

Modeling of Dworshak Summer 2007 Operations



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June 20, 2007

TMT Presentation

Columbia River Inter-Tribal Fish Commission
Portland, Oregon

Introduction



- Goals: (1) Model Dworshak flows and elevations for summer operation scenarios. (2) Evaluate impacts on Dworshak pool elevation and lower Snake water temperature and flow.
- CRITFC's Hydro spreadsheet: modeled outflows and elevations. Inflows provided by NOAA-NWRFC.
- EPA's RBM-10 model: water temperature. Assumes (1) 1970, 1973, 1978, and 1988 weather years, (2) 1986 tributary inflows, (3) 2000 Dworshak and Brownlee water temperatures, and (3) Dworshak release temperatures are 43 to 45 degF.



Weather Assumptions

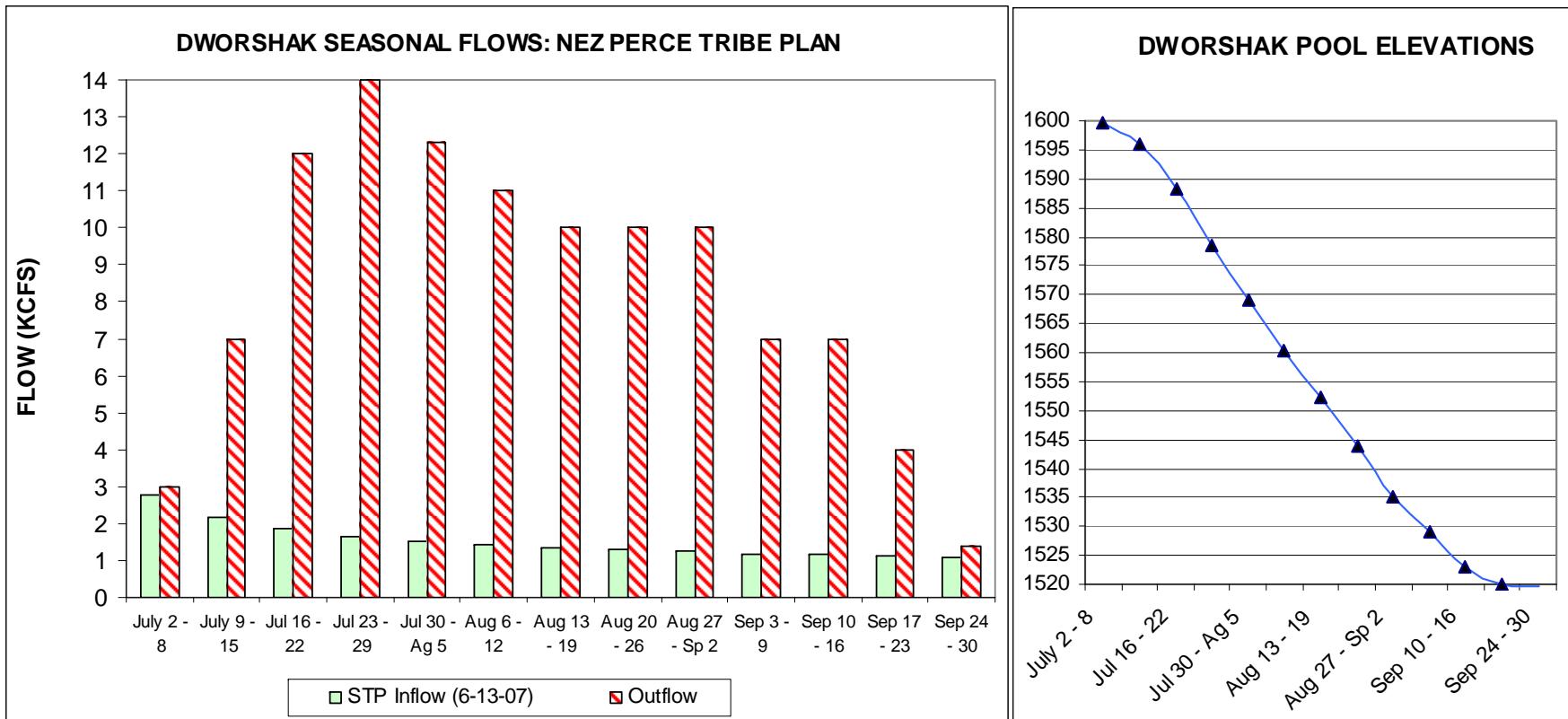
Lewiston air temperature (degF)						Dworchak April-July Inflow (KaF)
MAY	JUN	JUL	AUG	SEP		
1970	59.26	70.13	76.03	75.02	58.15	2622
Departure	1.1	4.5	2.3	3.2	-5.3	
1973	61.08	67.62	77.05	74.77	64.68	1262
Departure	2.9	2.0	3.3	3.0	1.2	
1978	55.98	67.17	74.06	71.08	61.87	2363
Departure	-2.2	1.5	0.3	-0.7	-1.6	
1988	58.82	66.68	73.82	73.84	64.18	1587
Departure	0.5	0.8	-0.2	1.5	0.5	
Average Departure:	0.6	2.2	1.4	1.7	-1.3	1,959
						June Final WSF (KaF):
2007 departure	2	1.6				1840
Assumption: "ENSO-warm / PDO-warm/cool"						
Oct. 2006 - May 2007:	MEI = 0.66 (+/- 0.45)			PDO = -0.05 (+/- 0.17)		

