Human Forecasters – Some Thoughts

• Local expertise of forecaster will always add value
  - augmentation & enhancement of automated forecast products,
    especially for recognizing high-impact situations
  - particularly relevant for site-specific forecasts (e.g., terminal area)

• Need for human weather consulting will remain
  - maintenance of situational awareness
  - interpretation of complex weather situations to users

• Information overload requires increasing automation
  - need automated tools to aid forecasters digesting wealth of information
  - automate routine tasks to enable forecasters focusing on what matters

• Challenge of grasping human thought process in algorithms
  - human assessment of the “unmeasurable”
  - human assessment of data quality
• **Changing workplace**
  - increasing utilization of computer-based tools
  - increasing demands on timeliness & specificity of forecasts
  - where is “optimum” human – machine mix?
  - need to foster a culture of embracing change

• **Research to operations**
  - how effectively get new scientific understanding & research tools into operations?

• **Consistency from forecaster to forecaster**
  - variable degree of experience

• **Verification**
  - demonstration of improvement & benefits

• **Human factors & social sciences aspects**
  - user training, acceptance of & trust in forecasting process
  - political acceptance
Update on AutoNowcaster

- Research & development
  - verification of initiation forecasts
  - assessment of human-over-the-loop

- Real-time demonstrations
  - Dallas Fort Worth, TX (ongoing)
  - Melbourne, FL (new)

Critical Success Index (CSI)

Human adds value to initiation forecasts

1 h forecasts

- automated
- human enhanced
Diagram after Paul Roebber (WAF 2009)

Bias lines (dashed)

Place aiming for

Automated forecast

Human-enhanced forecast

Probability of Detection (POD)

Critical Success Index (CSI) curves (solid)

1 – False Alarm Ratio (FAR)
Update on CoSPA

• Research & development
  - improvements in storm initiation & evolution
  - uncertainty characterization & probabilistic forecasting

• Real-time demonstrations
  - working toward a CONUS 0-8 hour demonstration in 2010
  - vertically integrated liquid (VIL) & echo top (ET)
  - possibly include weather avoidance field (WAF) & precipitation phase (snow, rain, mixed)

HRRR going CONUS
  - hourly updating
  - 3 km resolution
  - 15 h outlook

FY08  FY09  FY10
• Human-related CoSPA enhancements
  - overlay of CCFP
  - overlay of 3-hourly HPC synoptic fronts & automated advection
  - overlay of SPC convective outlook, thunderstorm watch & warning boxes
  - selection of weights for ensemble-based probabilistic forecasts (future R&D)
• Other potential CoSPA enhancements
  - deterministic & probabilistic forecast overlay
  - translation of weather into capacity constraints

1. VIL & ET => WAF
2. AFP capacity assessment

AFP A05 airspace (ZOB to ZNY)

CoSPA-based estimate

Actual observation

CoSPA Forecast Lead Times

Fair weather estimate