ATM – Weather Integration

“Pioneering the Frontier”

Mike Robinson
AvMet Applications, Inc

Friends and Partners in Aviation Weather
Summer Meeting 2015 – Washington D.C.
Where is AWI Needed?

1. Monitor Airspace
2. Identify Constraint
   - Analyze Capacity
   - Assess Demand
3. Is there an imbalance?
   - YES: Manage Constraint
   - NO: AWI
4. AWI: Monitor Effectiveness

AVMAt
What is AWI without AWI?

AWI exists as mental-models in the minds of air traffic managers (TM)

Aided by myriad of **Weather** and **ATM** decision support
- Including CWSU / NAM meteorologists (‘W’-side) and collaboration among inter/intra- facility traffic management colleagues (‘A’-side)

With this AWI:
- Effectiveness in execution varies
- Parts or ALL of TFM process at mercy of how fast TM can process and keep up
- Not a knock, mental-model no match for multi-faceted, 4-D complexity of WX-TFM event
Early Explorations Further Away From Homestead.... (some examples)

Integrated Terminal Weather System (ITWS)

Still Weather – but Relevant Aviation Weather that Ops Significantly Cares About

ITWS Integration for Safety Decision Support is Mature

ITWS guidance for ATM Efficiency decisions remains “wild-west” data among all other info for TM’s mental model

Route Availability Planning Tool (RAPT)

Now Weather “Translation” for TFM – When & where I cannot ignore weather given specific ATM operation

RAPT translated CIWS forecasts into statements of departure route availability for near-term airspace constraint awareness

Takes 4-D mental calculation for when key airspace will or will not be significantly affected by weather

However, not ‘full’ AWI, as it stops short of defining and recommending TFM solution(s) for route impact management
Even Getting This Far Was (Is) a Challenge.....

Cannot under-estimate the human factors challenges

- Traffic managers have been navigating the TFM process and WX-management decision process a specific way for a long time
- A significant challenge to modify current mental-models and indoctrinate new guidance, new way of problem-solving, etc; Challenges grow when process/paradigm-shifts for TFM required

Definition of TFM “success” ill-defined, not readily-tracked, and varies among decision-makers....as do the decision risks (heightens sensitivity to “burn factor”?)
GPSM Stakes A Claim in the AWI Frontier.....

SFO Ground Delay Program (GDP) Program Selection Model (GPSM) uses probabilistic forecasts for SFO marine-stratus clearing to provide recommendations for GDP parameters for this airport

- Thus, extends beyond weather translation and more firmly into realm of AWI by outputting explicit TMI response options to manage specific ATM constraints

- Trailblazing effort in the AWI arena – which shined a light brighter on AWI challenges and from which important lessons-learned were gleaned

- Chris Provan (Mosaic ATM) to now discuss GPSM and AWI in more details....