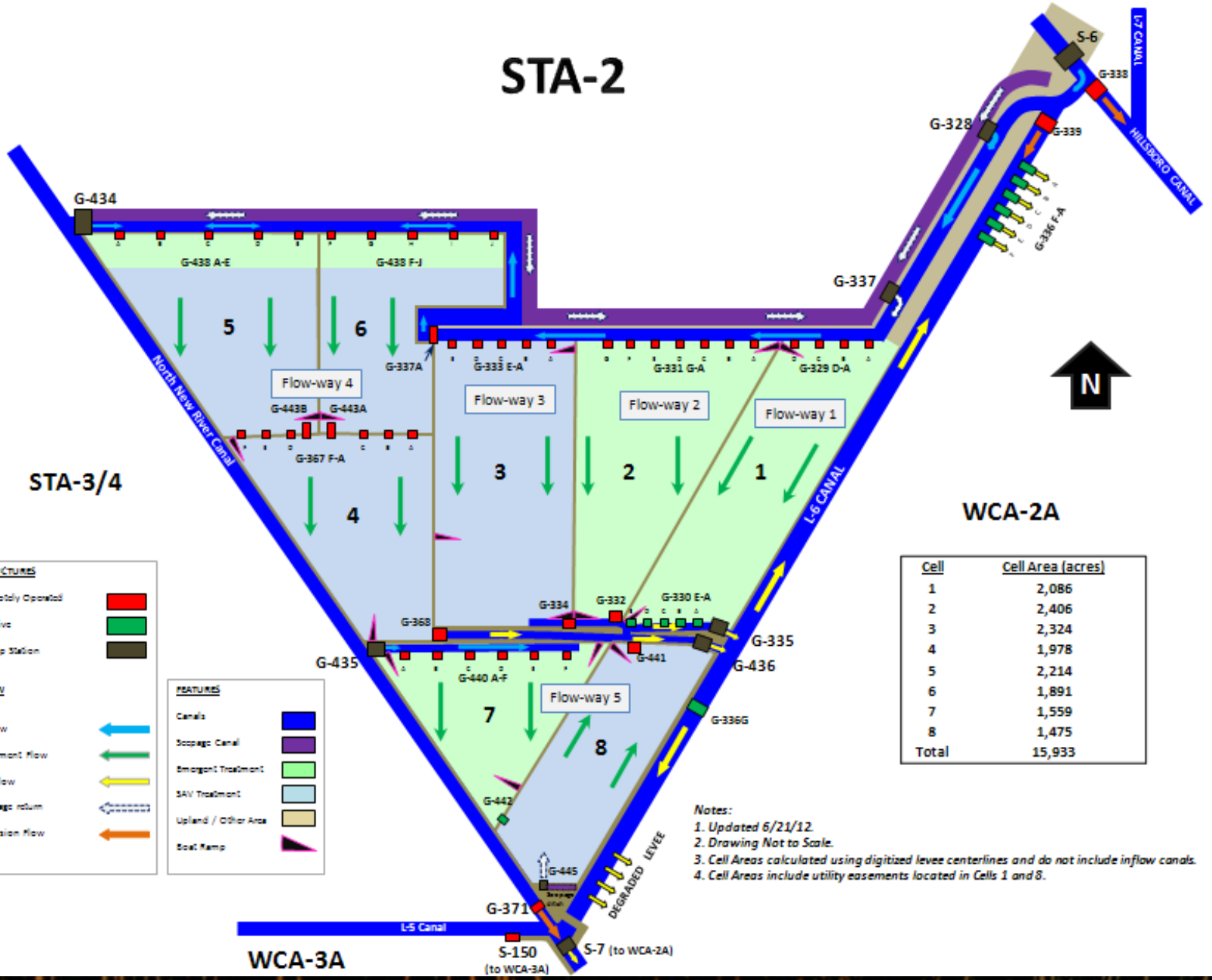
APPLICATIONS of LOEM-CW MODEL to STAs

By KANG-REN JIN and Matahel Ansar

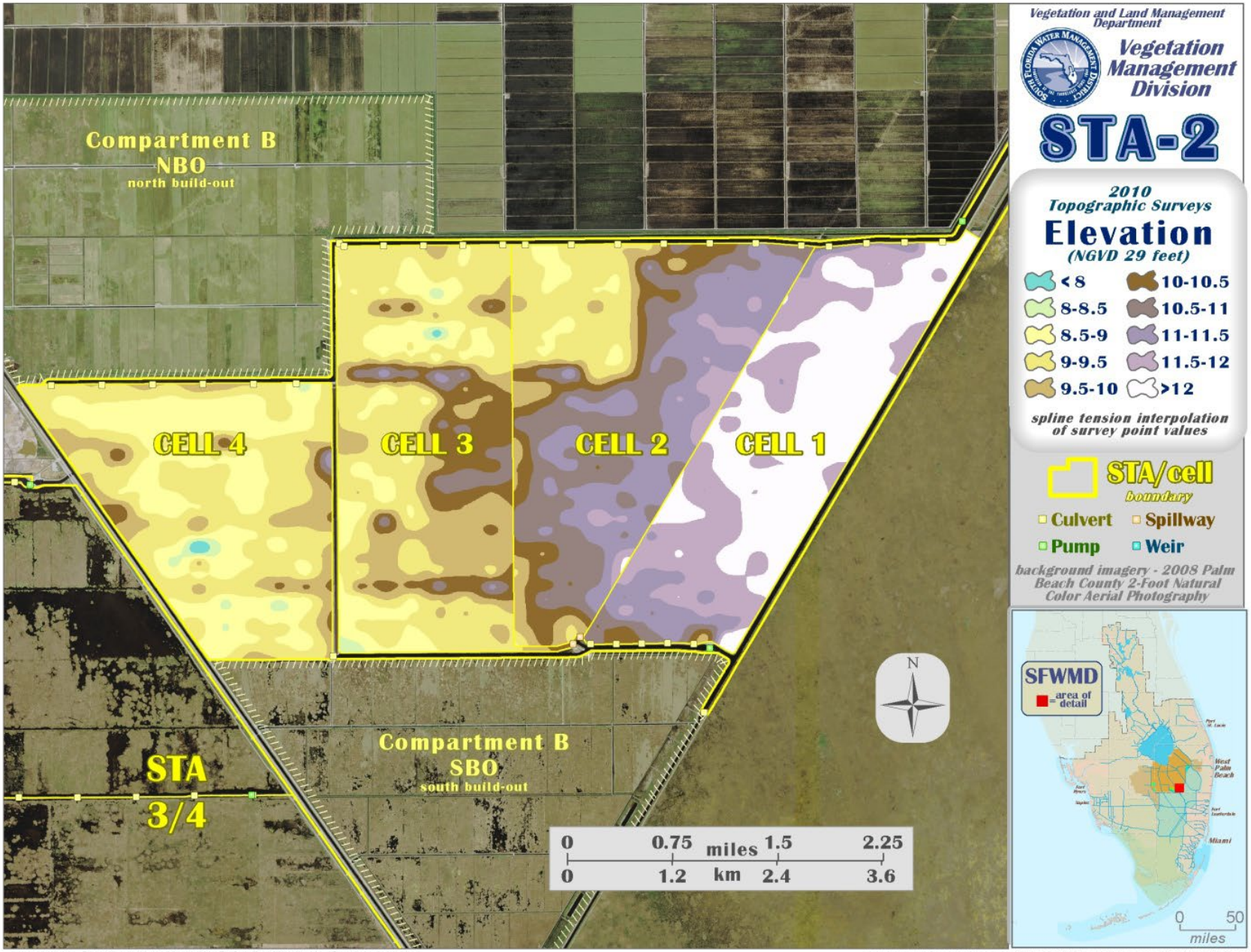
STA-2



Cell	Cell Area (acres)
1	2,086
2	2,406
3	2,324
4	1,978
5	2,214
6	1,891
7	1,559
8	1,475
Total	15,933

Notes:

1. *Updated 6/21/12.*
2. *Drawing Not to Scale.*
3. *Cell Areas calculated using digitized levee centerlines and do not include inflow canals.*
4. *Cell Areas include utility easements located in Cells 1 and 8.*



