RUC crisis change
5 Dec 2007 Stan Benjamin - NOAA/ESRL/GSD
Updated 10 January 2008, implemented 12z 8 January 2008

Errors in operational RUC

- Assimilation of METAR cloud observations was found to be neglecting a high percentage (20-40%) of them due to correctable code problems.
    - Vertical stability, model layer thickness, background RH limits – all too restrictive.
    - SCT/FEW clouds were not used properly, no clearing up to BKN/OVC levels.
    - Snow contribution to ceiling exaggerated in RUC post.
    - Very important for RUC use for aviation forecasting
- Instantaneous precipitation rate does not include stable precipitation, only convective precipitation.
- Wind gust now uses 10-m wind as minimum; previously used 5-m wind sometimes resulting in wind gust speed < 10m wind speed.

Results from testing:

Op40 – NCEP operational 13km-RUC – verified at 40km resolution
Dev1340 – GSD experimental 13km-RUC – changes introduced 14-25 November 2007. Also verified at 40km resolution.

- Much improved TSS (Total Skill Score) for RUC analysis and RUC 1h forecasts (also for other forecasts) from **both** higher PODy (probability of detecting 'Yes' events) and lower FAR (false alarm ratio)
- Shown for 500-ft ceiling (LIFR), 1000-ft ceiling (IFR), 1-mi visibility
- Only 40km results shown here, but verification scores are better still with 13km resolution for RUC, now available from NOAAPort as of 5 Dec 2007.

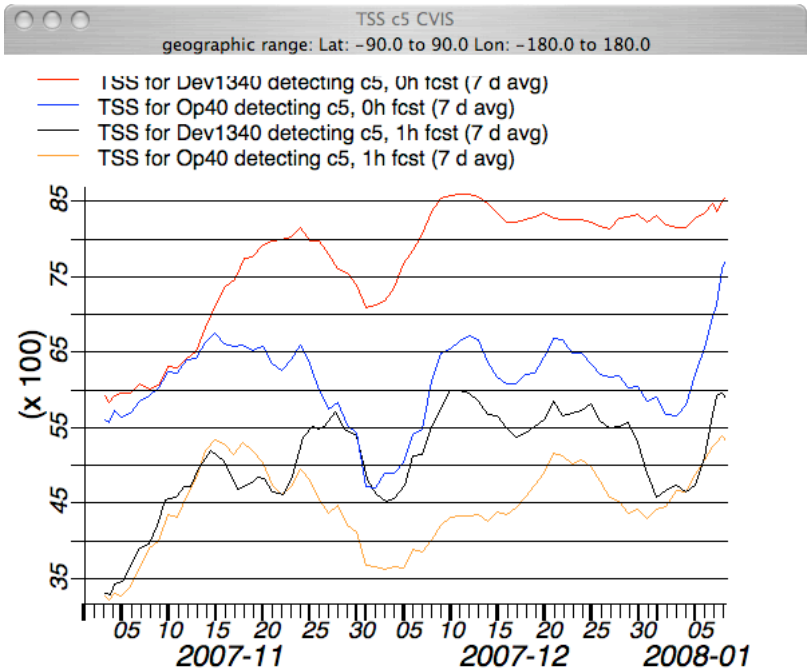

Figure 1. TSS for 500-ft (LIFR) ceiling for 1 Nov 07 – 10 Jan 07 for RUC 0h (analysis) and 1h forecast for exp RUC (dev1340) and oper RUC. NOTE: 7-day average, improvement in oper RUC at end of period from change implementation on 8 Jan 2008.

