



A NEON Testbed for High-Resolution Climate Assessment

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Outline

- ✓ Problem Statement
- ✓ Model description & Procedure
- ✓ Results
- ✓ Discussion

Research Hypothesis

High resolution model improves the accuracy of water cycle prediction.

High resolution topography, land use, land management and boundary condition improve land model output.

Model result evaluation with MERRA-2, LERI, NEON and CLM-1 deg.

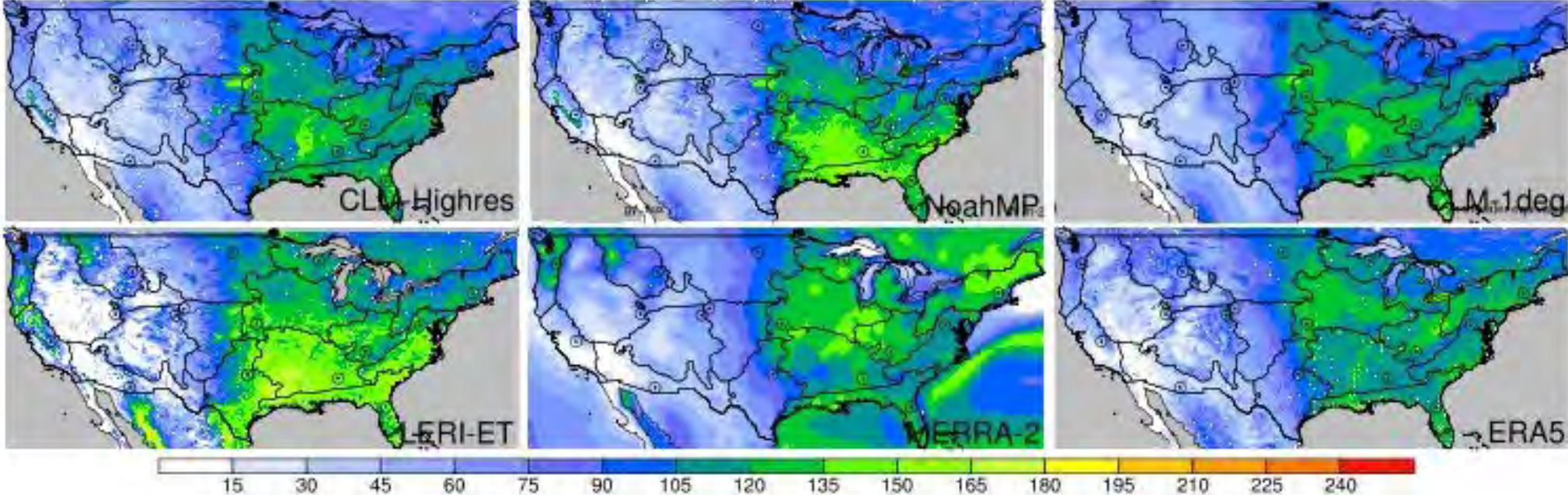
Model Description

	Model			Reference Dataset		
	Noah-MP	CLM-High res	CLM-Low res	MERRA2	LERI	ERA-5
Resolution(km)	12.5	12.5	100	50	1	10
Analysis Period	1980-2018	1980-2018	1980-2018	1980-2018	2000-2018	1980-2018
Forcing	NLDAS	NLDAS	NLDAS	-	-	-

