UNIVERSITY OF COPENHAGEN

Spatial patterns in distributed hydrological modeling

Towards a true spatial model evaluation

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Slide 1
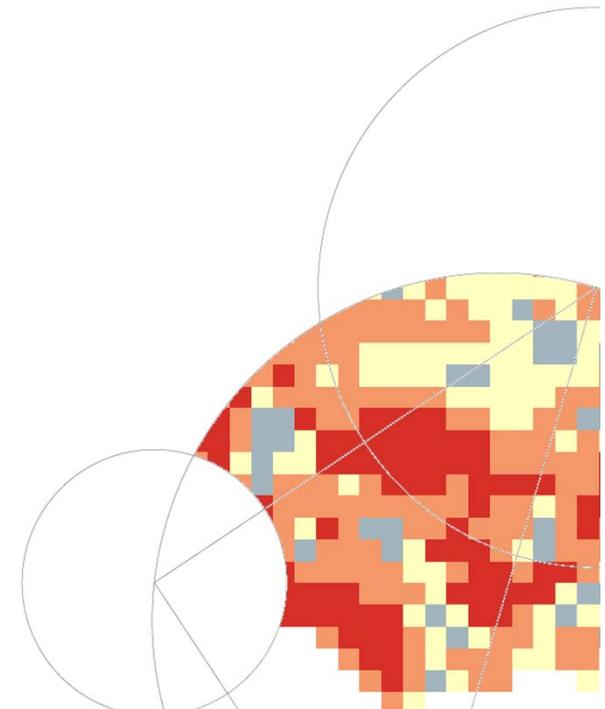
Content

Spatial model validation

- Introduction

- Benchmark spatial performance metrics

- Modeling case study

- Spatial model evaluation as diagnostic tool

Introduction

Aggregated model measures like e.g. Nash-Sutcliffe efficiency don't necessarily grant **right results for the right reasons**
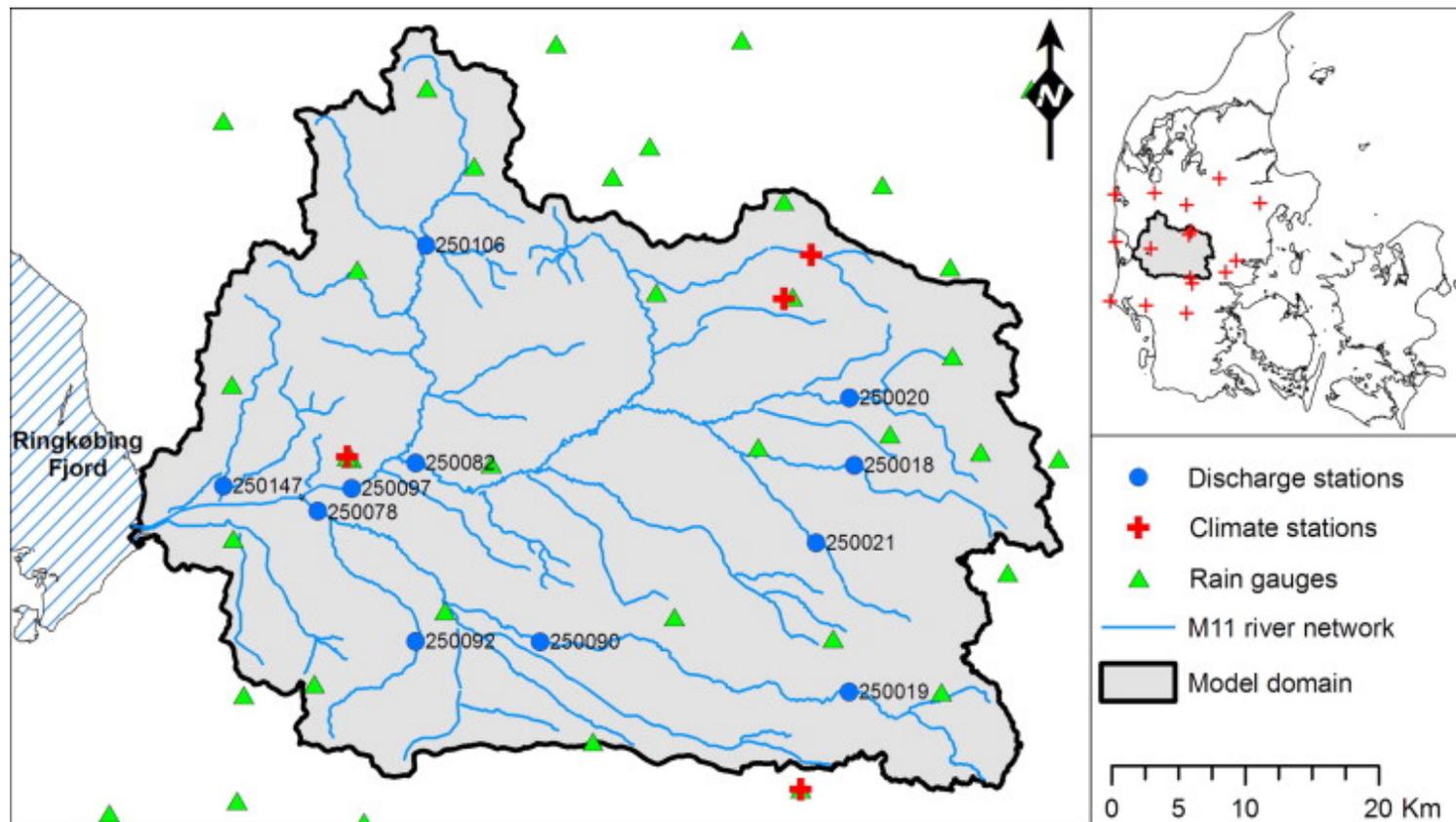
Introduction

