FORECAST IMPACT FIQAS QUALITY ASSESSMENT

Measuring Aviation Weather Forecast Performance and Operational Utility

Missy Petty
Forecast Impact and Quality Assessment Section
NOAA/ESRL/GSD

Friends and Partners of Aviation Weather Forum
25 July 2013

NOAA CIRA CIRES FEDERAL AVIATION ADMINISTRATION

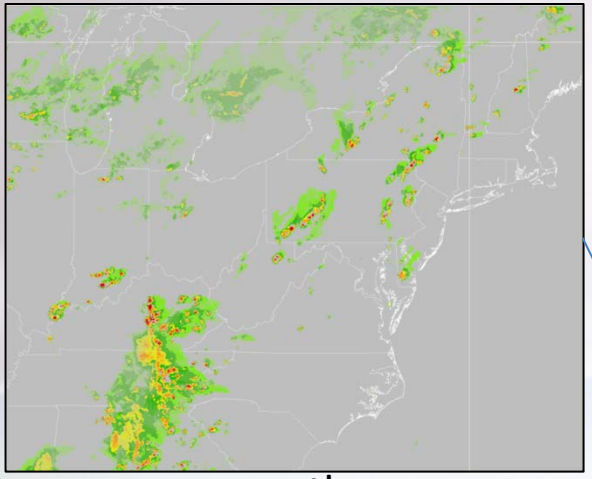
Measuring Product Performance

- Better meteorological skill does not necessarily yield operational benefits
- Operational context matters
  - Performance evaluation (verification) techniques
  - Determining performance requirements
- Verification techniques are evolving to capture the operational context

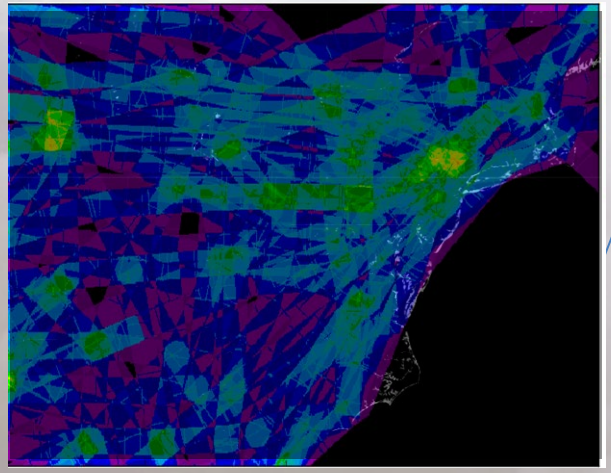
Weather Translation

- Weather translation highlights forecast characteristics that matter to operations
- Using translation in verification techniques provides performance information relative to operational context
- Performance information is used to improve meteorological forecast quality
- Translation is applied at various levels of sophistication
  - VIP Level 3 and above
  - Incorporating traffic patterns to emphasize constraint severity

