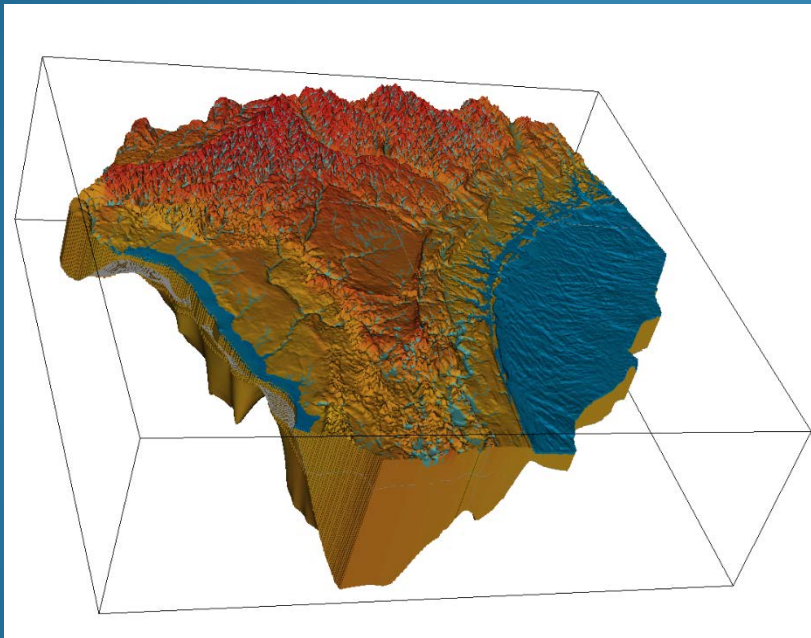


# Rumbaugh Comments



NFSEGV1.1  
Workshop  
April 18, 2018



# Summary

- Improvement in Phi Contribution in Most Groups
- Head Statistics Improved over 004b
- Average Spring % Error Improved over 004b
- Flooded Cells Worse than 004b
- Parameters at Bounds Improved over 004b
- Cells with  $K_z > K_x$  much Improved over 004b



# Contribution from Obs. Groups

Observation Group	004b	007h	Difference	Observation Group	004b	007h	Difference
TOTAL	323,870	275,391	48,479	vd_1to3	9,464	11,607	-2,143
h2001_lay1	7,944	5,141	2,803	vd_3to5	18,834	17,220	1,614
h2001_lay2	287	258	29	qr01	20,491	7,139	13,352
h2001_lay3	27,552	23,691	3,861	qr09	4,147	3,213	934
h2001_lay4	449	718	-269	qspring01	49,256	24,670	24,586
h2001_lay5	1,071	1,471	-400	qspring09	58,455	57,058	1,397
h2001_lay7	74	125	-51	qs_spring01	4,219	1,261	2,957
h2009_lay1	12,276	10,792	1,484	qs_spring09	3,246	1,384	1,861
h2009_lay2	272	256	16	qs01	9,729	812	8,917
h2009_lay3	25,561	22,198	3,363	qs09	5,384	826	4,558
h2009_lay4	187	217	-30	qlake01	20,206	14,344	5,862
h2009_lay5	1,206	1,142	64	qlake09	26,619	19,665	6,954
h2009_lay7	37	15	22	wp_dry_2001	5	13	-8
hd2001_lay3	7,228	6,123	1,105	wp_dry_2009	0	0	0
hd2009_lay3	8,239	4,787	3,452	wp_wet_2001	0	10	-10
				wp_wet_2009	0	85	-85

*Note: Removed “td...” group from 004b & combined “vd...” group in 007h*

# Head Statistics – 004b & 007h

			<b>004b</b>	<b>007h</b>	<u>2010</u>
	<b>Residual Mean</b>		-0.07	-0.06	0.70
<b>2001</b>	<b>Absolute Mean</b>		4.62	4.41	4.76
	<b>Std. Deviation</b>		7.17	6.77	7.37
	<b>Residual Mean</b>		0.04	0.26	
<b>2009</b>	<b>Absolute Mean</b>		4.74	4.48	
	<b>Std. Deviation</b>		8.84	8.87	

