APPENDIX H

Introduction:

DEQ has worked collaboratively with the City to develop seasonal waste load allocations that achieve water quality standards. The new analysis meets a similar level of technical rigor as the original analysis. The City of Klamath Falls provided DEQ with an alternative TMDL scenario with the WWTPs discharging at a higher concentration from October 16 to May 14 (Wells, April 2012). DEQ reviewed the alternative WLA scenario and determined that the guidelines were followed and that the scenario achieved the DO and pH criteria for the summer period. DEQ further reduced the City of Klamath Falls' suggested phosphorus concentrations during the non-summer period to protect against predicted pH excursions in JC Boyle Reservoir for the with dams scenario during particular times of the year. The results of the revised DEQ scenario will result in meeting water quality standards and alternative WLAs will be in the draft revised TMDL, Table 2-10 and Appendix H. Allocations based on the revised scenario will still result in effluent limitations for the Waste Water Treatment Plants, though they will vary between seasons.

Proposed Table 2-10 (partial). Point Source Waste Load Allocations using flow-weighted averages.

Source	Time Period	Flow Rate Average 2000 (MGD)	Total Phosphorus Average (mg/L)	Total Phosphorus Allocation (lb/day)	Total Nitrogen Average (mg/L)	Total Nitrogen Allocation (lb/day)	BOD_5 Average (mg/L)	BOD_5 Allocation (lb/day)
Klamath Falls WWTP	5/15 – 10/15	2.9	0.35	8.6	23	556	18	439
	10/16 – 5/14	3.5	1.9	54	23	671	19	549
South Suburban WWTP	5/15-10/15	1.7	0.35	4.9	23	318	18	251
	10/16 – 5/14	2.3	1.9	36	23	448	19	367

Revised figures 2-32 to 2-40 (repeated in Appendix H, below, along with many others).

This appendix presents the tables and figures that were used to compare results scenarios with the dissolved oxygen (DO) and pH water quality standards (Tables 1 – 5 and Figures 1 – 70). This information supplants the similar tables and figures presented in the December 2010 TMDL. The Natural Conditions Baseline Condition (T1BSR) was not modified from the December 2010 TMDL. The Oregon Allocation Scenario (TOD2RN) was modified to include seasonally variable waste load allocations for Klamath Falls and South Suburban WWTPs (see Chapter 2 of this document). This change also necessitated a revision to the Oregon With-Dams TMDL Scenario (T4BSRN). The difference in predicted instream concentration of pollutants at the Oregon / California border between the original and revised Oregon Allocation Scenario is presented in Figures 71 – 73.

The DO and pH water quality standards are predicted to be achieved by the Oregon Allocation Scenario the vast majority of the time. Similar to the 2010 TMDL, there are scattered times and places with digression of the criteria due to the complexity of the system and the high spatial and temporal resolution of model as compared to the relatively simple allocations (e.g. average concentrations, percent reductions). The excursion rates are similar to the 2010 TMDL. The excursions to a numeric criterion were calculated after rounding the model prediction to the tenth. The pH excursions are presented as the percent of days with at least one exceedance. The pH exceedance rate calculated by hour would be lower.

Table 1. Summary of compliance statistics with the absolute minimum DO standard, year round.

Site	Criteria	T1BSR minimum	T1BSR, percent days < criteria	TOD2RN revised, minimum	TOD2RN revised, percent days < criteria	T4BSRN revised, minimum	T4BSRN revised, percent days < criteria
Klamath Falls WWTP	> 4.0	5.7	0%	5.7	0%	5.8	0%
S. Suburban WWTP	> 4.0	6.8	0%	6.8	0%	7.0	0%
LRDC	> 4.0	7.0	0%	7.2	0%	7.1	0%
Miller Island	> 4.0	6.4	0%	6.6	0%	6.4	0%
KSD	> 4.0	6.0	0%	6.0	0%	5.9	0%
Hwy 66	> 4.0	5.9	0%	5.9	0%	5.8	0%
Upstream Keno Dam	> 4.0	5.8	0%	5.8	0%	5.9	0%
Keno Dam outlet	> 6.0	5.9	<1%	6.0	0%	5.9	<1%
J.C. Boyle	> 6.0	6.4	0%	6.5	0%	5.8	<1%
OR / CA State Line	> 6.0	7.2	0%	7.0	0%	6.7	0%

Table 2. Summary of compliance statistics with the spawning DO standard, applies January 1 to May 15th to reaches downstream of Keno Dam

Site	Criteria	T1BSR minimum	T1BSR minimum Saturation when <11.0 mg/L	T1BSR, percent days < criteria	TOD2RN revised, minimum	TOD2RN revised minimum Saturation when <11.0 mg/L	TOD2RN revised, percent days < criteria	T4BSRN revised, minimum	T4BSRN revised minimum Saturation when <11.0 mg/L	T4BSRN revised, percent days < criteria
Keno Dam outlet	>11.0 mg/L or > 95% satuation	8.4	93%	7%	8.6	93%	3%	8.5	93%	3%
J.C. Boyle	>11.0 mg/L or > 95% satuation	8.5	89%	71%	8.6	90%	48%	8.5	92%	17%
OR / CA State Line	>11.0 mg/L or > 95% satuation	8.6	91%	53%	8.8	91%	43%	8.8	92%	27%

Table 3. Summary of compliance statistics with the 7-day minimum mean DO criteria.

Site	Criteria	T1BSR minimum	T1BSR, percent days < criteria	TOD2RN revised, minimum	TOD2RN revised, percent days < criteria	Maximum difference between TOD2RN and T1BSR	T4BSRN revised, minimum	T4BSRN revised, percent days < criteria	Maximum difference between T4BSRN and TOD2RN
Klamath Falls WWTP	> 5.0	5.9	0%	5.9	0%	-0.12	6.1	0%	-0.05
S. Suburban WWTP	> 5.0	7.1	0%	7.1	0%	-0.07	7.3	0%	-0.09
LRDC	> 5.0	7.1	0%	7.4	0%	-0.06	7.3	0%	-0.12
Miller Island	> 5.0	6.5	0%	6.6	0%	-0.07	6.5	0%	-0.30
KSD	> 5.0	6.1	0%	6.1	0%	-0.07	6.0	0%	-0.38
Hwy 66	> 5.0	6.0	0%	6.0	0%	-0.07	5.9	0%	-0.21
Upstream Keno Dam	> 5.0	5.8	0%	5.9	0%	-0.07	6.0	0%	-0.20
Keno Dam outlet	> 6.5	6.0	12%	6.0	12%	-0.10	6.0	13%	-0.21
J.C. Boyle	> 6.5	6.4	1%	6.5	0%	-0.09	6.1	9%	-0.63
OR / CA State Line	> 6.5	7.4	0%	7.2	0%	-0.21	6.8	0%	-0.58

Table 4. Summary of compliance statistics with the 30-day mean minimum DO criteria.

Site	Criteria	T1BSR minimum	T1BSR, percent days < criteria	TOD2RN revised, minimum	TOD2RN revised, percent days < criteria	Maximum difference between TOD2RN and T1BSR	T4BSRN revised, minimum	T4BSRN revised, percent days < criteria	Maximum difference between T4BSRN and TOD2RN
Klamath Falls WWTP	> 6.5	7.0	0%	7.1	0%	-0.05	7.2	0%	-0.02
S. Suburban WWTP	> 6.5	7.4	0%	7.4	0%	-0.06	7.4	0%	-0.05
LRDC	> 6.5	7.4	0%	7.4	0%	-0.05	7.4	0%	-0.04
Miller Island	> 6.5	6.8	0%	7.0	0%	-0.06	6.9	0%	-0.21
KSD	> 6.5	6.4	3%	6.5	0%	-0.06	6.3	6%	-0.19
Hwy 66	> 6.5	6.3	8%	6.4	5%	-0.06	6.3	12%	-0.14
Upstream Keno Dam	> 6.5	6.2	13%	6.2	13%	-0.06	6.3	8%	-0.07

Site	Criteria	T1BSR minimum	T1BSR, percent days < criteria	TOD2RN revised, minimum	TOD2RN revised, percent days < criteria	Maximum difference between TOD2RN and T1BSR	T4BSRN revised, minimum	T4BSRN revised, percent days < criteria	Maximum difference between T4BSRN and TOD2RN
Keno Dam outlet	> 8.0	6.4	36%	6.4	36%	-0.06	6.3	36%	-0.14
J.C. Boyle	> 8.0	6.8	31%	6.8	34%	-0.11	6.5	36%	-0.39
OR / CA State Line	> 8.0	7.8	6%	7.8	8%	-0.06	7.7	10%	-0.15

Table 5. Summary of compliance statistics with maximum pH criterion.

Site	Criteria	T1BSR maximum	T1BSR, percent days > criteria	TOD2RN revised, maximum	TOD2RN revised, percent days > criteria	T4BSRN revised, maximum	T4BSRN revised, percent days > criteria
Klamath Falls WWTP	< 9.0	9.0	0%	9.0	0%	9.1	2%
S. Suburban WWTP	< 9.0	9.0	0%	9.1	2%	9.1	2%
LRDC	< 9.0	9.0	0%	9.1	1%	9.1	<1%
Miller Island	< 9.0	8.9	0%	9.0	0%	9.0	0%
KSD	< 9.0	8.6	0%	8.9	0%	8.9	0%
Hwy 66	< 9.0	8.5	0%	8.9	0%	8.9	0%
Upstream Keno Dam	< 9.0	8.5	0%	8.9	0%	8.9	0%
Keno Dam outlet	< 9.0	8.5	0%	8.9	0%	8.9	0%
J.C. Boyle	< 9.0	8.5	0%	9.0	0%	9.0	0%
OR / CA State Line	< 9.0	8.8	0%	9.0	0%	9.0	0%

Klamath River at Klamath Falls WWTP discharge location.

Figure 1. Predicted DO (instantaneous) in Klamath River at Klamath Falls WWTP discharge location. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

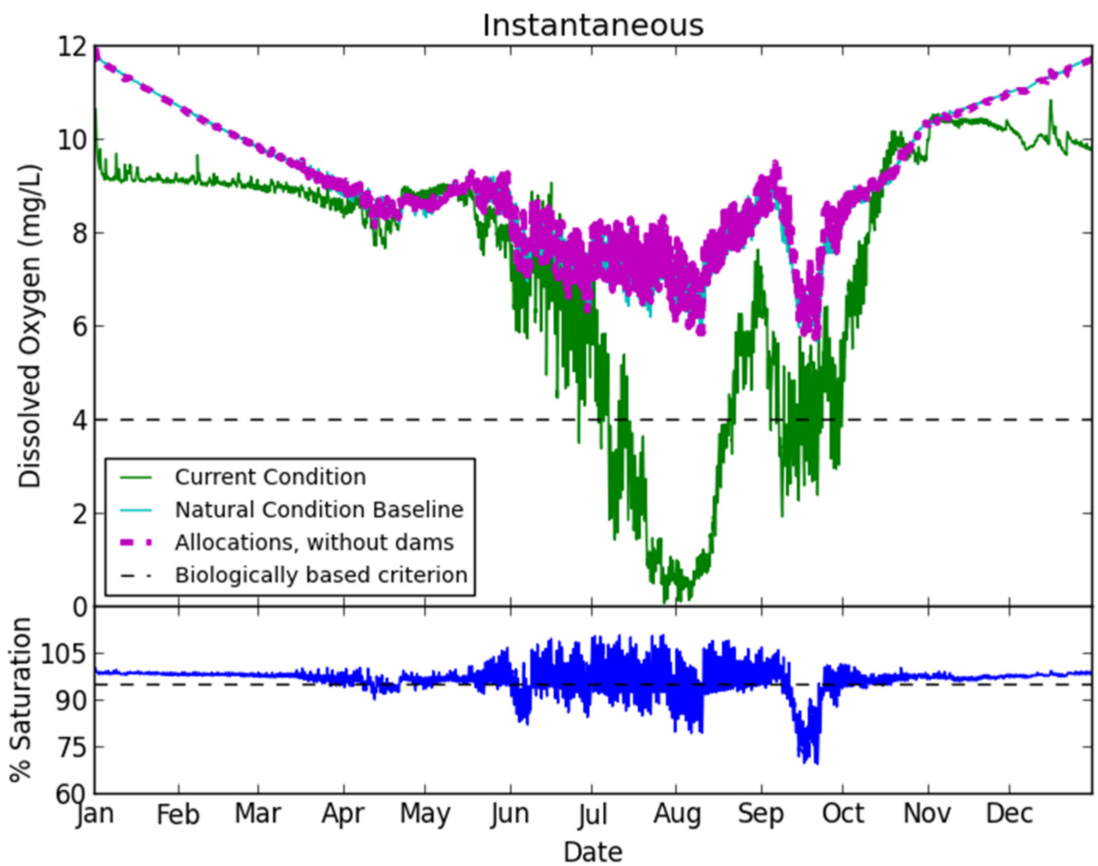


Figure 2. Predicted DO (7-day metric) in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

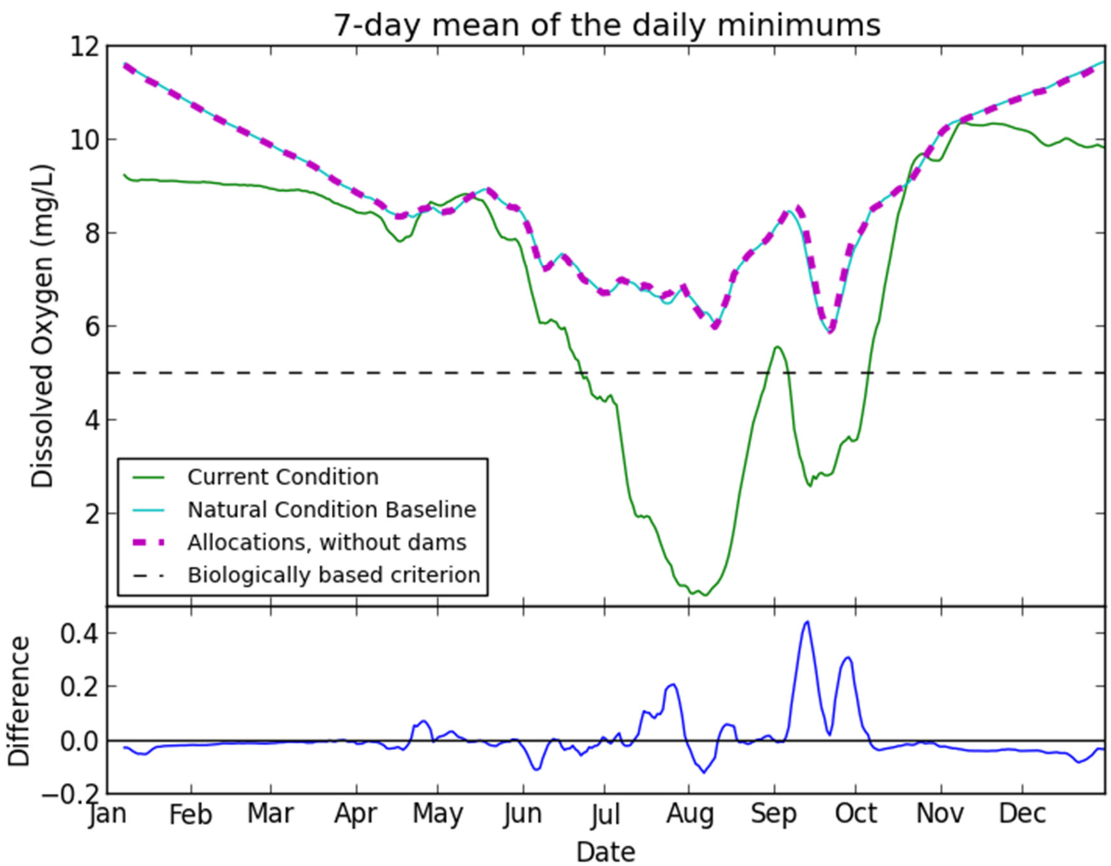


Figure 3. Predicted DO (7-day metric) in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

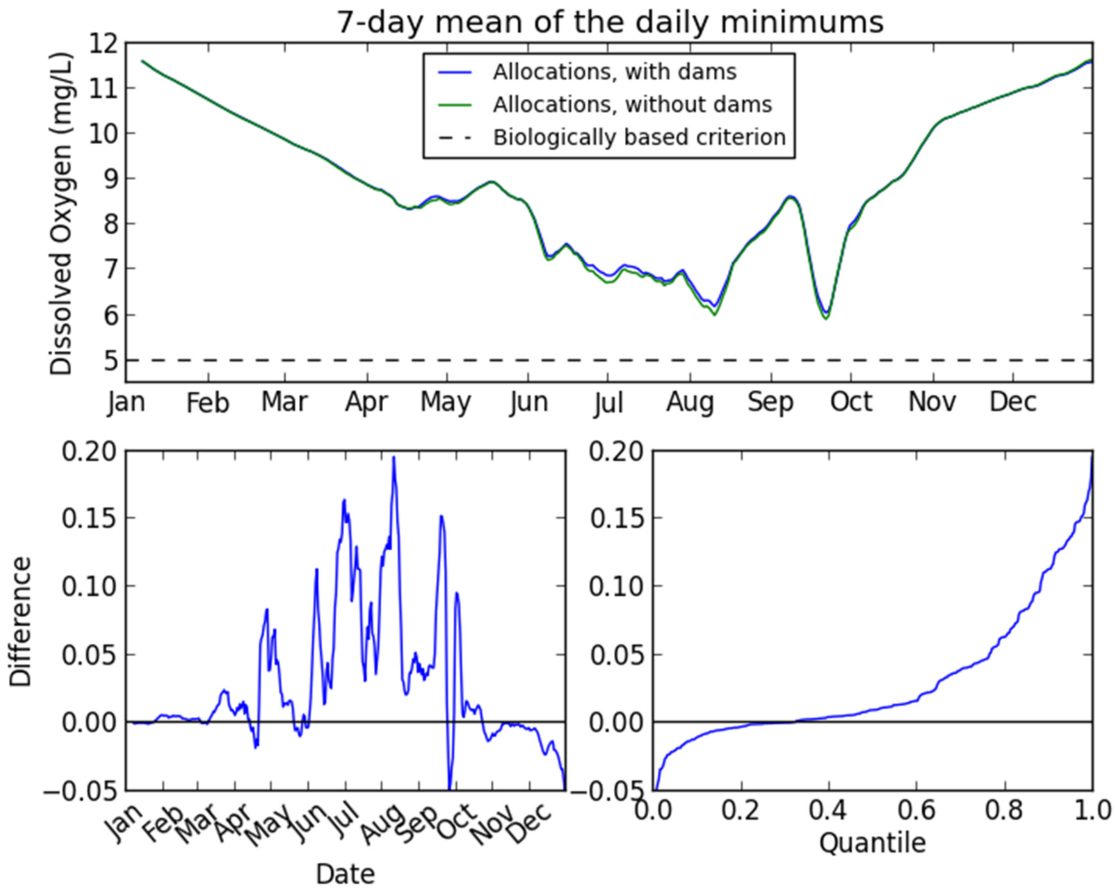


Figure 4. Predicted DO (30-day metric) in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

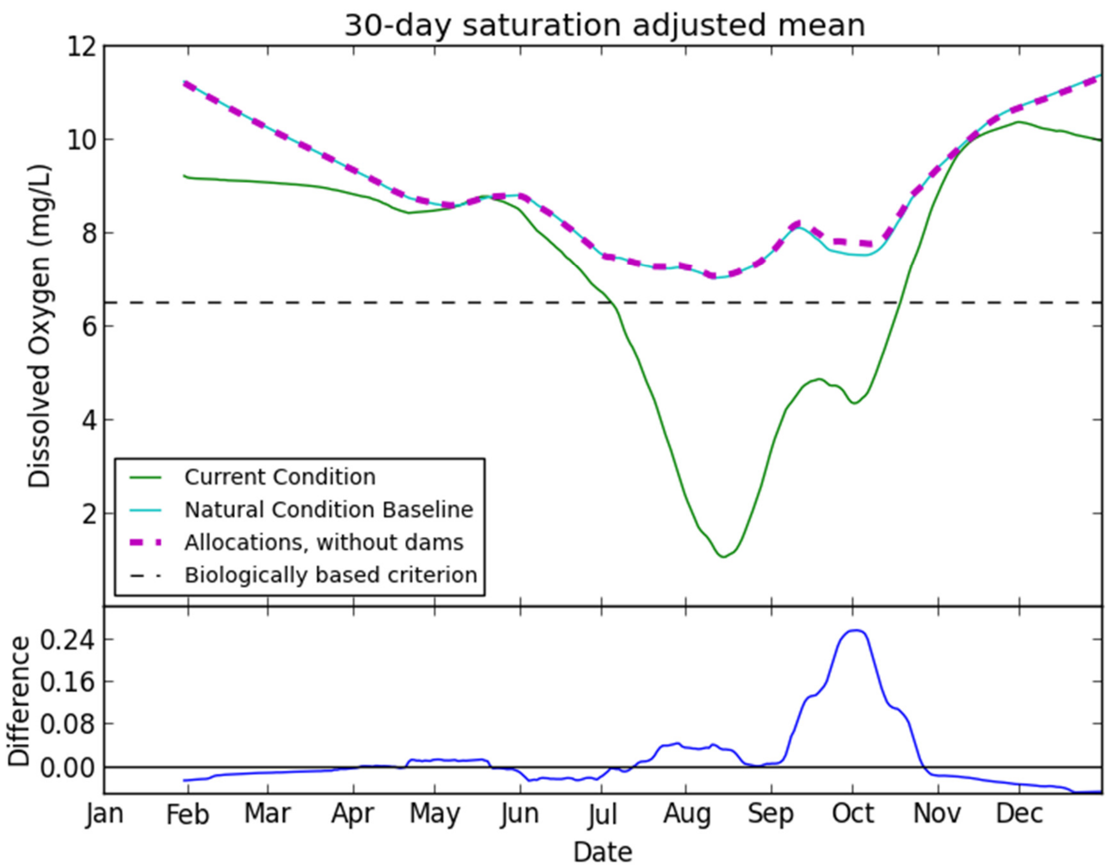


Figure 5. Predicted DO (30-day metric) in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

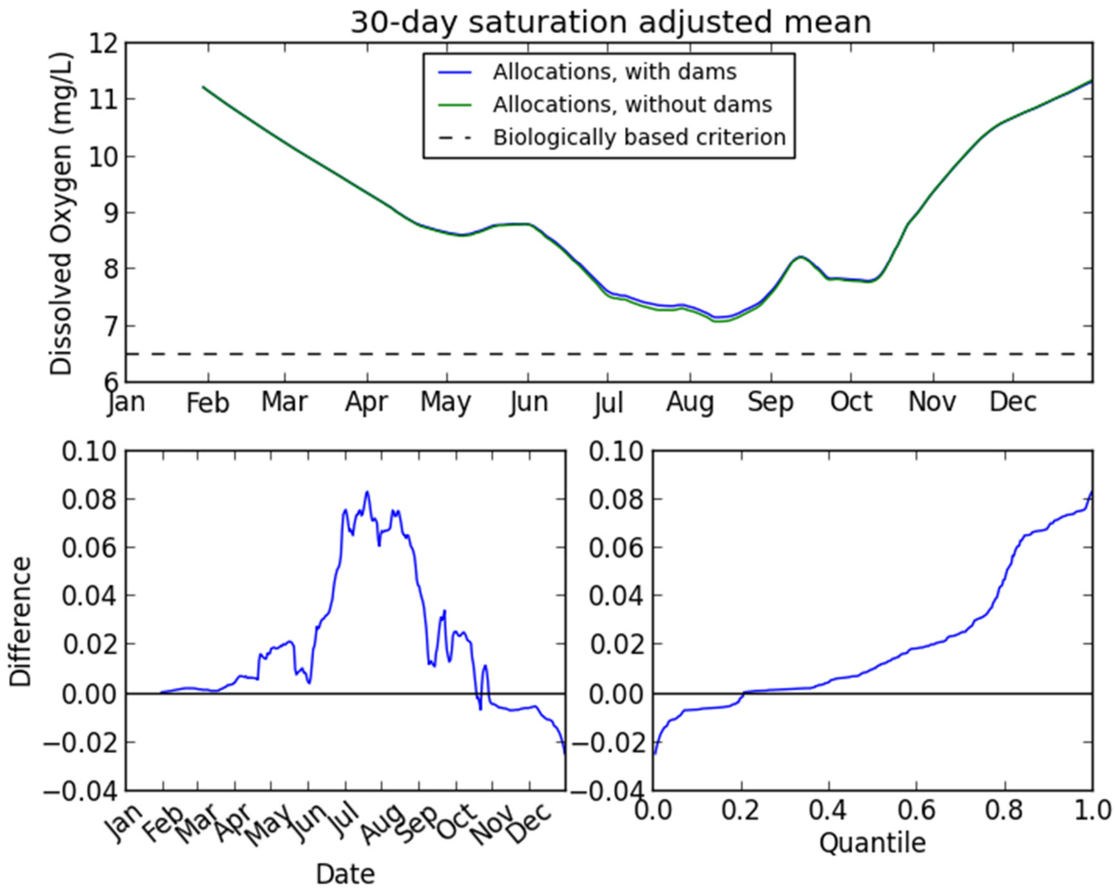


Figure 6. Predicted daily maximum pH in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

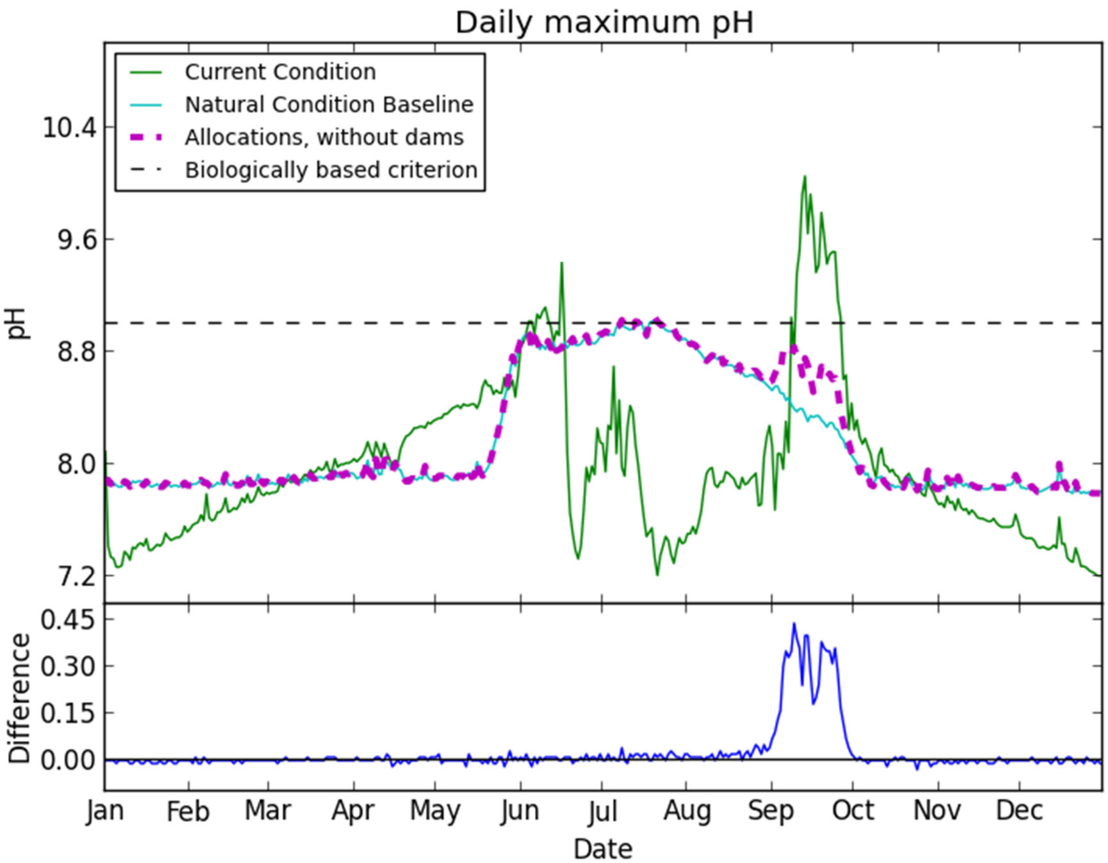
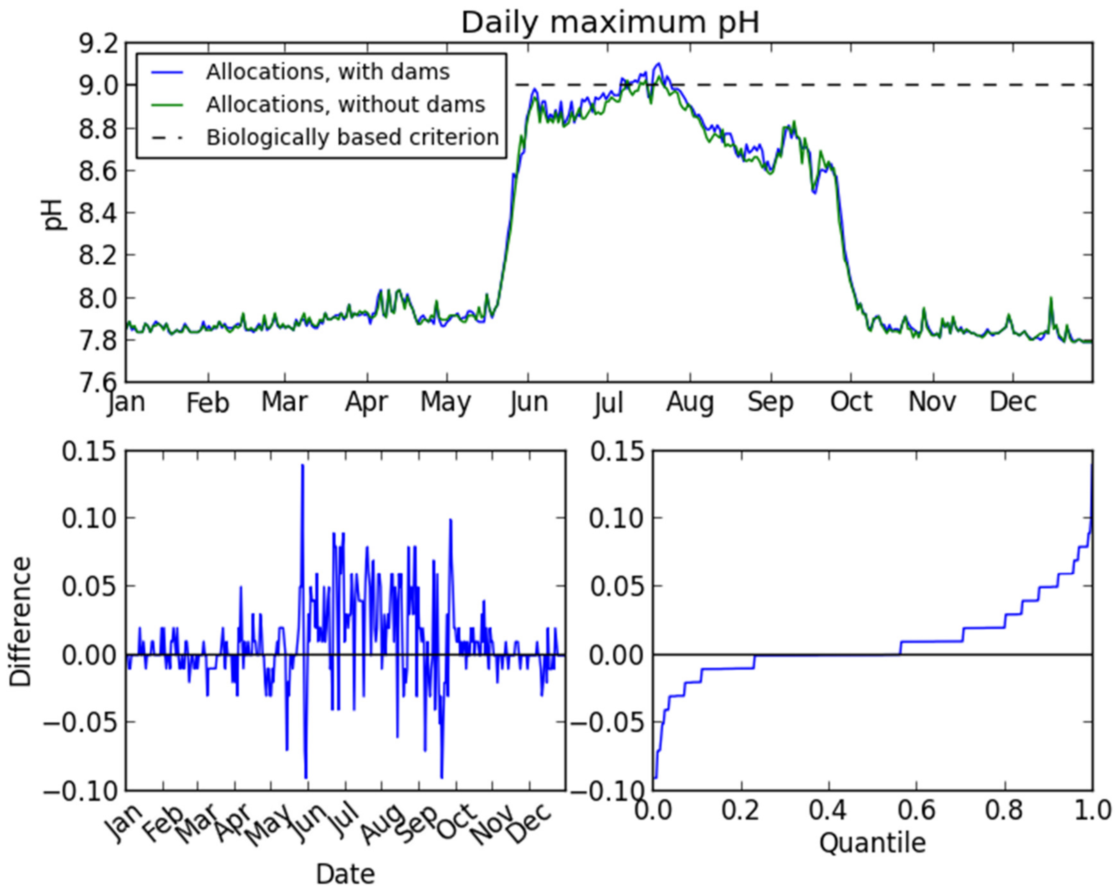


Figure 7. Predicted daily maximum pH in Klamath River at Klamath Falls WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at South Suburban WWTP discharge location.

