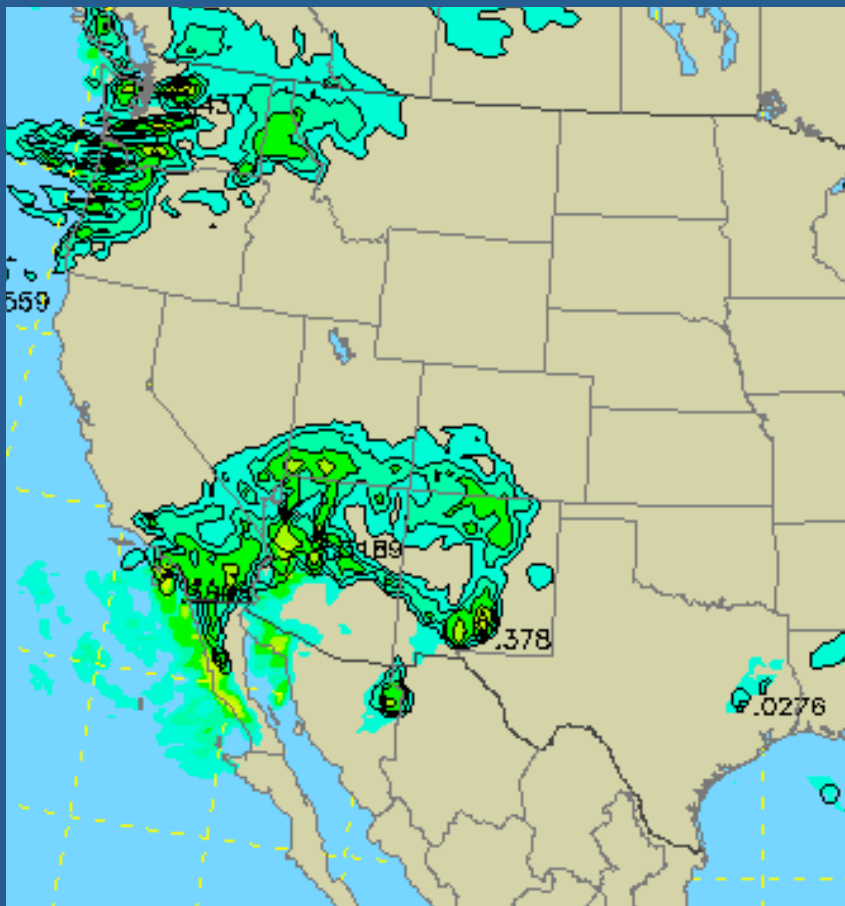


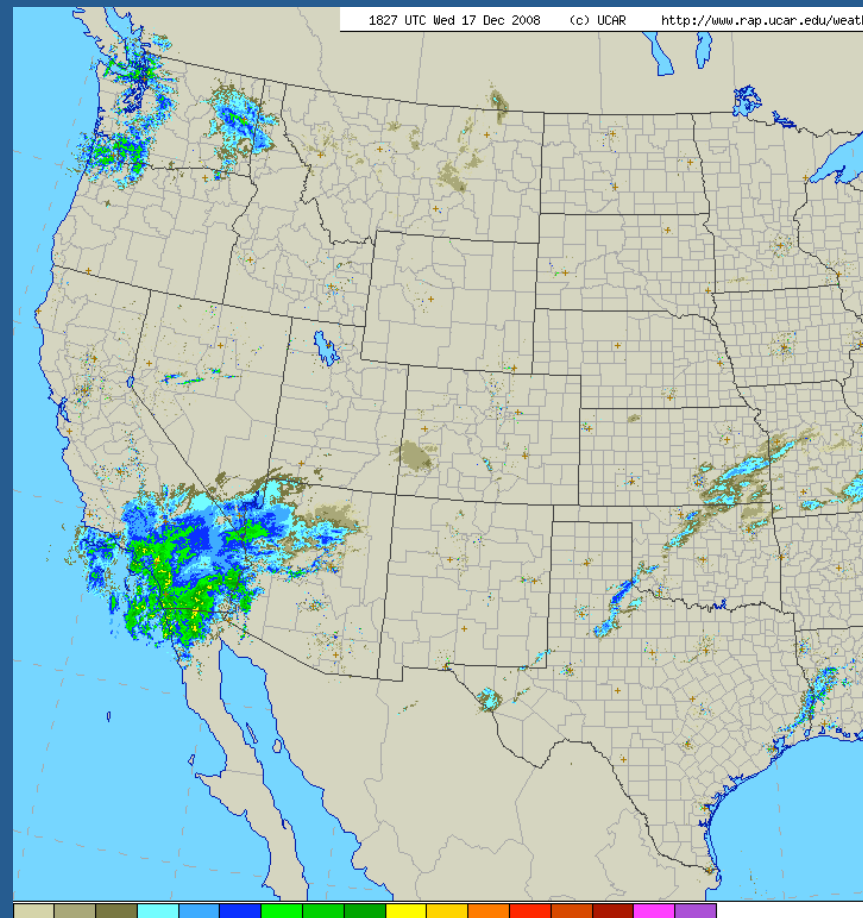
Why Use Objects?