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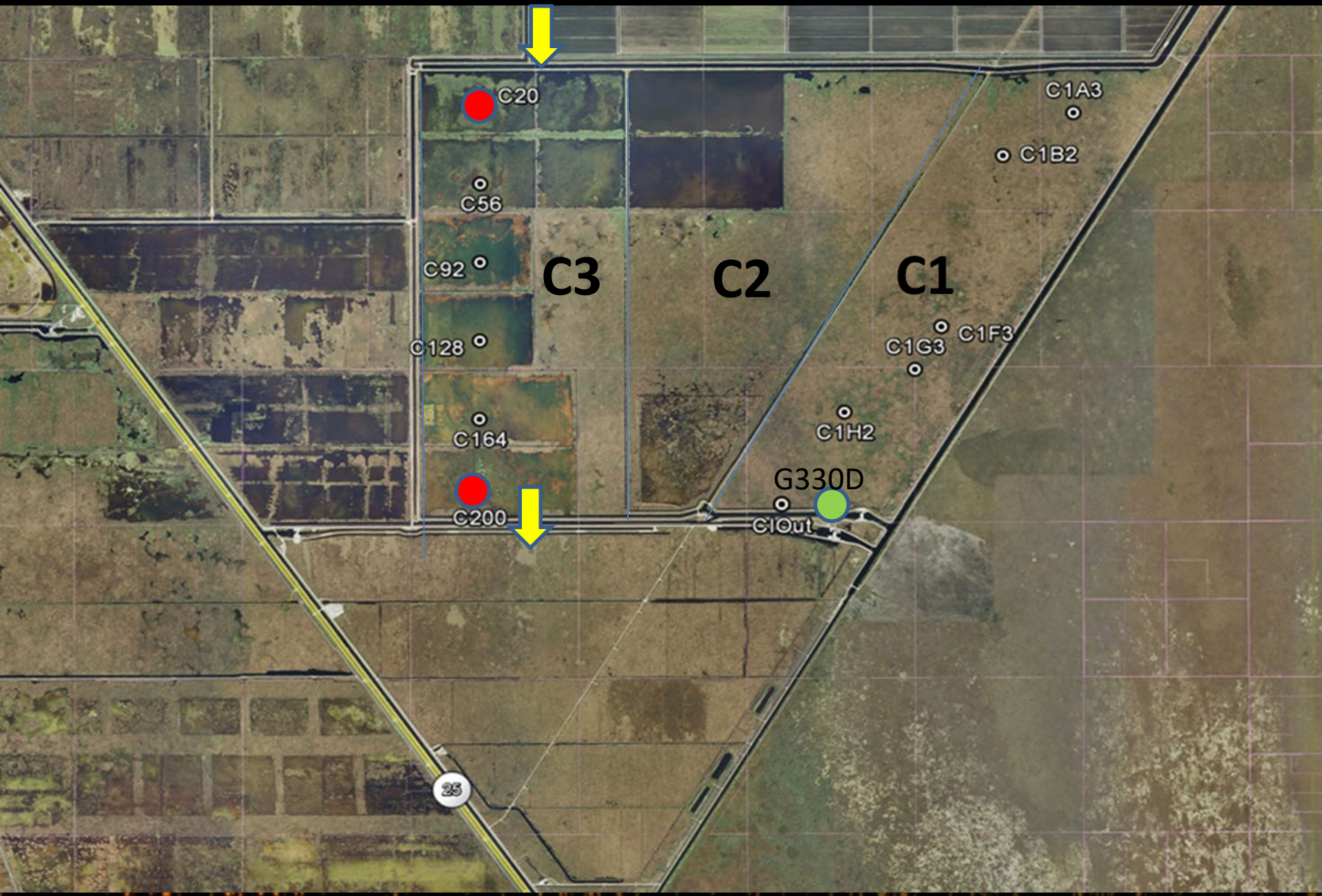
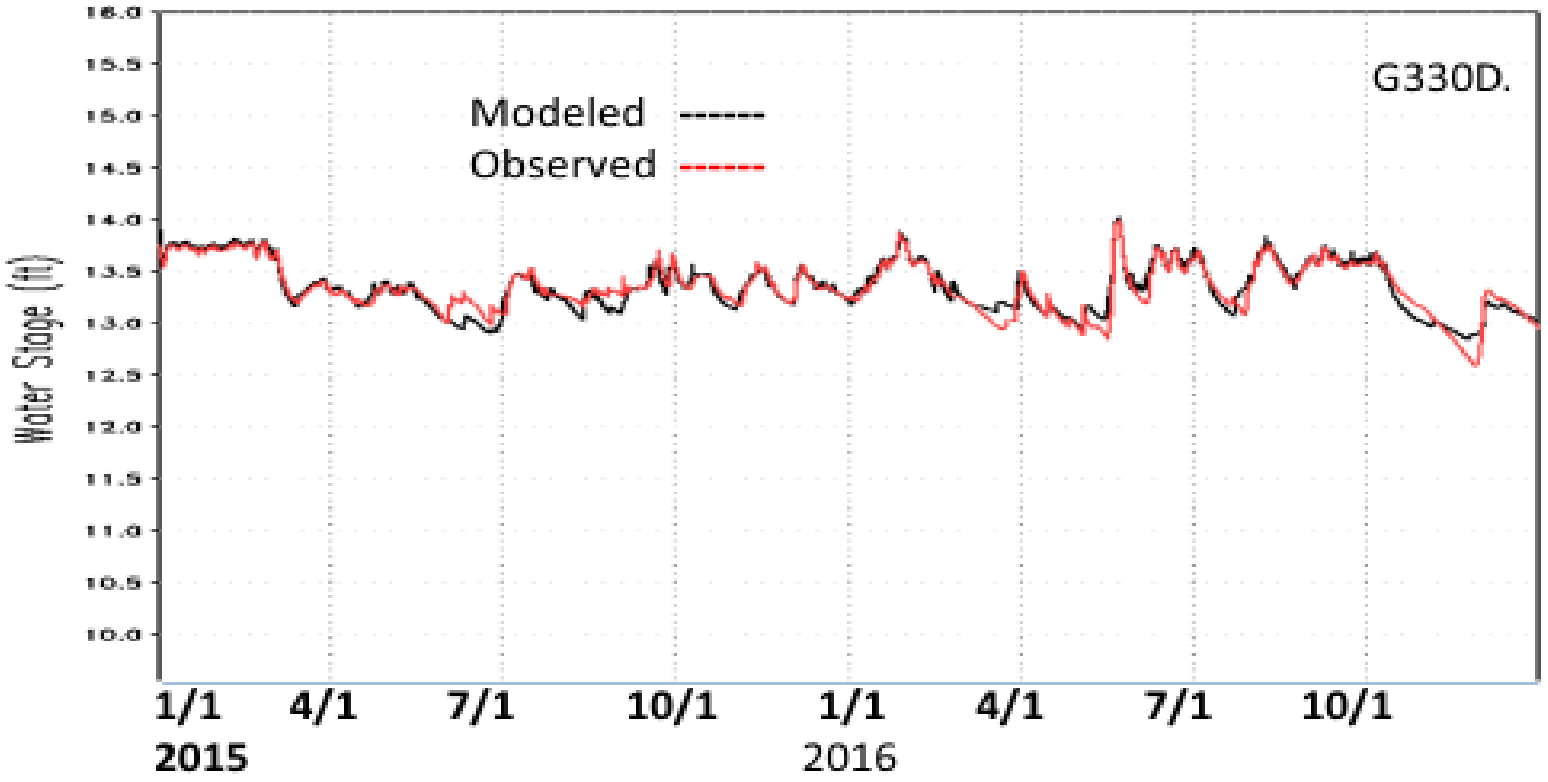
STA2

Mean Volume (Cell 1,2,and 3)	10603 (acre-feet)	13.073 X10^6 (m^3)
Mean Area	6509 (acres)	2.63X10^7(m^2)
Mean Depth	1.6 (feet)	0.49(m)
7.3-year Mean Inflow (1/2008-3/2015)	228 (cfs)	10.1 (cms)
7.3-year Mean Outflow	216 (cfs)	10.9 (cms)
Retention Time (days)	13.9	13.9


