

Modeling of Dworshak Summer 2006 Operations



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TMT Presentation (given by Tom Lorz)

Columbia River Inter-Tribal Fish Commission
Portland, Oregon

Introduction



- Goals: (1) Model Dworshak flows and elevations from summer operation proposals. (2) Evaluate impacts on Dworshak pool elevation and lower Snake water temperature and flow.
- CRITFC's Hydro spreadsheet: modeled outflows and elevations. Inflows are given by NWRFC.
- EPA's RBM-10 model: water temperature. Assumes (1) 1975, 1985, 1990, and 1991 weather years, (2) 1986 tributary inflows, (3) 2000 Dworshak and Brownlee water temperatures, and (3) Dworshak release temperature is 43 to 45 degF.

Weather Assumptions



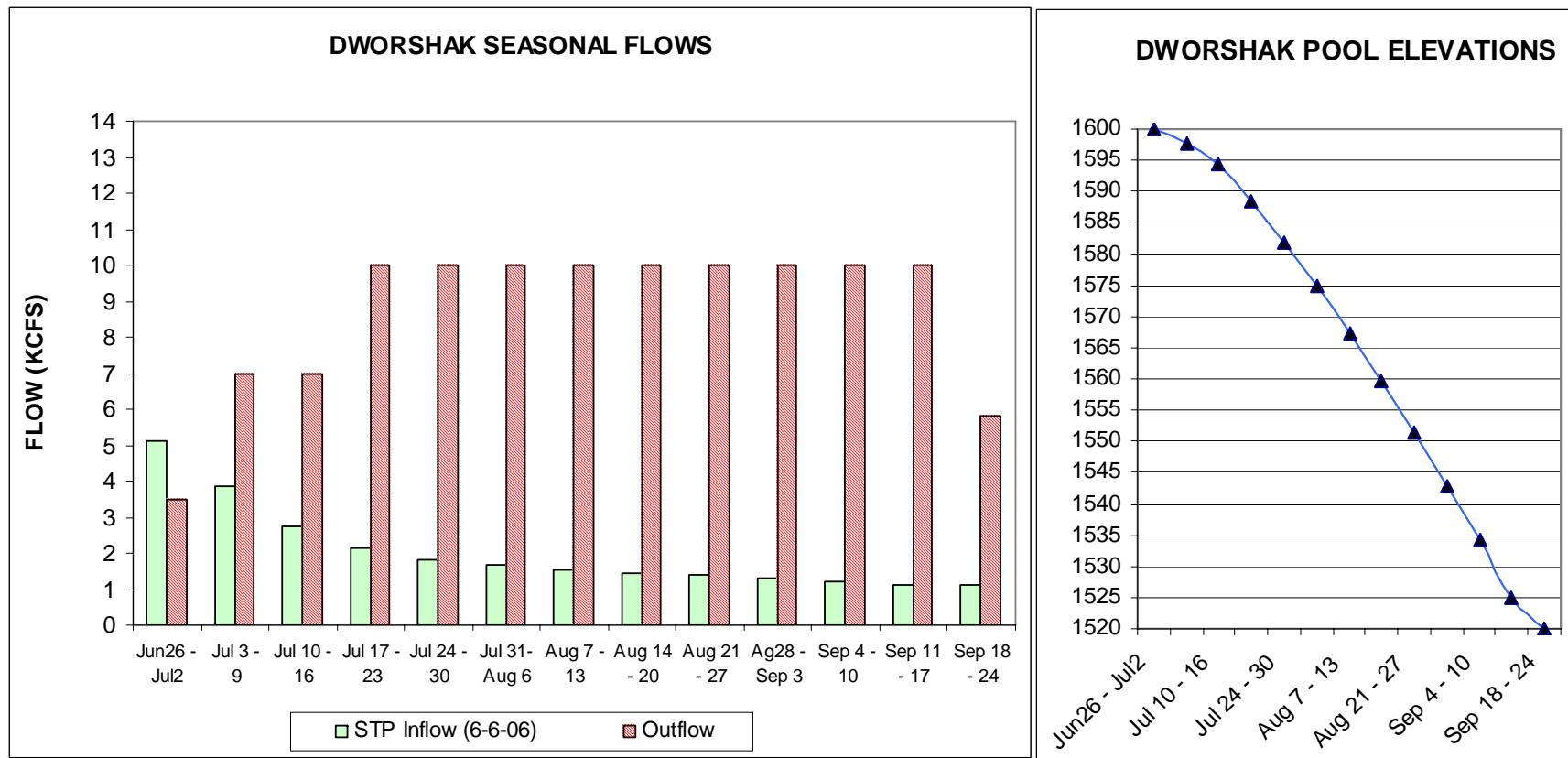
Lewiston air temperature (degF)						Dworchak
	MAY	JUN	JUL	AUG	SEP	April-July Inflow (KaF)
1975	57.79	63.6	77.74	70.39	66.15	3342
Departure	-0.4	-2.0	4.0	-1.4	2.7	
1985	60.26	66.9	79.94	69.47	56.8	2913
Departure	2.0	1.0	5.9	-2.9	-6.9	
1990	58.79	67.55	77.39	75.6	72.95	2716
Departure	0.5	1.6	3.3	3.3	9.3	
1991	55.85	60.28	72.27	75.08	65.53	2565
Departure	-2.6	-6.6	-1.8	1.4	1.4	
Average Departure:	-0.1	-1.5	2.8	0.1	1.6	2,884
	MAY	JUN	JUL	AUG	SEP	June Final WSF (KaF):
2006 departure	2.8					2800
Assumption: "PDO-neutral / ENSO-cold / ENSO-neutral"						
Oct. 2005 - May 2006:	PDO =-0.00 (+/- 0.86)			MEI = -0.39 (+/- 0.18)		

