

# DMIP 2: Results for Oklahoma Basins

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# Distributed Model Intercomparison Project (DMIP)

## Phase 2 Scope



### Tests with Complex Hydrology

1. Snow, Rain/snow events
2. Soil Moisture
3. Lumped and Distributed
4. Mountainous terrain



### Additional Tests in DMIP 1 Basins

1. Routing
2. Soil Moisture
3. Lumped and Distributed
4. Forecast test

# DMIP 2 Participants for Oklahoma

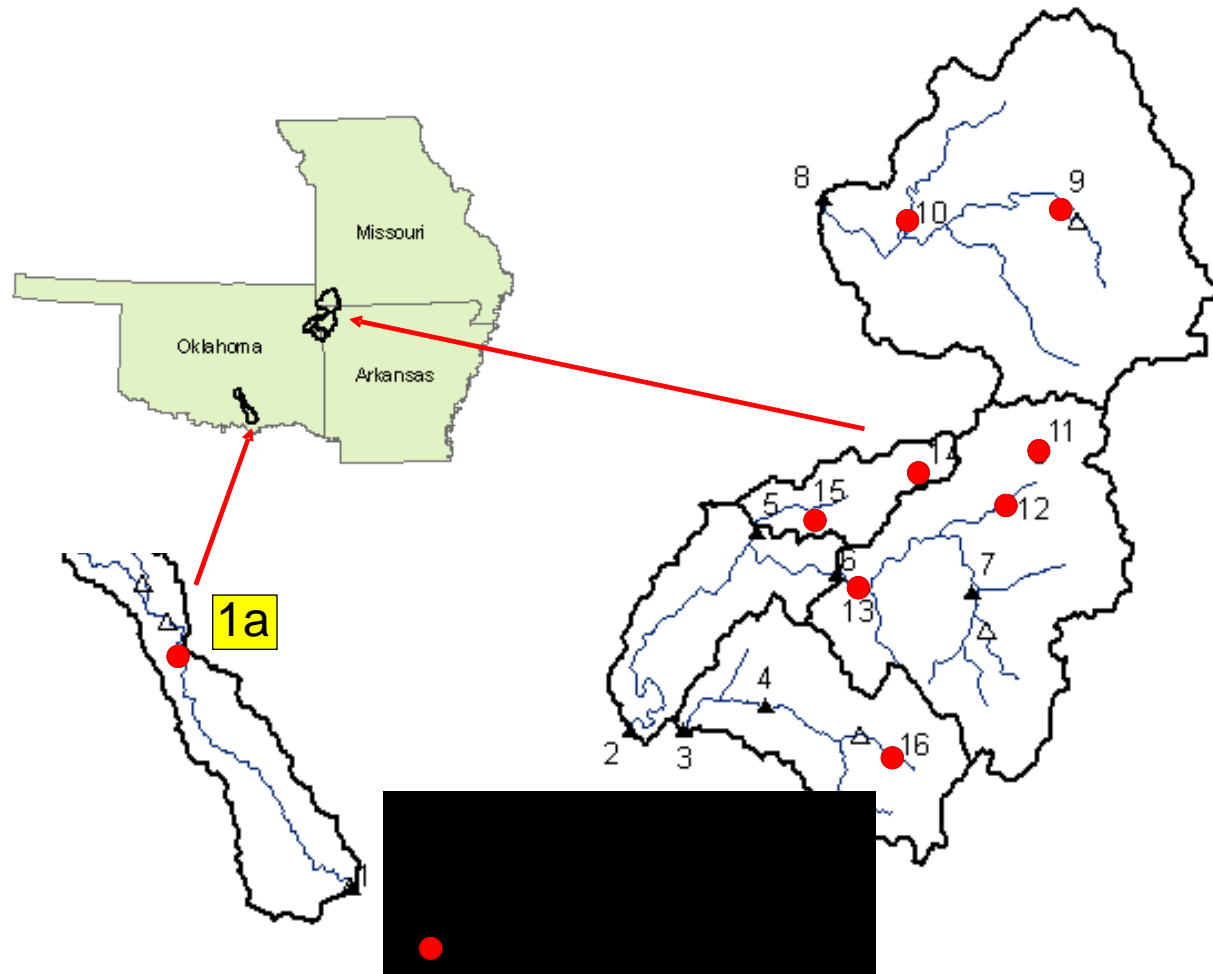
Workshop Sept 10-12, 2007 at NWS HQ

- OHD
- NCEP
- U. Ca Irvine
- Imperial College of London
- Vrije U. of Brussels
- CEMAGREF (Fra)
- ARS
- Risk Management Solutions, London
- Wuhan U., China
- U. Arizona
- U. Oklahoma
- U. Nebraska
- Danish Hydraulics Institute
- U. Alberta, Can.

