Aviation Weather Center

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8th NCEP Ensemble User Workshop, August 27-29, 2019
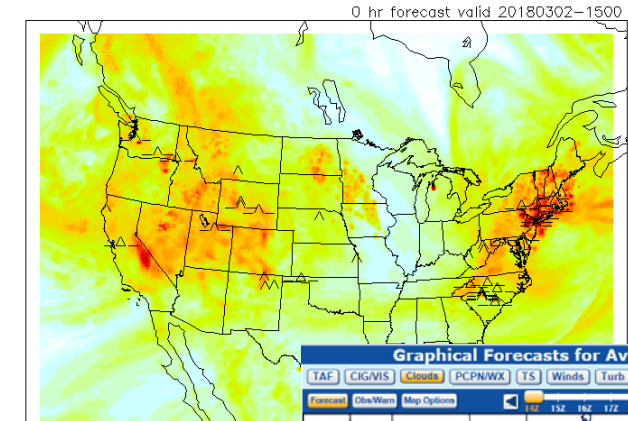
Aviation Weather Testbed

Global leadership in aviation research-to-operations (R2O), operations-to-research (O2R), and forecasting
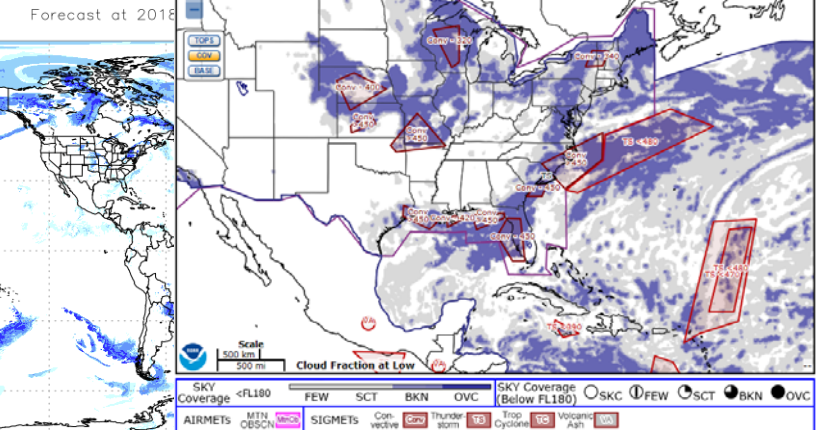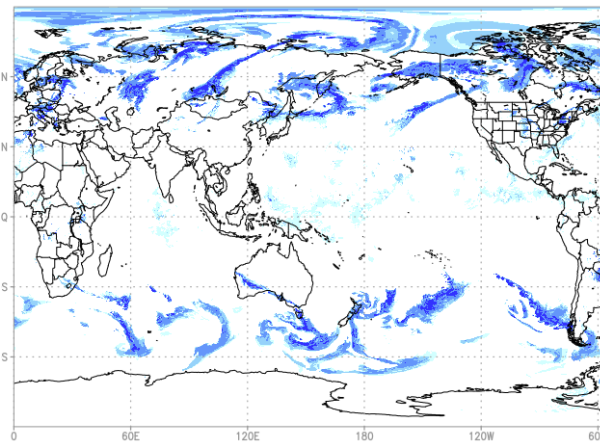
Collaboration with other testbeds, laboratories, and the FAA Aviation Weather Research Program (AWRP)
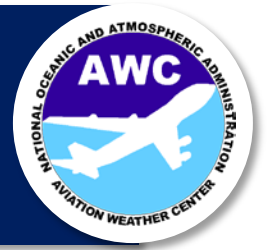

GTGN - Max layer turbulence (1000 ft. MSL to FL500)
0 hr forecast valid 20180302−1500

