Appendix G

WOMT Meeting Notes (WY 2020)

Table 1 was created from a review of the WOMT meeting notes. When there is a disagreement on the technical group level, that topic is raised as a recommendation to WOMT. It is WOMT's decision whether an issue is elevated to the Directors. The goal is shared ownership of the decision-making process. WOMT notes can also be found at: https://www.usbr.gov/mp/bdo/water-operations-management.html

Table 1. WOMT Meeting Notes in WY 2020

Weekly Meeting Date	Recommendation to WOMT	Elevated to Directors	Outcome
4/1/2020	Yes	Yes	BOR seeking policy direction on additional State ITP actions different from federal ROD.
4/8/2020	Yes	Yes	Elevation regarding monitoring team membership to Directors
4/15/2020	Yes	Yes	Integration of ITP and BiOps in weekly Assessment and weekly Fish and Water Ops document.
4/22/2020	No	No	No elevation issues, no director meeting topics.
4/29/2020	No	No	No elevation issues, no director meeting topics.
5/6/2020	No	No	No elevation issues, no director meeting topics.
5/13/2020	No	No	No elevation issues, no director meeting topics.
5/20/2020	No	No	No elevation issues, no director meeting topics.
5/27/2020	No	No	No elevation issues, no director meeting topics.

6/3/2020	No	No	No elevation issues, no director meeting topics.
6/10/2020	No	No	No elevation issues, no director meeting topics.
6/17/2020	No	No	No elevation issues, no director meeting topics.
6/24/2020	No	No	No elevation issues, no director meeting topics.
7/1/2020	No	No	No elevation issues, no director meeting topics.
7/8/2020	No	No	No elevation issues, no director meeting topics.
7/15/2020	No	No	No elevation issues, no director meeting topics.

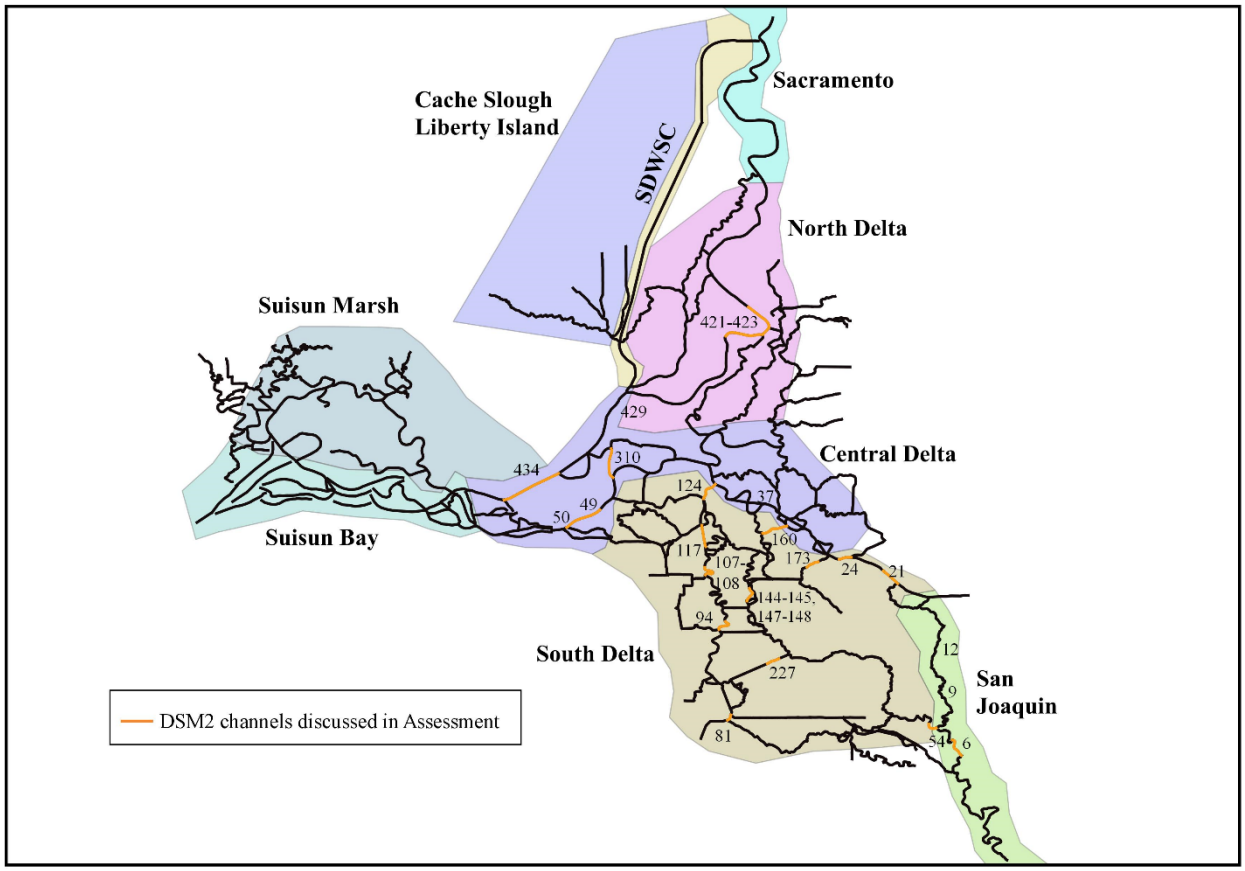
Appendix H

DSM2 Modeling Scenarios

DSM2 hydrological modeling run results were included from a review of weekly Assessment documents provided to the Salmon Monitoring Team, produced beginning 4/7/2020 through 6/23/2020. Beginning 4/28/2020 additional information on model runs was provided in table format. The following figures and tables are pulled from Assessment Appendix A.