# What is New in DMIP 2

	DMIP 1	DMIP 2
Participants (models)	12 (12)	14 (17)
New participants	-	6
Interior gauged points	4	9
Data quality	Inconsistent	Consistent
Soil moisture	No	Yes
Num. simulations requested	30	44+15+1+1

# DMIP 2 Test Basins

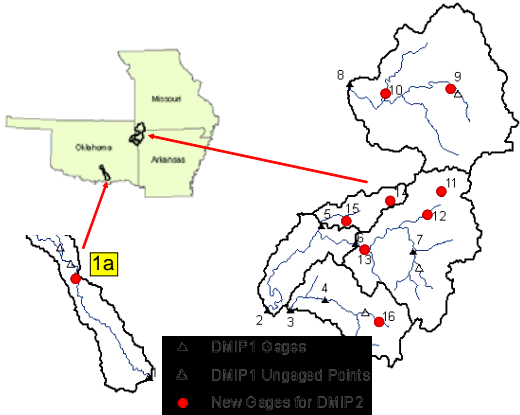
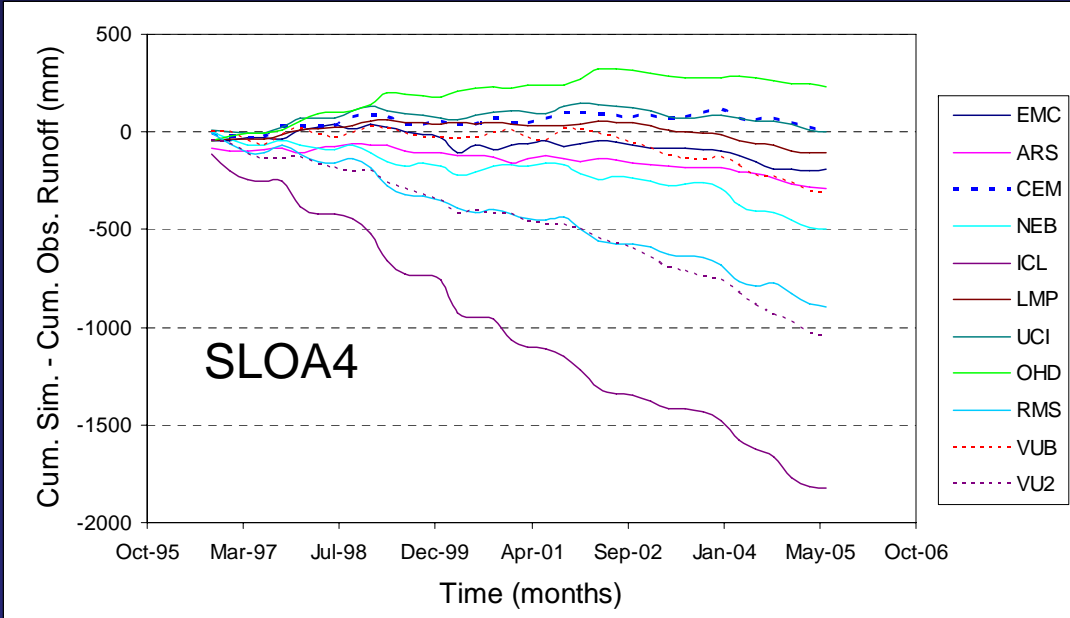
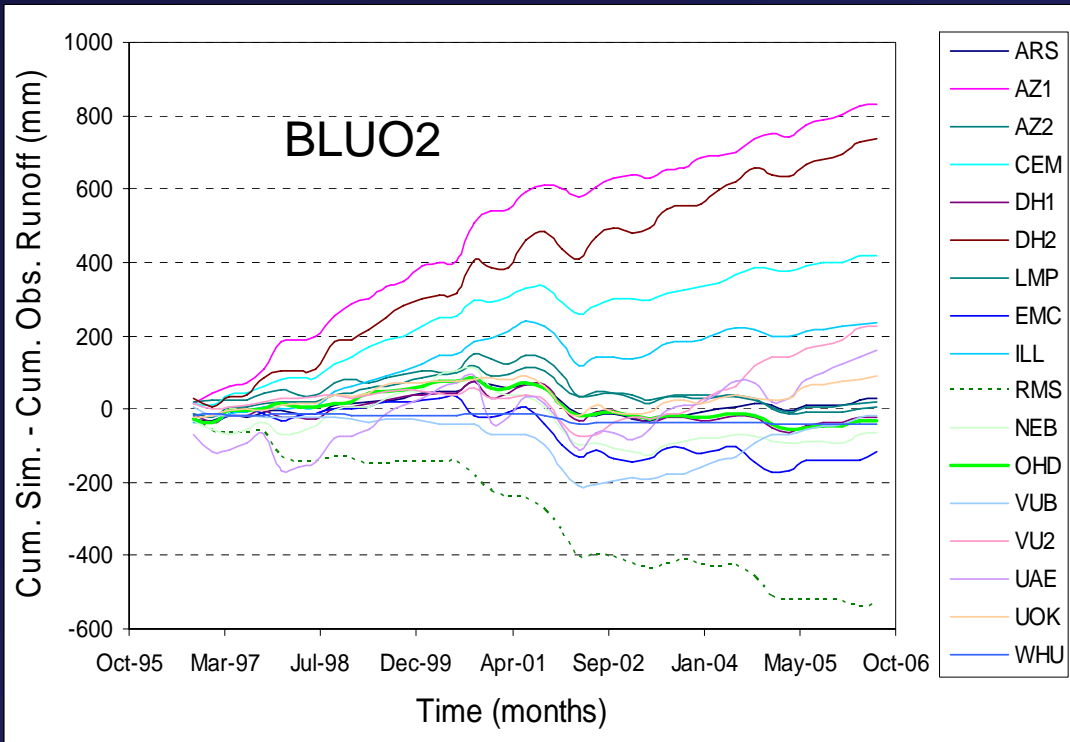