*Note: Statistics above are unweighted*

# 2001 Spring Flows

004B					007H				
Spring	Observed	Simulated	Residual	% Error	Spring	Observed	Simulated	Residual	% Error
qspring01_n011235002	-418.75	-431.871	13.1206	-3.13%	qspring01_7943	-386	-195.936	-190.064	49.24%
qspring01_7943	-386	-103.787	-282.213	73.11%	qspring01_n011235002	-242.88	-232.346	-10.5338	4.34%
qspring01_28224892	-180.16	-174.368	-5.79241	3.22%	qspring01_28224892	-180.16	-185.393	5.2334	-2.90%
qspring01_31843538	-180.16	-174.368	-5.79241	3.22%	qspring01_31843538	-180.16	-185.39	5.22982	-2.90%
qspring01_587	-169.9	-512.432	342.532	-201.61%	qspring01_587	-169.9	-531.472	361.572	-212.81%
qspring01_n011331001	-144.18	-140.161	-4.01877	2.79%	qspring01_20041	-136.96	-137.036	7.62E-02	-0.06%
qspring01_20041	-136.96	-135.142	-1.81833	1.33%	qspring01_s111326002	-121	-116.648	-4.35151	3.60%
qspring01_351900	-103.4	-104.43	1.03012	-1.00%	qspring01_351900	-103.4	-105.942	2.54242	-2.46%
qspring01_s111326002	-100	-100.997	0.997303	-1.00%	qspring01_s020302004	-94.41	-86.8048	-7.60515	8.06%
qspring01_s020302004	-94.41	-102.208	7.79814	-8.26%	qspring01_291896	-92.75	-104.693	11.9434	-12.88%
qspring01_291896	-92.75	-102.037	9.28693	-10.01%	qspring01_s071634012	-90.64	-99.8969	9.25685	-10.21%
qspring01_s071634012	-92.4	-102.152	9.75224	-10.55%	qspring01_s051334002	-87.55	-80.0425	-7.50745	8.58%
qspring01_s051334002	-87.55	-75.1344	-12.4156	14.18%	qspring01_6001	-86.4	-91.0441	4.64412	-5.38%
qspring01_s011207009	-86.45	-89.1192	2.66925	-3.09%	qspring01_s011207009	-83.07	-90.6341	7.56407	-9.11%
qspring01_6001	-86.4	-80.9547	-5.44535	6.30%	qspring01_2312764	-80	-85.1406	5.14056	-6.43%
qspring01_n011117008	-82.92	-58.2595	-24.6605	29.74%	qspring01_341901	-74.6	-89.5319	14.9319	-20.02%
qspring01_2312764	-80	-79.4555	-0.54447	0.68%	qspring01_n011121006	-71.23	-55.4362	-15.7938	22.17%
qspring01_s081028004	-74.98	-65.2348	-9.74519	13.00%	qspring01_n011331001	-70.65	-64.0427	-6.60729	9.35%
qspring01_341901	-74.6	-83.5145	8.91449	-11.95%	qspring01_11562199	-70	-70.4007	0.400683	-0.57%
qspring01_n011121006	-71.23	-56.8733	-14.3567	20.16%	qspring01_s071620010	-70	0	-70	100.00%