Figure 8. Predicted DO (instantaneous) in Klamath River at South Suburban WWTP discharge location. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

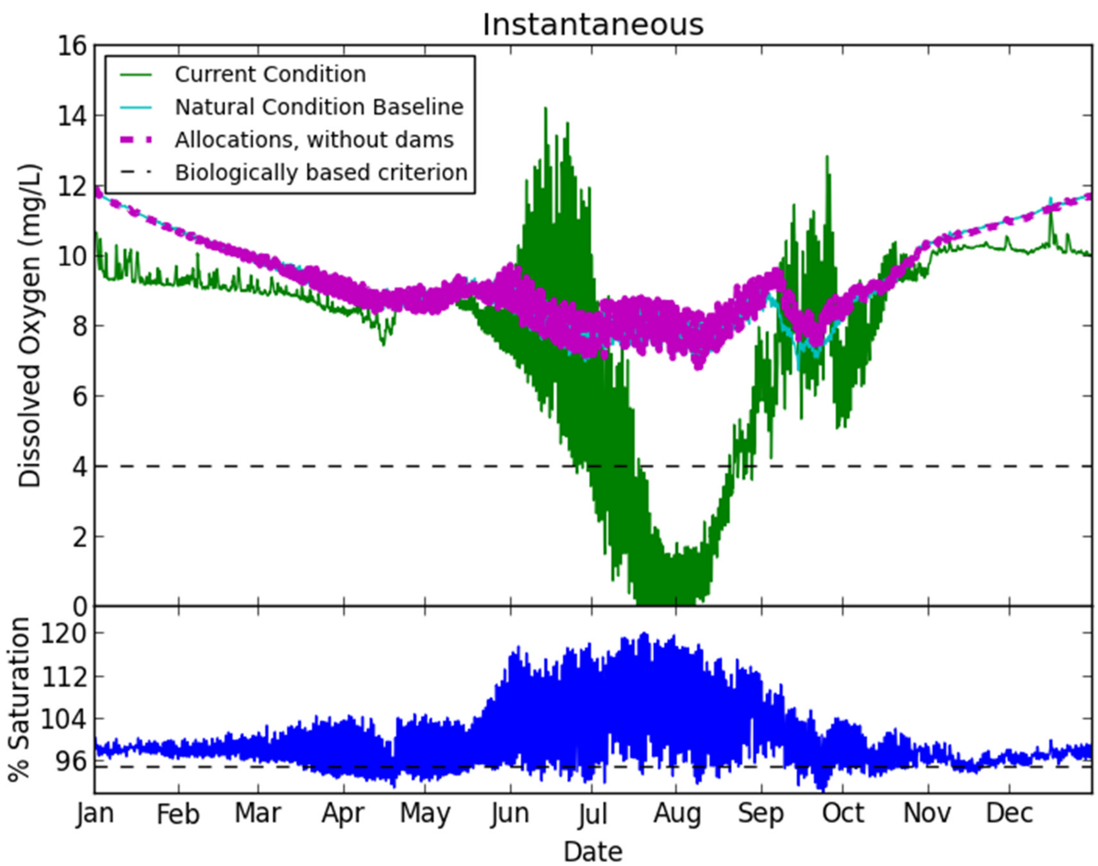


Figure 9. Predicted DO (7-day metric) in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

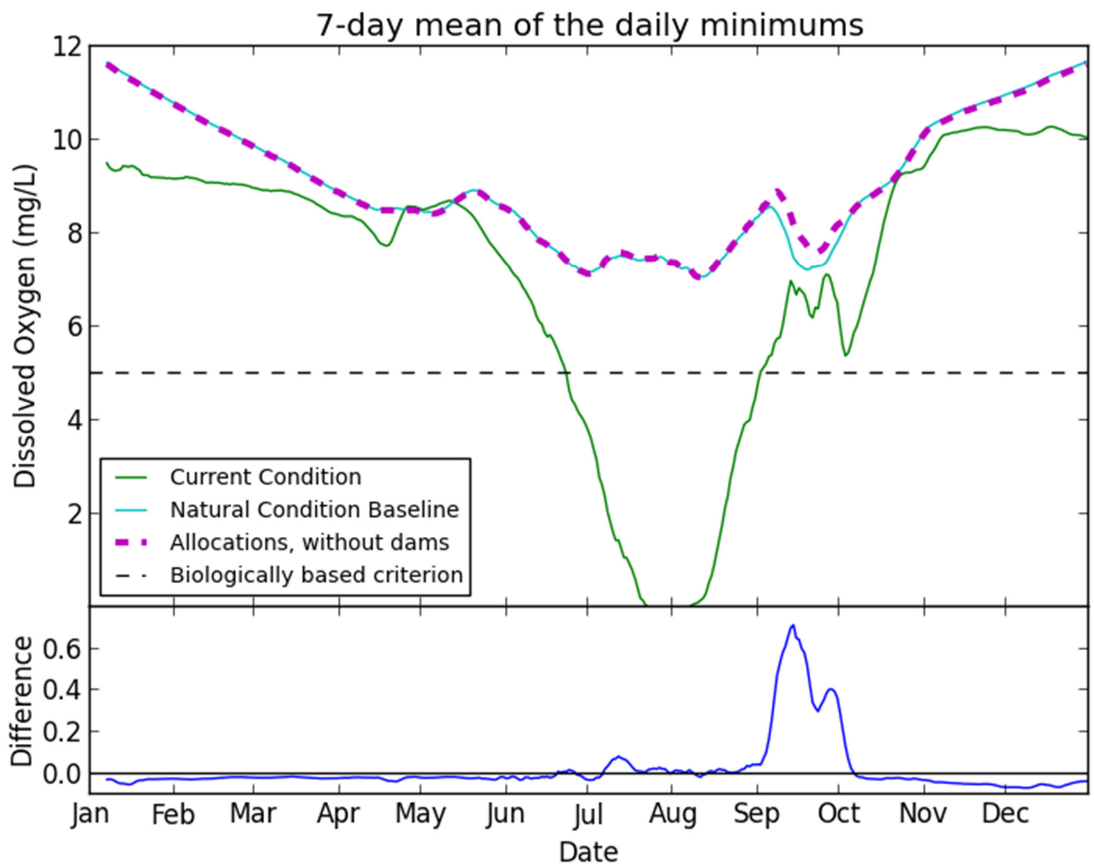


Figure 10. Predicted DO (7-day metric) in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

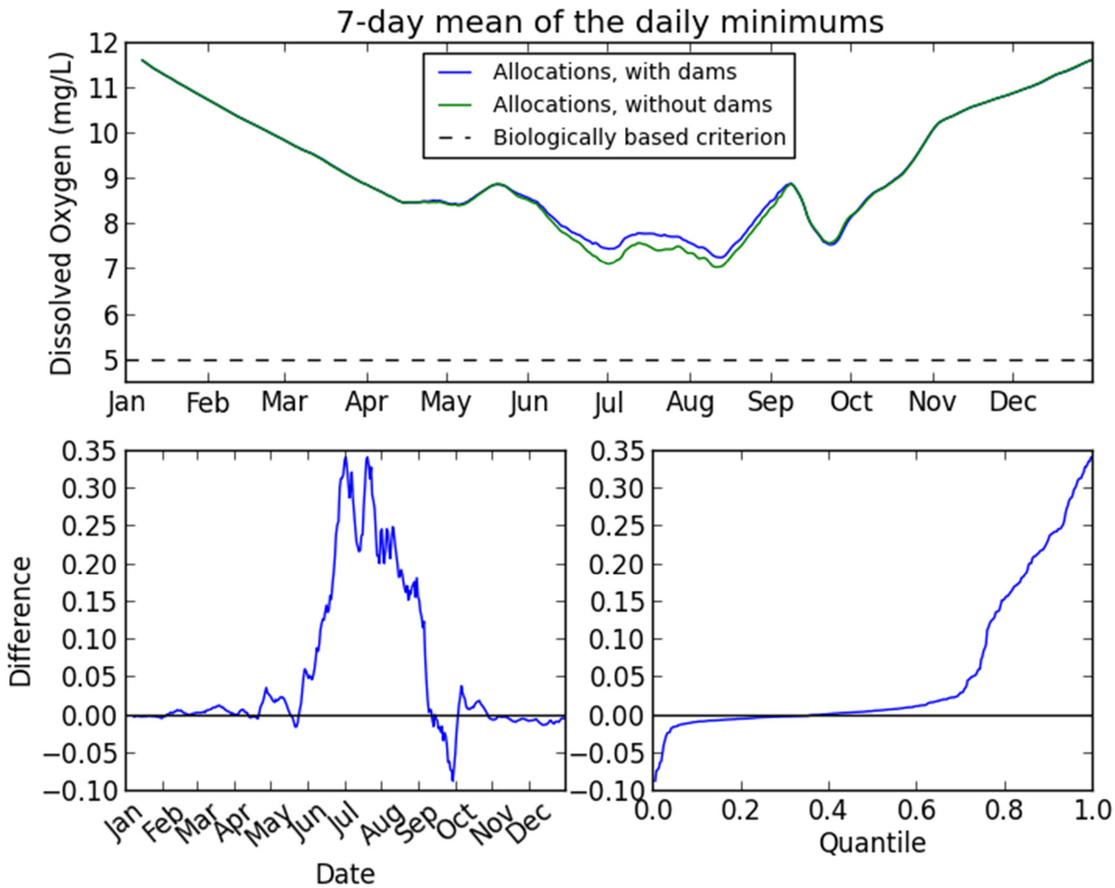


Figure 11. Predicted DO (30-day metric) in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

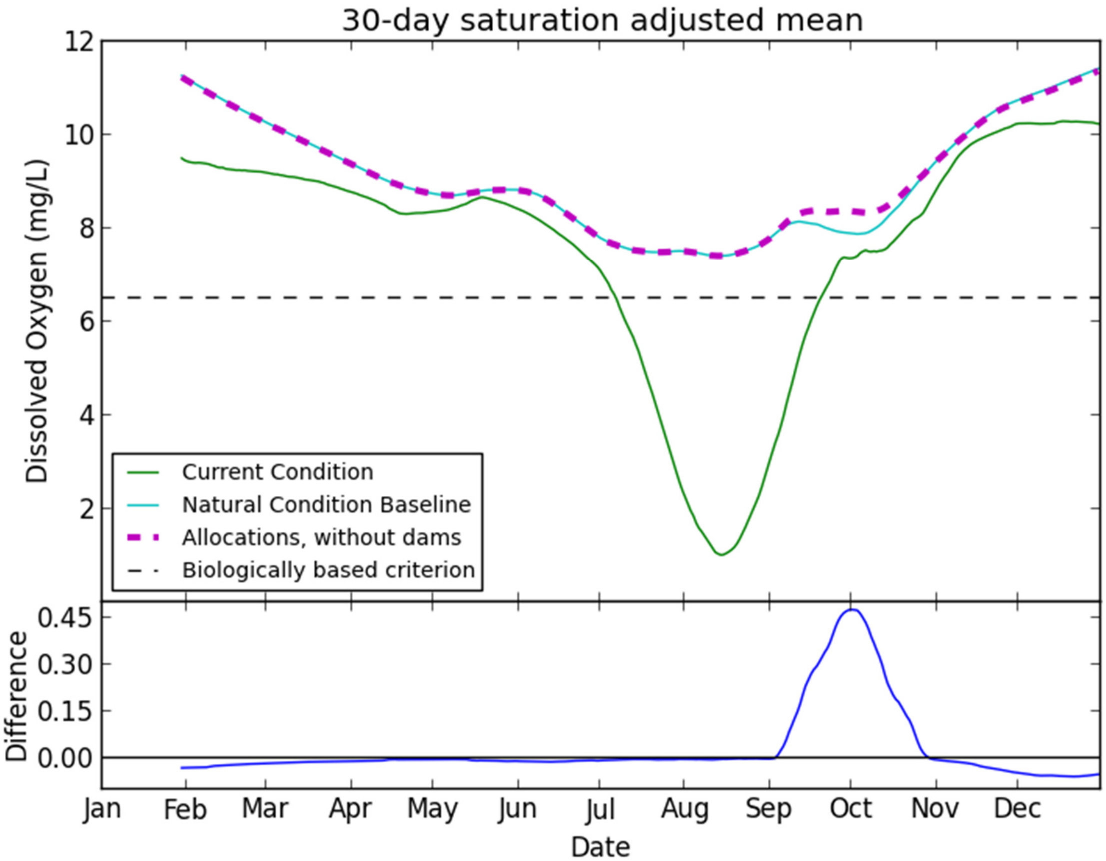


Figure 12. Predicted DO (30-day metric) in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

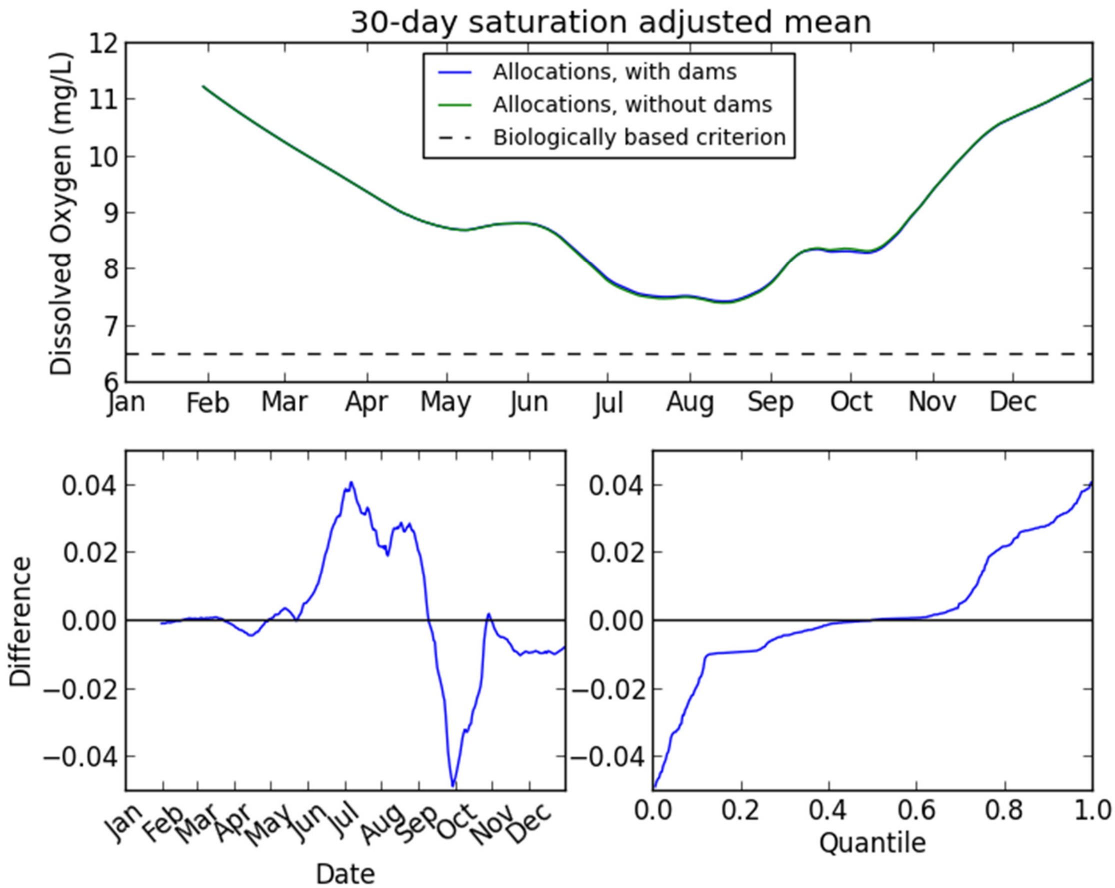


Figure 13. Predicted daily maximum pH in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

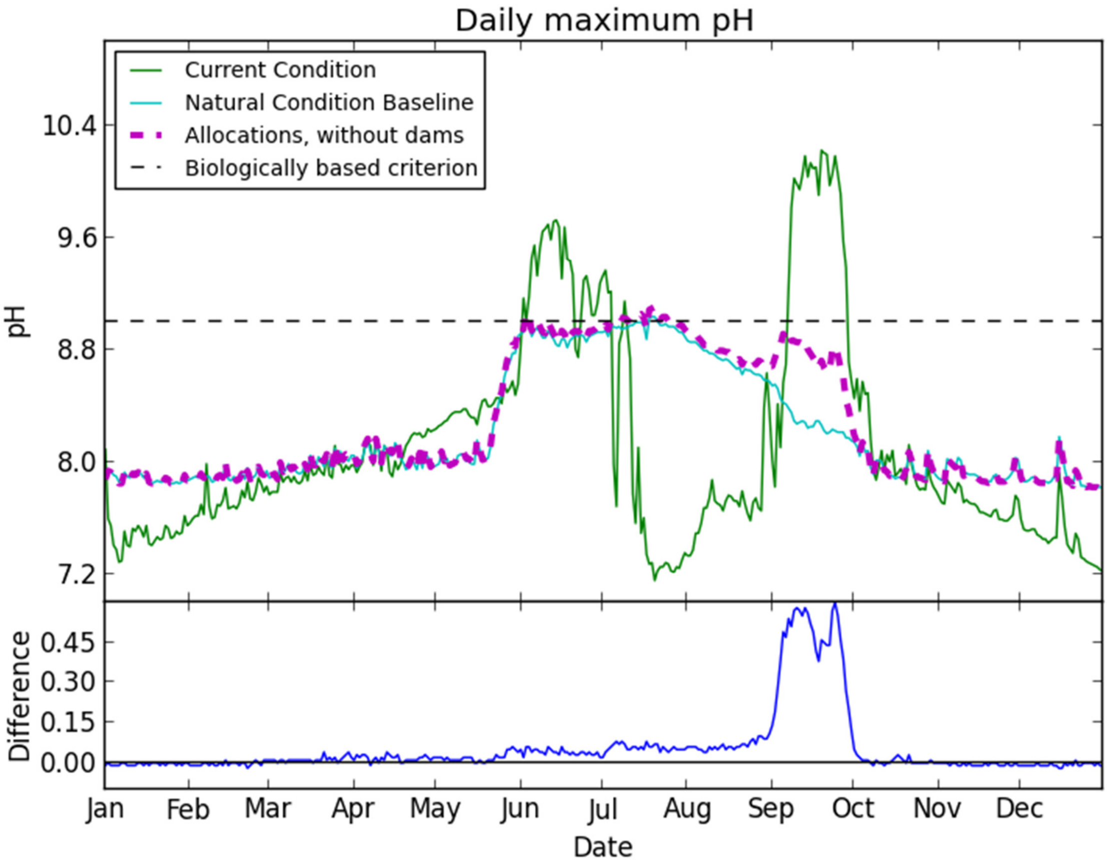
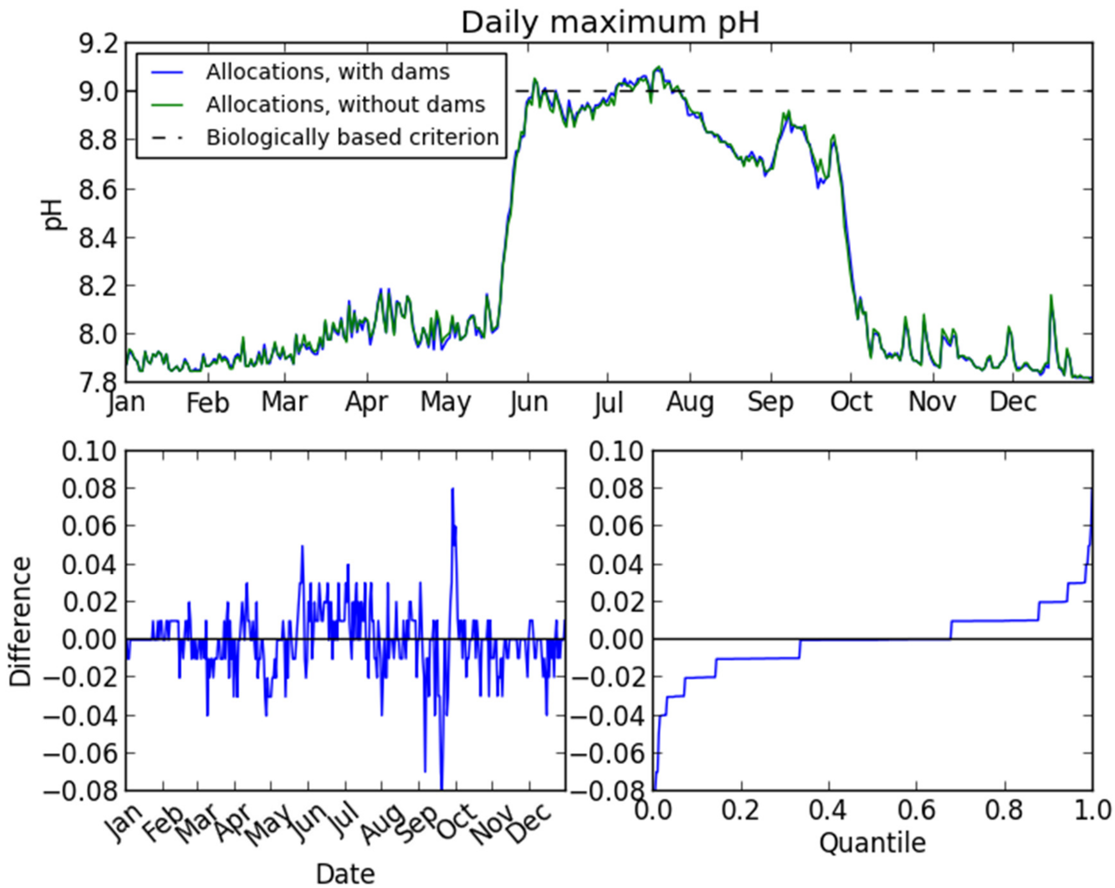


Figure 14. Predicted daily maximum pH in Klamath River at South Suburban WWTP discharge location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Lost River Diversion inflow.

Figure 15. Predicted DO (instantaneous) in Klamath River at Lost River Diversion inflow. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

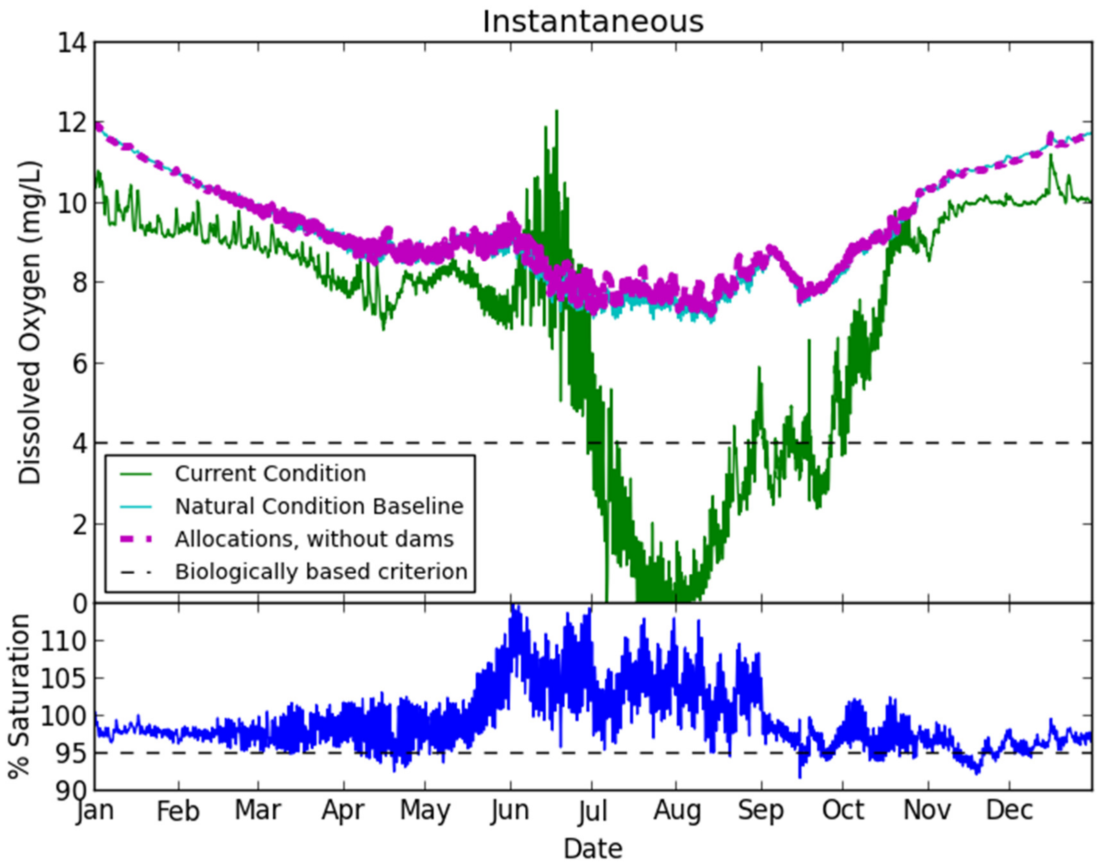


Figure 16. Predicted DO (7-day metric) in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

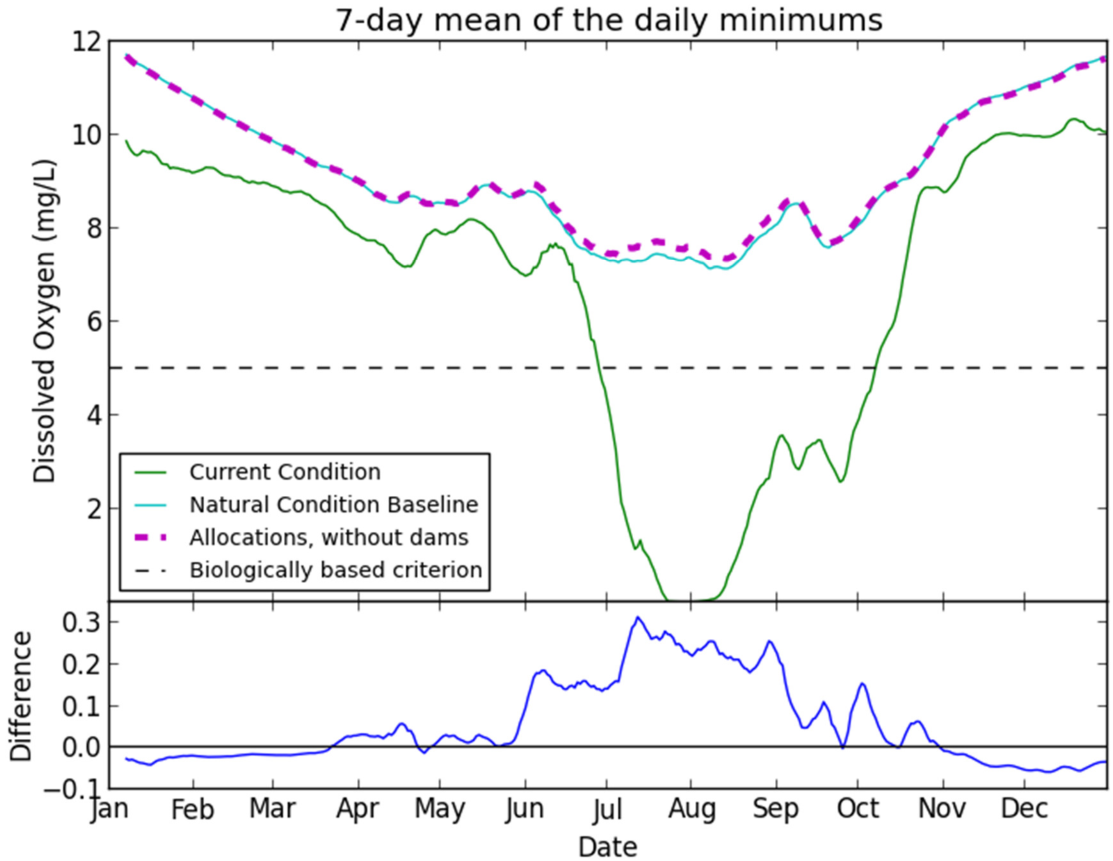


Figure 17. Predicted DO (7-day metric) in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