Observed   May 2008   August 2008
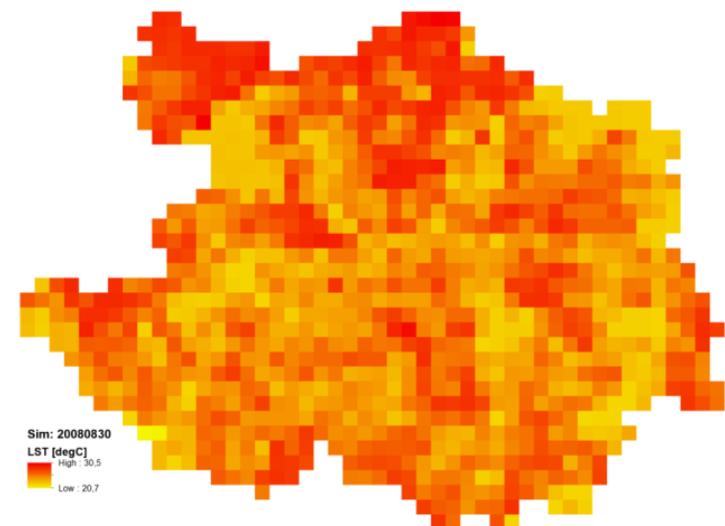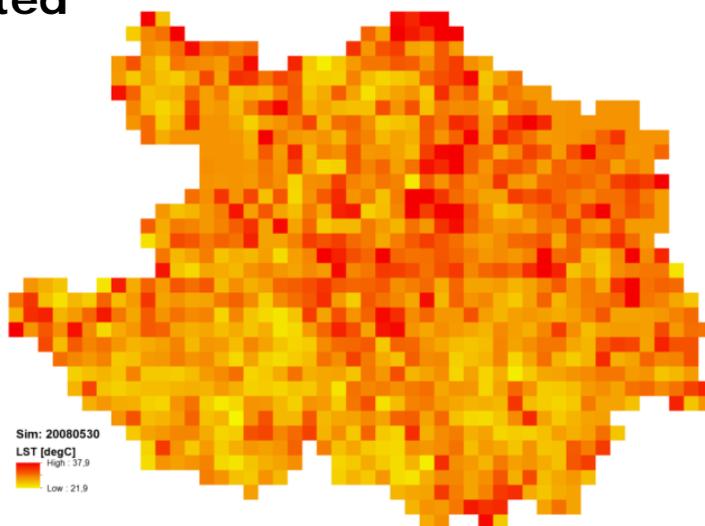
MODIS

