
MetWise® Enterprise

- On-site, turn-key MetWise AWIPS system
- Instantaneous CAVE workstation connections with the EDEX server
- User control of hardware
- User control of security protocols
- Open or air-gapped weather system
- Direct connection to a data resource, such as NOAAPort antenna, may reduce lag at times
- Higher up-front costs and infrastructure is needed to support 24/7 servers and workstations

MetWise® Net

- Cloud-based MetWise AWIPS system
- System hardware and architecture knowledge is not needed
- User can access the weather visualization software from a web browser anywhere
- Lower, monthly cloud costs
- No maintenance on user side
- Rapid scalability
- Occasional networking lag for very high resolution or animations, not considered standard operation

From AWIPS II to MetWise Enterprise/Net

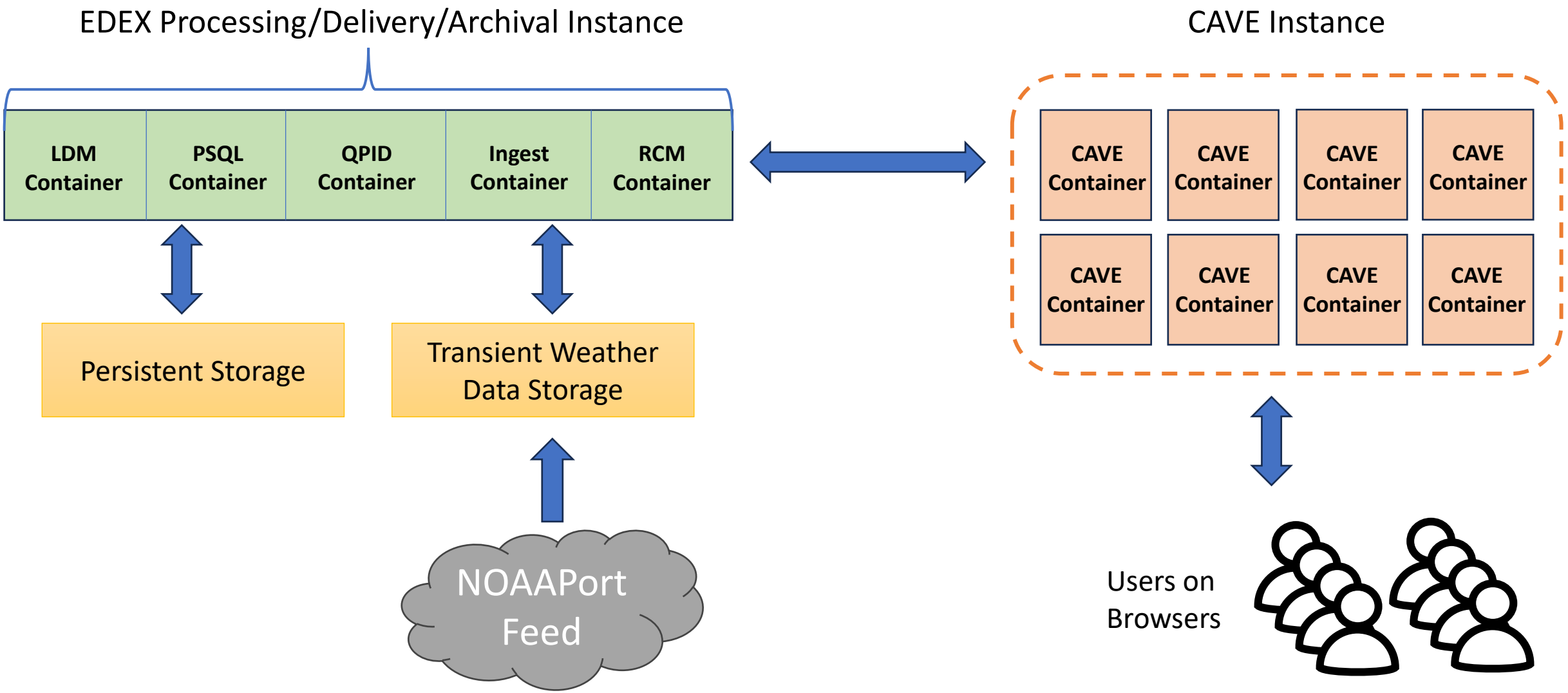


Overview Questions

- Are there *system* advantages (challenges) to moving AWIPS from a closed on-site system to a cloud-based operation?

- From a user stand-point, can a cloud-based transition meet the processing, graphics-heavy, and timely requirements needed for critical operations?

Cloud Schematic



System Advantages with Cloud-Based Platform

- Consolidated location for software components and services
- Separate cloud-based instances for both processing data and workstation visualization
- Easily containerize MetWise Net instances for:
  - Scalability
  - Load balancing
  - Rapid elasticity
  - Mass deployment

METWISE® NET

System Advantages Cont.