Each scenario's OMR value is compared with the baseline OMR value. A measure of similarity between scenarios is reported using the Kolmogorov-Smirnov (KS) statistic, test, or distance. This is a method to quantify how similar two empirical cumulative distribution functions (ECDFs) are to each other. The KS-stat is bounded between 0 (very similar / equal) and 1 (very dissimilar / not equal).

In the context of this analysis, a single parameter (daily OMR values) is modified between scenarios allowing for appropriate comparisons. The KS-stat is an indicator of how much of an effect changing OMR via export diversion rates would have on hydrodynamics at that area in the Delta. Results from modeling efforts are examined at 28 Delta channel node locations.



Highlighted DSM2 channels by Delta Strata.

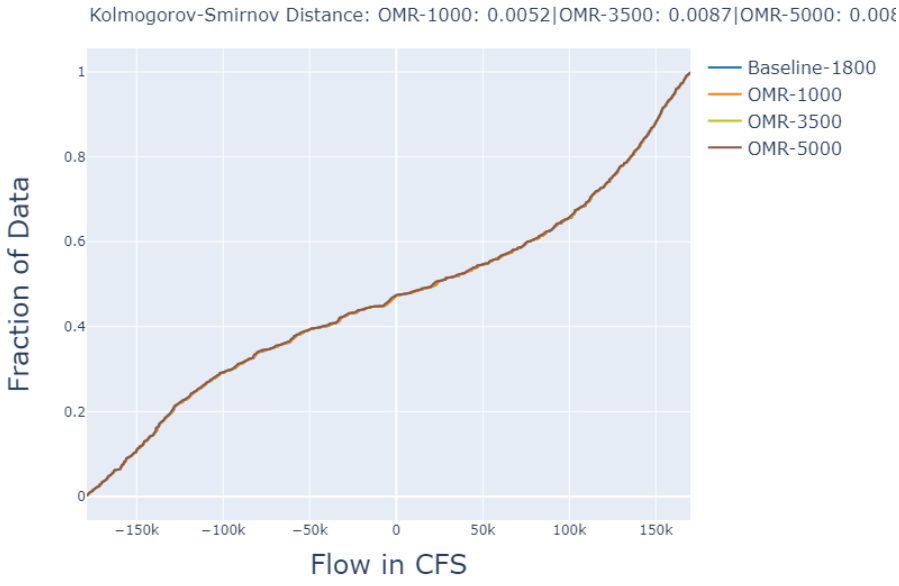
4/7/2020

DWR baseline forecast 03/31/2020 to 04/20/2020
CVO updated baseline and Scenarios on 04/06/2020.
CVO OMR action taking place on 04/08/2020 to 04/14/2020*
Baseline: -1,800 cfs OMR
Scenario -1,000: -1,000 cfs OMR
Scenario -3,500: -3,500 cfs OMR
Scenario -5,000: -5,000 cfs OMR

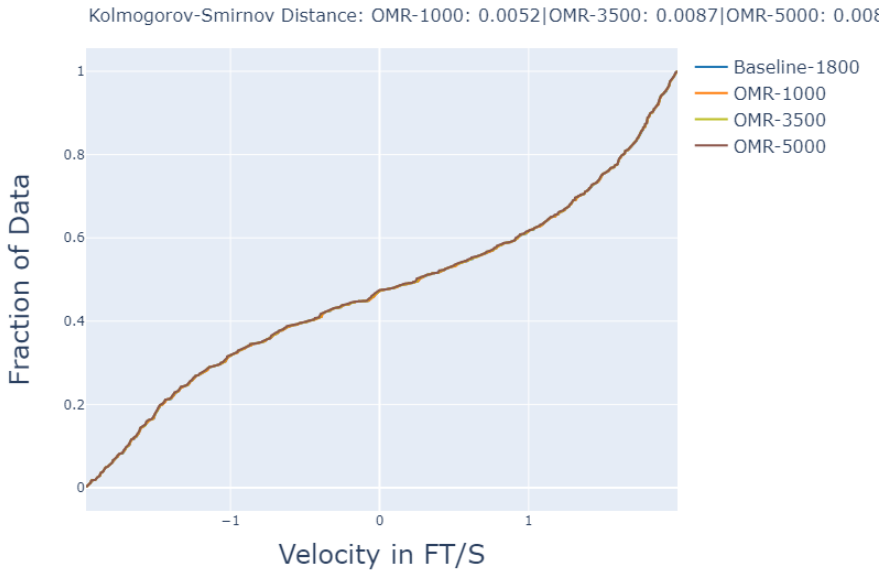
* OMR begins at -3,400 cfs and decreases to -1,000 cfs when 1:1 ratio begins 04/10/2020. Model forecast stops at 00:00 on 4/14/2020

DSM2 modeling for April 8 through April 14 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week three scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,800 cfs, hereafter referred to as Scenario -1,000) to -3,500 cfs (increasing pumping from OMR -1,800, hereafter referred to as Scenario -3,500) to -5,000 cfs (increasing pumping from OMR -8,500 cfs, hereafter referred to as Scenario -5,000).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