# General Results (2)

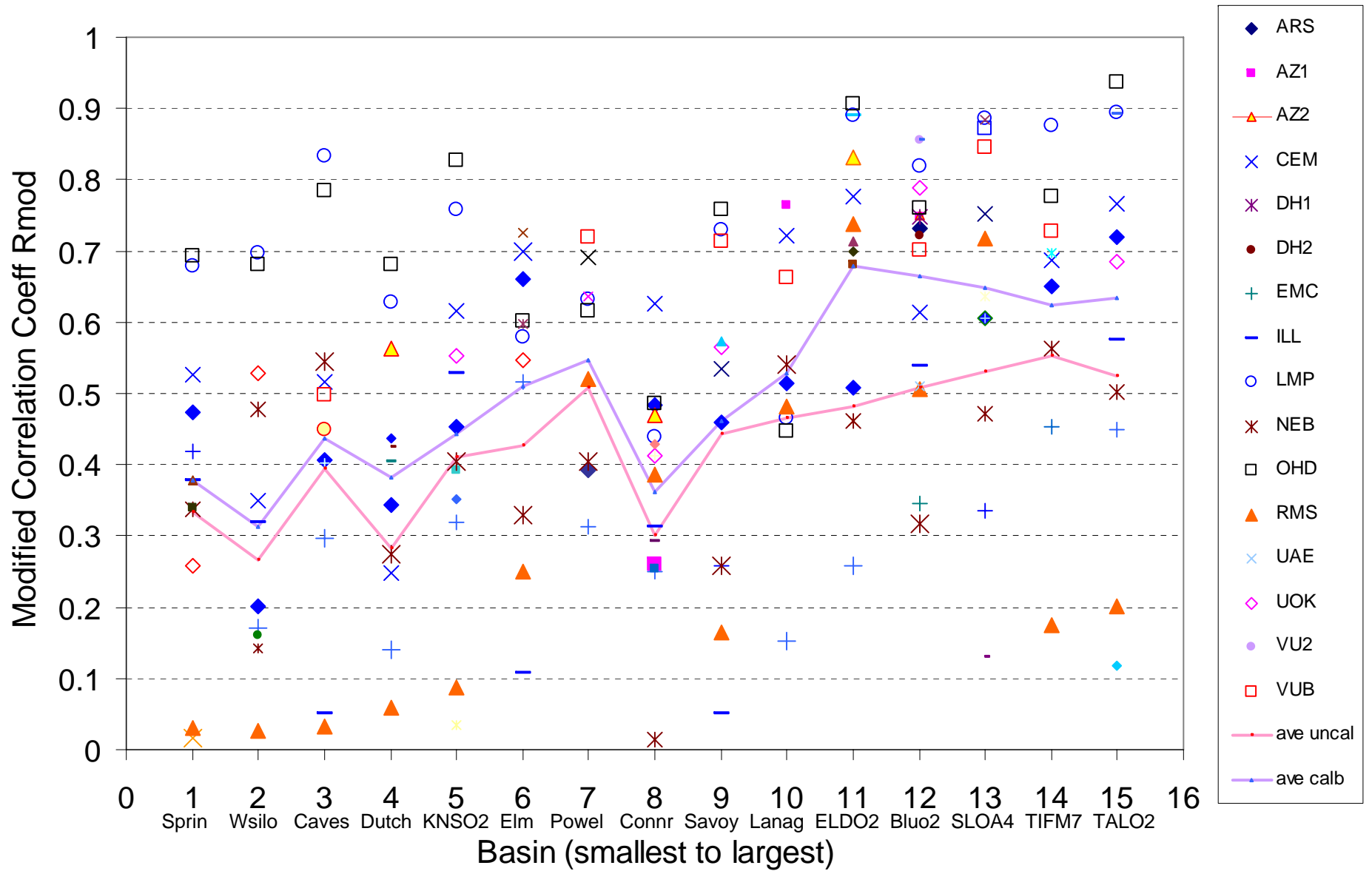
# Accumulated Error

Plots indicate more consistent forcing than