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New Capability For Forecast Verification

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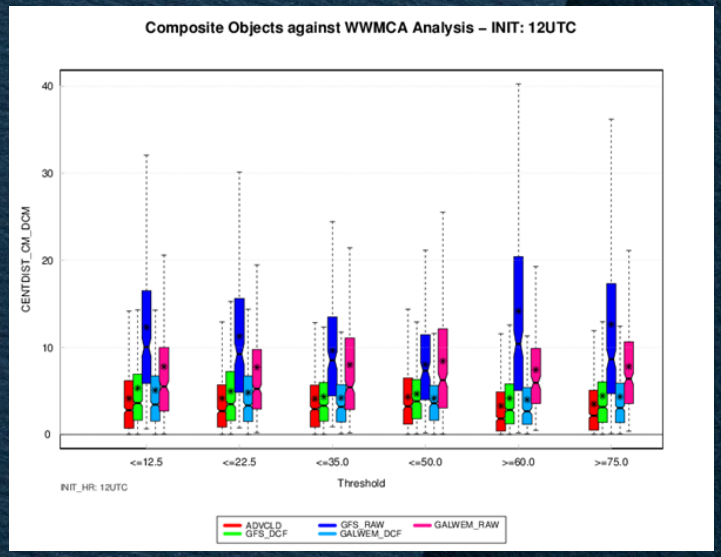

