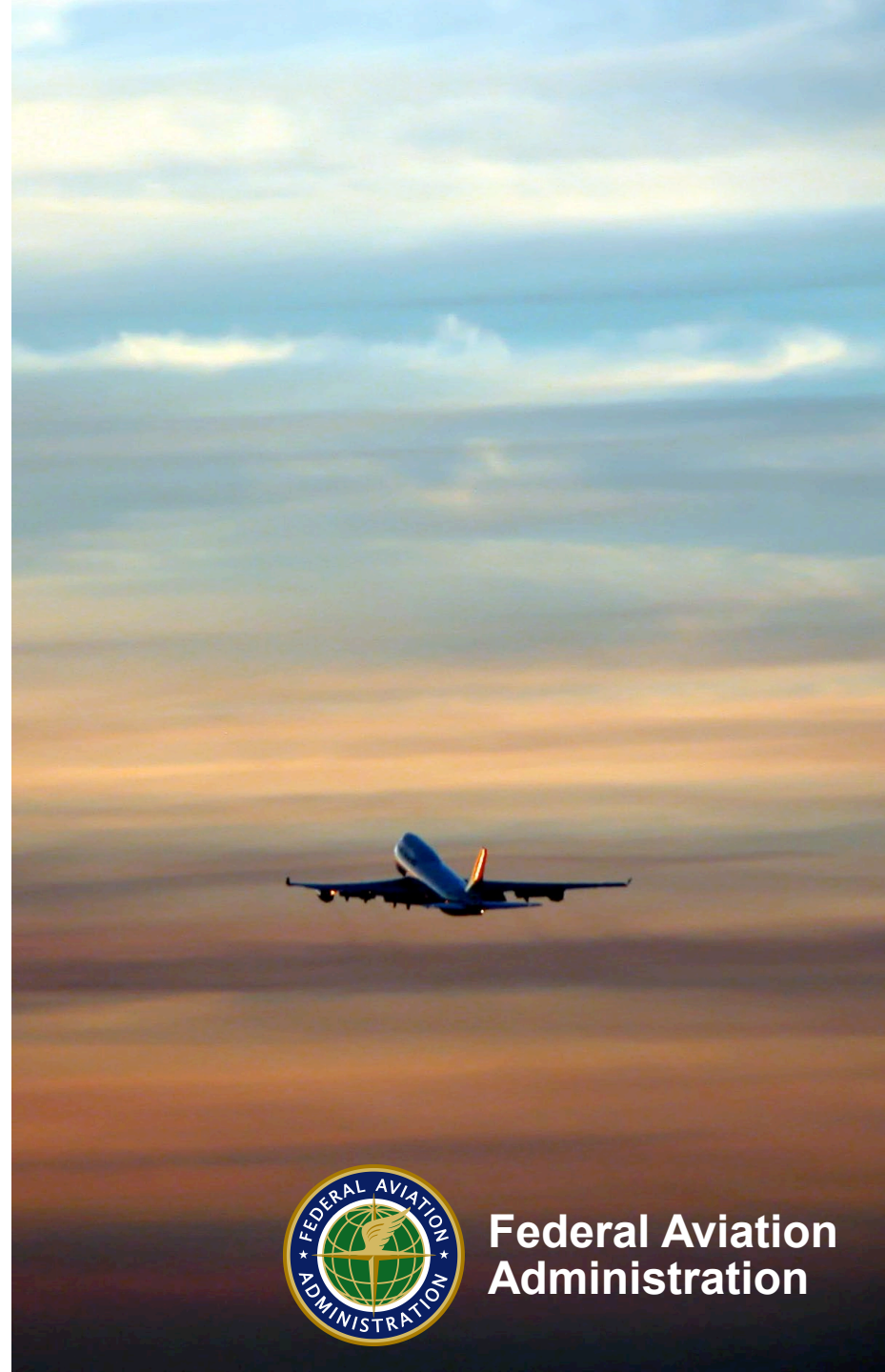


Weather Information Modernization and Transition (WIMAT)

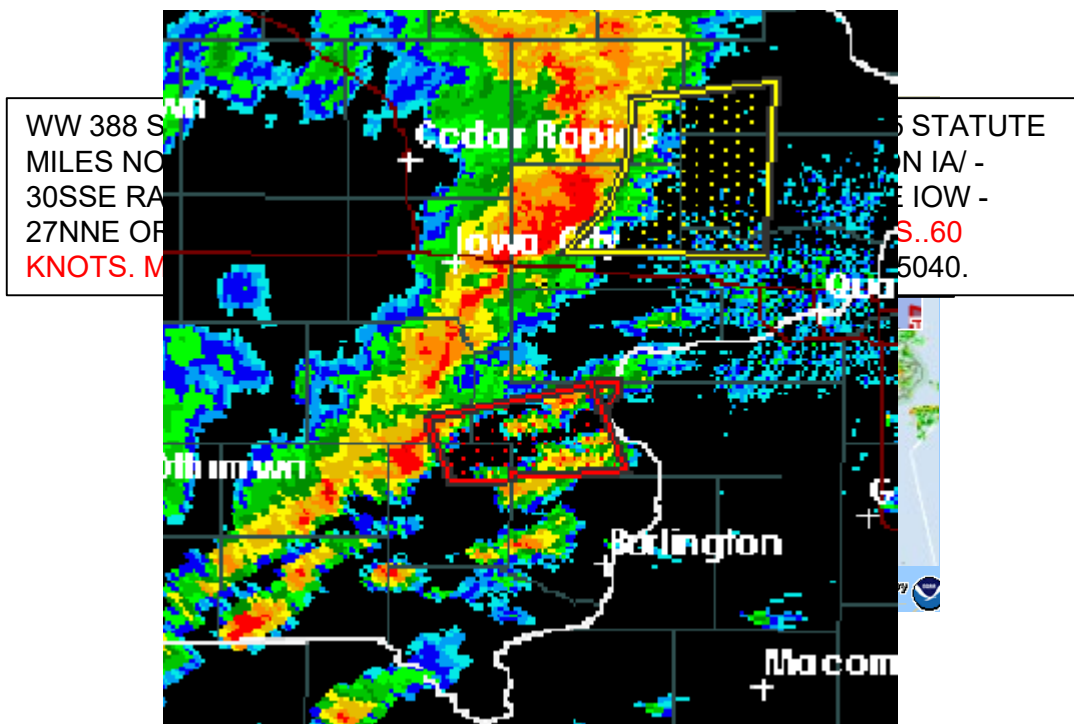
Presented to:
Friends and Partners of Aviation Weather
By: ANG-C6
Date: October 18, 2018