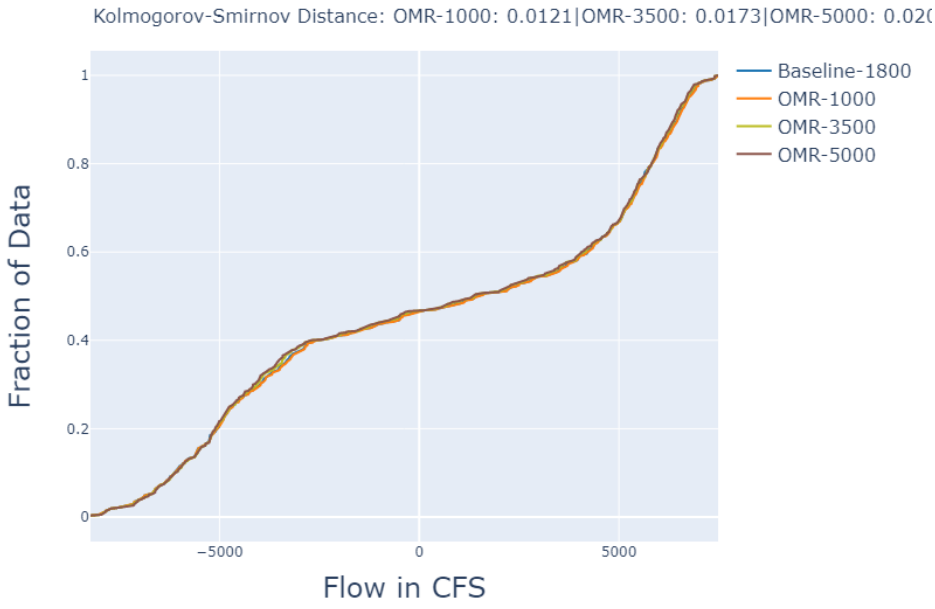


a)

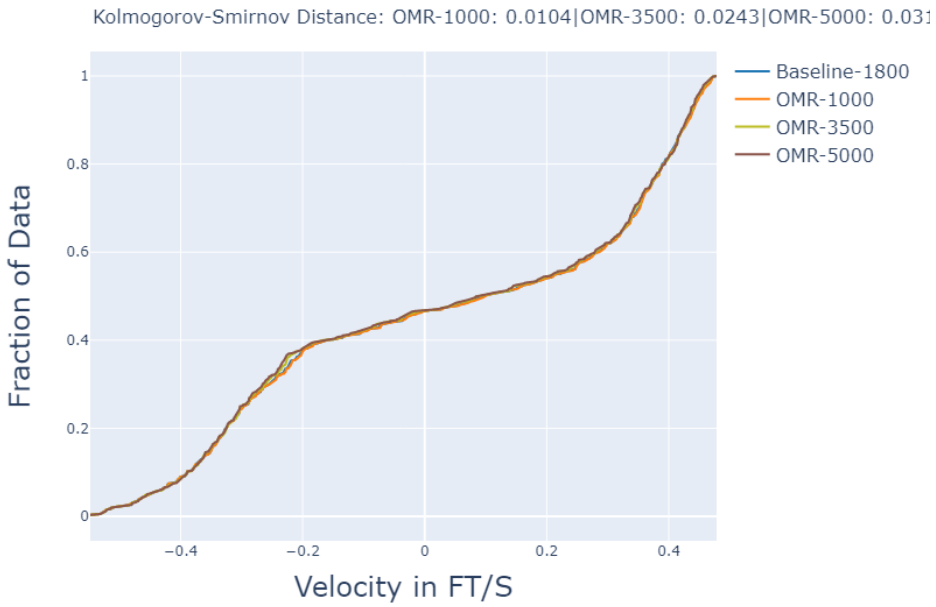


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

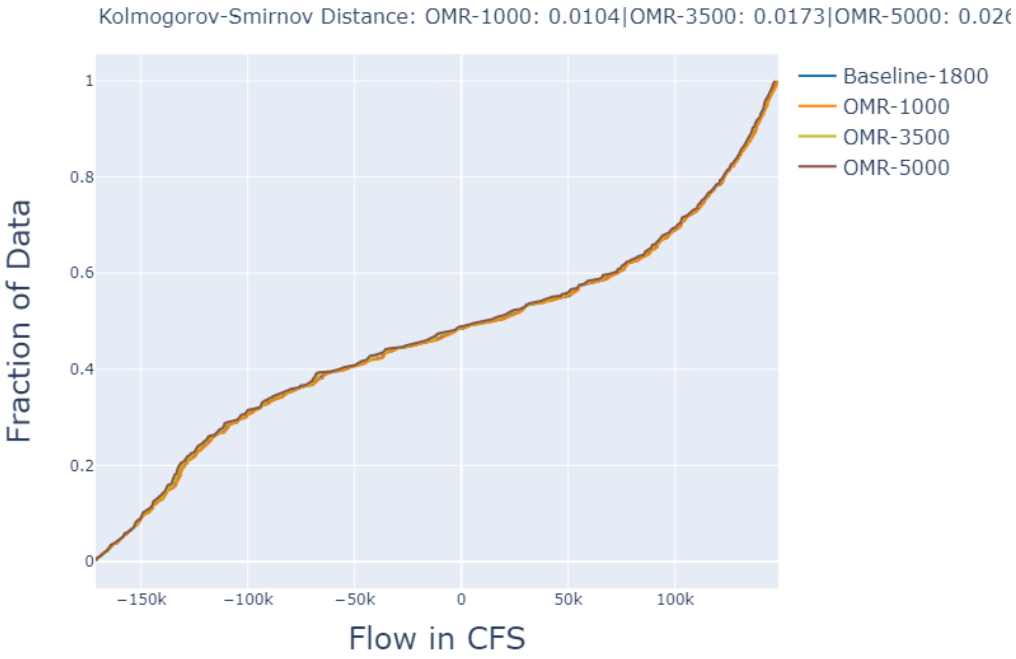


a)