DMIP 1 data: results more reliable



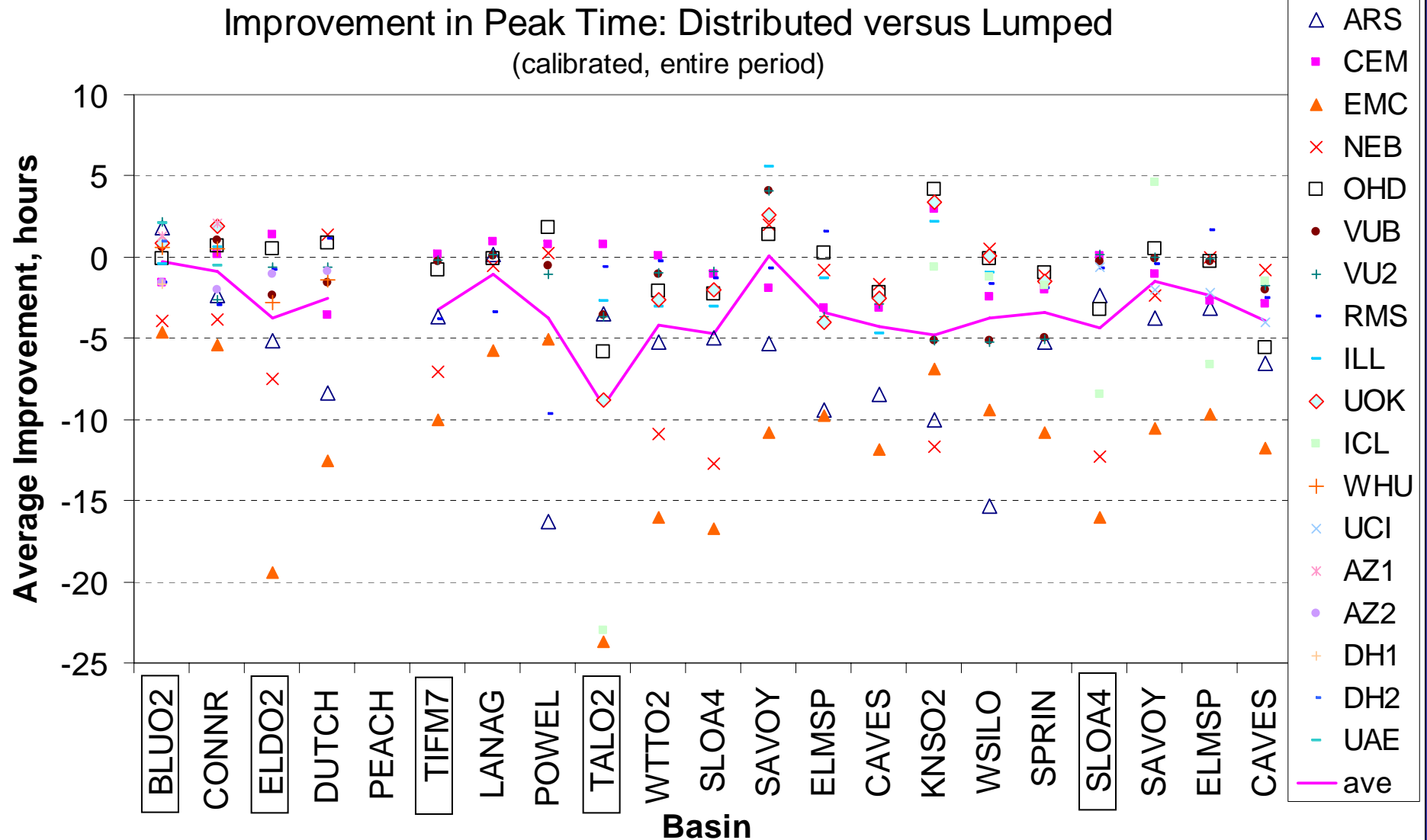
# General Results (3) Overall Rmod vs Basin Size

