



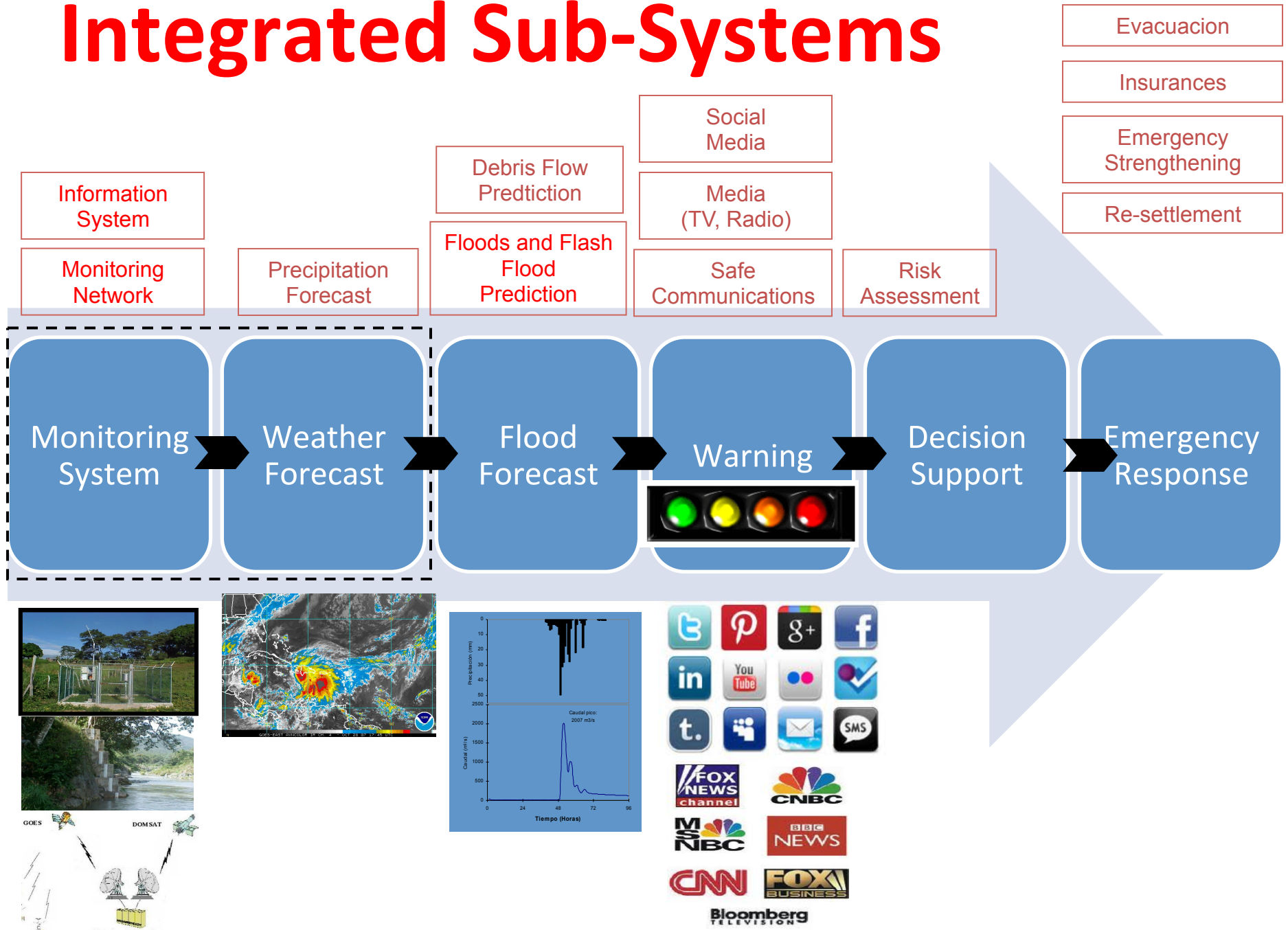
# A new approach to FEWS

HERMAN DOLDER - FIDEL PEREZ

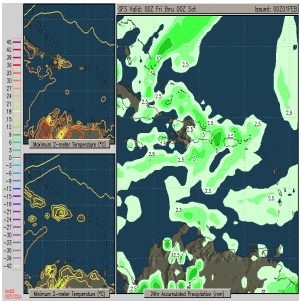
October 10, 2013

At University of Utah, Salt Lake City, Utah

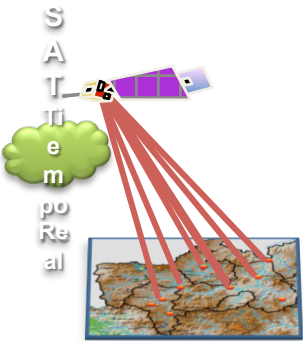
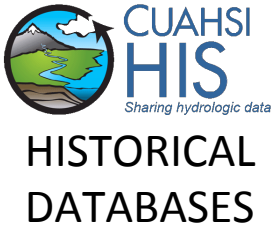
# Integrated Sub-Systems