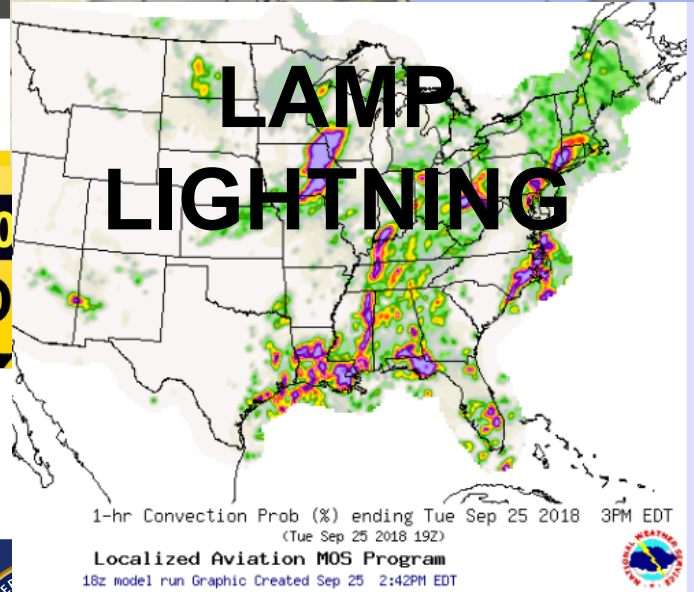
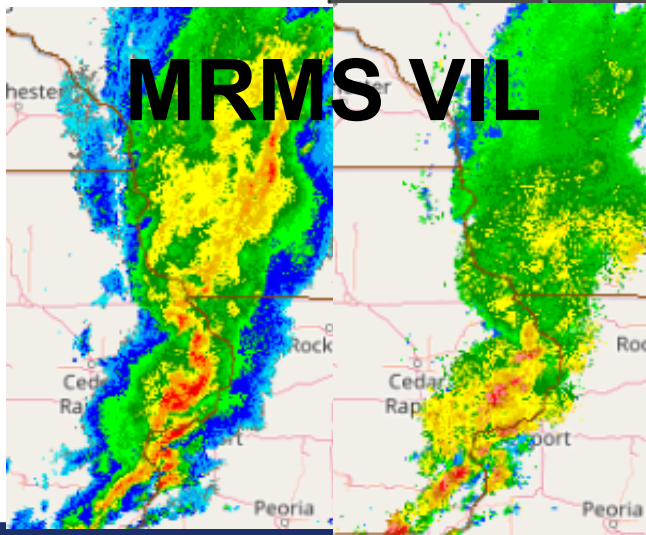
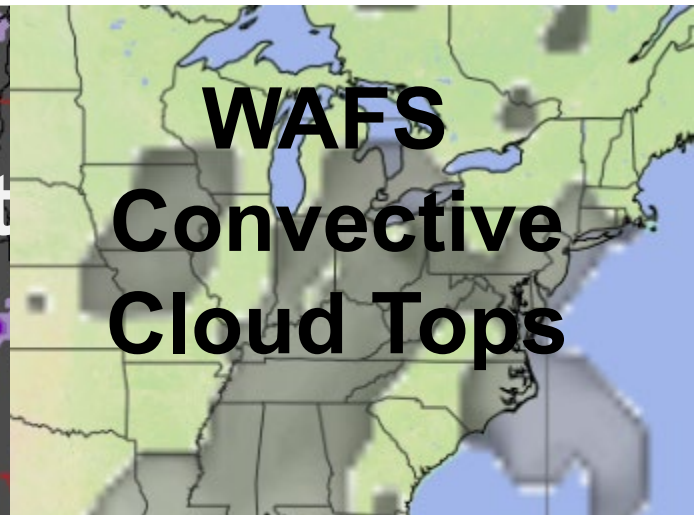
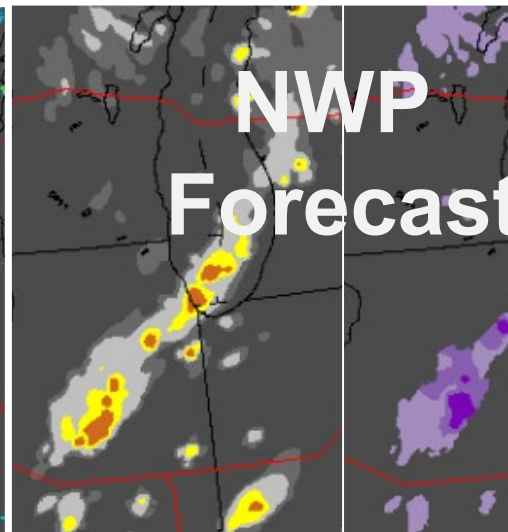
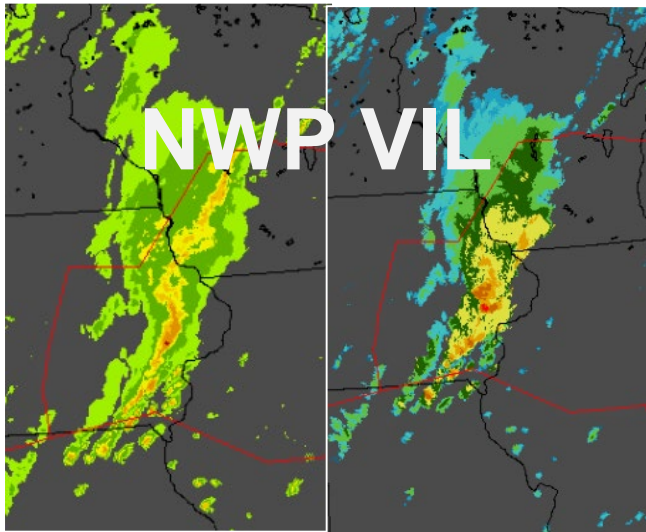
**Federal Aviation
Administration**