Simulated

Survey of the human perception
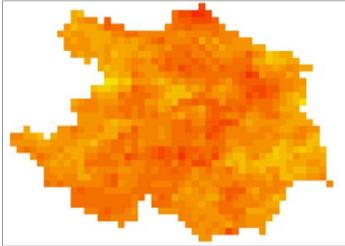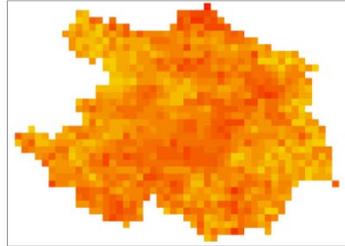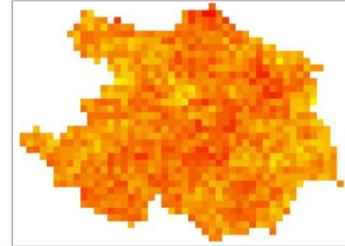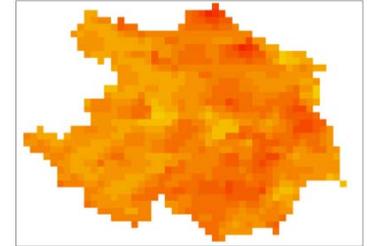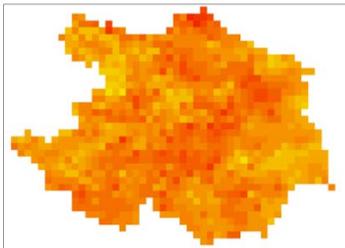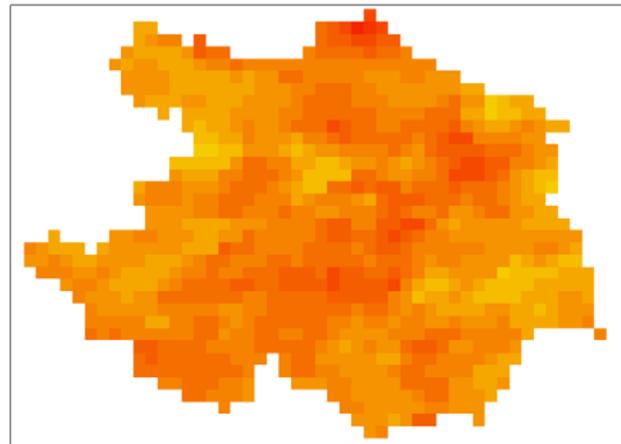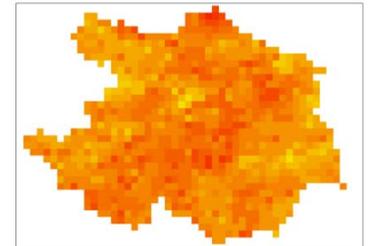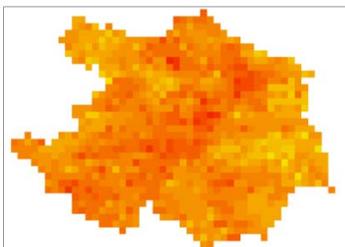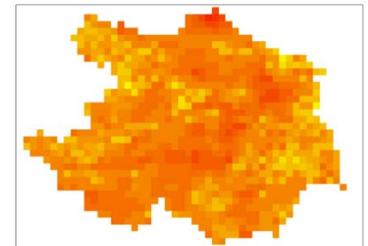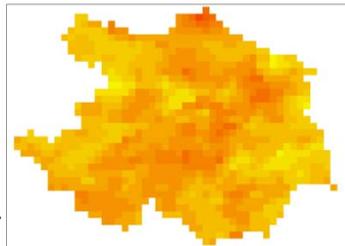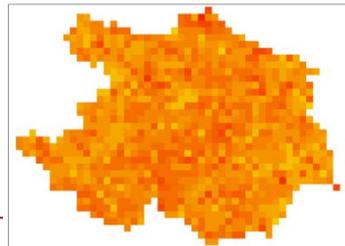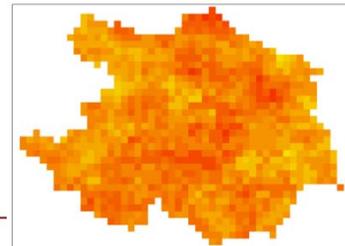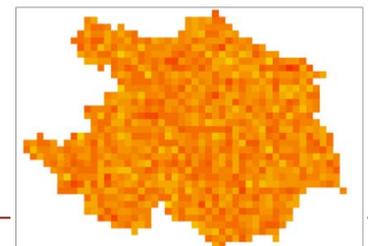
Survey of the human perception
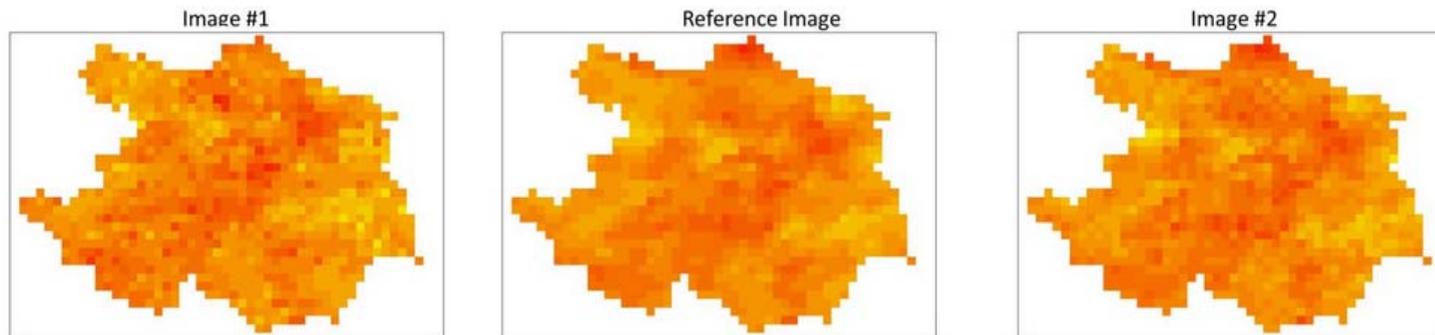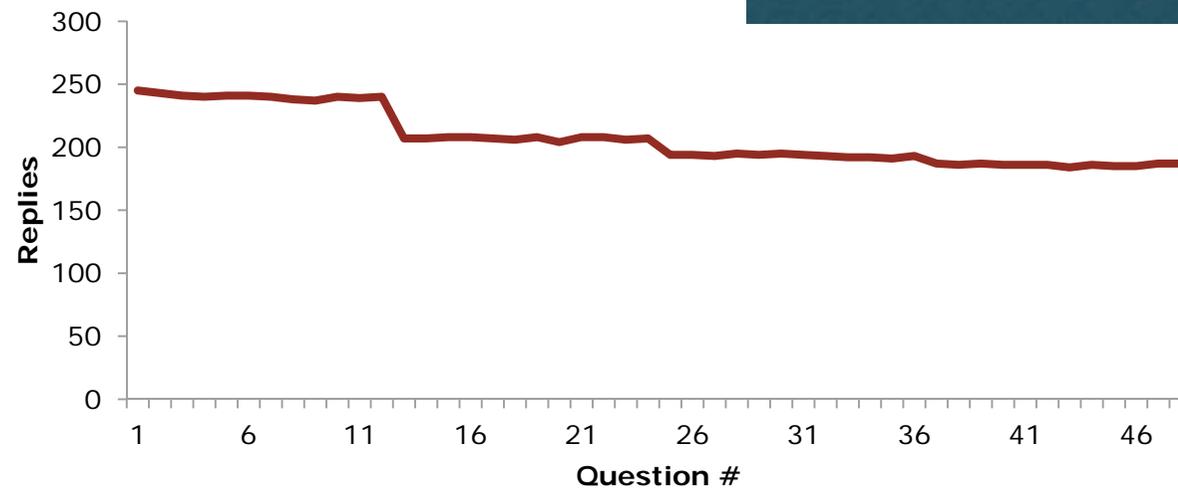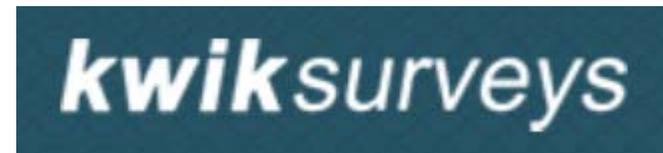
Survey Results