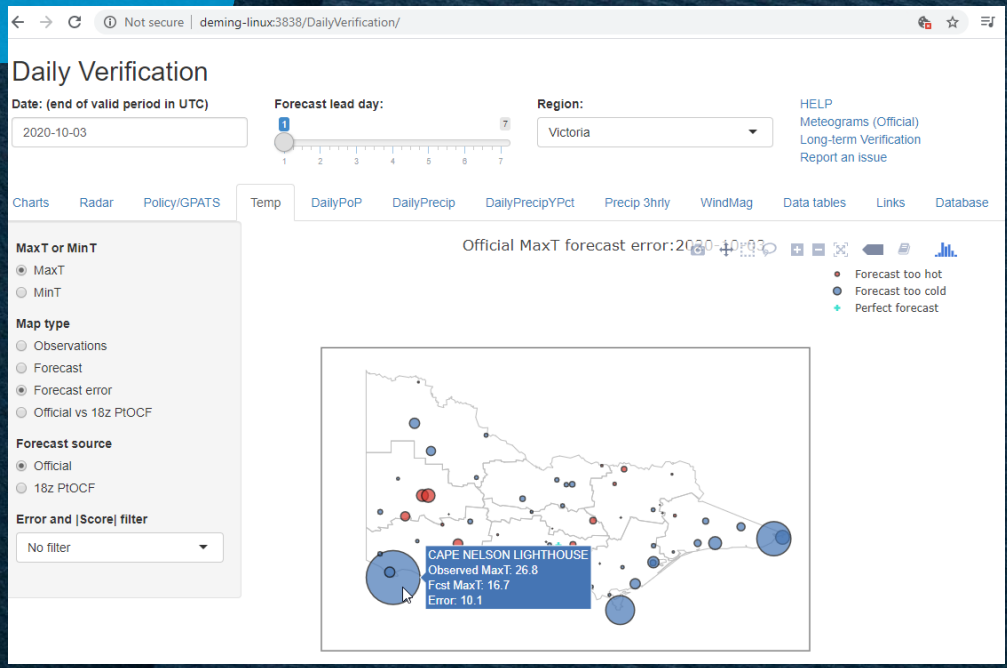

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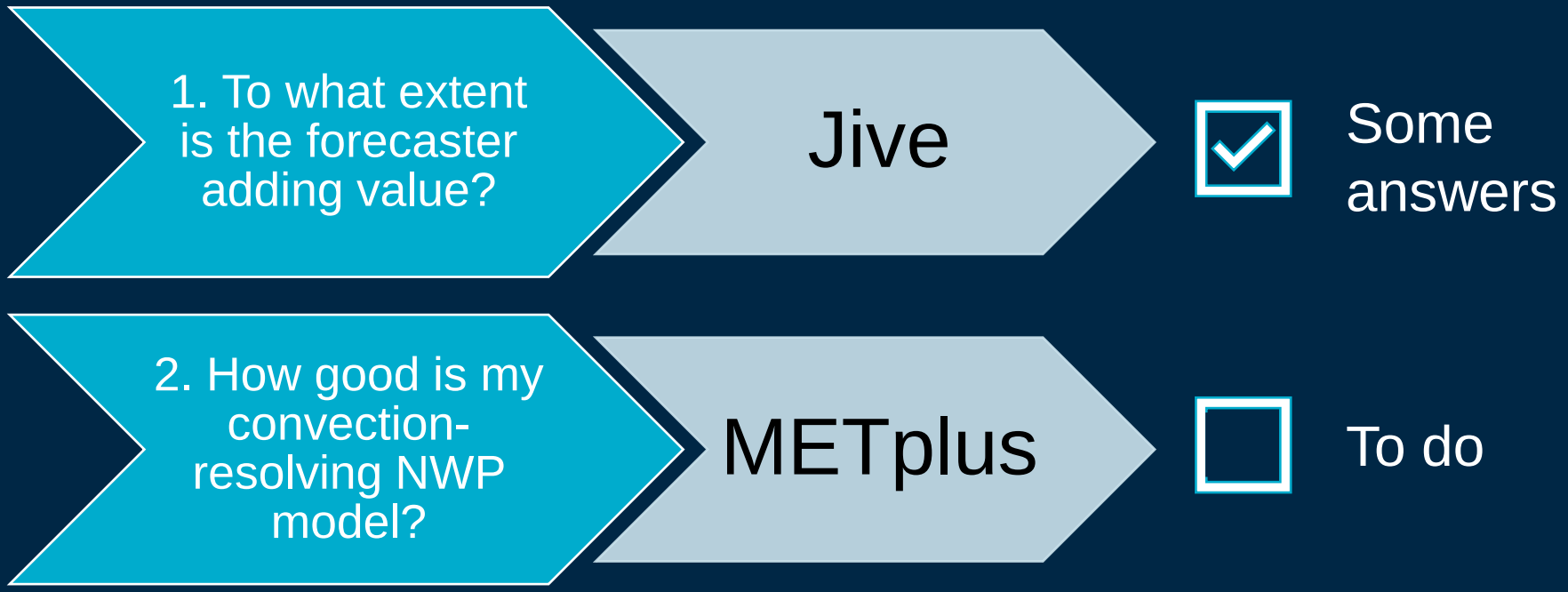
Questions For Which We Needed New Capability



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Problem: Lack of Tools and Data

…also lack of *shared* tools

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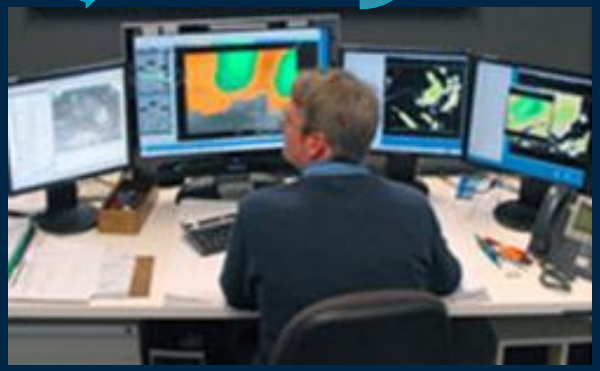
Question 1 – To what extent is the forecaster adding value?