# From Meteorological Forecast and Data Monitoring to a Hydrologic Forecast



WEATHER FORECAST



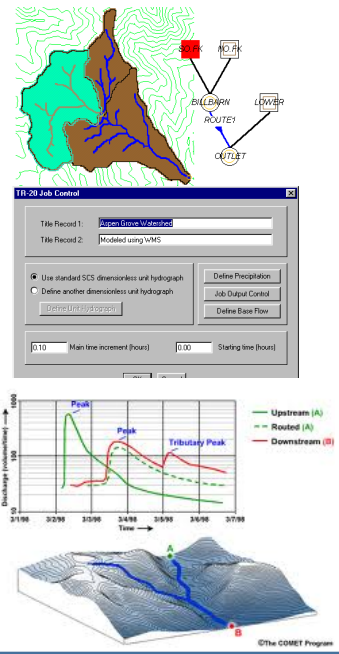
TELEMETRY



GIS SERVER



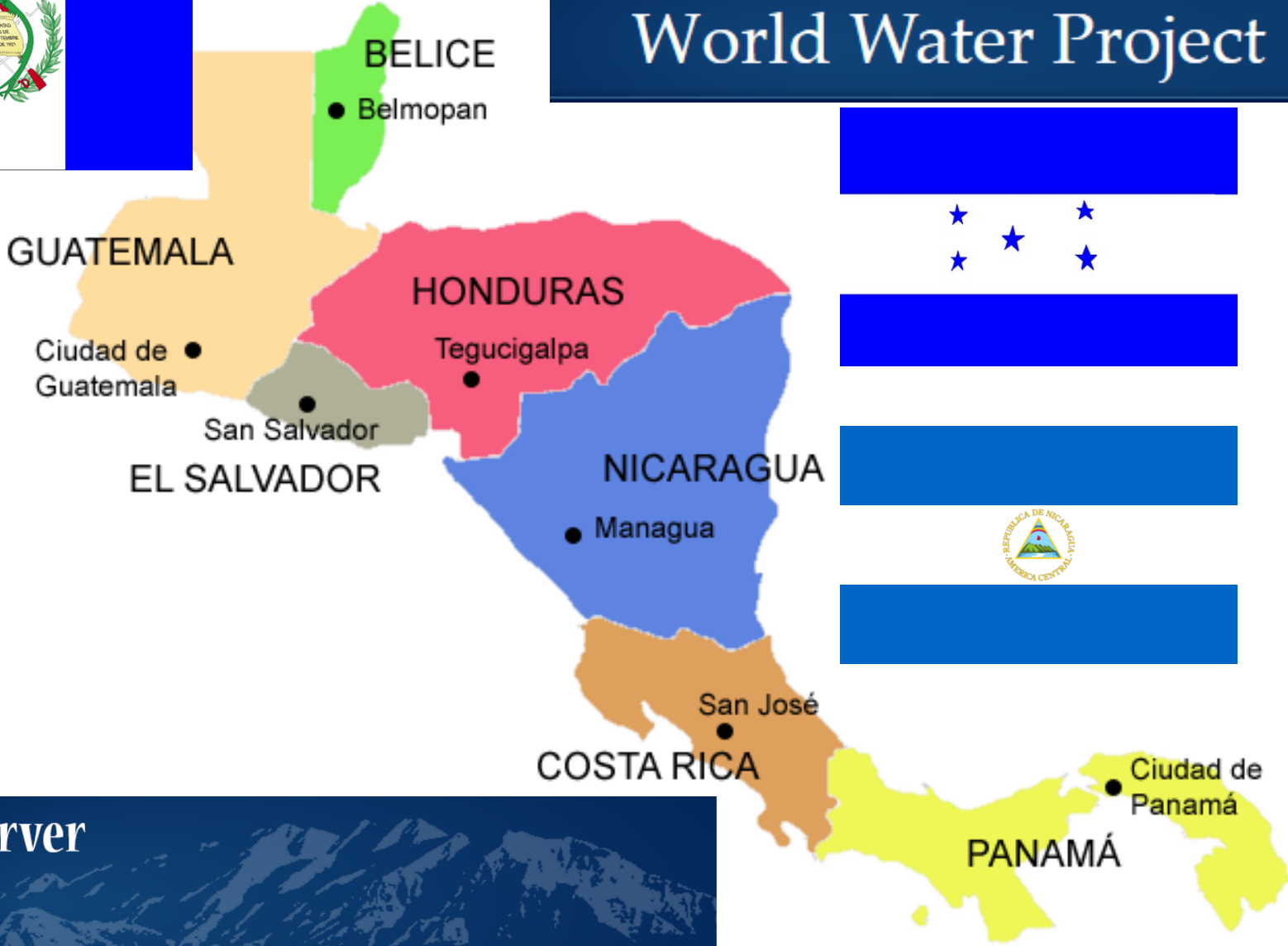
**HYDROLOGIC MODELS**  
(previously calibrated and ready for simulation) **OR**  
**SAVED SIMULATIONS**