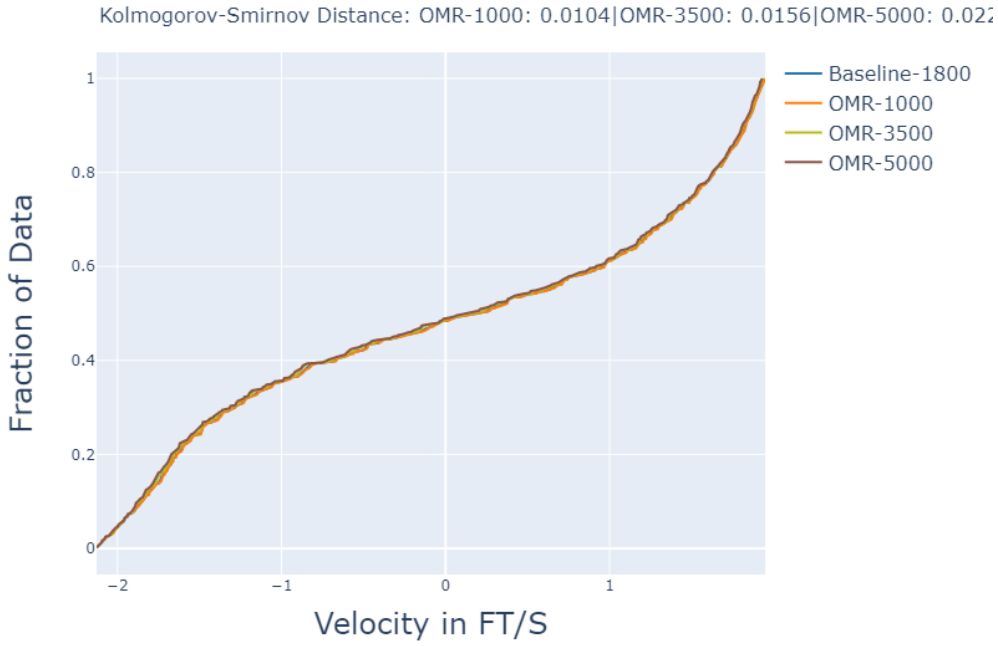


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

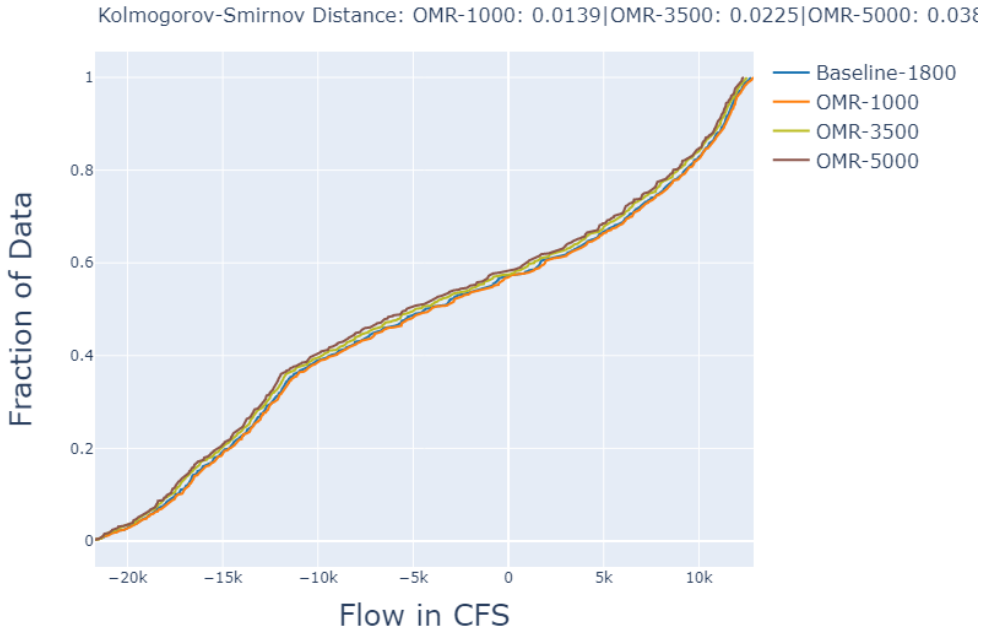


a)