- Interconnectability of containers allows seamless migration of raw and processed data through the internal messaging system
- Cloud-based platform provides a smooth transition and turnaround from GitLab CI/CD alpha or beta sandbox environment to an operational setting
- Manageable regression defects and rollbacks within the cloud

METWISE® NET

System Advantages Cont.

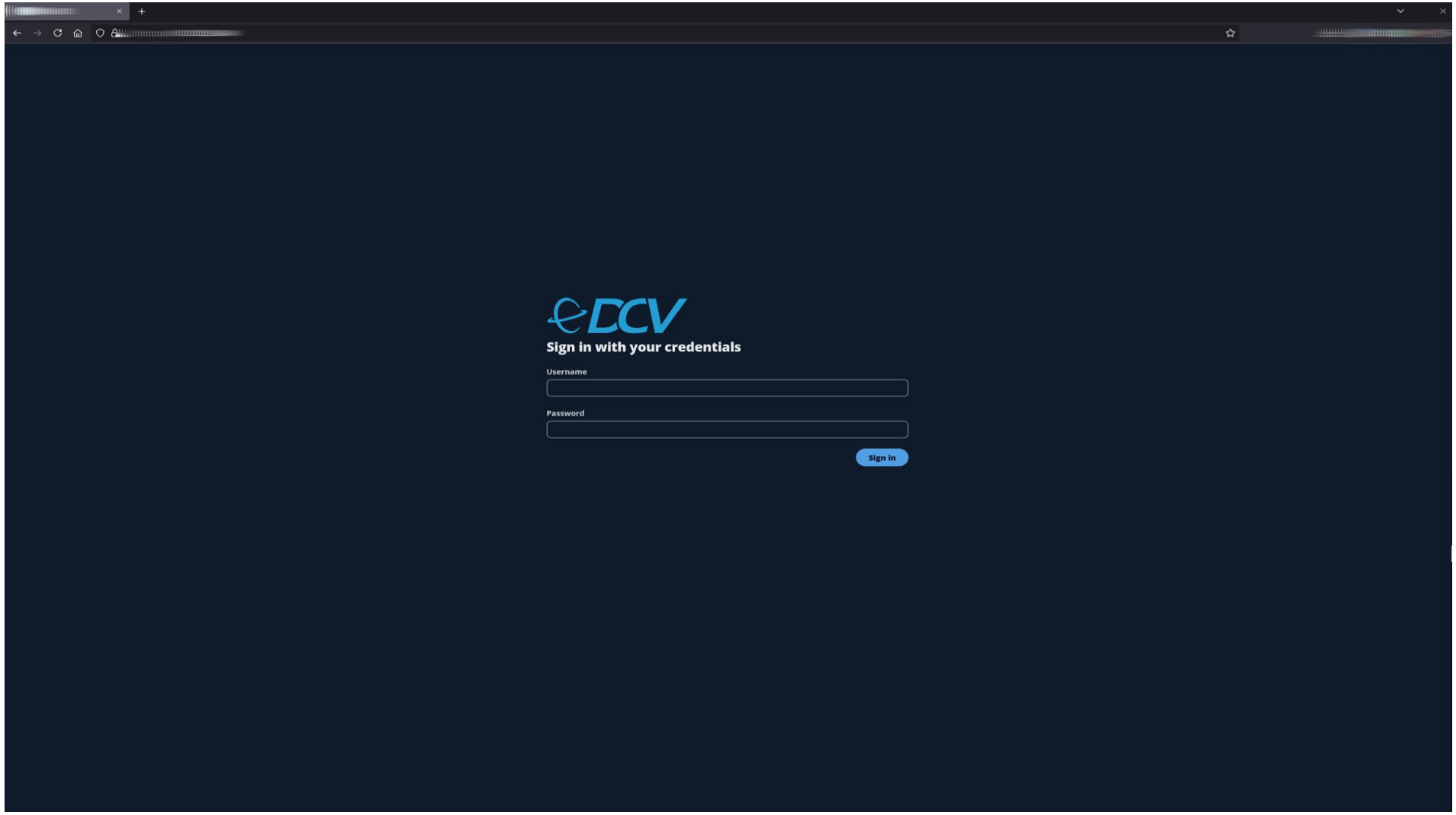
- Cloud-based networking provides optimal control with system security and networking between microservices
- Separation between static data and transient weather data in a containerized environment results in no loss of data when transitioning between releases