**BYU** | BRIGHAM YOUNG UNIVERSITY  
**World Water Project**



<http://www.youtube.com/watch?v=UxC3itJkqps>



**How much it rained?**

**Where?**

**When it started?**

**Was there snow?**

**How much?**

**What was the temperature?**

**What was the soil moisture?**

**What...**

**“when the time to perform arrives,  
the time to prepare has passed”**







- ✓ Food
  - ✓ Water
  - ✓ Fuel
  - ✓ Clothes
- Computation Time

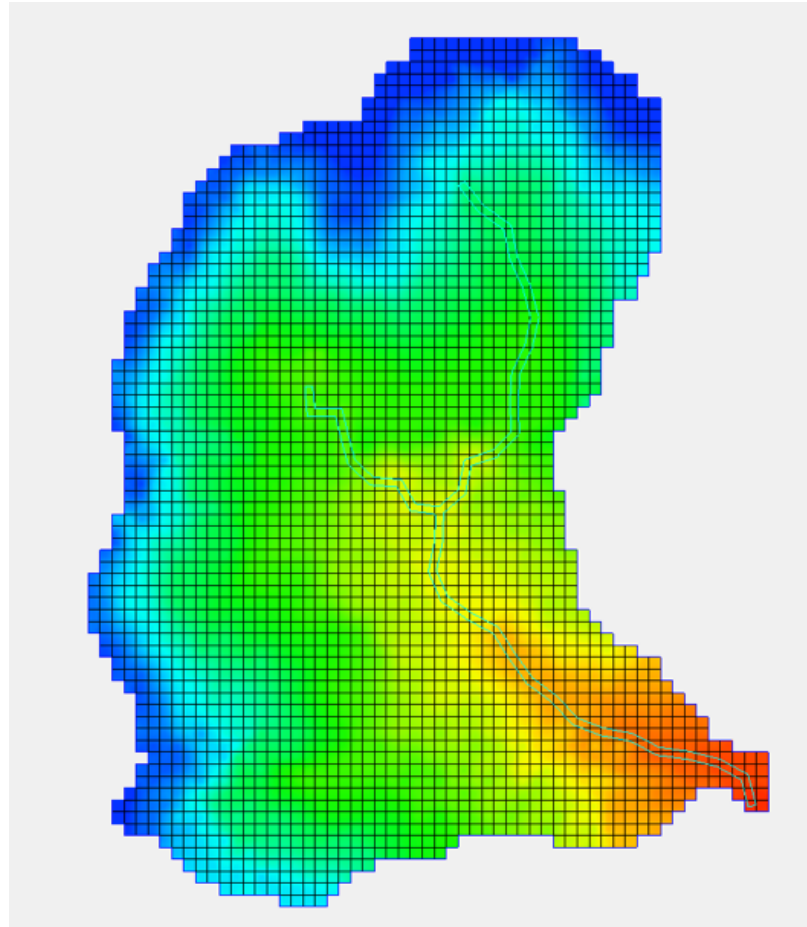
## Assumption:

*“Similar conditions produce similar results”*

Our purpose will be to **generate** a large set of model runs to evenly cover the “variables space” and a technique to **select** the one that better fits the current conditions

**Generate**

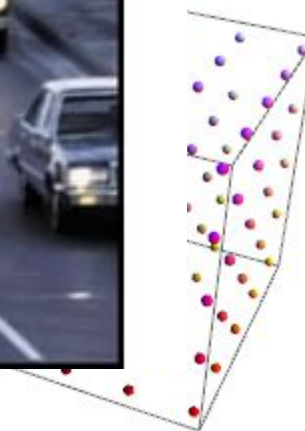
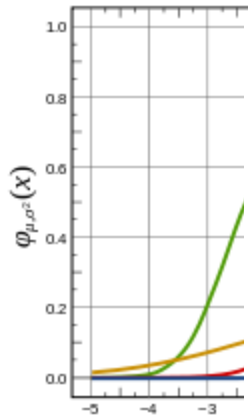
# Generate



## Generate

<b>Variable</b>	<b>Min value</b>	<b>Max value</b>	<b>units</b>
temp	20	100	°F
tempamp	5	20	°F
rainlenght	1	10	hs
rainint	10	100	mm
rainstart	0	24	hs
snowgrad	0	0.002	m/m
snowline	-100	400	m