Highlights of Scenarios

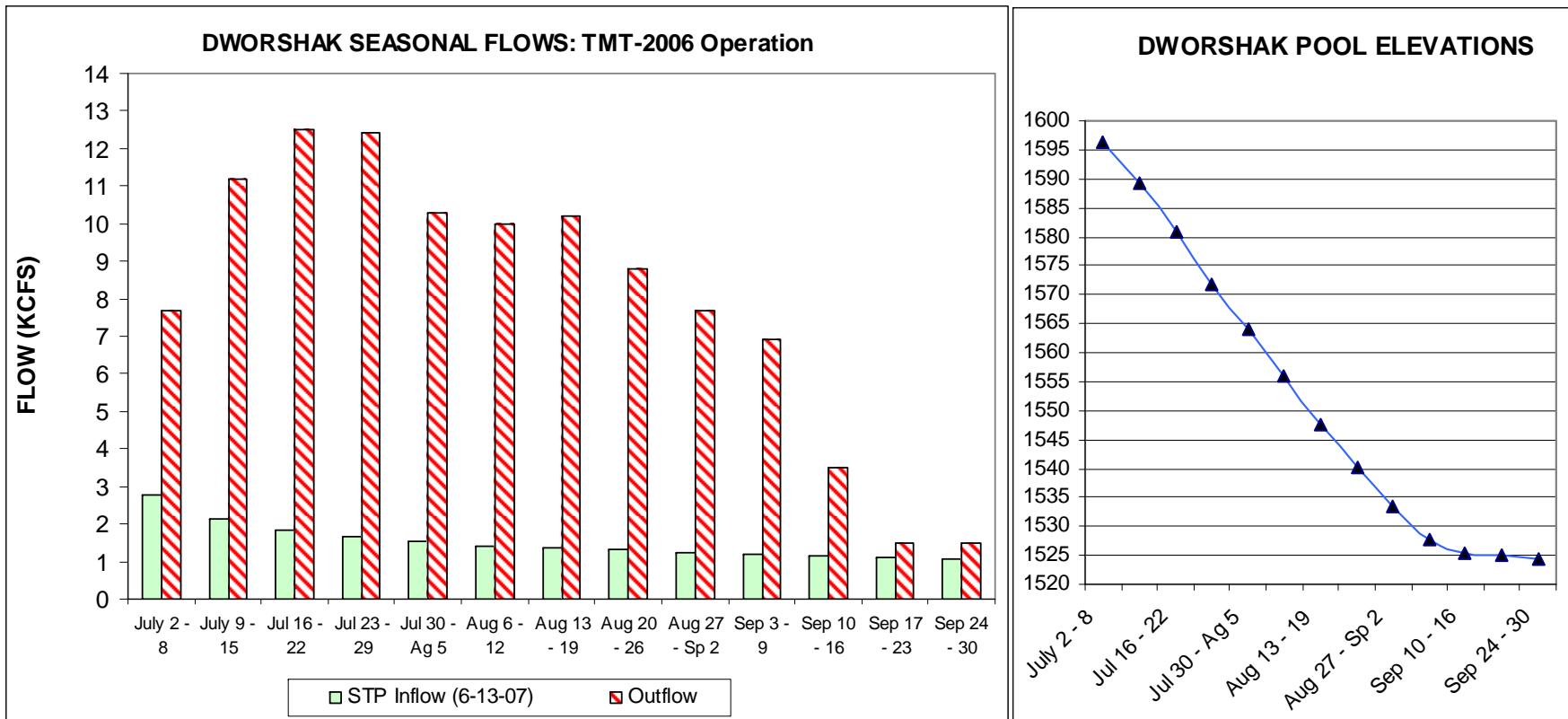


- Nez Perce Tribe 2007: draft to 1535 feet by Aug. 31, then 1520 feet by Sept. 30. Shape the July-August outflow to balance NPT concerns with lower Snake needs. Outflows 3 - 14 kcfs.
- TMT-2006: draft to 1535 ft by Aug. 31, then 1520 feet by Sept. 30. More water is shaped in July. Outflows 7.7 – 12.5 kcfs.
- Observed water temperatures: June 10 – June 19.