## Calibrated Models





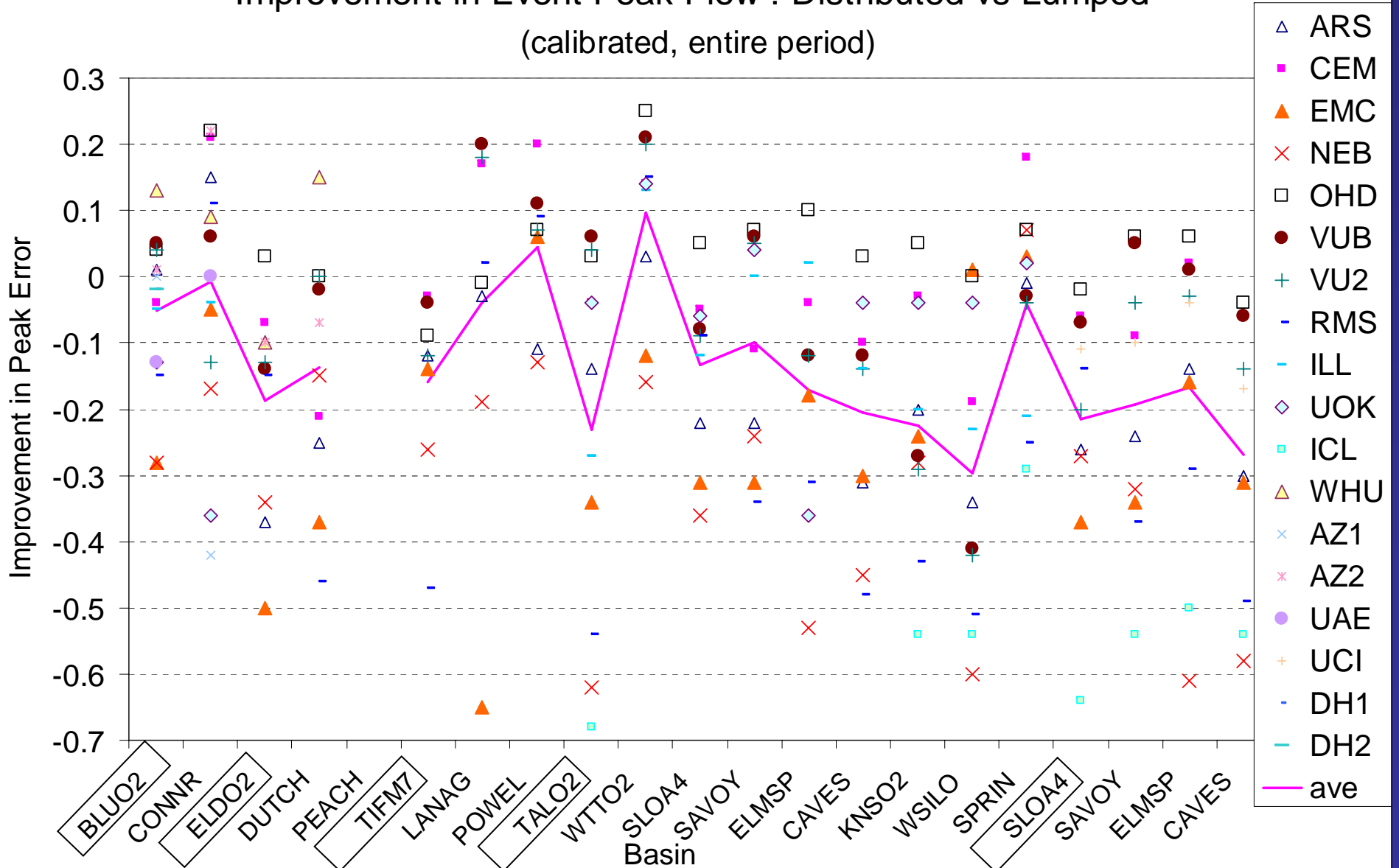
# Event Results (1)