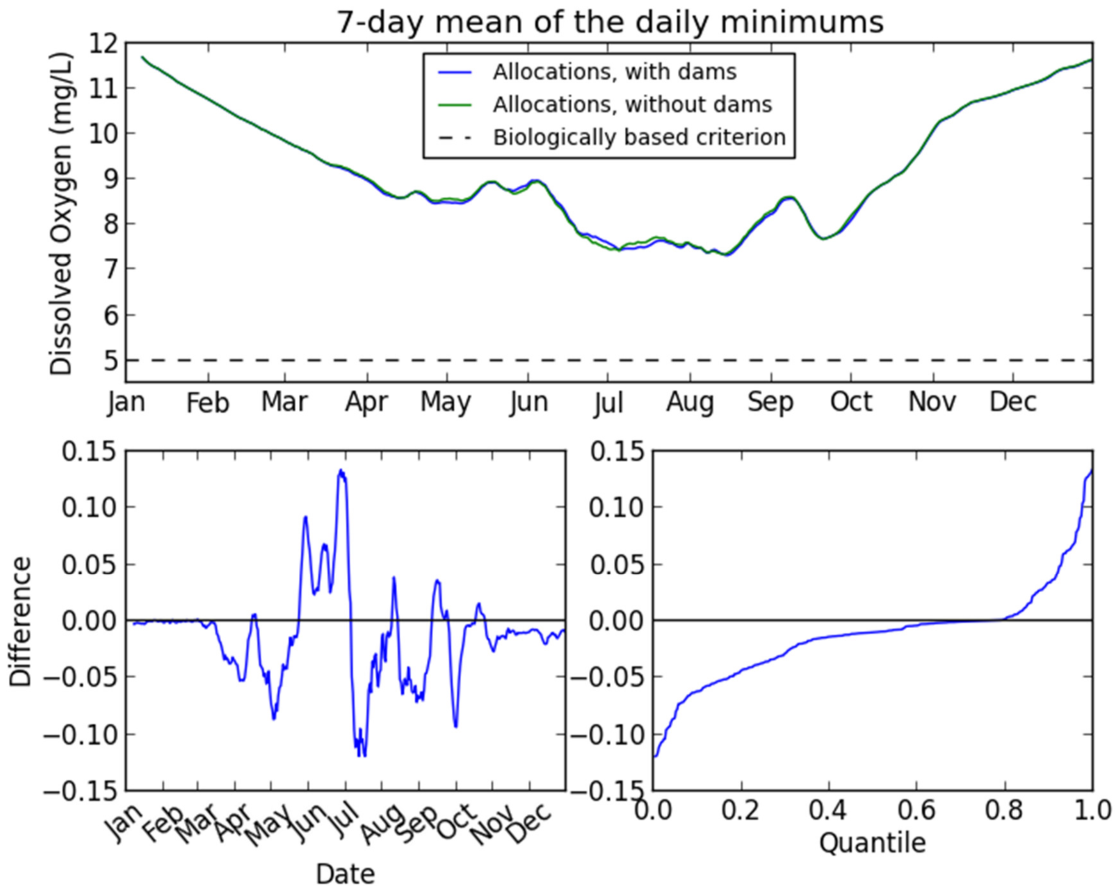


Figure 18. Predicted DO (30-day metric) in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

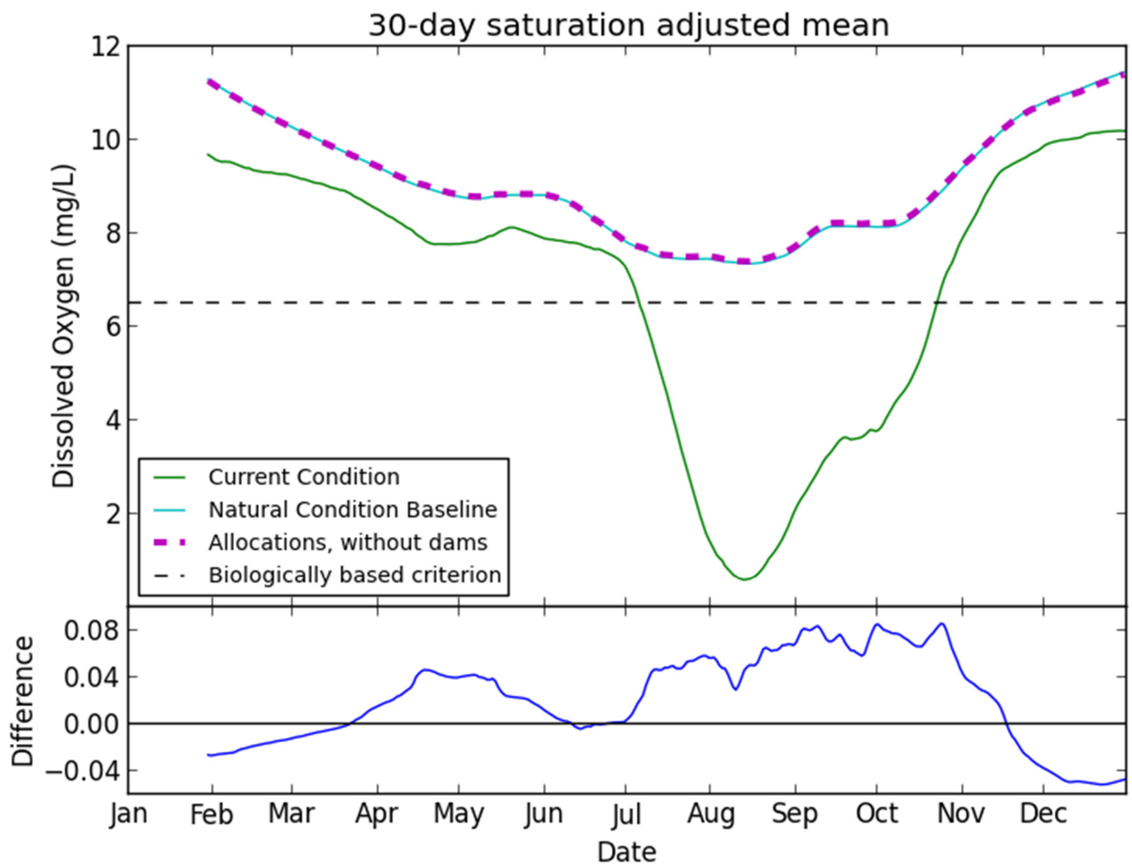


Figure 19. Predicted DO (30-day metric) in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

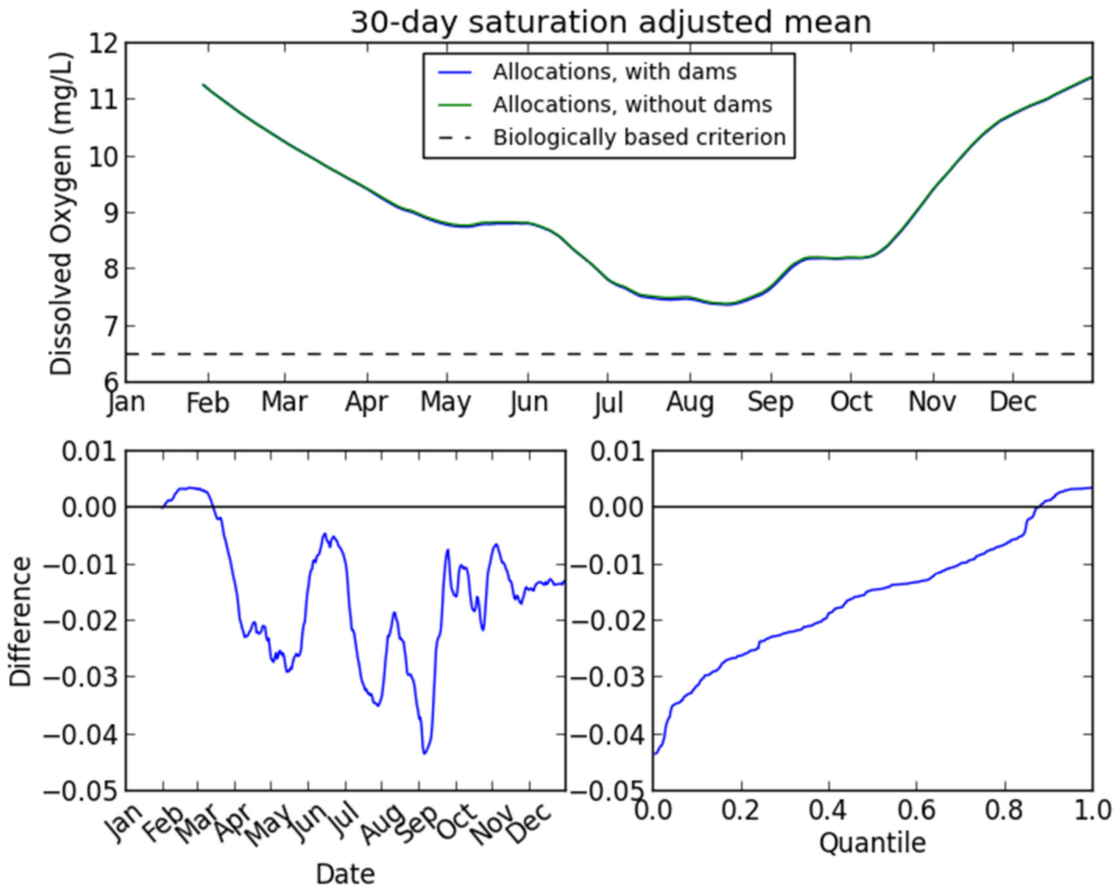


Figure 20. Predicted daily maximum pH in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

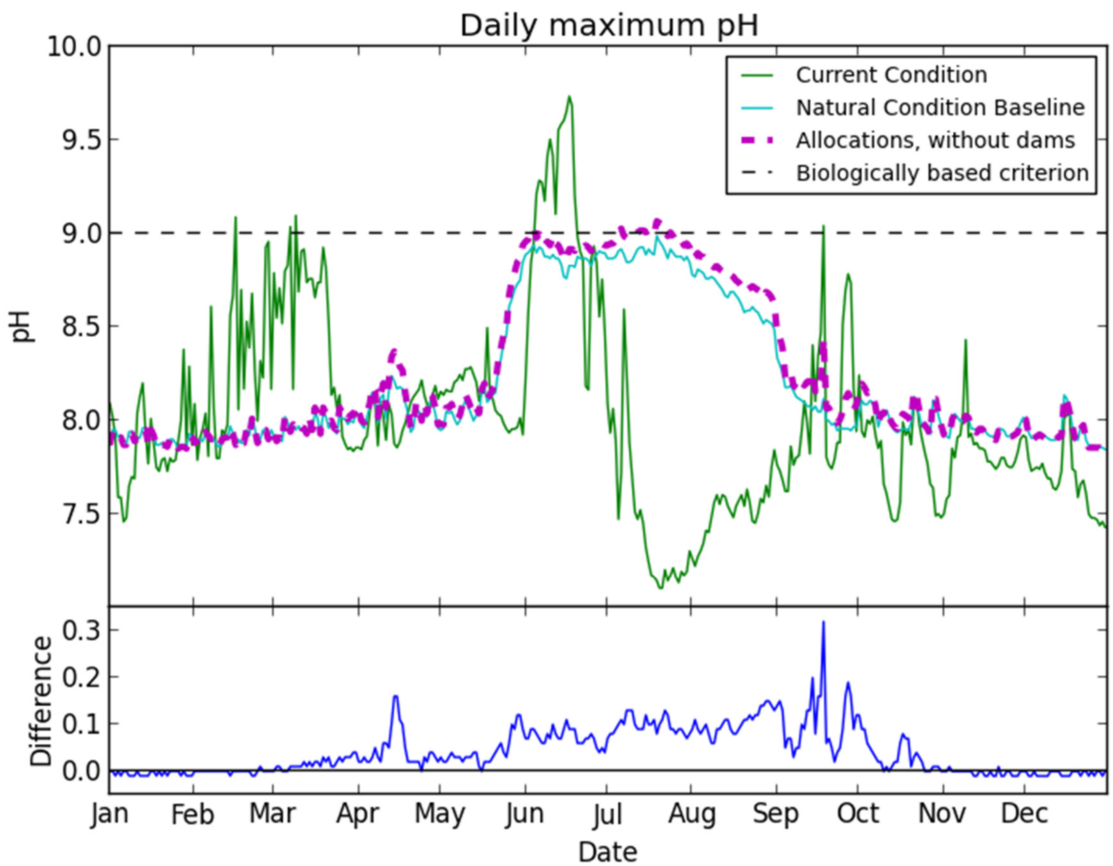
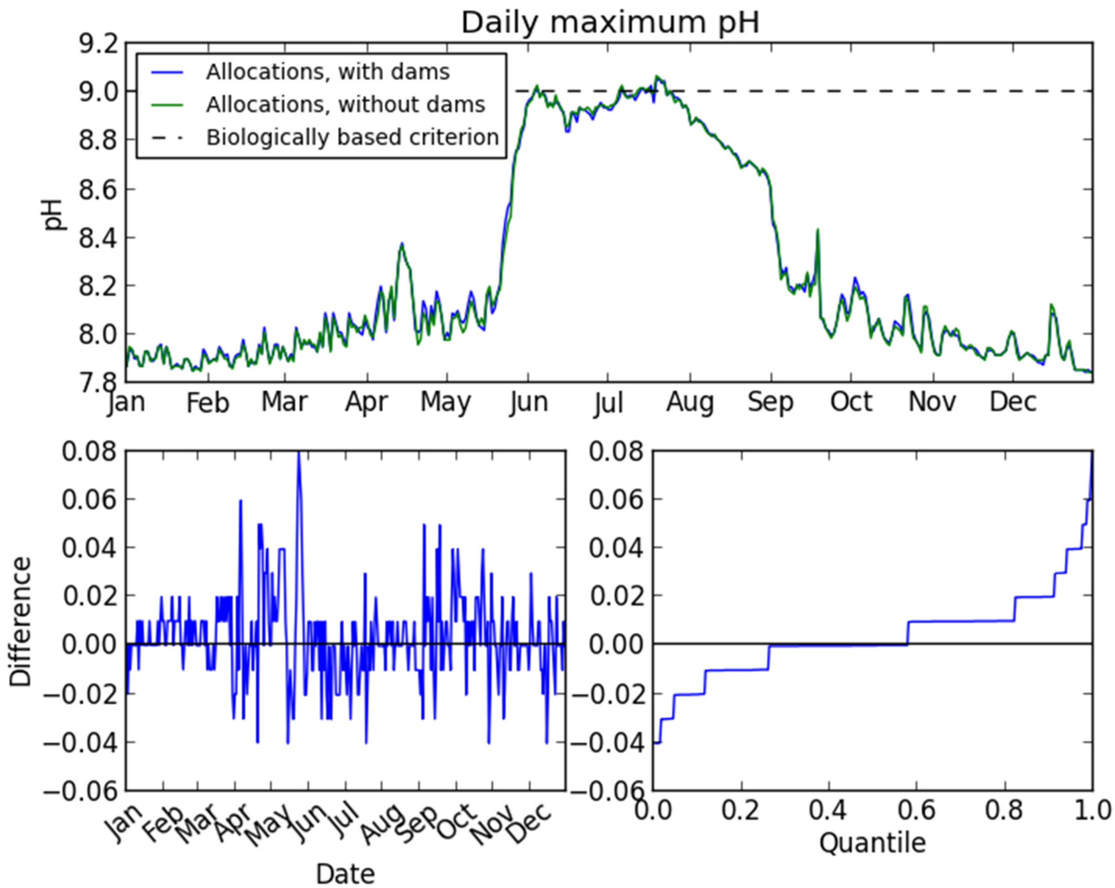


Figure 21. Predicted daily maximum pH in Klamath River at Lost River Diversion inflow. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Miller Island.

Figure 22. Predicted DO (instantaneous) in Klamath River at Miller Island. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

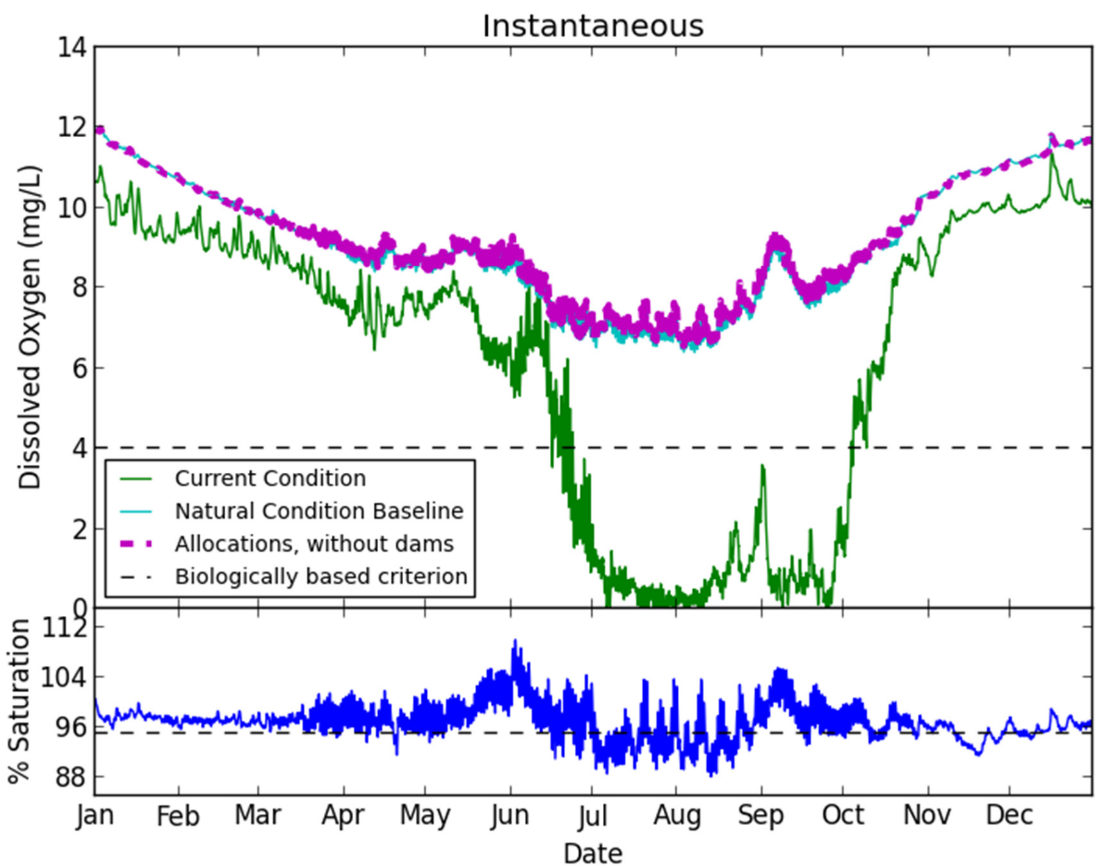


Figure 23. Predicted DO (7-day metric) in Klamath River at Miller Island. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

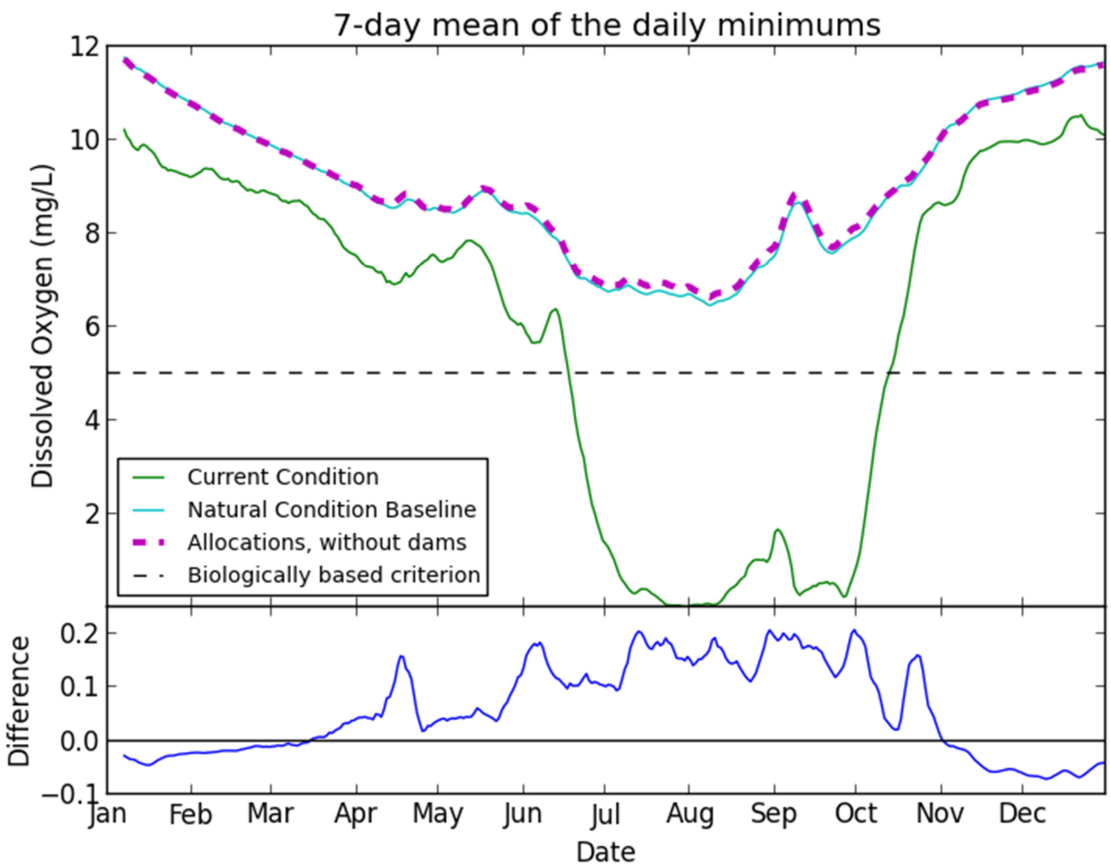


Figure 24. Predicted DO (7-day metric) in Klamath River at Miller Island. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

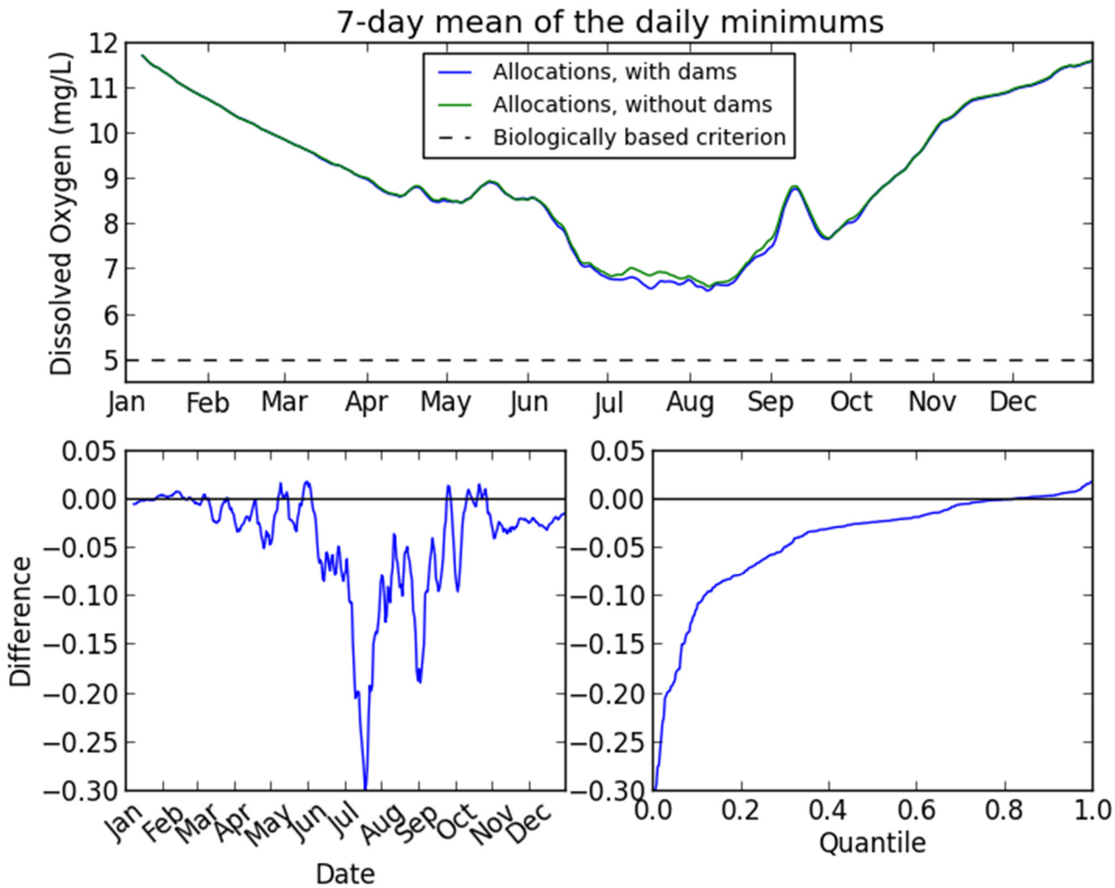


Figure 25. Predicted DO (30-day metric) in Klamath River at Miller Island. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

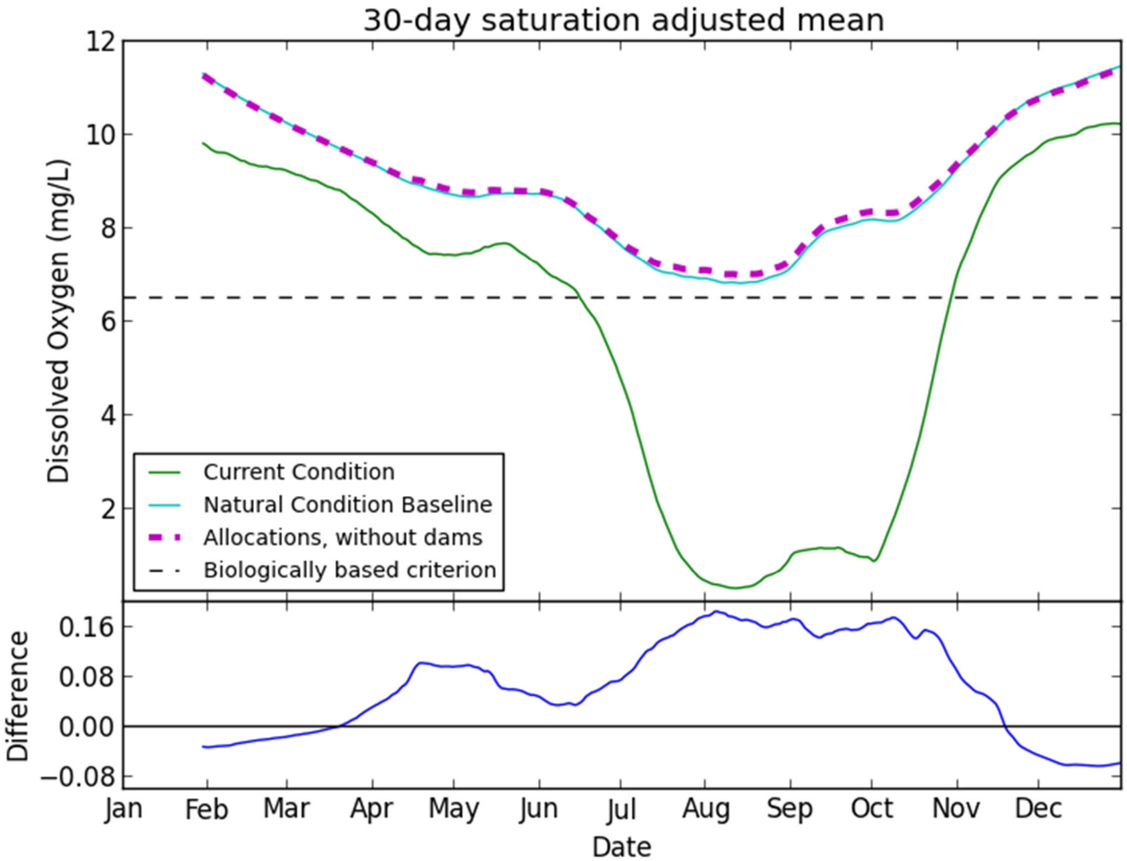


Figure 26. Predicted DO (30-day metric) in Klamath River at Miller Island. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