20 Largest: 4.14% All: 2.76% Error

20 Largest: 4.02% All: 1.64% Error

# 2009 Spring Flows

004B				
Spring	Observed	Simulated	Residual	% Error
qspring09_587	-712	-709.198	-2.80162	0.39%
qspring09_12341	-451	-437.137	-13.8633	3.07%
qspring09_n011235002	-435.47	-417.205	-18.265	4.19%
qspring09_7943	-404	-122.438	-281.562	69.69%
qspring09_28224892	-199.8	-210.018	10.2184	-5.11%
qspring09_31843538	-199.8	-210.018	10.2184	-5.11%
qspring09_s020302004	-182.12	-183.561	1.44134	-0.79%
qspring09_n011331001	-133.82	-137.073	3.25292	-2.43%
qspring09_20041	-124.51	-126.219	1.70852	-1.37%
qspring09_s071634012	-114	-112.641	-1.35862	1.19%
qspring09_s111326002	-110.25	-109.345	-0.90546	0.82%
qspring09_n011117008	-104	-104.707	0.707118	-0.68%
qspring09_351900	-103	-101.511	-1.4894	1.45%
qspring09_291896	-102	-100.906	-1.09416	1.07%
qspring09_341901	-94.6	-86.3725	-8.22751	8.70%
qspring09_s011207009	-93.87	-81.3521	-12.5179	13.34%
qspring09_s051334002	-92.5	-76.2622	-16.2378	17.55%
qspring09_n011121006	-87.88	-97.1717	9.29169	-10.57%
qspring09_6001	-78.5	-78.4206	-7.94E-02	0.10%
qspring09_s061607003	-77.17	-86.7692	9.59924	-12.44%

007H				
Spring	Observed	Simulated	Residual	% Error
qspring09_587	-712	-716.93	4.92975	-0.69%
qspring09_7943	-611.65	-230.071	-381.579	62.39%
qspring09_12341	-451	-448.174	-2.82593	0.63%
qspring09_n011235002	-243.86	-240.368	-3.49171	1.43%
qspring09_28224892	-199.8	-211.325	11.5255	-5.77%
qspring09_31843538	-199.8	-211.322	11.5215	-5.77%
qspring09_s020302004	-170	-163.966	-6.03357	3.55%
qspring09_20041	-124.51	-123.543	-0.9666	0.78%
qspring09_s111326002	-124	-128.519	4.5191	-3.64%
qspring09_s071634012	-111.83	-114.899	3.06888	-2.74%
qspring09_n011117008	-104	-104.184	0.184248	-0.18%
qspring09_351900	-103	-101.218	-1.78222	1.73%
qspring09_s011207009	-102.49	-90.7017	-11.7883	11.50%
qspring09_291896	-102	-102.31	0.309537	-0.30%
qspring09_341901	-94.6	-91.8026	-2.79738	2.96%
qspring09_s051334002	-92.5	-93.2036	0.703634	-0.76%
qspring09_n011121006	-87.88	-98.5773	10.6973	-12.17%
qspring09_6001	-78.5	-70.0823	-8.41766	10.72%
qspring09_s061607003	-77.17	-73.7884	-3.38164	4.38%
qspring09_s061607002	-76.07	-78.2884	2.21843	-2.92%

