

Weather Information Migration and Transition (WIMAT)

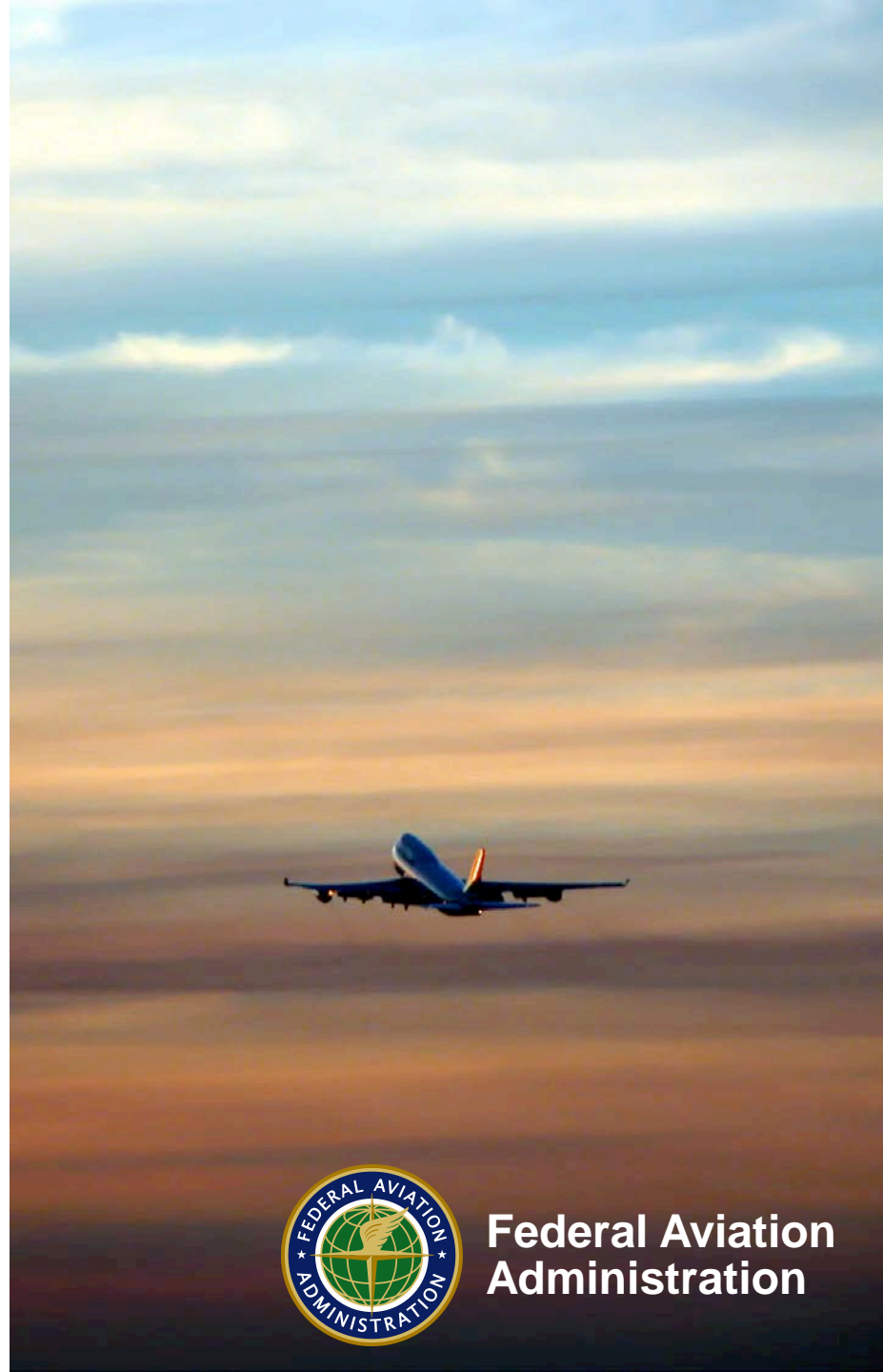
Presented to: Friends and Partners of Aviation
Weather