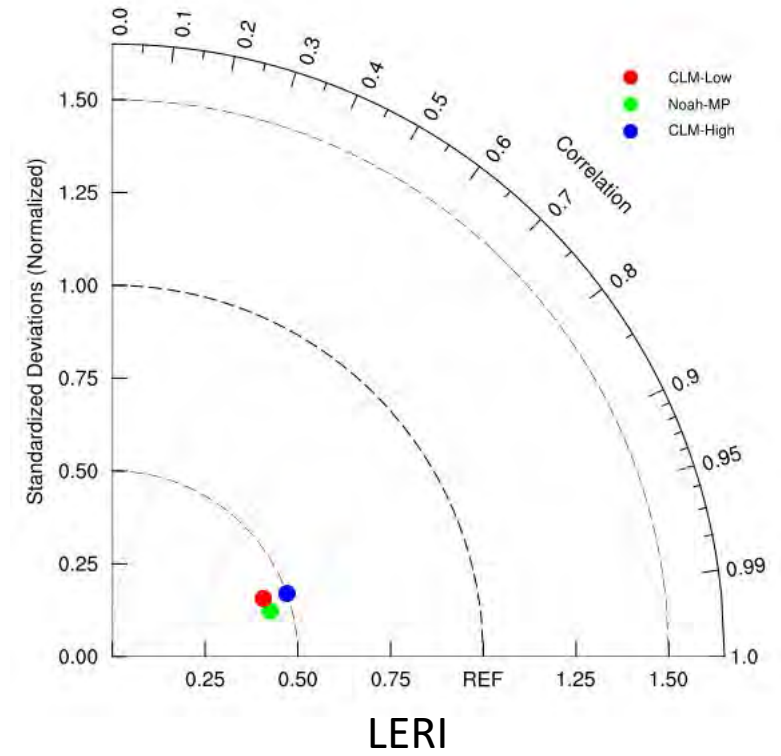
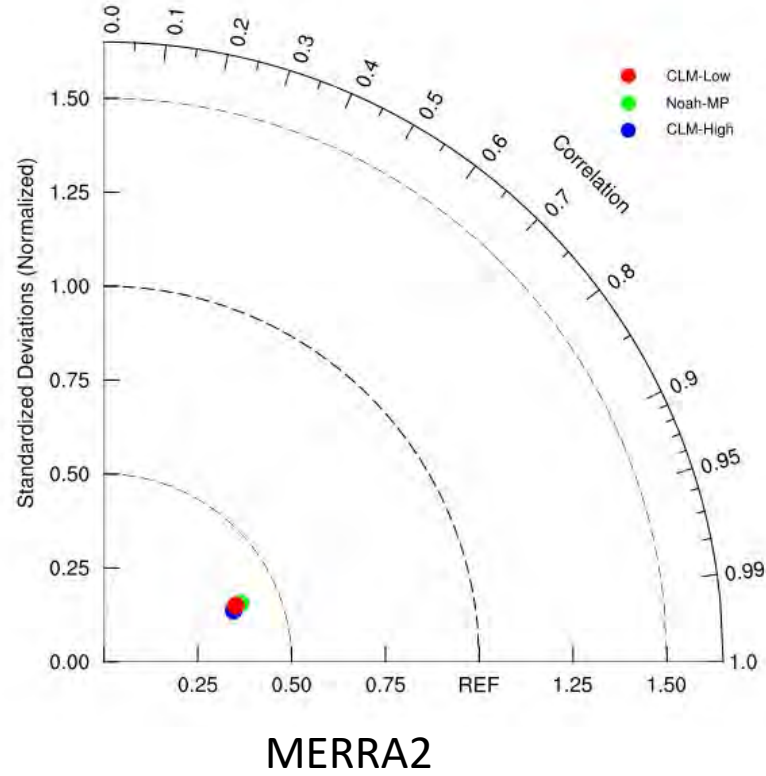
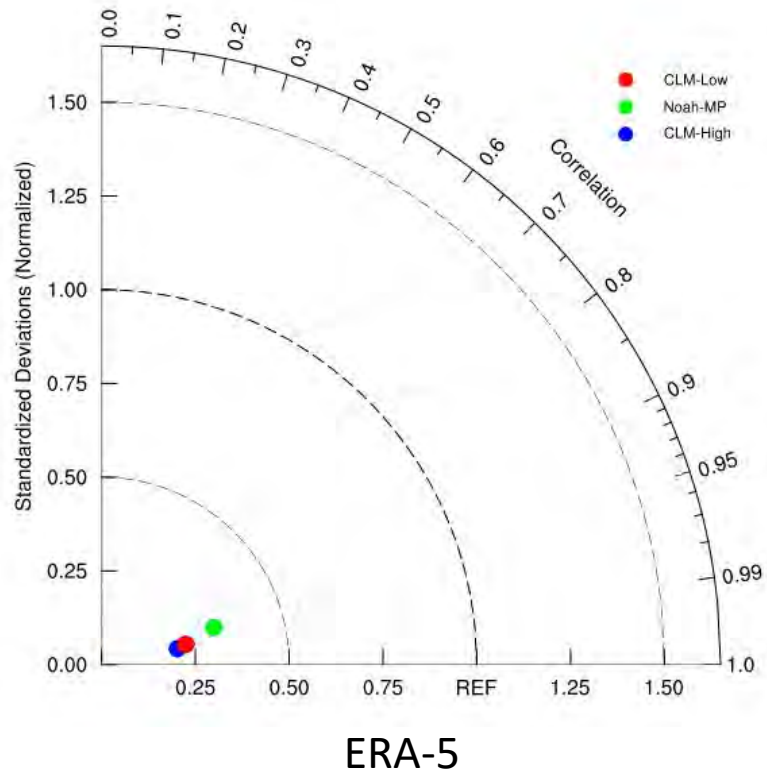
Methodology