Icing Severity on 600hPa
Forecast at 2018

trace   light   moderate   heavy

Graphical Forecasts for Aviation - Clouds

AWT Ensemble Work

High Resolution Ensembles (F00-F36)
- **HREF and HRRRE have been evaluated in AWT**
- **Support Graphical Forecasts for Aviation enhancements**
- **NWS Evolve DAS Initiative**
  - Require native vertical resolution 3D-cloud fraction from individual members on operational WCOSS
  - Flight Category (VFR, MVFR, IFR, LIFR)
  - TAF Board
- **Traffic Flow Management Convective Forecasts (TCF) and Extended TCF enhancements**
  - Echo Tops, VIL, Composite Reflectivity
  - Lean on SPC/HWT expertise with CAMs
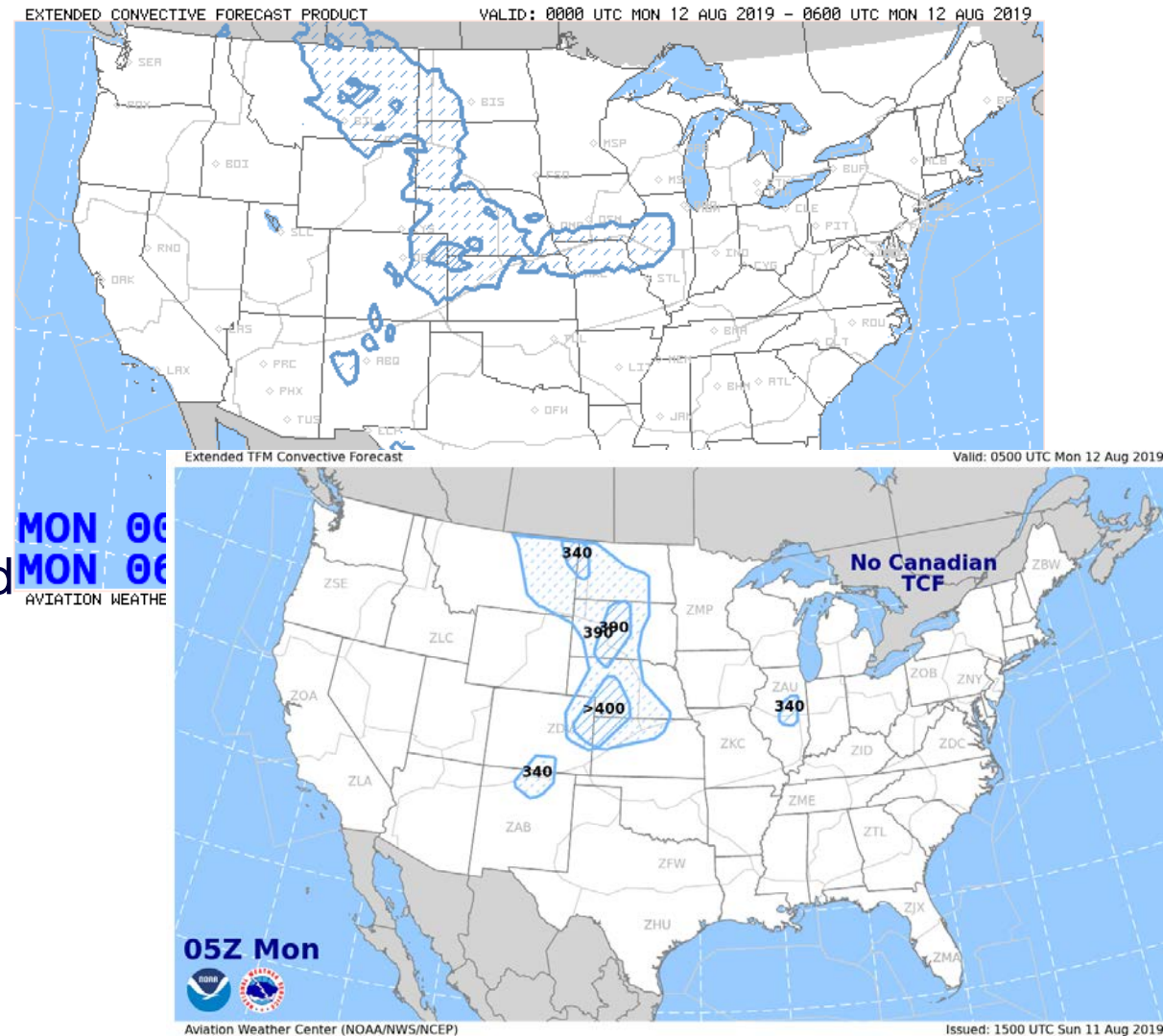
Global Resolution Ensembles (through F240)
- **Probabilistic Turbulence, Probabilistic Icing, and Global Convection**
- **GEFS and NAEFS are currently being evaluated in AWT**

AWT Ensemble Work

High Resolution Ensembles (F00-F87)
- **Support current and future decision support tools**
  - Expand forecast valid time horizon for Graphical Forecasts for Aviation, and Digital Aviation Services, etc.
  - Maintain and upgrade capability of operational Aviation Winter Weather Dashboard, Extended Traffic Flow Management Convective Forecast (TCF) and extended TCF products
    - Increasing emphasis on communication hazards at an extended range (48-96 hrs)
    - Currently use SREF to F87

AWT Ensemble Work

Global Resolution Ensembles (through day 12)
- **Probabilistic Turbulence, Probabilistic Icing, and Global Convection**
- **Explore assorted decision support tools to be evaluated in AWT in collaboration with FAA**

WAFC
- **GEFS and MOGREPS blending of aviation en-route variables**
  - Limited spread in early forecast hours still a concern
- **Potential for multi-ensemble**

Deterministic GTG — at 300 hPa for 20160106_i00f18

EDR [m^2/3 s^-1]
0.1 0.125 0.15 0.175 0.2 0.225 0.25 0.275 0.3

Probabilistic GTG — at 300 hPa for 20160106_i00f18

Prob. [%]
10 20 30 40 50 60 70 80 90