NPT 2007



TMT-2006

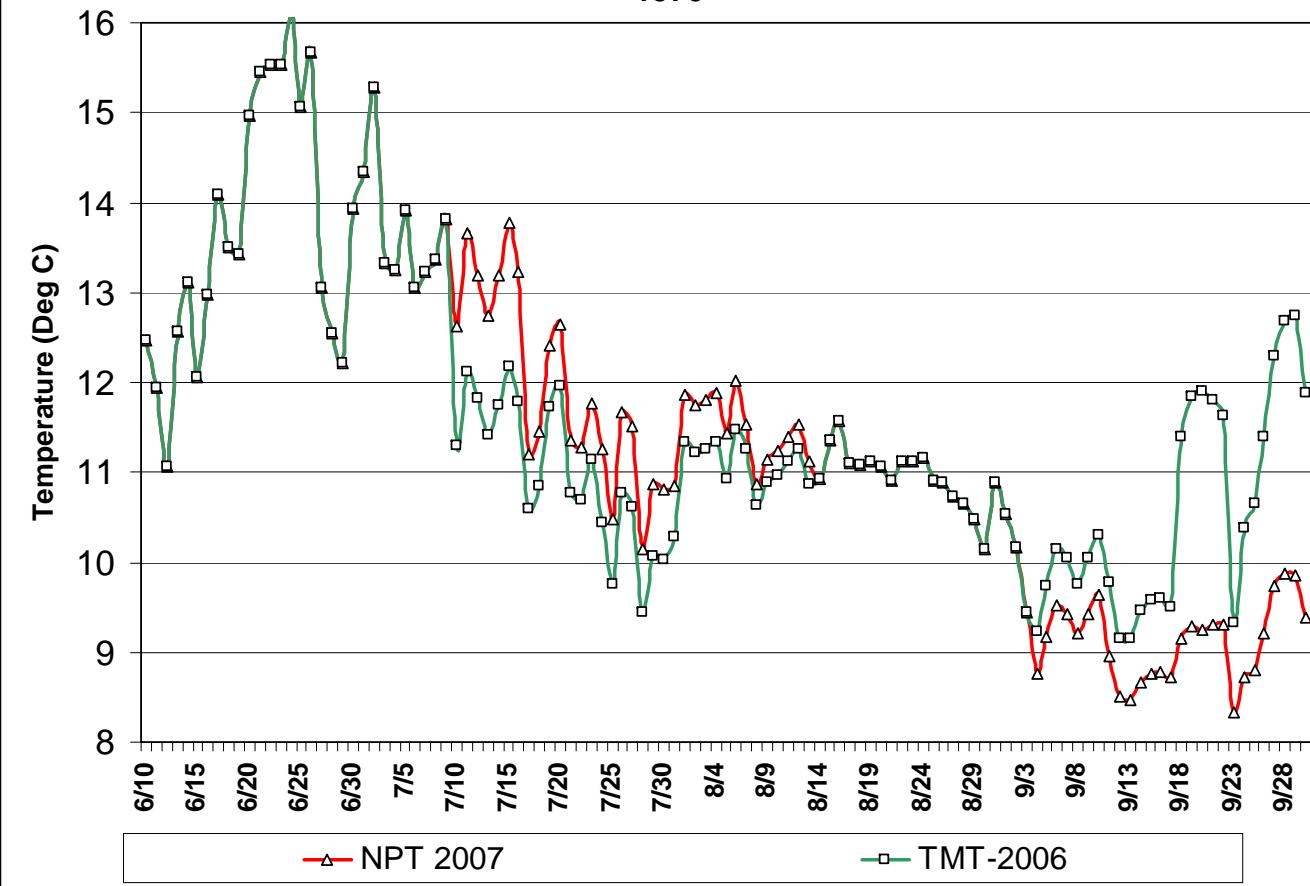


Modeled Water Temperature

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

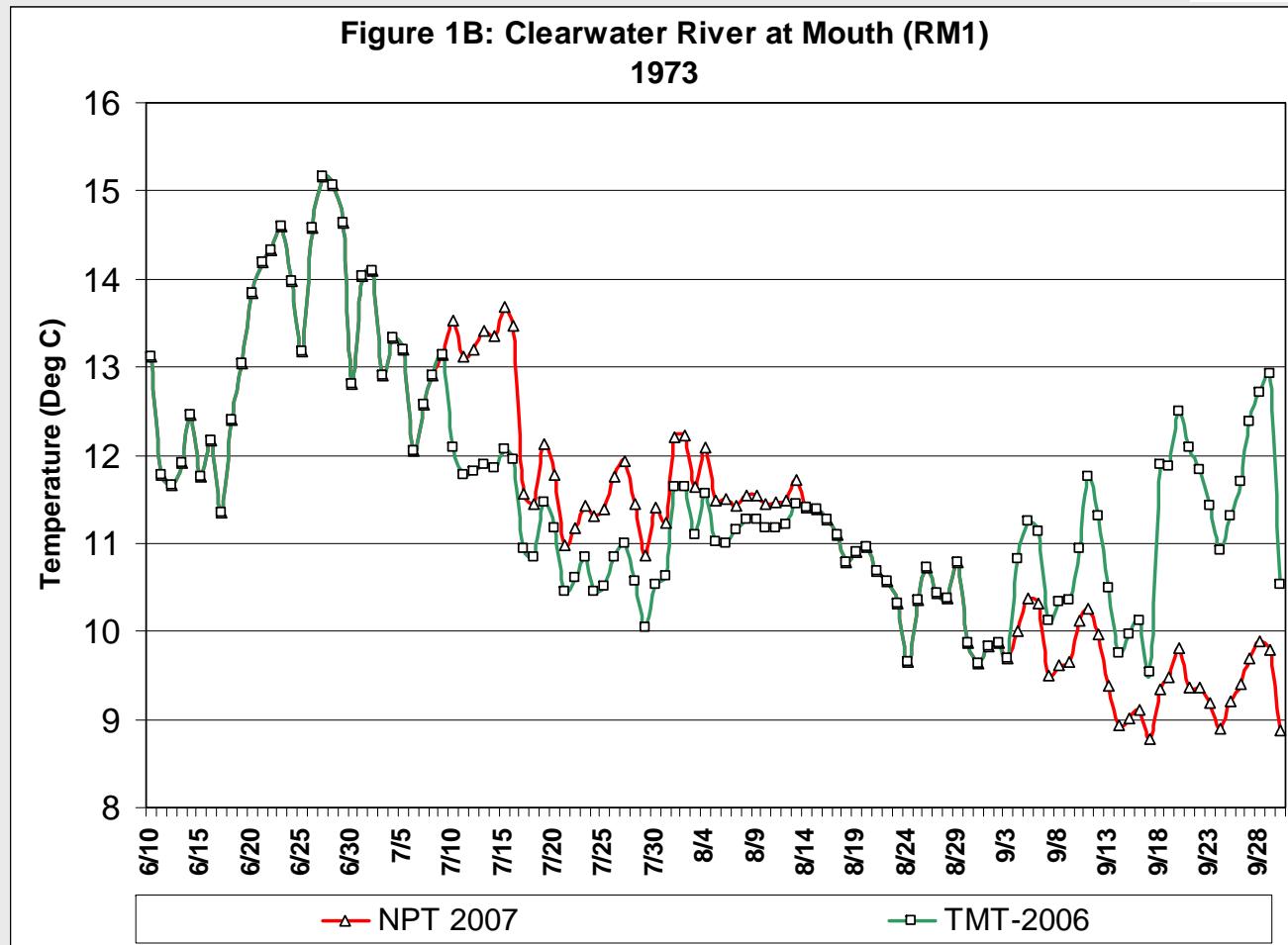


Figure 1A: Clearwater River at Mouth (RM1)
1970



Modeled Water Temperature

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