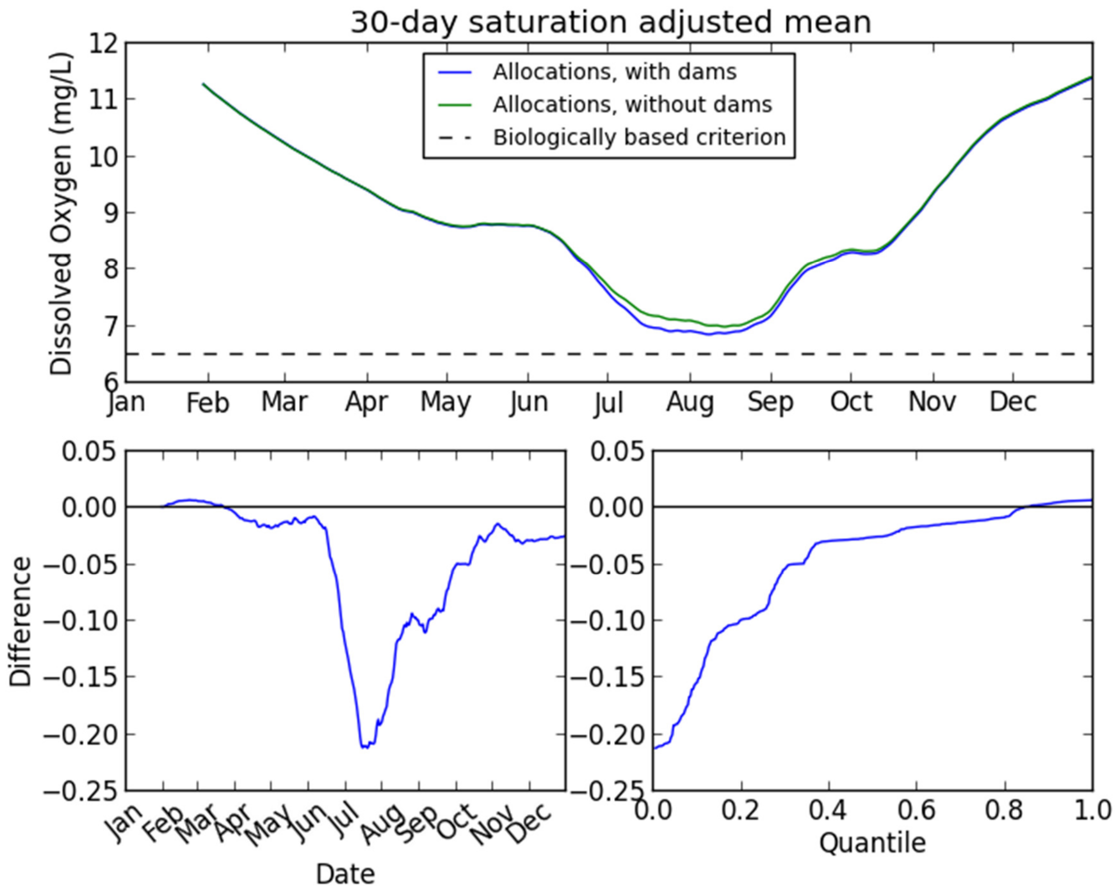


Figure 27. Predicted daily maximum pH in Klamath River at Miller Island. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

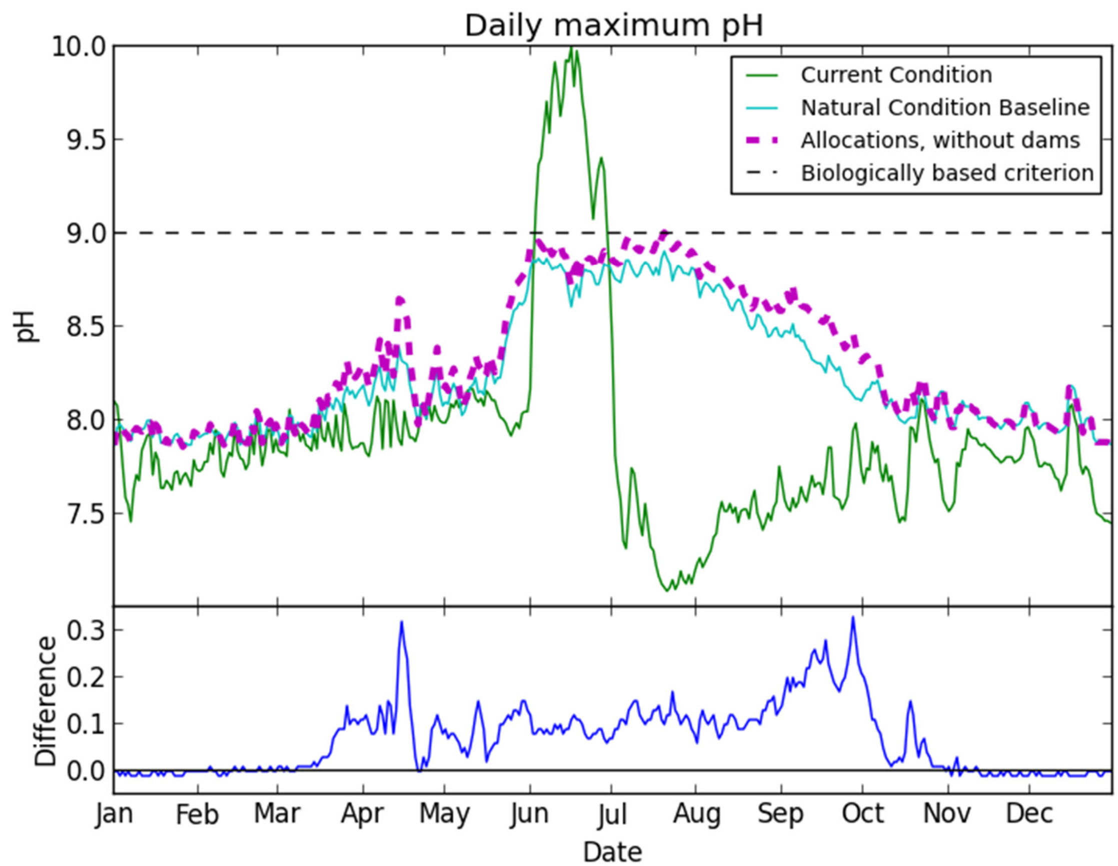
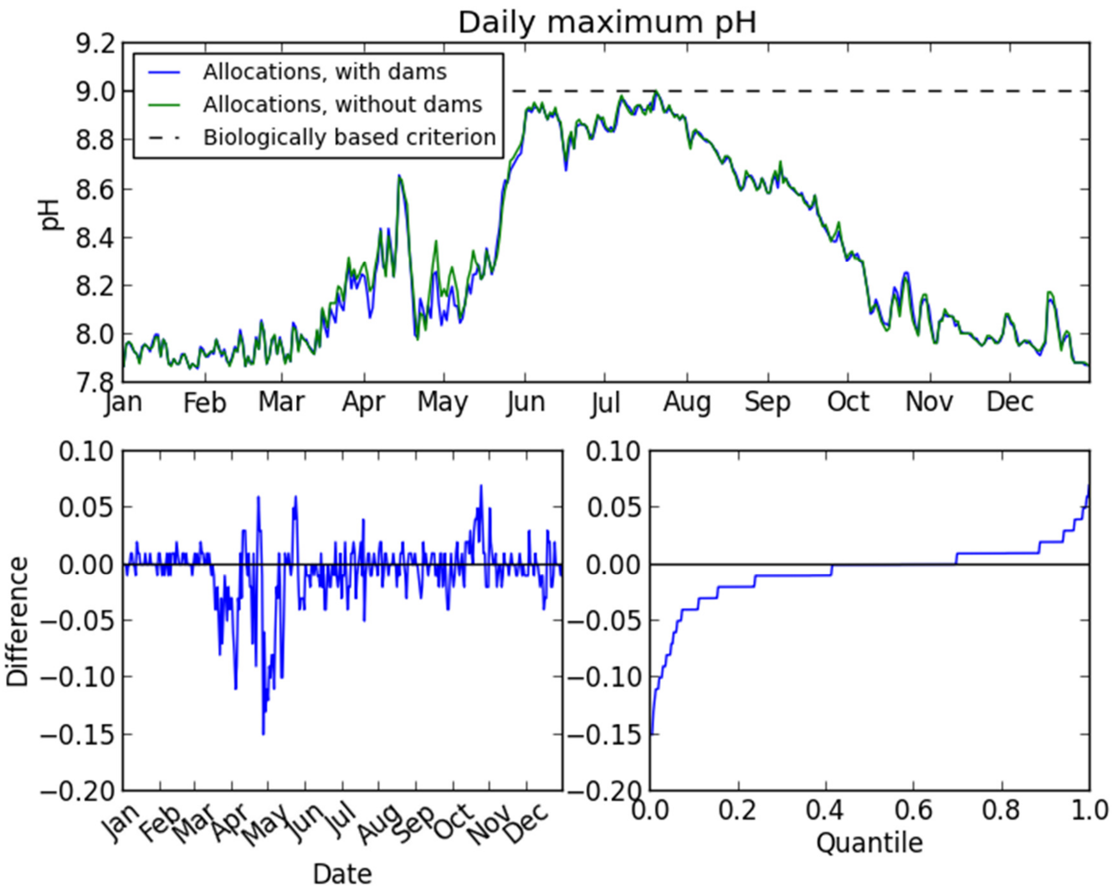


Figure 28. Predicted daily maximum pH in Klamath River at Miller Island. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Klamath Straits Drain inflow location.

Figure 29. Predicted DO (instantaneous) in Klamath River at Klamath Strait Drain inflow location. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

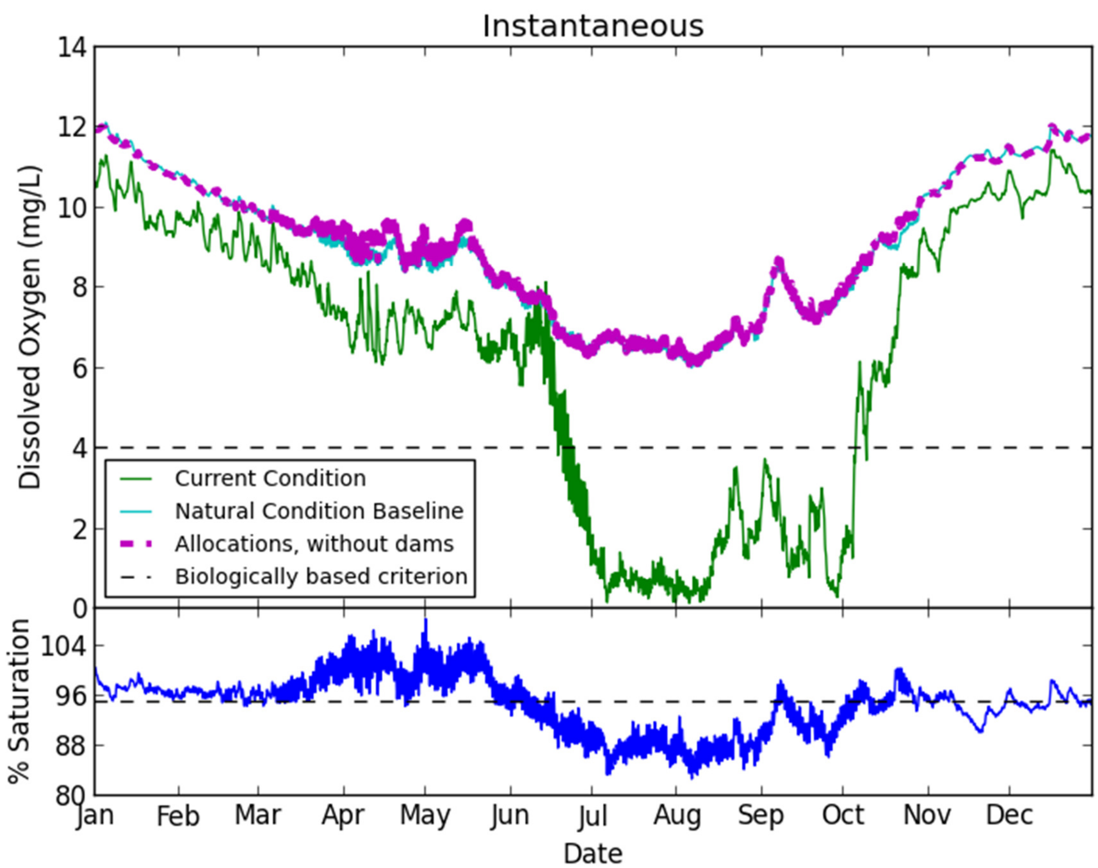


Figure 30. Predicted DO (7-day metric) in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

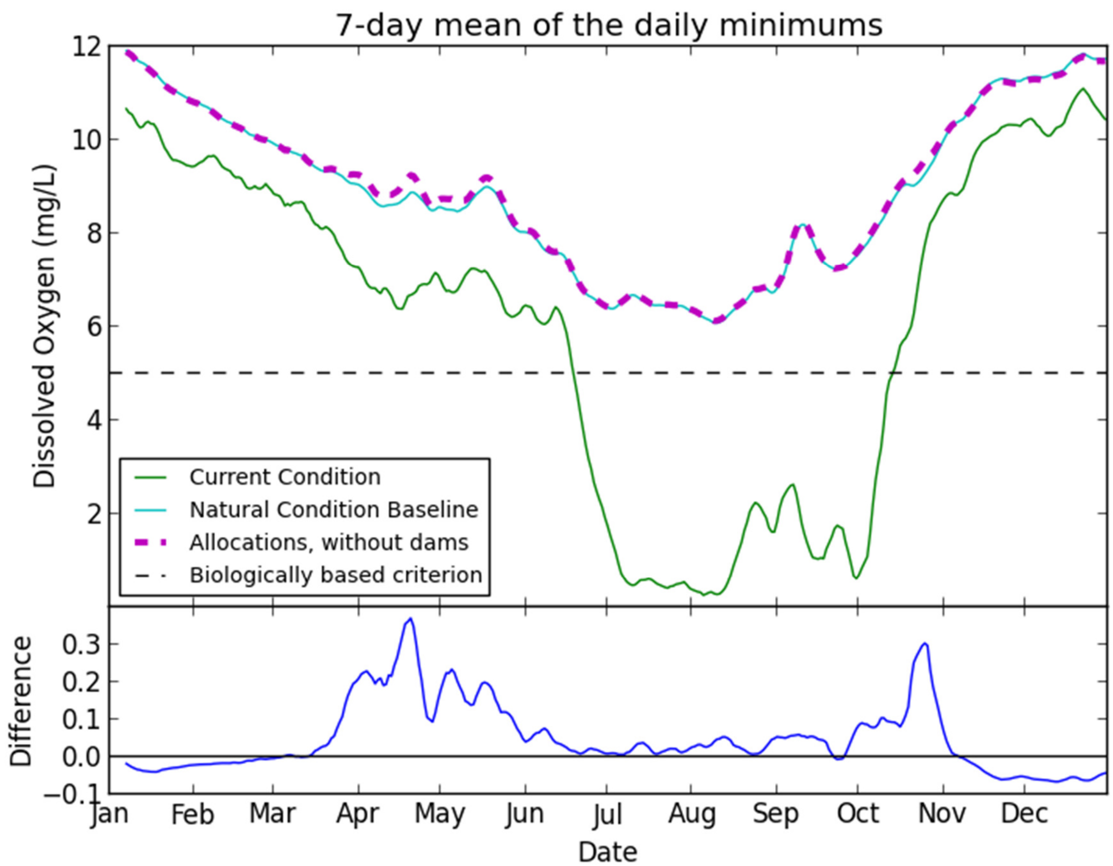


Figure 31. Predicted DO (7-day metric) in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

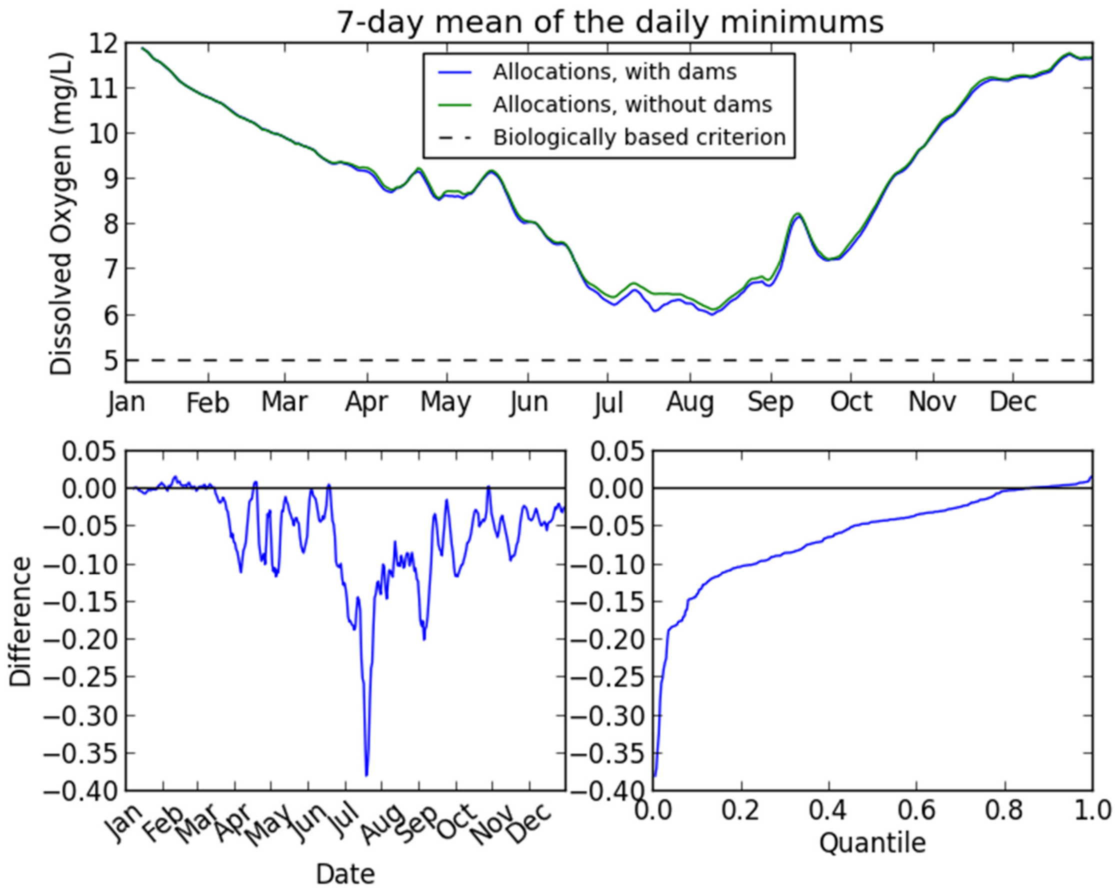


Figure 32. Predicted DO (30-day metric) in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

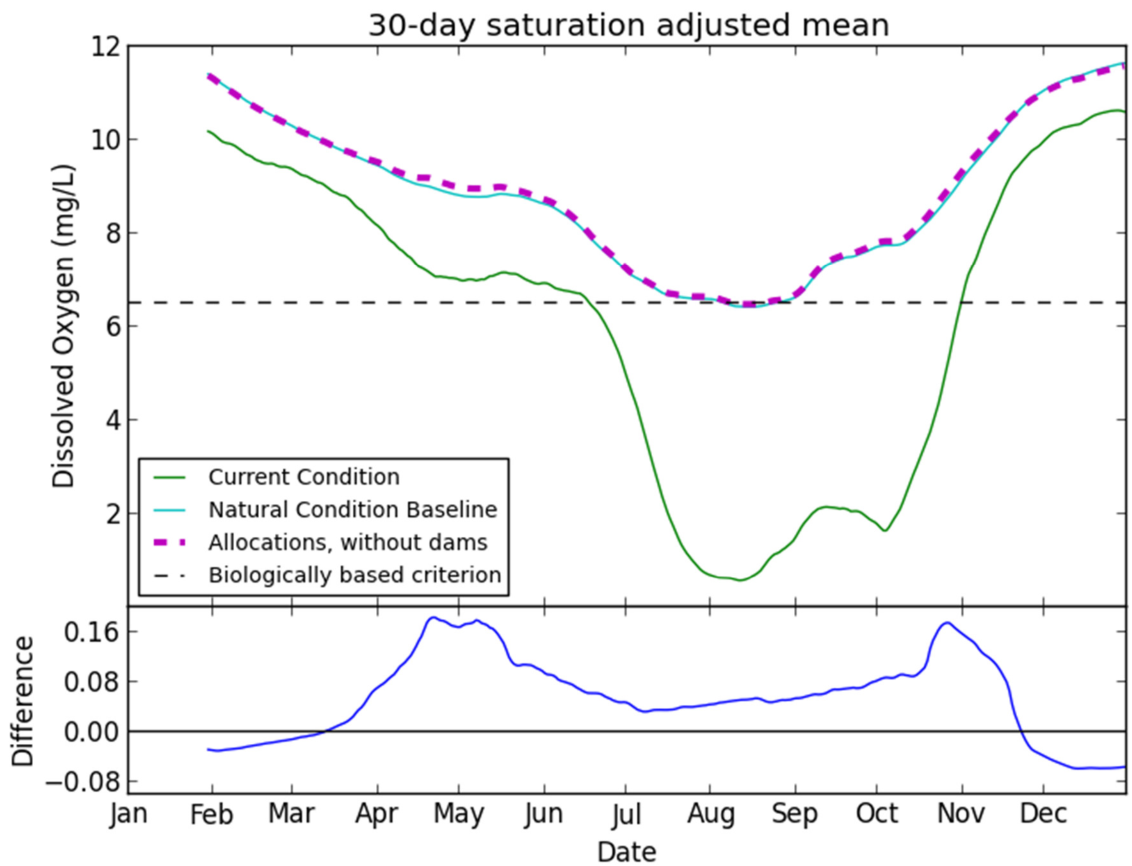


Figure 33. Predicted DO (7-day metric) in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

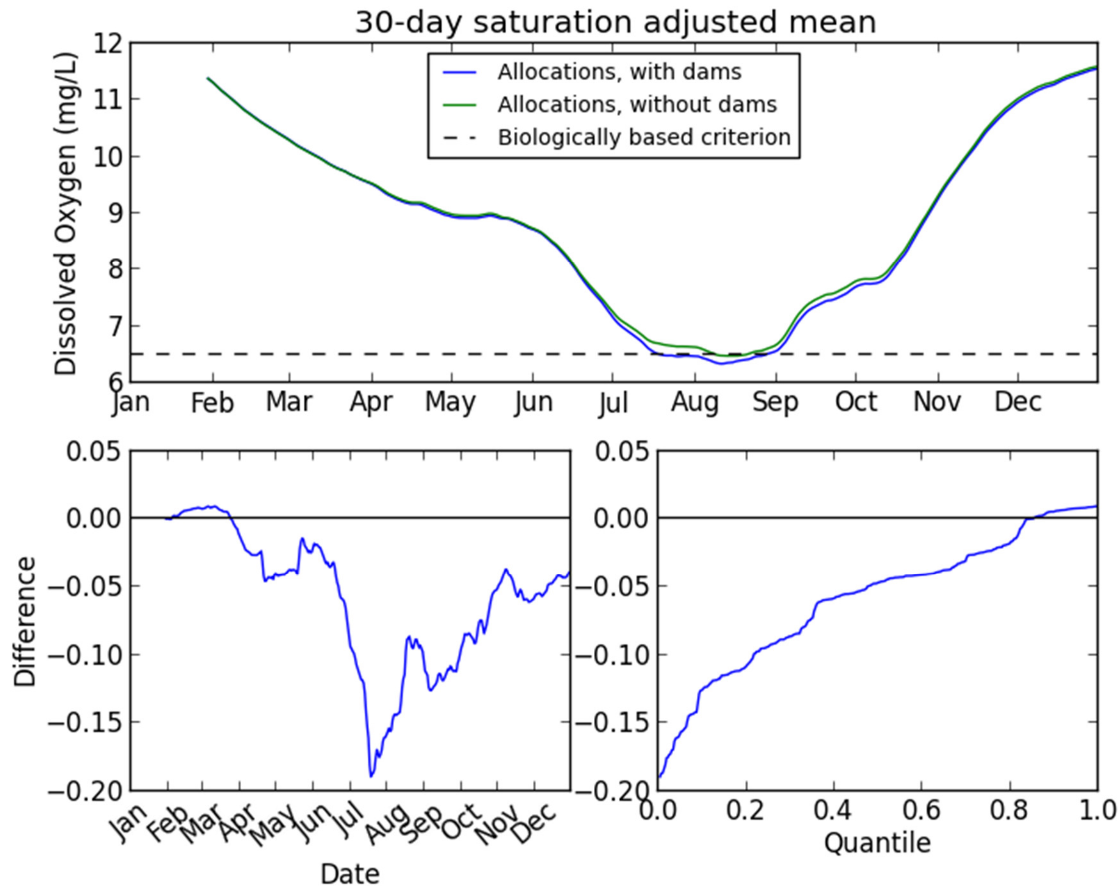


Figure 34. Predicted daily maximum pH in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

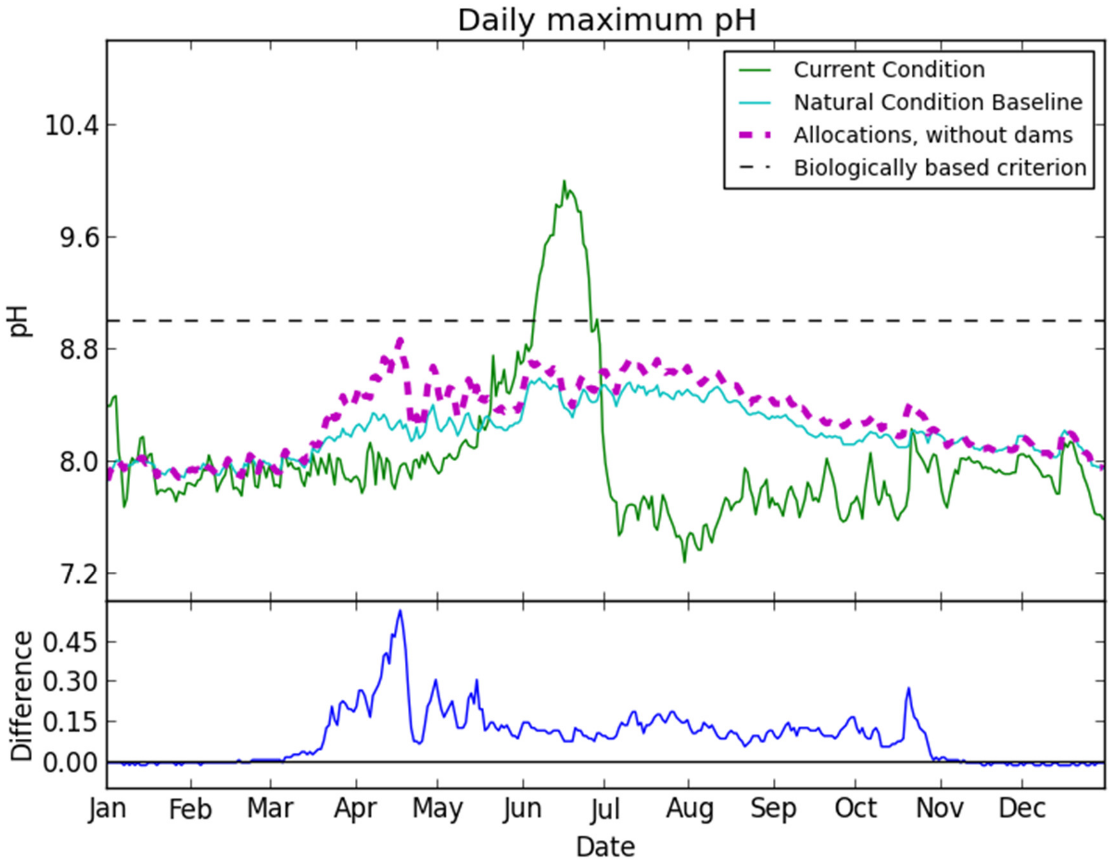
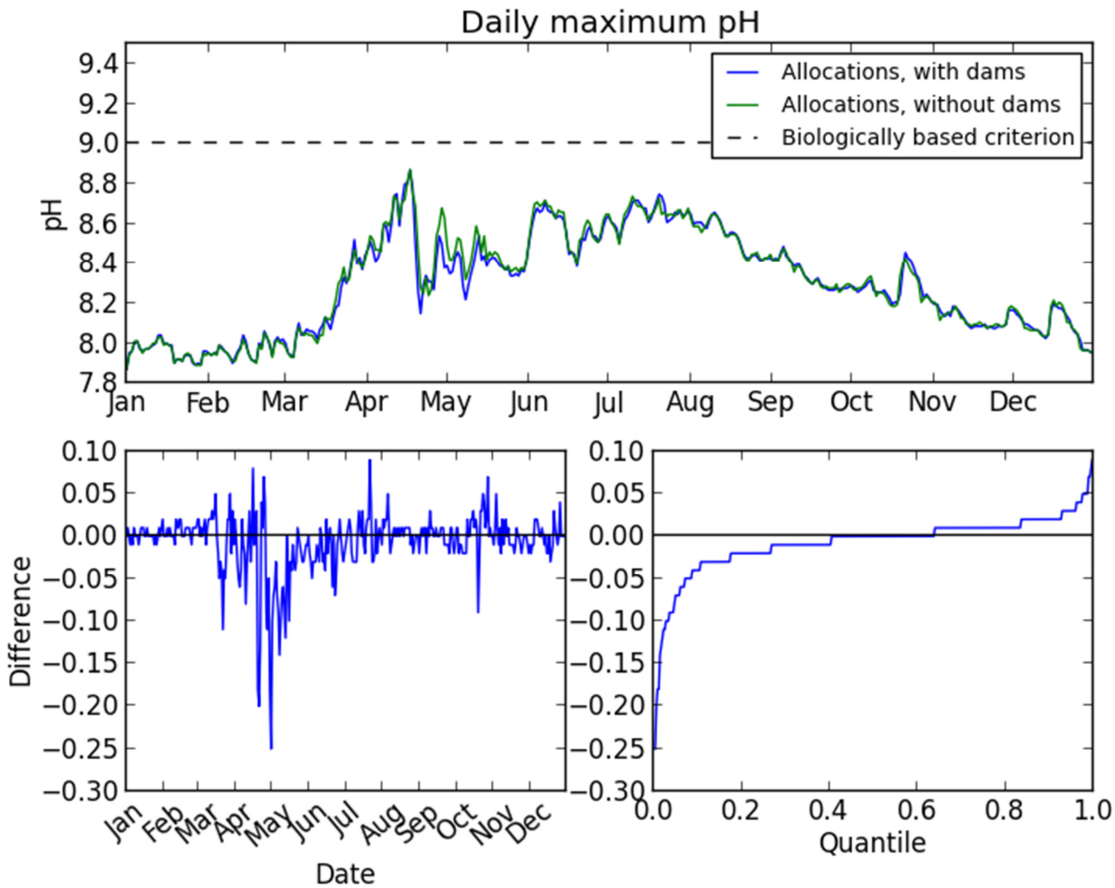


Figure 35. Predicted daily maximum pH in Klamath River at Klamath Straits Drain inflow location. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Highway 66.