Survey	RMSE	ME	R
1 6 8			
12 5 2			
10 11 4			
3 9 7			
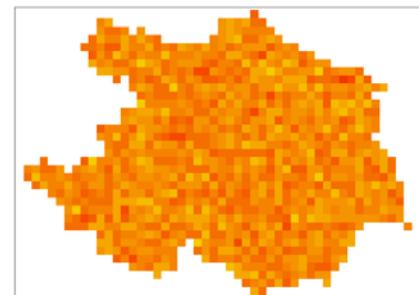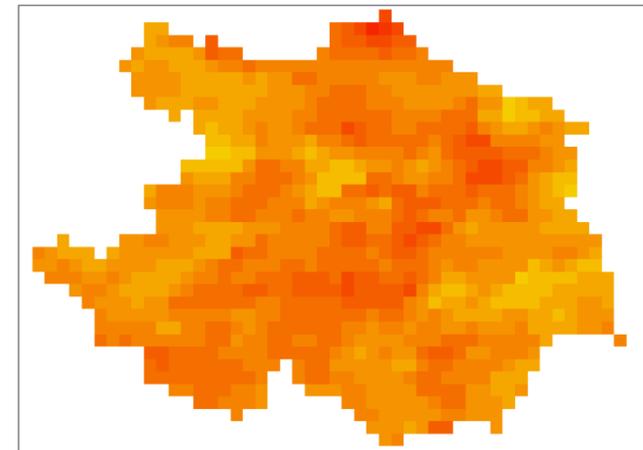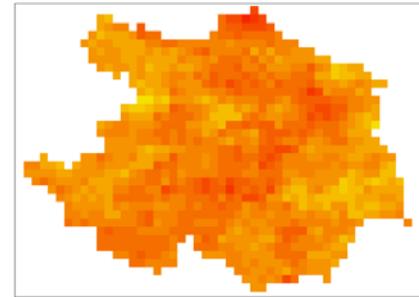
Survey Results

Survey	RMSE	ME	R
1	1	1	10
6	5	8	1
8	8	6	5
12	6	12	6
5	12	4	8
2	2	9	12
10	9	5	2
11	3	7	3
4	11	3	9
3	4	2	11
9	7	11	4
7	10	10	7