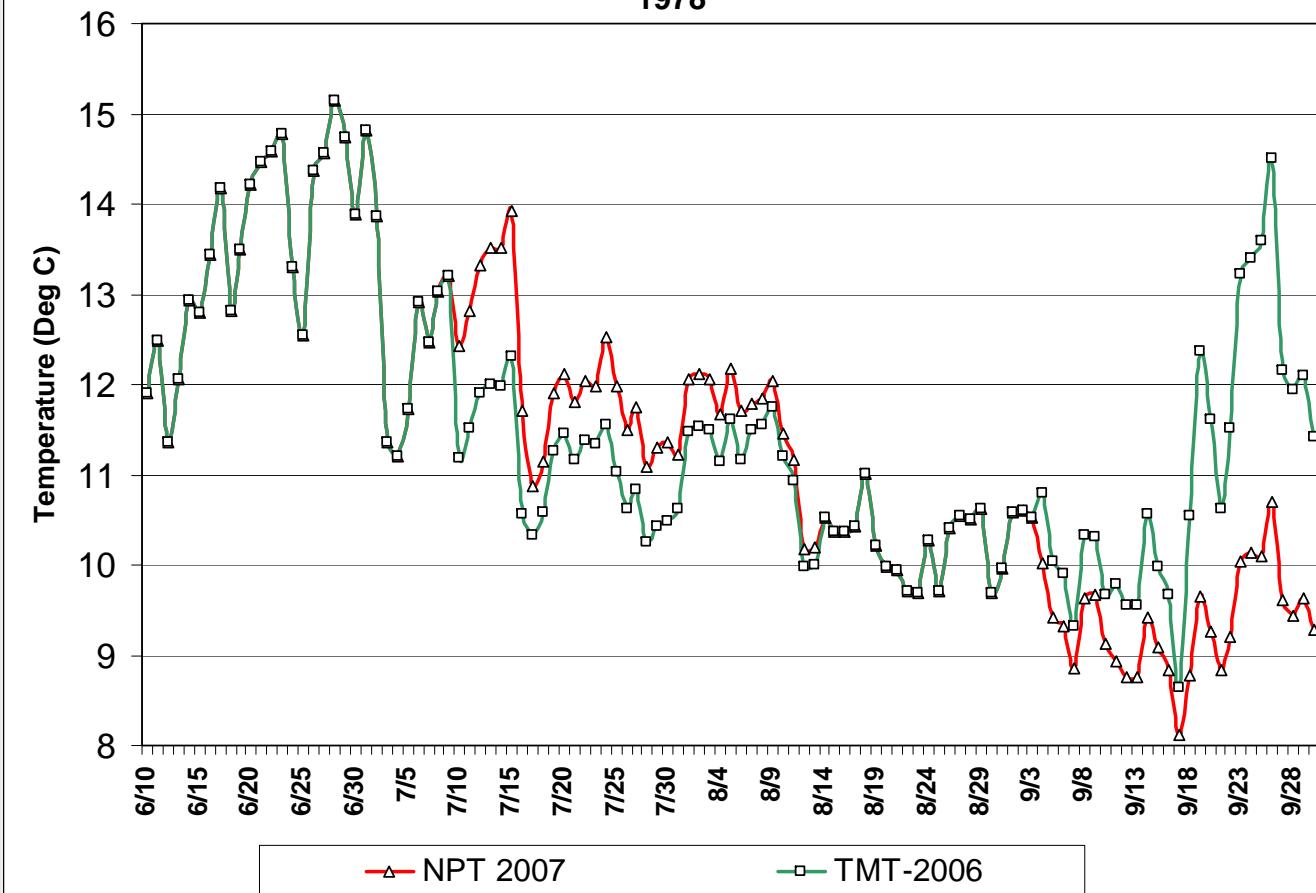


Modeled Water Temperature

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

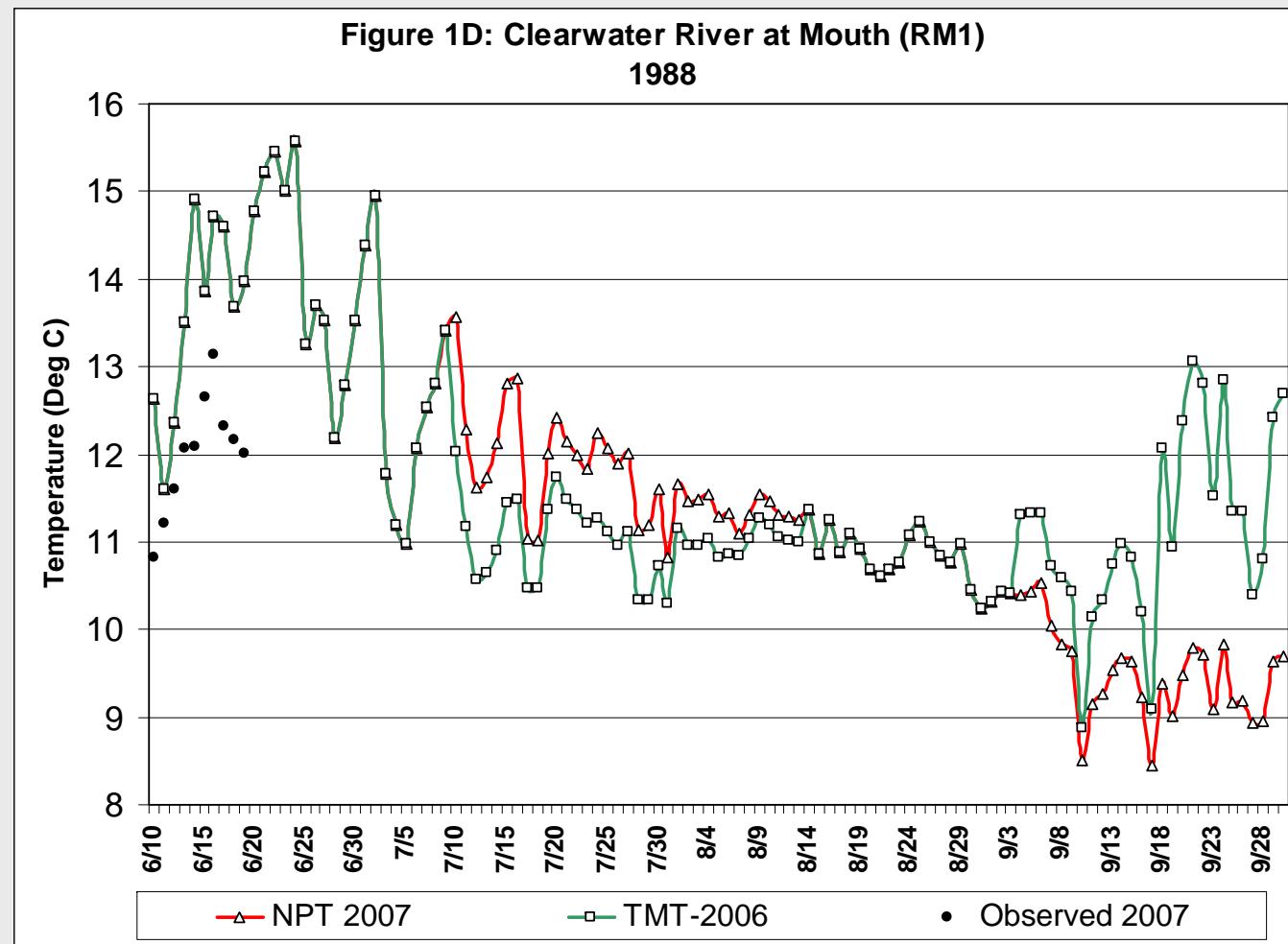


Figure 1C: Clearwater River at Mouth (RM1)
1978



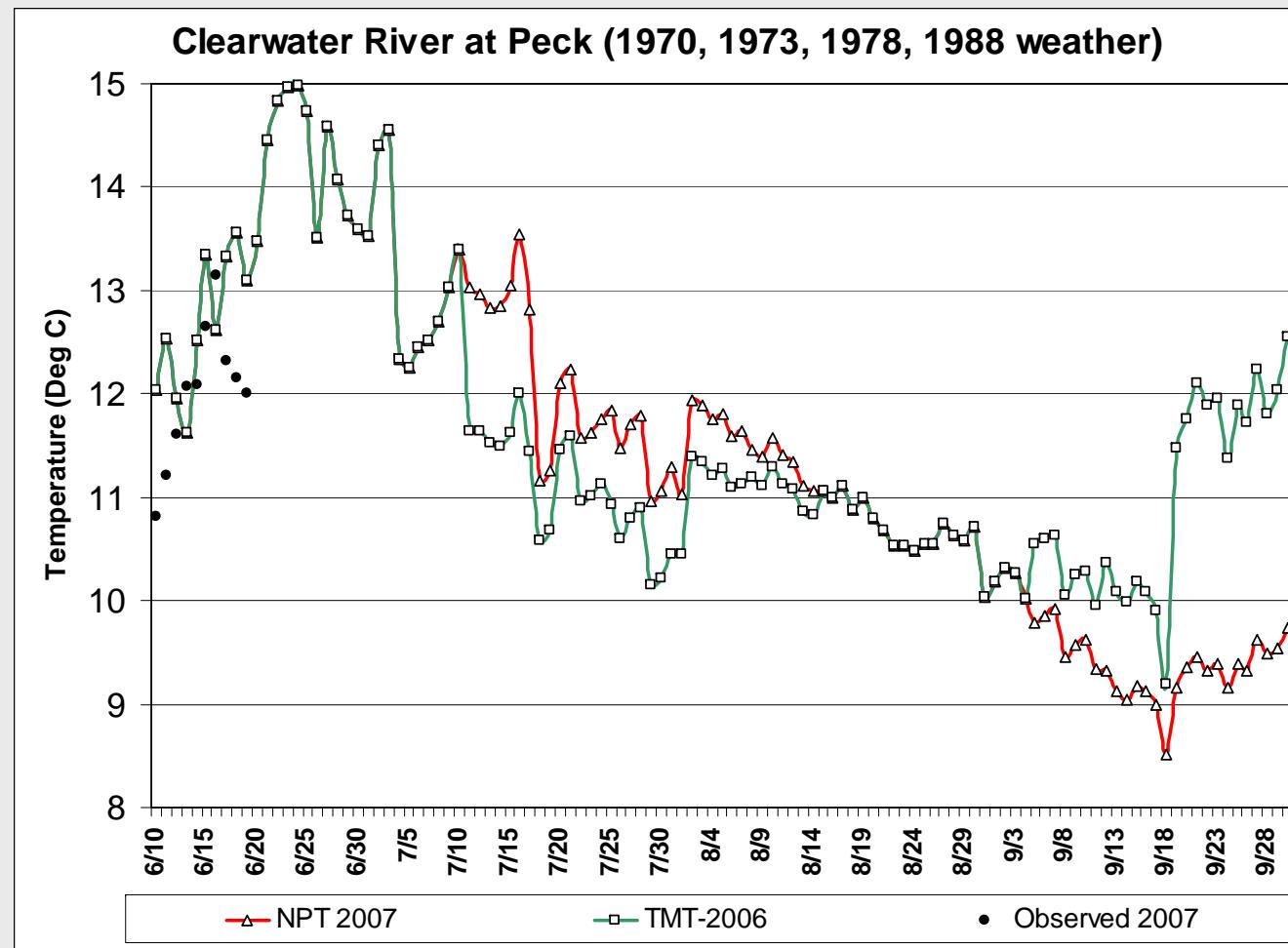
Modeled Water Temperature

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