Highlights of Proposals

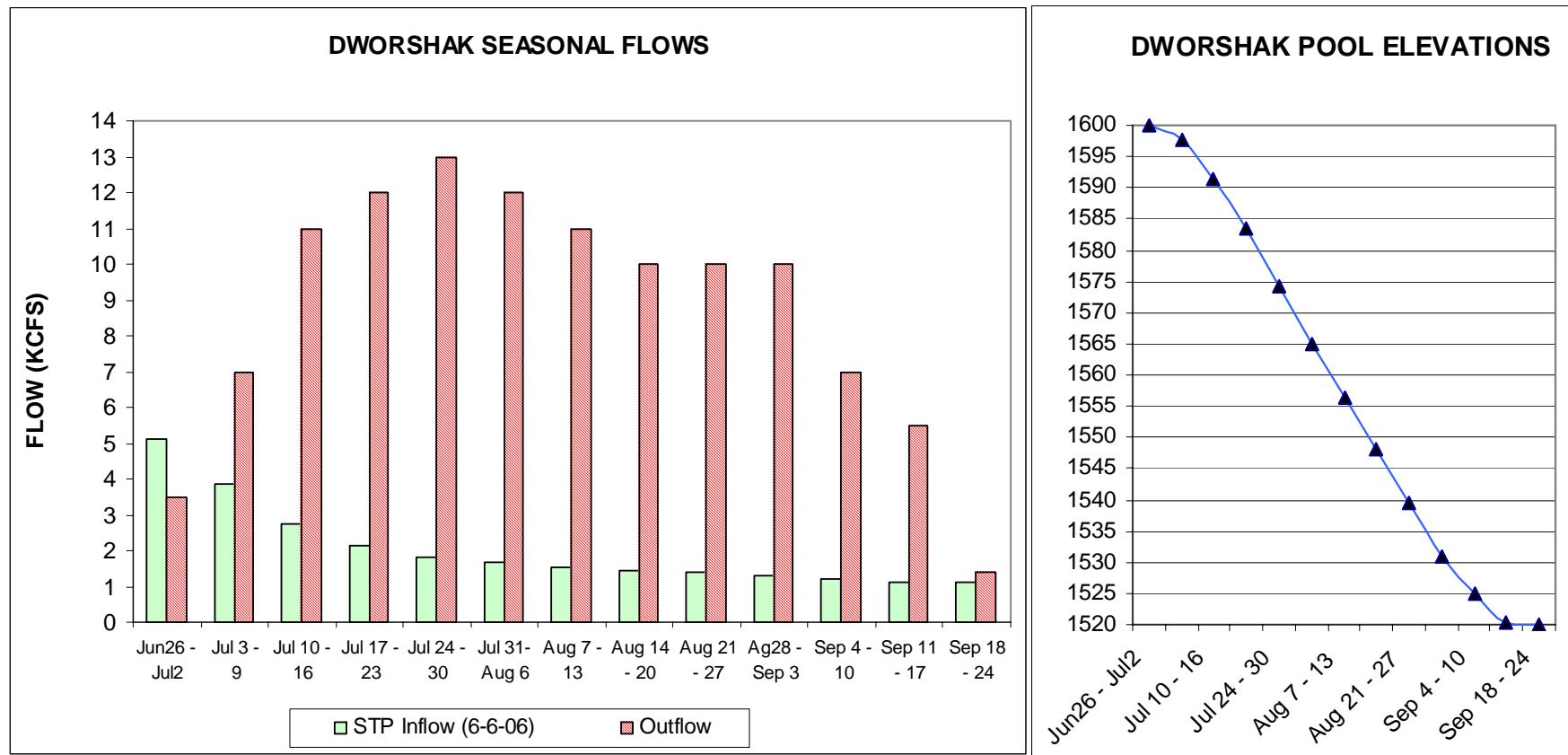


- Nez Perce Tribe SOR: draft to 1520 feet by Sept. 30. Outflows 7 - 10 kcfs. Use enough DWR spill to meet state water quality standard.
- TMT-2005: draft to 1535 ft by Aug. 31, then 1520 feet by Sept. 30. Outflows 7 - 12 kcfs.