EOF - Analysis

EOF-maps

EOF 1

EOF 2

EOF Analysis

LST maps Day 1

EOF-loadings

Reference

loadings - EOF2

loadings - EOF1
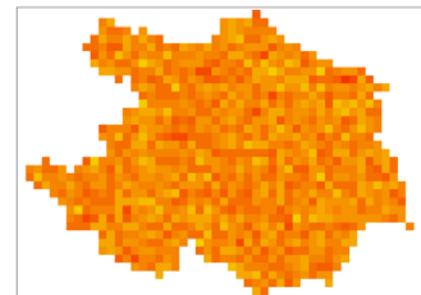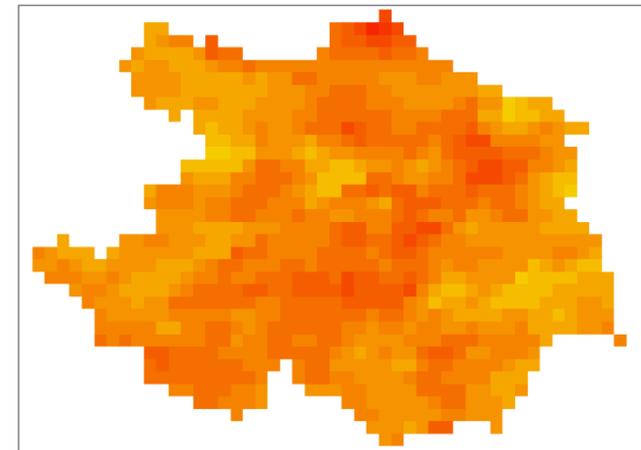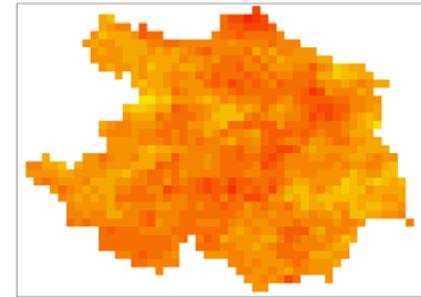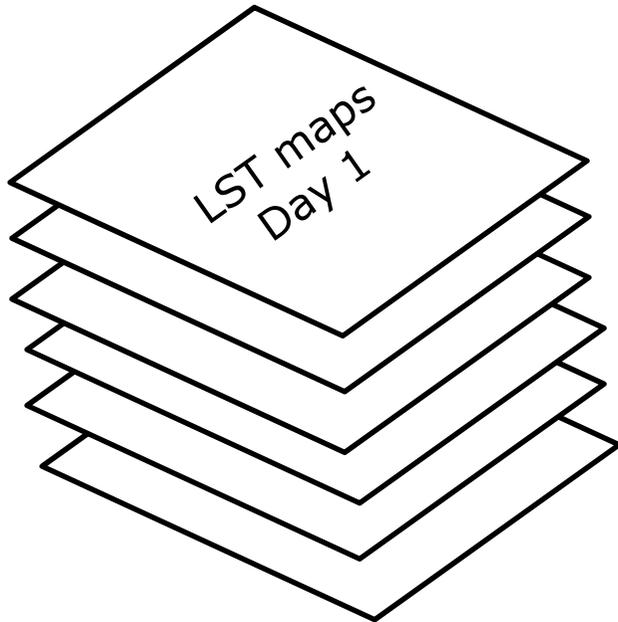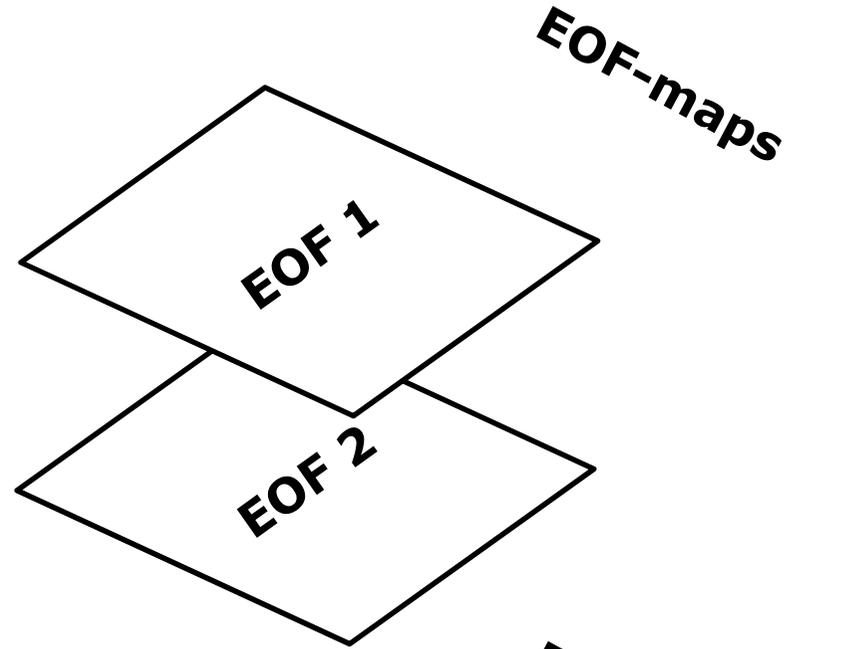
	Day_1	...	Day_n
Cell_1	Lst_11		
⋮			
Cell_n			Lst_nn
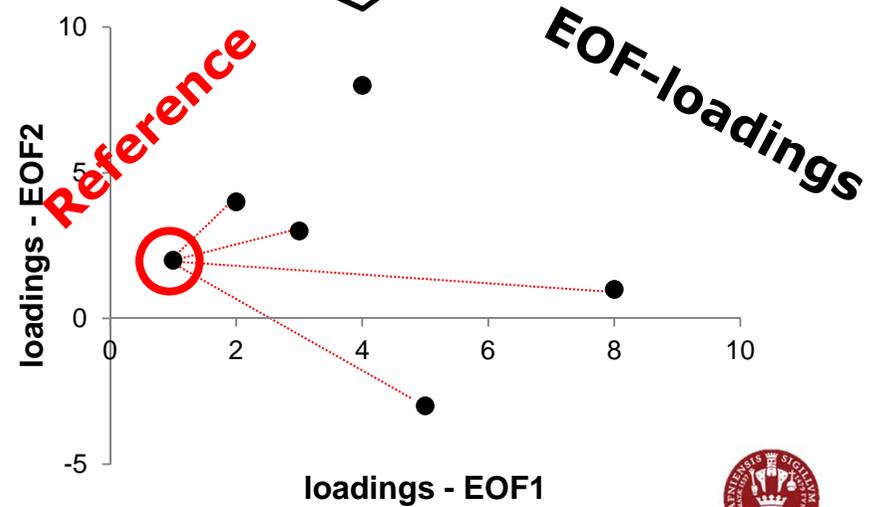
Survey Results