manual edits



GFE

LESS

automated edits

GFE

MORE

Changing meteorologist roles

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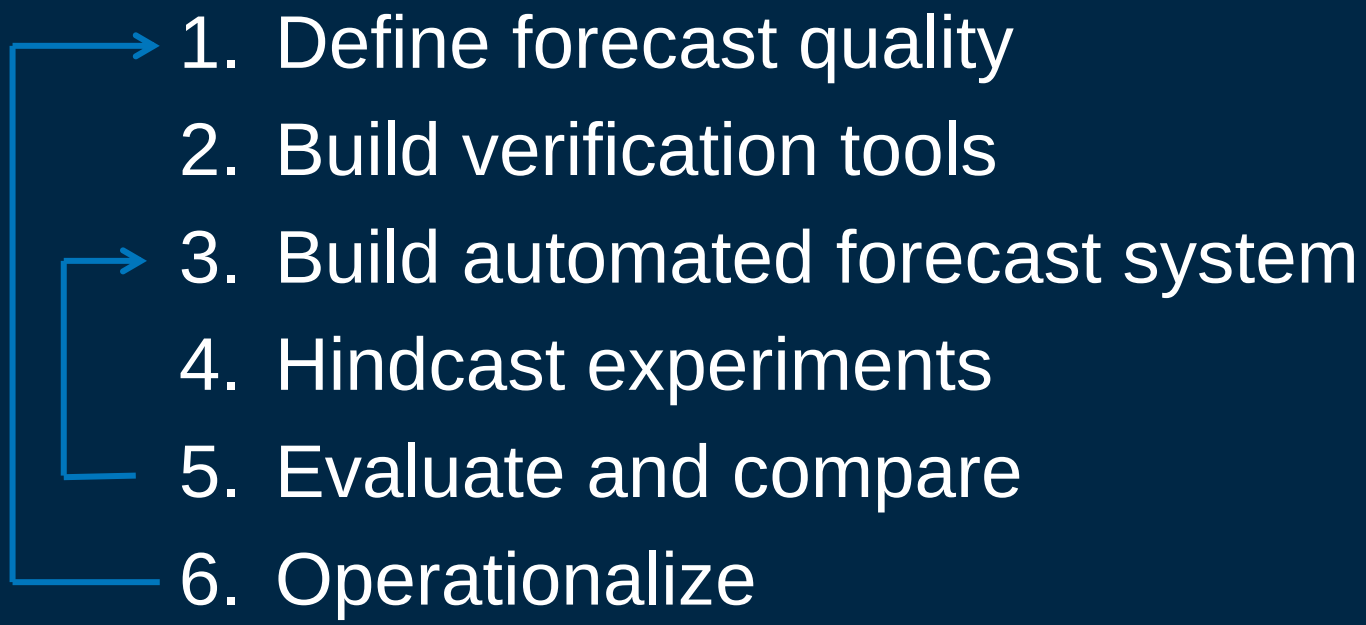
Verification+Automation Incremental Improvement



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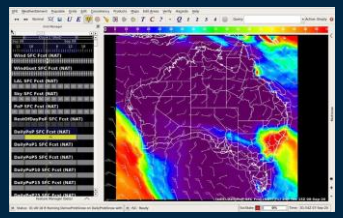
Jive Interactive Verification Environment

GFE forecasts
- Official
- Automated
- NWP
- OCF
- Hindcast experiments



Competitor forecasts

ADAM database
- AWS data
- Lightning data
- Buoy data (coming soon)