Figure 36. Predicted DO (instantaneous) in Klamath River at Highway 66. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

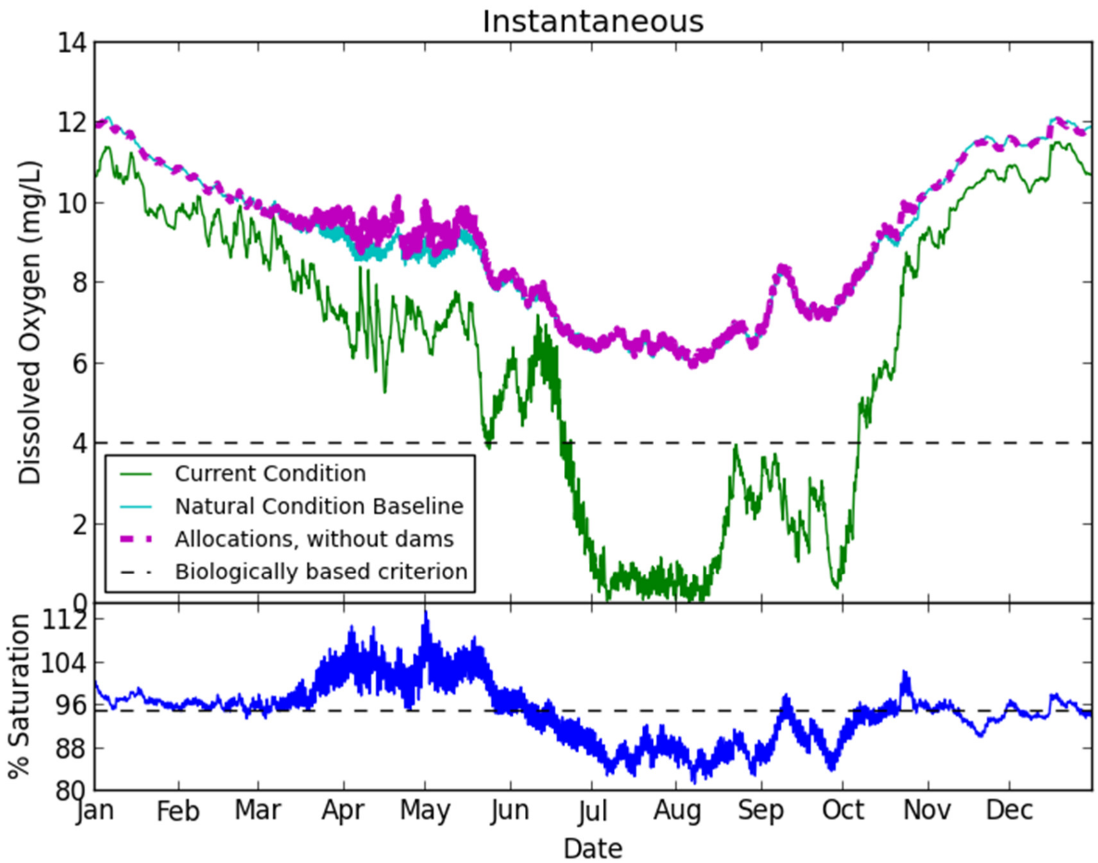


Figure 37. Predicted DO (7-day metric) in Klamath River at Highway 66. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

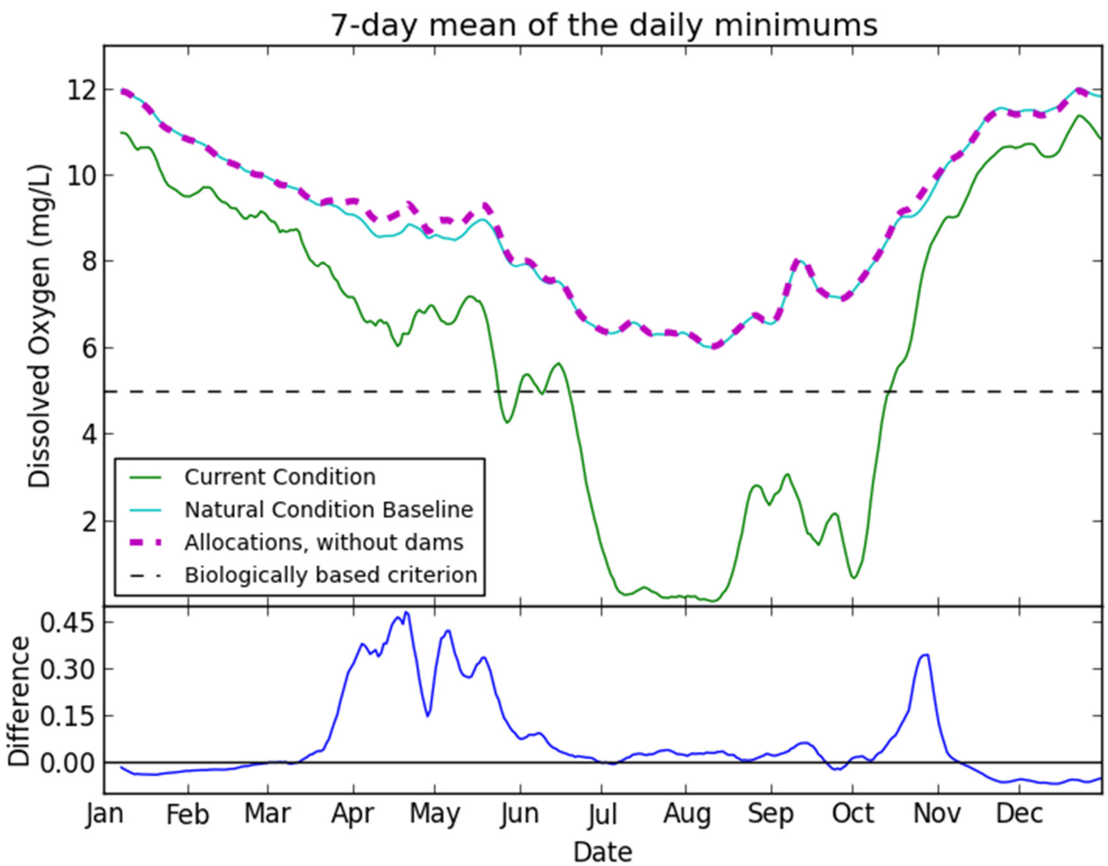
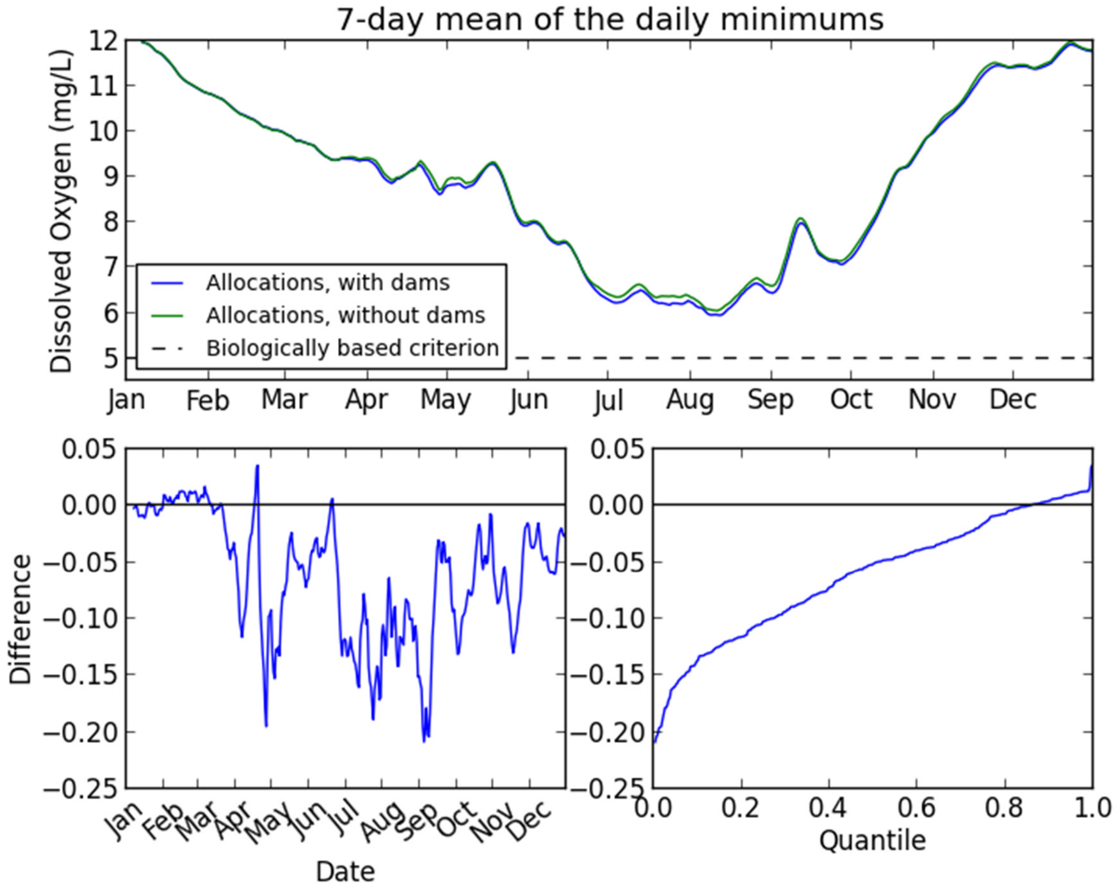


Figure 38. Predicted DO (7-day metric) in Klamath River at Highway 66. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



7-day mean of the daily minimums
Dissolved Oxygen (mg/L)
Allocations, with dams
Allocations, without dams
Biologically based criterion
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Difference
Date
Quantile

Figure 39. Predicted DO (30-day metric) in Klamath River at Highway 66. The “Difference” at the bottom of the figure shows the ‘Allocations, without dams’ minus the ‘Natural Condition Baseline Scenario’.

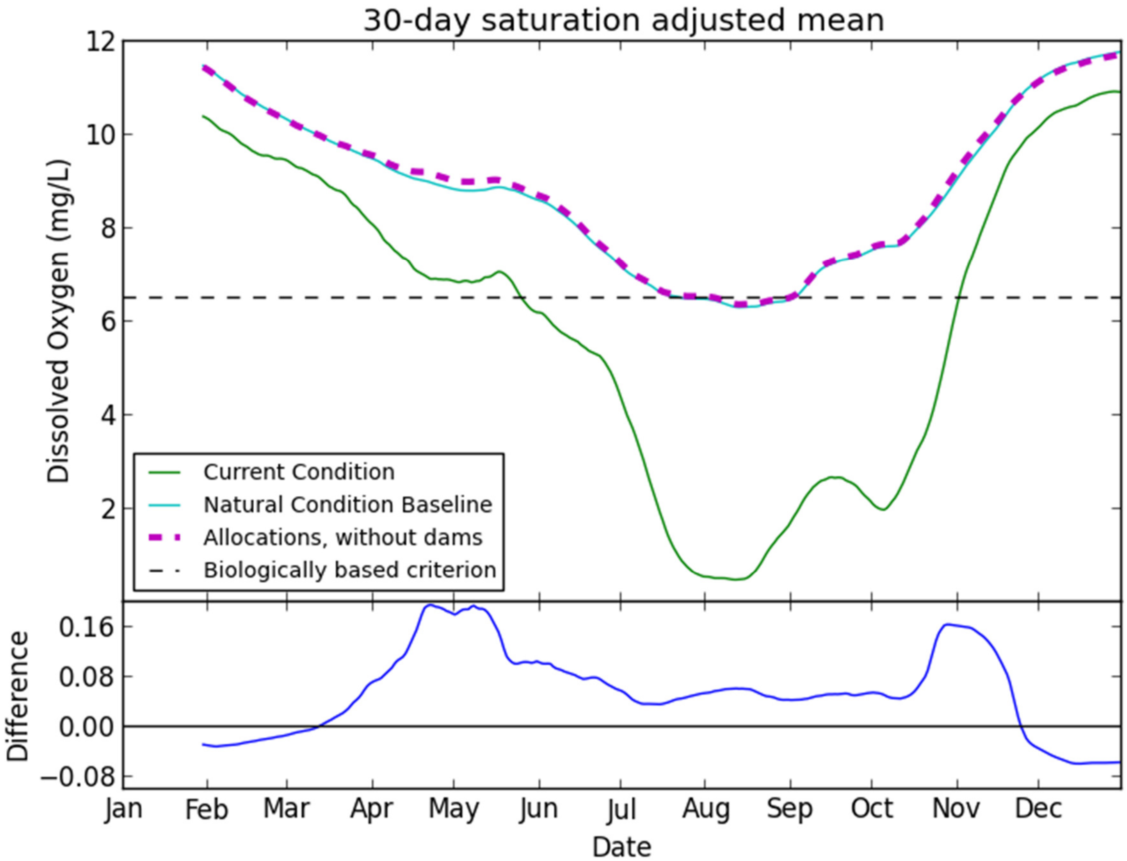


Figure 40. Predicted DO (7-day metric) in Klamath River at Highway 66. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

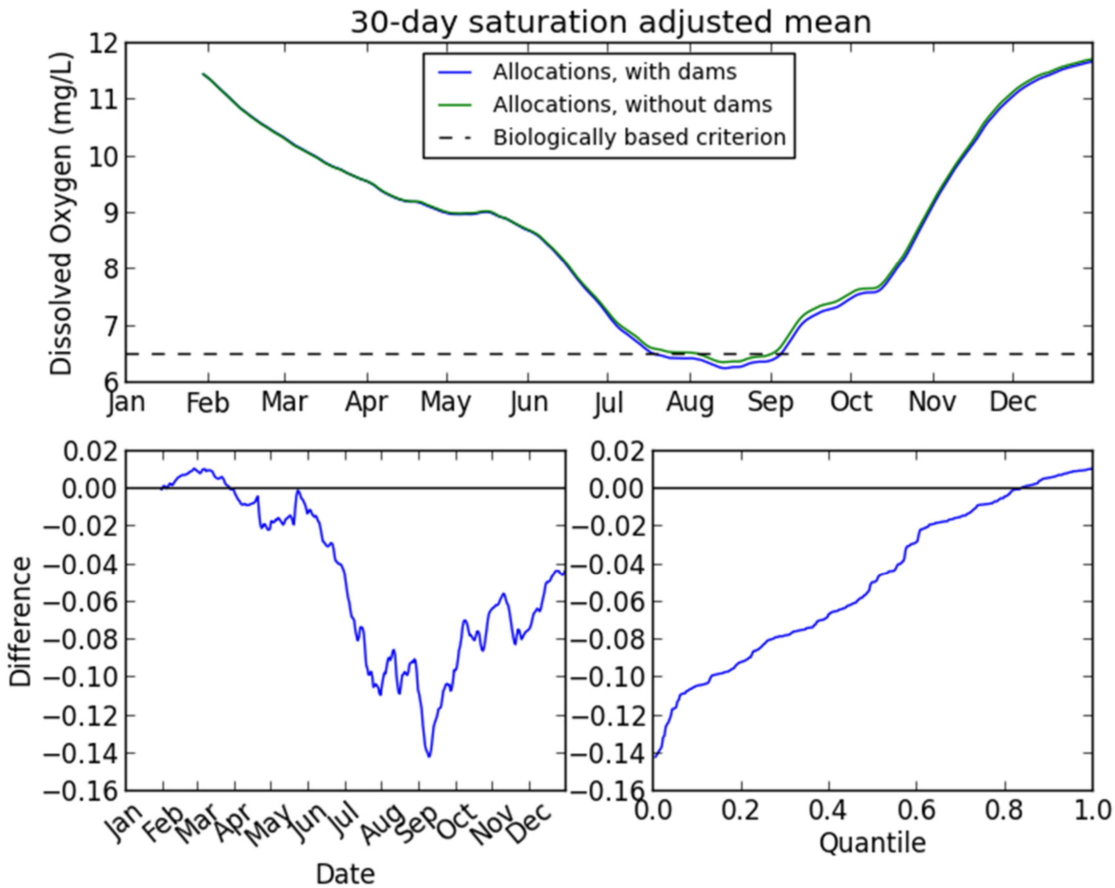


Figure 41. Predicted daily maximum pH in Klamath River at Highway 66. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

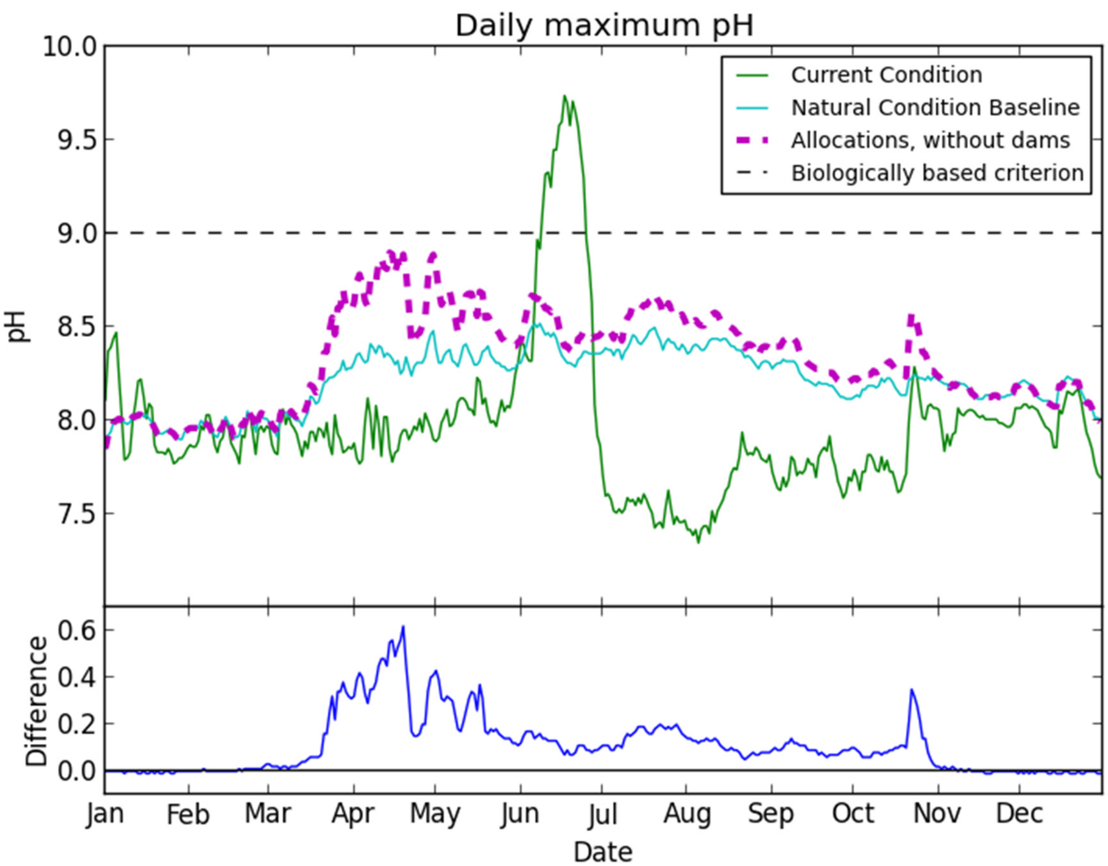
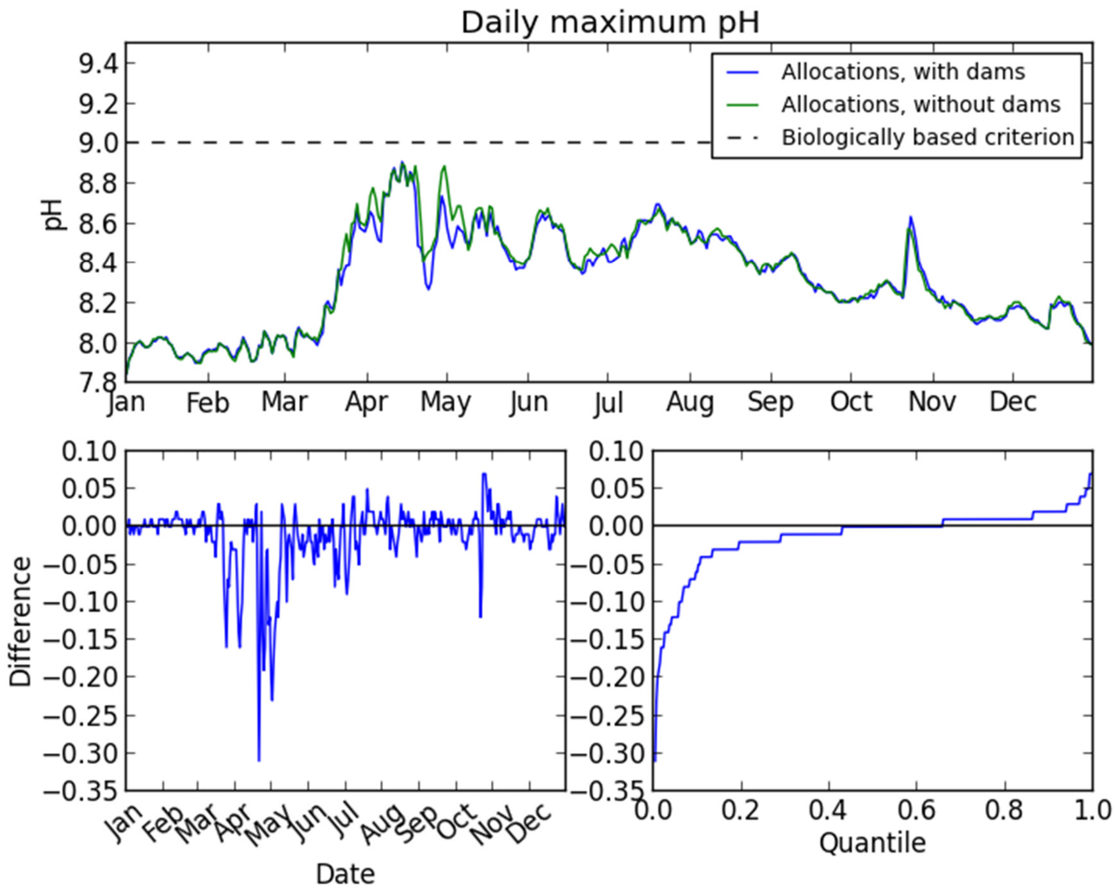


Figure 42. Predicted daily maximum pH in Klamath River at Highway 66. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Keno Dam.

Figure 43. Predicted DO (instantaneous) in Klamath River at Keno Dam. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

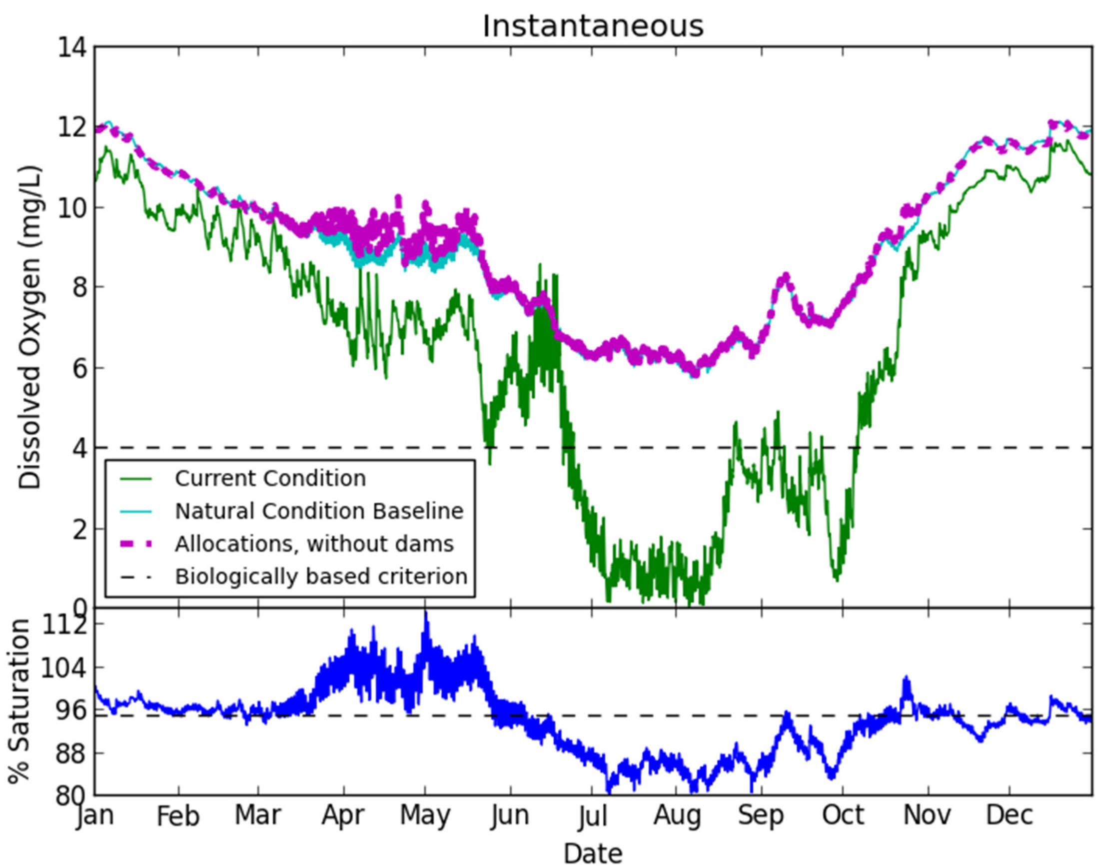


Figure 44. Predicted DO (7-day metric) in Klamath River at Keno Dam. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

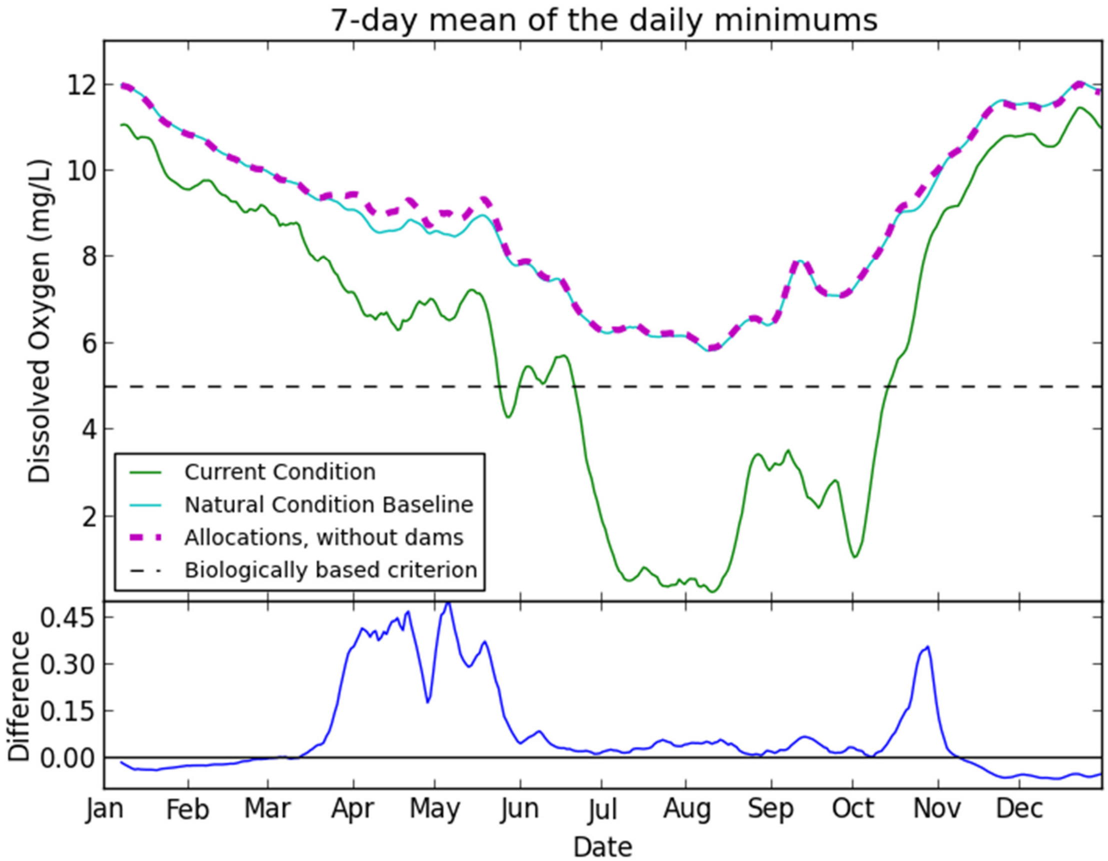


Figure 45. Predicted DO (7-day metric) in Klamath River at Keno Dam. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

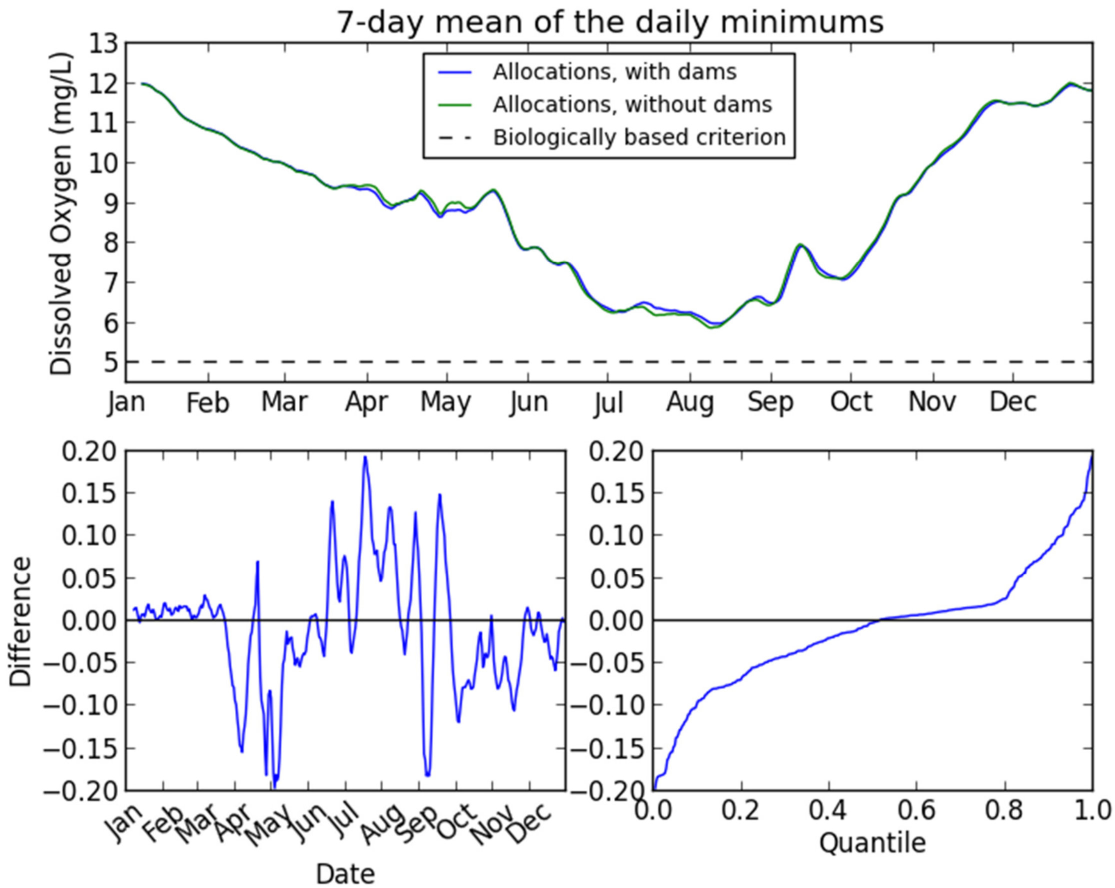


Figure 46. Predicted DO (30-day metric) in Klamath River at Keno Dam. The “Difference” at the bottom of the figure shows the ‘Allocations, without dams’ minus the ‘Natural Condition Baseline Scenario’.

