Spatial forecast verification inter-comparison project (ICP)

Eric Gilleland[1, †]

Barb Brown[1], *et al.*

[1]Research Applications Laboratory,
National Center for Atmospheric Research

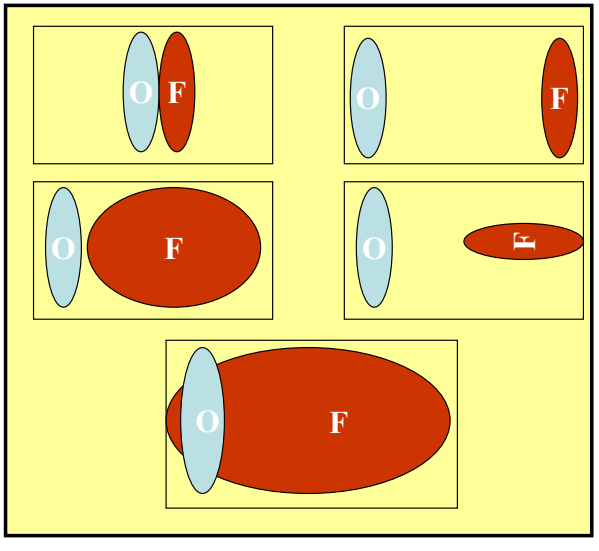
[†]ericg "at" ucar "point" edu

Outline

- Motivation and Goals
- Data Cases
- Questions
- Miscellaneous information on ICP