C20
C56
C92
C128
C164
C200
C3
C2
C1
C1A3
C1B2
C1F3
C1G3
C1H2
G330D
C1Out
25

Station Name	Number of Data Points	Obs. Mean (ft)	Modeled Mean (ft)	RMS Err. (ft)	Obs. Change (ft)	RRE (%)
G330D	17544	13.350	13.349	0.085	1.410	6.019
G332	17544	12.383	12.383	0.133	1.487	8.918
G334	17544	11.123	11.123	0.167	2.234	7.491

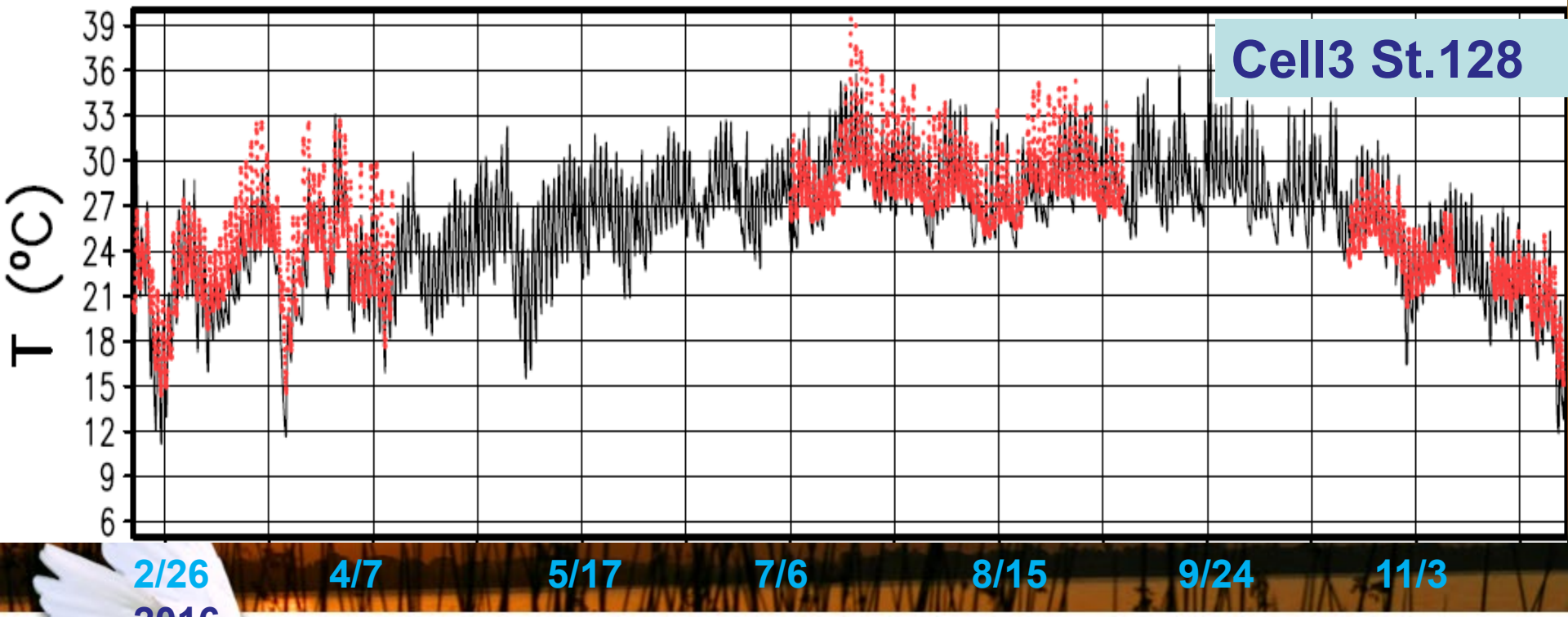
Comparison of observed data and modeled stage



