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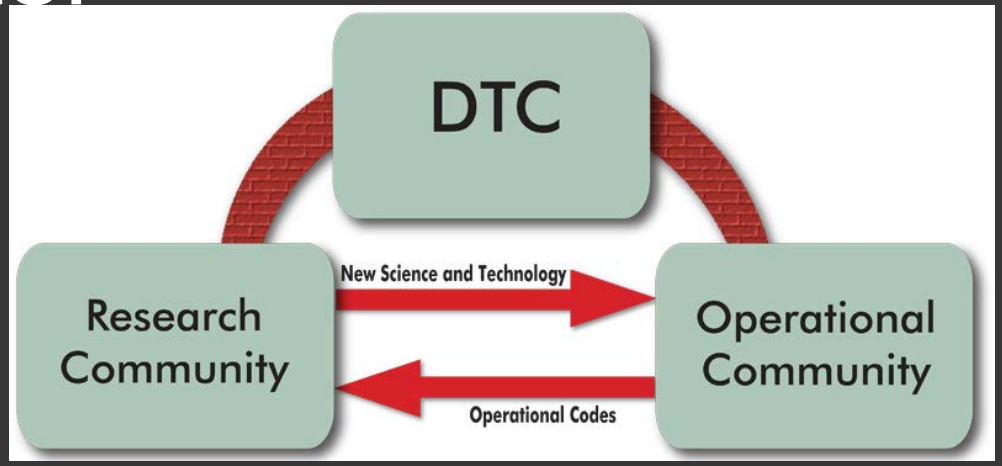
THE MISE EN PLACE OF NWP VERIFICATION

Developmental Testbed Center

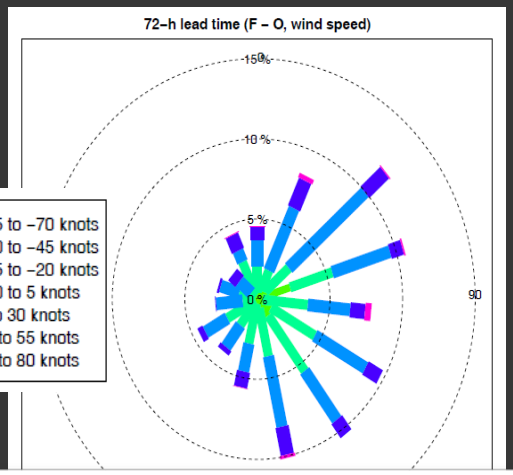


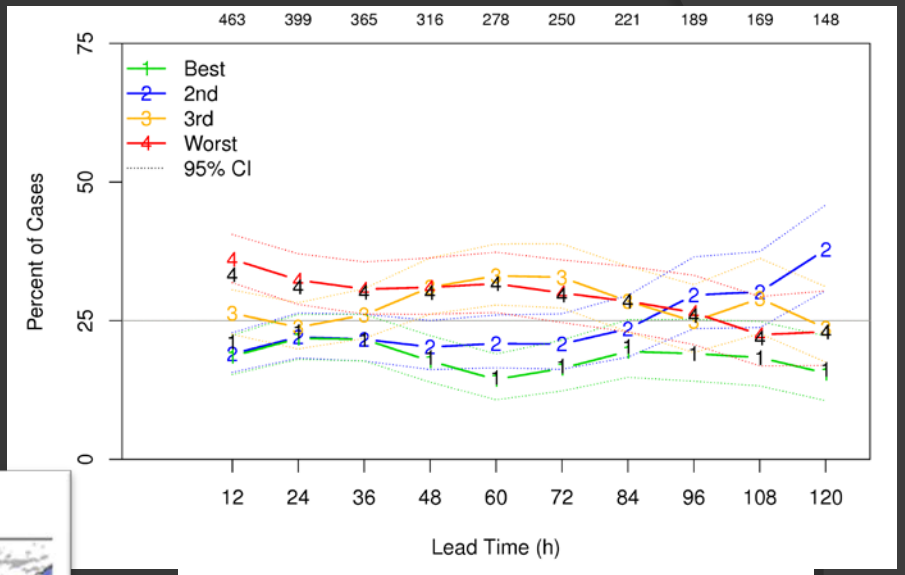
- A distributed facility for *testing* and *evaluating* new models and techniques.
- Goal of transitioning Research to Operations.

