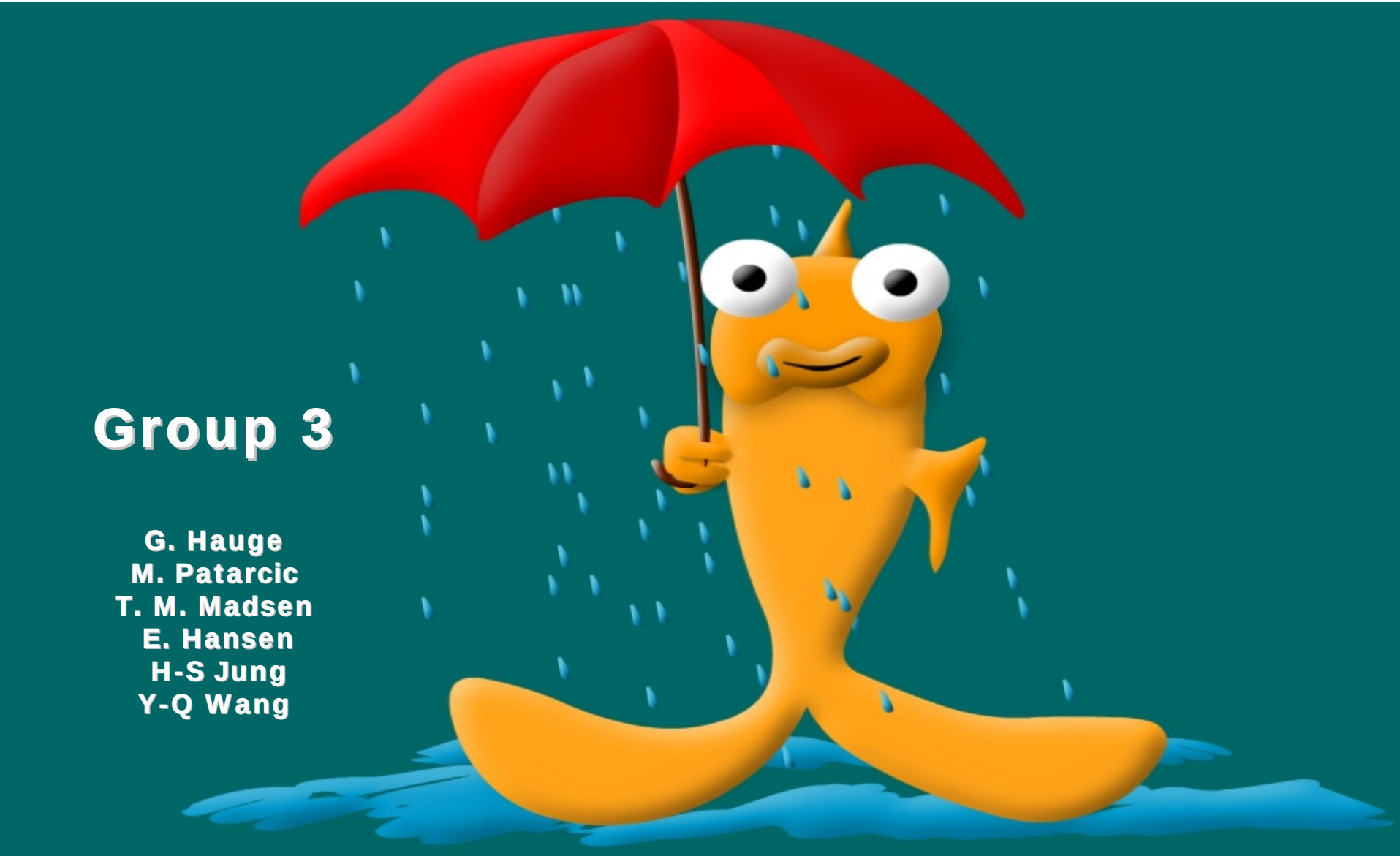
Skill of precipitation forecasts at Takle, Norway