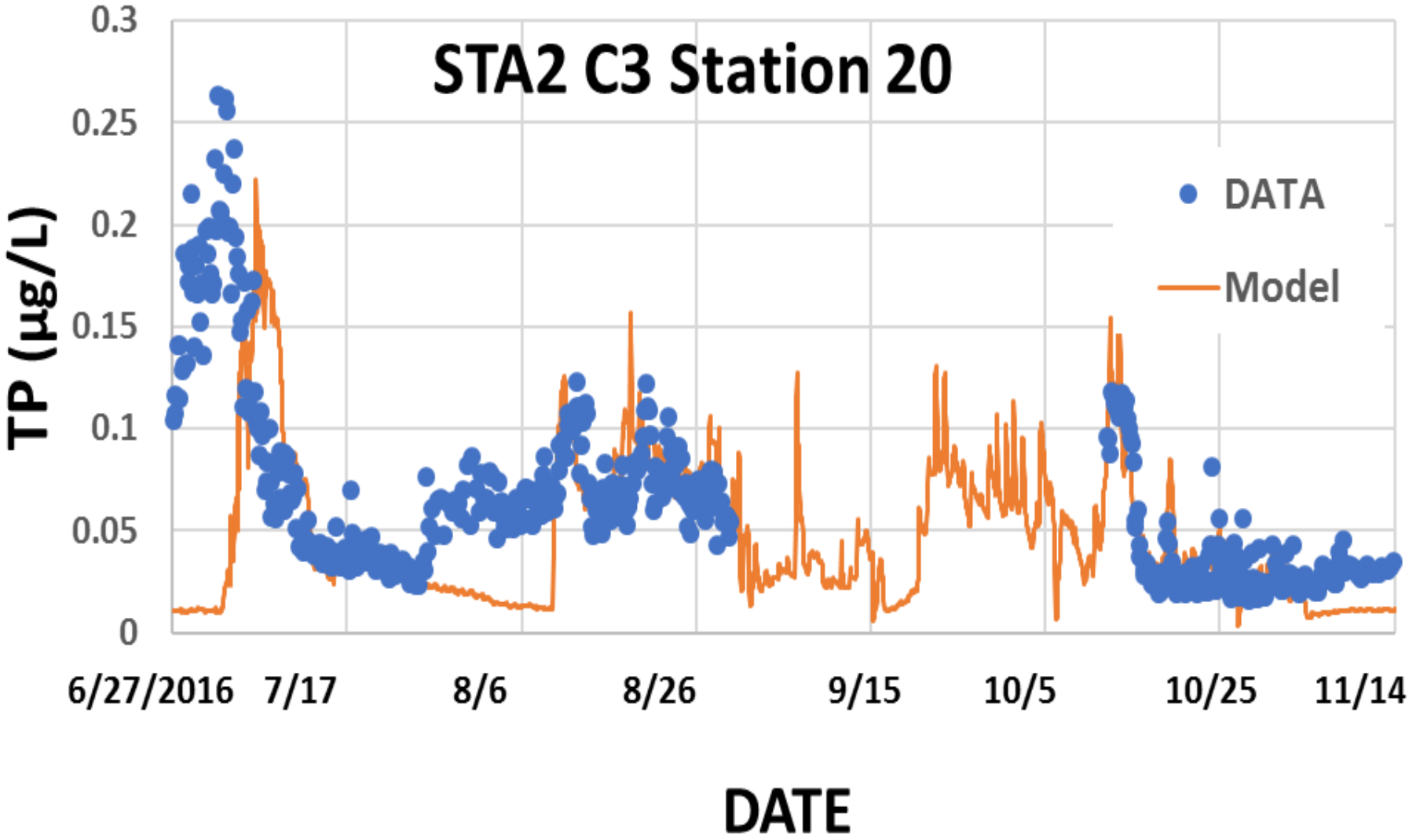
Station Name	Number of Data Points	Obs. Mean (°C)	Modeled Mean (°C)	RMS Err. (°C)	Obs. Change (°C)	RRE (%)
ST2C1A3	1164	25.62	25.50	1.41	9.76	14.50
ST2C1B2	1682	26.08	26.06	1.62	12.52	12.94
ST2C1F3	1319	28.55	26.88	2.41	13.49	17.91
ST2C1G3	1730	26.41	25.97	1.59	12.24	13.05
ST2C1H2	1732	26.65	26.56	1.39	11.90	11.74
ST2C1COUT	983	24.81	25.54	1.35	7.02	19.22
ST2C3_20	3285	26.42	25.80	2.03	21.58	9.41
ST2C3_56	3574	26.79	26.07	2.22	21.76	10.20
ST2C3_92	3727	25.97	25.05	1.98	25.62	7.76
ST2C3_128	3558	26.01	25.20	1.98	24.95	7.95
ST2C3_164	3727	26.52	25.89	2.22	24.55	9.07
ST2C3_200	2402	26.31	25.94	2.02	24.59	8.22