Convection Products from NWS Forecasters



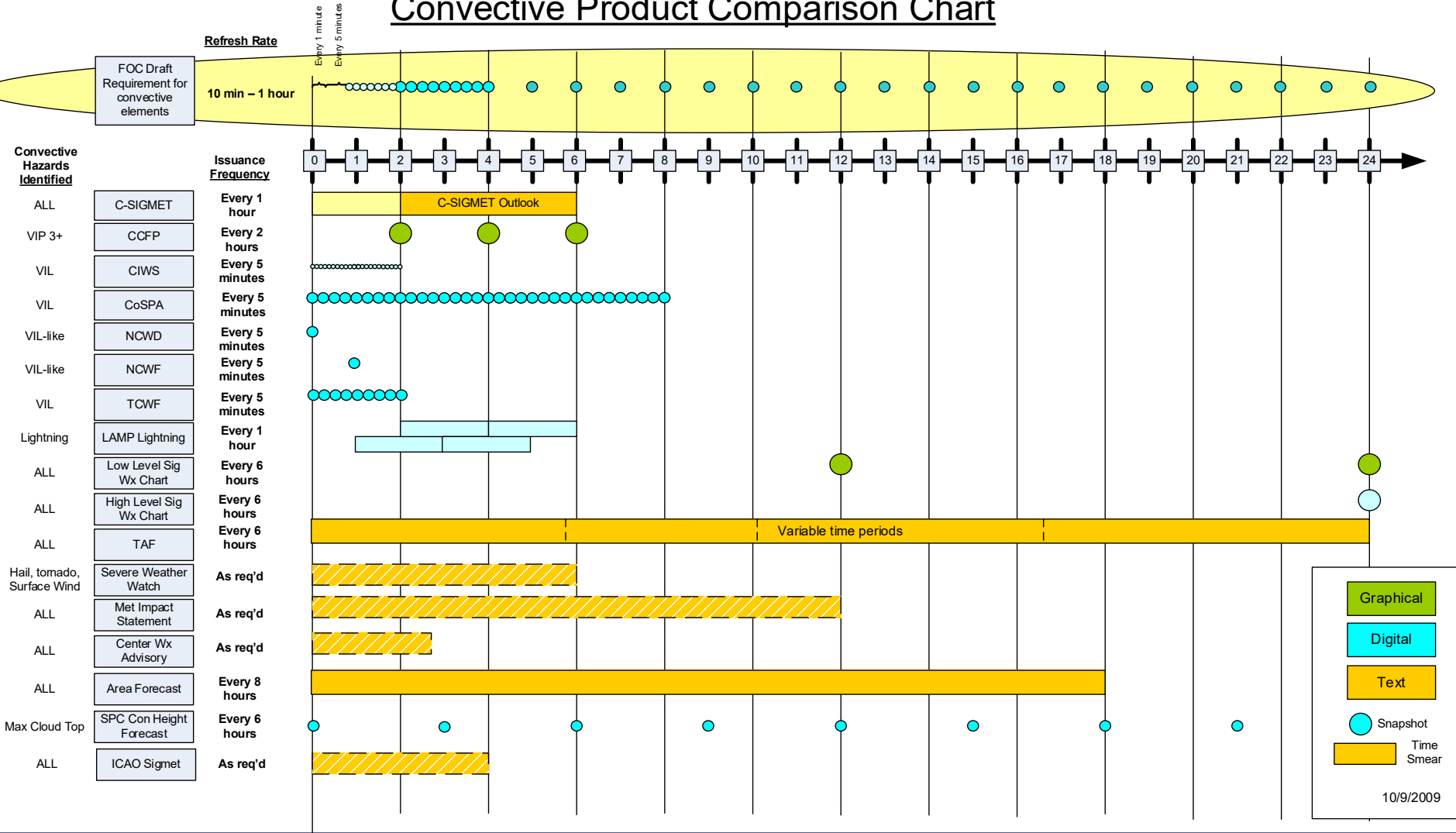
Automated Convection



Why the Differences?

- **Sources differ**
 - Automated
 - Forecaster
 - NCEP, WFO, CWSU
- **Formats differ**
 - Text
 - Graphic
 - Digital
 - IWXXM
- **Time-smear vs. Time-snapshot**
- **Spatial resolution**
- **Forecast time resolution**
- **Scale resolution**
- **Update rate**
- **Content type**
 - Probabilistic, or
 - Deterministic

Convective Product Comparison Chart



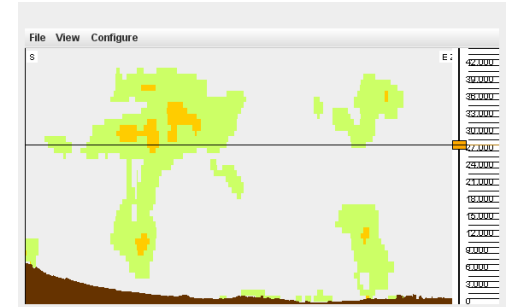
The Impact of so Many Different Products?

