„Detective“ Miss Marple in „Murder at the Gallop“
Now, this is how we verify the forecasters at DWD: we watch them intensely and when they get it wrong, they'll get a bang over their head. OK, I'm slightly exaggerating and I will explain later what Detective Miss Marple has to do with warning verification.
Comparing peaches and apples

On the accuracy of gust warnings issued by forecasters and the accuracy of the model guidance

Martin Göber

Department Weather Forecasting
Deutscher Wetterdienst

Acknowledgements: R. Kirchner, T. Kratzsch, D. Richardson, G. Schweigert, S. Tremmel
Warnlage: Vor allem im Süden teils starke Gewitter.
Heidke skill score

- Blue: forecaster
- Red: Local model

- X-axis: Categories of storms (near gale, gale, storm, violent storm, hurricane force)
- Y-axis: Probability (p)
hit rate

- near gale
- gale
- storm
- violent storm
- hurrican force

Blue bar represents forecaster, red bar represents Local model.
false alarm ratio

- near gale
- gale
- storm
- violent storm
- hurrican force

Legend:
- forecaster
- Local model
relative value for C/L=0.1

- Forecast
- Local model

- near gale
- gale
- storm
- violent storm
- hurricane
relative value for C/L=0.01

- forecaster
- Local model

p

near gale  gale  storm  violent storm  hurricane
Signal Detection Theory
Deutscher Wetterdienst

3rd verification workshop, ECMWF 2007, Göber
Deutscher Wetterdienst

POD = 90%
FAR = 40%
ETS = 42%
Bias = 150%
Detective Miss Marple in "Murder at the Gallop"
Now, this is how we verify the forecasters at DWD: we watch them intensily and when they get it wrong, they'll get a bang over their head. OK, I'm slightly exaggerating and I will explain later what Detective Miss Marple has to do with warning verification.

mgoeber, 03/01/2007
Violent storm warning: gusts $\geq 29$ m/s
Violent storm warning: gusts $\geq 29$ m/s

- **Correct NO**
- **Missed**
- **False Alarm**
- **Hit**

Model at “face value”
Violent storm warning: gusts $\geq 29$ m/s
Violent storm warning: gusts $\geq 29$ m/s

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- hit rate
- false alarm ratio
- Bias
- Heidke skill score

Threshold in m/s

Hit rate

False alarm ratio

Bias

Heidke skill score

3rd verification workshop, ECMWF 2007, Göber
Re-labeling
„model bias = forecaster bias“

model in m/s  ---->  „model gust interpretation for warnings“

13  ---->  14  (near gale)
16  ---->  18  (gale)
22  ---->  25  (storm)
25  ---->  29  (violent storm)
30  ---->  33  (hurricane force)

Verification of heavily biased model? Quite similar to forecaster!
Relative Operating Characteristics (ROC)

- Larger model values = underforecasting
- Smaller model values = overforecasting
- Model: near gale (>14m/s)
- Forecaster: near gale (>14m/s)
- No skill
model: violent storm
forecaster: violent storm
no skill
model: near gale (>14m/s)
forecaster: near gale

Face value
overforecasting
underforecasting

H
F
My conclusions

End user forecast verification: face value (incl. space-time point)

Guidance verification: measure potential of the guidance using Fuzzy, Object, ..., Signal detection Theory (ROC)