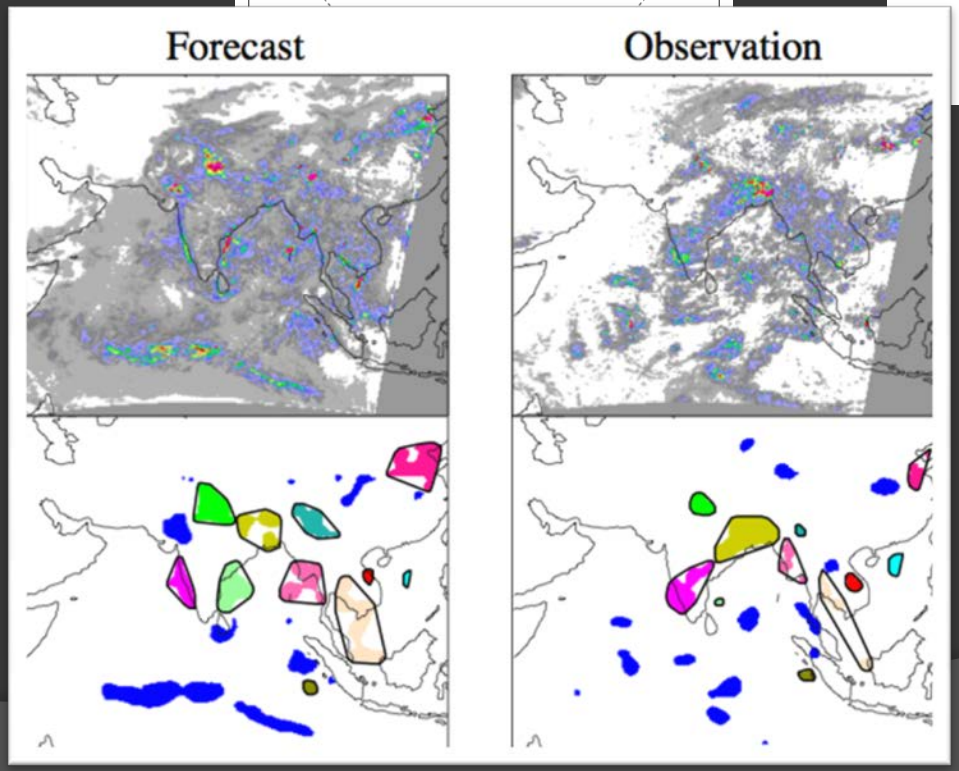
How does the DTC do it?

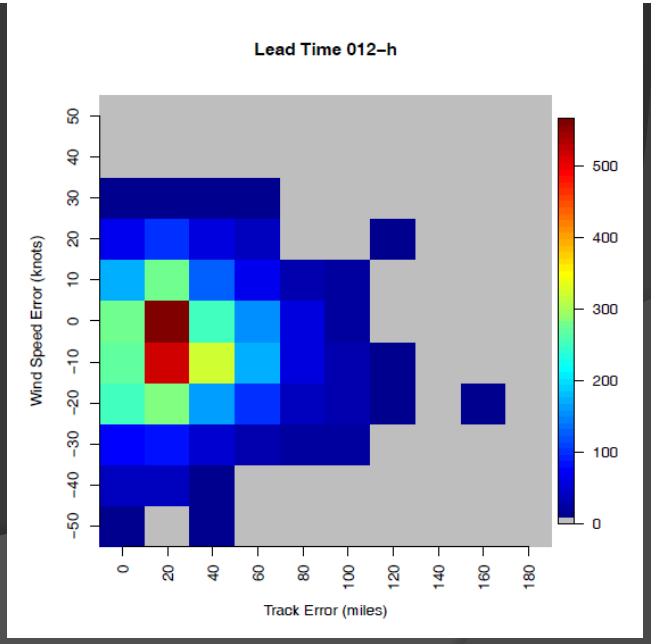
- Comprehensive testing and evaluation of NWP ‘upgrades’.
  - Reference configurations
  - Physics packages.
  - New model versions.
- Publish summaries and make details available via web.
- Develop relevant verification metrics.
- Provide community software with support.
  - Verification
  - Post processing
  - Data assimilation
- Visitor program.

Examples of advanced verification metrics









MET software

- Similar to WRF, but for verification
- Free
- Supported
- Downloadable
- Documented

- A plethora of verification capabilities
  - Traditional
  - Height series
  - Ensemble
  - Spatial
  - Wavelets

Verification of NWP forecasts

- Process of comparing NWP forecasts to observations to:
  - Determine if improvements have been made.
  - Provide knowledge about biases and errors to forecast users.
  - Identify shortcomings and potential improvement areas.

Mise En Place - Everything in Place

Getting tools and ingredients together is often most complicated but least interesting part of verification.

- Identify and procure data
- Check quality
- Alter format
- Match in space and time
- Identify verification methods
- Choose or create software

Often at the end, the sadness

So much

time and money

have been spent on data acquisition, staging, processing . . .

Resources for actual analysis and write up very limited.

La Dolorosa

- Earthcube could be a fantastic resource for verification.
- By leveraging knowledge and resources, e.g. taking care of the mise en place, more science and evaluation can be accomplished.

- ***Coupled Model Intercomparison Project (***CMIP) provides a community-based infrastructure in support of climate model diagnosis, validation, intercomparison, documentation and data access.
- Encourage participants to include verification and intercomparison as an essential part of Earthcube's mission.
- Consider a partnership with DTC for transitioning research to operations.

Conclusions

- Gathering, staging and quality controlling forecasts and observations paves the way for NWP verification.
- Meaningful verification with reproducible results is essential for advancement of NWP science, requires a common set of tools and methods.
- A centralized effort would be more a efficient and effective way to advance the science of NWP.
- More verification might get done, Yay!