

Notes from Breakout Group 2: Applications and New Products (e.g. for AWIPS II)

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Since the group was composed entirely of NWS people, our first discussion centered on the fact that LAPS is used very much in some Warning and Forecast Offices (WFOs), not so much in others. Some reasons:

- The quality of LAPS documentation available to NWS staff
- The lack of training on LAPS and best practices
- Complicated procedures for local customization
- Bugs in the first versions undermined forecaster confidence
 - Handling terrain, an especially significant issue in the Western Region
 - Bullseyes in the surface analyses

Most of the bugs in the initial releases of LAPS have been addressed, but many forecasters have been slow to reconsider using it.

Candidate solutions to these problems include improvements in LAPS documentation, developing training materials in coordination with the NWS Training Branch, forecaster participation in future LAPS workshops like this one, and building a library of use cases that represent best practices.

A well-designed graphical user interface (GUI) for simplifying the use of LAPS features is expected to help greatly. The center point of the domain, the geometrical projection, the grid spacing, and the refresh rate should all be configurable with just a few clicks of the mouse. It should be easy to identify and “blacklist” bad sensors that are causing bullseyes, and then re-run the analysis. The inventory of datasets that were included in the analyses, and those that were rejected, should be readily available.

Many offices either run a local model using initialization data from LAPS, or would like to. This is not an easy thing to do today, but it could and should be via a GUI. The WRF modeling system comes with a GUI that already is able to make the appropriate outputs that enable LAPS localization; it may be a good idea to expand that to include the features described in the previous paragraph, and to also facilitate establishing and running a local forecast model, or even an ensemble.

Our next main discussion topic was the appropriate grid mesh and cycle time for WFO operations. To this group it makes little sense to refine the grid spacing without also increasing the LAPS cycle time. For example, the original default LAPS configuration was an hourly cycle on a 61x61 grid with 10 km increment. J.Medlin suggests that for the convection forecasting problems encountered in the Mobile AL office, a 5-km grid should be run every 15 minutes at most, and at 3 km the cycle time should probably be 5 minutes (or as often as available mesonets are updated, or the local radar). Configuration

decisions would be different for offices in mountainous areas, for offices with coasts, for summertime weather, for winter weather. Best practices should be an integral part of forecaster training on LAPS.

Some sort of “intelligent smoother” is probably required. For example, certain derivative fields such as vorticity, divergence, Q-vector diagnostics, helicity, and some stability indices are usually quite noisy if calculated directly; these are examples of fields that might be more informative with a certain amount of spatial smoothing, whereas wind fields are probably most useful as analyzed.