- ET-JJA Normalized Root Mean Square and Correlation comparison with MERAA2, LERI and ERA-5.
- Sensible Heat Flux-JJA Normalized Root Mean Square and Correlation comparison with MERAA-2, LERI and ERA-5.
- Residence time comparison with ERA-5.

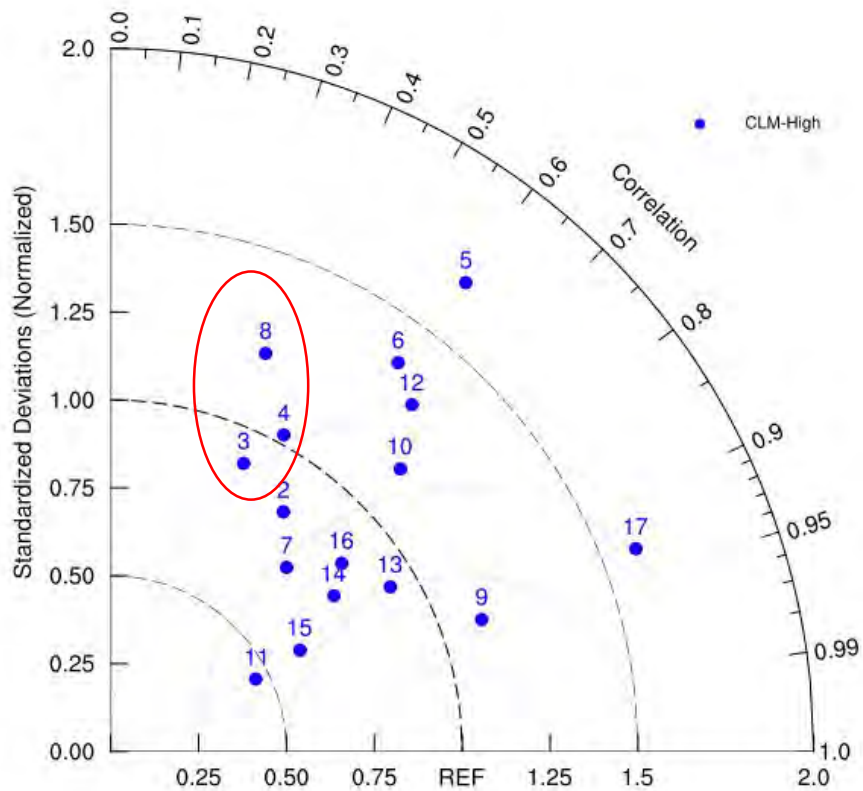
ET Comparison



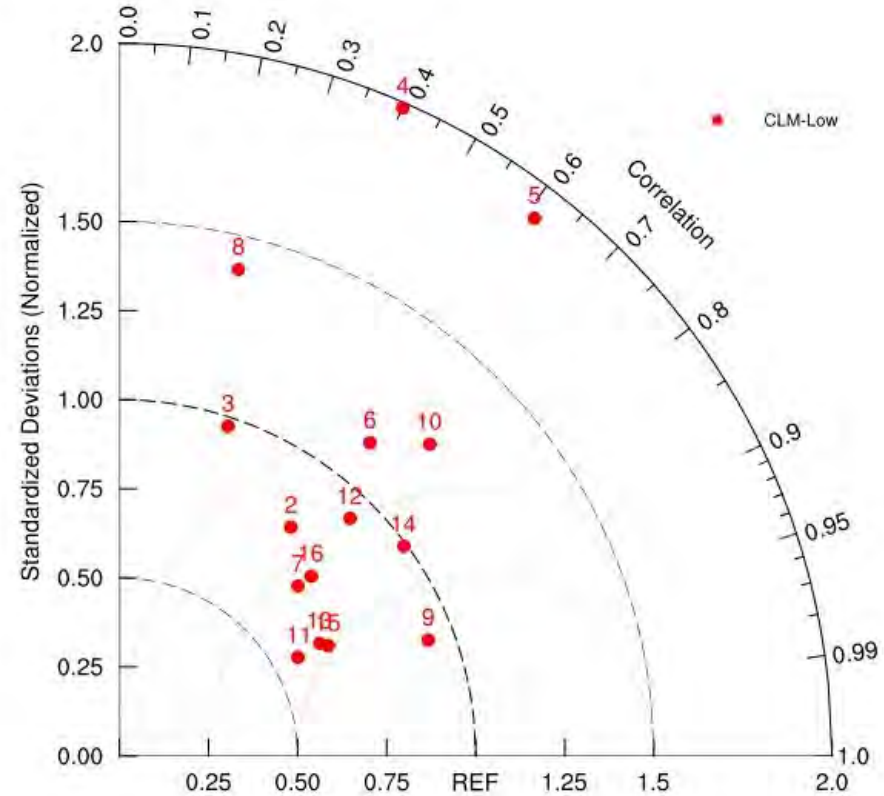
NRMSE & Correlation Comparison for ET-JJA



NRMSE & Correlation Comparison with ERA-5 for ET-JJA (Temporal Average)