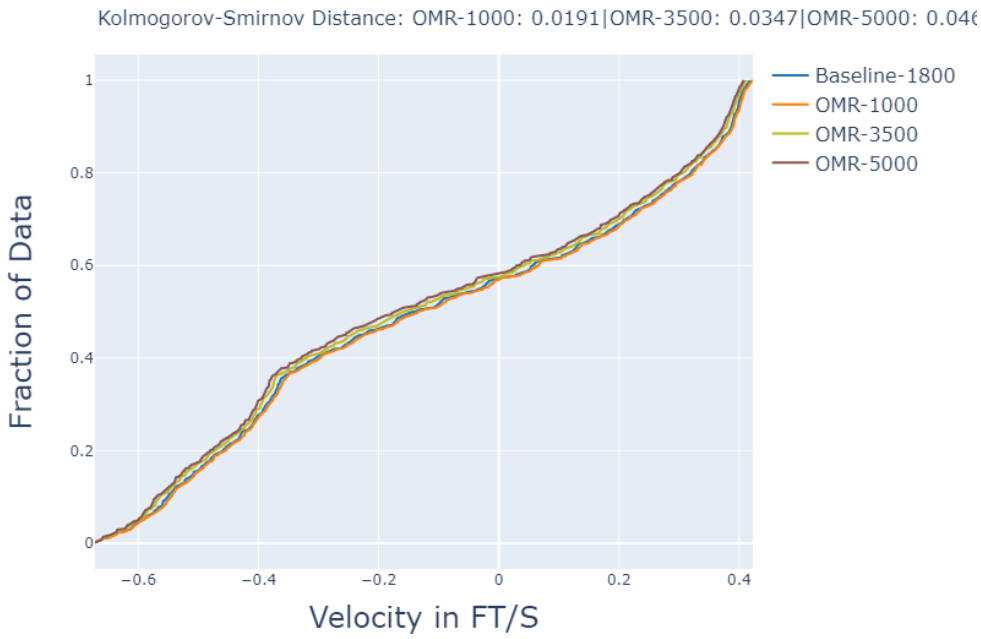


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs, OMR -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

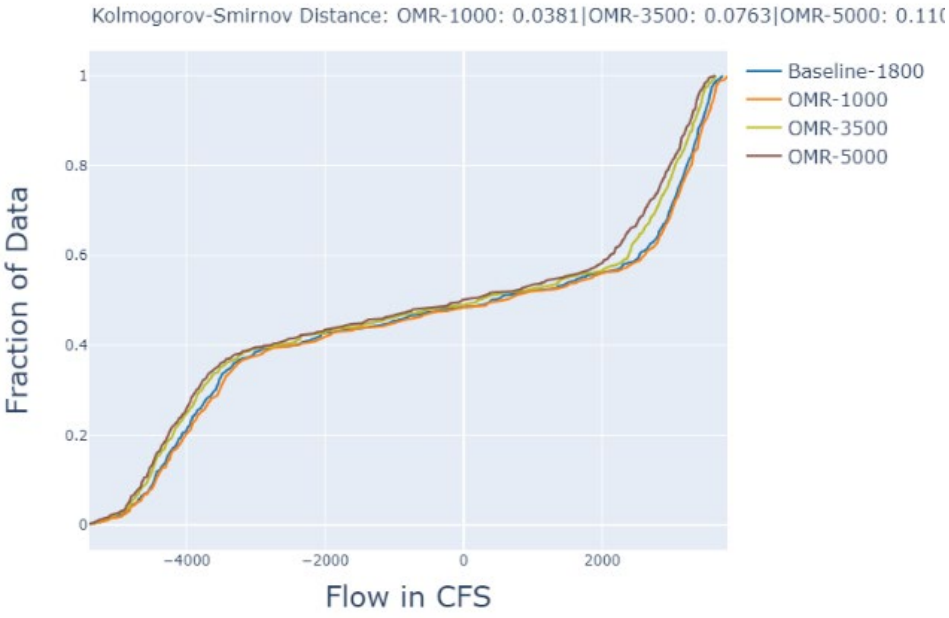


a)