JIVE python library

JIVE Database

Quality Control

Derived parameters

Jupyter Notebook Server

Dashboards

Individual workstations or servers

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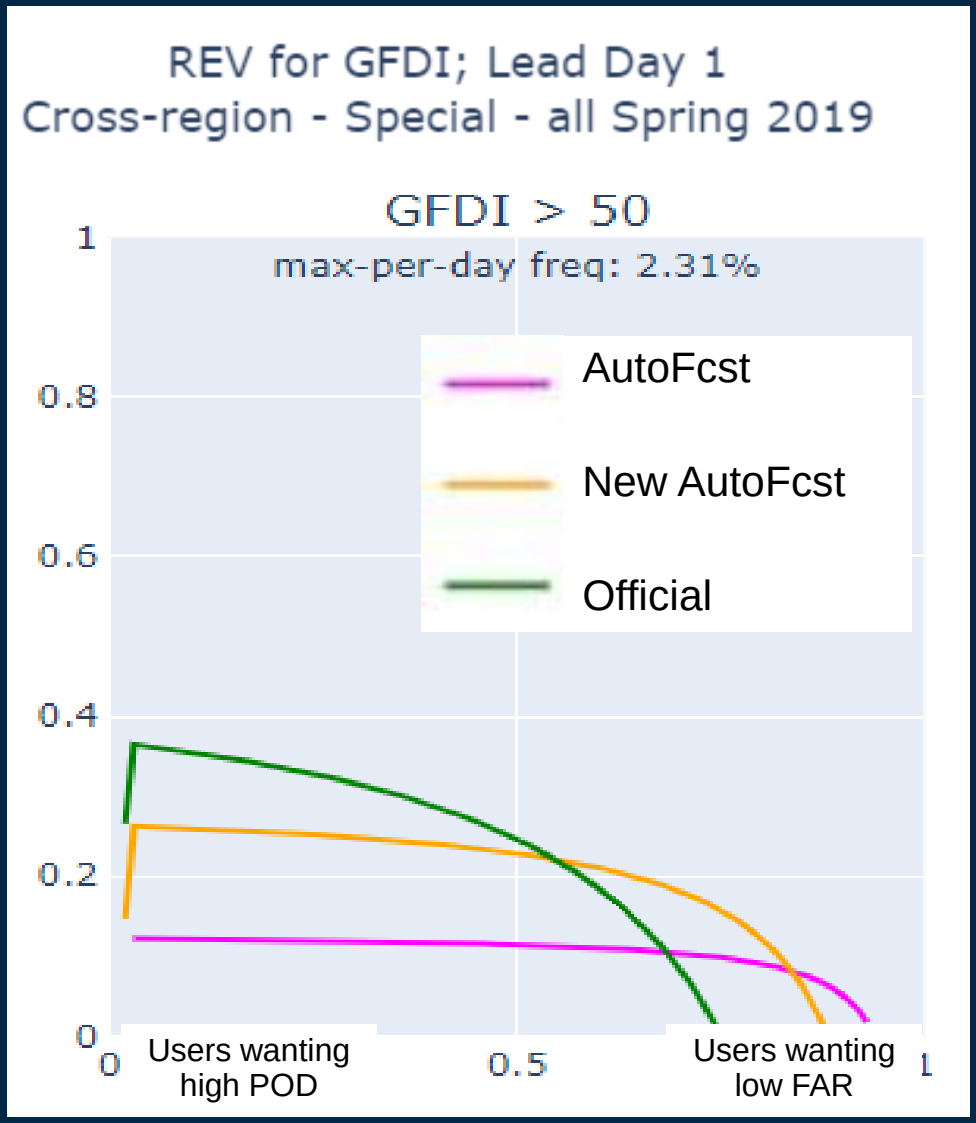
Benefits

- Informed improvements to post-processed forecast guidance
- Informed improvements to GFE tools and automated forecast
- Promoted changing forecast culture and practices
- Informed Standard Operating Procedures
- Forecasters can get feedback on their forecasts
- Has provided a contemporary framework for KPI generation

more value



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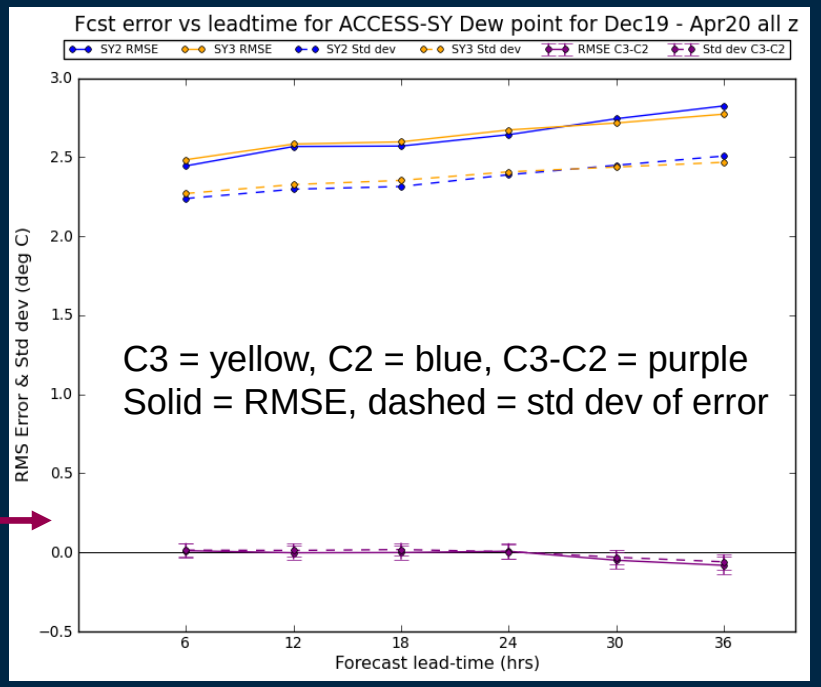
Question 2 – How good is my convection-resolving NWP model?