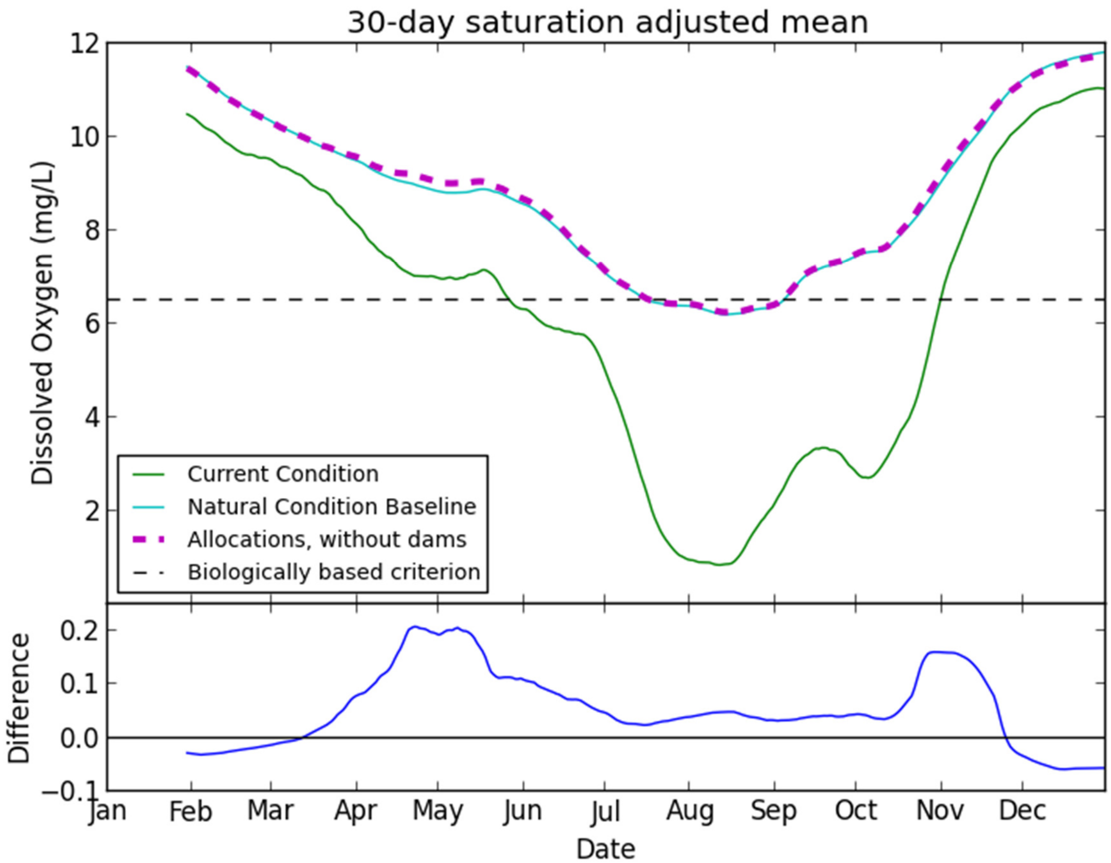


Figure 47. Predicted DO (7-day metric) in Klamath River at Keno Dam. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

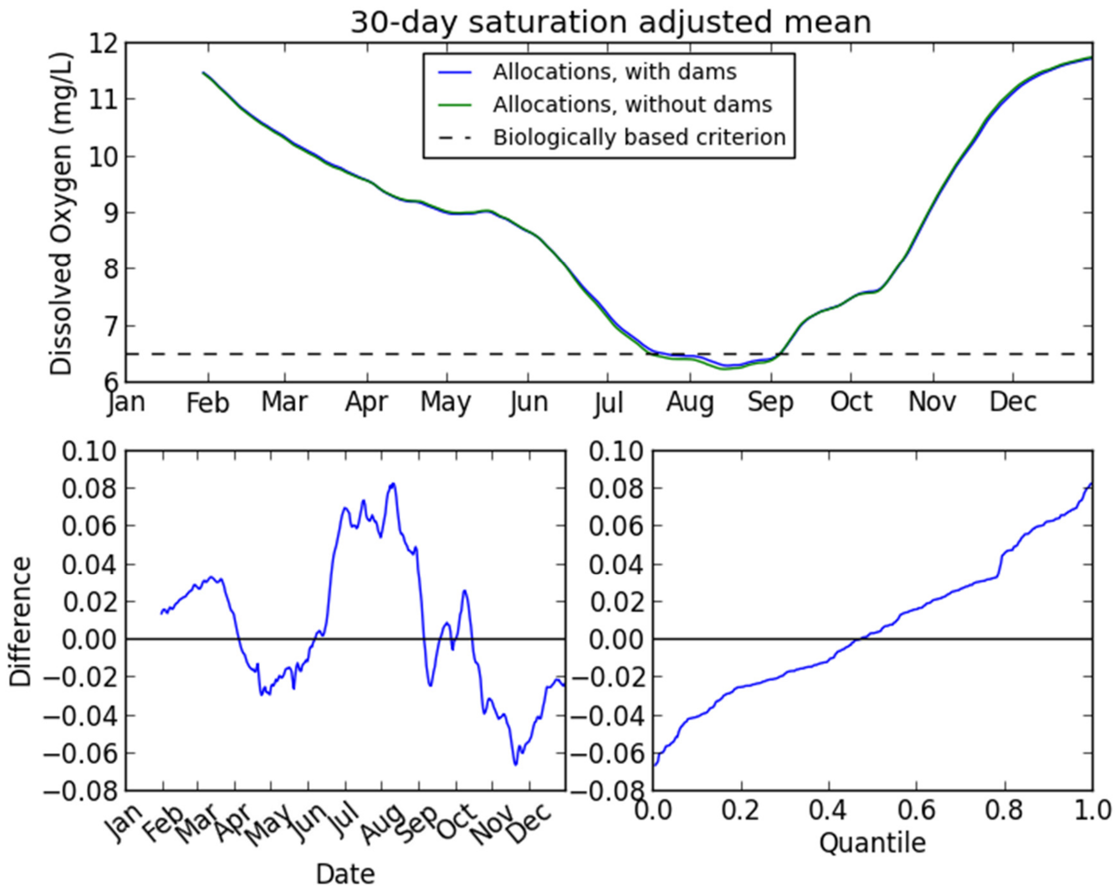


Figure 48. Predicted daily maximum pH in Klamath River at Keno Dam. The “Difference” at the bottom of the figure shows the ‘Allocations, without dams’ minus the ‘Natural Condition Baseline Scenario’.

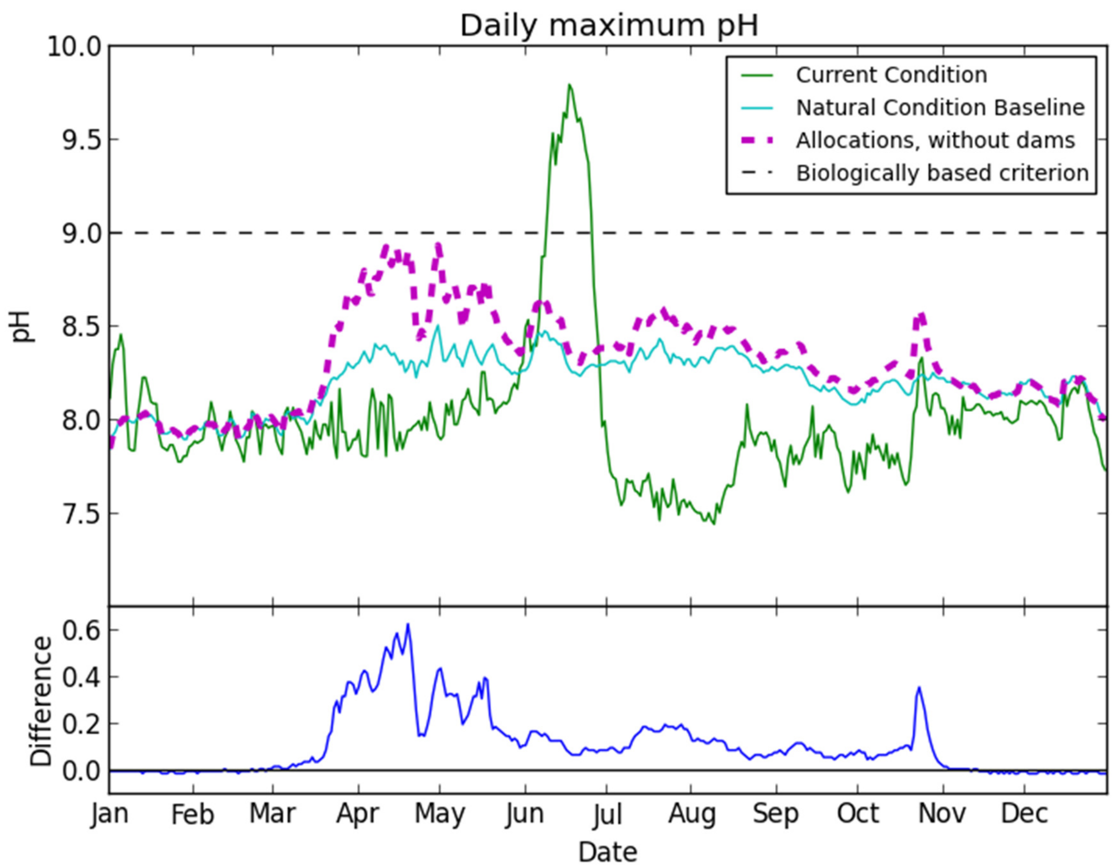
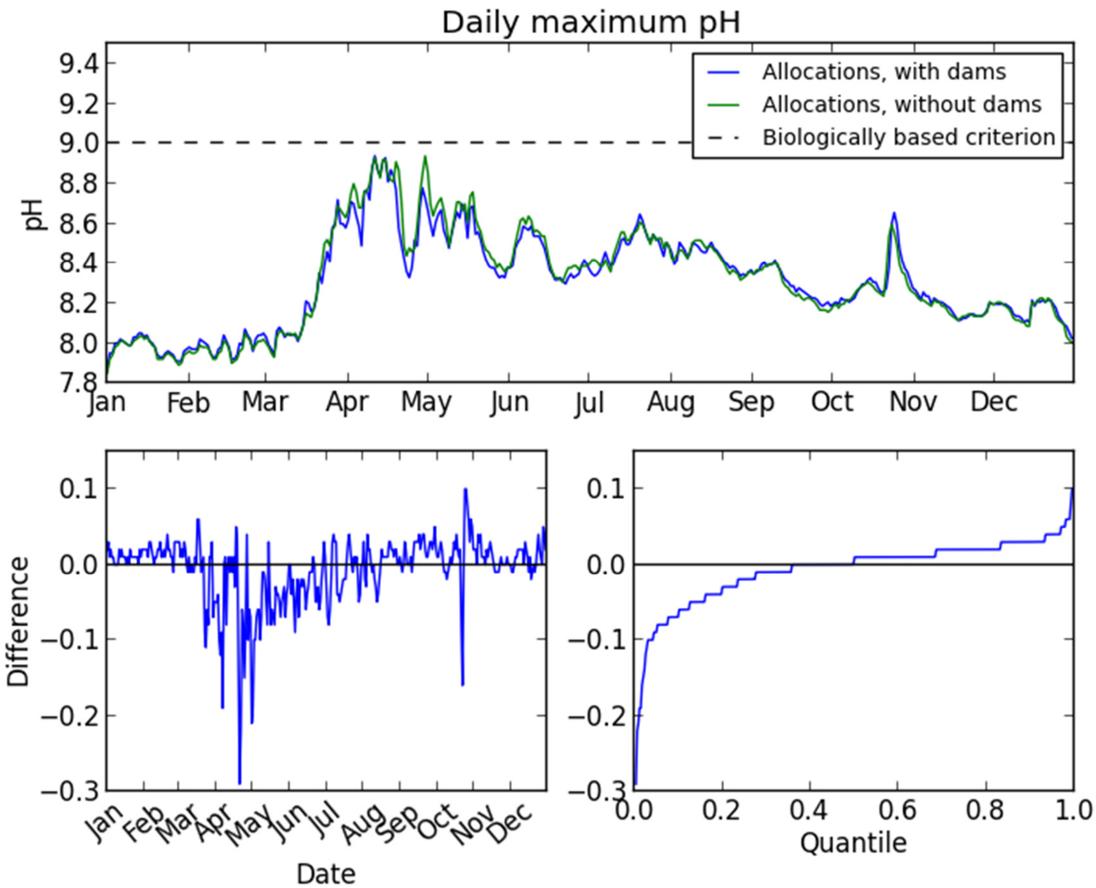


Figure 49. Predicted daily maximum pH in Klamath River at Keno Dam. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Keno Dam outlet.

Figure 50. Predicted DO (instantaneous) in Klamath River at Keno Dam outlet. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

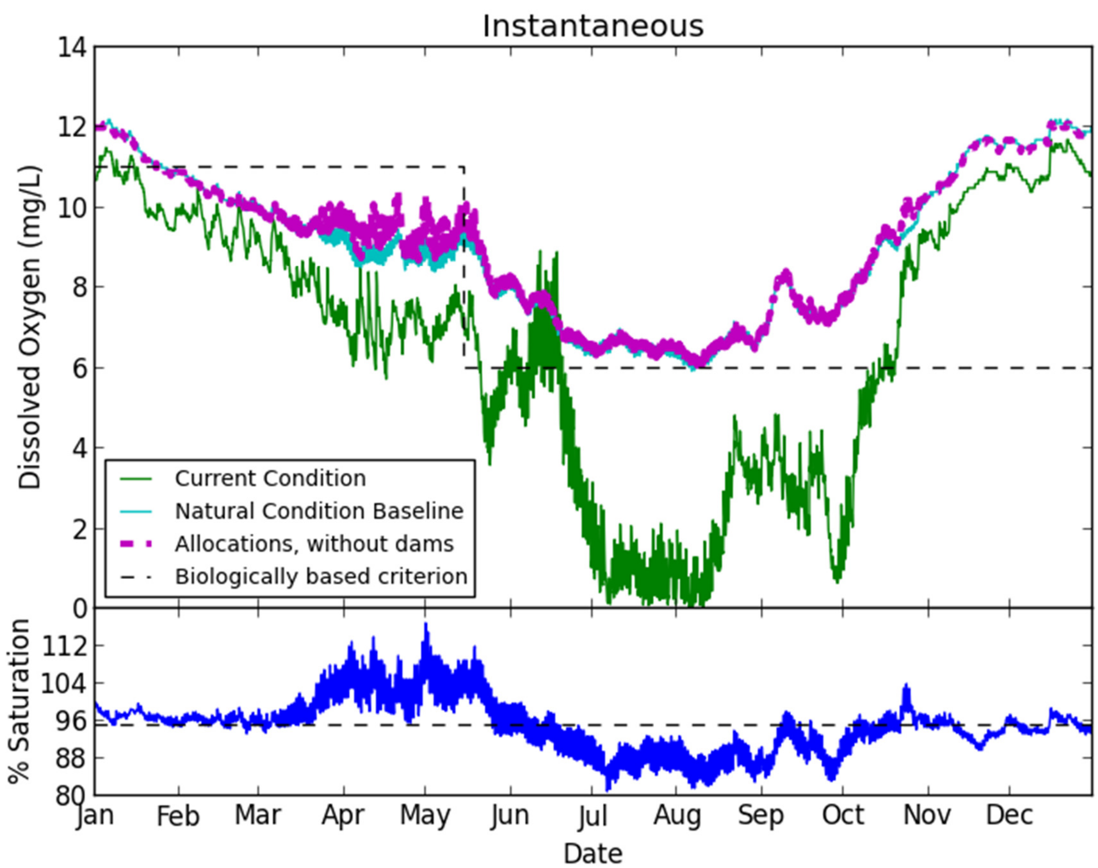


Figure 51. Predicted DO (7-day metric) in Klamath River at Keno Dam outlet. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

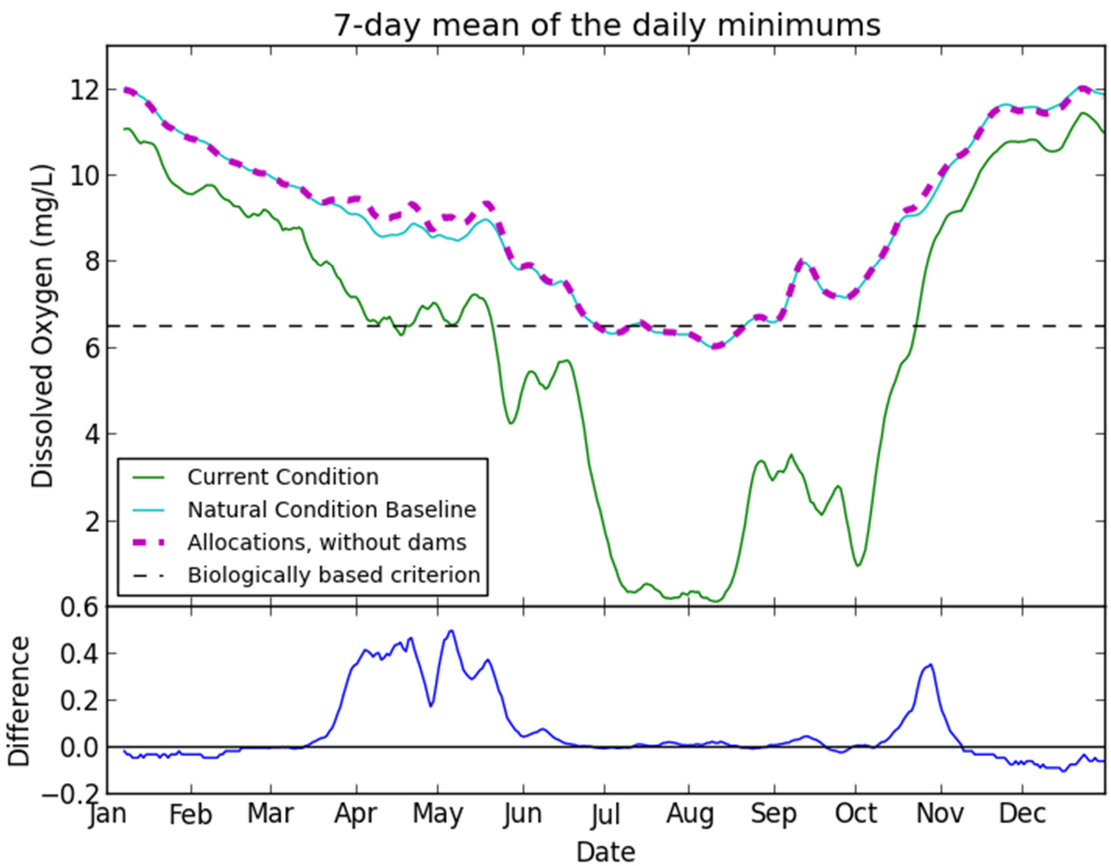


Figure 52. Predicted DO (7-day metric) in Klamath River at Keno Dam outlet. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

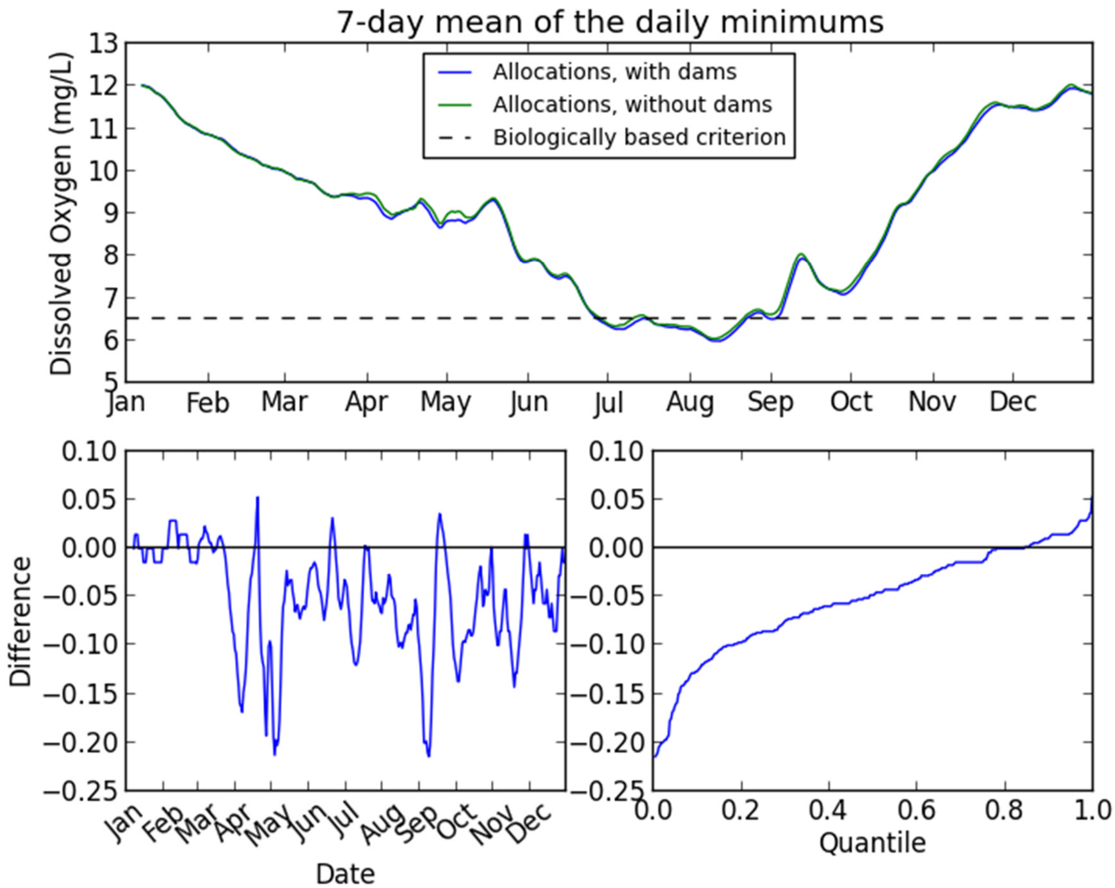


Figure 53. Predicted DO (30-day metric) in Klamath River at Keno Dam outlet. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

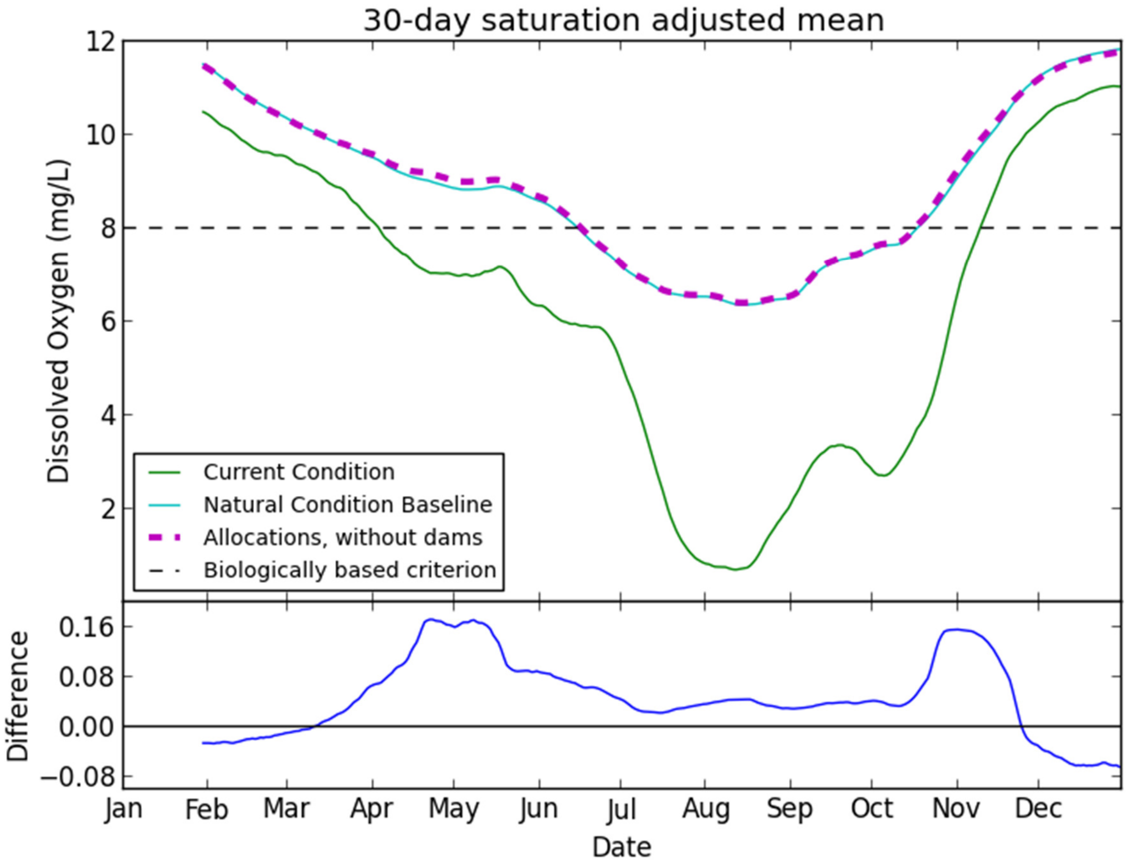


Figure 54. Predicted DO (7-day metric) in Klamath River at Keno Dam outlet. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