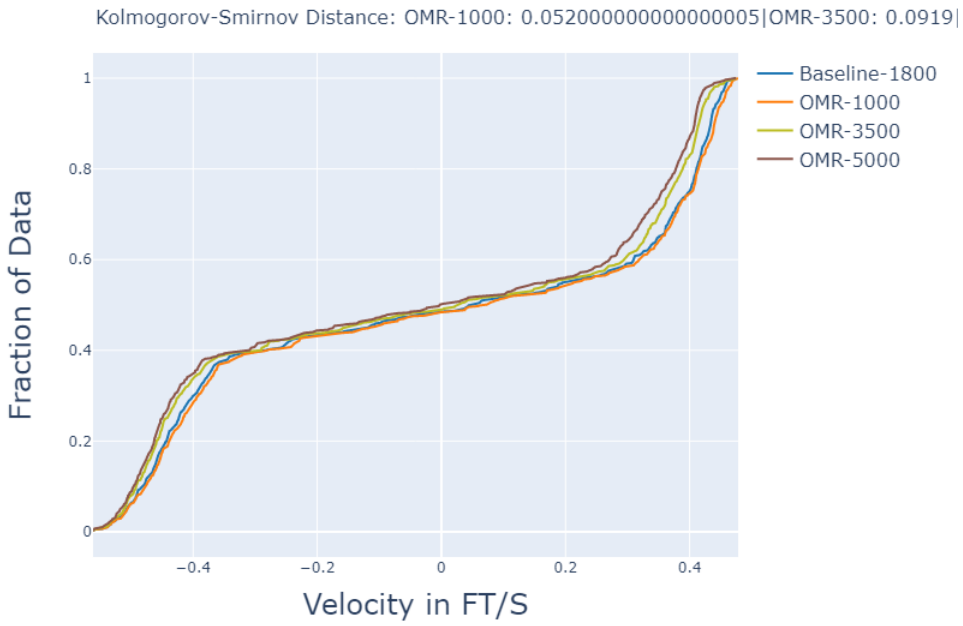


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

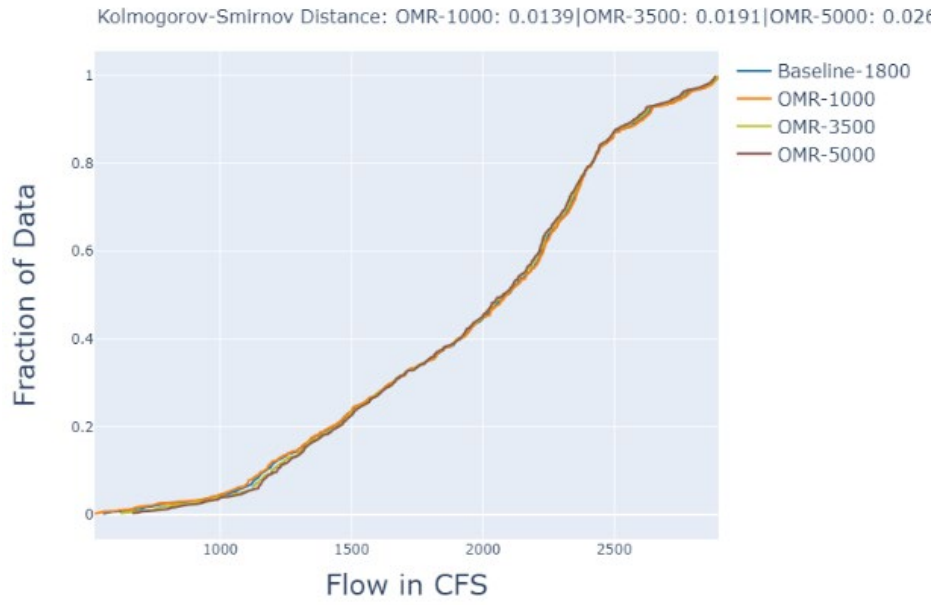


a)

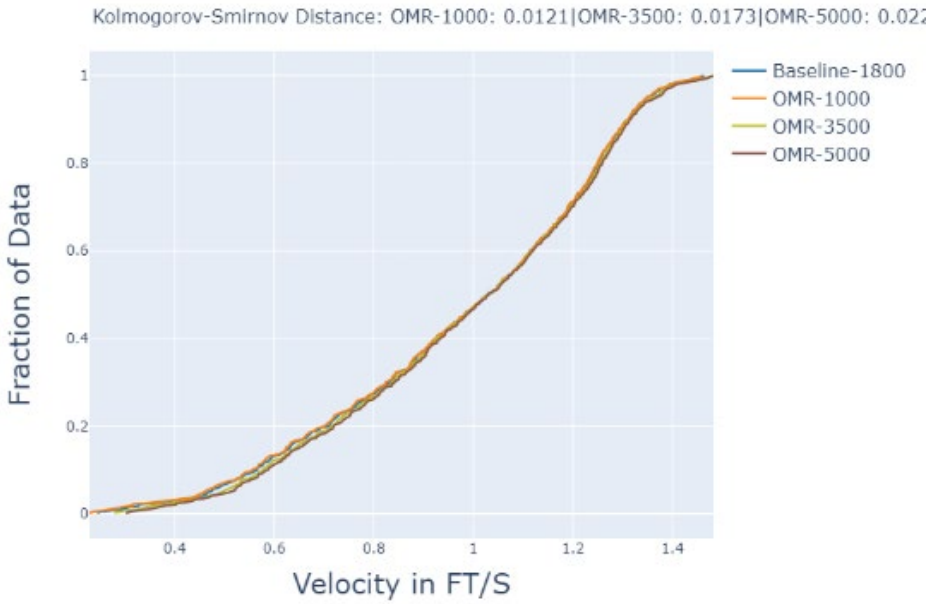


b)

Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

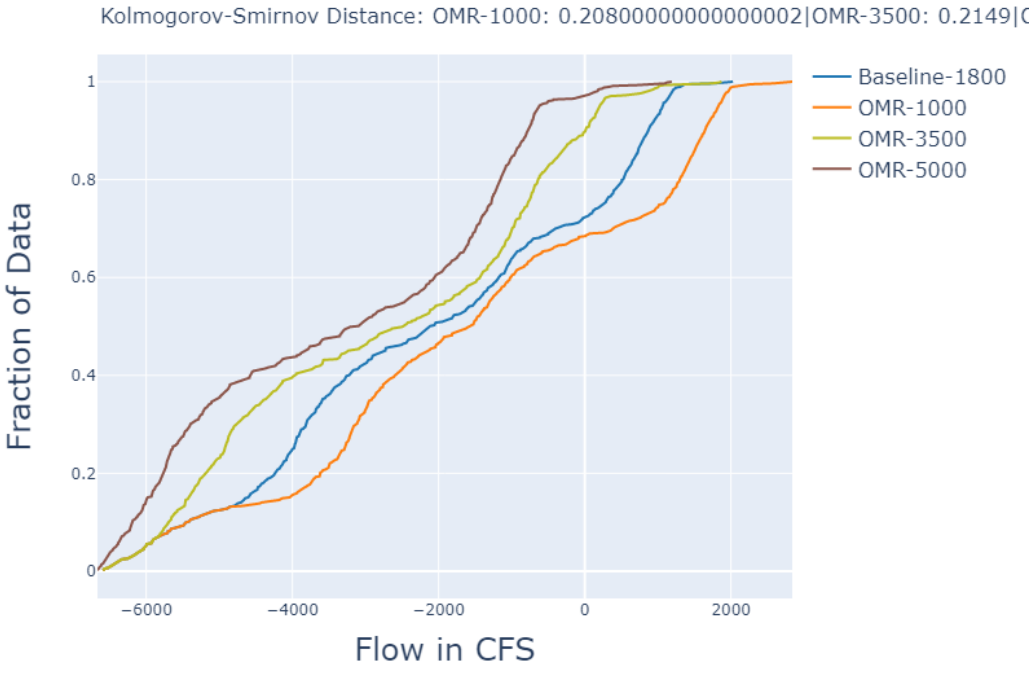


a)