METWISE® NET

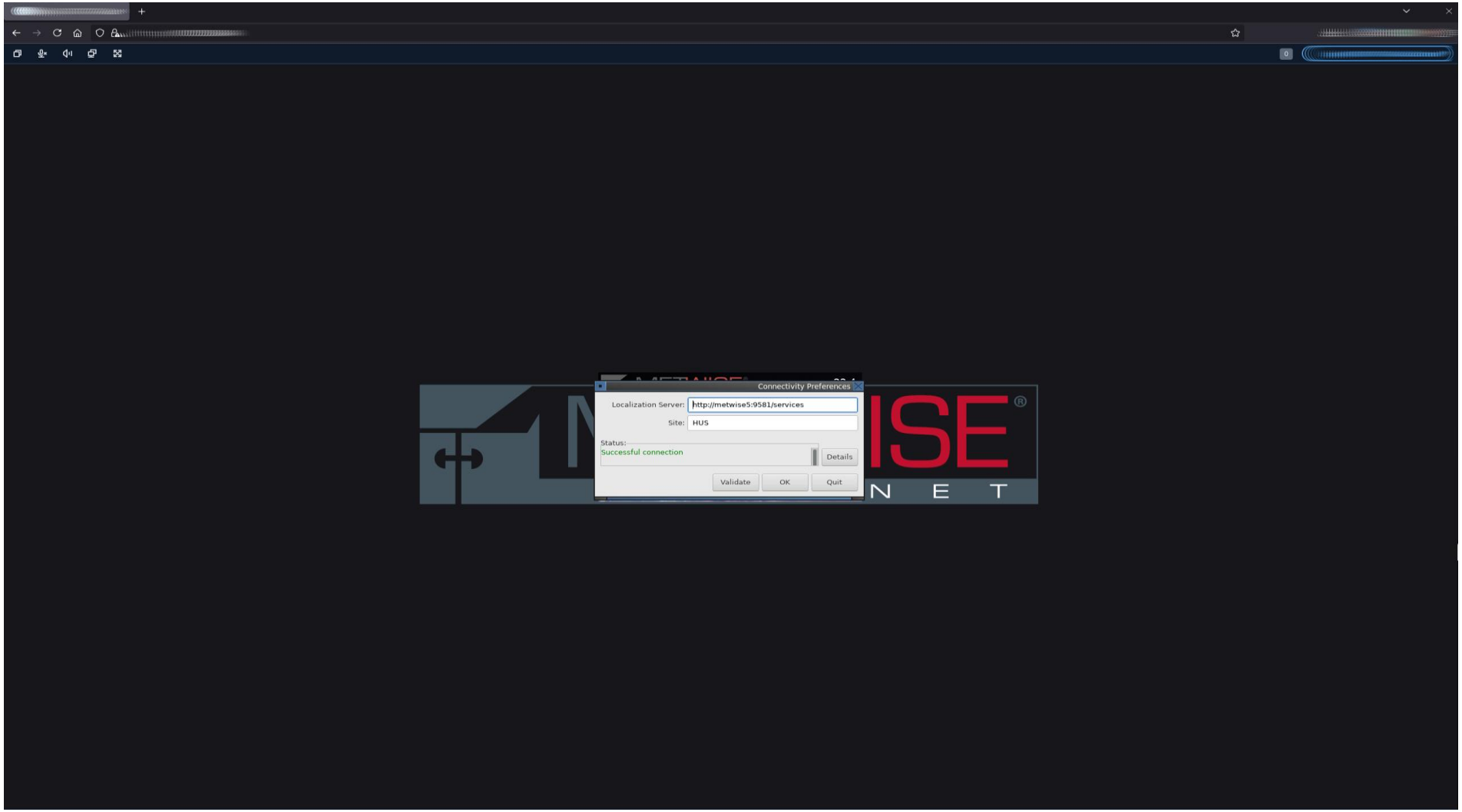
Challenges with Cloud-Based Platform

- MetWise Net, in a cloud environment, has a slightly higher graphics delivery load and network-based lag
- System administrators are only able to configure a cloud setting but cannot directly control it
- A persistent external archive is required for time-sensitive data, in case of brief outage
- High-end node and graphics-based instances
- Containerization can be challenging for graphics accelerated instances