20 Largest: 4.15% All: 10.4% Error

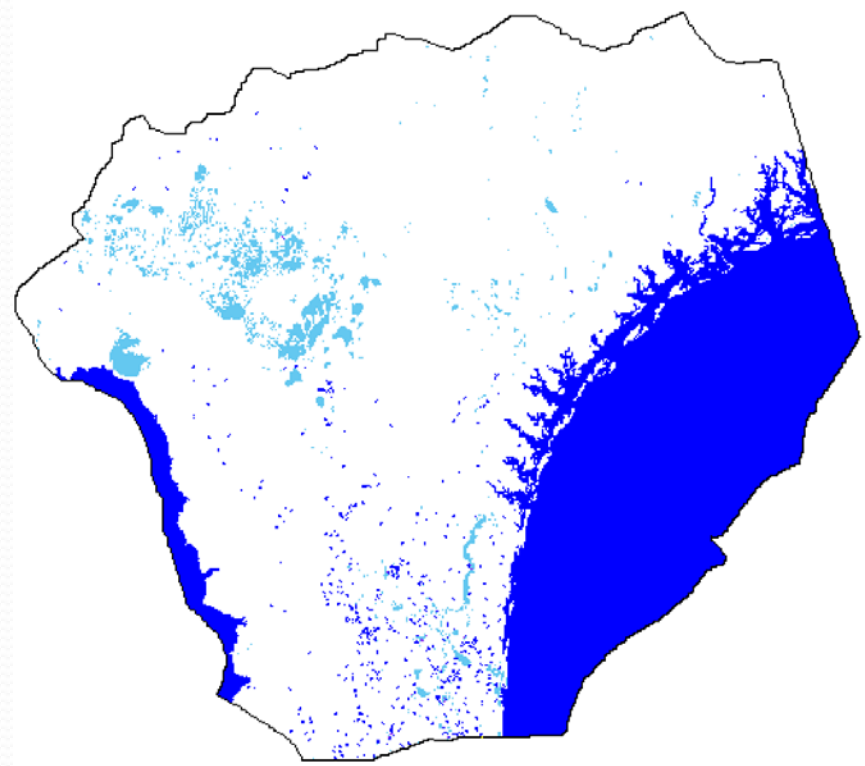
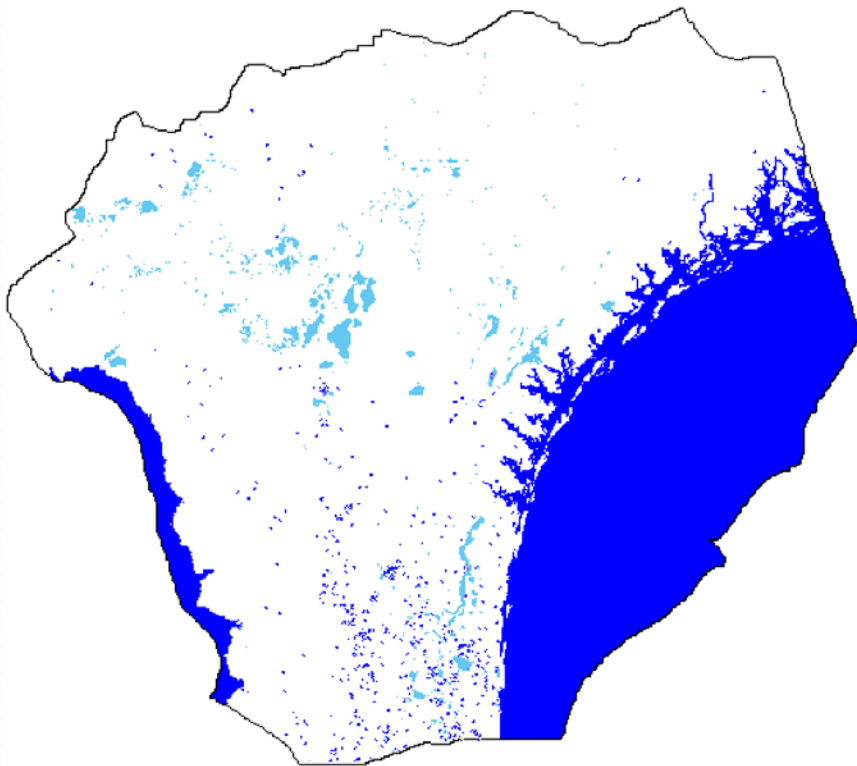
20 Largest: 3.26% All: 7.78% Error