- **Numerous products are needed to make my decisions**
 - Information not tailored specifically for my decisions
- **Conflicting information among products**
 - Different users using different information from different sources to make decisions
- **Result: Pleas from customers for fewer products and consistency among products that remain**
- **Technology offers capability to automatically tailor information for specific decisions from base weather information**
 - Decision support tools!
 - More user-end tailoring required

Two Forces at Work

- **Gridded Weather is good.**

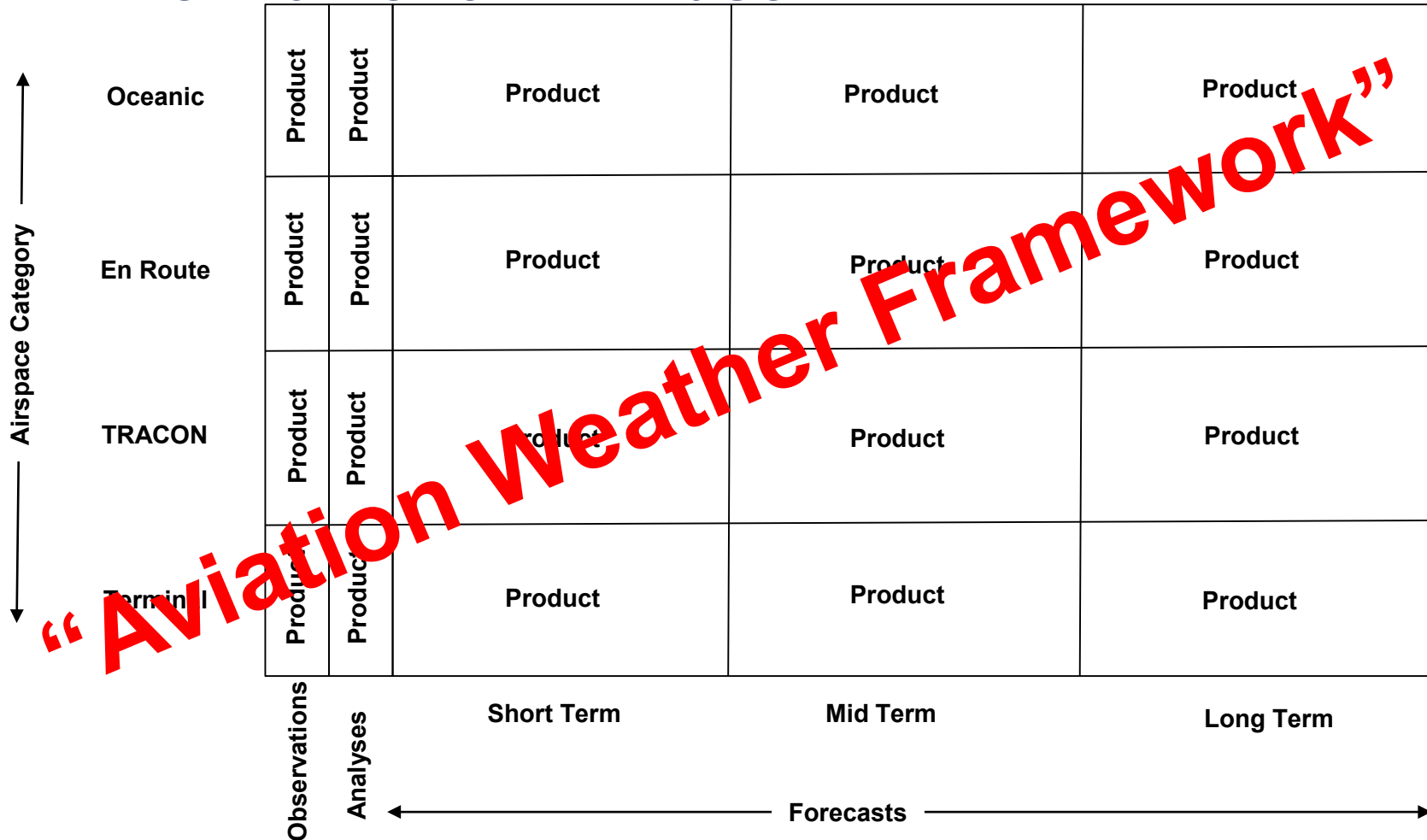
- Flexible. It's easier to graphically depict in ways meaningful to specific user decisions
- It's easier for DSTs to utilize
- It has high temporal resolution
- It has frequent update rate
- It is appearing on more and more platforms
- Each timeframe has a source that fits it best



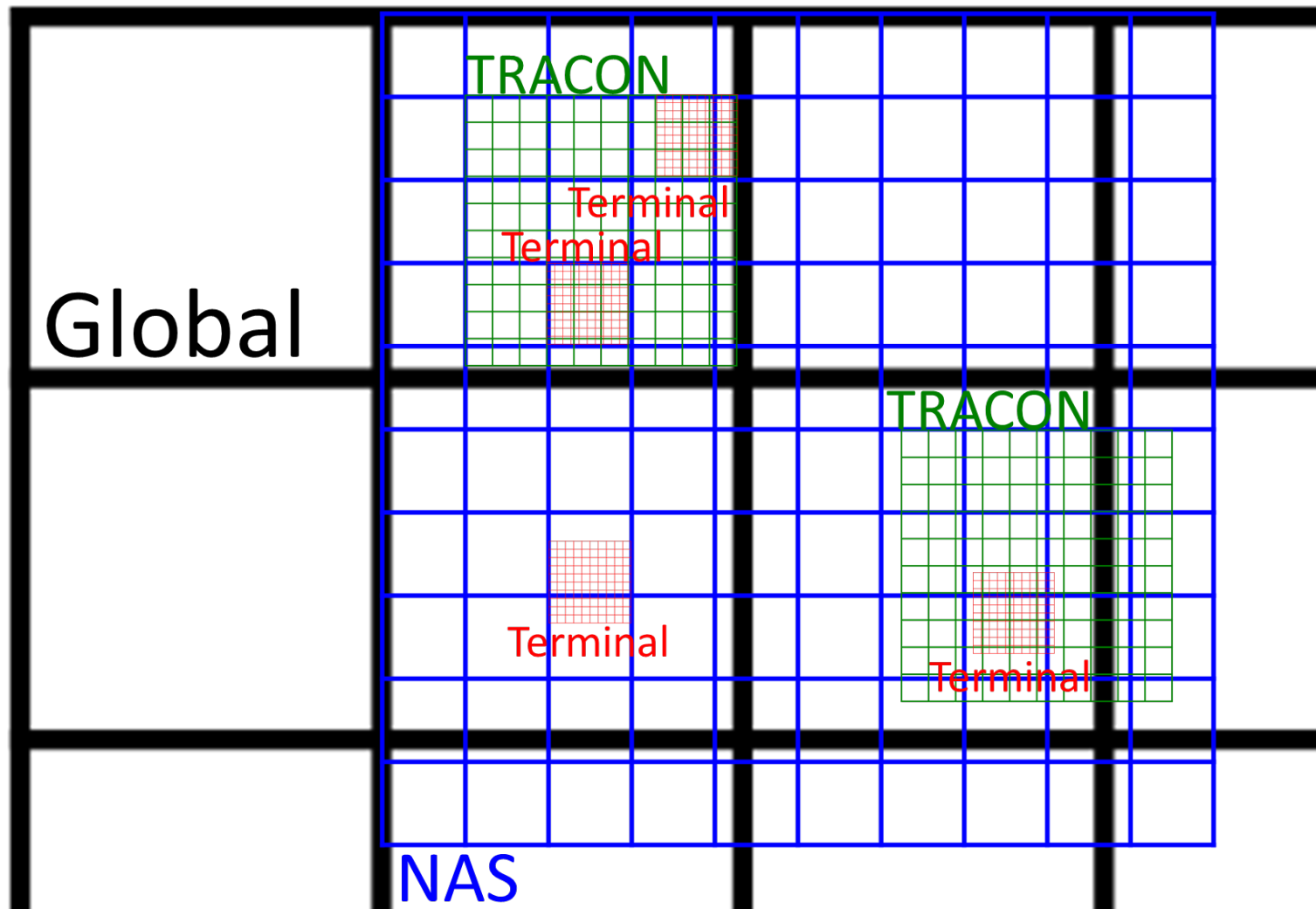
- **The many sources of Gridded Weather can cause problems.**