Flow Constraint Index

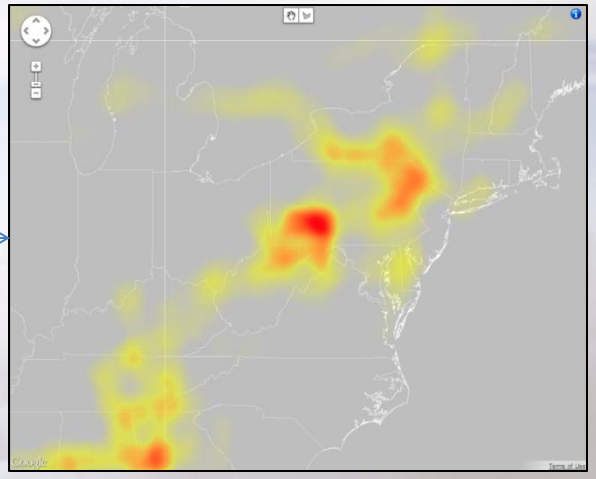


raw weather

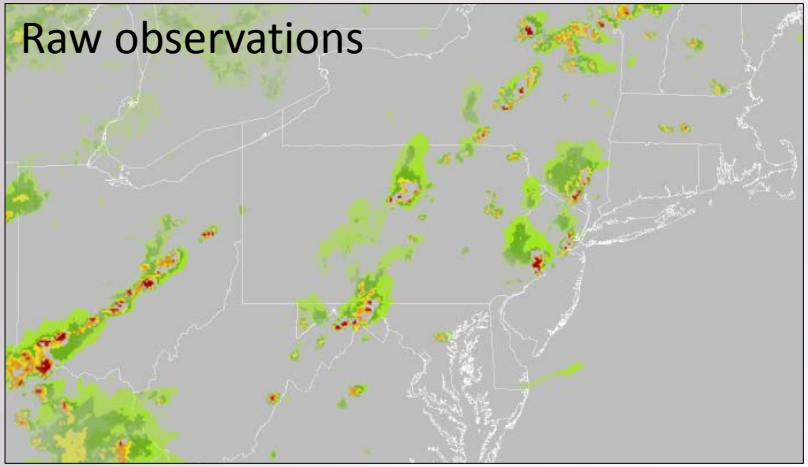


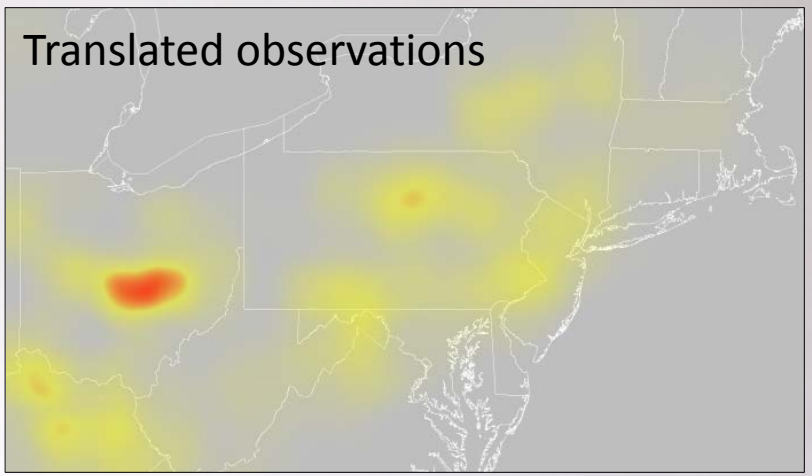
density of J,Q airways

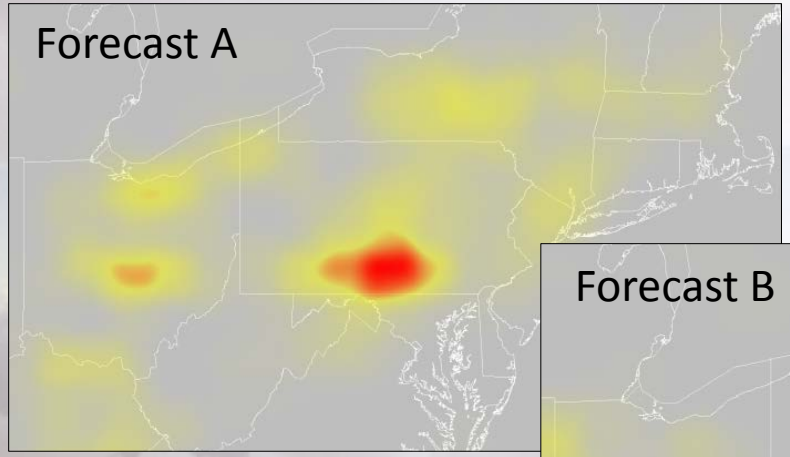
FCI = measure of wx permeability + traffic

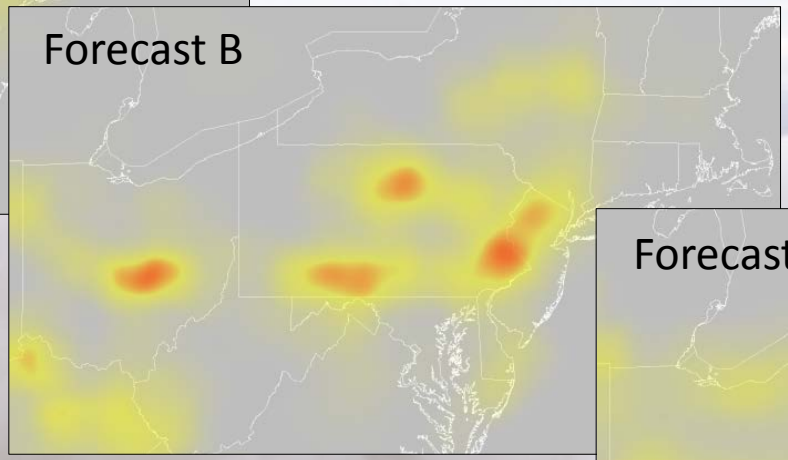


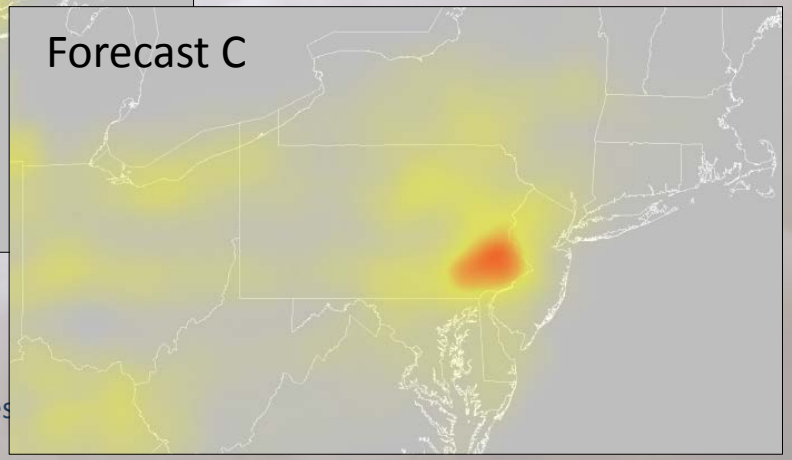
constraint in areas of denser traffic → more heat


Raw observations


Translated observations


Forecast A


Forecast B


Forecast C

Considerations

- Measuring performance in ‘translation space’ is only as good as its translation
  - Translation must accurately capture operational context, connect to operational decisions
  - Requires collaboration with the operational community
- Performance information needs to feed back into forecast development/production
  - Will affect the characteristics important to operational context
  - Requires collaboration with the forecast community
- Operational Utility
  - Performance measurement is one piece of the puzzle
  - Tie translation characteristics to specific decisions such as Traffic Management Initiatives (TMIs)
  - Link performance in TMI scenarios to operational benefits