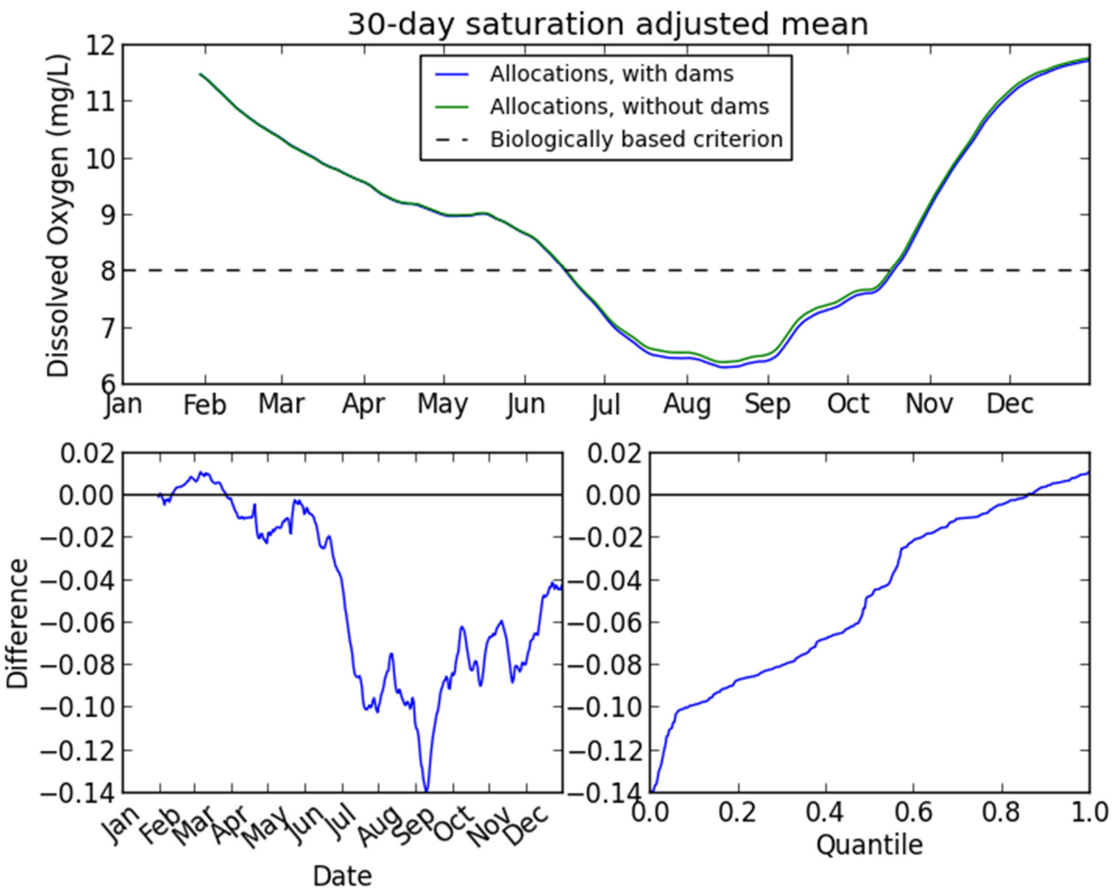


Figure 55. Predicted daily maximum pH in Klamath River at Keno Dam outlet. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

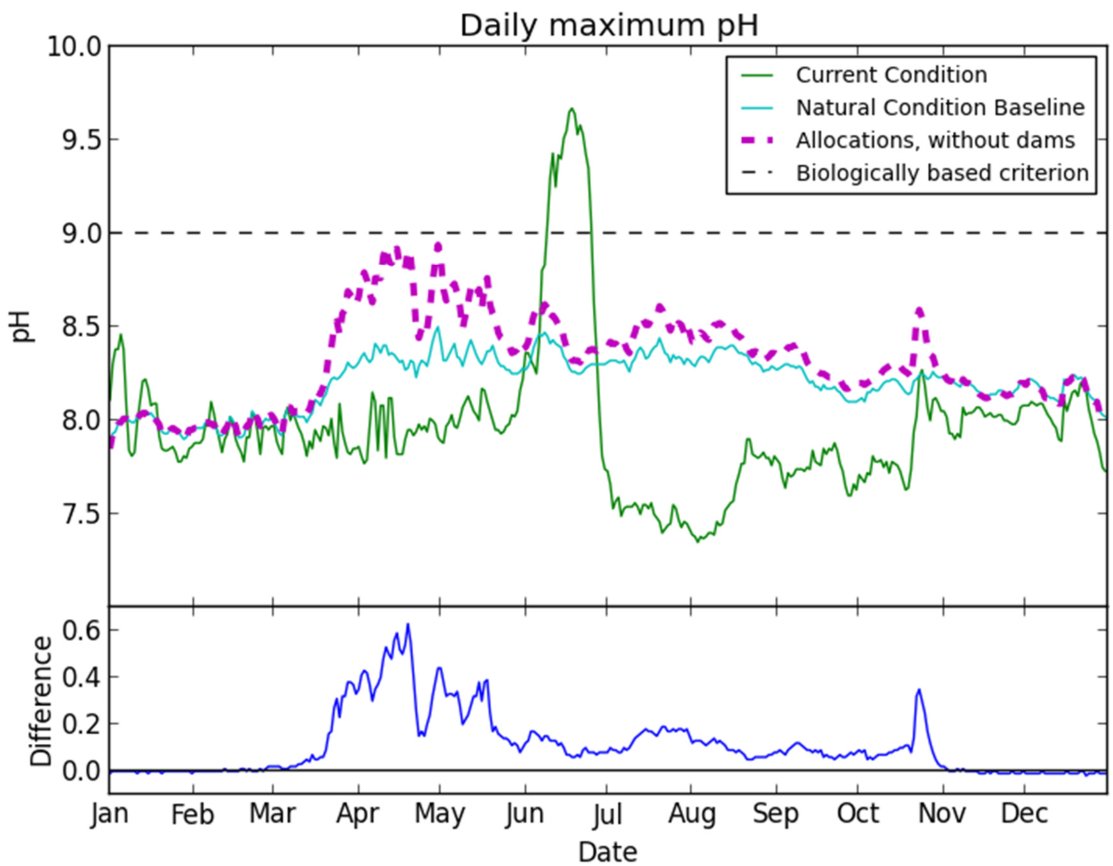
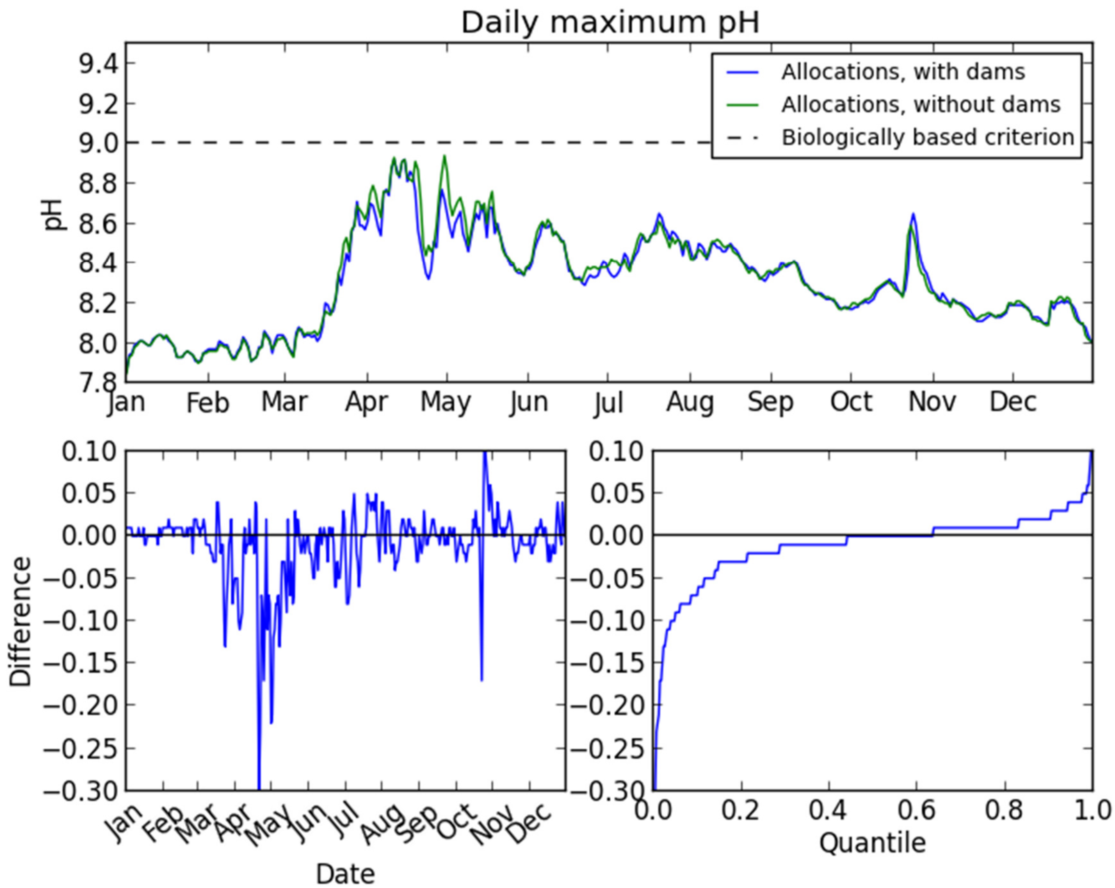


Figure 56. Predicted daily maximum pH in Klamath River at Keno Dam outlet. The “Difference” at the bottom-left of the figure shows the ‘Allocations, with dams’ scenario minus the ‘Allocations, without dams’ scenario. The ‘Quartile’ plot at the bottom-right shows the distribution of the differences.



Klamath River at JC Boyle Dam.

Figure 57. Predicted DO (instantaneous) in Klamath River at JC Boyle Dam. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

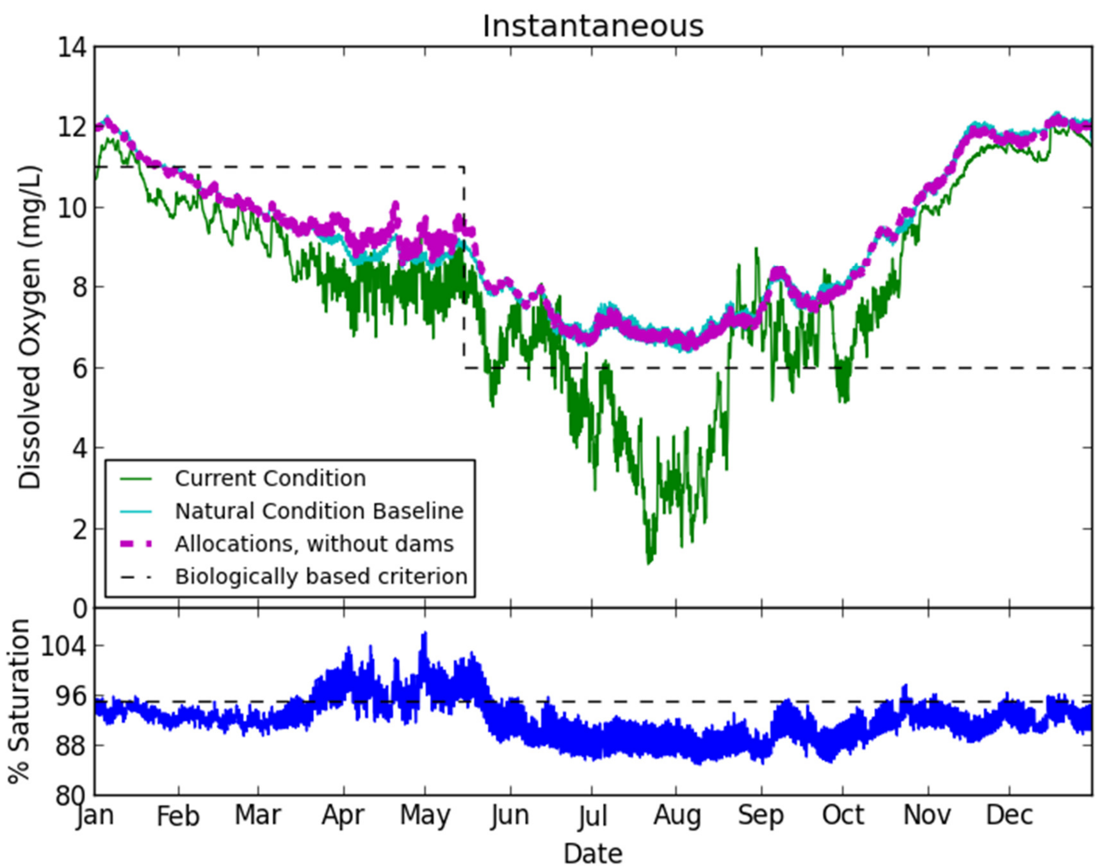


Figure 58. Predicted DO (7-day metric) in Klamath River at JC Boyle Dam. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

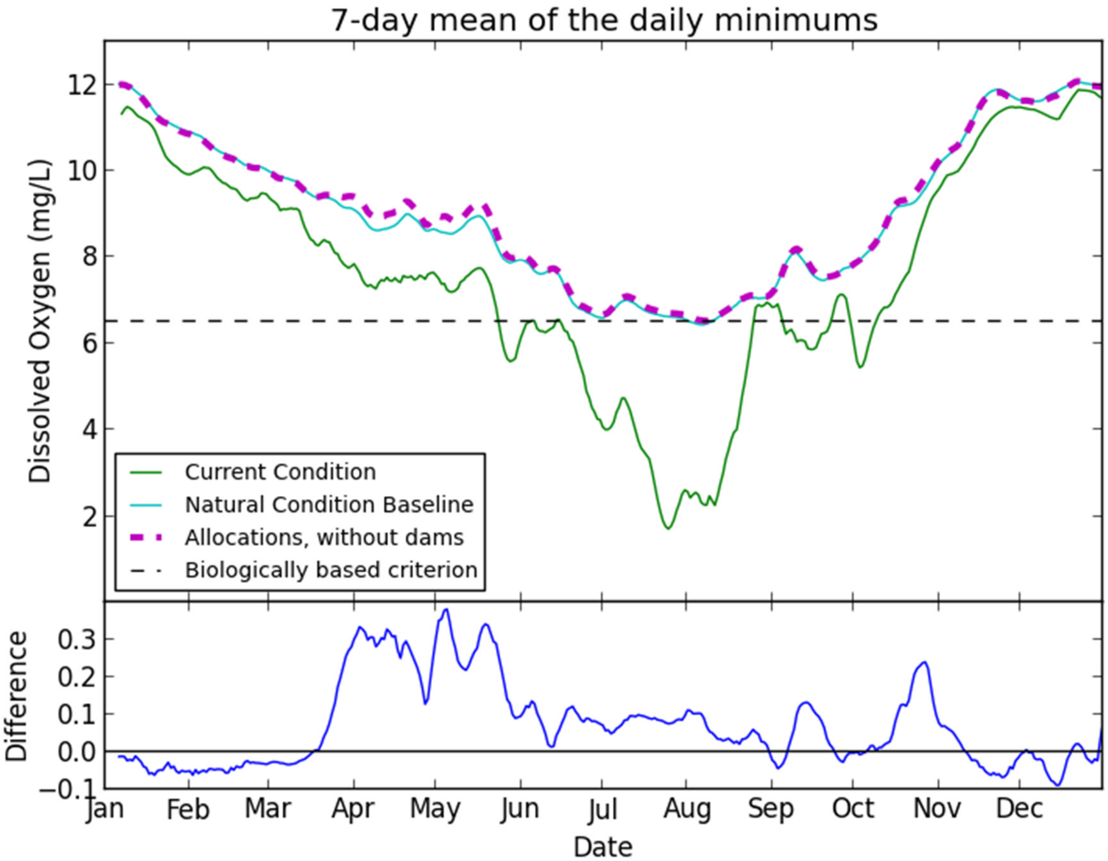


Figure 59. Predicted DO (7-day metric) in Klamath River at JC Boyle Dam. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

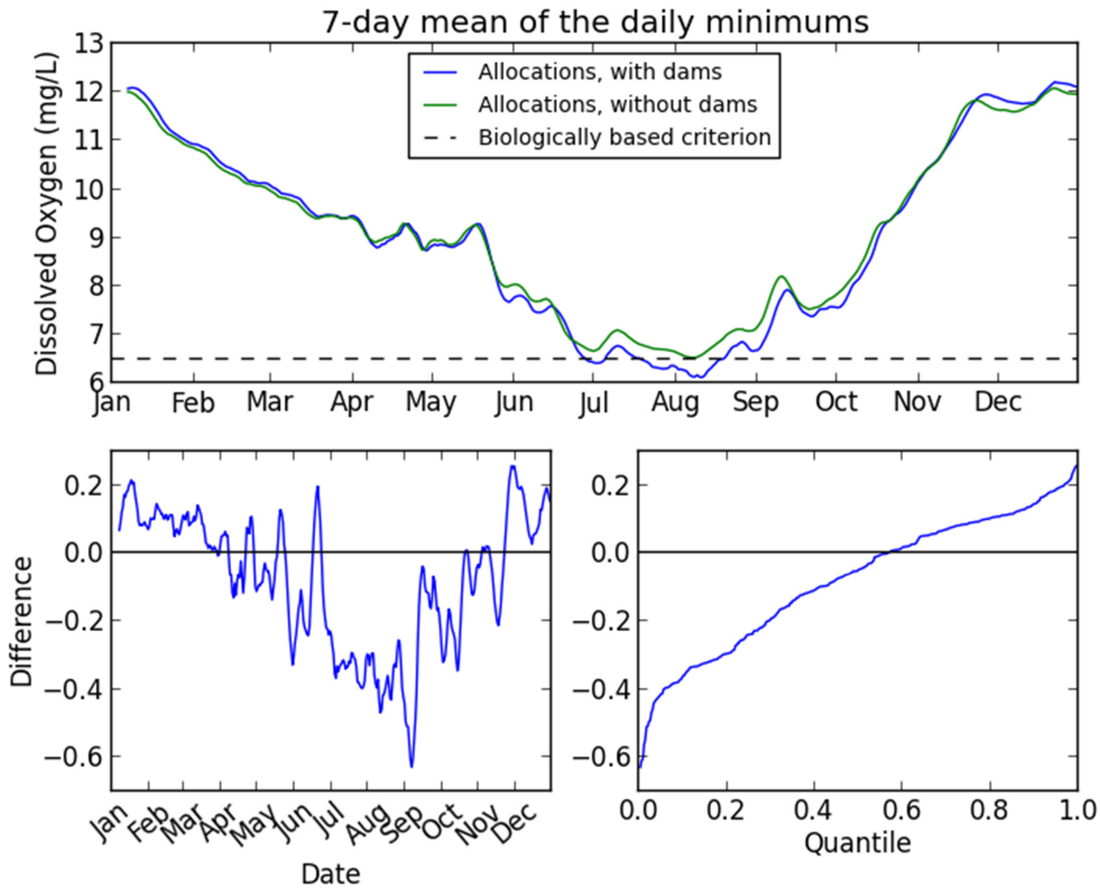


Figure 60. Predicted DO (30-day metric) in Klamath River at JC Boyle Dam. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

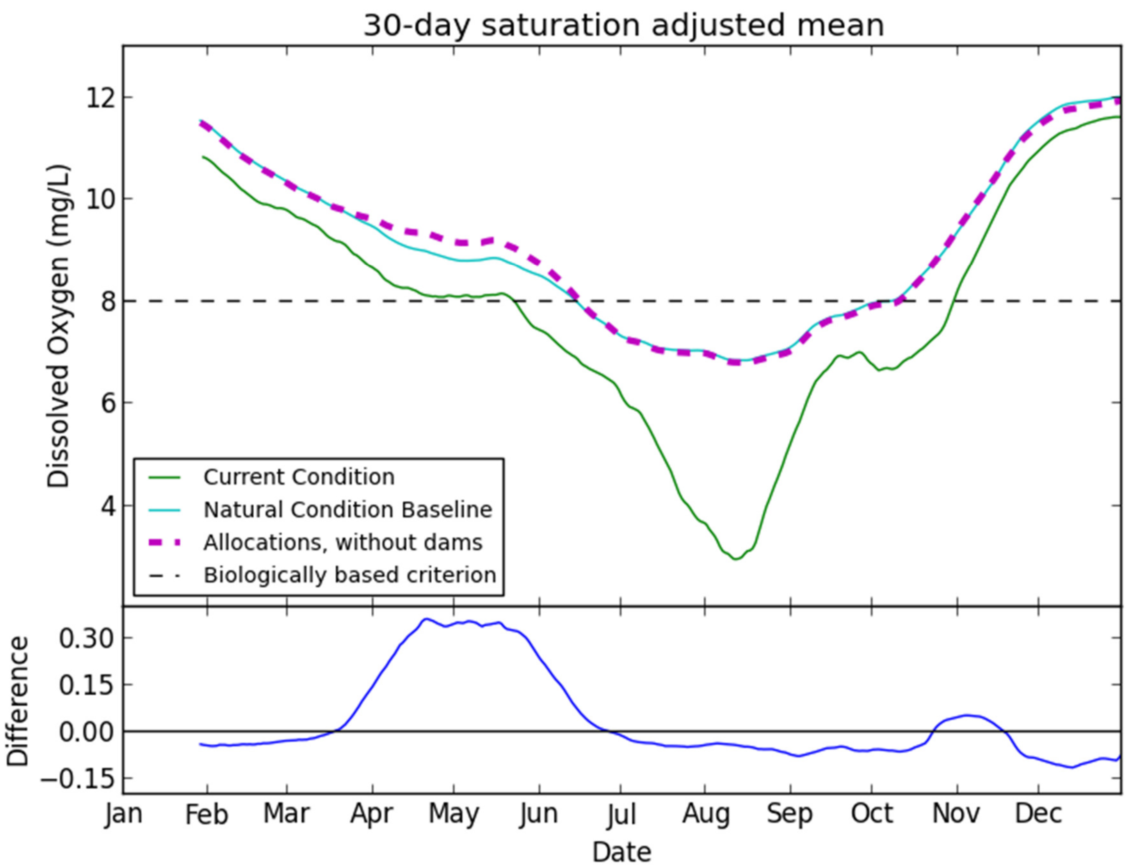


Figure 61. Predicted DO (7-day metric) in Klamath River at JC Boyle Dam. The “Difference” at the bottom-left of the figure shows the ‘Allocations, with dams’ scenario minus the ‘Allocations, without dams’ scenario. The ‘Quartile’ plot at the bottom-right shows the distribution of the differences.

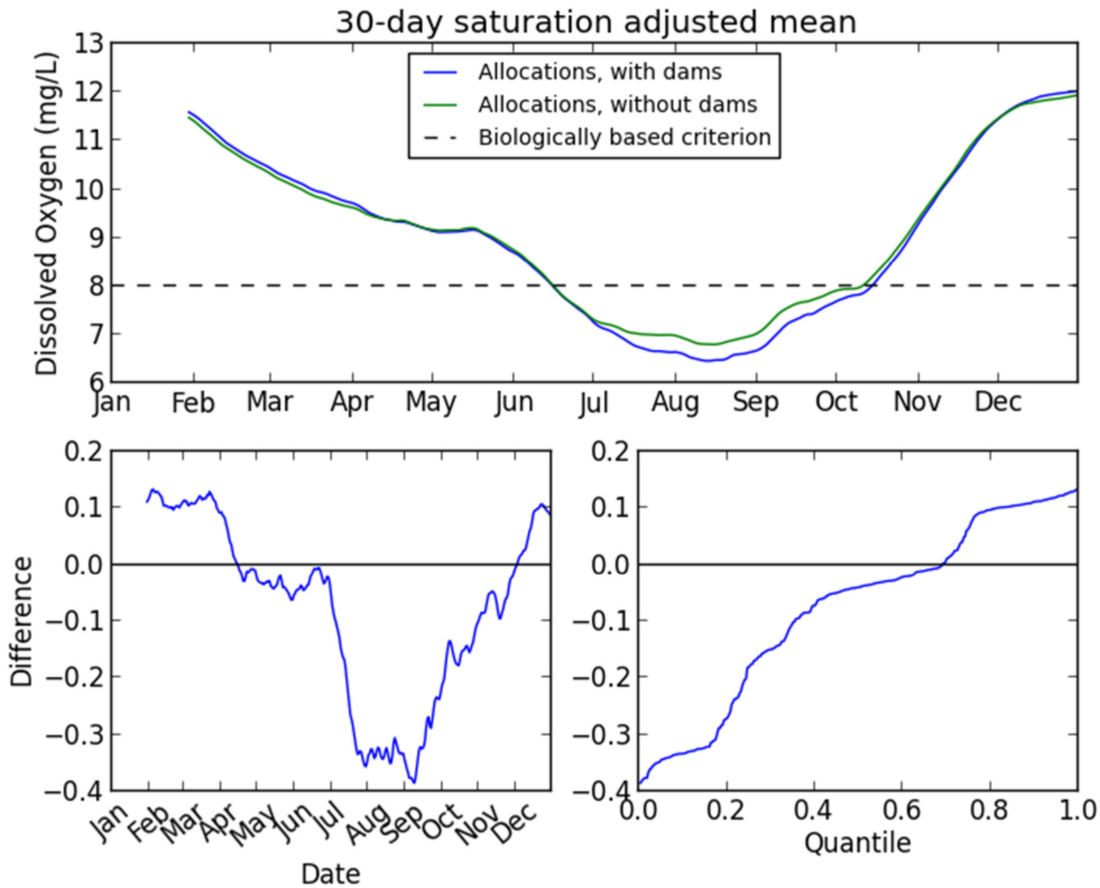


Figure 62. Predicted daily maximum pH in Klamath River at JC Boyle Dam. The “Difference” at the bottom of the figure shows the ‘Allocations, without dams’ minus the ‘Natural Condition Baseline Scenario’.

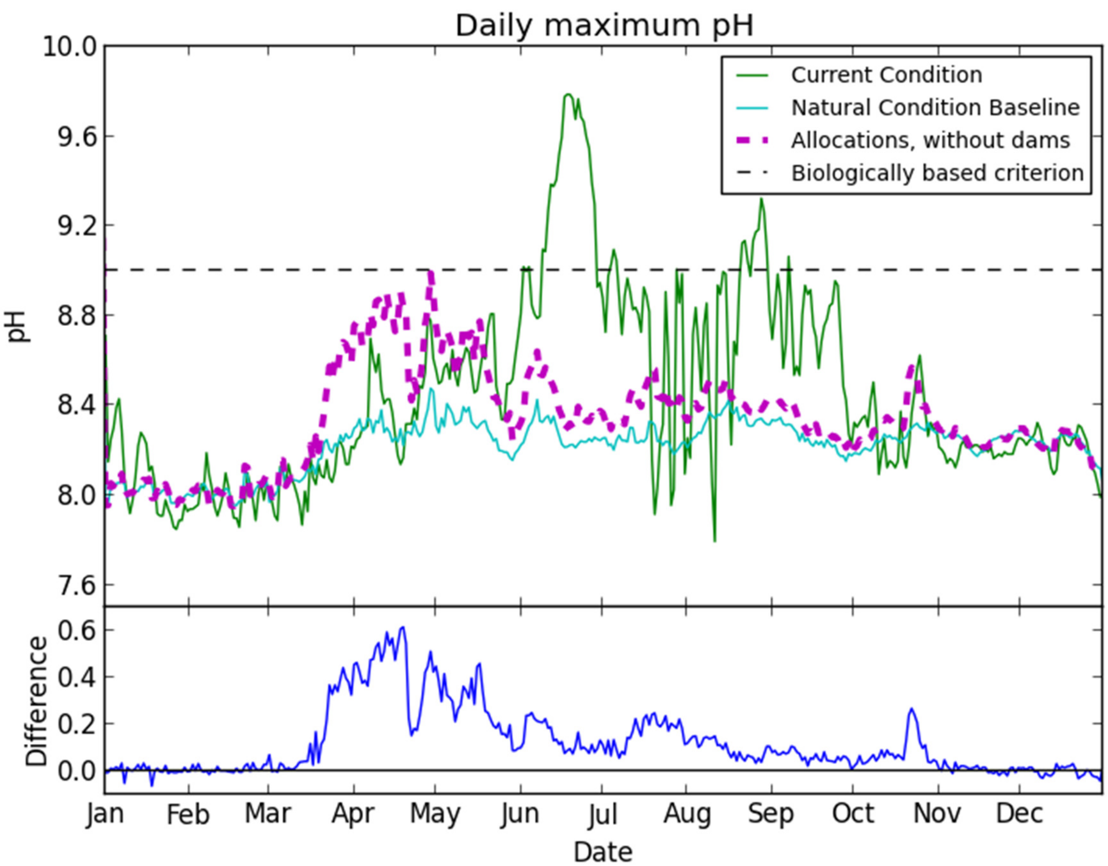
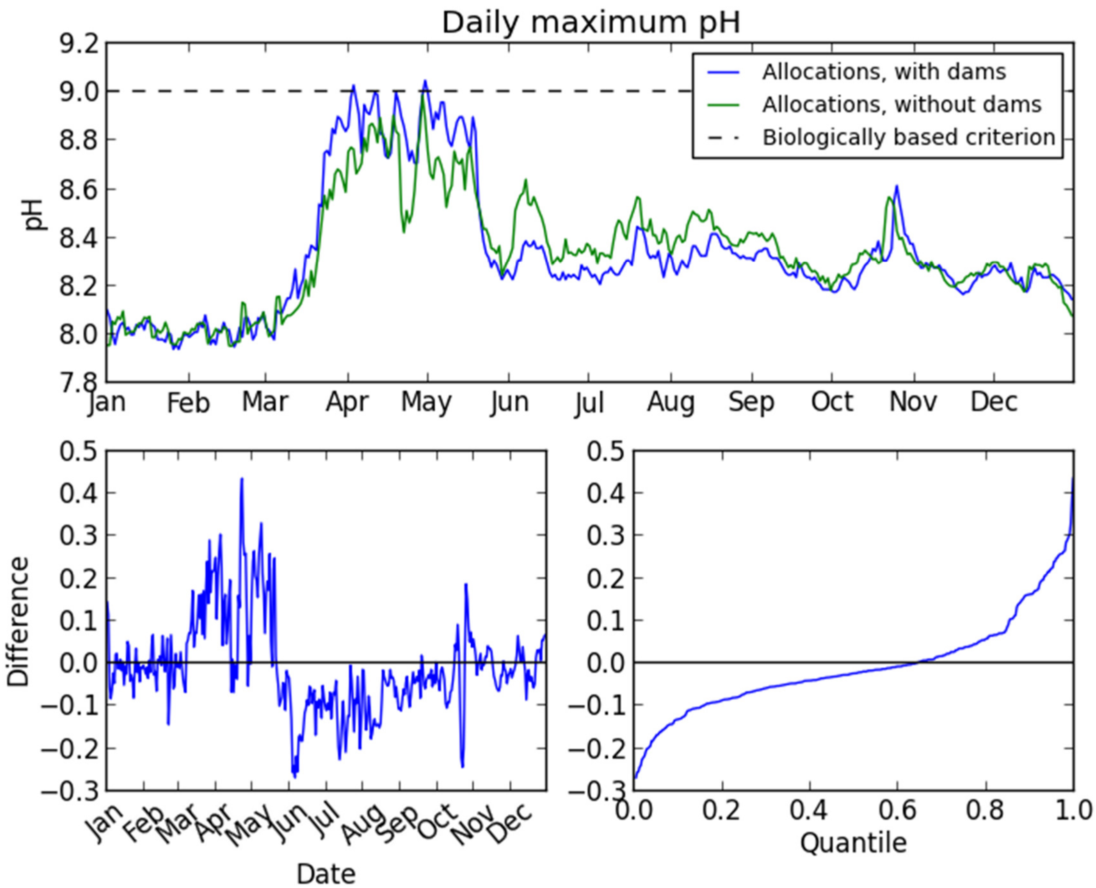


Figure 63. Predicted daily maximum pH in Klamath River at JC Boyle Dam. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.