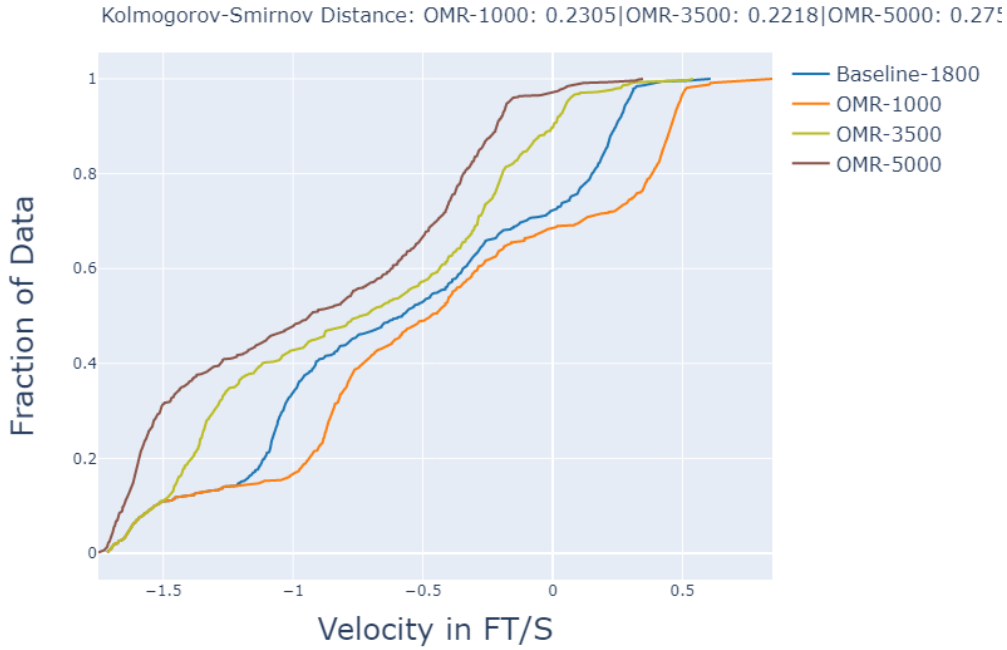


b)

Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

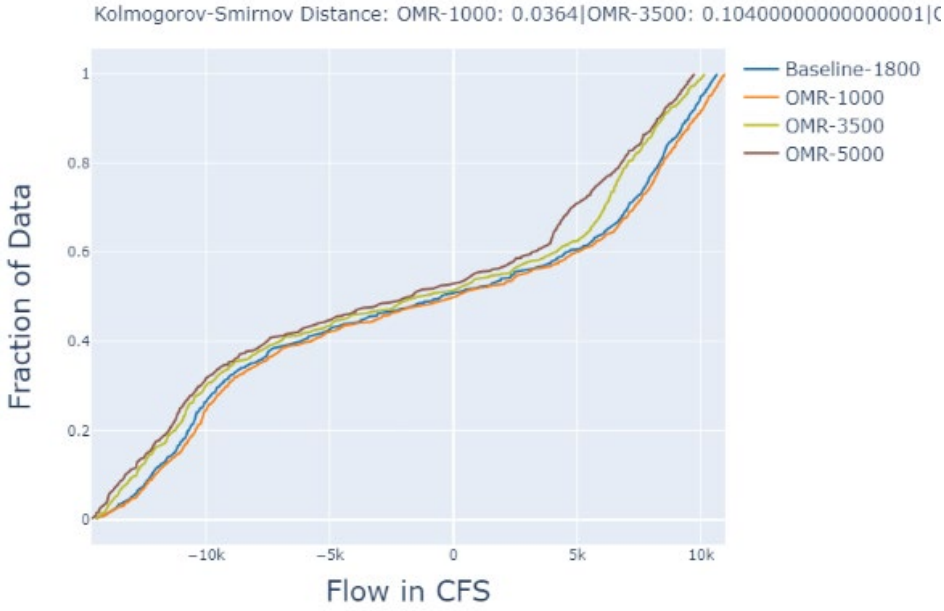


a)