# Flooded Cells > 5 ft – 2001

004b: 4,406 (844 > 20ft) Max: 81.5 ft

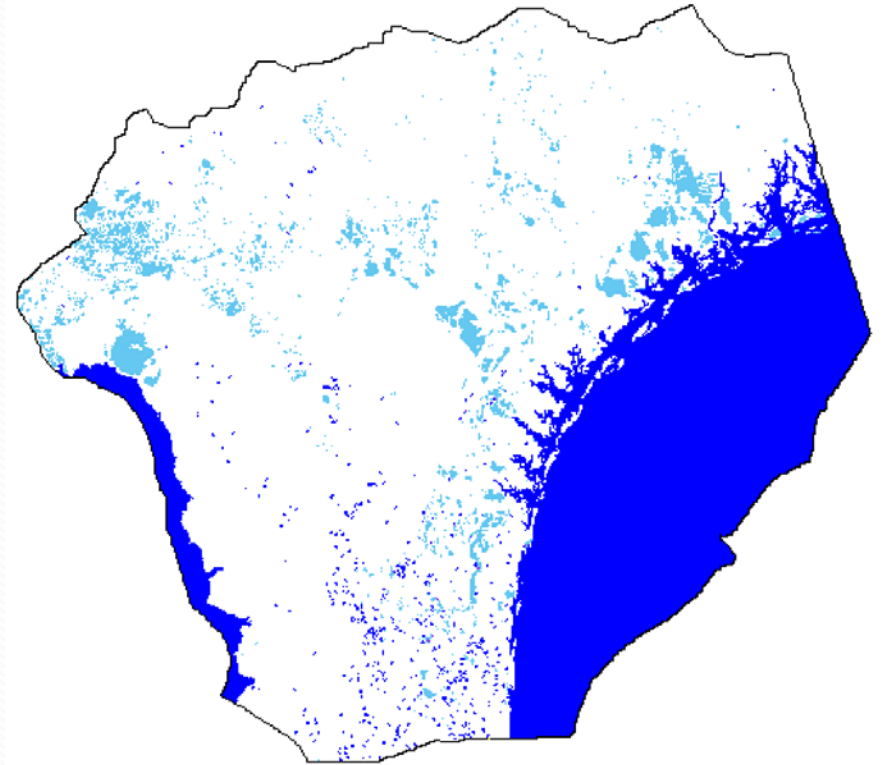
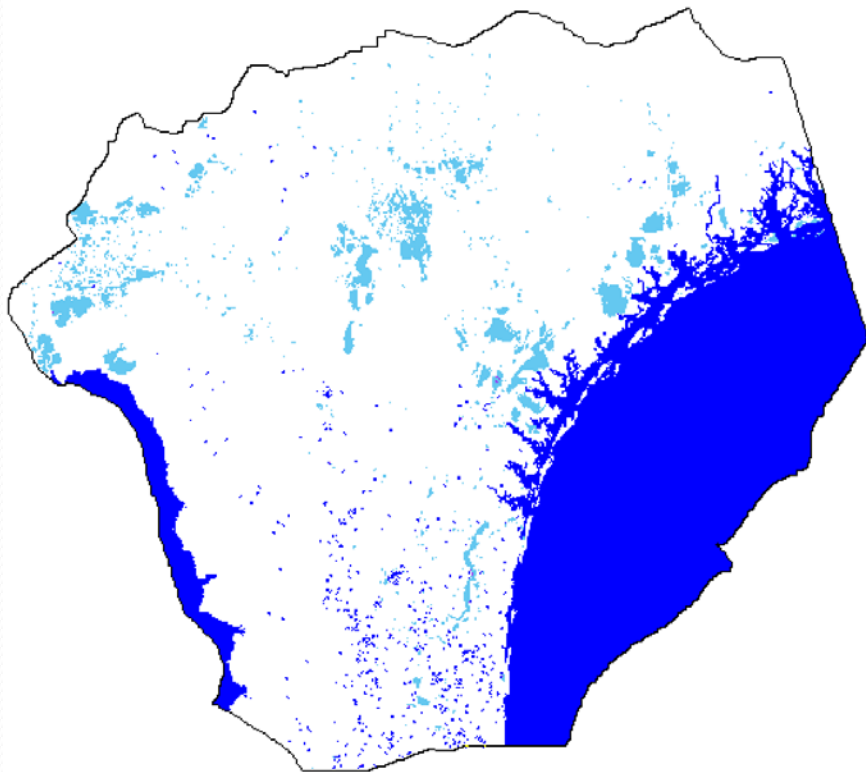
007h: 6,139 (2,023 > 20ft) Max: 359