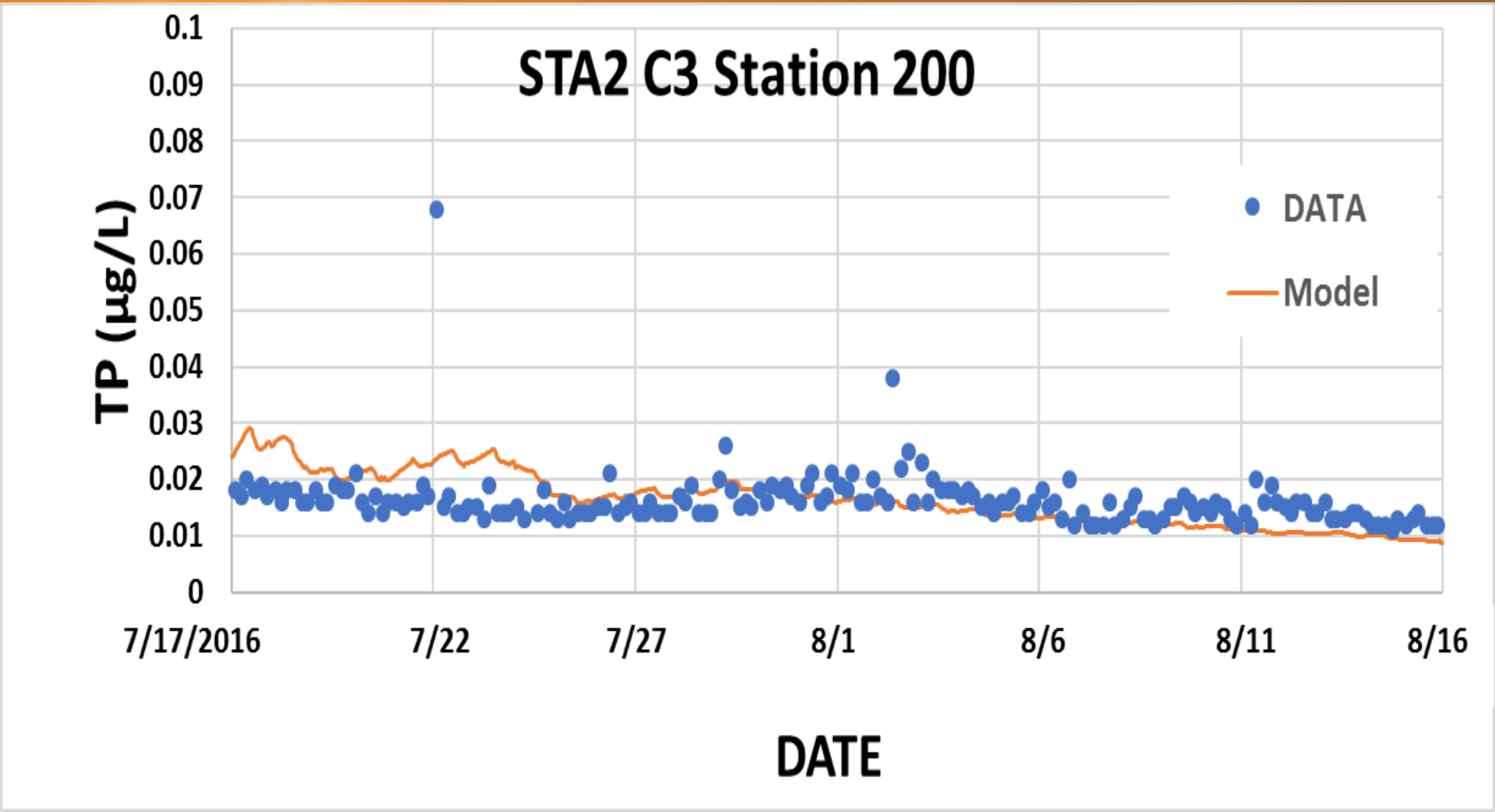
ERR AVG 11.83%

Comparison of observed data and modeled water temp.



Observed data and modeled water temperature


STA2 C3 Station 20
TP (µg/L)
0.3
0.25
0.2
0.15
0.1
0.05
0
DATA
Model
6/27/2016
7/17
8/6
8/26
9/15
10/5
10/25
11/14
DATE


STA2 C3 Station 200
TP (µg/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
DATA
Model
7/17/2016
7/22
7/27
8/1
8/6
8/11
8/16
DATE

Station Name	Number of Data Points	Obs. Mean (mg/l)	Modeled Mean (mg/l)	RMS Err. (mg/l)	Obs. Change (mg/l)	RRE (%)
ST2C1A3	229	0.0757	0.0455	0.0547	0.3030	18.0384
ST2C1B2	243	0.0445	0.0203	0.0349	0.1720	20.2955
ST2C1F3	250	0.0360	0.0105	0.0357	0.1660	21.5058
ST2C1G3	257	0.0246	0.0090	0.0181	0.0550	32.8945
ST2C1H2	248	0.0158	0.0086	0.0195	0.2710	7.1881
ST2C1COU	283	0.0111	0.0102	0.0046	0.0510	9.0822
ST2C3_20	865	0.0749	0.0447	0.1122	1.8580	6.0381
ST2C3_56	915	0.0839	0.0372	0.2080	2.0280	10.2544
ST2C3_92	919	0.0998	0.0329	0.1319	0.9710	13.5842
ST2C3_128	874	0.0502	0.0295	0.1485	4.0230	3.6924
ST2C3_164	923	0.0268	0.0273	0.0404	0.4270	9.4574
ST2C3_200	902	0.0218	0.0220	0.0317	0.2360	13.4142