- Output from many models and algorithms used operationally (HRRR, NAM, GFS, ensembles, NDFD)
- Many product-specific sources for same/similar phenomenon
 - CIP, TAIWIN, NEXRAD Icing
 - CIT, GTG-CAT, GTG-MTW, (no GTG-Composite?)
 - HRRR Cloud Tops, RAP Cloud Tops

WIMAT Assumption: As much as possible, one weather source for each Airspace Category and Time Frame for FAA use



Airspace Resolution – Airspace Category



WIMAT Mission Statement

WIMAT (Weather Information Modernization and Transition) is an effort supported by the Federal Aviation Administration, National Weather Service, and Aviation Weather User Community to:

- Evaluate current and future operational aviation weather information to determine which will serve as source information for FAA-supported activities with NextGen and System Wide Information Management (SWIM);
- Identify products to be considered for retirement; and,
- Identify actions needed to integrate designated weather source information within FAA- supported activities.

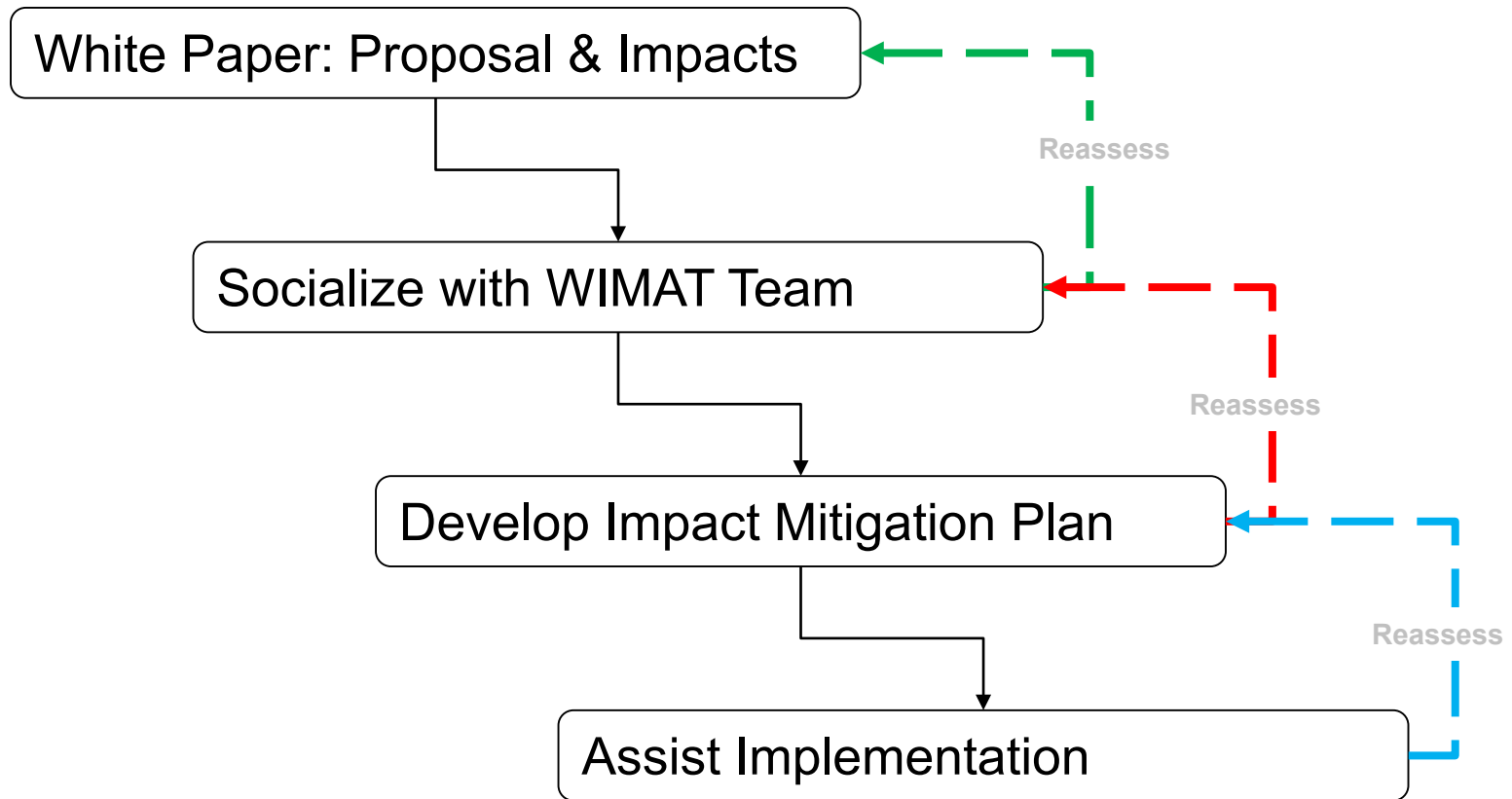
What we learned from ARWG

- **Retired Text Area forecast for CONUS**
- **Content of “To be retired” product has to be available to users**
 - Gridded C&V from RAP
 - Gridded cloud bases and tops from RAP
 - Gridded weather and winds from NDFD
- **Output accommodation**
 - Volume too high to communicate to Alaska
 - Grids became static images

WIMAT Process

- **White Paper Proposal**
 - Exactly what is being proposed (e.g., retire text AIRMET)
 - Replacement information
 - Impacts of retiring proposed product
- **Review by WIMAT Committee. Most likely:**
