

COMET Verification Training

- ✓FY08: Introduction to Verification of Hydrologic Forecasts
- FY09: Techniques in Hydrologic Forecast Verification
- FY09-FY10: QPF Verification

Science Lead:

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Instructional Design:

Lon Goldstein

FY08 Subject Matter Experts:

*Julie DeMargne
Holly Hartmann
Kevin Werner*

Introduction to Verification of Hydrologic Forecasts

- Reviewed measures in each of 7 topic considered most important by the OHD team.
- Both Deterministic and Probabilistic
- No case studies

INTRODUCTION TO VERIFICATION OF HYDROLOGIC FORECASTS

Produced by The COMET® Program

Begin

MetEd Home
COMET Home

Pre-Assessment

Quiz

Survey

Contributors

Tech Notes

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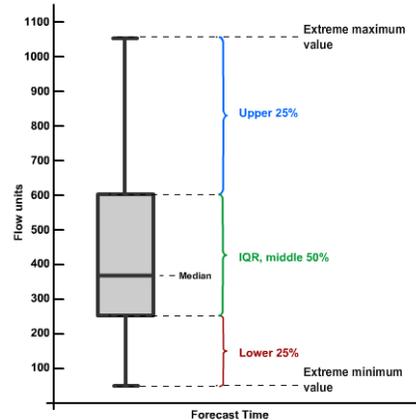
2 x 2 Contingency Table

		Event Observed		Total
		Yes	No	
Event Forecasted	Yes	a	b	a+b
	No	c	d	c+d
Total		a+c	b+d	a+b+c+d = n

a = Hits
b = False alarms
c = Misses
d = Correct negatives

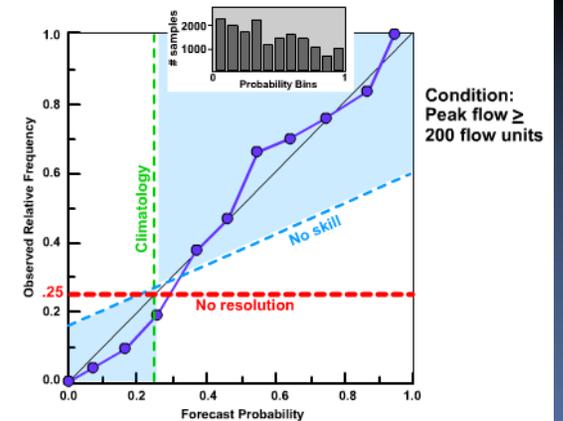
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Box and Whiskers Plot of River Flow Distribution



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Attributes Diagram



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Topics in module on *Introduction to Verification of Hydrologic Forecasts*

From OHD verification group

	Subtopic	Measures	Section
1.	Distribution	Mean, Variance, Standard Deviation, PDF, CDF, IQR, Rank Histogram	2
2.	Confidence	Sample Size , Confidence Interval	3
3.	Correlation	Scatter plots, Correlation Coefficient	4
4.	Categorical (contingency tables)	POD, FAR, POFD, Threat Score, Frequency Bias, Brier Score, RPS	5
5.	Accuracy (Error Stats)	MAE, RMSE, Additive Bias (ME), Volumetric Bias, Continuous RPS	6
6.	Skill	RMSE Skill Score, Brier Skill Score, RPSS	7
7.	Conditional (reliability and discrimination)	ROC, Reliability measures (including reliability diagram and attributes diagram), Discrimination measures	8

Review summary table

Techniques in Hydrologic Forecast Verification

OHD/COMET call in April 2008 to discuss module

- Can't start until FY09
- Apply FY08 module
- Case study reports (January 2009)
- 2 hrs, including time for questions and quiz

COMET does science training, not software training

- What are the objectives (think about what quiz questions people should answer)?
- IVP/EVS products can be used to express the scientific reasoning

Techniques in Hydrologic Forecast Verification

OUTLINE

- Part 1: What are the questions to answer? How do you phrase them to be more meaningful? What measures can be used?
- Part 2: Case studies. Looks at how case studies answer questions about flow and stage.
- Part 3: Summary and considerations. How might these be communicated?

Subject Matter Experts (SMEs)? (would like 2-3)

- Julie, Holly, Kevin, RFC person(s), other OHD, university

COMET Verification Training

- FY09: Techniques in Hydrologic Forecast Verification
 - Development/review this winter
 - Publish Spring 2009
- FY09-FY10: QPF Verification
 - Development in summer 2009
 - Review/Publish goes into FY2010
- FY09: Precip Estimates (QPE)
 - Under development, publish Spring 2009
- FY09: QPF virtual class
 - 22-25 June 2009

Techniques in Hydrologic Forecast Verification

Sections

- What questions?
- Hydro Case Studies
- Summary/Communicate

Objectives (Quiz questions)

-
-
-
-
-
-

Cases

-
-
-
-

SMEs