By: Jack May

Date: July 18, 2018



**Federal Aviation
Administration**



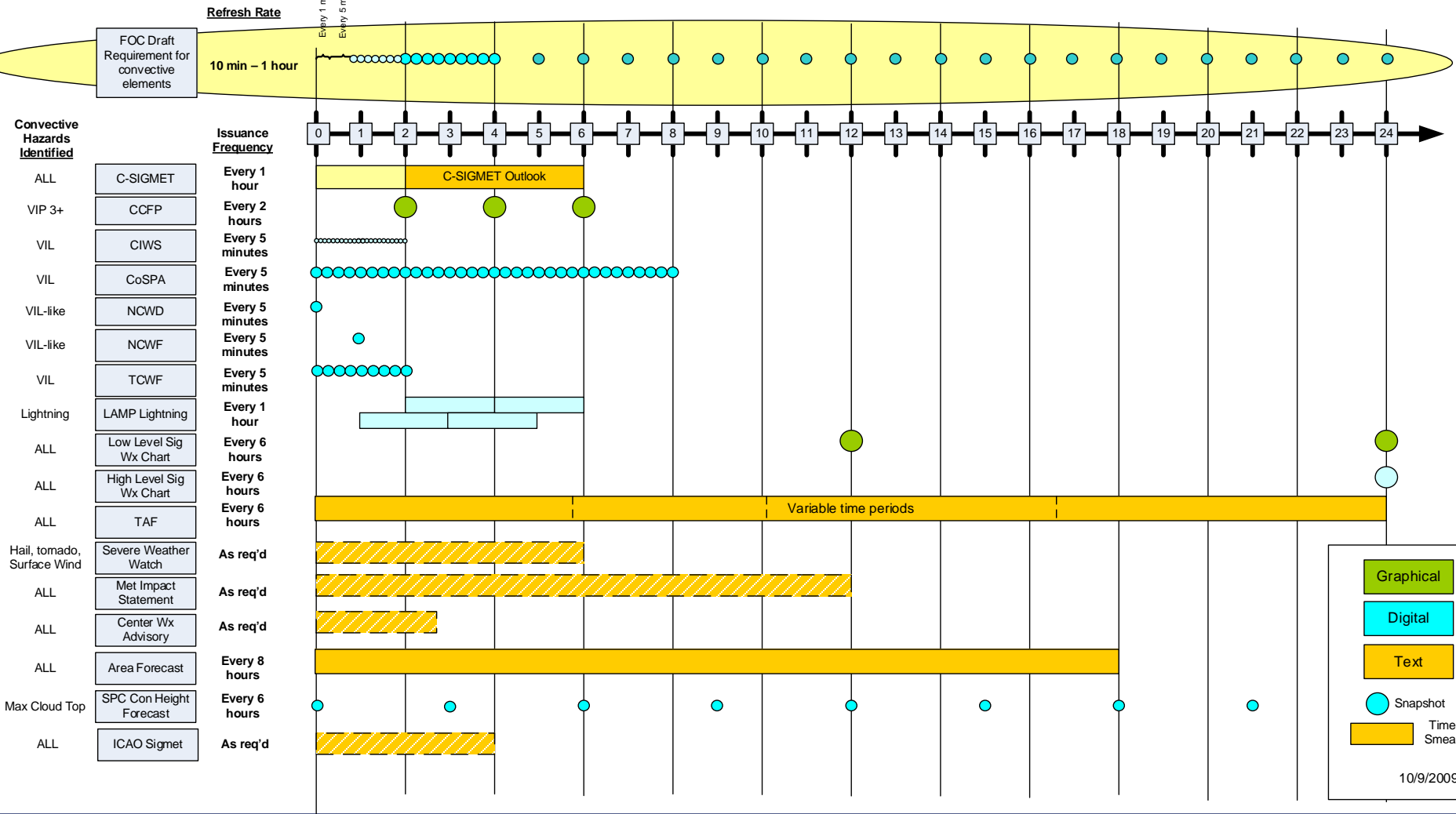
The Problem (Example: Convection)

- **Convective SIGMET**
- **C-SIGMET 2-6HR OTLK**
- **International SIGMET**
- **CIWS/COSPA**
- **TCM Convective Forecast**
- **Low Level SIG Wx**
- **Hi Level SIG Wx**
- **WAFS Grids**
- **TAF**
- **GTG-N (convection)**
- **Center Wx Advisory**
- **Met Impact Statement**
- **Area Forecast (AK, HI)**
- **LAMP (Lightning)**
- **Severe Wx Watches**
- **Severe Wx Warnings**
- **NDFD probability of T**
- **Verbal expression (CWSU Mets)**

Why the Differences?