Modeled Water Temperature

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

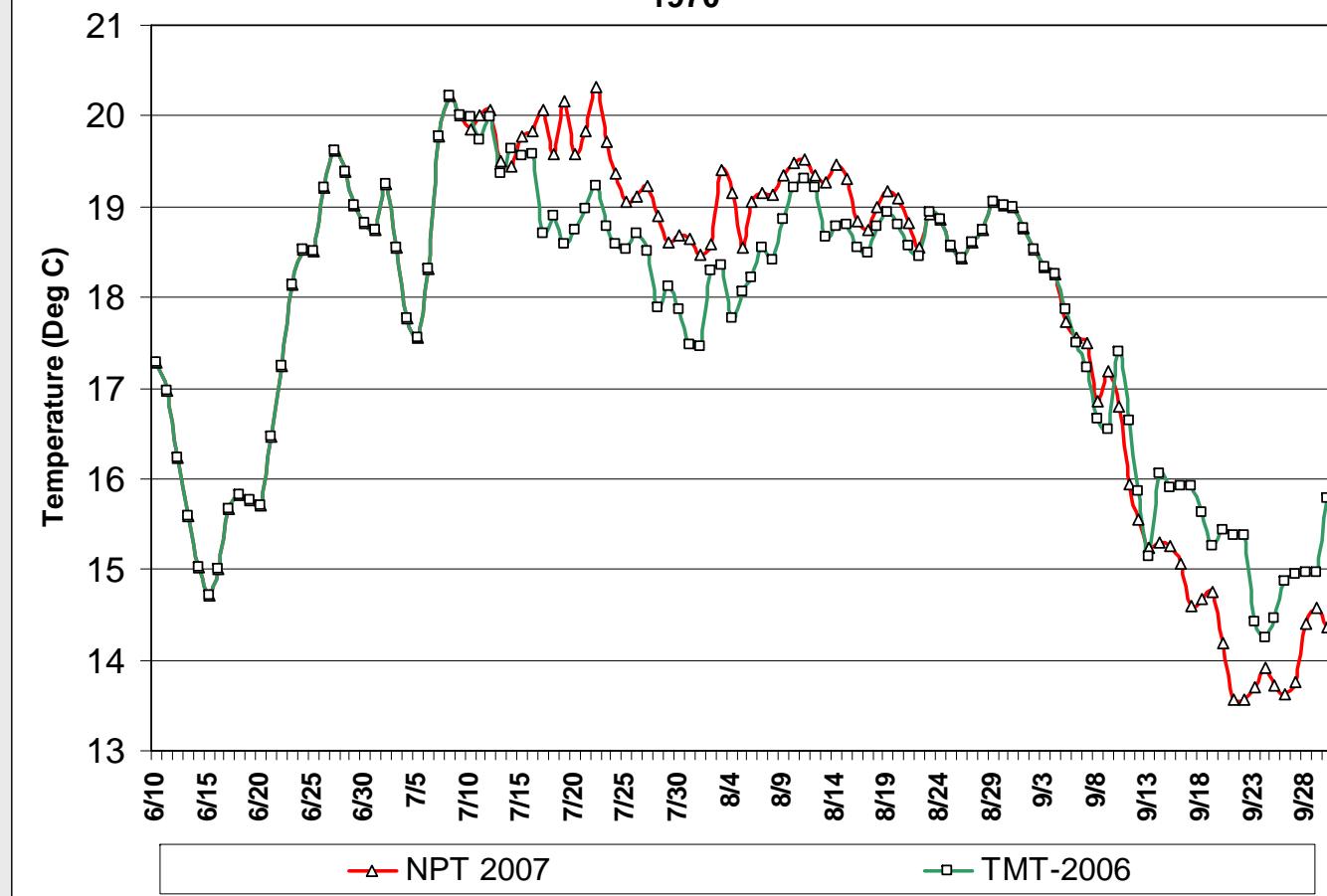


Modeled Water Temperature

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



Figure 2A: Lower Granite Dam (RM107)
1970

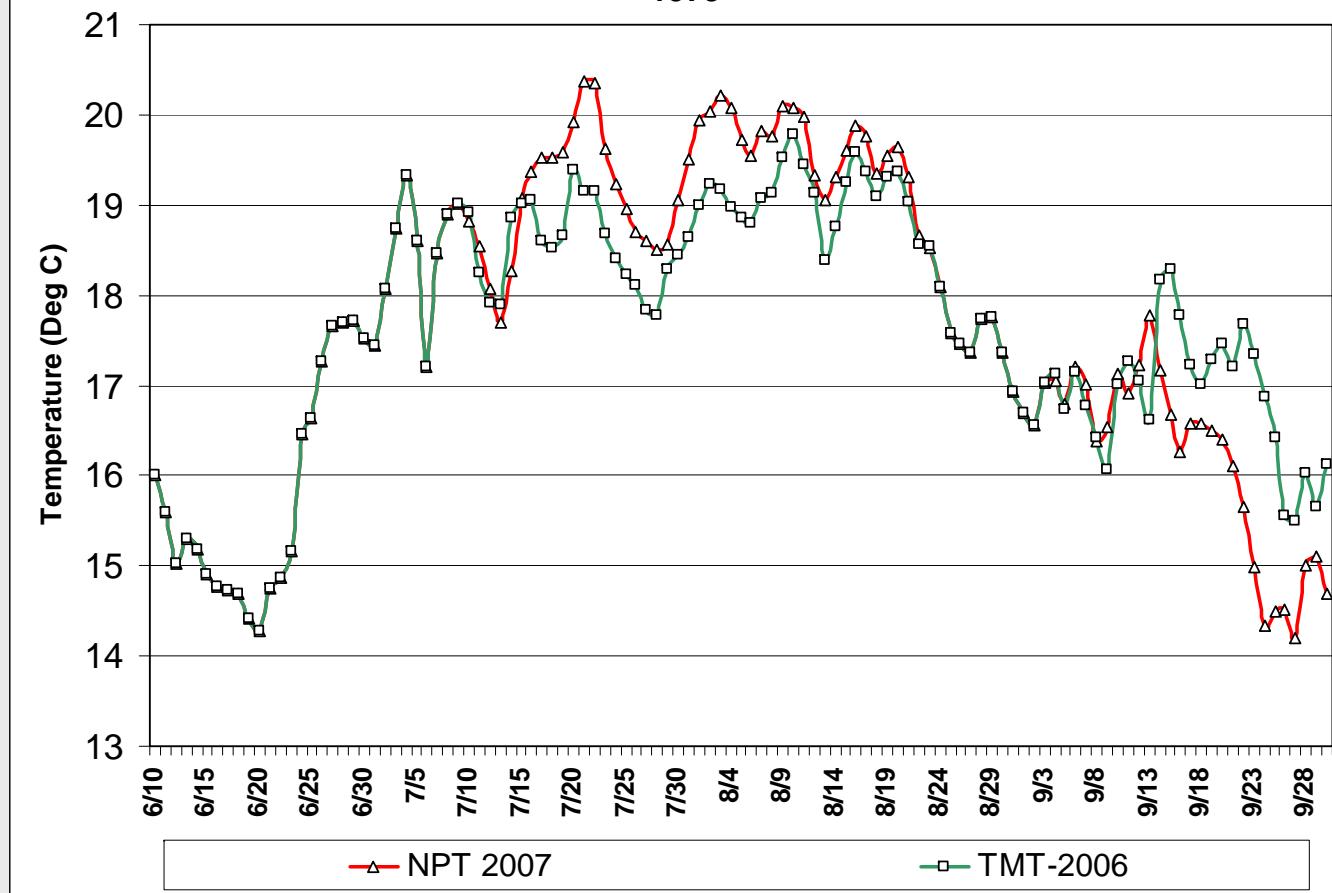


Modeled Water Temperature