NPT SOR



TMT-2005



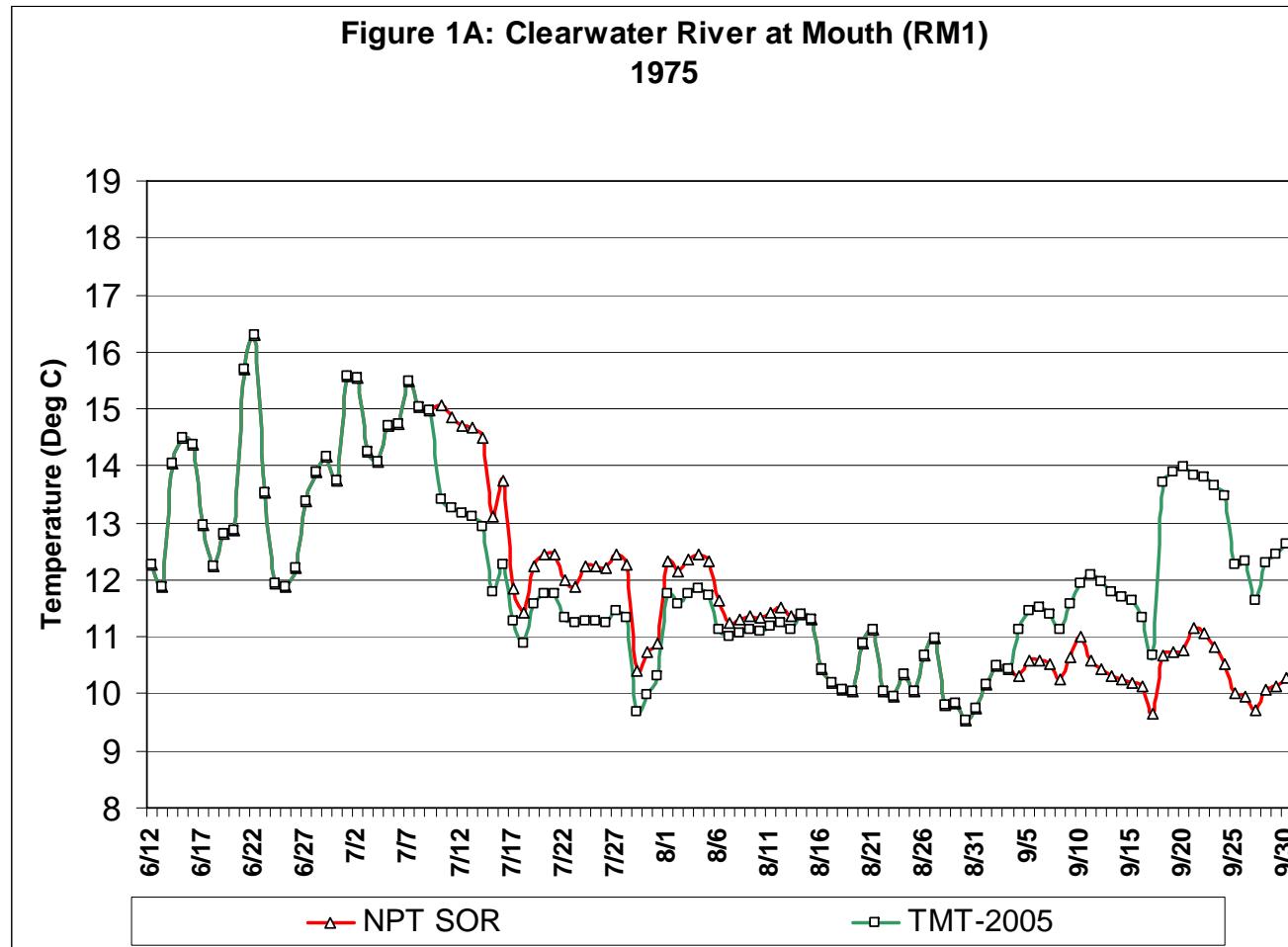


Comparing Outflows

07-Jun-06 WY 2006 SUMMER	Scenario #1 (NPT-SOR)	Scenario #2 (TMT-2005)	Outflow (kcfs)	Outflow (kcfs)	Outflow (kcfs)
DWORSHAK					
Jun26 - Jul2	3.5		3.5		17.75
Jul 3 - 9	7		7		25.3
Jul 10 - 16	7		11		13.6
Jul 17 - 23	10		12		13.2
Jul 24 - 30	10		13		13.1
Jul 31-Aug 6	10		12		14.25
Aug 7 - 13	10		11		12.3
Aug 14 - 20	10		10		10.5
Aug 21 - 27	10		10		11.4
Ag28 -Sep 3	10		10		12
Sep 4 - 10	10		7		12.45
Sep 11 - 17	10		5.5		11.6
Sep 18 - 24	5.8		1.4		12.6

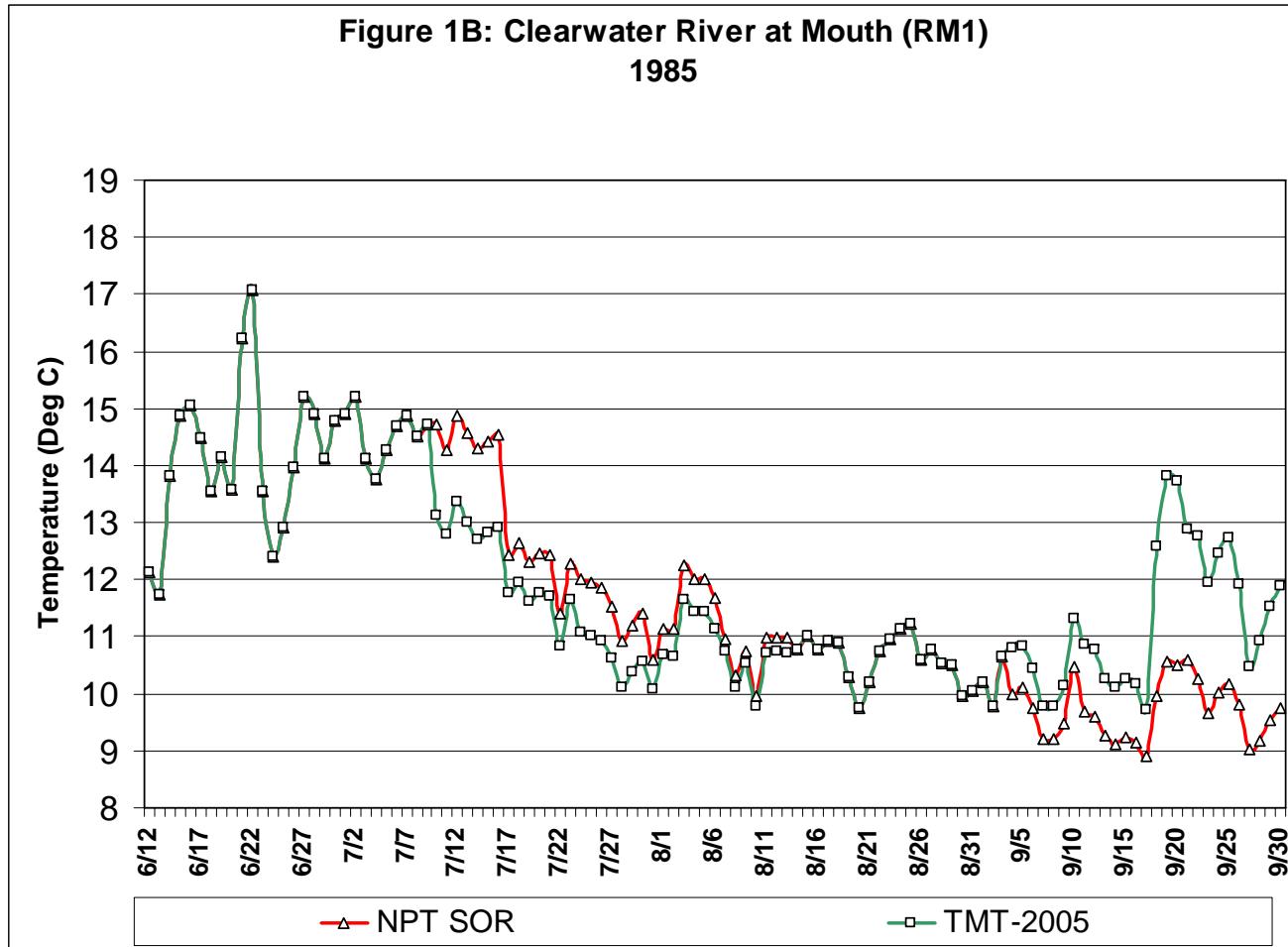
Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)