# Flooded Cells > 5 ft – 2009

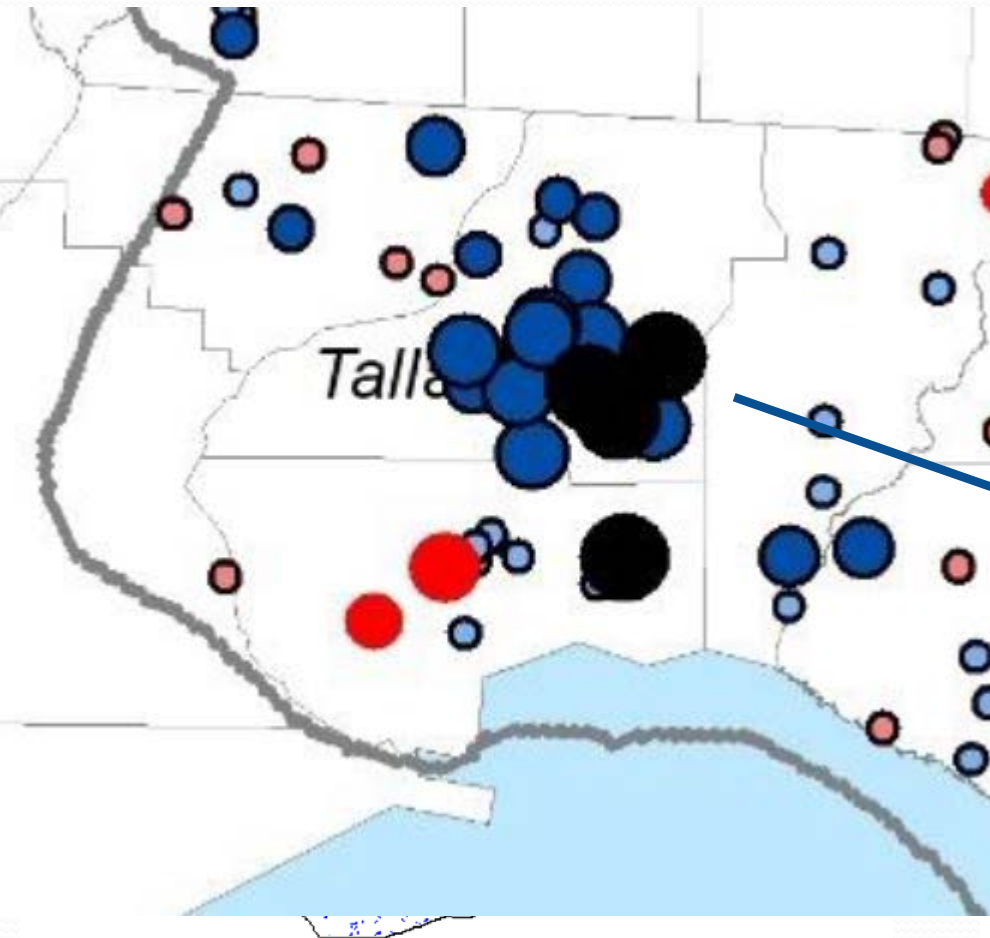
004b: 9,109 (3,206 > 20ft) Max: 226 ft

007h: 10,371 (3,269 > 20ft) Max: 491

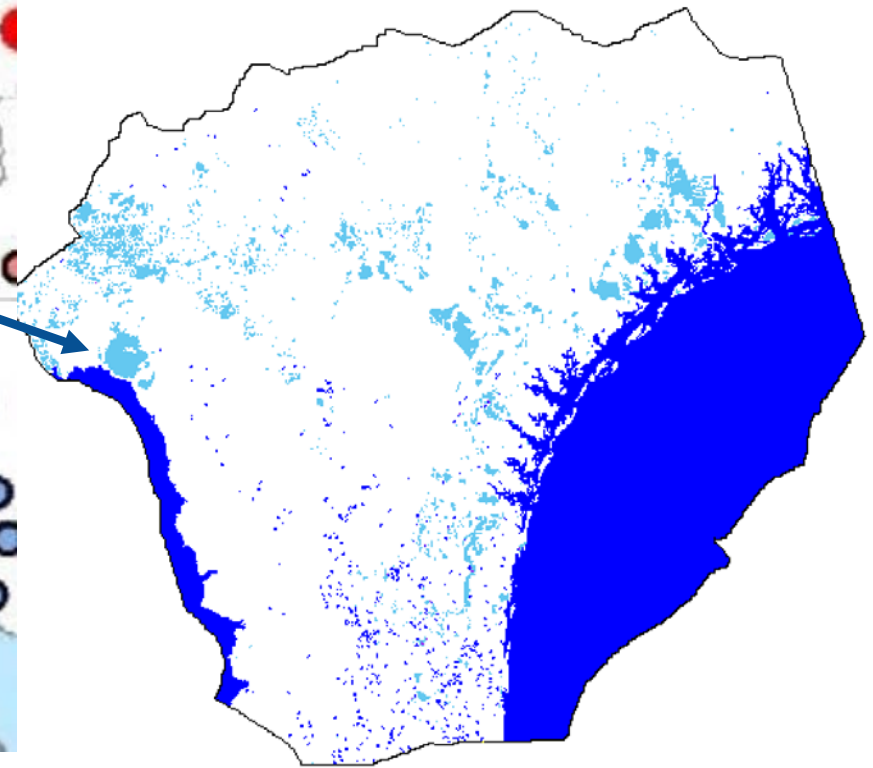




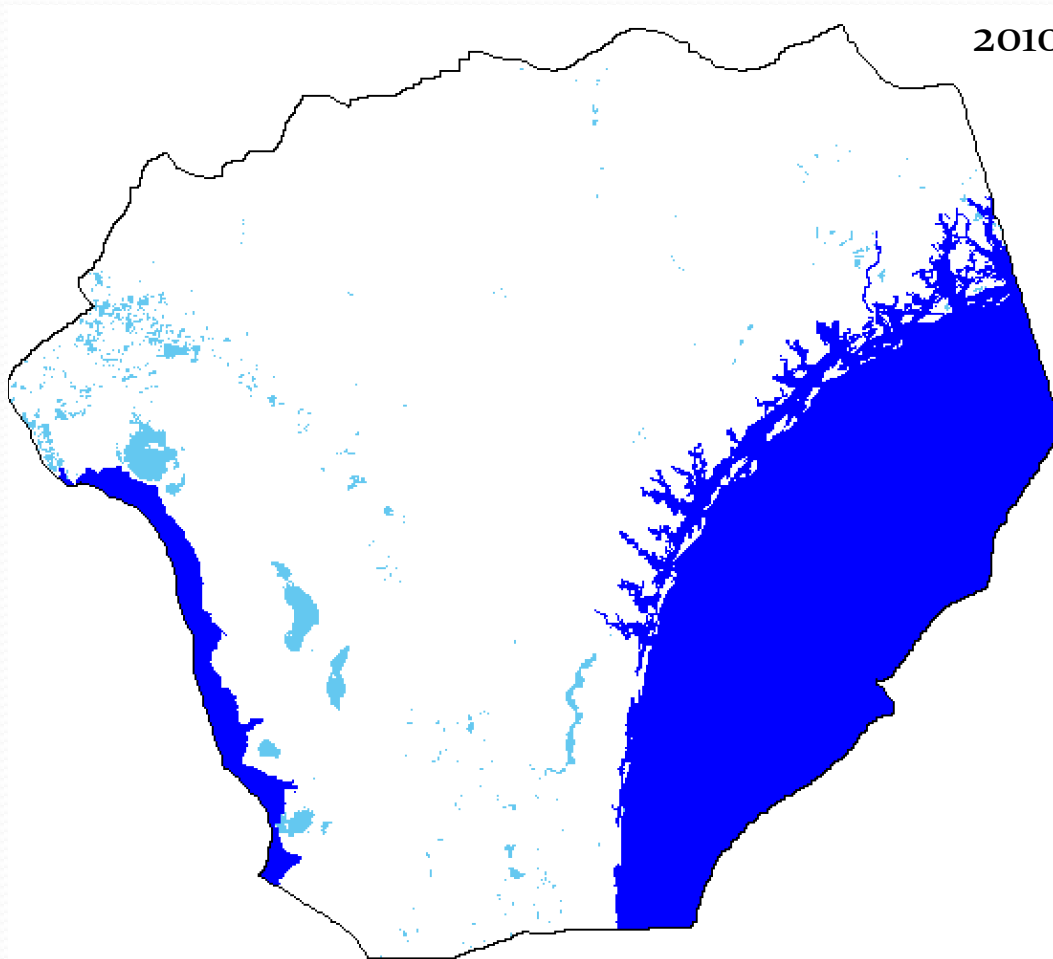