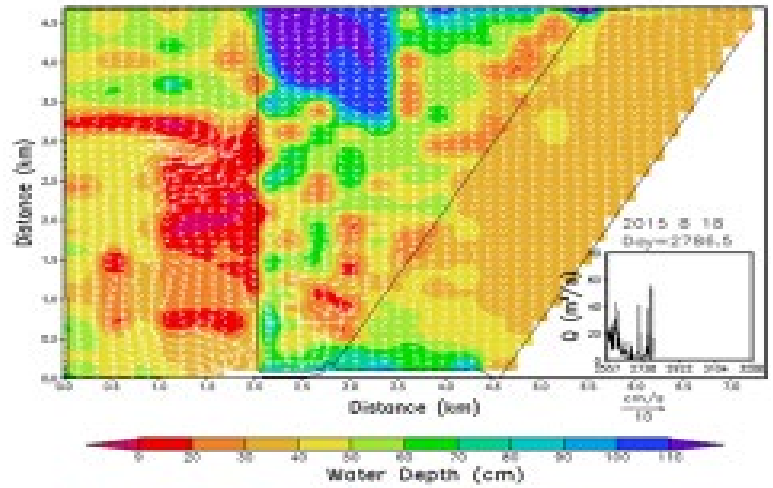
ERR AVG 13.79%

Comparison of observed data and modeled TP

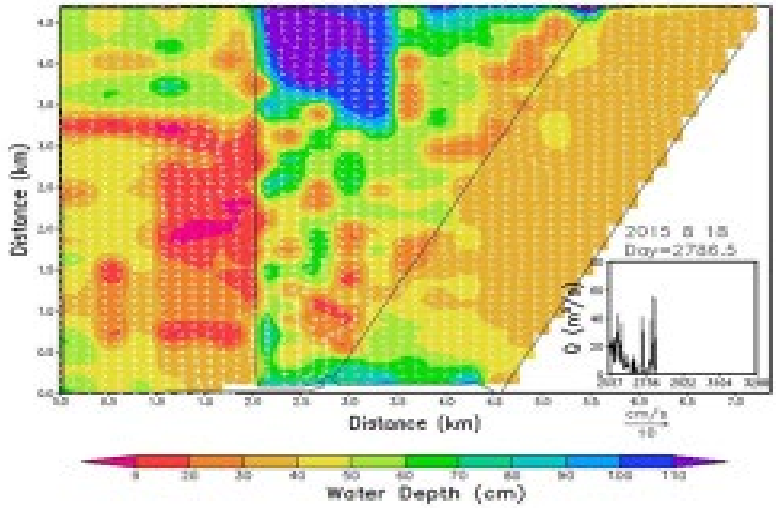
Hr ave comparison

Year	Cell 1			Cell 2			Cell 3		
	TP_{in} (ppb)	TP_{out} (ppb)	RE (%)	TP_{in} (ppb)	TP_{out} (ppb)	RE (%)	TP_{in} (ppb)	TP_{out} (ppb)	RE (%)
2015	81.9	19.8	75.8	86.9	16.9	80.5	126.9	18.3	85.6
2016	97.9	18.1	81.5	107.8	25.6	76.2	108.8	20.5	81.1
2-year Mean	89.9	18.9	**78.6**	96.5	20.9	**78.4**	118.9	19.3	**83.4**

Summary of AFWM inflow TP concentration (TPin), AFWM outflow TP concentration (TPout), and removal efficiency (RE) in Cell 1, 2, and 3 of STA 2.



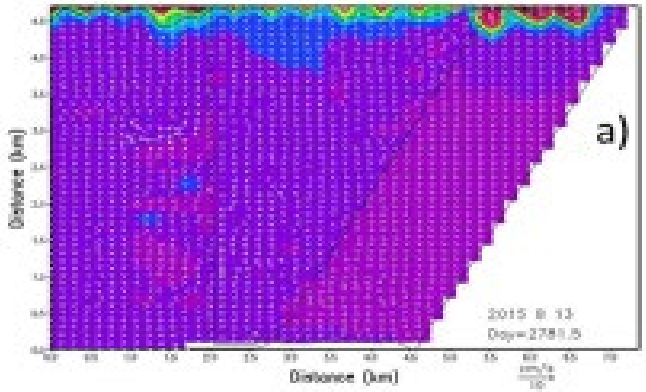
Top layer



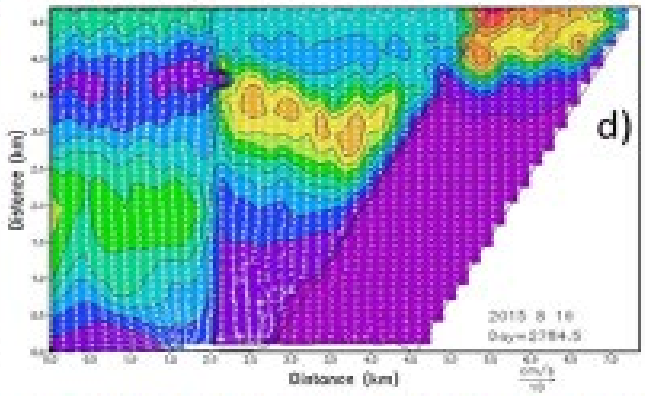
Bottom layer

Modeled daily averaged water depth and velocity on August 18, 2015.