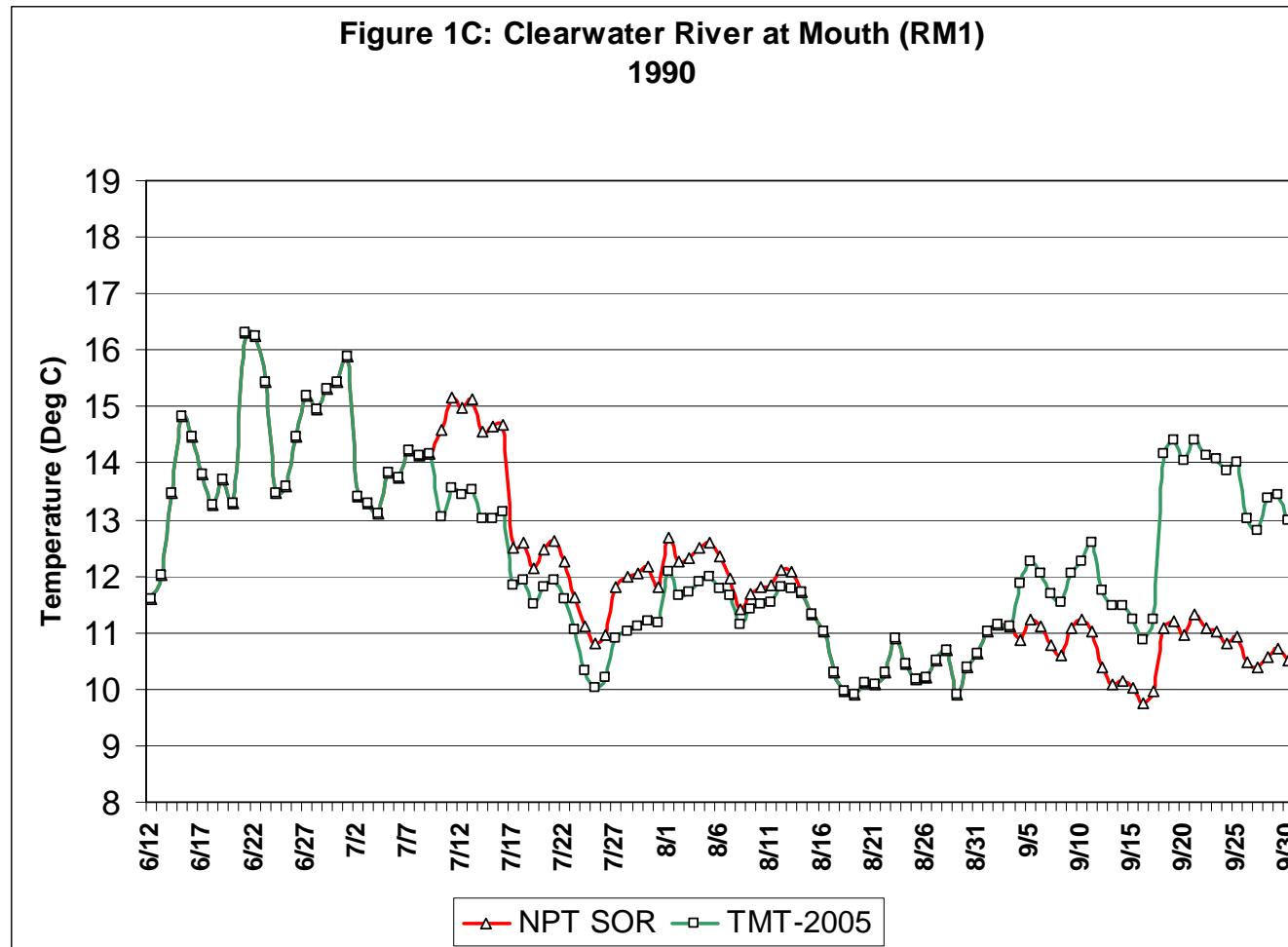
Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)



Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)