C2 & C3 verification performed for Dec, Mar, Apr for all six domains.

Domain	2m temp		2m dew point temp		10m wind speed		Precip amounts	
	Bias	Acc	Bias	Acc	Bias	Acc	Bias	Acc
AD								
BN								
DN								
PH								
SY								
VT								



	= C3 win
	= C2 win
	= Evens

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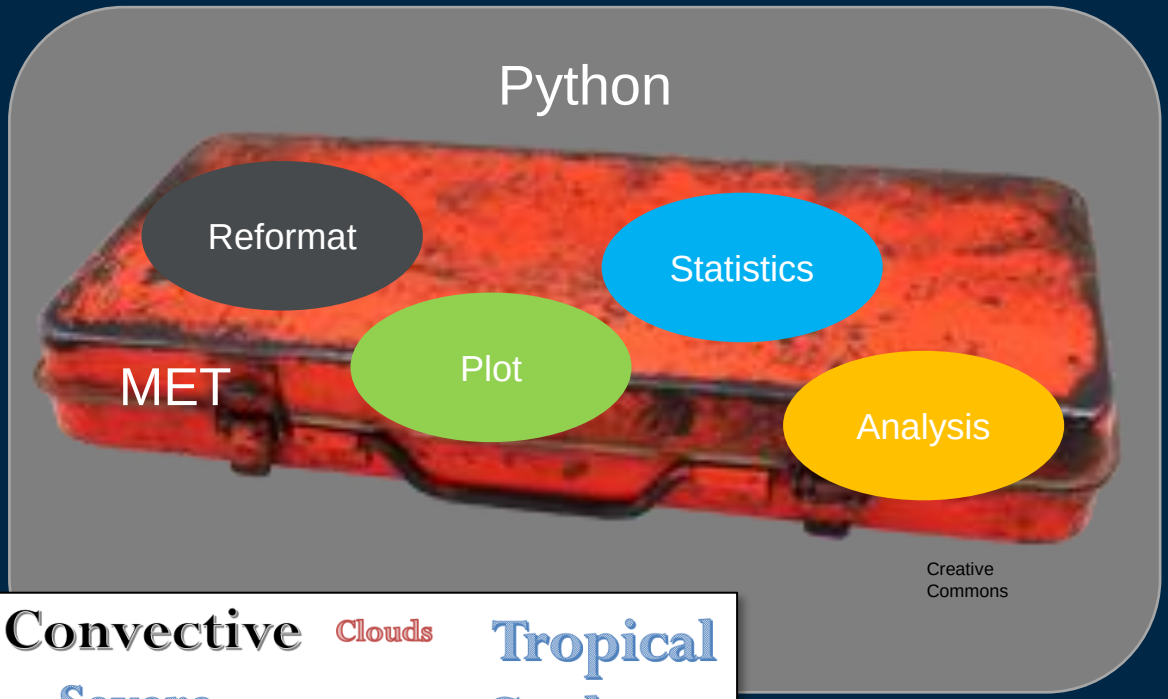
MET = Model Evaluation Tools

METplus = MET + Python

- Development Testbed Center (DTC), since 2008
- "A state-of-the-art suite verification package for the NWP community"
- Modular
- Gridded forecasts & gridded or point obs
- Mainly C/C++
- Python wrappers around MET to simplify use
- And more e.g. database & display systems
- Freely available
- 3500+ users including UK MetOffice