- **Customers/needs**
- **Accuracy**
- **Regions**
- **Format**
 - Text
 - Graphic
 - Digital
 - IWXXM
- **Source differences**
- **Automated/Forecaster**
- **Time-smear vs. Time-snapshot**
- **Spatial resolution**
- **Forecast time resolution**
- **Scaler resolution**
- **Update rate**
- **Content type**
 - Probabilistic, or
 - Deterministic

Convective Product Comparison Chart



The Impact of so Many Different Products?

- **Information not tailored for my needs**
 - Numerous products used by me to tailor to my needs
- **Conflicting information**
 - Different users using different information from different sources to make decisions
- **Pleas from customers for fewer products and consistency among products**
- **Technology offers capability to automatically tailor information for specific decisions from base weather information**
 - Decision support tools!

Airspace and Timeframe

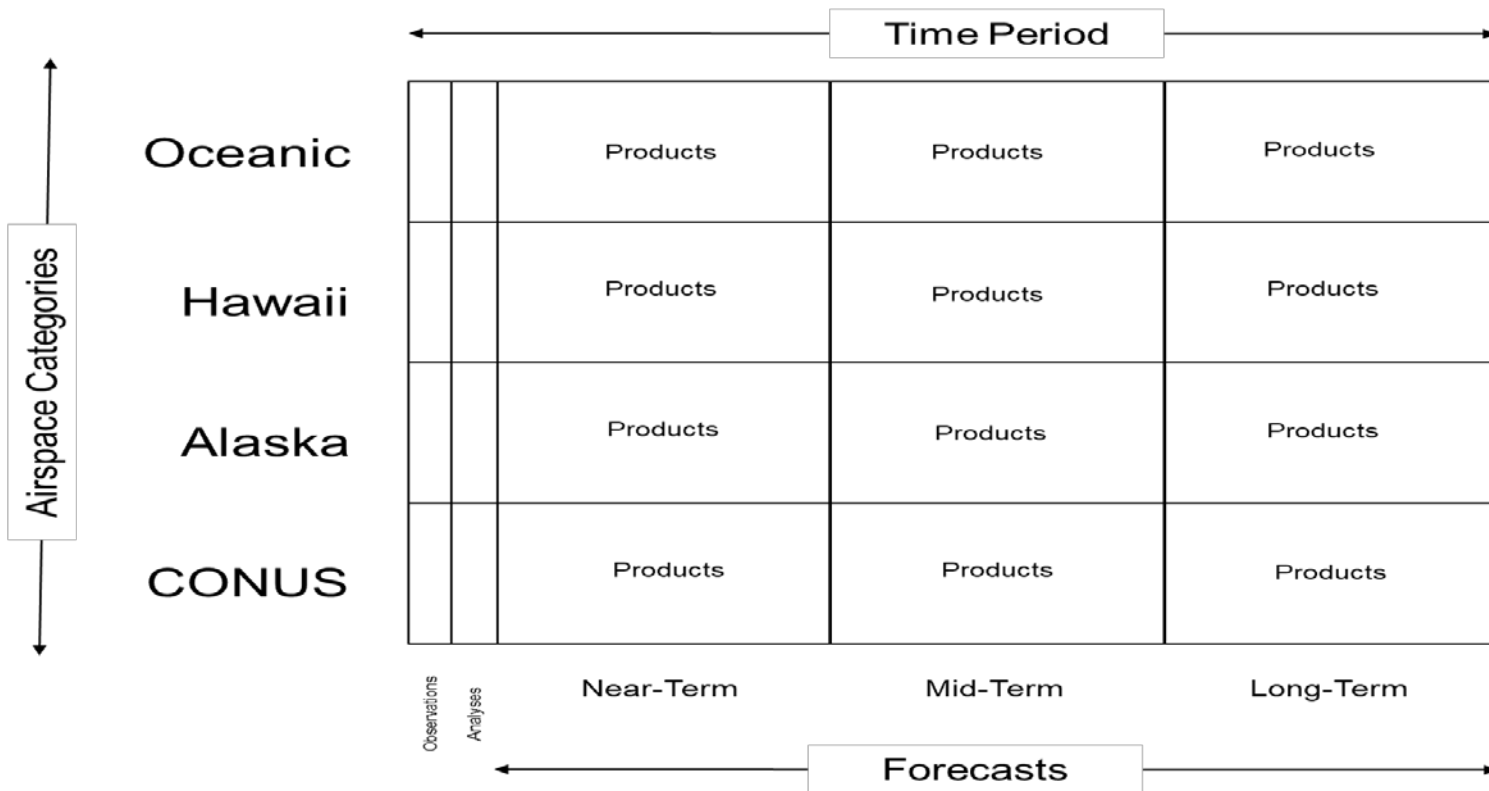
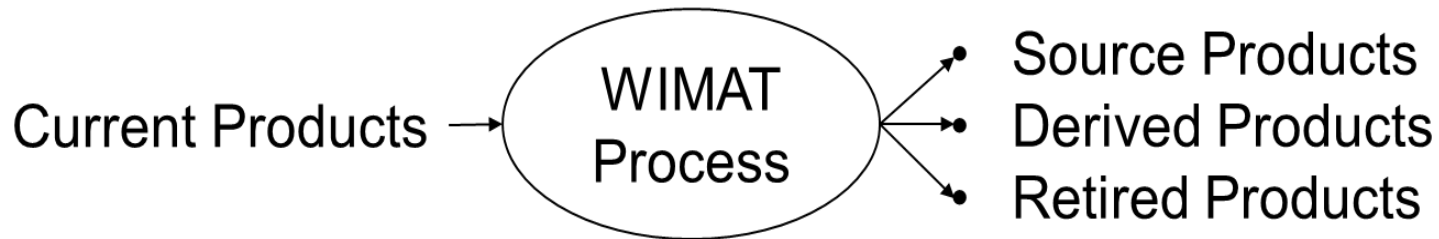