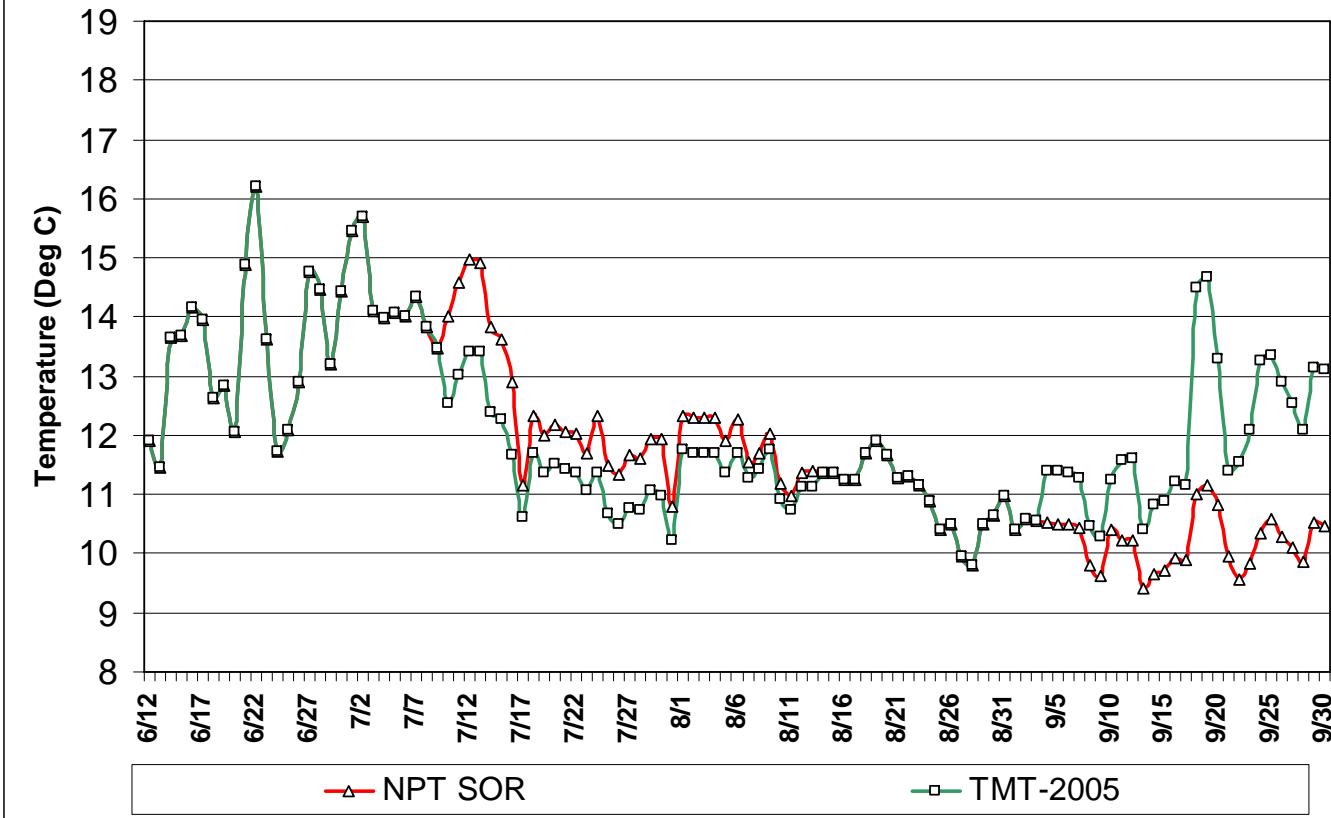


Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)