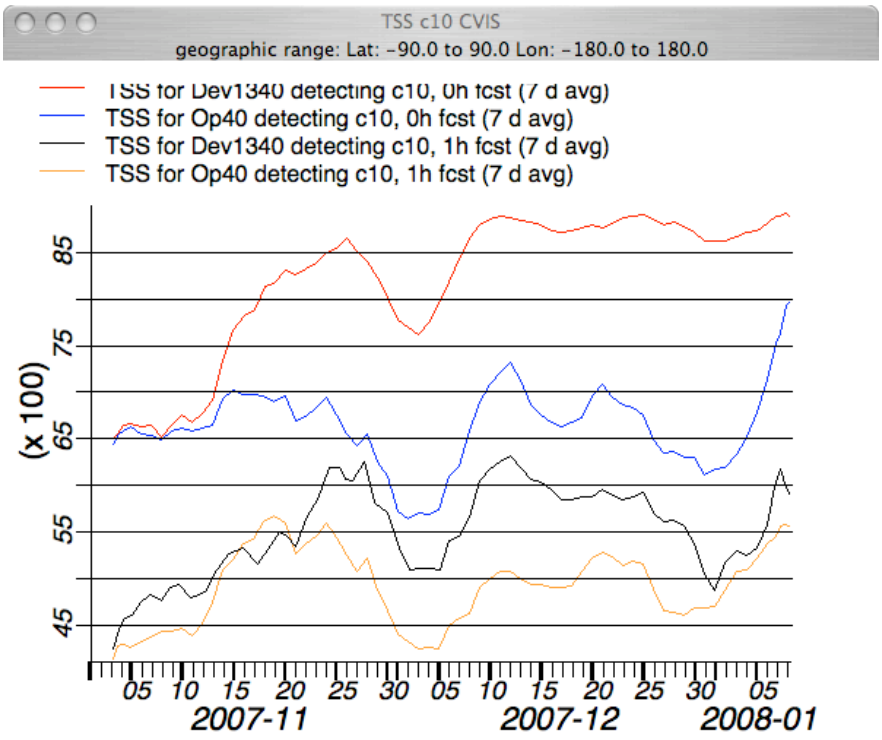

Figure 2. Same as Fig. 1 but for 1000-ft ceiling (IFR).

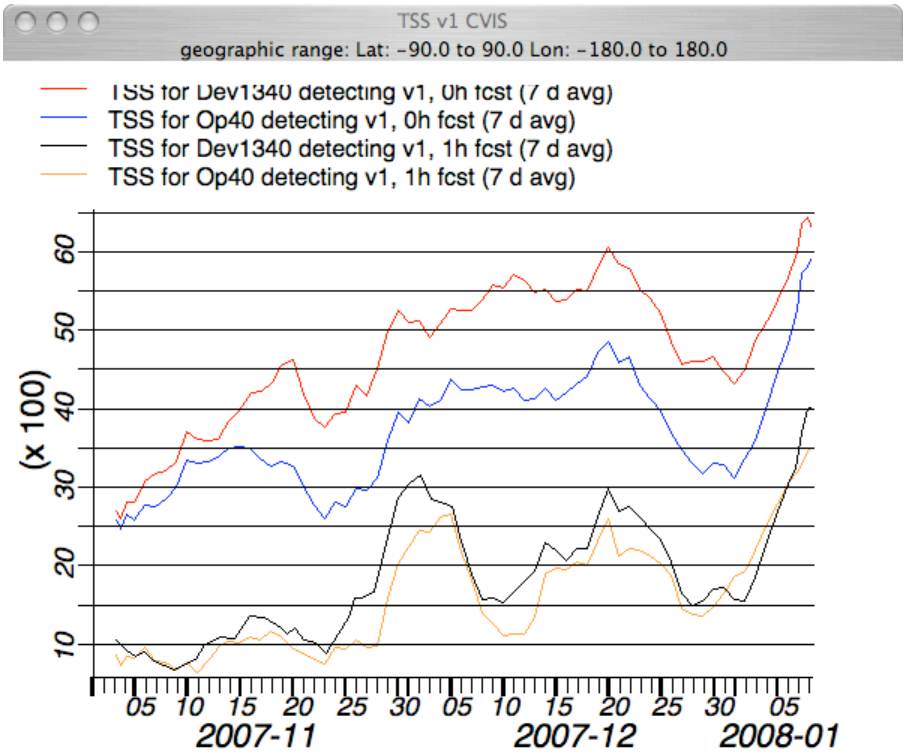

Figure 3. Same as Fig. 1 but for 1-mi visibility.