Survey	RMSE	ME	R	EOF
1	1	1	10	10
6	5	8	1	1
8	8	6	5	5
12	6	12	6	6
5	12	4	8	8
2	2	9	12	12
10	9	5	2	2
11	3	7	3	3
4	11	3	9	9
3	4	2	11	11
9	7	11	4	4
7	10	10	7	7
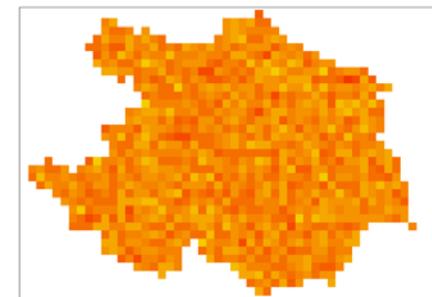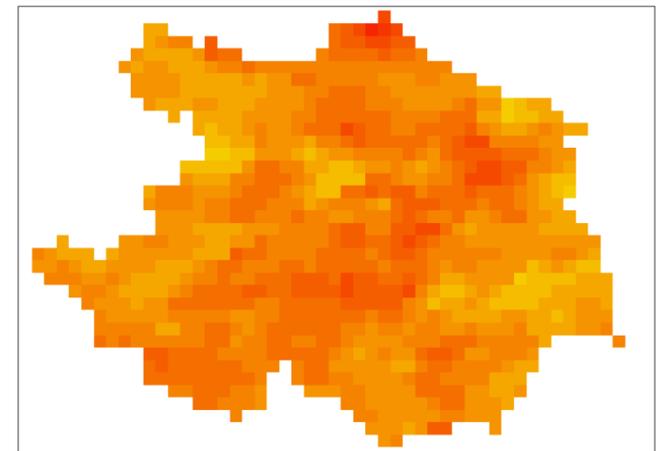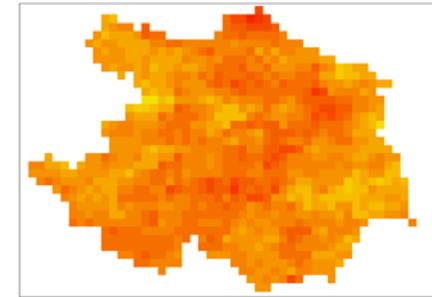
EOF - Analysis
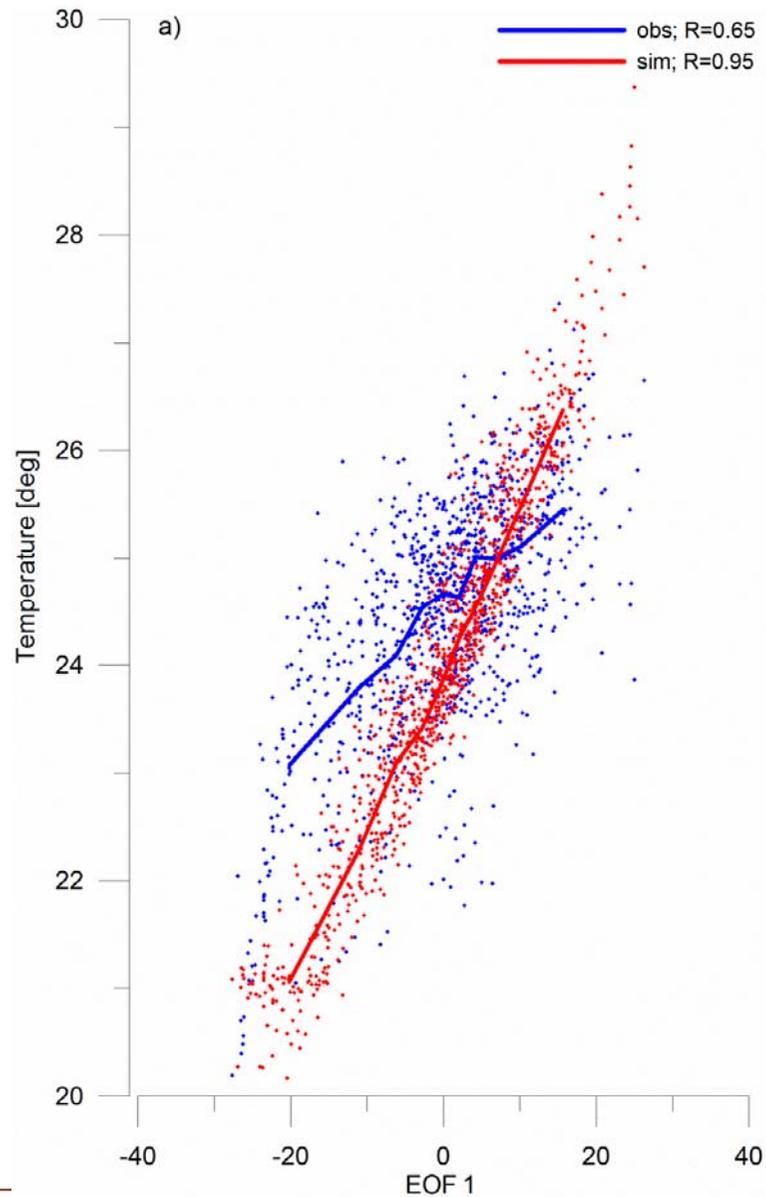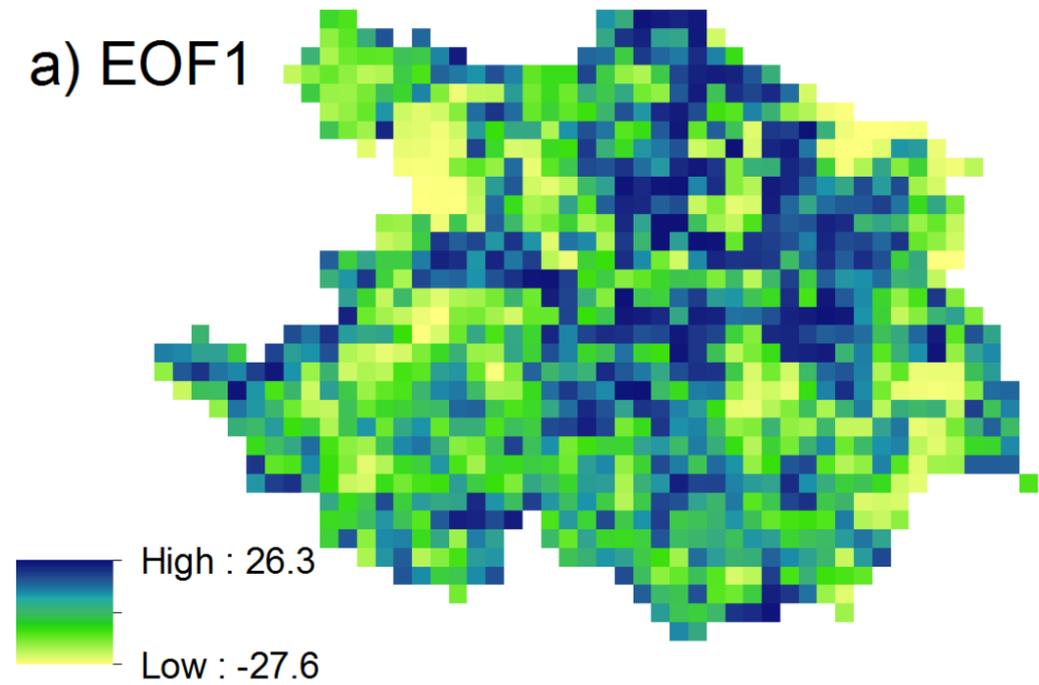
49% Variance