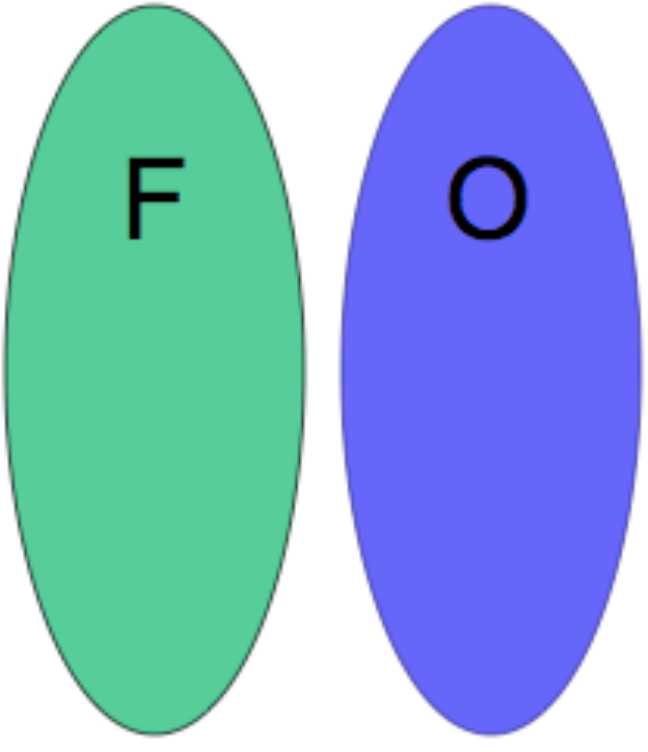
Motivation and Goals

Example

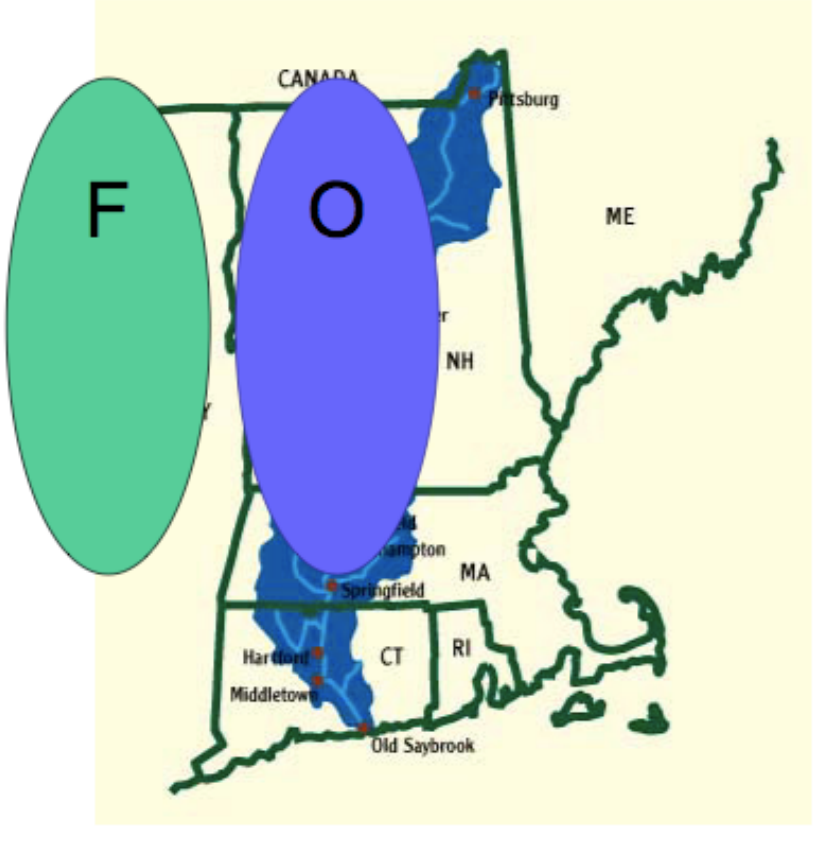


- First four forecasts have POD=0; FAR=1; CSI=0
  - i.e., all are equally "BAD"
- Fifth forecast has POD>0, FAR<1, CSI>1
- Traditional verification approach identifies "worst" forecast as the "best"

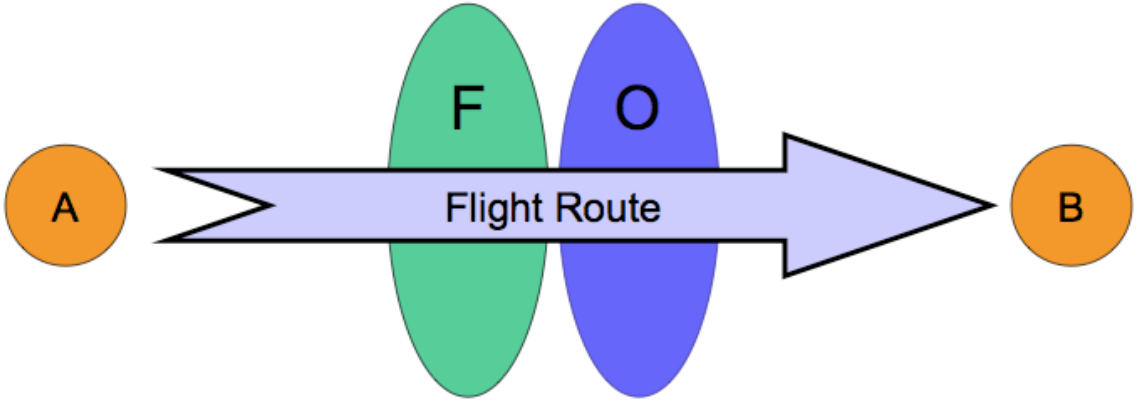
What makes a good forecast?



Motivation and Goals



Motivation and Goals



Motivation and Goals

Ultimate Goal: Set of guidelines for users

Challenges

- Comparing wide variety of methods each yielding different types of information.
- Difficult to determine truth even for a human (subjective) observer.
- Multiple types of possible errors (displacement, intensity, coverage, etc.).
- User-dependent requirements.

Approach: Various data cases and questions to answer

- Various real cases.
- Known perturbations of one or more real cases (i.e., known errors).
- Simple and contrived cases.

Data Cases: Real Data

First Set

Storm Prediction Center (SPC) Spring 2005 Program Precipitation.