# Flooded Cells > 5 ft – 2009



007h: 10,371 (3,269 > 20ft) Max: 491



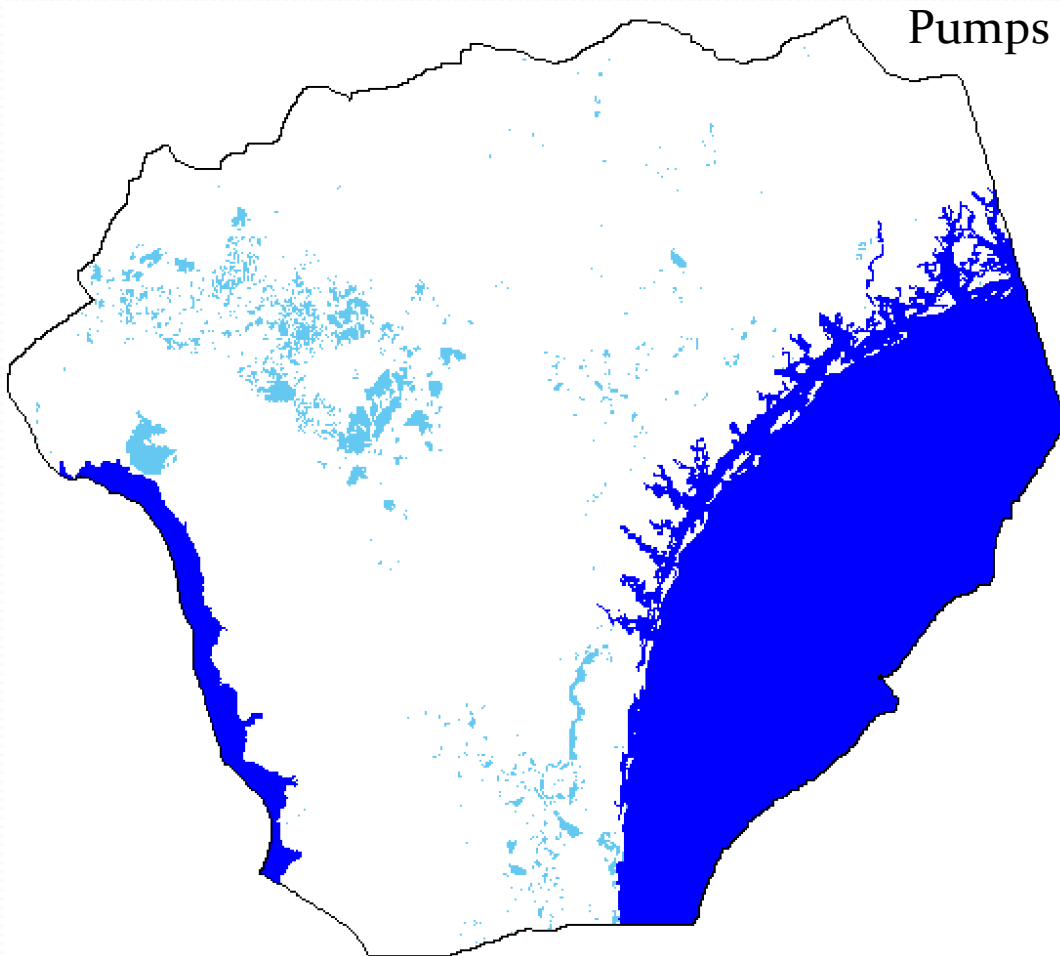
# Flooded Cells > 5 ft (2010)



2010: 59,385 (52,027 > 20ft) Max: 396

# Flooded Cells > 5 ft (Pumps Off)

Pumps Off: 61,603 (53,021 > 20ft) Max: 359



# Parameters at Bounds

- Case 004b:
  - 457 Total
  - 192 at Minimum Bound
  - 265 at Maximum Bound
- Case 007h:
  - 144 Total
  - 144 at Minimum Bound
  - 0 at Maximum Bound



# Kz > Kx Locations

- 004b : 10,168 cells with  $Kz > Kx$
- 007h : 24 cells