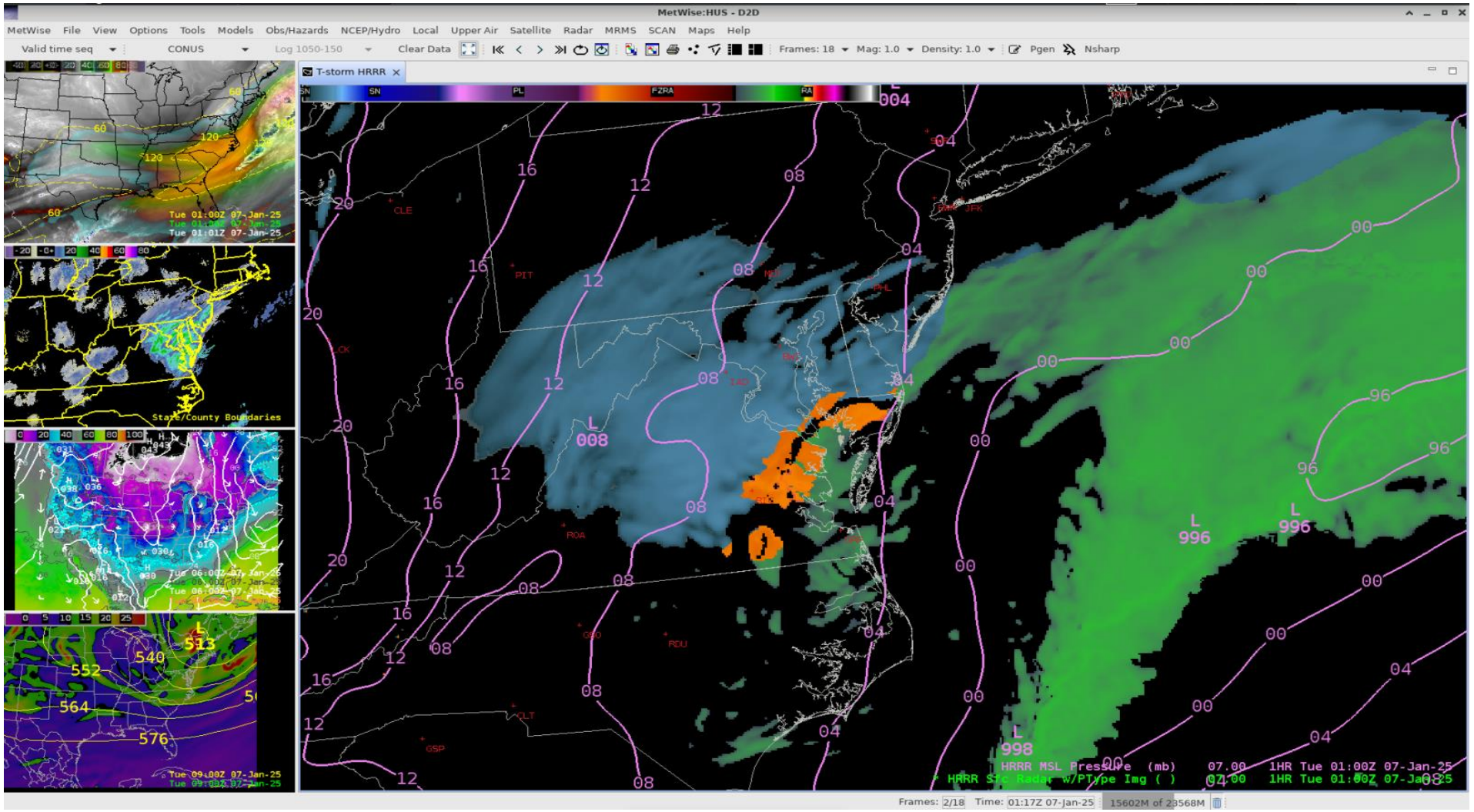
MetWise® Net Login Portal



MetWise® Net Startup

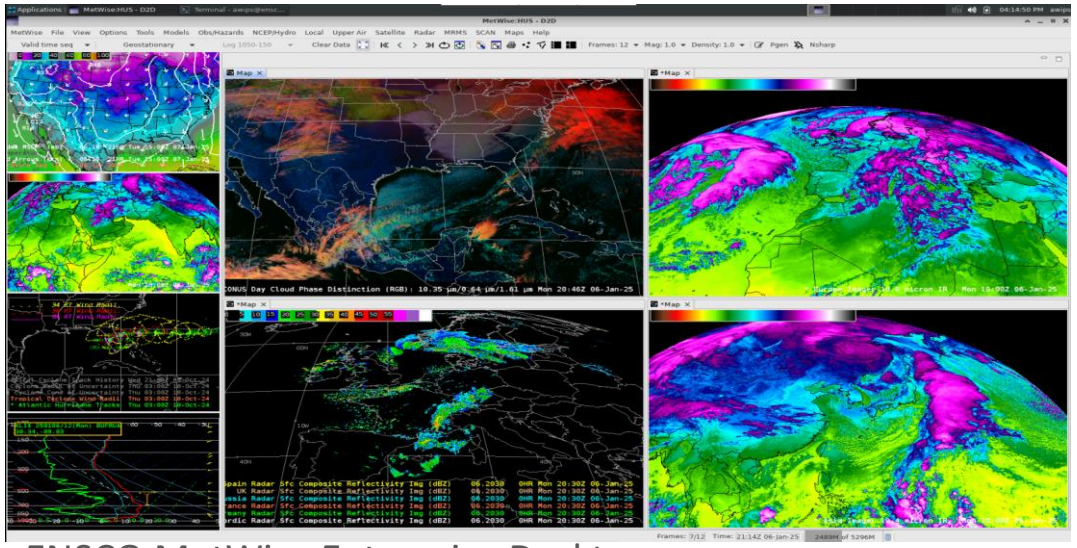


MetWise® Net GUI

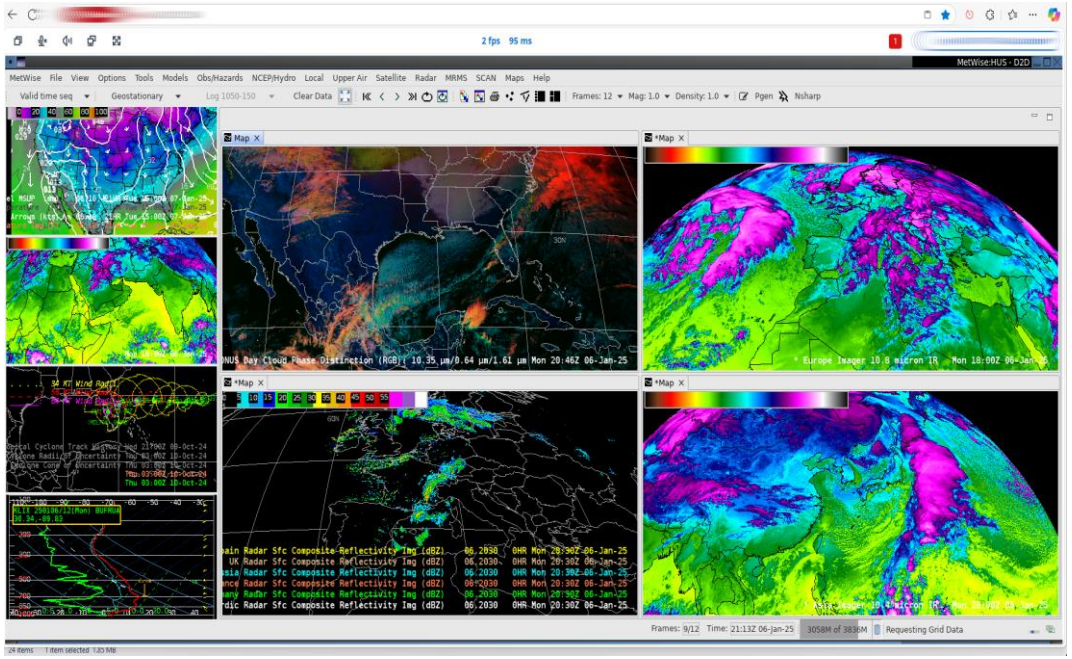


MetWise® Experience

- Cloud resources open the door for easily scalable visualization experience for the user
  - Once configured, scalability can be automated
- Comparative reliability differences between the air-gapped and cloud-based systems are negligible for most operations
- Interactive end-user experience is identical, whether remote or on-site
  - Full AWIPS D2D visualization suite available through browser with proper internet connection