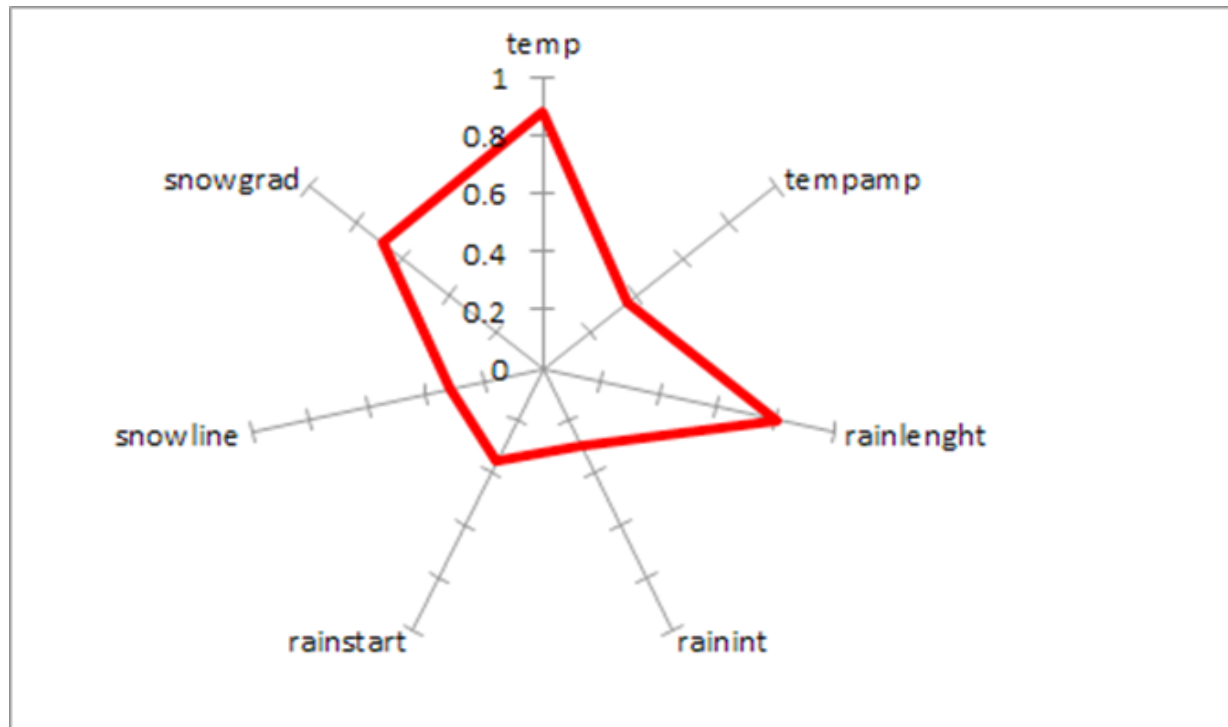
# Generate





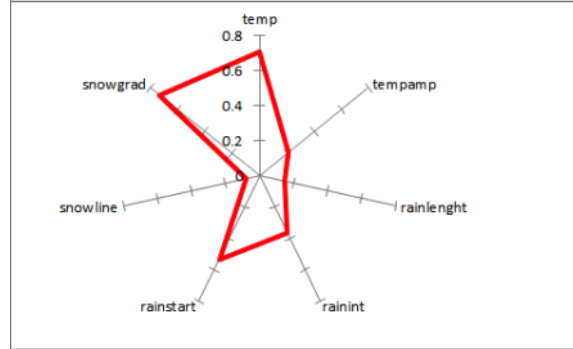
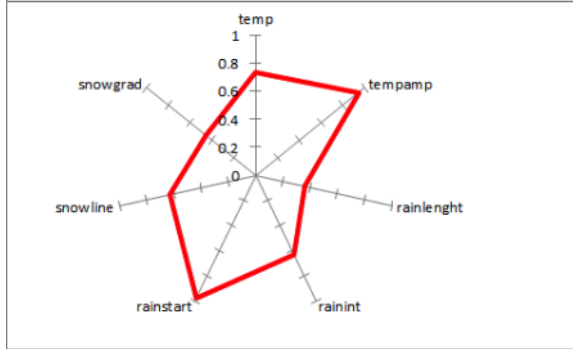
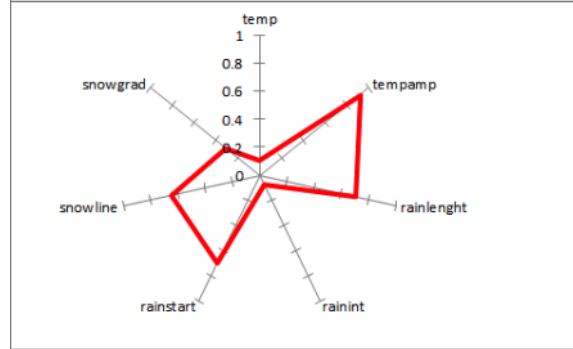
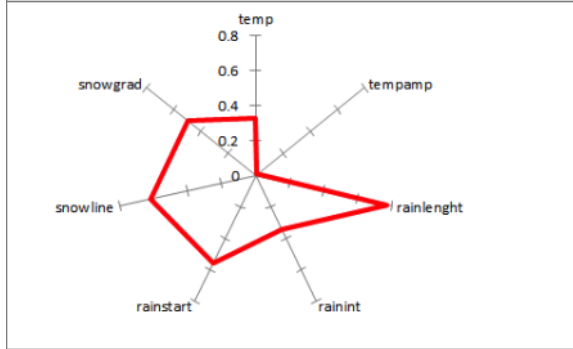
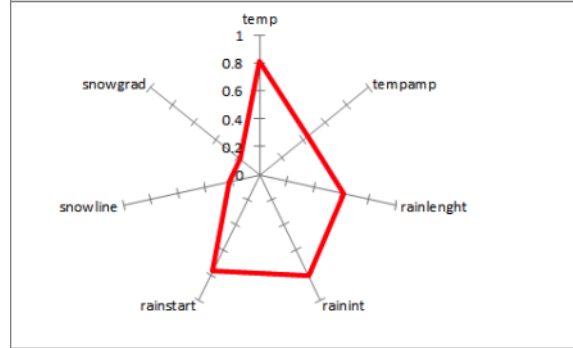
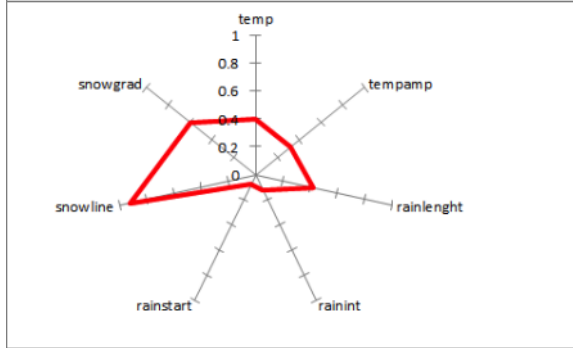