 - *What* is being proposed may change
 - *Additional Impacts* will be identified
- **Mitigation Plan**
 - Resolve impacts identified above
 - May result in additional impacts and mitigation need
- **Assist Implementation**

WIMAT Process



Early Candidates



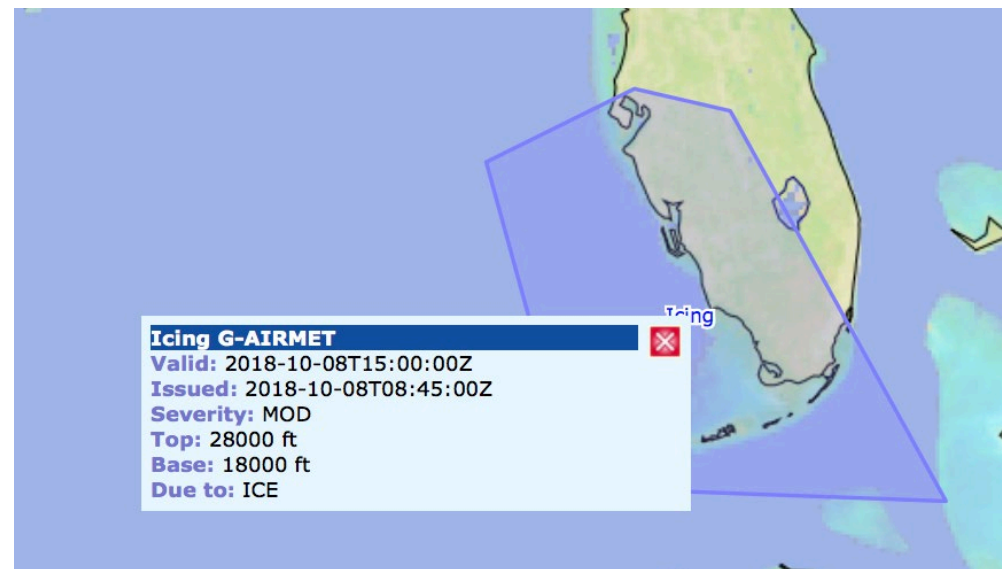
Text AIRMET

- **Text AIRMET vs. Graphical AIRMET (G-AIRMET)**

- What is the purpose of Text AIRMET given G-AIRMETs?
- What is the obligation to ICAO to produce text AIRMETs?

AIRMET ICE...FL AND CSTL
WTRS FROM 20NNE PIE TO 50S
ORL TO 150SE MIA TO 80WSW
EYW TO 90WSW PIE TO 20NNE
PIE

MOD ICE BTN FL180 AND
FL280. CONDS CONTG BYD 15Z
ENDG 18-21Z.



Text Area Forecasts

- Caribbean
- Gulf of Mexico
- Hawaii
- Alaska



02 SIGNIFICANT CLD/WX...

.

CSTL WTRS...

BRO-LEV...SCT015-020 BKN045-050 TOP 160. OCNL SCT015 BKN020 LYRD

FL180. SCT TSRA/SHRA. CB TOP ABV FL450. BECMG 1820 SCT020 SCT060.

OCNL SCT015-020 BKN040-045 TOP 080. WDLY SCT SHRA/ISOL TSRA. CB

TOP FL450. OTLK...VFR TSRA SHRA.

LEV-AAF...

NR SHORE...SCT015-020 SCT060. OCNL SCT015-020 BKN040 TOP 080. WDLY SCT SHRA/ISOL TSRA. CB TOP FL450. BECMG 1820 SCT015-025. OCNL SCT015-020 SCT050. ISOL SHRA. OTLK...VFR.

OF SHORE...SCT015-020 SCT080. OCNL SCT015-020 BKN040 TOP 100. WDLY SCT SHRA/ISOL TSRA. CB TOP ABV FL450. OTLK...VFR TSRA SHRA.

.

HOUSTON OCEANIC FIR...GLFMEX MIAMI OCEANIC FIR...

W 88W...SCT015-020 BKN035-040 TOP 160. OCNL SCT015-020 SCT080.

SCT SHRA/WDLY SCT TSRA. CB TOP ABV FL450. OTLK...VFR TSRA SHRA.

RMNDR...

NW HLF...SCT015-025. OCNL SCT020 SCT060. ISOL TSRA/SHRA. CB TOP

ABV FL450. OTLK...VFR TSRA SHRA.