EOF - Analysis
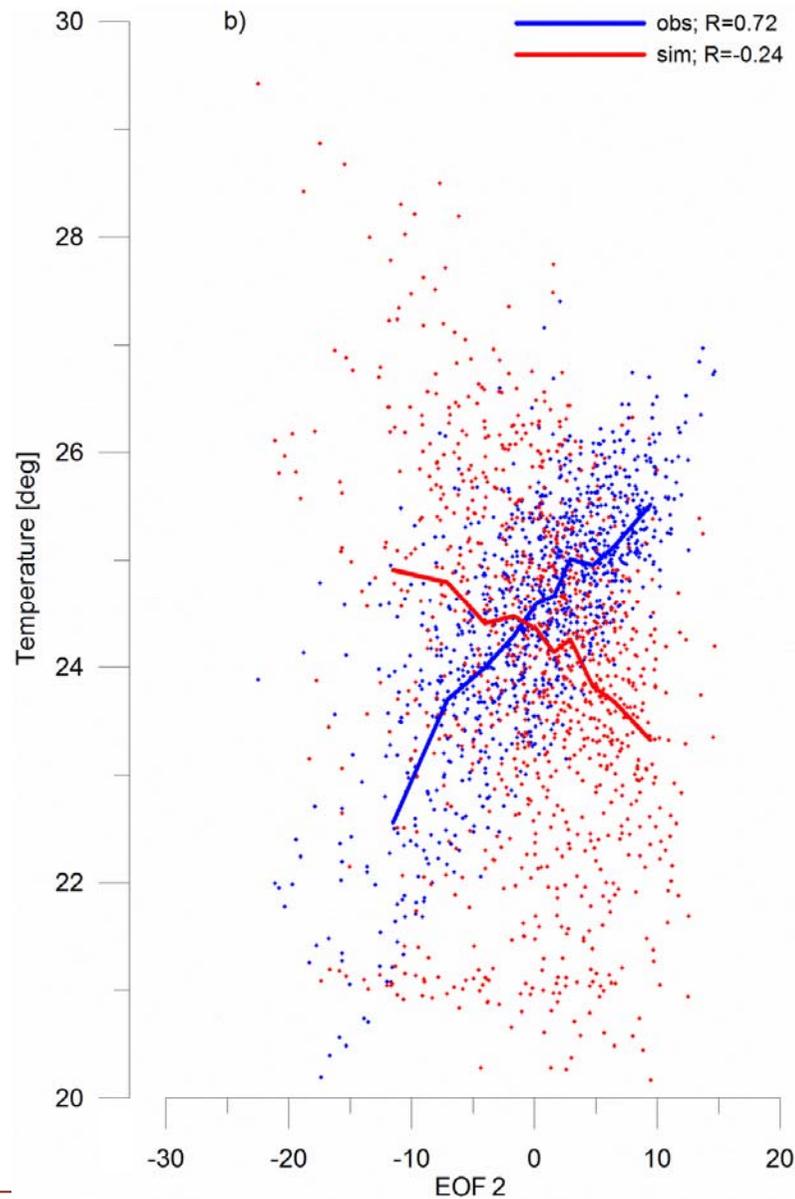
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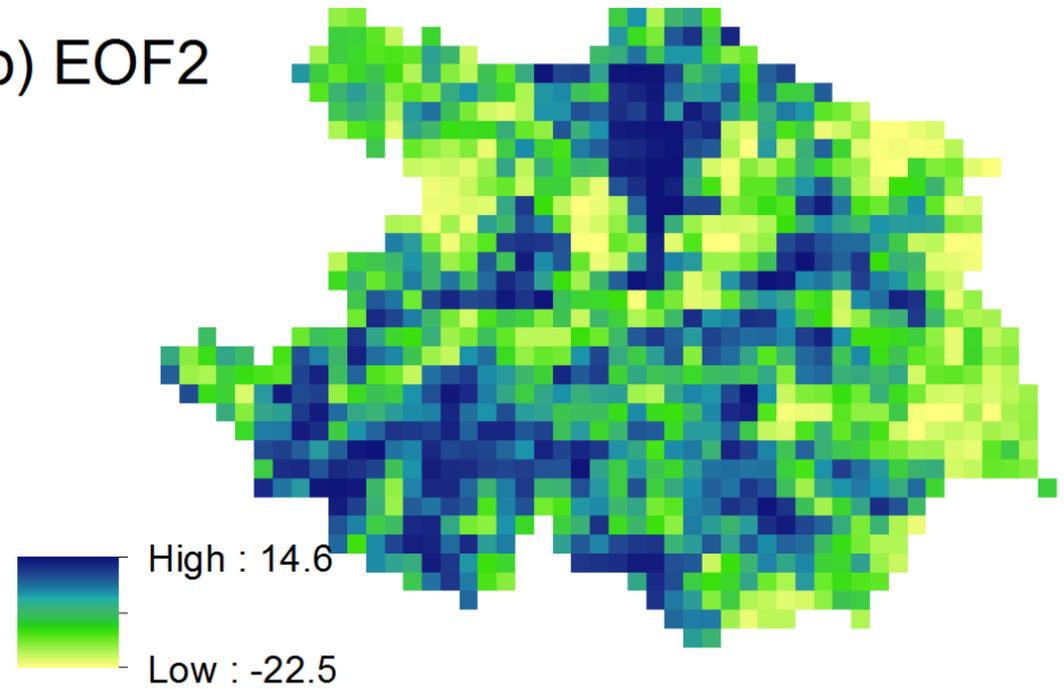
19% Variance