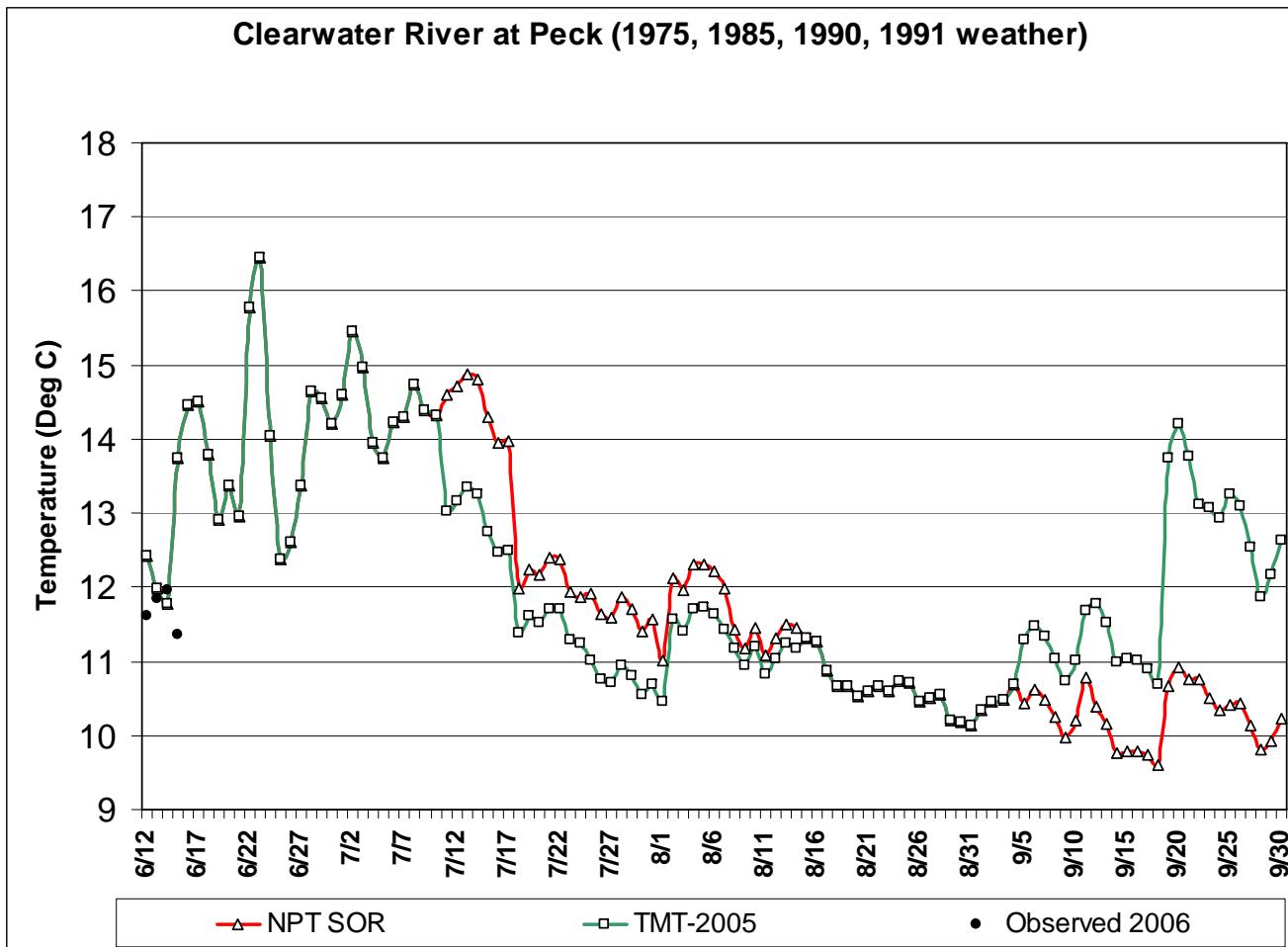


**Figure 1D: Clearwater River at Mouth (RM1)
1991**



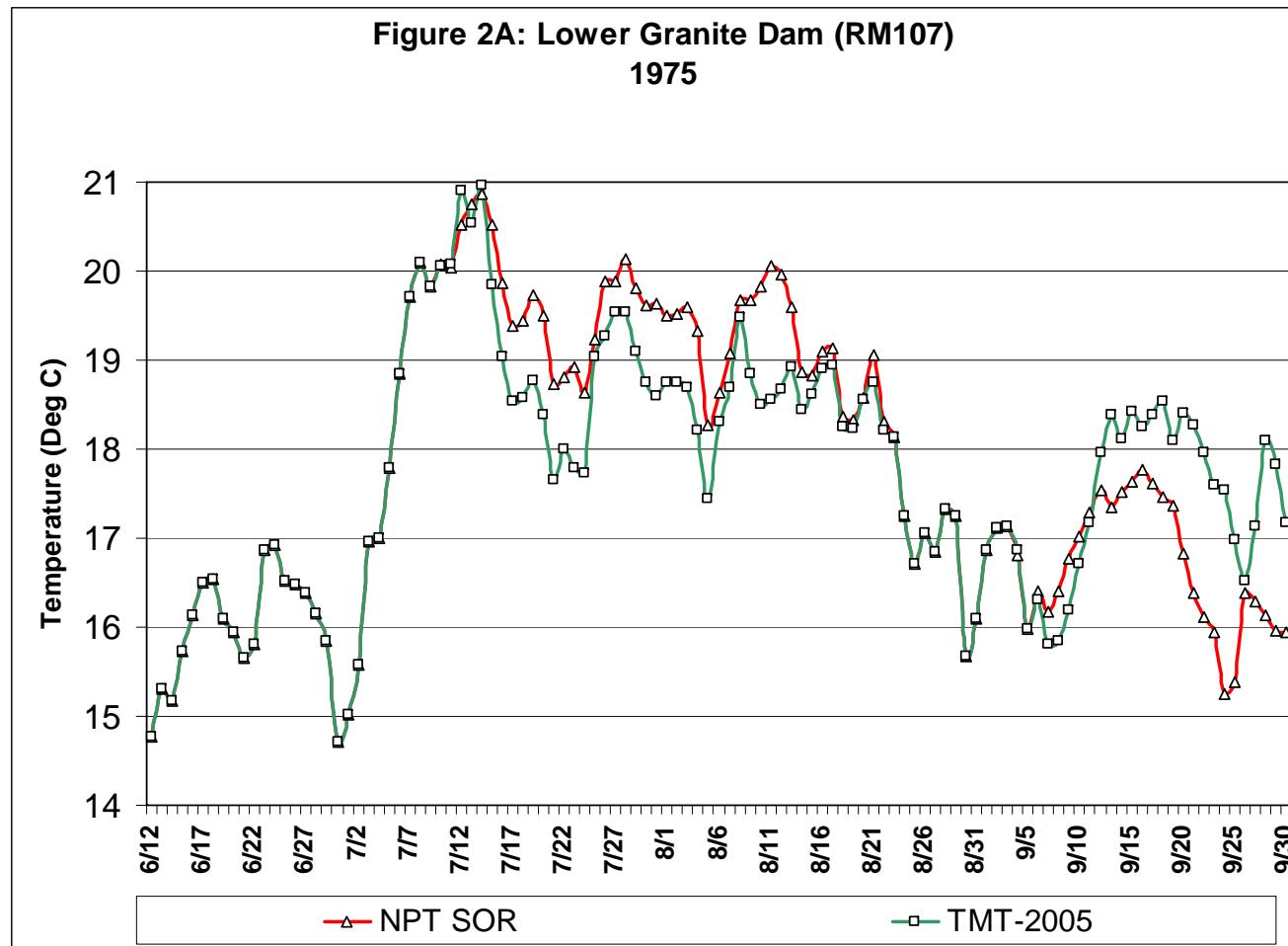
Modeled Water Temperature

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Modeled Water Temperature

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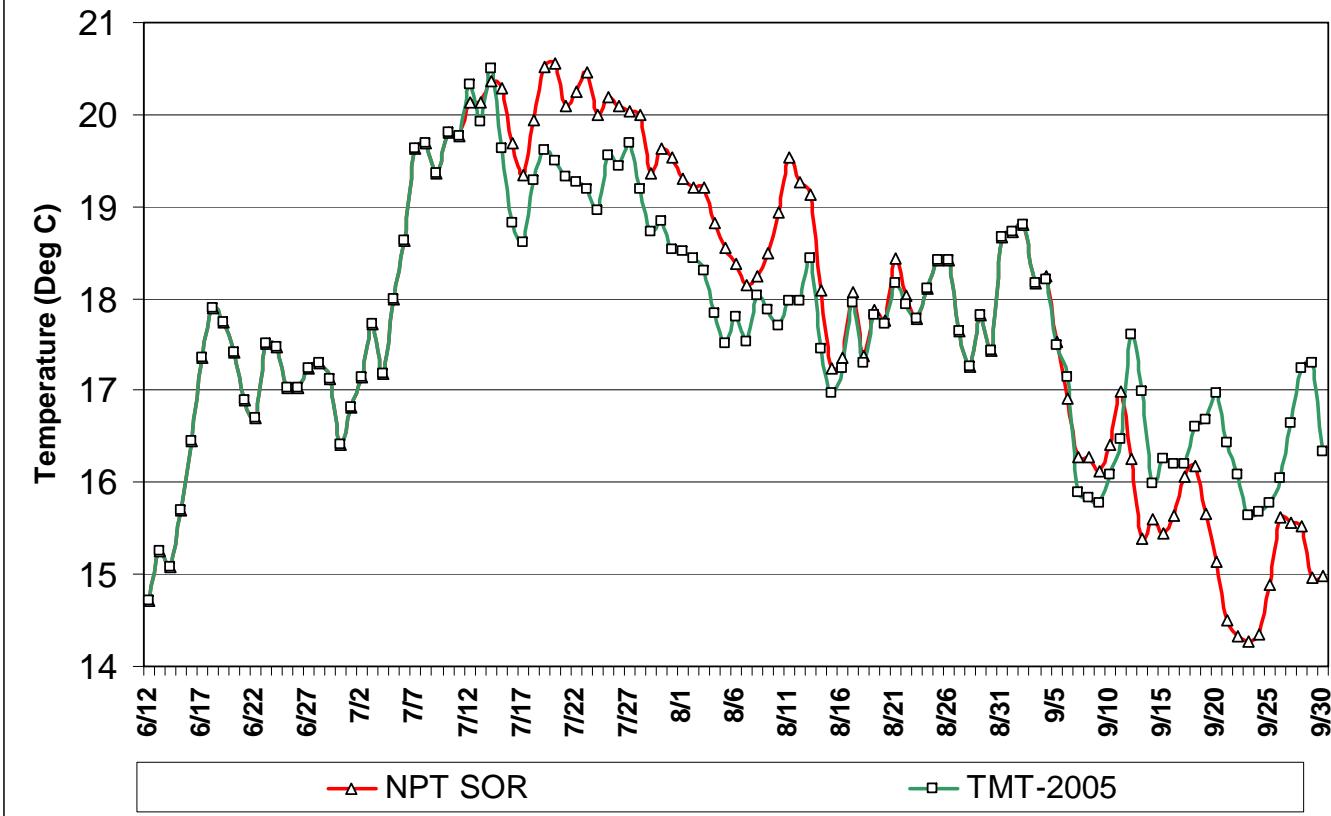


Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)

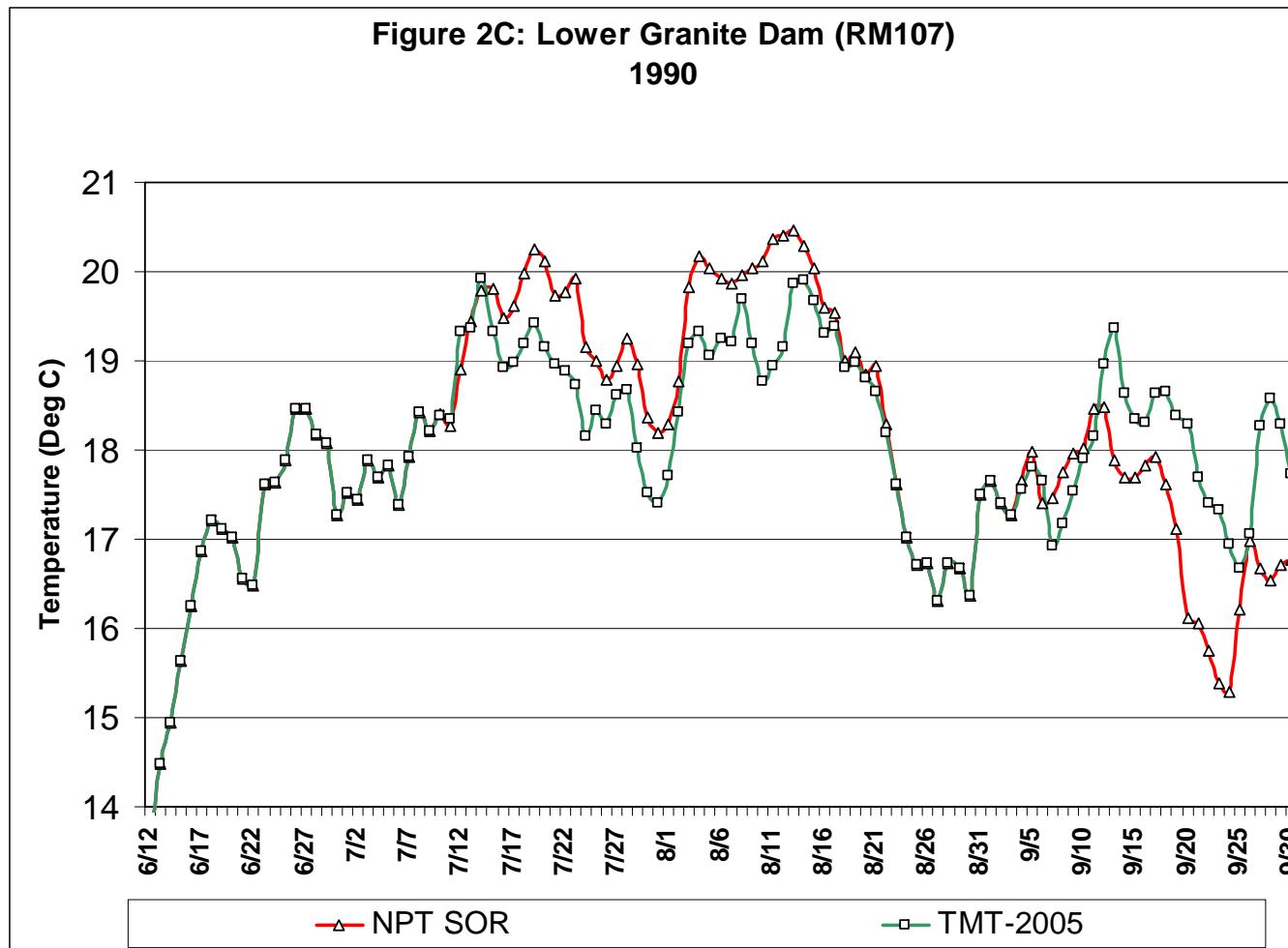


**Figure 2B: Lower Granite Dam (RM107)
1985**



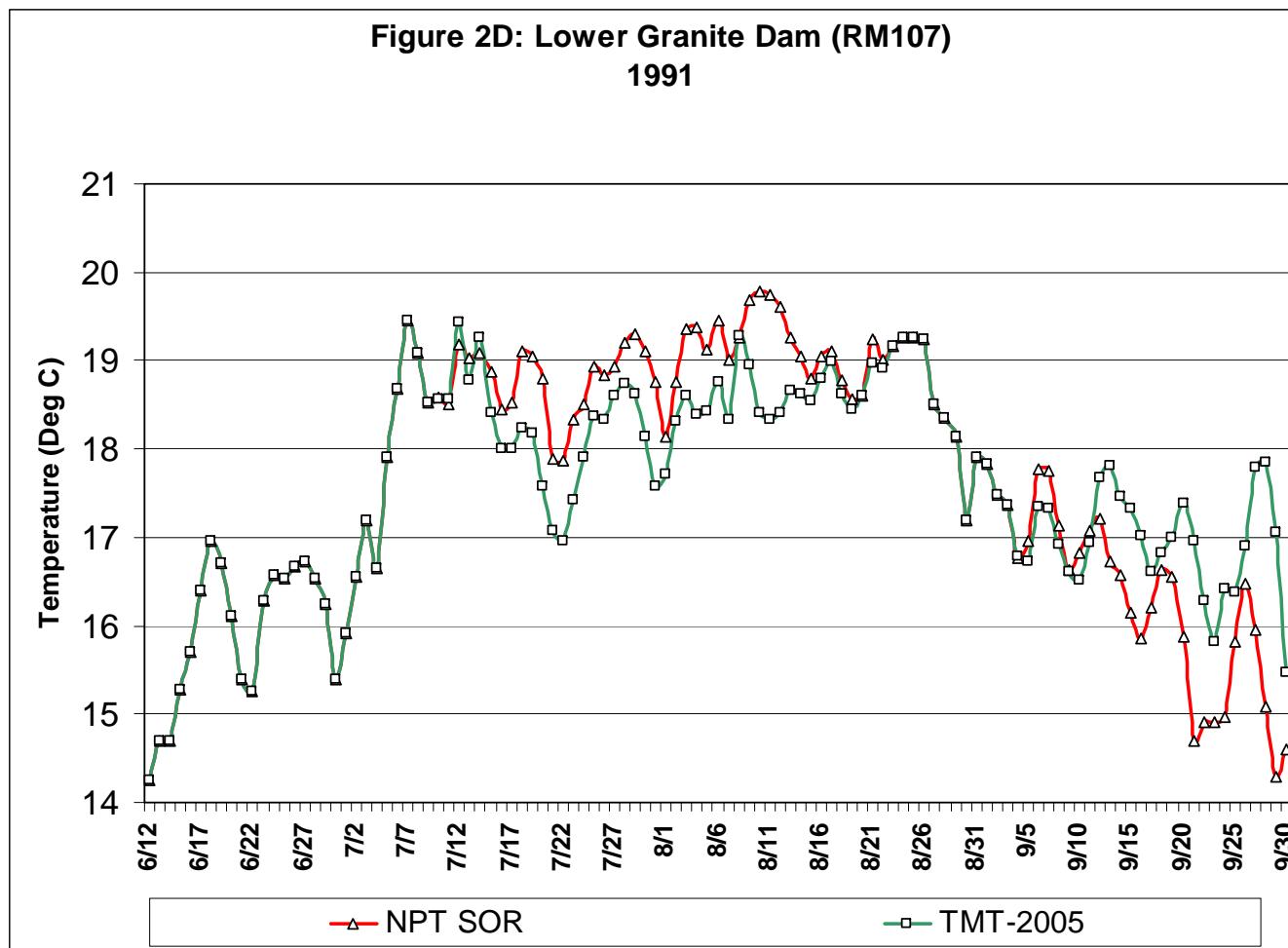
Modeled Water Temperature

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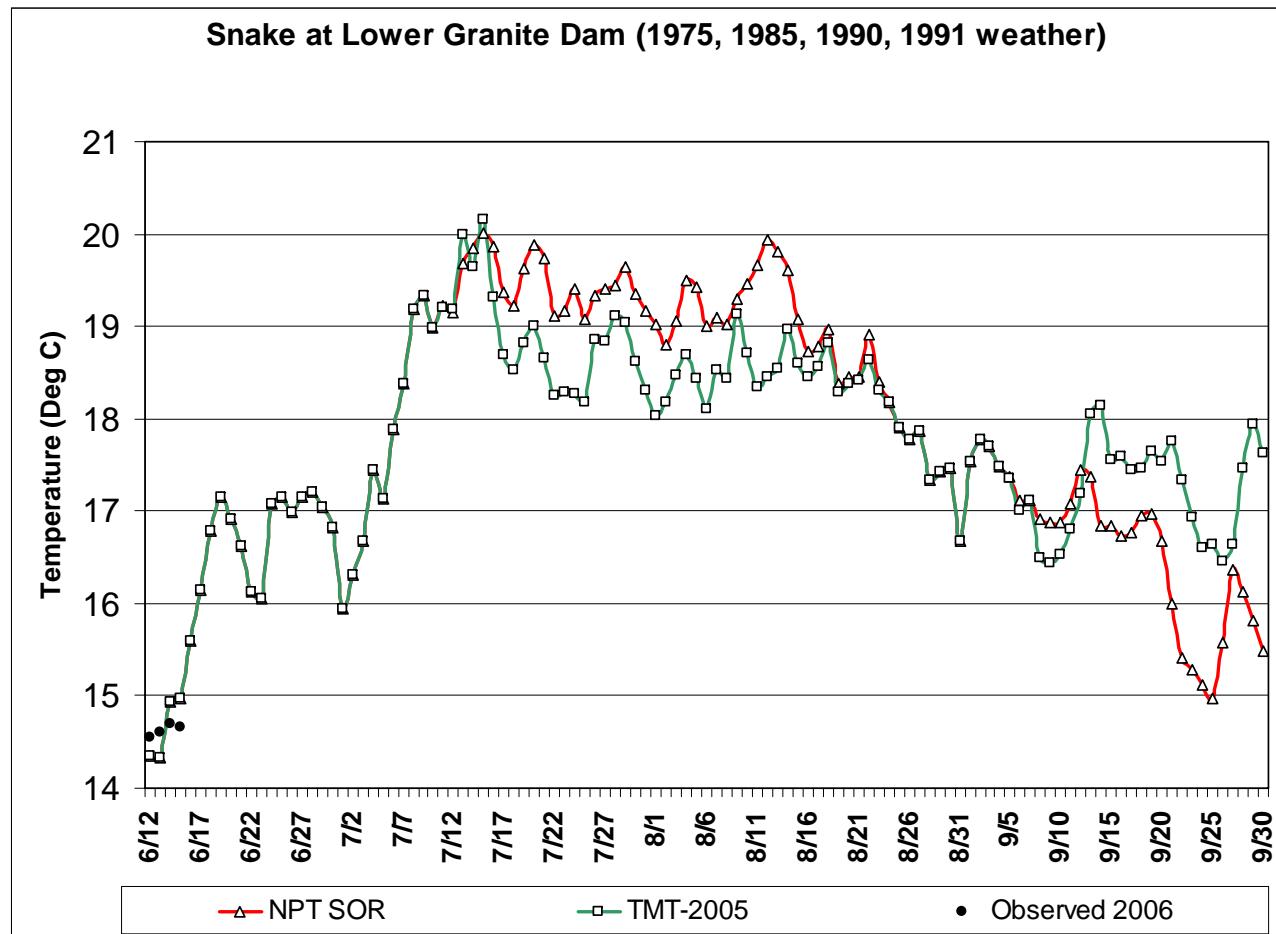
Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)



Modeled Water Temperature

(Model data courtesy of Ben Cope, EPA-Seattle)



Conclusions



- Nez Perce Tribe-SOR: 1 MaF drafted by September 30. Outflows 7 - 10 kcfs. Base assumes no DWR spill but may need to in order to meet state WQ standards. September carryover is 363 KaF.
- TMT-2005 Proposal: 1 MaF drafted by September 30 and 1535 feet elevation target on August 31. Outflows 7-12 kcfs. September carryover: 197 KaF.
- Water temperature modeling shows a +1 degC between the NPT-SOR and TMT-2005 proposals.