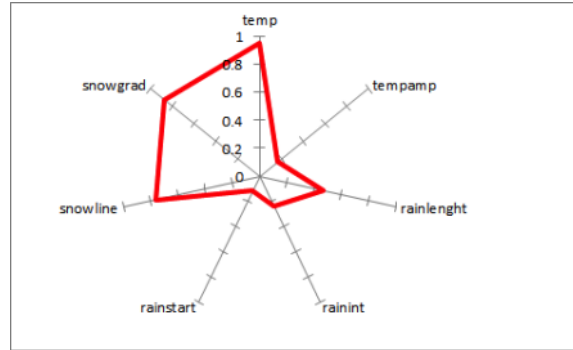
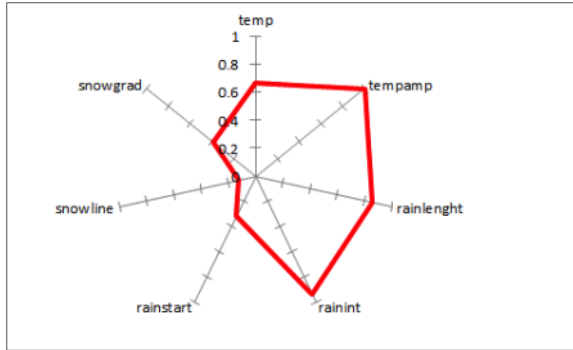
# Generate

<b>Variable</b>	temp	tempamp	rainlenght	rainint	rainstart	snowline	snowgrad
<b>Quantile</b>	3 <sup>rd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	3 <sup>rd</sup>
<b>Value</b>	0.87665	0.36473	0.80741	0.2967	0.35116	0.31854	0.68824