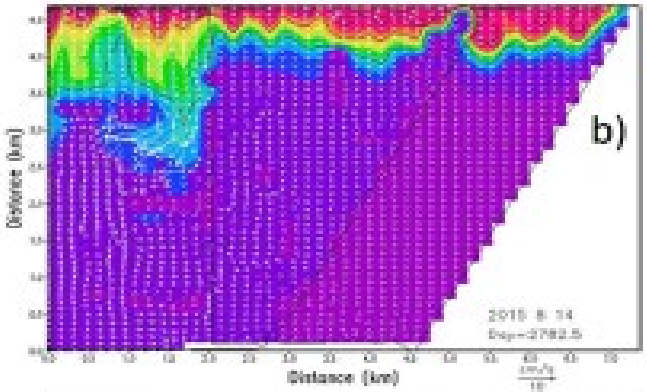
Day 1



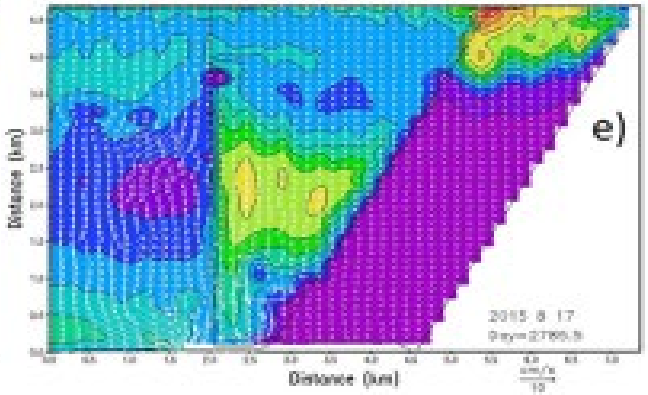
Day 4



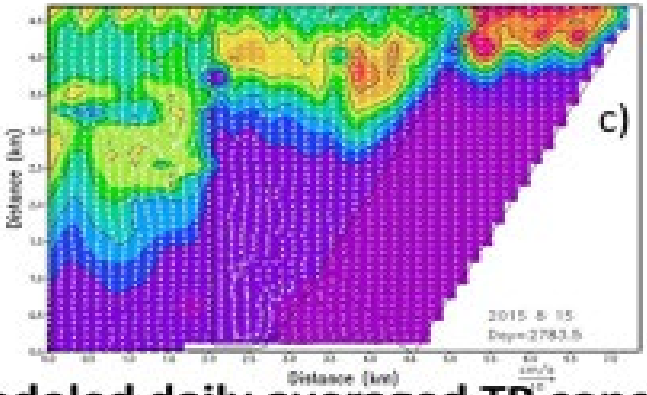
Day 2



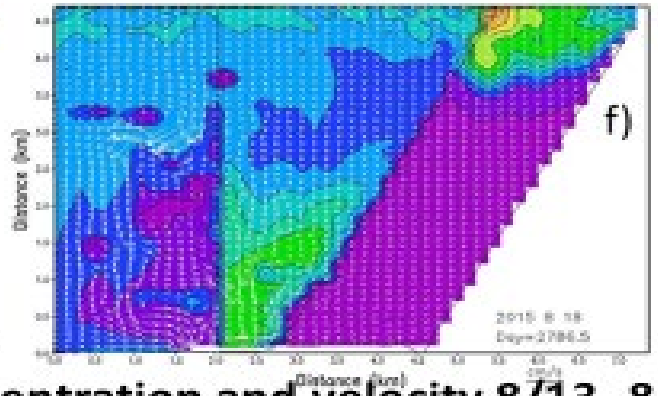
Day 5



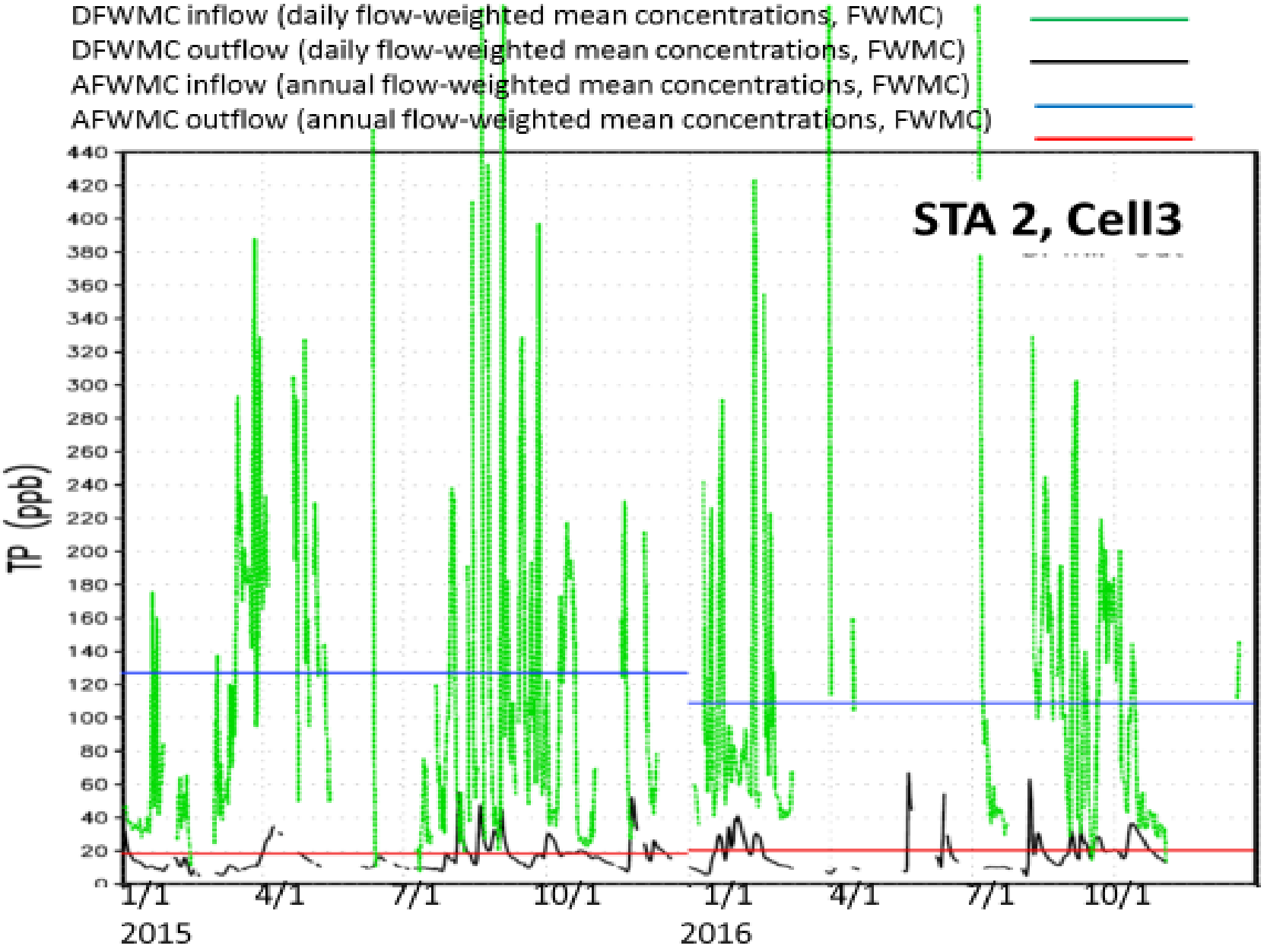
Day 3



Day 6



Modeled daily averaged TP concentration and velocity 8/13 -8/18, 2015.


DFWMC inflow (daily flow-weighted mean concentrations, FWMC)
DFWMC outflow (daily flow-weighted mean concentrations, FWMC)
AFWMC inflow (annual flow-weighted mean concentrations, FWMC)
AFWMC outflow (annual flow-weighted mean concentrations, FWMC)
STA 2, Cell3
TP (ppb)
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1/1
4/1
7/1
10/1
1/1
4/1
7/1
10/1
2015
2016