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

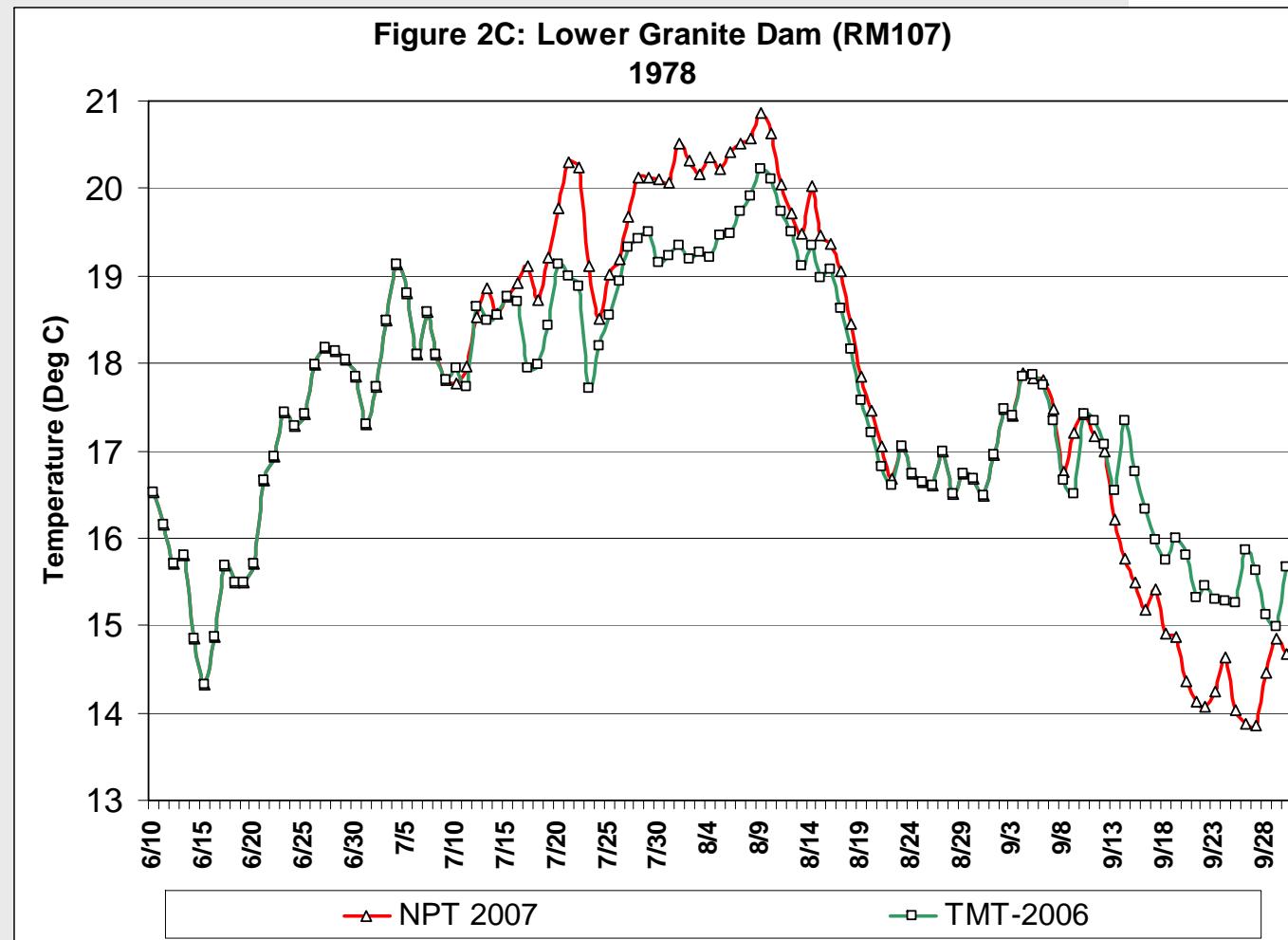


Figure 2B: Lower Granite Dam (RM107)
1973



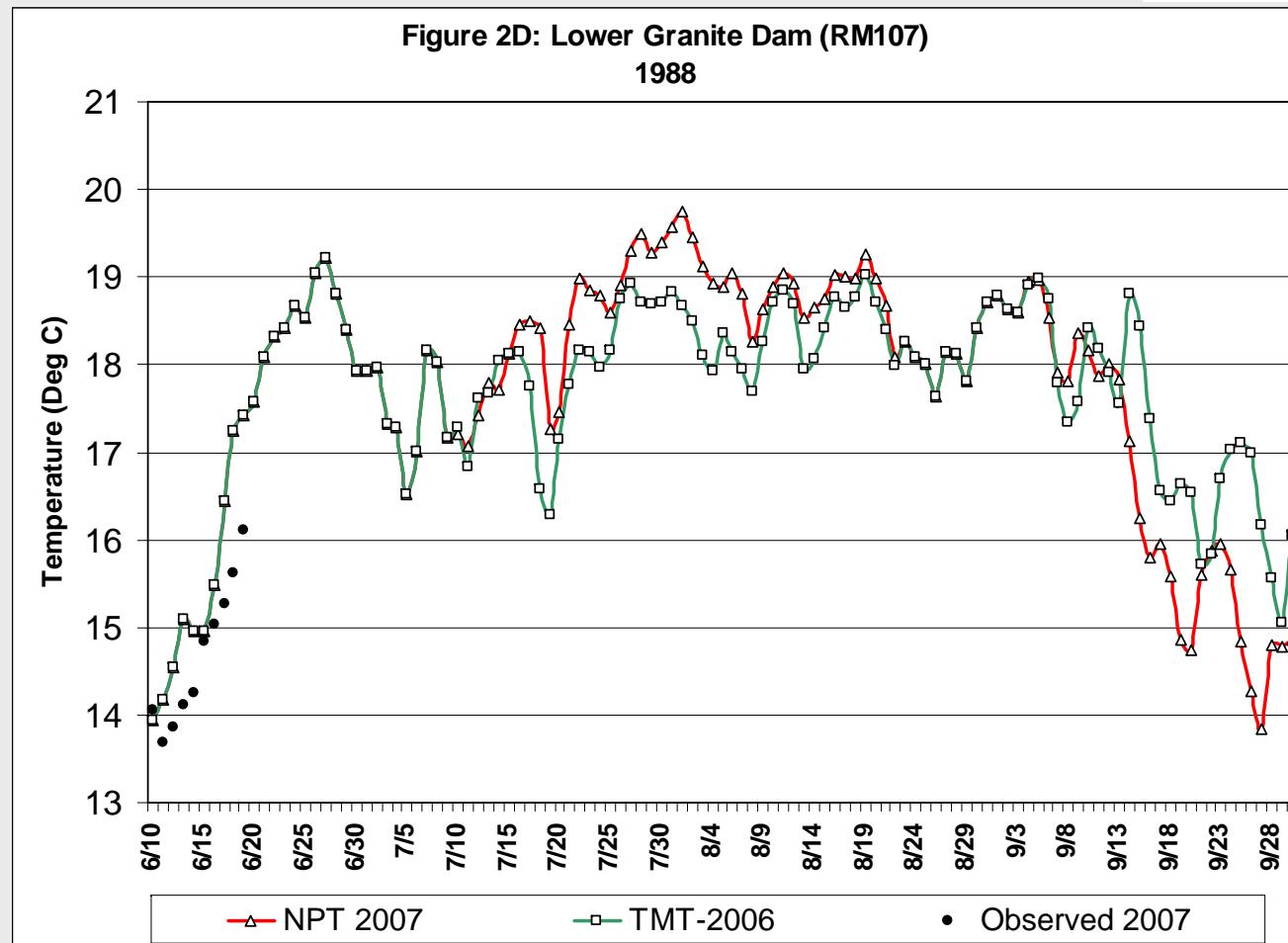
Modeled Water Temperature

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



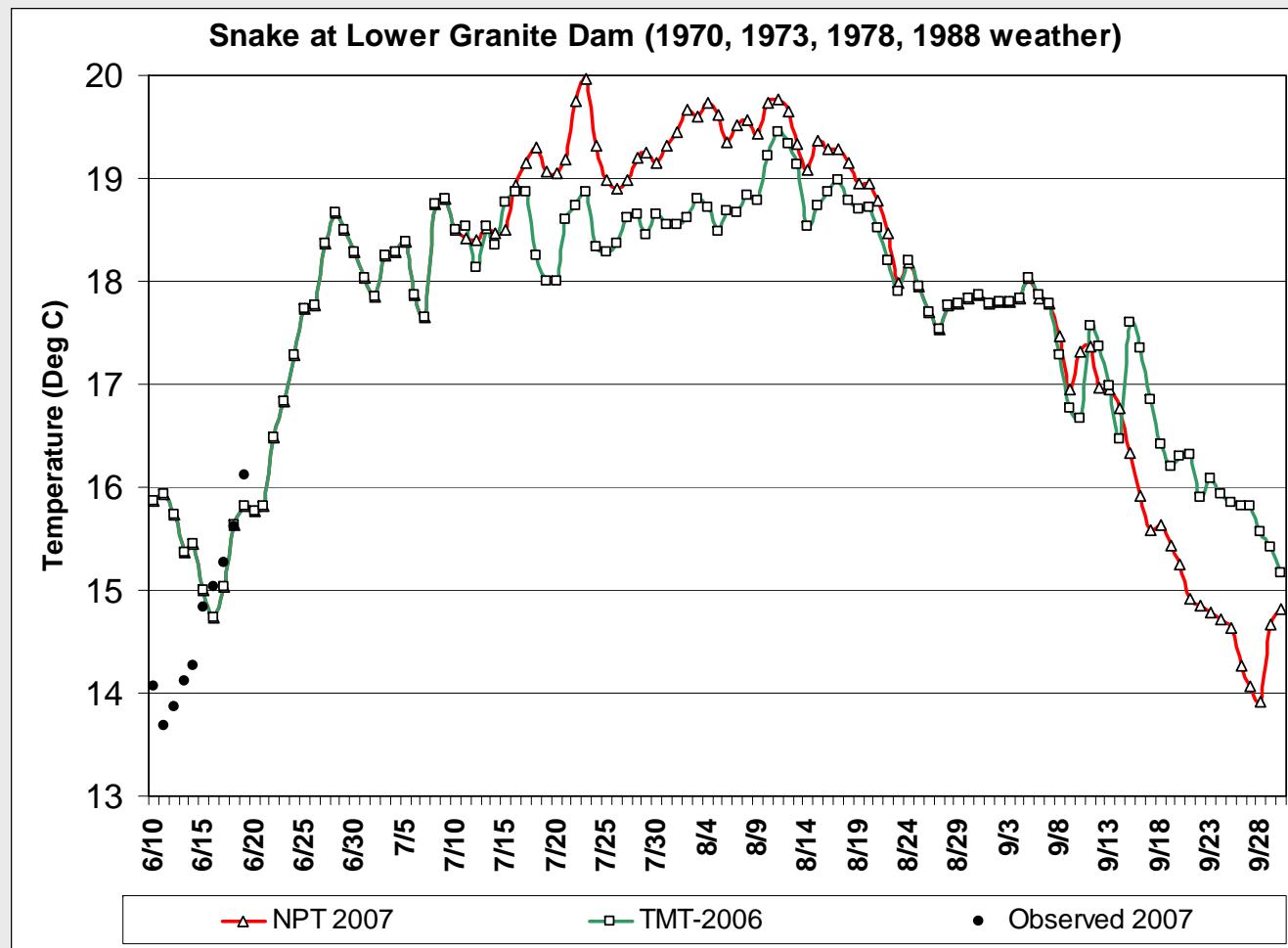
Modeled Water Temperature

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



Modeled Water Temperature

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



Conclusions



- Nez Perce Tribe-2007: Draft 1233 KaF (July-Sept). Outflows 3 - 14 kcfs. Balance and temperature control is achieved in early July and September. September carryover: ~236 KaF.
- TMT-2006 Operation: Draft 1171 KaF (July-Sept.). Outflows 7.7 - 12.5 kcfs. September carryover: ~137 KaF.
- Water temperature modeling shows that NPT 2007 gives a good balance for temperature control (20 degC) in early July and September (very important for returning adults and their spawning conditions).
- What are your questions? ☺