Diagnostic tool
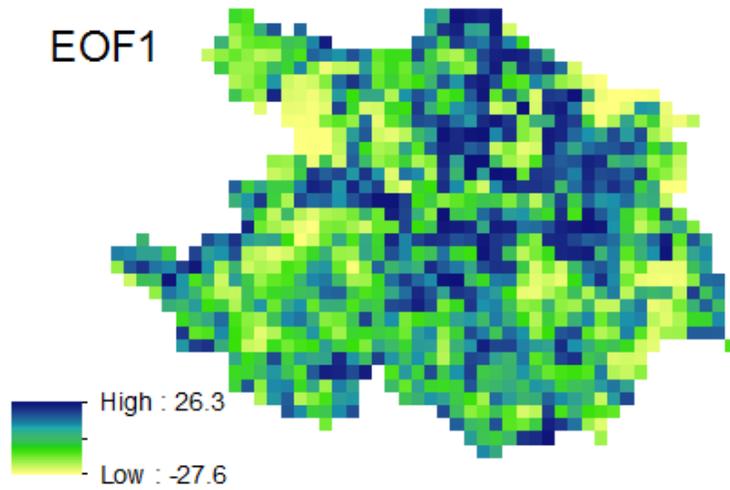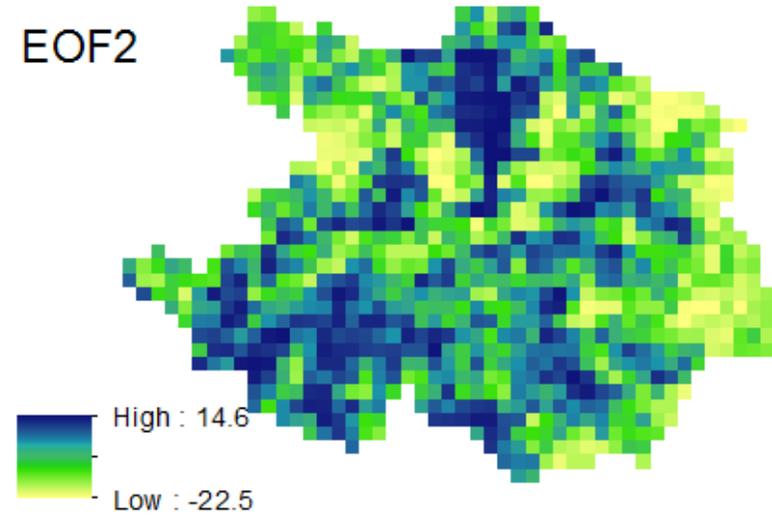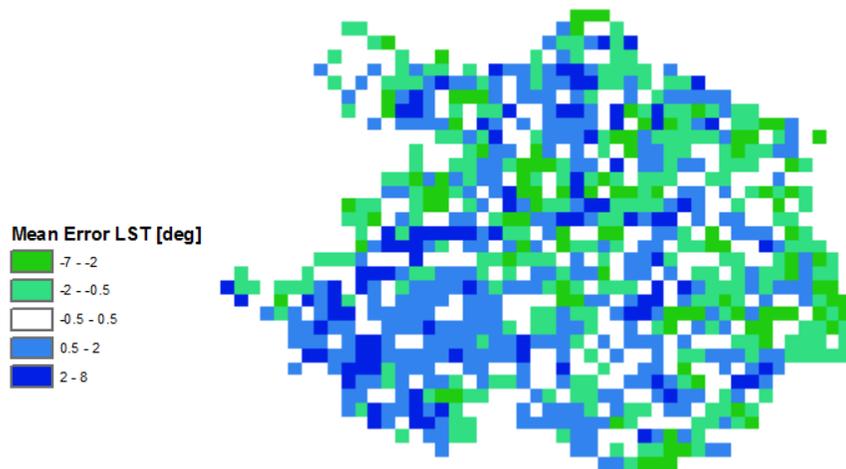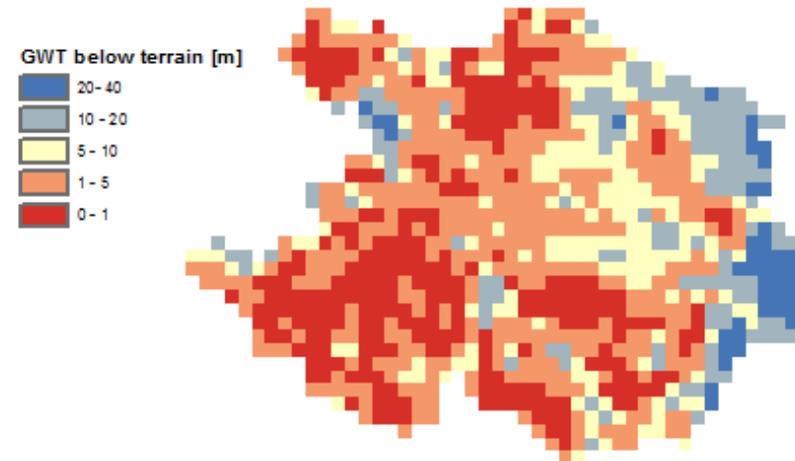
Conclusion

- Survey proved useful

- Geostatistical pattern comparison challenging

- Learn about the distributed model

- Improve the distributed model

Thank you for your attention!

Acknowledgments

Alexander Graf, Agrosphere Institute, Forschungszentrum Jülich