Verification of the CCFP
Outline

- FY03 /FY02 Quality of CCFP
- New verification approach
- Consistency index
Forecast Coverage vs Actual Coverage
2-h Forecast

- Spread is less in ’03
- Accuracy of coverage improved in ’03, particularly for the high coverage forecasts
Forecast Coverage vs Actual Coverage

- Spread is less in ’03
- Little change in accuracy of forecast coverage at 4-h lead
Forecast Coverage vs Actual Coverage

- Spread is less in ’03
- Forecast accuracy improves, particularly for high coverage forecasts.
Forecast Coverage/Probability vs Actual Coverage
2-h Forecast

- Spread is less in '03
- Medium and high coverage forecasts better at capturing actual coverage in '03
- Increase in low and medium coverage with increase in probability
Forecast Coverage/Probability vs Actual Coverage
4-h Forecast

- Little change in low coverage / low probability forecasts between ’02 and ‘03
- Increase in low coverage with increase in probability
- Medium coverage low probability cases improved from ’02 to ‘03
- Slight change in low coverage medium probability forecasts in ‘03
- Decrease in low coverage high probability forecasts in ‘03
- Slight improvement in medium coverage medium probability forecasts in ’03
- Forecast coverage lower than actual coverage
New Verification Approach

- Maintain attributes of forecast
- Assess quality of forecast through reliability and accuracy
- Reduce scale issue
- Evaluate forecast attributes independently

Coverage as a verification measure

Coverage alone doesn't tell you everything…
Current Verification Approach

Grid-based approach

- Binary comparison
- Compare forecasts with observations
  - Overlay forecasts and observations
  - Test inclusion in forecast
- Methods consider the entire domain and sub-domains
- Compute coverage separately
Each box would have a value of 25-49% coverage and 1-39% probability assigned.

Each box would have a value of 25-49% coverage and 40-69% probability assigned.

Each box would have a value of 75-100% coverage and 40-69% probability assigned.
<table>
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<th>Observed Coverage</th>
<th>25-49</th>
<th>50-74</th>
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Measures of Quality

[Diagrams showing ROC curves for different categories: ALL, MCG, SLD.]
Measures of Quality

• Continue to compute standard skill scores that maintain the attributes of the forecast
• Investigate particulars of forecast attributes (e.g. number of areas issues, relationship between coverage and probability)
• Doesn’t answer the “were we close” question. Need object-oriented verification approaches.
Consistency Index

Determine consistency between forecasts valid at the same time.
Consistency Index

- Compare grid points between two forecasts
- Determine the correlation coefficient
- Develop Distribution Function
- Compare individual cases with ideal distribution to determine level of consistency.
Distribution Function
Summary

• Overall results indicate that:
  – Coverage categories more accurately reflect actual coverage in ’03 for short leads.
  – Overall, coverage of 6-h forecasts are less than actual coverage.
  – Probability attribute in ’03 is somewhat better at 2-h lead indicating confidence in meeting forecast coverage.

• New verification methods show promise for maintaining forecast attributes and providing a measure of skill that is meaningful to the user.
Summary

- The consistency index shows promise for providing a measure of forecast consistency. This method will be tested over the next few months.
- Monthly report describing quality of forecast will be provided by end of month.