Figure 4: Categorize Products by Airspace and Time Period for each specific phenomenon.

WIMAT Process

- **A team-based approach, led by Pat Murphy (ANG-C6), to identify and evaluate current products for:**
 - Duplication over airspace and timeframe
 - Frequency of use
 - Production cost vs. utility
 - “Derivability” - Can products, if needed, be reformatted from a single higher resolution product?
- **Steering Committee to develop drafts for participants to evaluate and comment**
- **Participants from:**
 - FAA, NWS , AOPA, ADF, ALPA, A4A, MITRE, Harris, HAI, NATCA, NBAA, NTSB, and RAA

WIMAT Process for a Candidate Product



- **Is there another product that has the parameters expressed by candidate product in the candidate product’s timeframe?**
- **Are these parameters “sufficiently accurate”?**
 - If yes, is the candidate product required by external authority (e.g. ICAO)?
 - If yes, can the product be derived through automation?
 - If no, place product into the “retirement” process

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Early Candidates



Text AIRMET

- **Text AIRMET vs. Graphical AIRMET (G-AIRMET)**
 - What is the purpose of Text AIRMET given G-AIRMETS?
 - Is there an obligation to ICAO to produce text AIRMETS?
 - Going to IWXXM anyway

LLWS POTENTIAL...CA AND
CSTL WTRS
BOUNDED BY 40WSW ENI-30NE
PYE-20SSW EHF-60NW HEC-
20NNE HEC-20WNW
LAX-50W RZS-40WSW ENI
LLWS EXP. CONDS CONTG BYD
15Z THRU 21Z.