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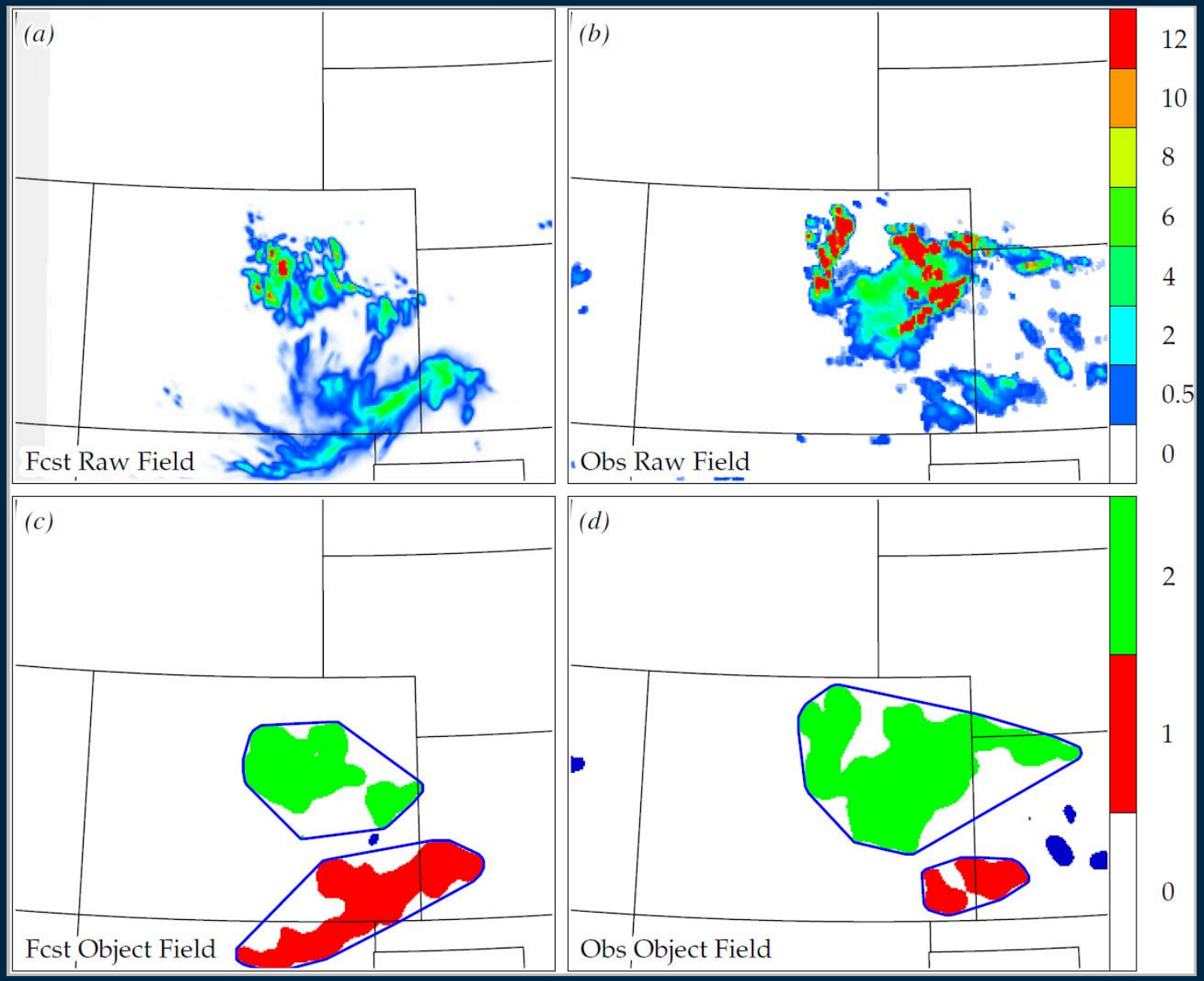
Spatial Verification - Precipitation



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Complimentary Systems

	Jive	METplus
Python enabled	Yes	Yes
Observation quality control (basic)	Yes	No
GFE hindcast experiments	Yes	No
Site forecast verification	Yes	No
Bespoke verification in web notebooks	Yes	No
Grid-based verification	Some	Yes
Spatial verification methods	No	Yes
TC track verification	No	Yes
Verification dashboards	Yes	Yes

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The Future

Public Services Transformation Program:

- **Jive**: expand and make it BoM supported system
- **METplus**: preliminary use e.g. NAS, "City" models

Forecast Quality System:
future BoM verification approach and investments

Weather analytics ecosystem including Jive and METplus