Group 3

G. Hauge
M. Patarcic
T. M. Madsen
E. Hansen
H-S Jung
Y-Q Wang

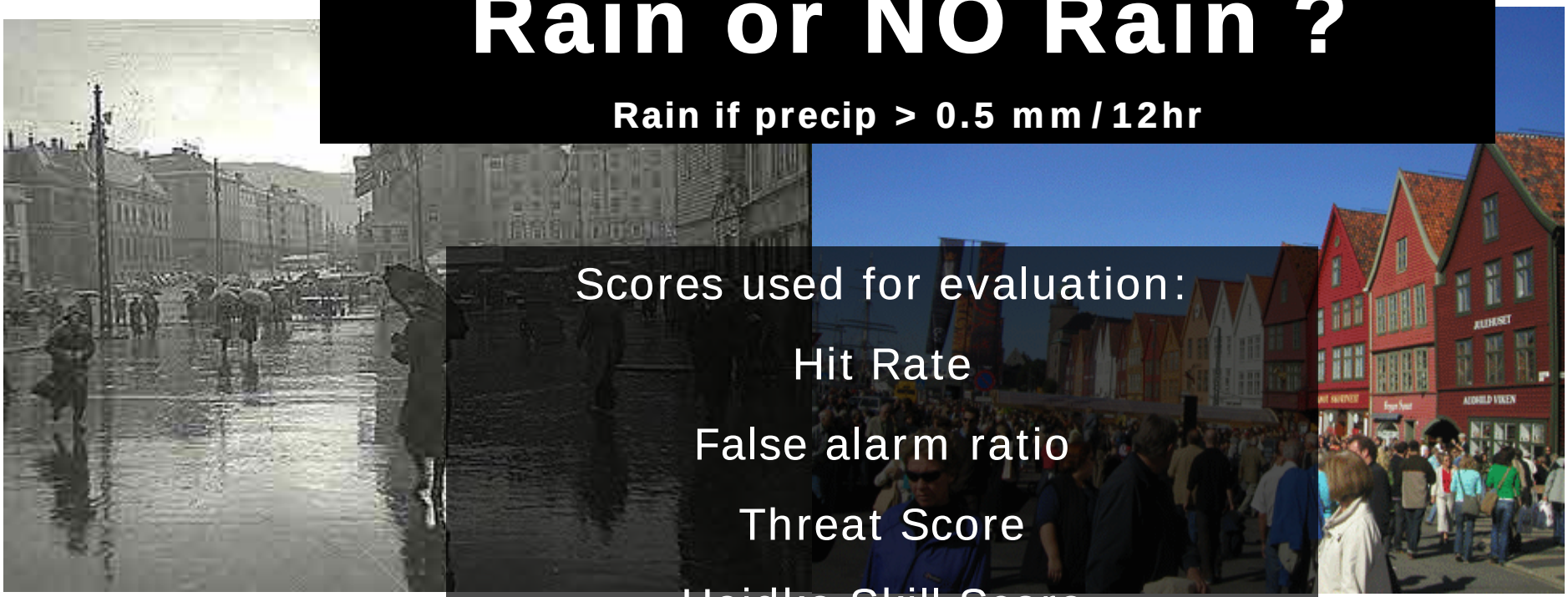
Dataset

- ✓ Dataset from May 2003 to January 2007
  - ✓ 12hr accumulated precipitation
- ✓ MM5 12km res at +18 and +42 hrs are evaluated
- ✓ Takle is one of the wettest places in Norway
  - ✓ approx 3500 mm/year !

What do we want to achieve with our verification?

- ✓ Categorical verification: Rain or not?
- ✓ Is the model over- or underforecasting?
- ✓ What is the overall skill of our forecasts?
- ✓ Is the skill decreasing with increasing forecast length?

Can we trust our forecasts?



Rain or NO Rain ?