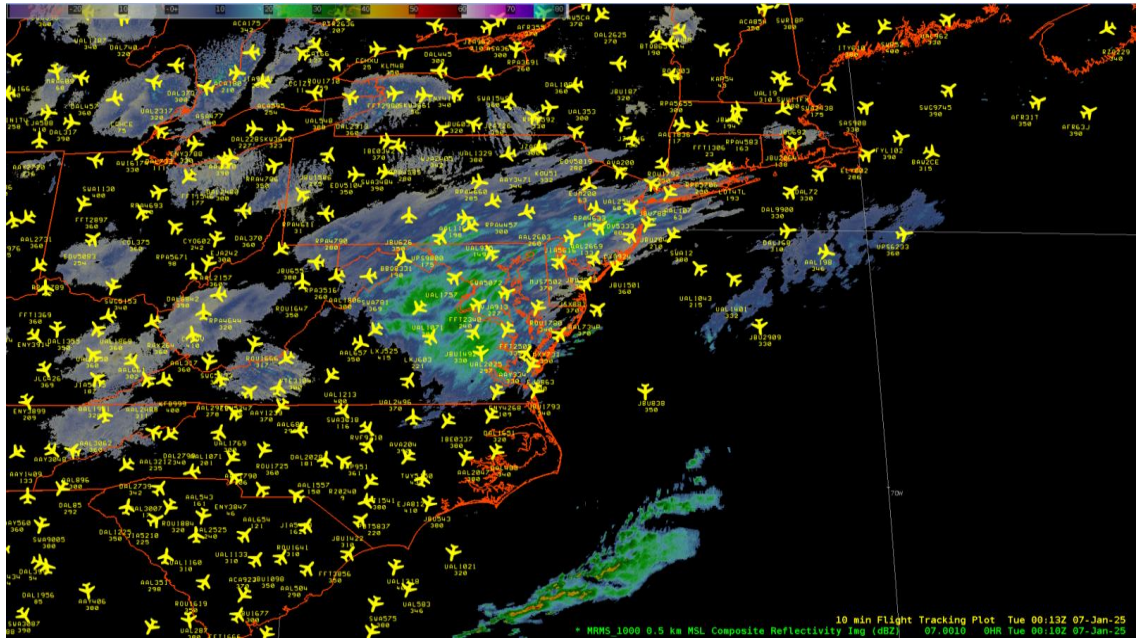


ENSCO MetWise Enterprise Desktop



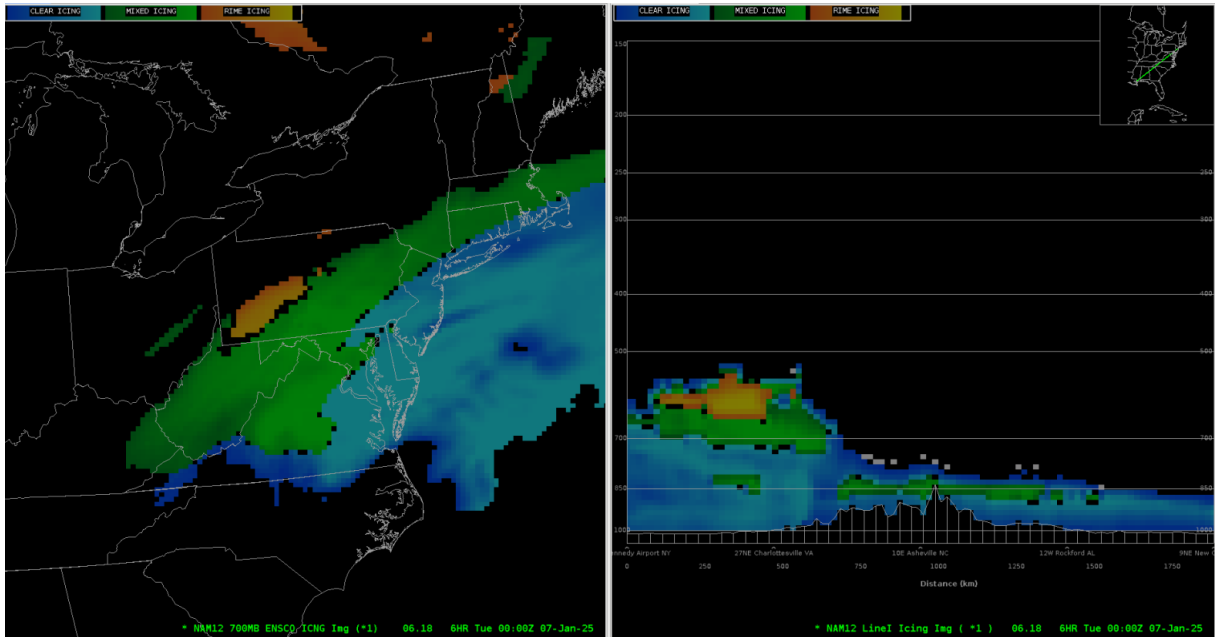
ENSCO MetWise Net Desktop

MetWise® Tailored Products



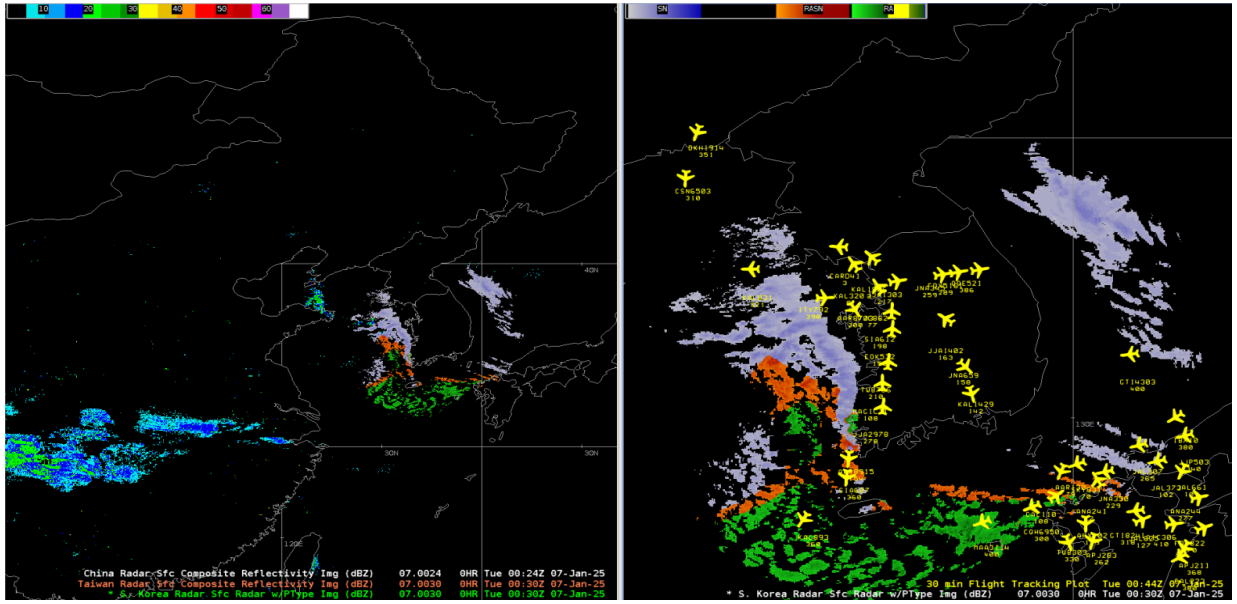
ENSCO Flight Tracker Overlay

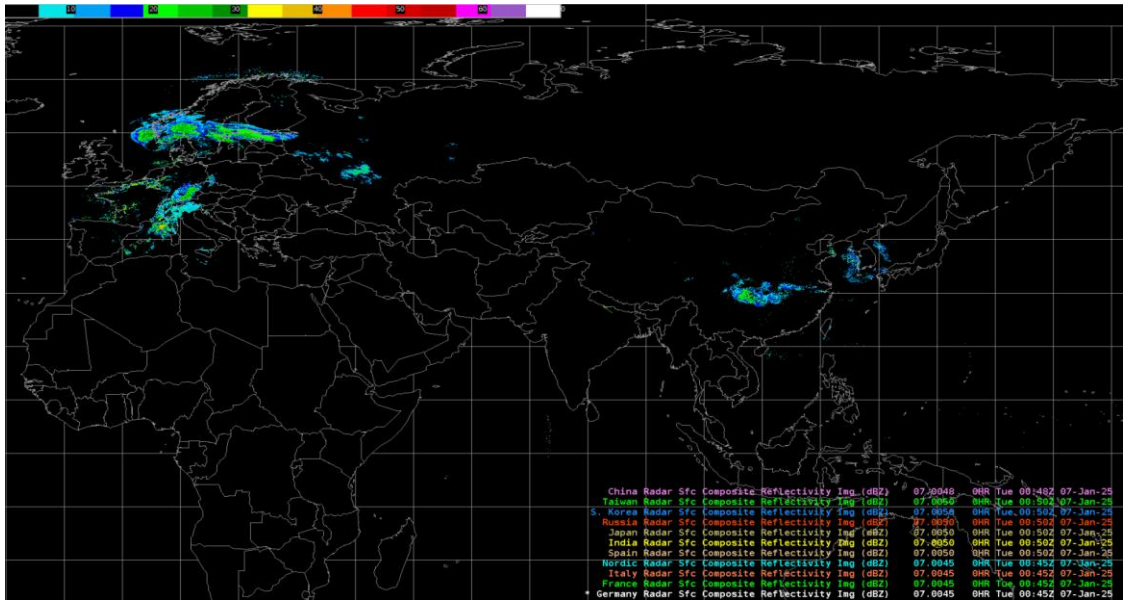