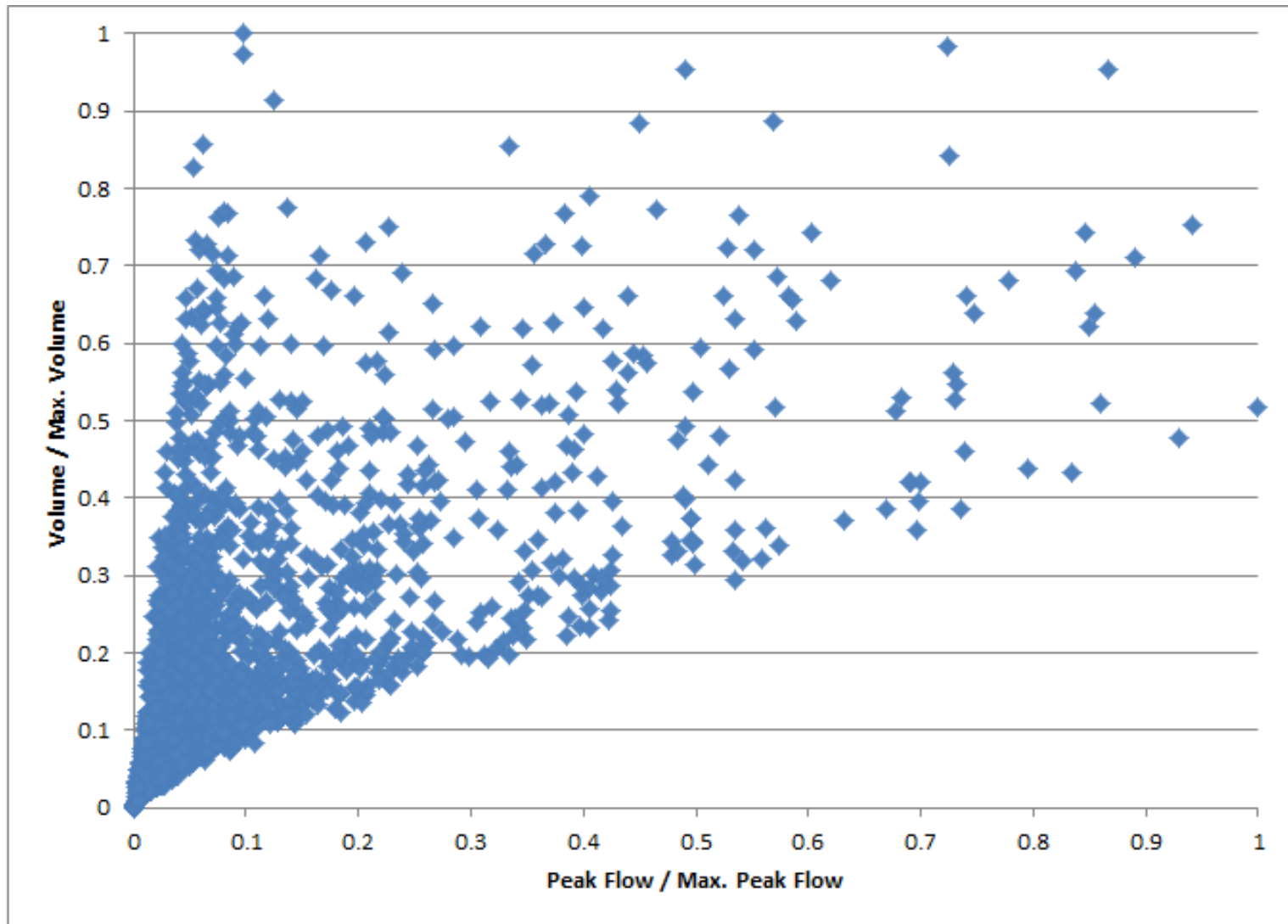




# Generate

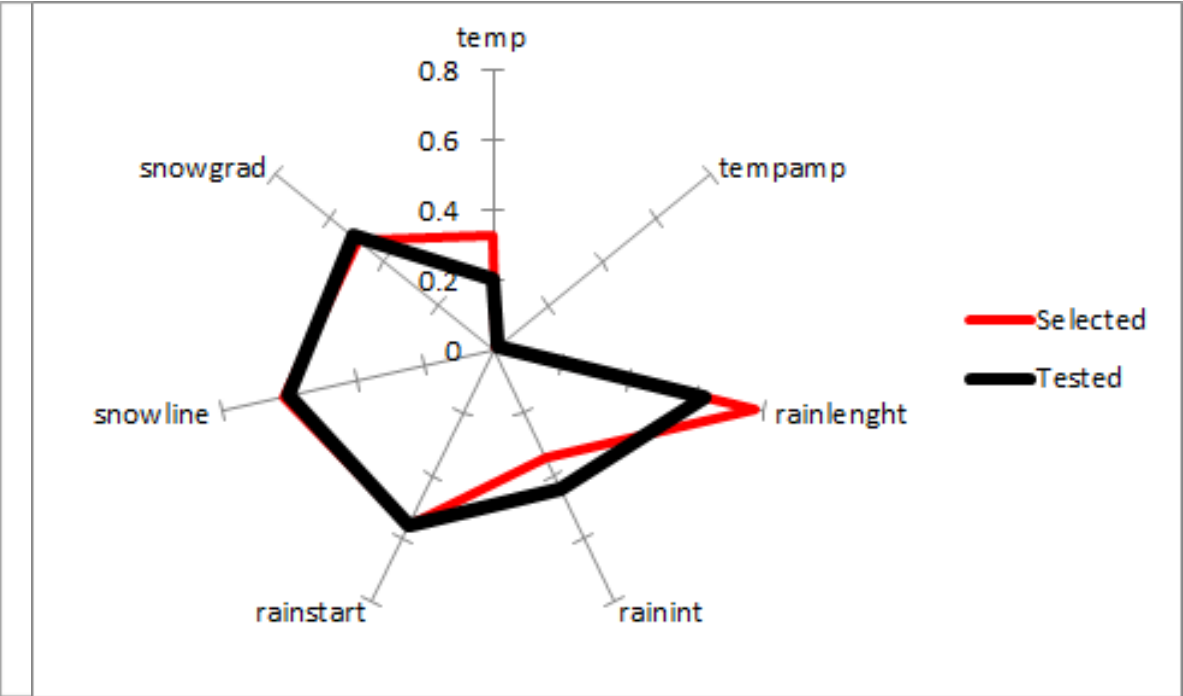


# Generate

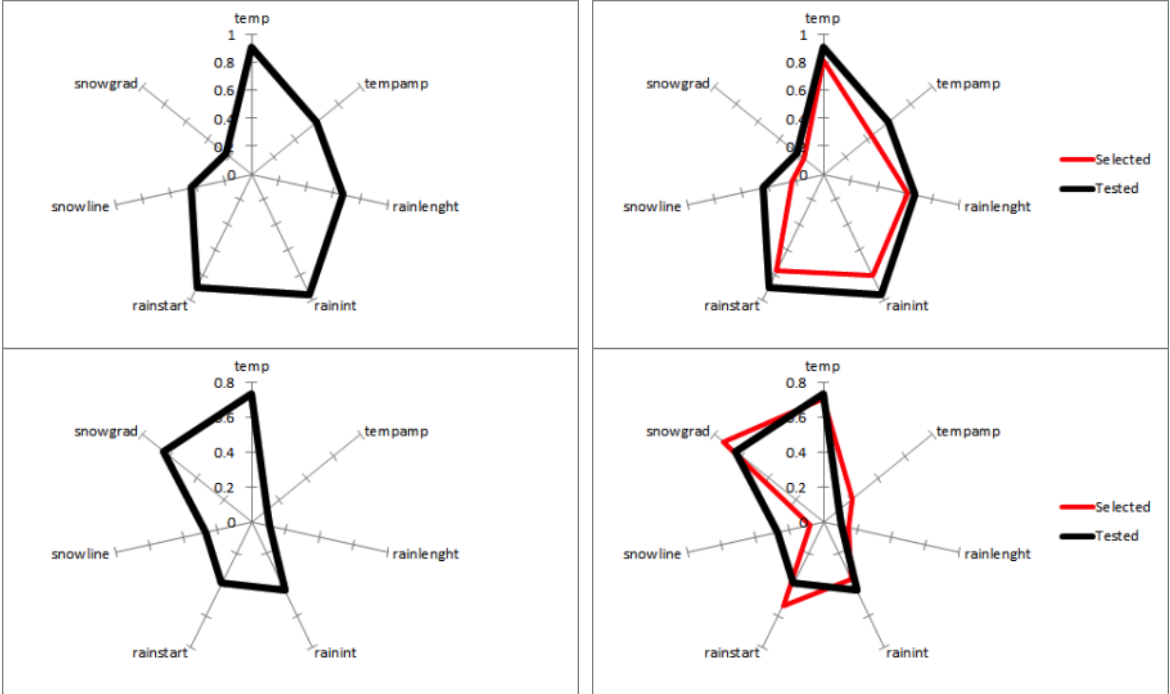


**Select**

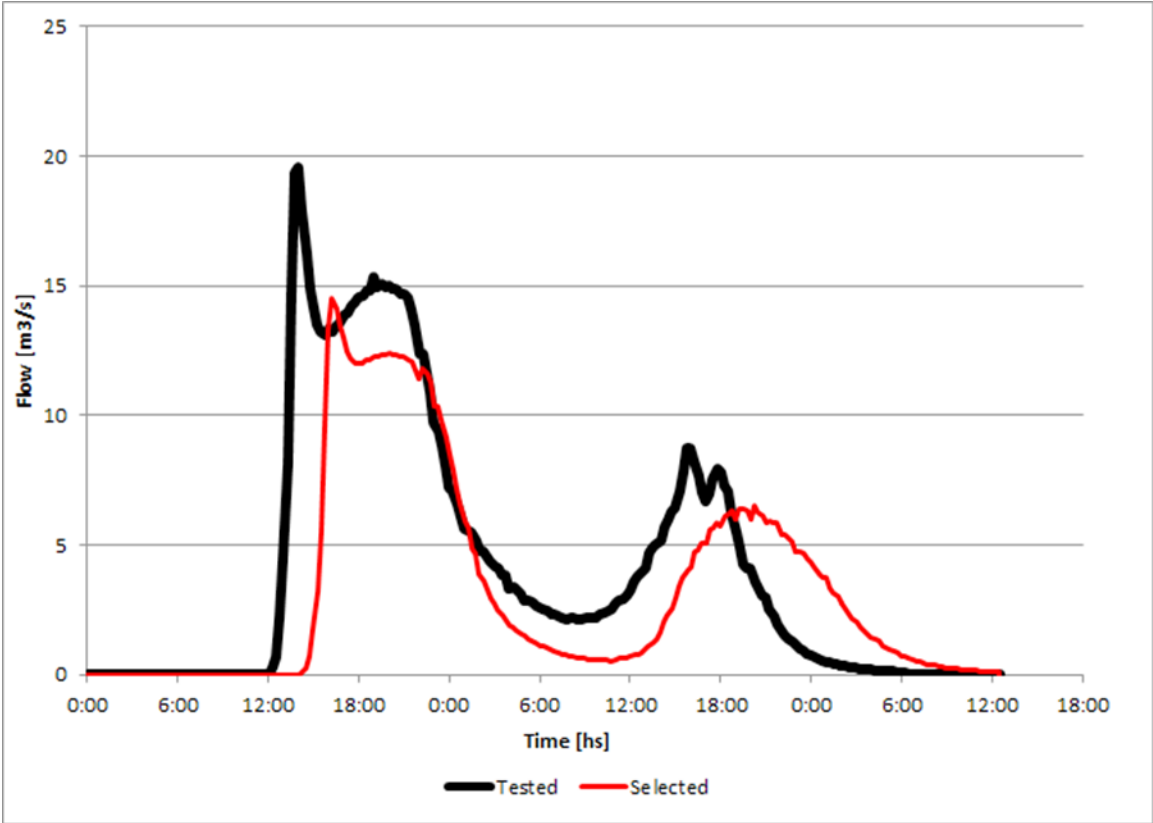
# Select



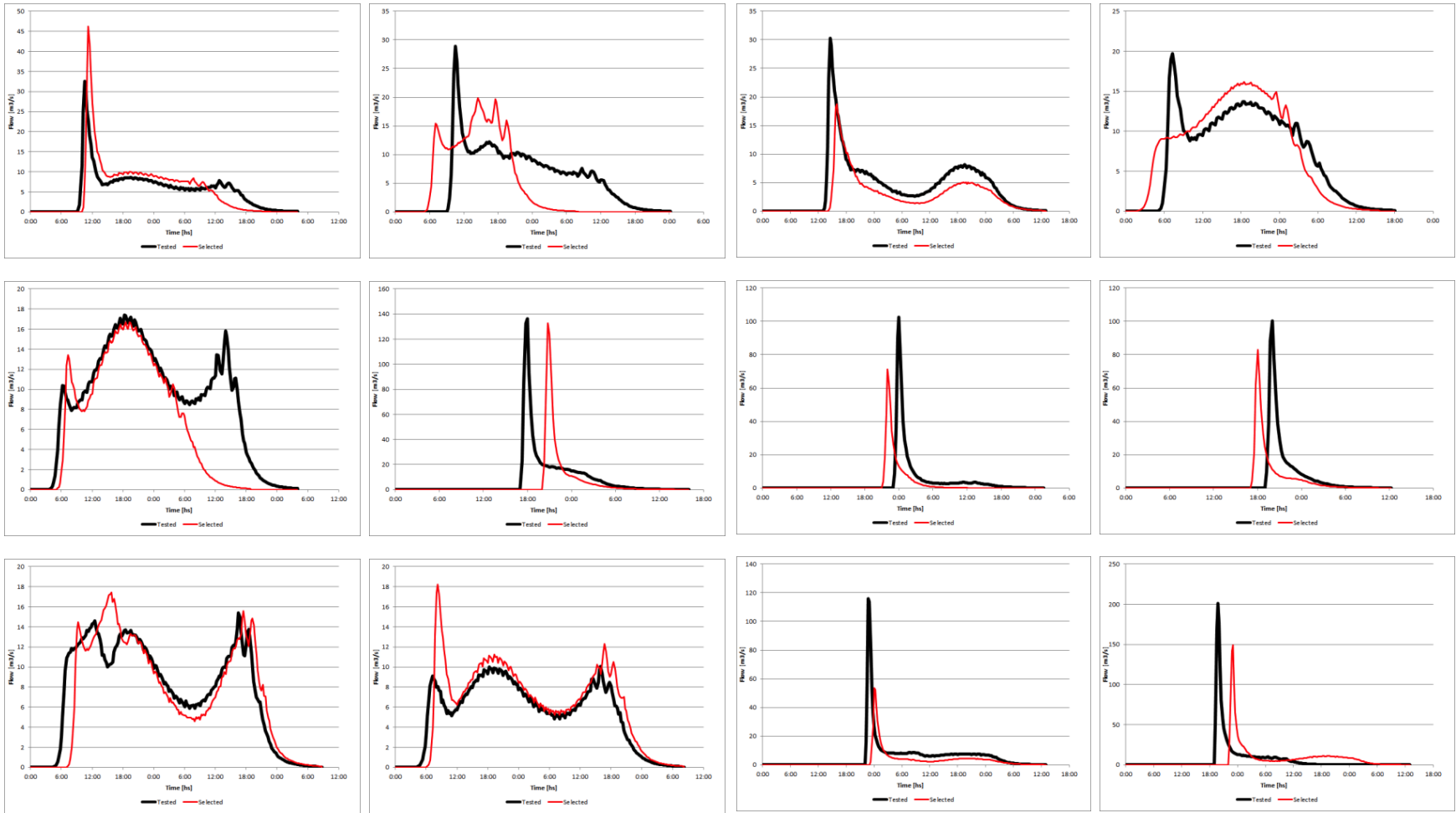
# Select



# Select



# Select



*Similar conditions produced similar results?*

**Grow**



# Grow

<b>Variable</b>	temp	tempamp	rainlenght	rainint	rainstart	snowline	snowgrad
<b>3Quantile</b>	3 <sup>rd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	3 <sup>rd</sup>
<b>4Quantile</b>	4 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
<b>Value</b>	0.87665	0.36473	0.80741	0.2967	0.35116	0.31854	0.68824



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