Rain if precip > 0.5 mm / 12hr

Scores used for evaluation:

Hit Rate

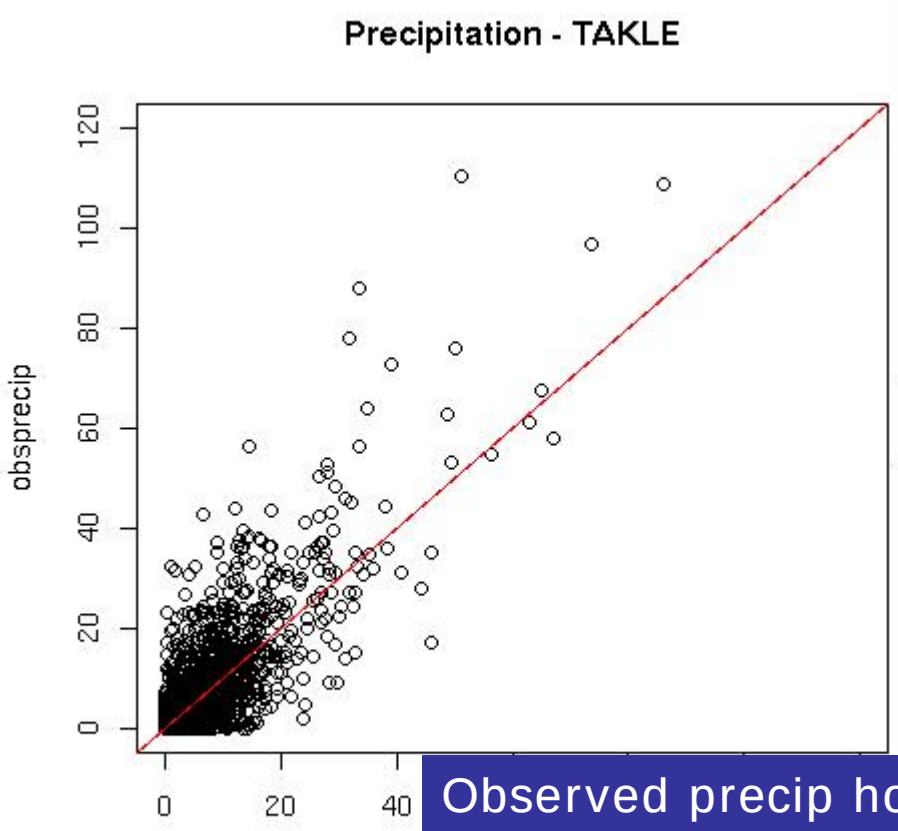
False alarm ratio

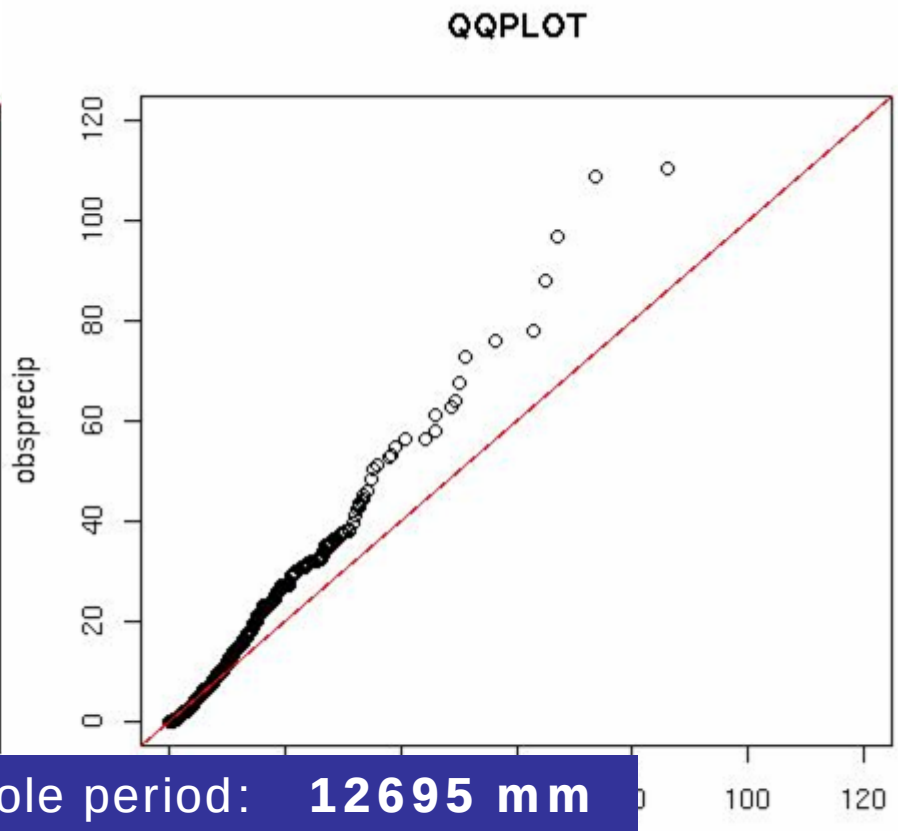
Threat Score

Heidke Skill Score

Frequency Bias Index

The 18 hour forecasts



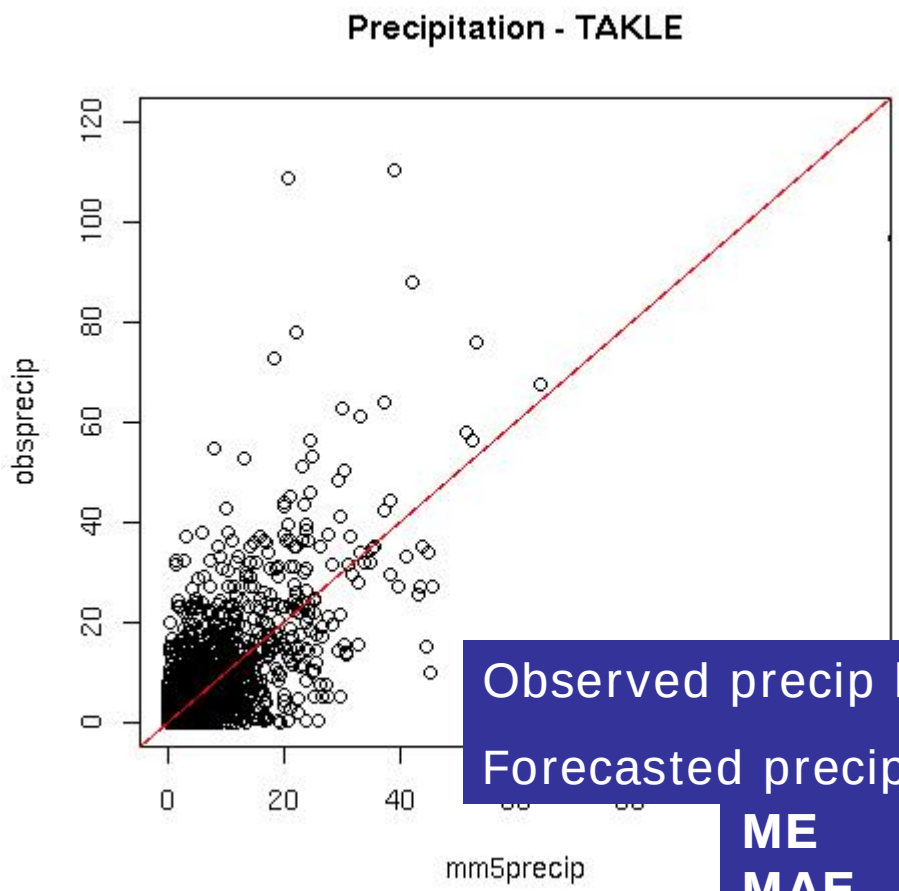


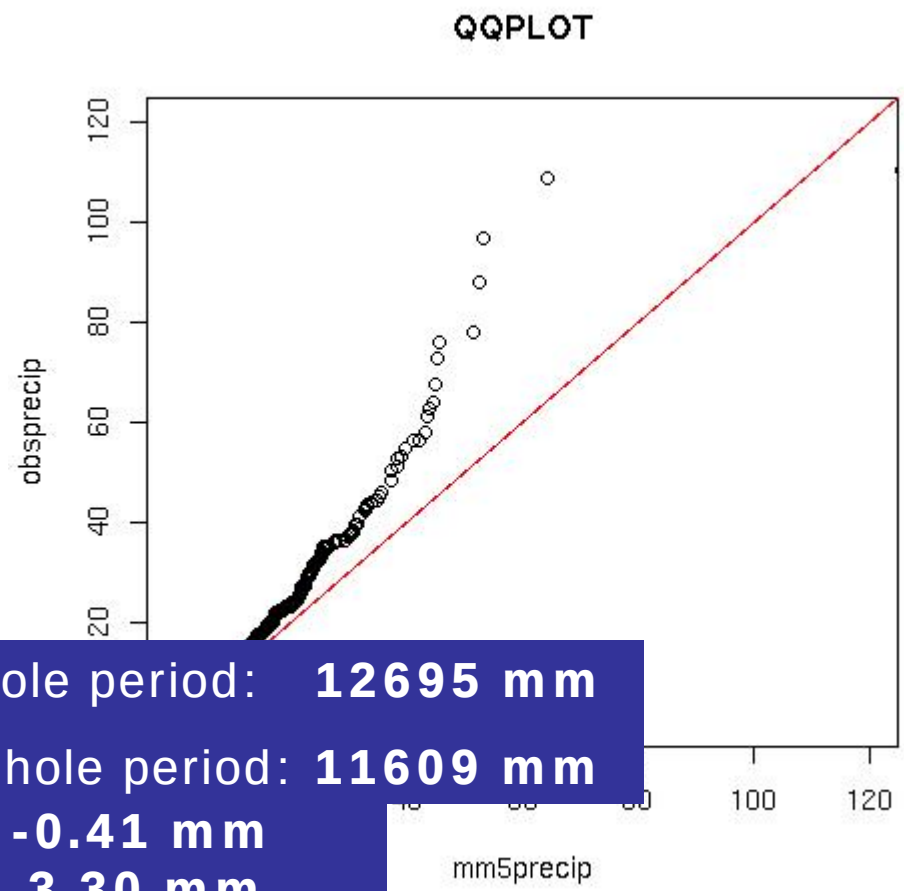
Observed precip hole period: **12695 mm**

Forecasted precip hole period: **11059 mm**

ME -0.64 mm
MAE 2.77 mm
RMSE 5.60 mm

42hr data





Observed precip hole period: **12695 mm**

Forecasted precip hole period: **11609 mm**

ME -0.41 mm
MAE 3.30 mm
RMSE 6.65 mm

Contingency table
precip > 0.5 mm/12hr

Fcst \ Obs	Yes	No	Fcst ∑
Yes	1116	322	1438
No	102	1016	1118
obs∑	1218	1338	2556

+ 18 hr fcst

Fcst \ Obs	Yes	No	Fcst ∑
Yes	1099	422	1521
No	120	915	1035
obs∑	1219	1337	2556

+ 42 hr fcst

Skill of forecasting rain?

Threshold = 0.5 mm	+ 18	+ 42
Frequency Bias index	1.18	1.29
Hit Rate	0.92	0.90
False Alarm Ratio	0.22	0.27
Threat Score	0.72	0.67
Heidke Skill Score	0.67	0.58

Conclusive Remarks

Rain or no rain?

- Good skill, but as expected worse forecasts at 42 hours
- Fine hit rate
- False alarm rate little too large

The FBI indicates that the MM5 predictions are

- Slightly overpredicting the rain events

Future improvements

Future improvements

Shorter time intervals to see if the model actually describes the events

Multicategorical verification for checking if there is a bias for the extremities