21% of 188 cases show improvement

# Event Results (2)

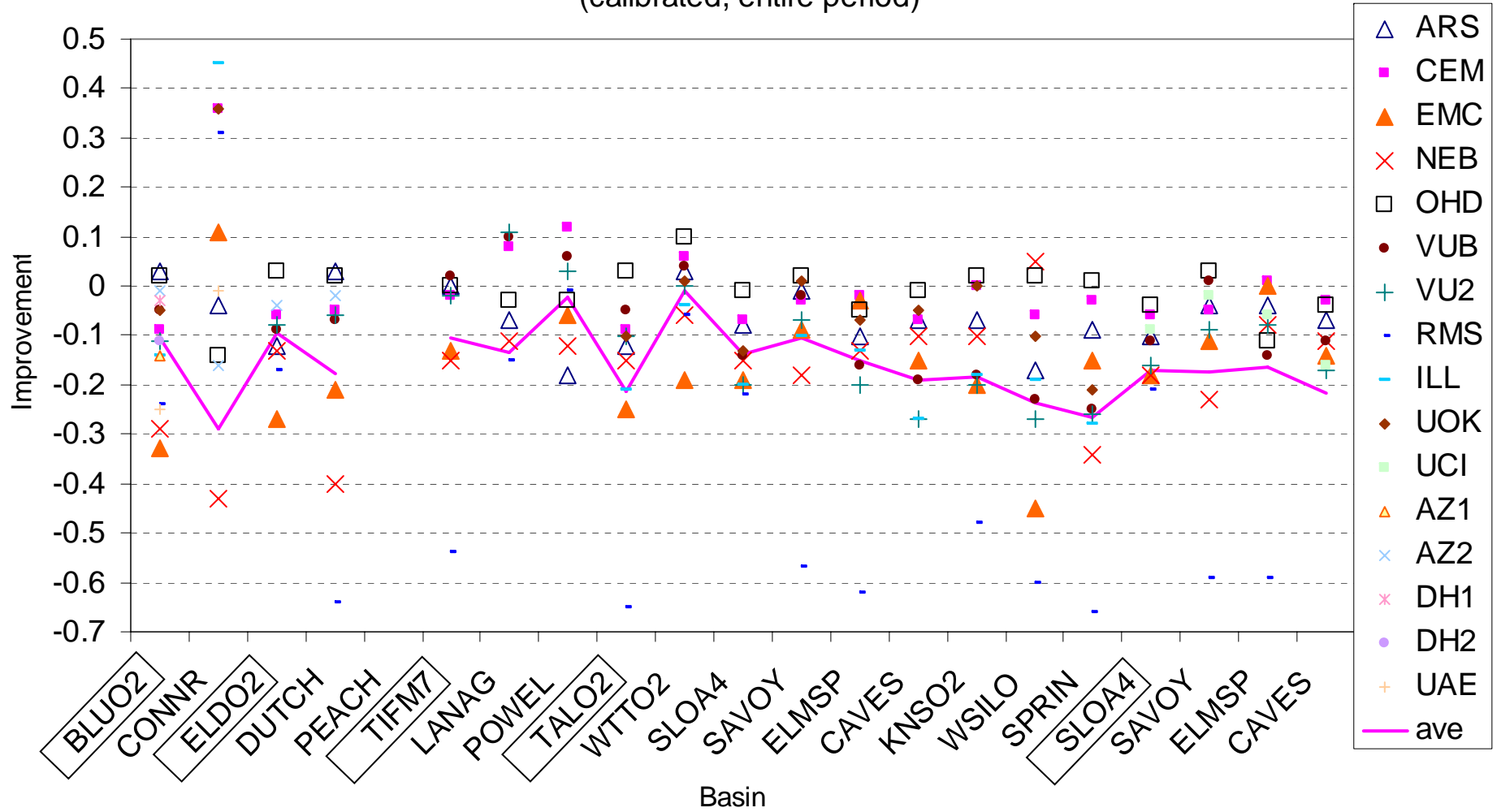
Improvement in Event Peak Flow : Distributed vs Lumped  
(calibrated, entire period)



27% of 188 cases show improvement

# Event Results (3)

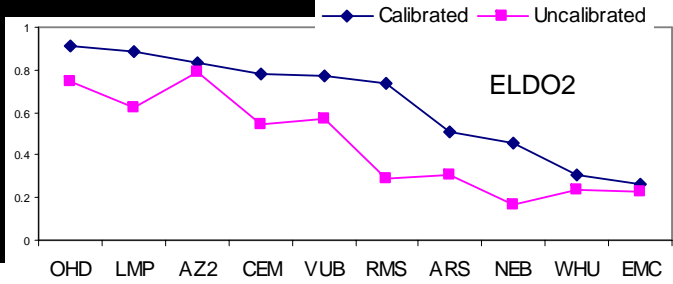
Improvement in Event Runoff Volume: Distributed vs Lumped  
(calibrated, entire period)



