

Looking Ahead: Ceiling and Visibility for IOC and Beyond

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C&V: Safety & Efficiency Impacts



Airport Efficiency

- Approx 1/3 of Wx-related delays due to impacted C&V.
- Key Issue: *Landing & taxi visibility in the terminal area.*



In-route Safety

- 60-75 GA deaths/year.
 - VFR to IMC hazard
 - VFR pilots or low-proficiency Inst-Rated pilots.
- GA pilot strategy: *Avoid or exit inadvertent IFR.*

Efficiency

121 & 135

Hi-End GA

Low/Mid
DoD

Helo EMS

Safety

Low/Mid
GA

Product Scope



Through IOC Product Type

- Current Analysis
- ~~Prob. Forecast~~



MOC - FOC

Seamless Product

Predictands

- Ceiling
- Surface visibility



3-D Cloud Obstruction
Slant-range visibility
- Aerosol / haze

Domains

- CONUS

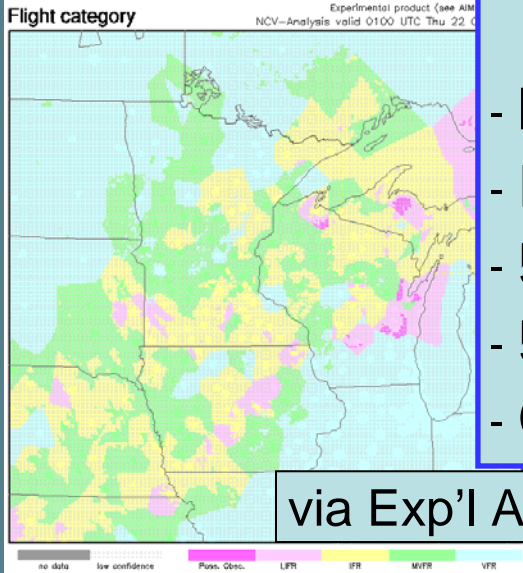


Add

Embedded Terminals
Alaska
GoMex

NCVA – Analysis Product Today

NCVA Today

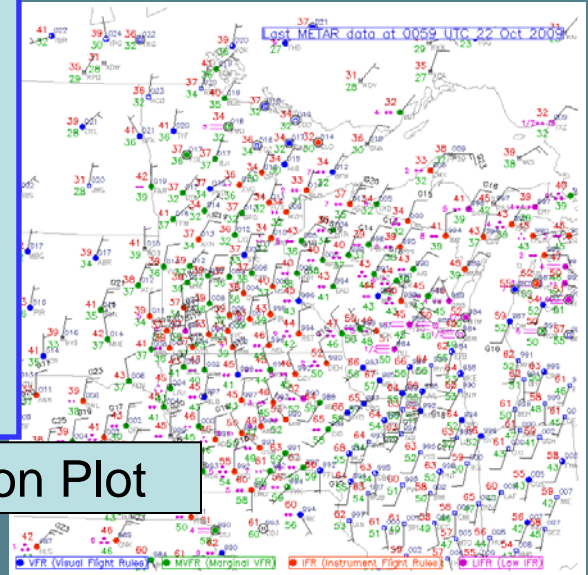


via Exp'l ADDS

Details

- METAR and GOES inputs
- Real-time C, V, & Flight Cat.
- 5 minute update rate
- 5 km grid resolution
- Confidence – “Normal” & “Low”

Supplementing these:

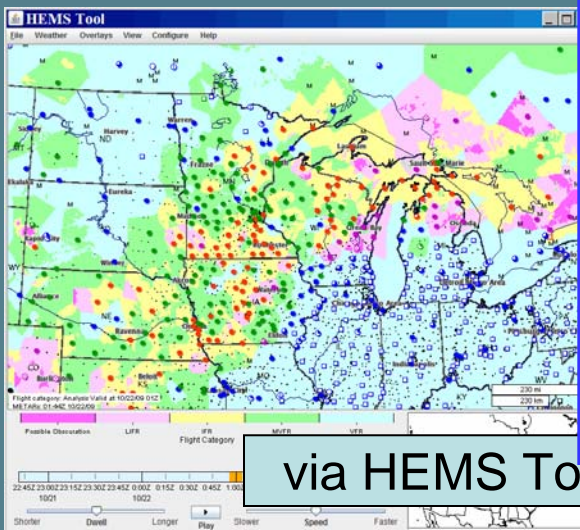


Station Plot

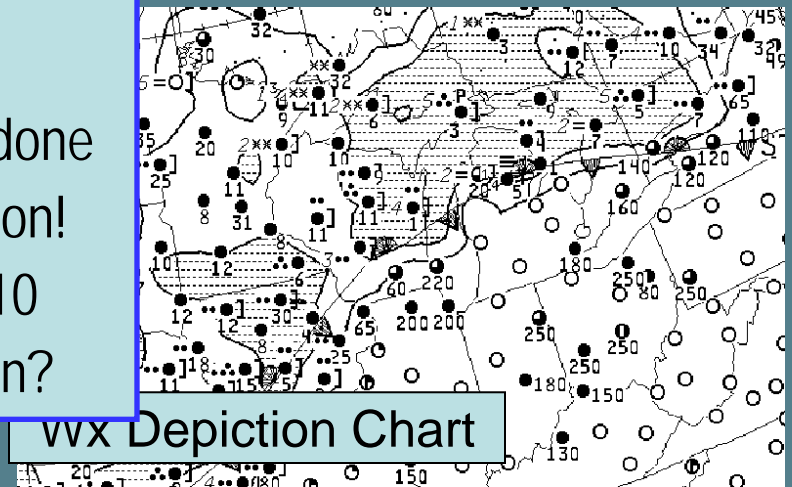
Status

- QA study done
- Tech Rev Panel done
- ConUse in Revision!
- SMS process 2010
- 2010 Op'l decision?

via HEMS Tool



wx Depiction Chart



NCVA – Analysis V2 – Looking Ahead

Enabling Technologies

- NCVF Fcst input (2013)
- Possible NASA/LARC SatPrd
- GOES-R (2013 launch)
(2014 data flowing)

New Capabilities

- Model-based probabilistic gap-filling
- Integrated with NCVF 1-12 fcst
- Improved GOES-R cloud products
- Fog mapping
- Embedded hi-res terminals

Demo Plans

- 2015 CONUS demo

Ops

- 2016
- CONUS

NCVF – Forecast Concept

Forecast Inputs

NCV Observations-based Statistical Forecast

NCV Time-lagged RR Ensemble Forecast

CoSPA Storm Forecast
1-3 hr
4-8 hr

Multi-member RR, NAM, SREF Ensemble Forecasts

Blended Probabilistic Forecast

1 hr

3 hr

6 hr

9 hr

12 hr

FY09 Enabling Results

1-3 hr skill meets or beats operational guidance with reduced latency. 4-12 hr forecasts in development.

On track for a 1-3hr forecast test at the OEP 35 airports in FY11.



NCVF Probabilistic 1-3 hr – Looking Ahead

Role – one component of NCVF forecast method

- Anchors 1-3 hr segment of 1-12 NCV probabilistic forecast process
- Obs-based statistical forecast – plus CoSPA regime change triggers

Enabling Technologies

- NCV Statistical Fcst module
- CoSPA for regime changes

New Capabilities

- Low-latency 1-5 hr C&V site fcsts
- Customizable fcst thresholds

Demo Goals – to airlines, dispatch, airports, CWSU's, WFO's

- 2010 Is this useful.

When do you use it to make decisions?

What's needed or missing?

Demo Plans

- 2011 **NCAR-based** demo – OEP 35 airports + others as possible.
- 2012 Continue and expand to many more sites.
- 2013 **AWC-based** (?) CONUS 1-12 hr forecast

NCVF Probabilistic 1-12 hr – Looking Ahead

Integrated Statistical + RR Ensemble-based fcst

- Time-lagged RR inputs. Poss. HRRR. Poss. RR 6-mem ens. VSREF – TBD.
- All CONUS airport sites (site-based)
- Continuous spatial grids?... Possible in V1 – not certain.

Enabling Technologies

- NCV Statistical Fcst module
- CoSPA for regime changes
- RR time-lagged ensemble

New Capabilities

- Low-latency 1-12 hr C&V site fcsts
- Statistical skill + CoSPA trigger + TL Ensemble.
- Customizable fcst thresholds

Demo Goals – to airlines, dispatch, airports, CWSU's, WFO's

- 2013 Supports NVEC. Is this useful.
When do you use it to make decisions?
What's needed or missing?

Demo / Ops Plans

- 2013 **AWC-based Demo** CONUS 1-12 hr forecast
- 2014 Operational
- 2015 (?) Upgrade to use of NARRE? – Schedule/Phasing problem.

Wrap-Up

NCVA CONUS

- V1: Frozen. Will be ready for IOC.
- V2 (model-based gap filling) ready for MOC. Integrated with NCVF V2 (below).

NCVF CONUS

- V1 (1-12 hr) Demonstration at IOC. Time-lagged RR. Operational 2014.
- V2 for MOC. True-ensemble based. Expect 1-2 embedded hi-res terminals.

NCV Alaska

- Dependent on NARRE.
- 2013 development start.
- "Analysis & Forecast" – one product.
- Model-based gap filling (0 hr analysis grid) is critical.
- Could be ready for MOC.

Others ... Post-MOC start

- 3D cloud obstructions to vision – slant range visibility.
- More embedded terminal coverage.
- RVR forecasts.