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



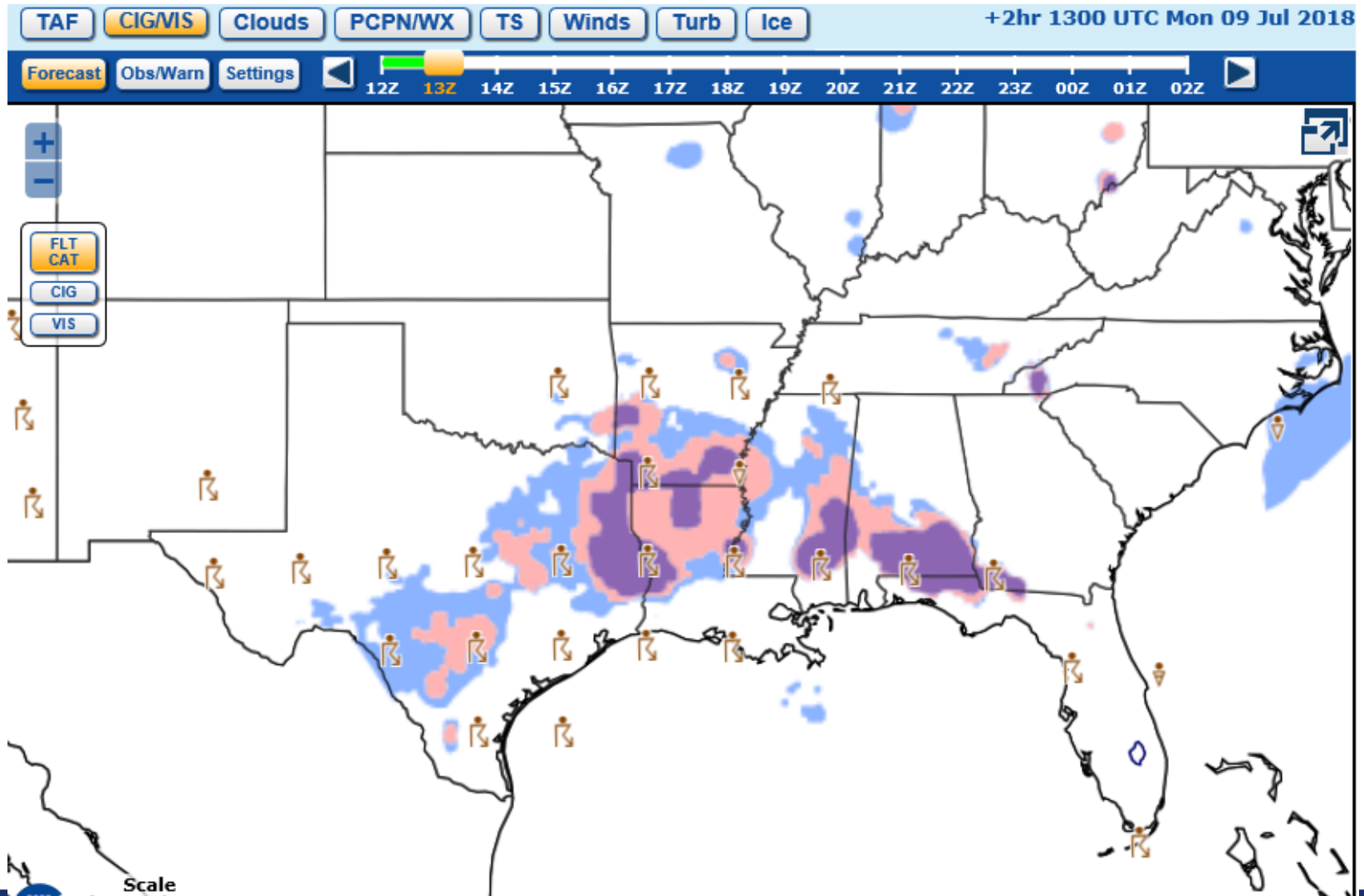
Text Area Forecasts

- Caribbean
- Gulf of Mexico
- Hawaii
- Alaska

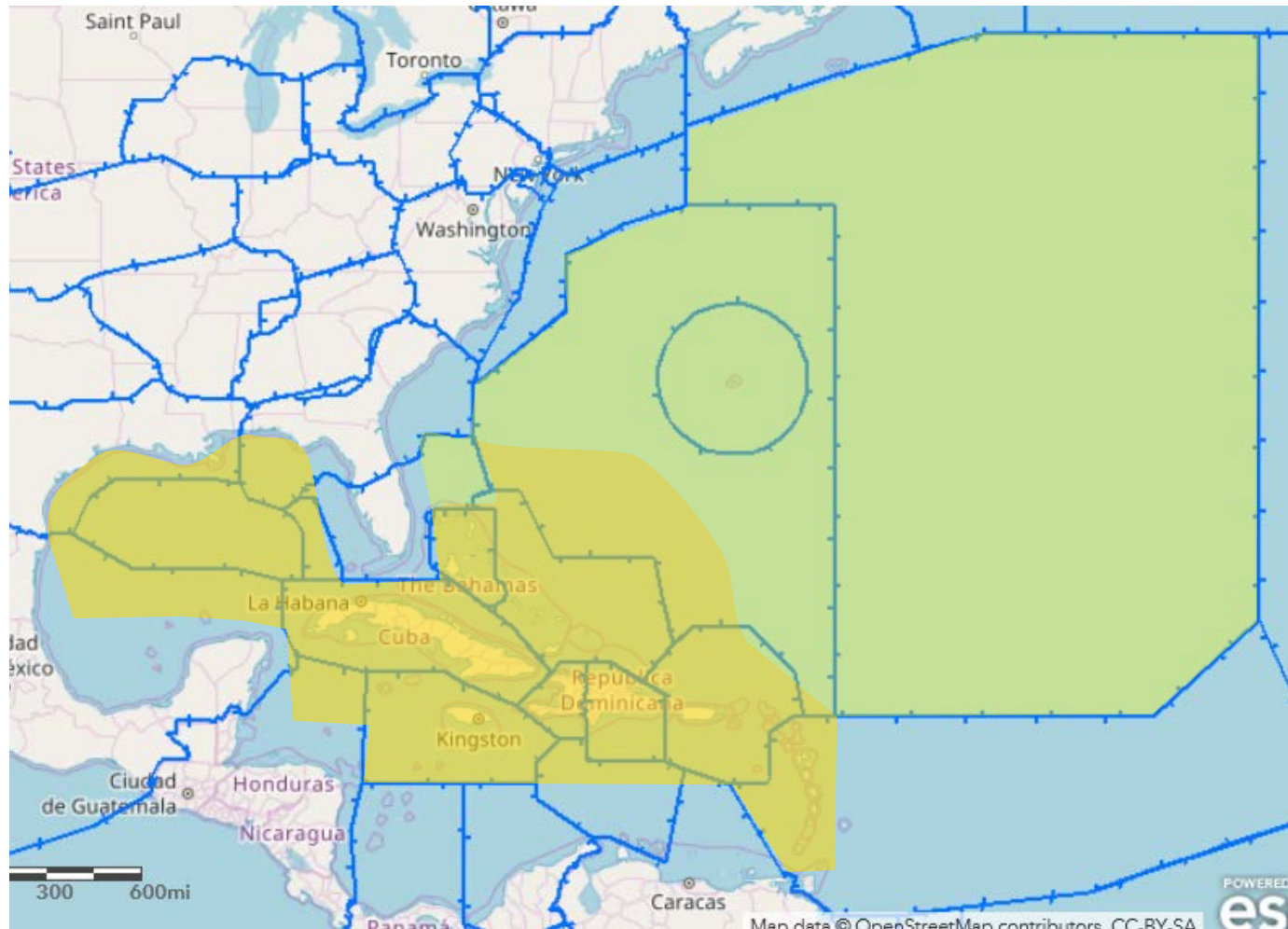


02 SIGNIFICANT CLD/WX...
.
CSTL WTRS...
BRO-LEV...SCT015-020 BKN045-050 TOP 160. OCNL SCT015 BKN020 LYRD
FL180. SCT TSRA/SHRA. CB TOP ABV FL450. BECMG 1820 SCT020 SCT060.
OCNL SCT015-020 BKN040-045 TOP 080. WDLY SCT SHRA/ISOL TSRA. CB
TOP FL450. OTLK...VFR TSRA SHRA.
LEV-AAF...
NR SHORE...SCT015-020 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.
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Gridded Forecasts for Aviation



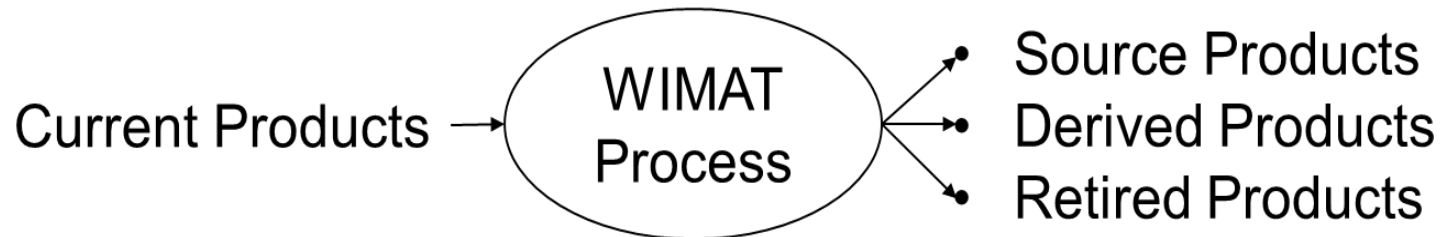
Area Forecasts for Caribbean and Gulf of Mexico



Convective SIGMET

- **In the world of NWP...**
 - Convection updated every 25 seconds
 - 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
- **If SIGMETs are required for convection, what is the role of the hourly Convective SIGMET as opposed to a four-hour SIGMET for convection?**
- **Can it be automated from NWP grids?**

WIMAT -- Strategy



- **Distill weather info down to its basic form over specific time periods and airspace**
- **Determine how to retire the other products**
- **Derive products base information that cannot be retired**
- **More and More, allow user to tailor base information to meet decision needs (e.g. display, integration with DSTs)**

Save your Questions for Q&A after next session