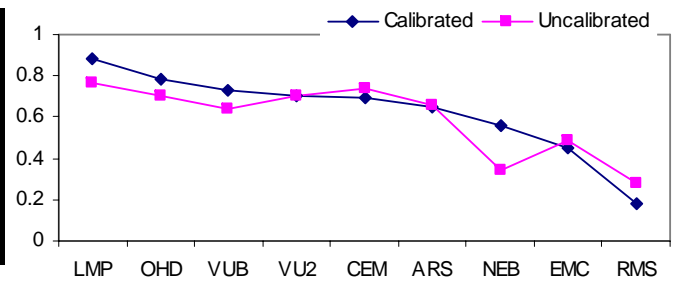
15% of 188 cases show improvement

## Parent Basins

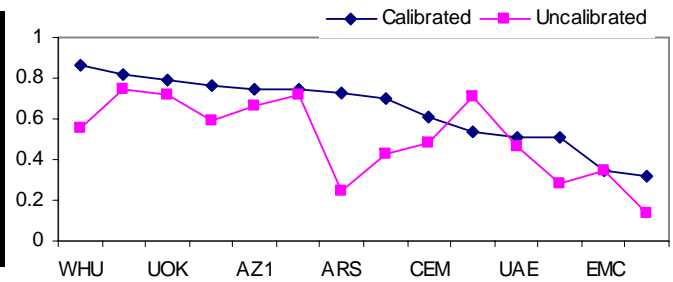
O2, Total Period



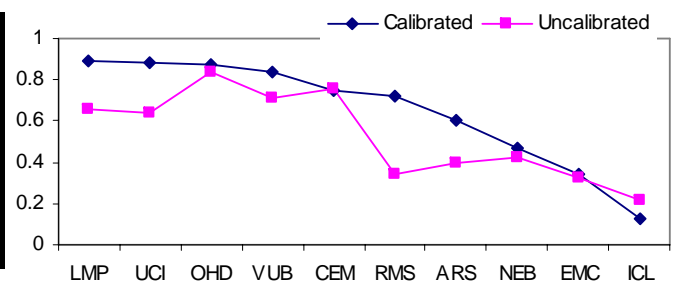
Rmod: TIFM7, Total Period



Rmod: BLUO2, Total Period

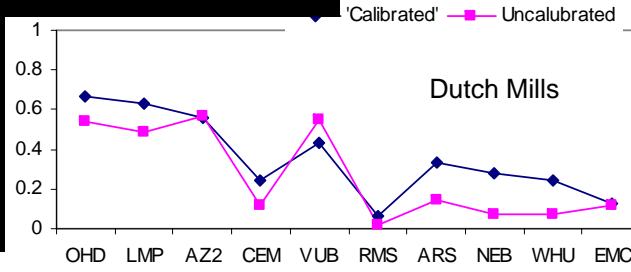


Rmod: SLOA4, Total Period

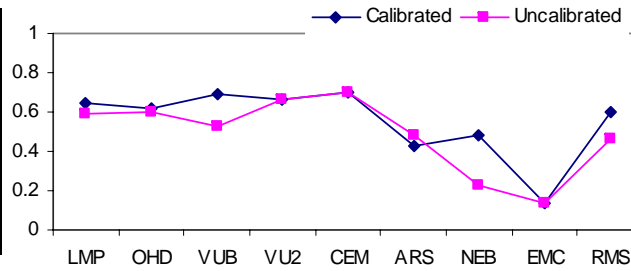


## Interior Basins

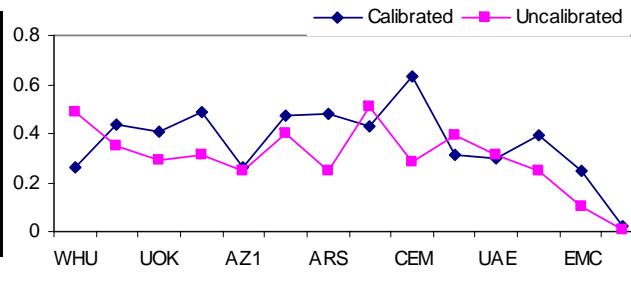
Total Period



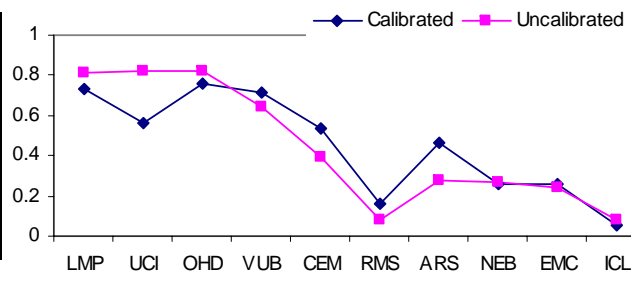