ENSCO Icing Overlay



MetWise® Tailored Products

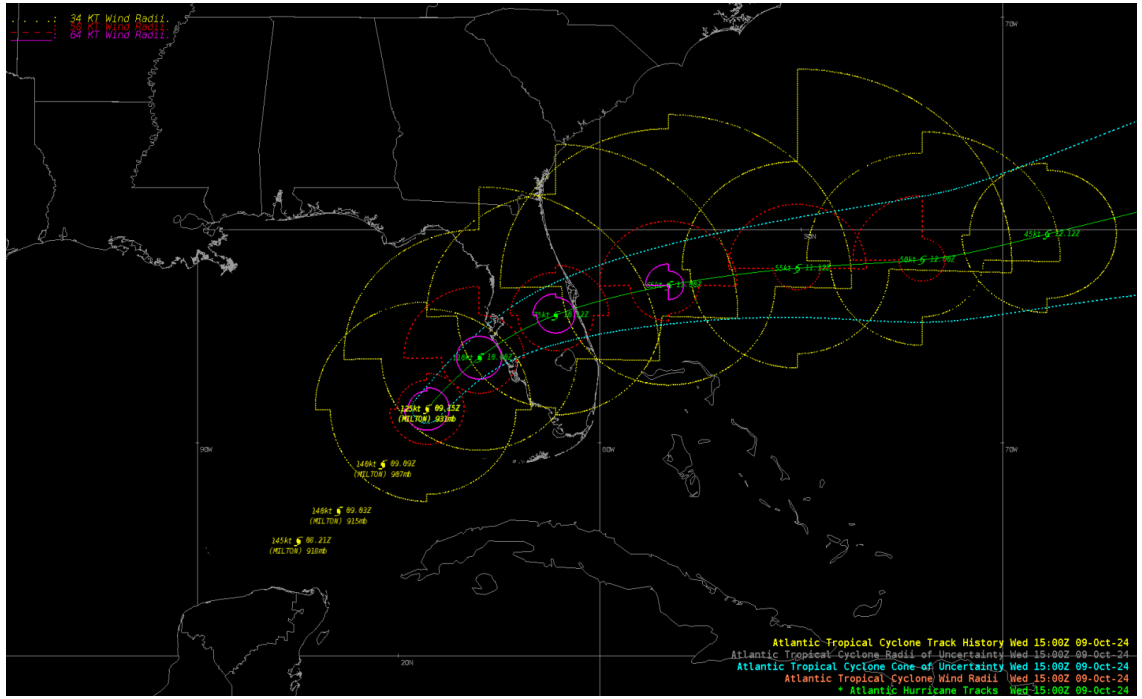
ENSCO Near Real-Time Mixed Precipitation w/Flight Overlay



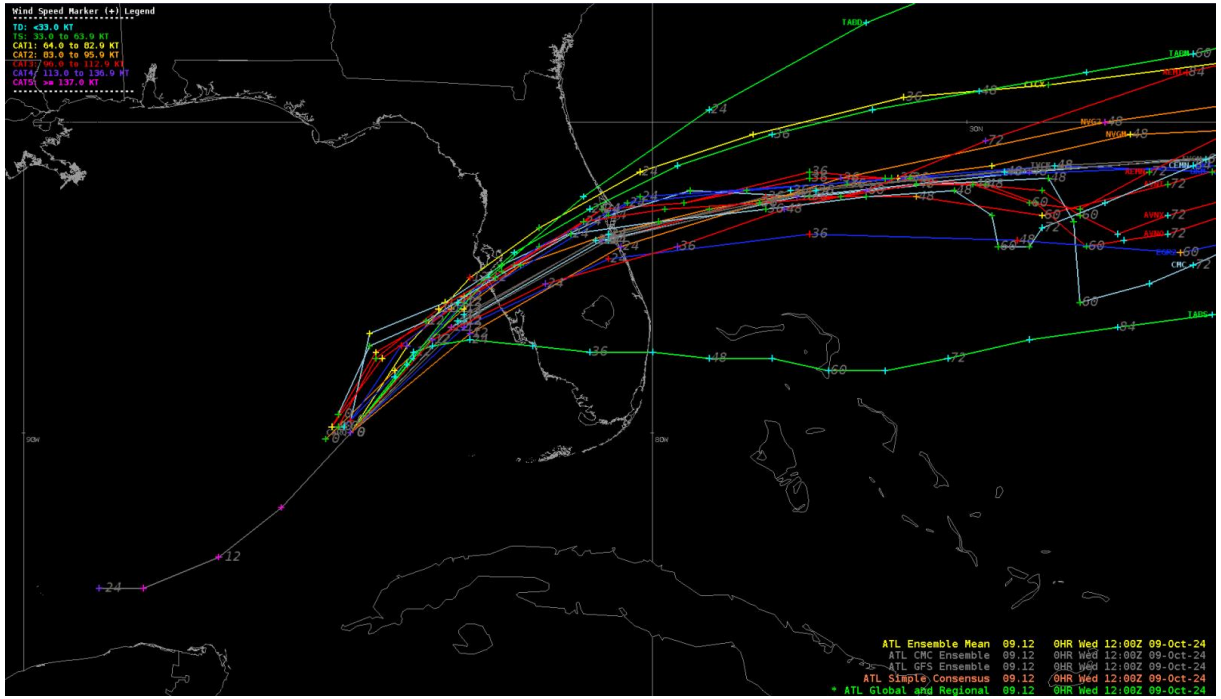


ENSCO International Doppler Radar

MetWise® Tailored Products



ENSCO Tropical Cyclone Tracker



ENSCO Tropical Cyclone Spaghetti Plot



https://www.ensco.com/metwise

Visit our booth (556) to see a demonstration of MetWise Net!

Chasity B. Wright, Ph.D.
Lead Meteorologist
ENSCO, Inc.
wright.chasity@ensco.com

Booth 556!


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