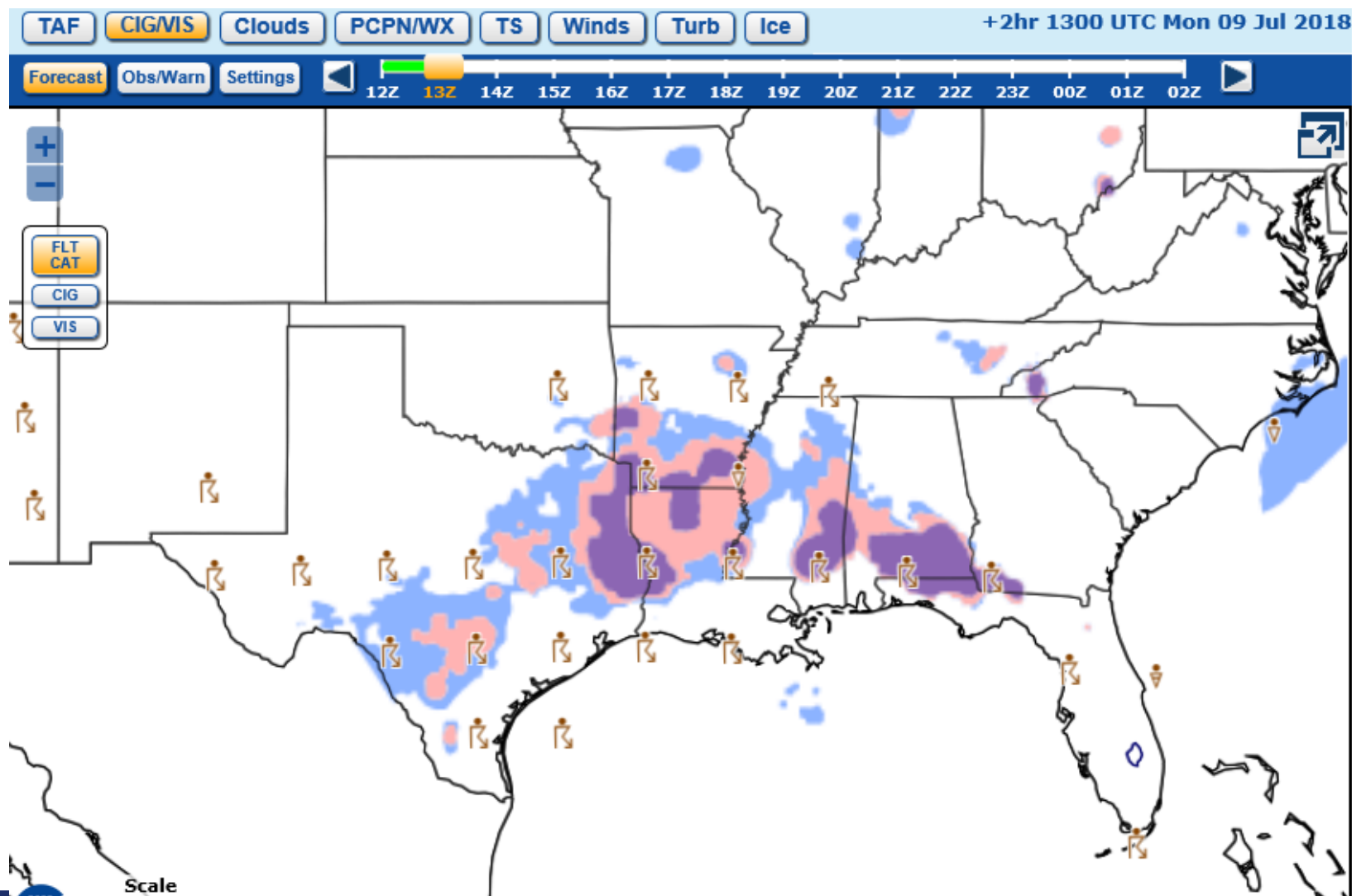
SW HLF...SCT015-020 BKN035-040 TOP 120. OCNL SCT020 SCT070. SCT

TSRA/SHRA. CB TOP ABV FL450. BECMG 1719 SCT015-020 SCT060. OCNL

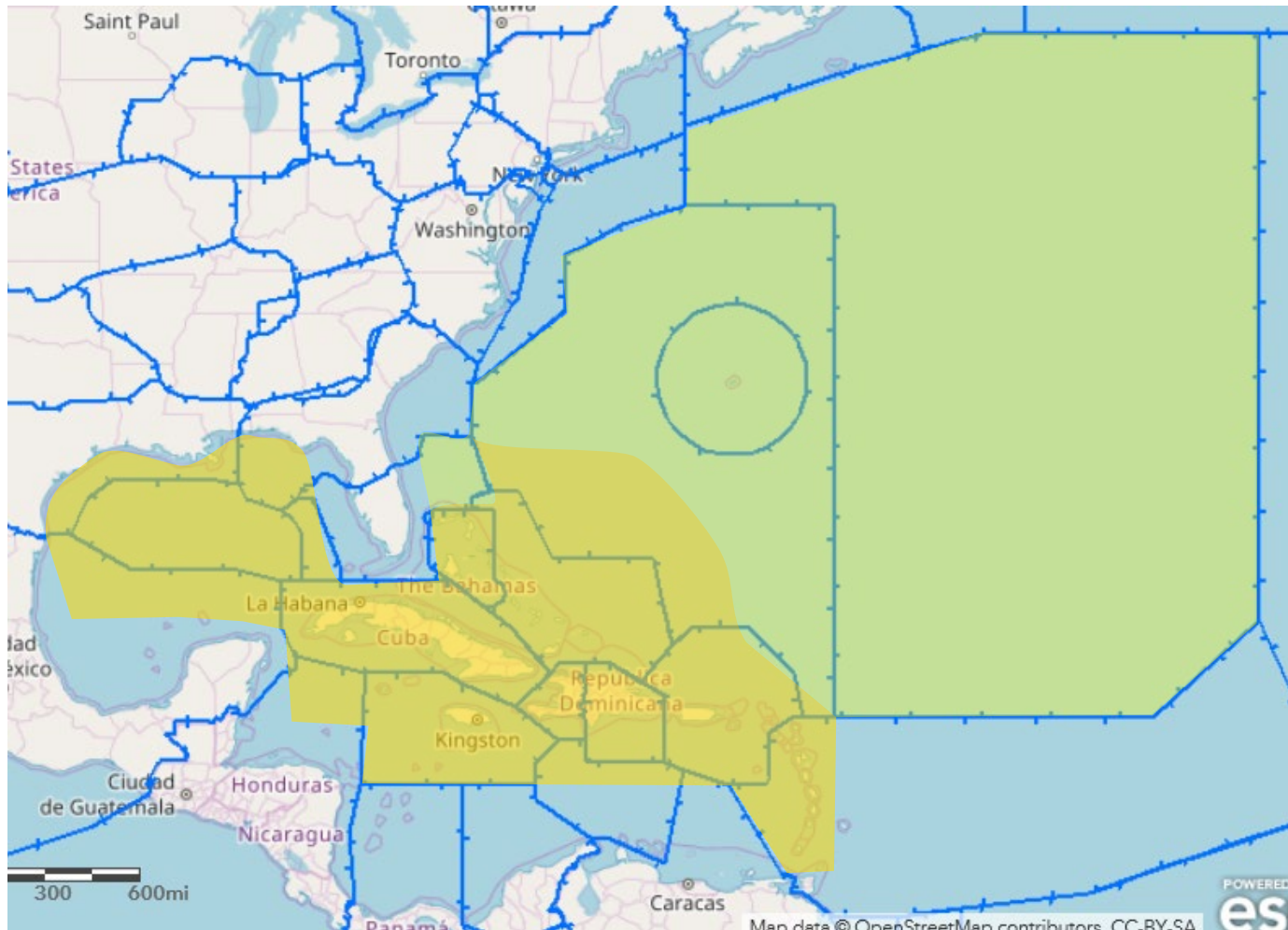
SCT015-025. WDLY SCT SHRA. OTLK...VFR TSRA SHRA.