Rmod: LANAG, Total Period



Rmod: CONNR, Total Period

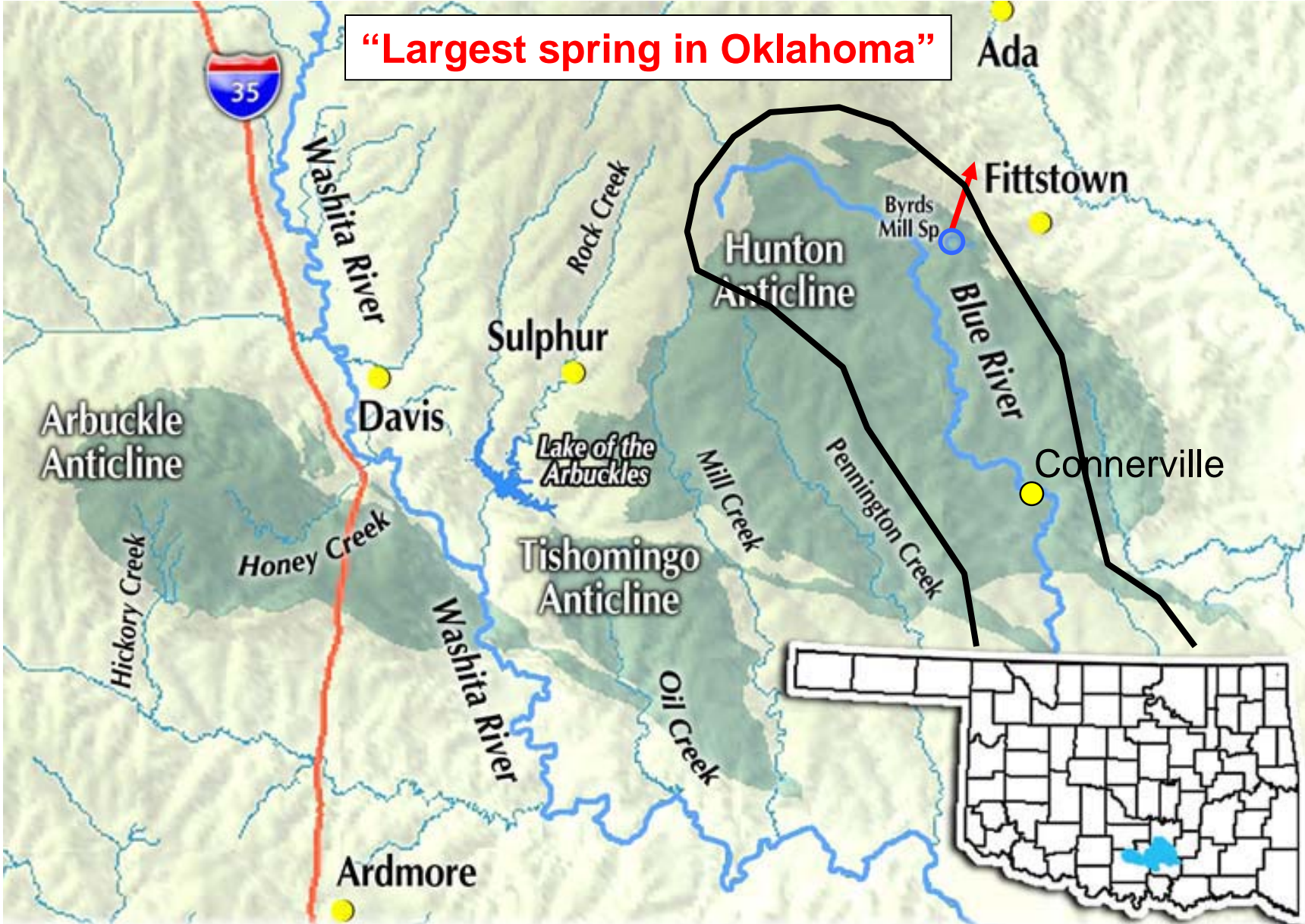


Rmod: SAVOY, Total Period



DMIP 2  
Oklahoma  
Results:  
Importance  
of *a priori*  
parameter  
estimates

# Problems with Blue River



# Summary

- More consistent data used in DMIP 2
- General trend for statistics to improve with basin size
- Easy to do worse than lumped model
- Critical to have good *a priori* model parameters
- Good performance of OHD models