Klamath River at Oregon / California state line.

Figure 64. Predicted DO (instantaneous) in Klamath River at Oregon / California state line. The '% Saturation" at the bottom of the figure shows the predicted percent DO saturation of the 'Allocations, without dams' scenario.

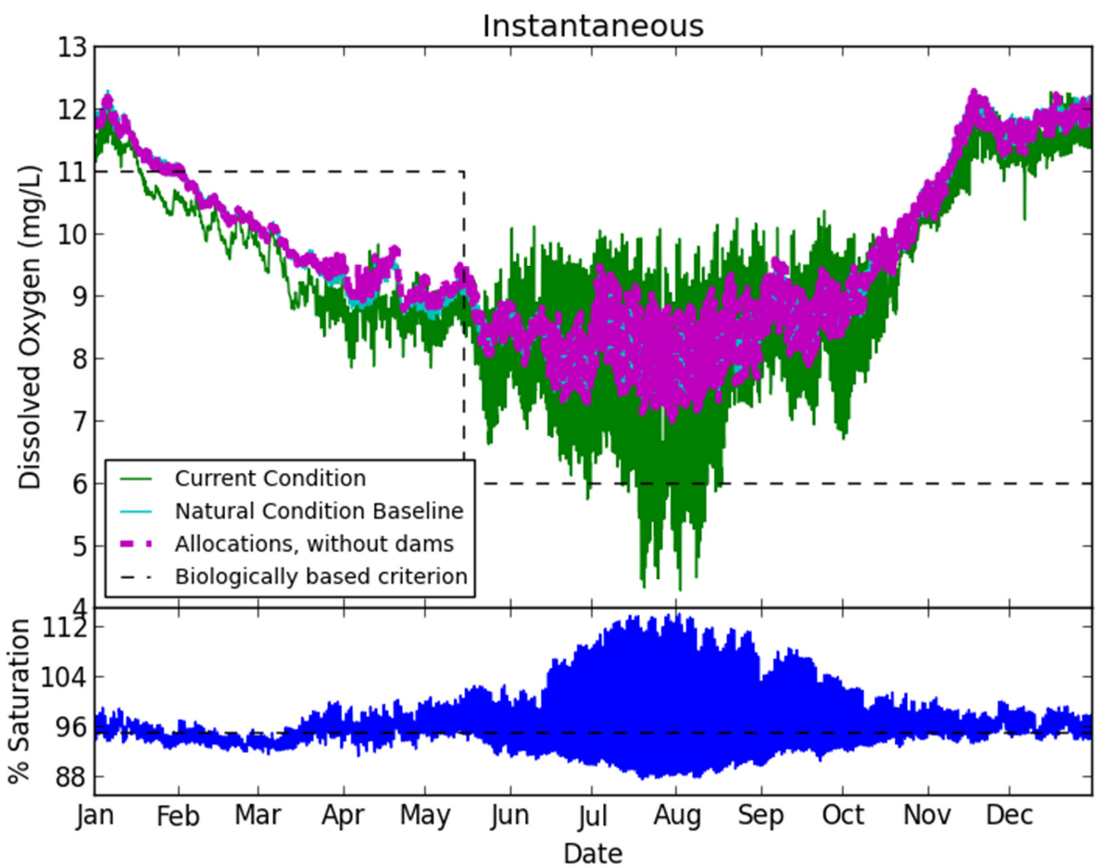


Figure 65. Predicted DO (7-day metric) in Klamath River at Oregon / California state line. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

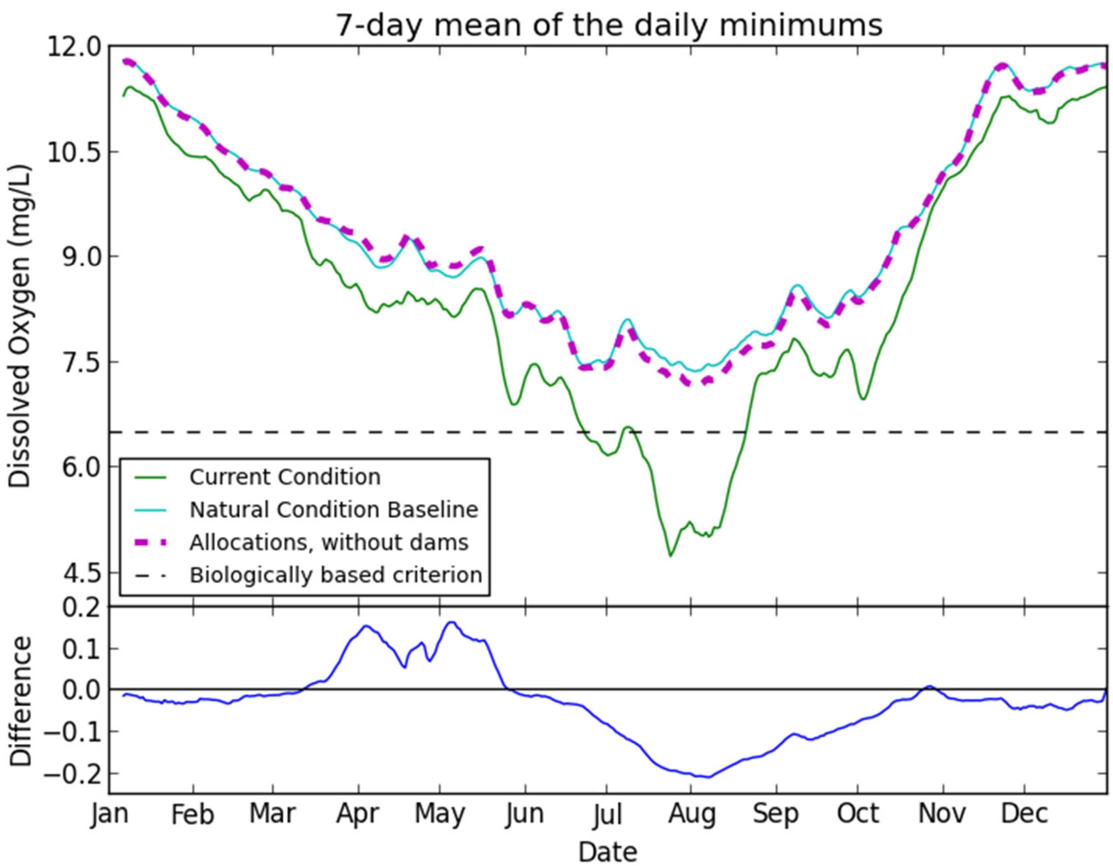


Figure 66. Predicted DO (7-day metric) in Klamath River at Oregon / California state line. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

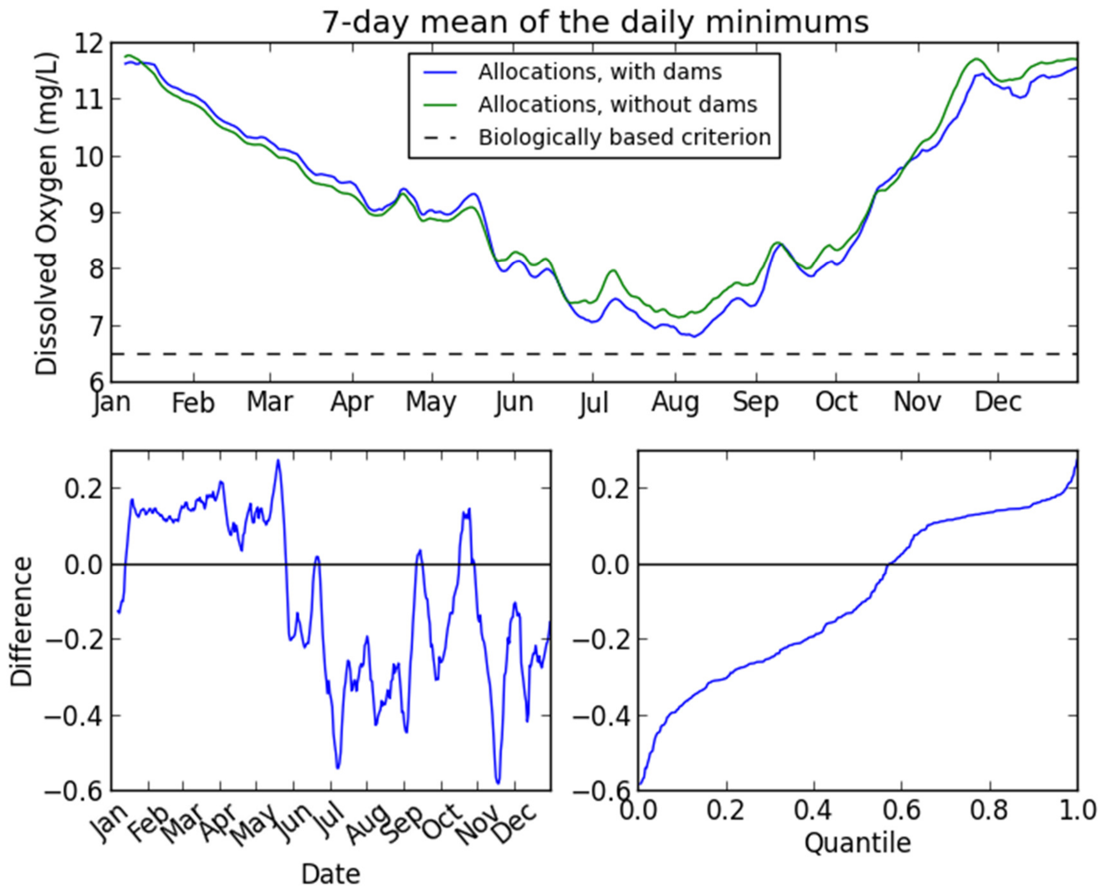


Figure 67. Predicted DO (30-day metric) in Klamath River at Oregon / California state line. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

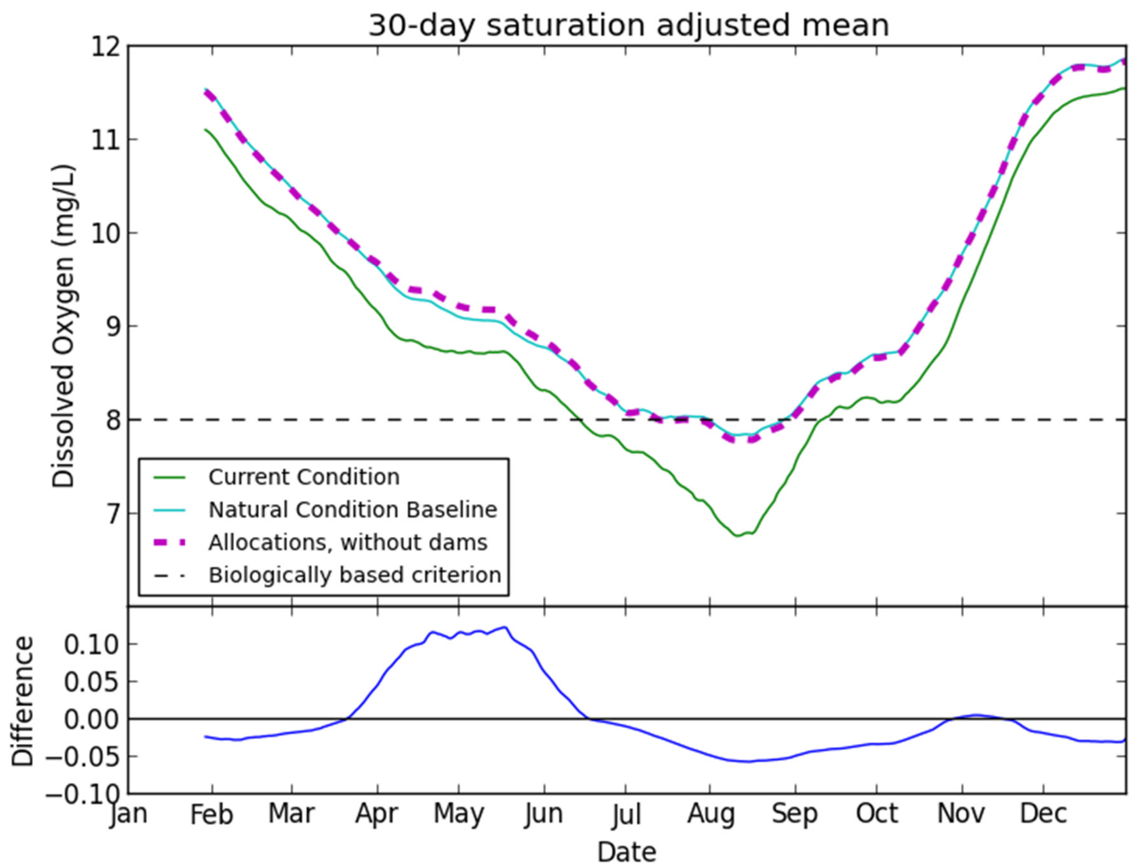


Figure 68. Predicted DO (7-day metric) in Klamath River at Oregon / California state line. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

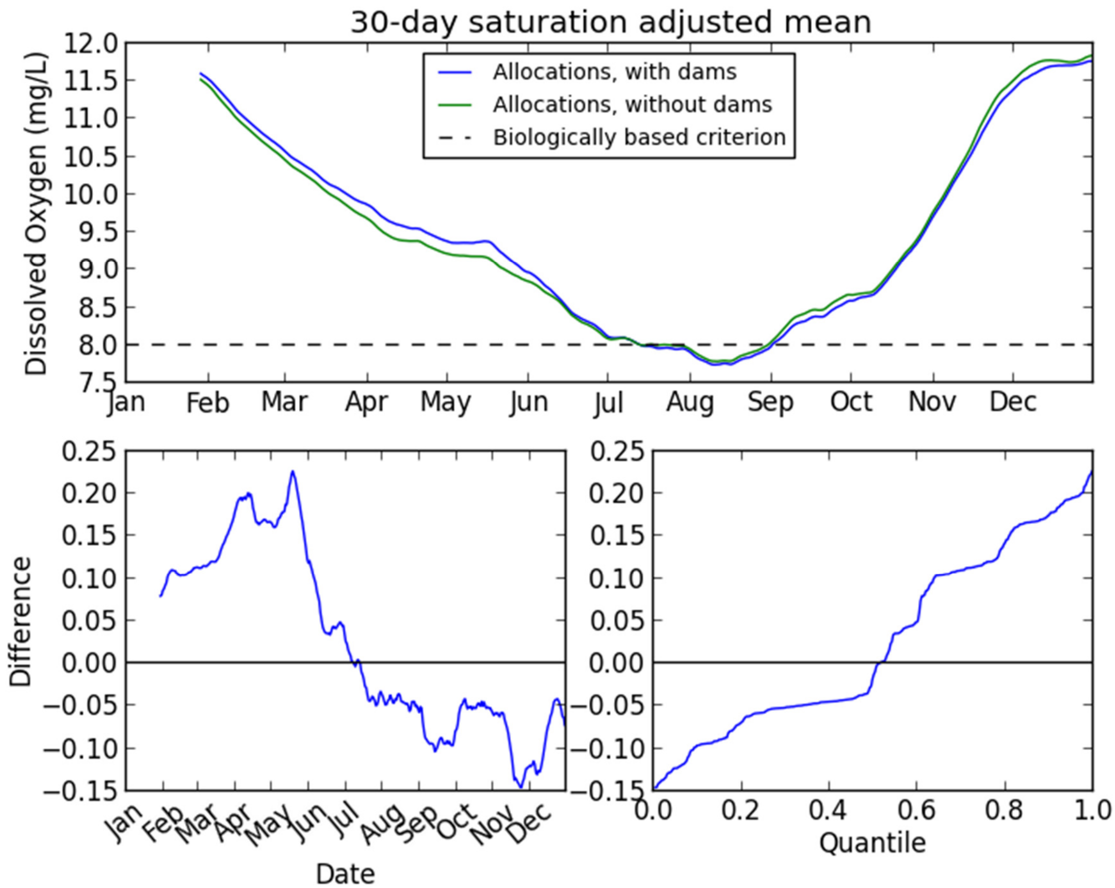


Figure 69. Predicted daily maximum pH in Klamath River at Oregon / California state line. The "Difference" at the bottom of the figure shows the 'Allocations, without dams' minus the 'Natural Condition Baseline Scenario'.

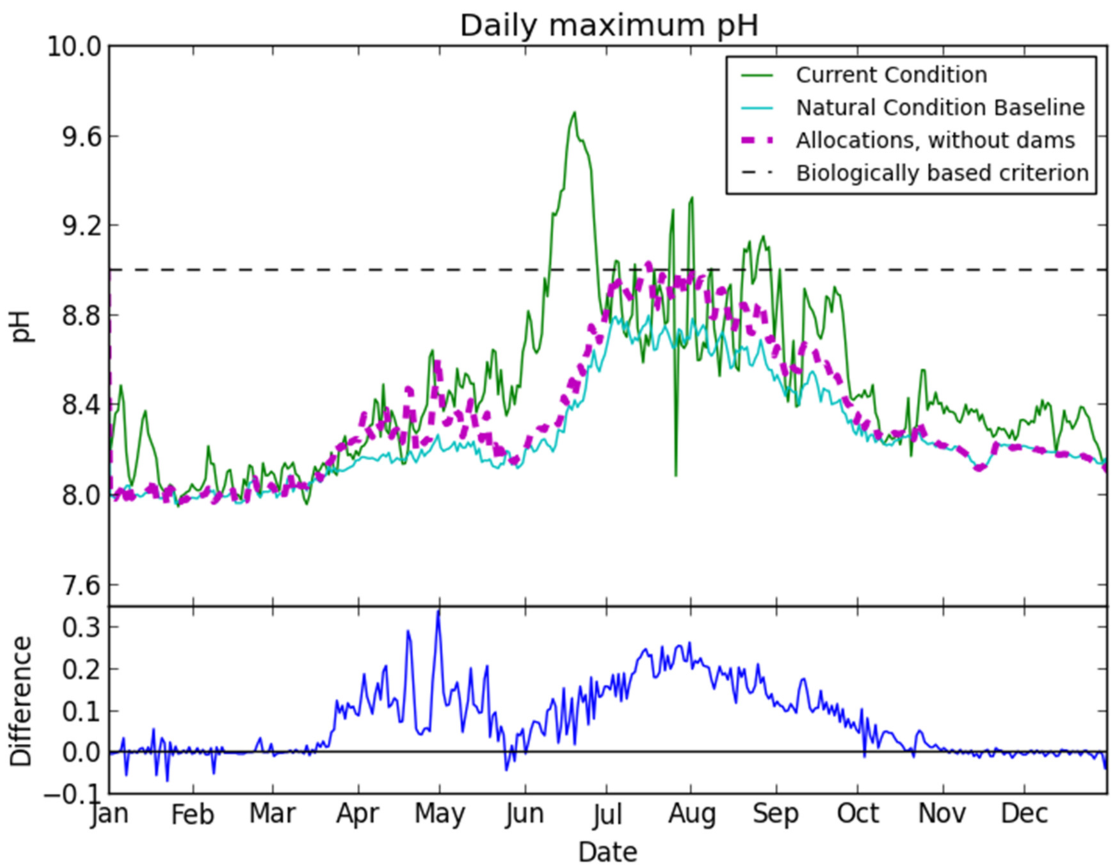


Figure 70. Predicted daily maximum pH in Klamath River at Oregon / California state line. The "Difference" at the bottom-left of the figure shows the 'Allocations, with dams' scenario minus the 'Allocations, without dams' scenario. The 'Quartile' plot at the bottom-right shows the distribution of the differences.

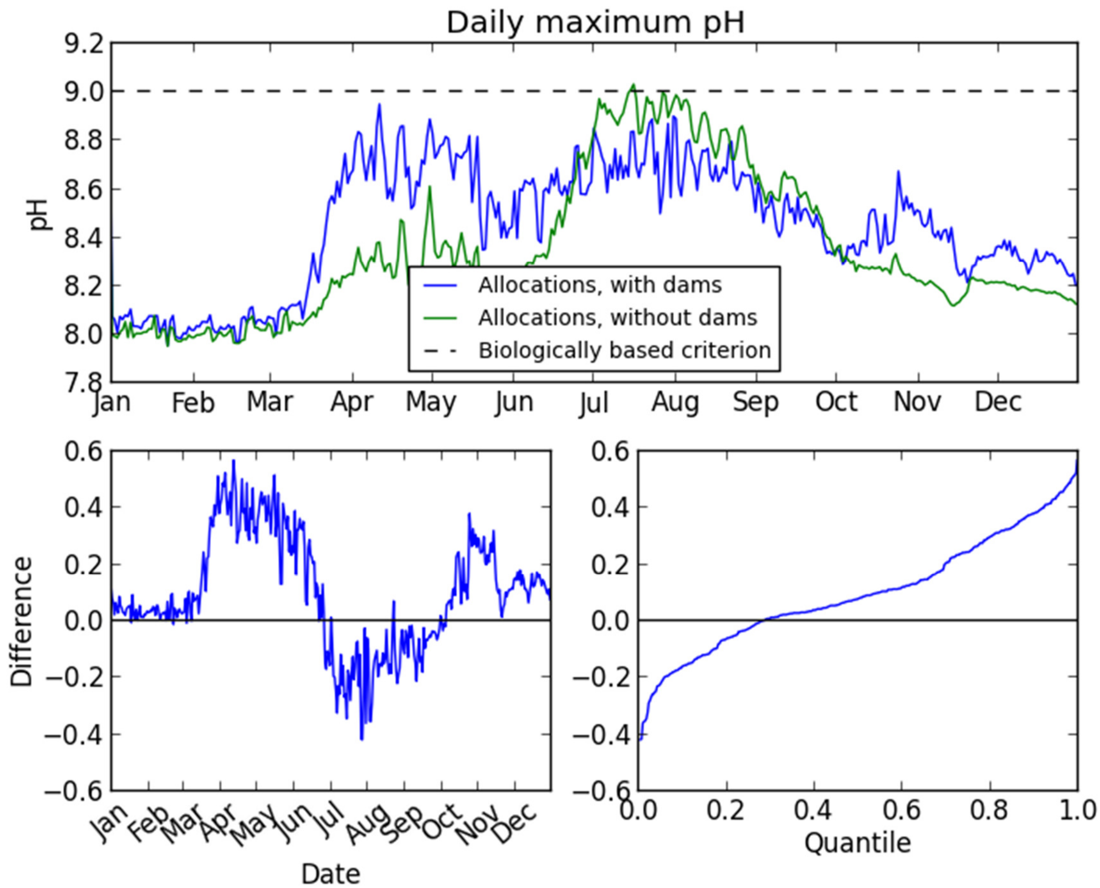


Figure 71. Comparison of predicted total phosphorus concentrations at the Oregon / California border.

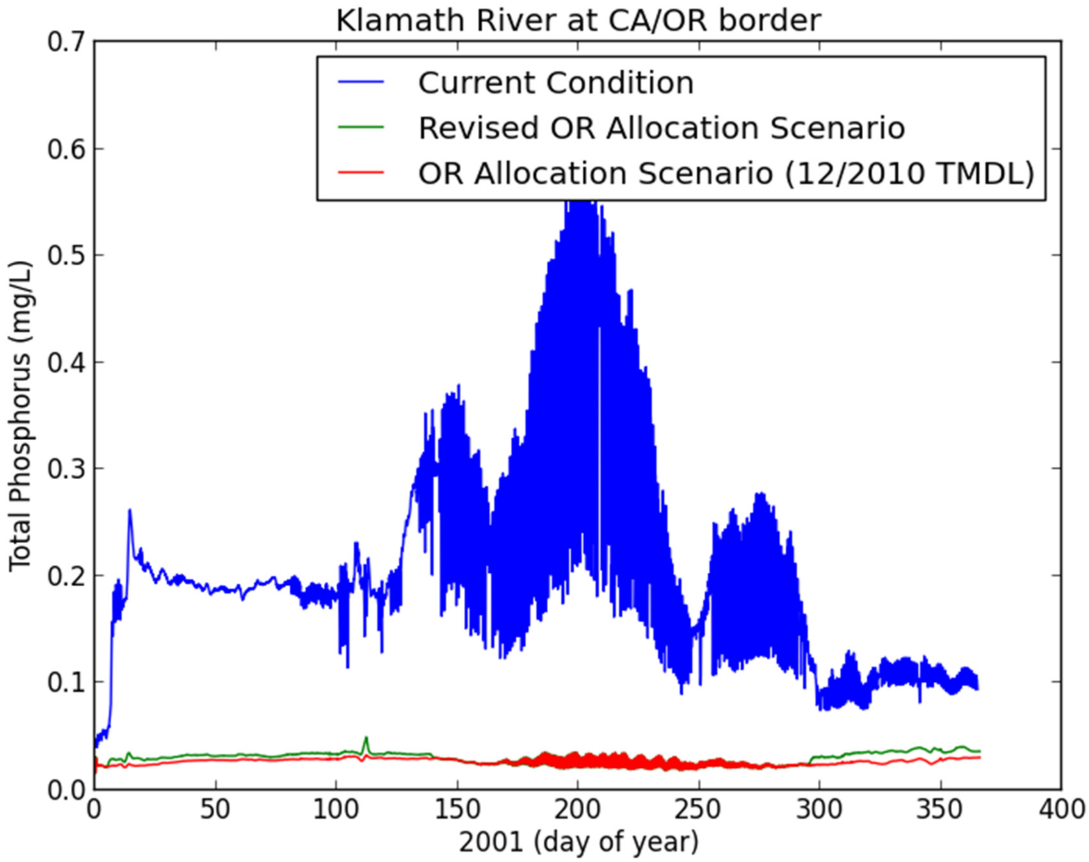


Figure 72. Comparison of predicted total nitrogen concentrations at the Oregon / California border.

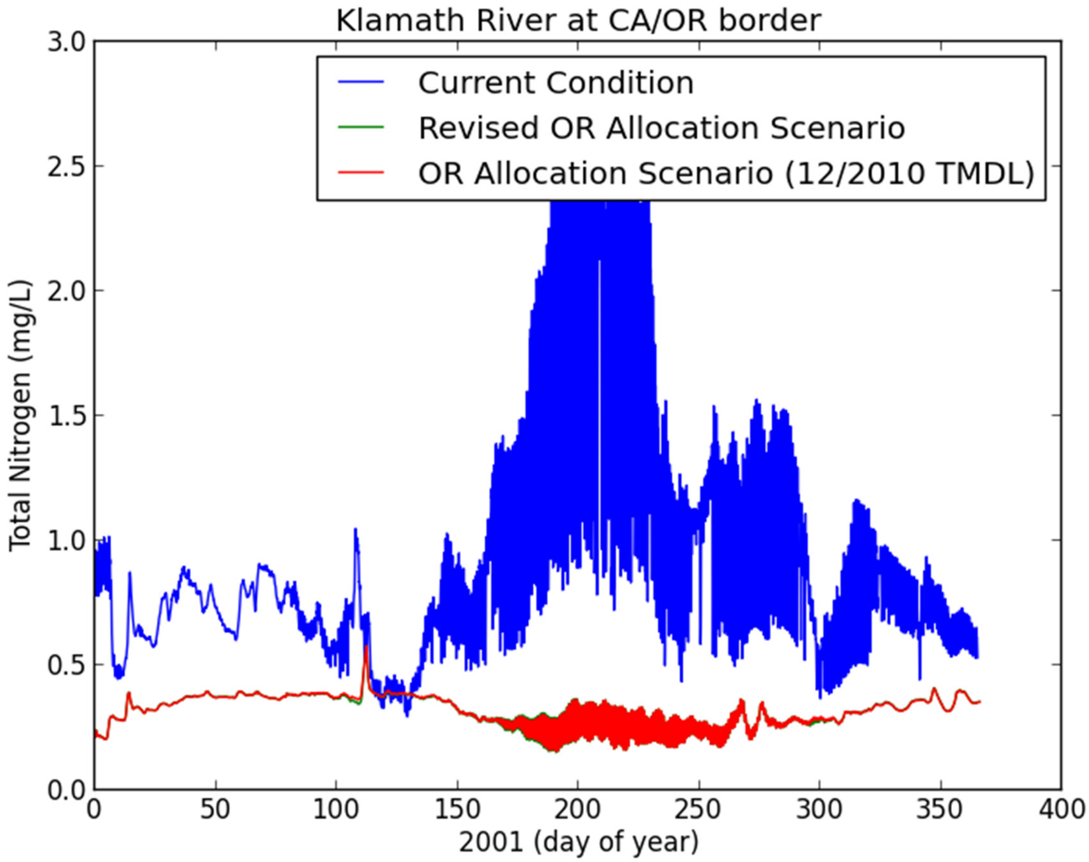


Figure 73. Comparison of predicted organic matter concentrations at the Oregon / California border.