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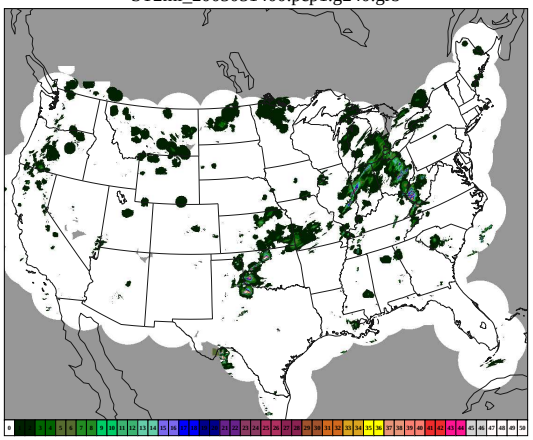

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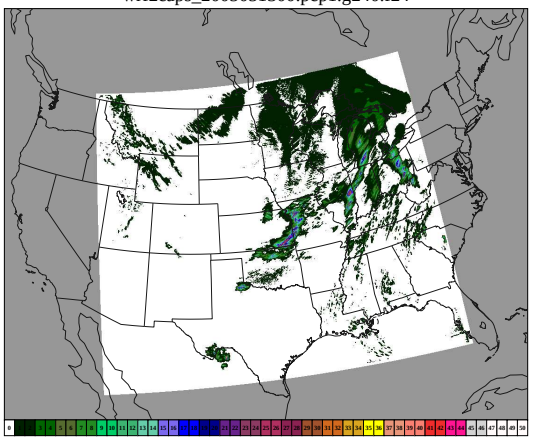

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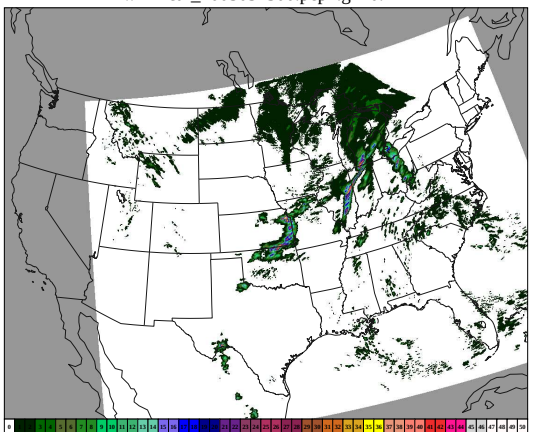

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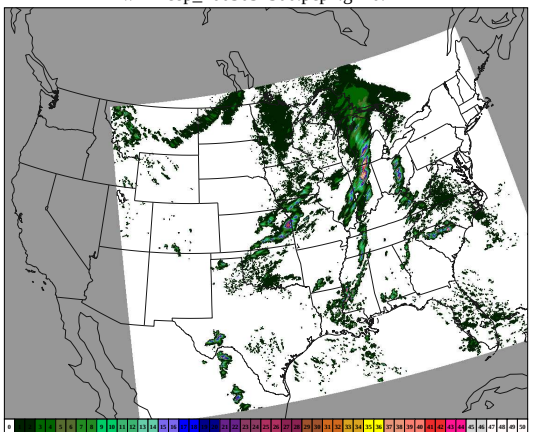

Data Cases: Real Data

- 9 cases hand-selected.
- 1-h precipitation accumulations.
- 501×601 grid.
- $\approx$ 4-km grid squares.

Data Cases: Real Data *Questions*

Questions to answer/Information to glean

- How does each method compare with subjective assessments?
- What is the most important aspect of forecast quality for each method?
- Information on scales that are appropriate.
- Clarification on how the forecast fails.
- Easily interpretable results?
- How to better use the forecast.
- Are there meteorological situations that one method is better equipped to handle?
- ...

Known errors

Perturbed real cases and simple contrived cases

- How sensitive is each method to particular types of errors?
- Can the forecast be *hedged* to obtain a better score?
- How does each method inform the user about various types of errors?

Miscellaneous information on IPC

- All are welcome to participate in IPC. Just email me (ericg " at " ucar " point " edu).
- Planning meeting February 20, 2007 at NCAR's Foothills Lab in Boulder, Colorado.

Numerous participants already working. Major methods such as:

1. Fuzzy logic approaches.
2. Features-based and object-oriented approaches.
3. Image comparison metrics.
4. Subjective.