Tressa L. Fowler

Typical situation



Forecast



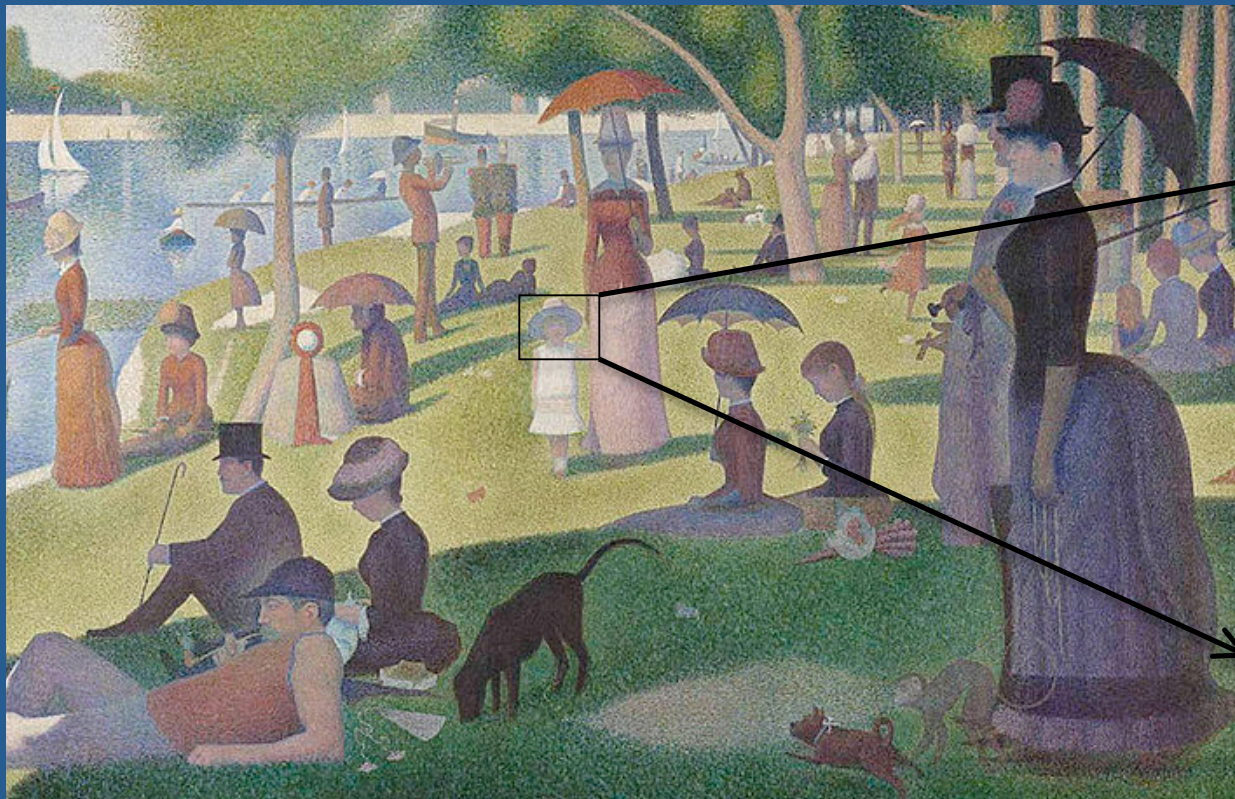
Observation

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Traditional verification matches up points,
then sums them up.

Many forecasts are more than the sums of
their parts.

Pixels or Pictures?



Object verification
is more like what
humans
do.

Objects recognize
the spatial relationship
between points.