.

Gridded Forecasts for Aviation



Area Forecasts for Caribbean and Gulf of Mexico



Text Winds Aloft

FD1US1

DATA BASED ON 050600Z

VALID 051200Z FOR USE 0800-1500Z. TEMPS NEG ABV 24000

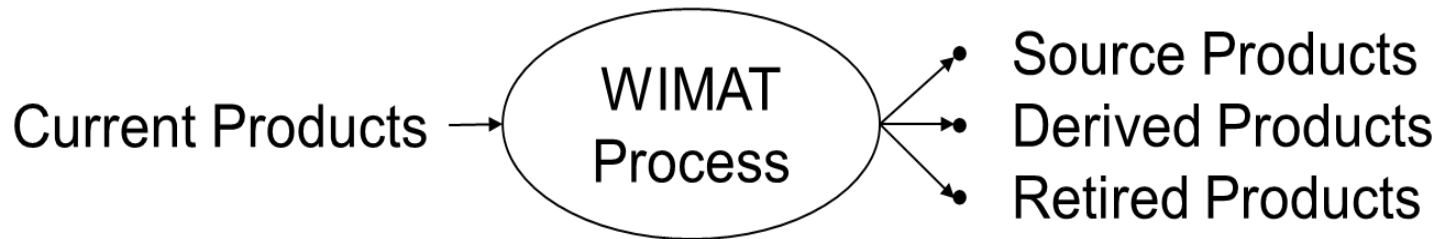
FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
EYW	1111	9900+17	1912+11	1912+05	2013-09	2311-19	241834	254042	255254
JAX	1114	1014+15	1114+09	1015+05	1115-07	1116-19	092234	093544	095555
MIA	1208	1605+16	2012+10	2015+04	2117-09	2108-19	230834	251644	252754
MLB	1307	1807+14	1908+09	2109+04	1909-08	1310-19	091234	101145	080556
PFN	1015	0918+14	0916+09	0919+05	0832-08	0840-19	094435	085144	086354
PIE	1011	1306+14	9900+09	1906+04	1811-08	1413-18	161035	161245	181356
TLH	1015	1015+14	1019+10	1022+04	1029-08	1035-19	104034	094944	096854
ATL	1011	0918+15	0820+10	0820+06	0824-07	0829-17	083233	083743	084554
CSG	1117	0918+15	0821+10	0826+06	0827-08	0837-18	084433	084543	085354
SAV	1013	0916+15	0814+11	0918+06	1019-08	0824-18	093733	083943	084355
HAT	1110	1011+15	1012+11	0810+05	0815-08	0820-18	062634	062943	054055
ILM	1013	1110+15	1014+11	1013+05	0816-08	0719-18	062733	063343	064155
RDU	9900	1108+15	1108+11	0810+06	0715-08	0712-17	062232	062042	043155
CAE	1008	0814+15	0917+11	0918+06	0818-08	0820-18	072733	073243	084254
CHS	0912	1014+14	1017+11	1022+06	0917-08	0822-18	073033	073343	074555
FLO	1209	0912+15	1014+12	1014+06	0816-08	0817-18	062433	073243	073954
GSP	9900	0810+15	0714+11	0716+06	0817-08	0819-17	072532	073042	073654
2XG	1011	1210+14	1210+10	1408+05	1108-08	0909-19	081534	083244	084655



Convective SIGMET

- **In the world of NWP...**
 - Convection updated every 2.5 minutes
 - Forecasts updated every 5 minutes
 - Forecast temporal resolution of
 - 5 minutes up to hour two
 - 15 minutes for hours 2-8
 - High resolution storm tops in 1,000 foot increments
- **What is the role of the hourly Convective SIGMET?**
- **Can a four-hour SIGMET for convection meet the same role?**

WIMAT -- Analysis Strategy



- **Distill weather info to its basic form for specific time periods and airspace type**
- **Determine how to retire the other products from FAA operational and FAA-sponsored uses (FFSP, FIS-B)**
- **Derive products base information that cannot be retired**
- **Encourage user tailoring base information to meet decision needs (e.g. display, integration with DSTs)**