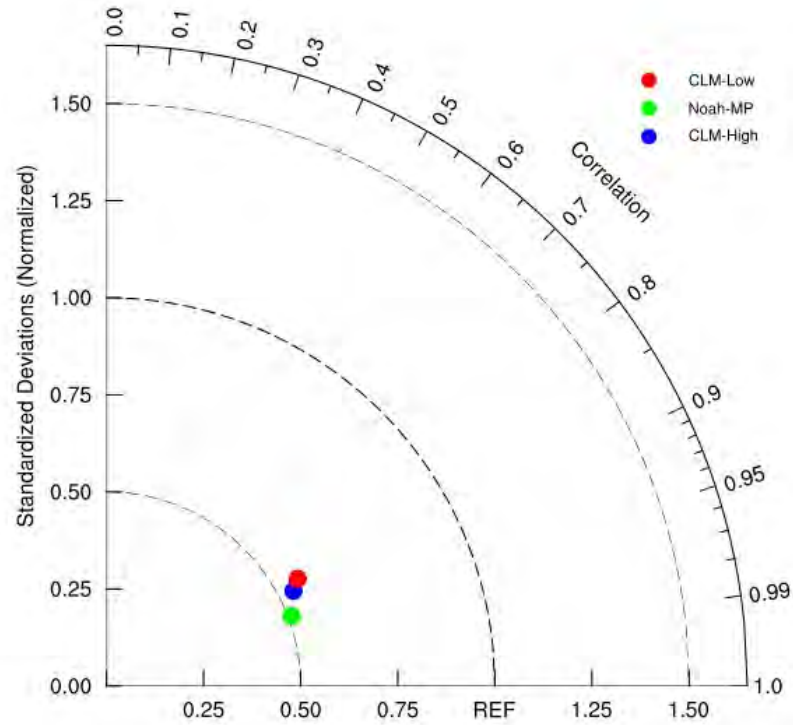


CLM-Highres

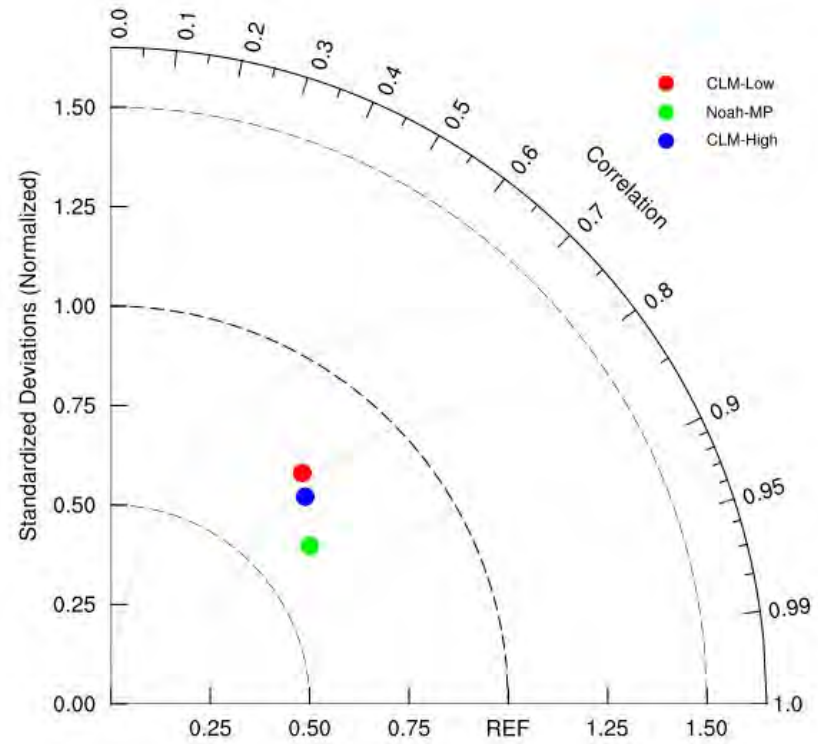


CLM-Lowres

NRMSE & Correlation Comparison Sensible Heat Flux-JJA



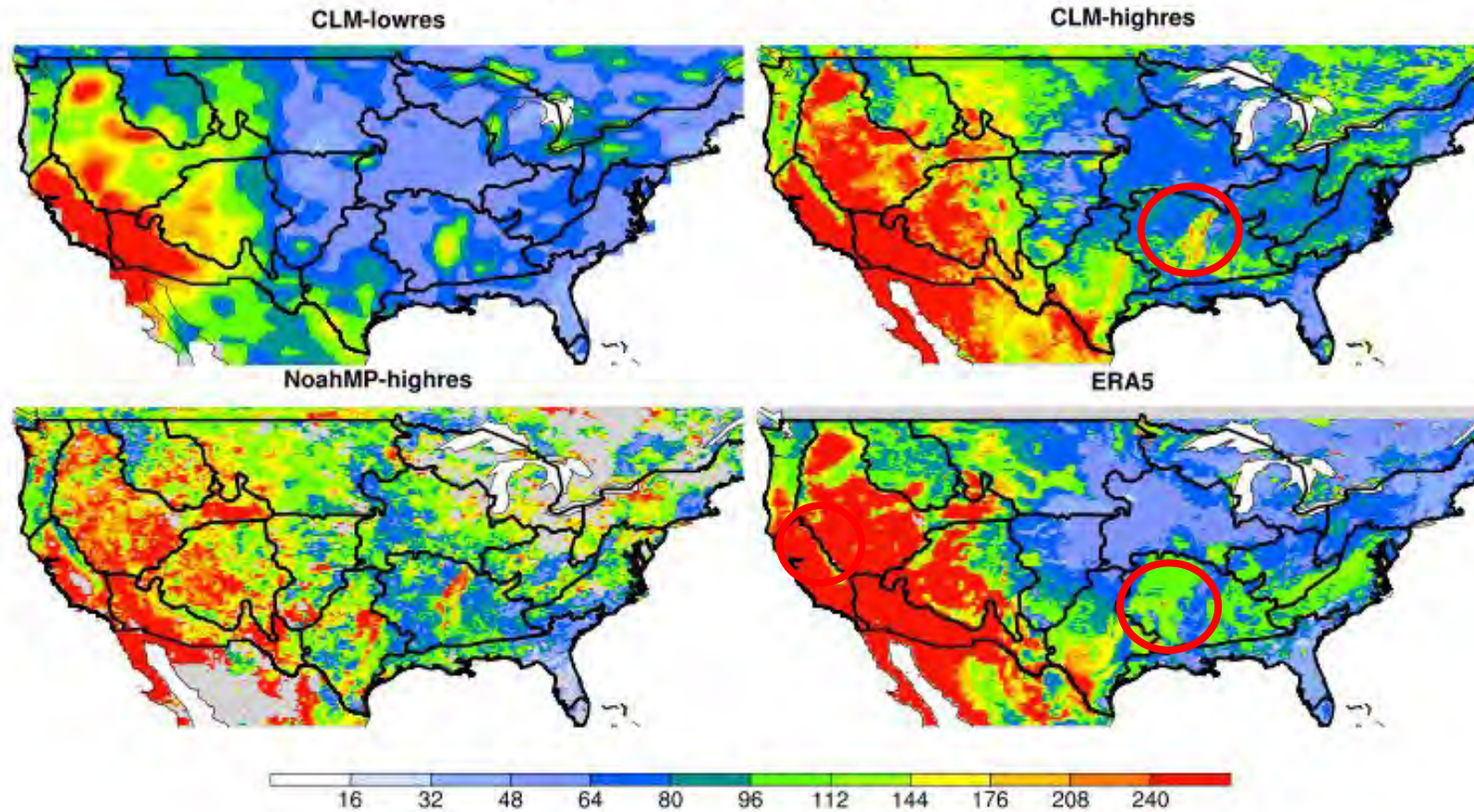
ERA-5



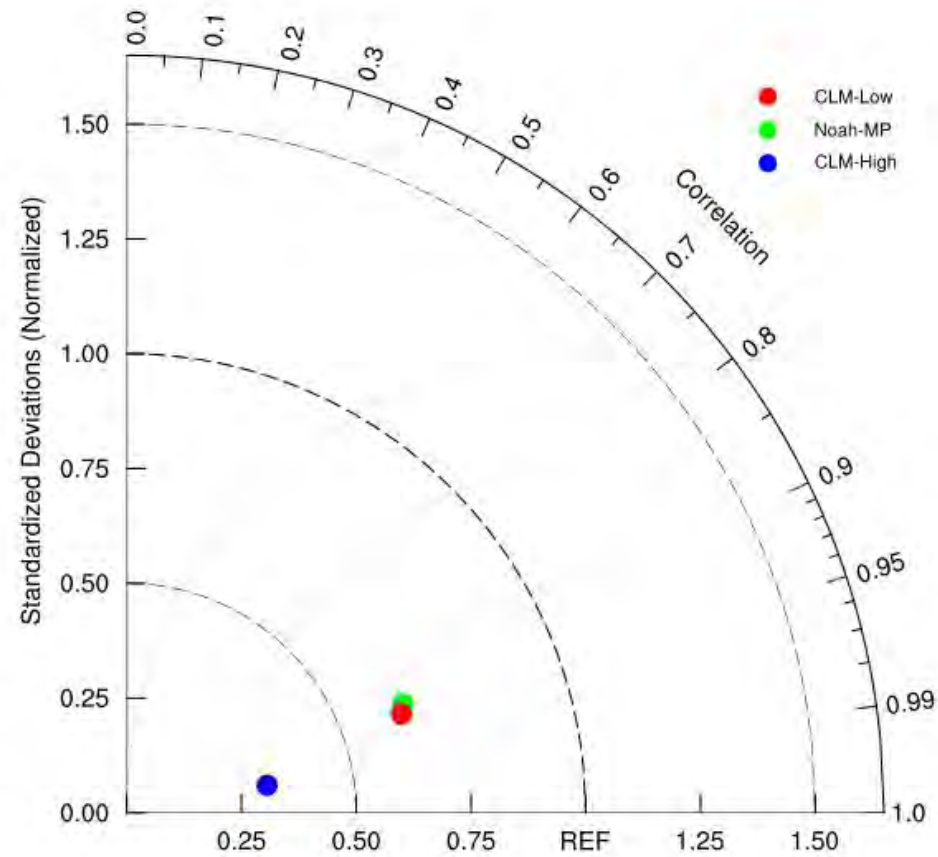
MERRA2

Residence Time Comparison

SMRT seasonal plots upto 50cm



NRMSE & Correlation Comparison for Residence Time



Key Findings

- CLM-High res provides more consistent output for ET and Residence time compared to other models.
- Noah-MP provides better more consistent output for Sensible heat flux compared to other models
- Residence time has increased in higher resolution model.
- Better ET prediction improves the soil moisture residence time for CLM-High res

Acknowledgement

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Thank you!

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