Simple example

Observed

Forecast

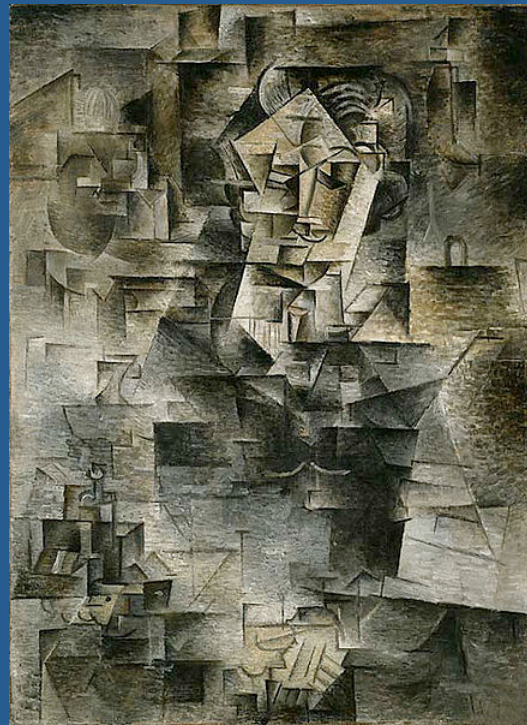
Shifted

Totally
wrong

REAL - observed



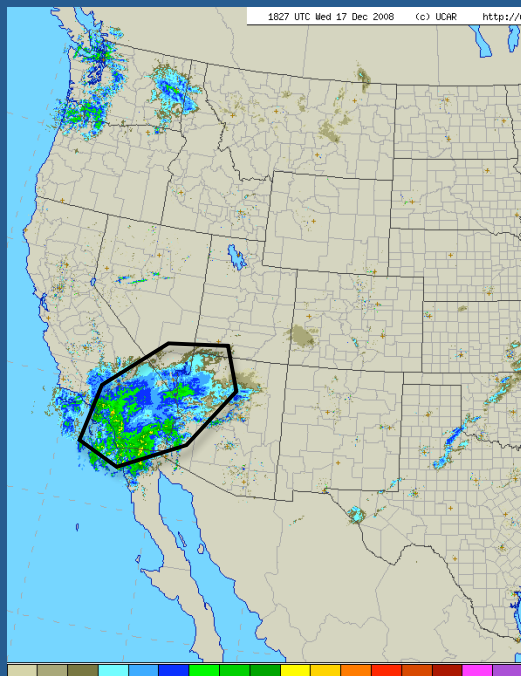
Forecast 1 –
Distorted view of reality



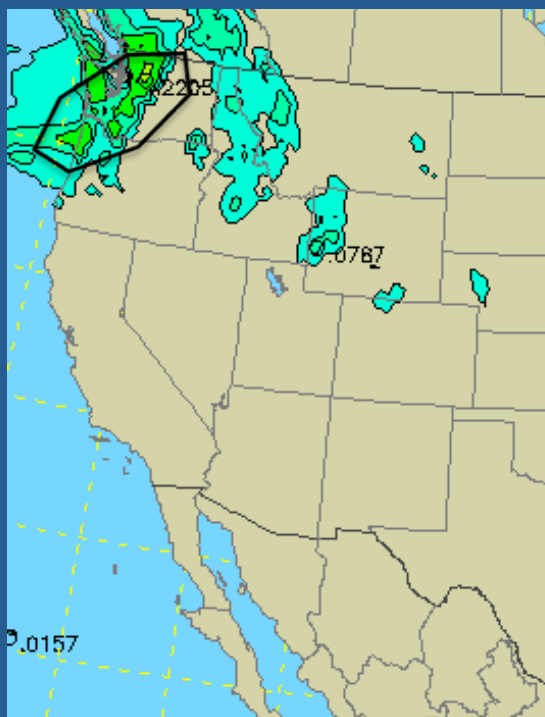
Forecast 2 –
Another
distorted view of
reality



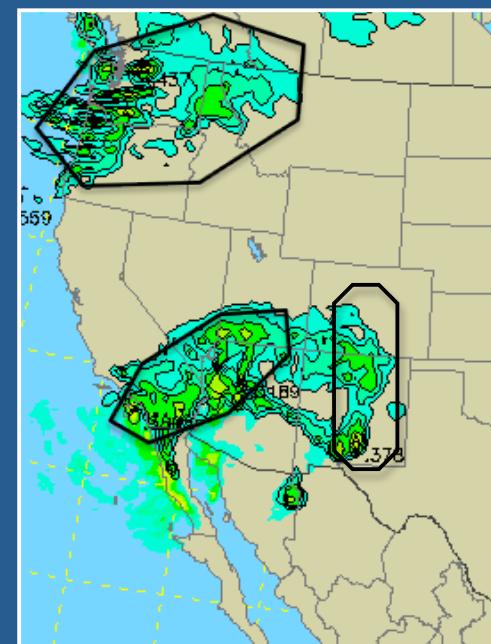
REAL - observed



Forecast 1 – Distorted view of reality



Forecast 2 – Another distorted view of reality



This is not really a new idea . . .

Analytic cubists "analyzed" natural forms
and reduced the forms into basic
geometric parts on the two-dimensional
picture plane.

Analytic cubism was developed between
1908 and 1912 . . .

Comparing objects can tell you things about your forecast like . . .

This:

30% Too Big

Shifted west 1 km

Rotated 15°


Peak Rain 1/2" too much

Instead of this:

POD = 0.35

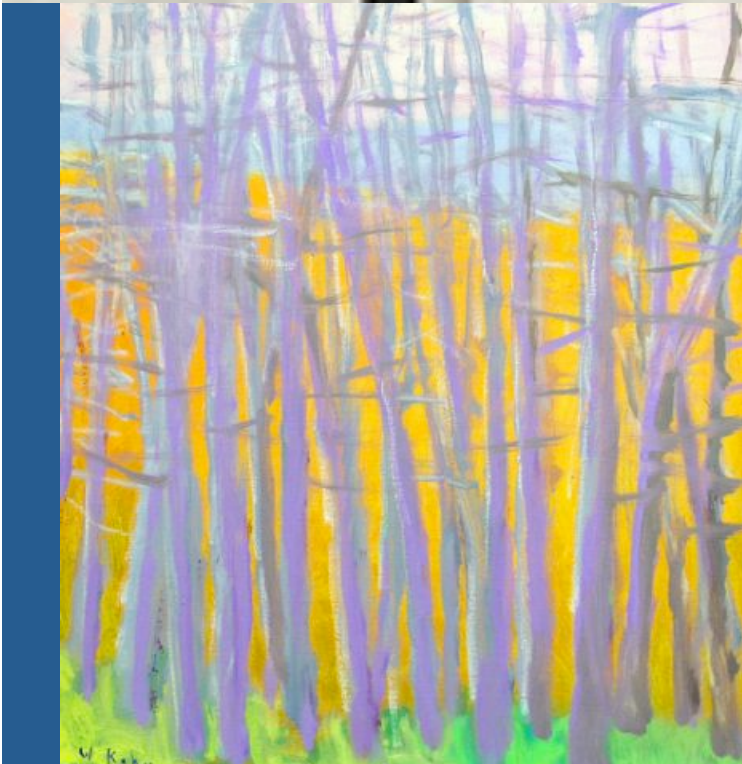
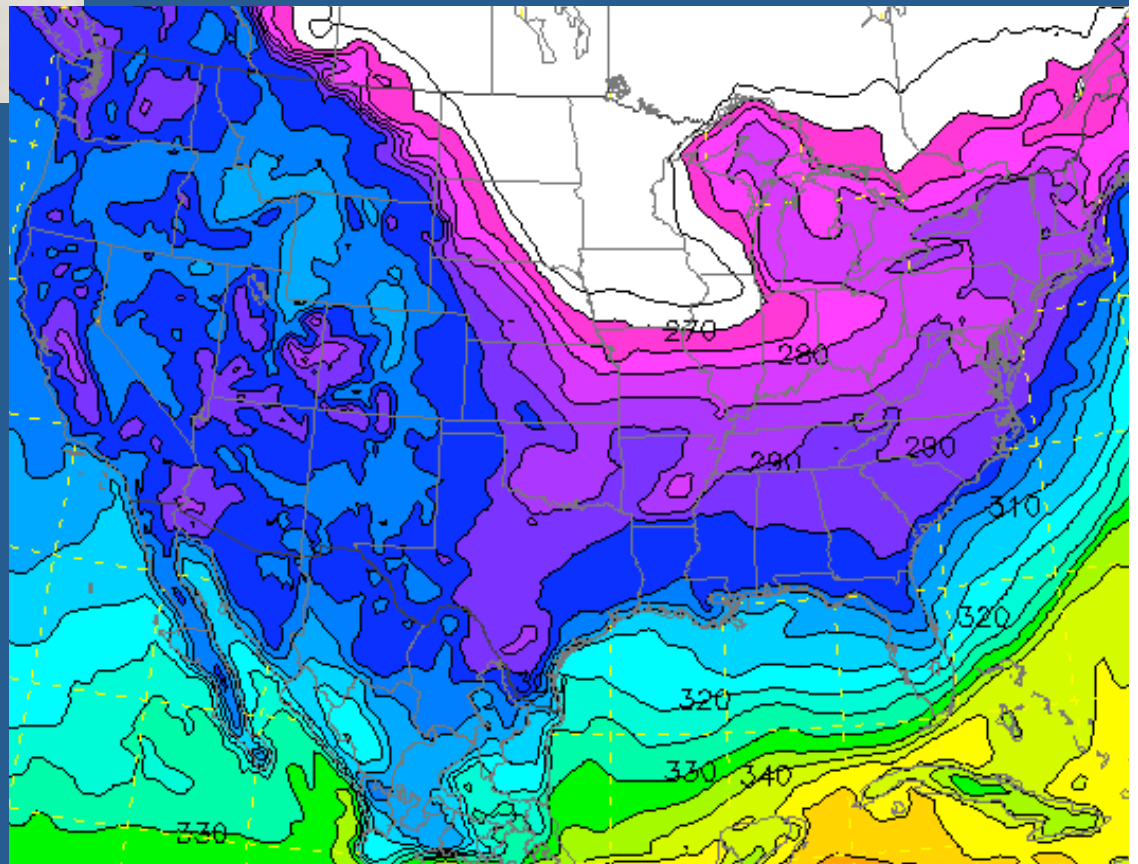
FAR = 0.7235

CSI = 0.1587



Verifying with
objects doesn't
always make sense

...



- In MET, object based verification is done using the MODE (Method for Object-Based Diagnostic Evaluation) tool.
 - Define objects
 - Compute attributes (e.g. area, centroid, axis angle, intensity)
 - Merge objects (e.g. thunderstorm cells merge into line)
 - Match forecast and observed objects
 - Compare attributes between matches
 - Output summary statistics

Now that you want to use objects to verify
your forecasts,

here's Randy to tell you how to use
MODE.