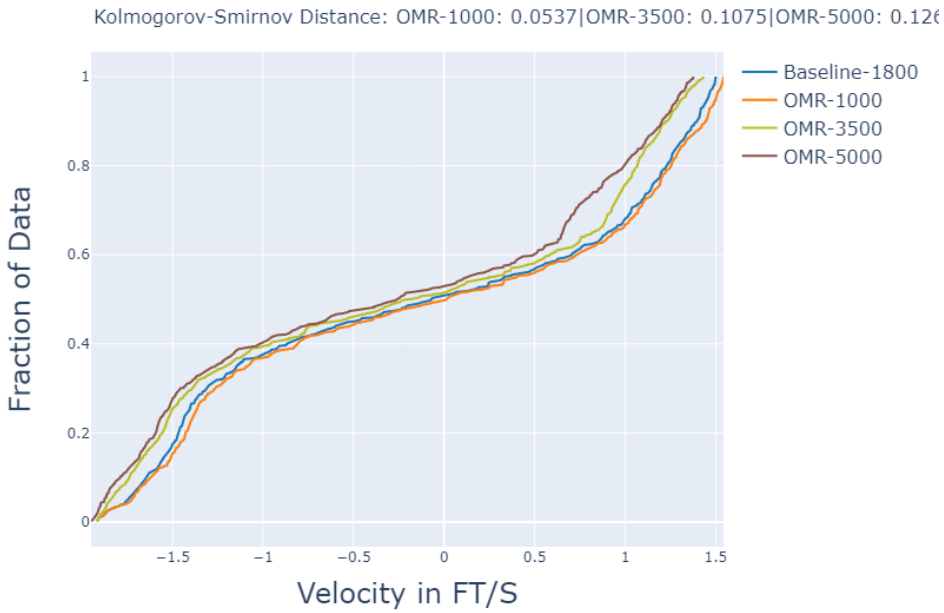


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

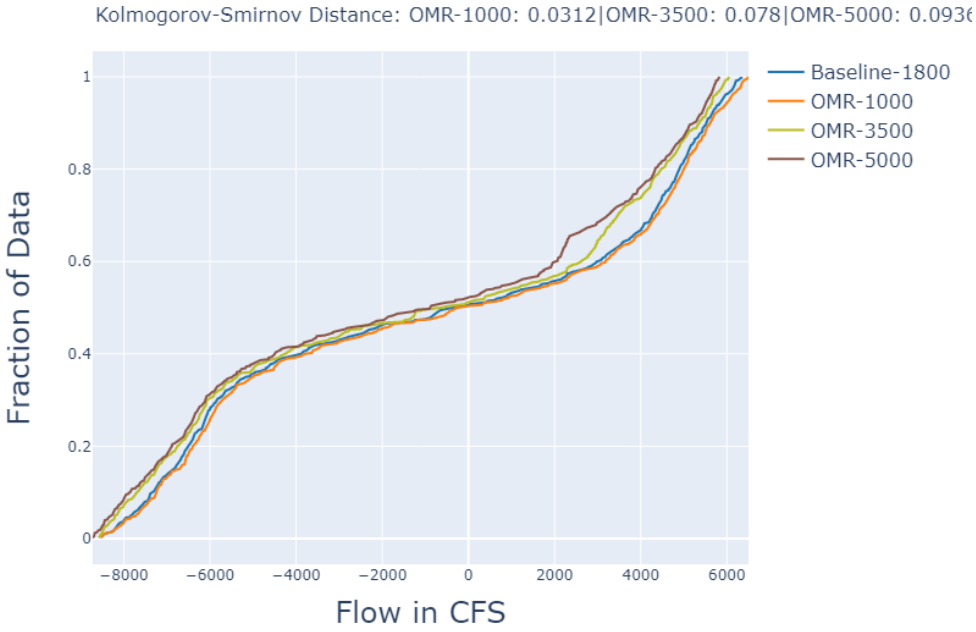


a)

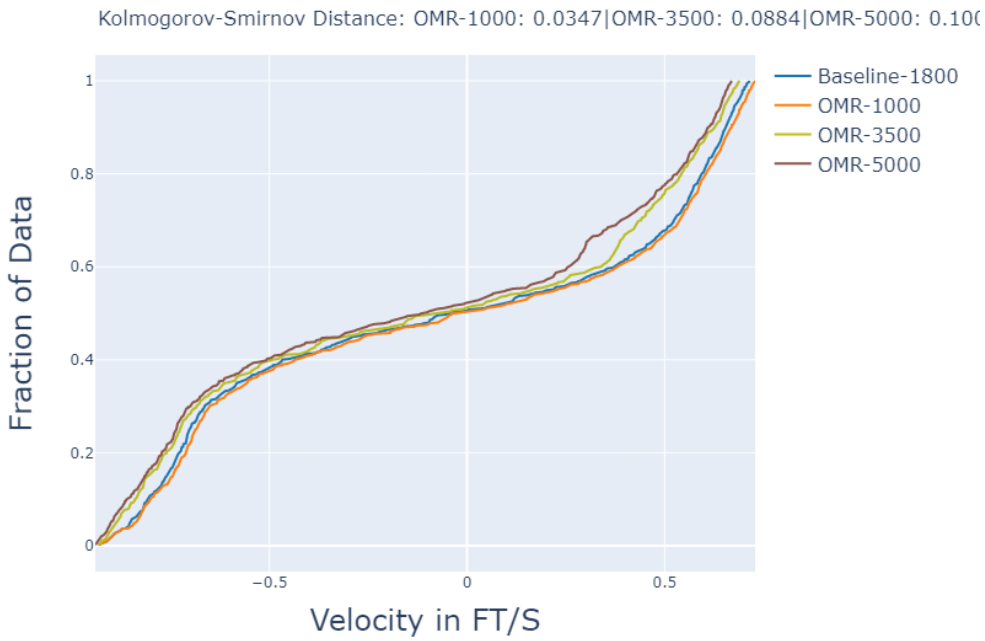


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

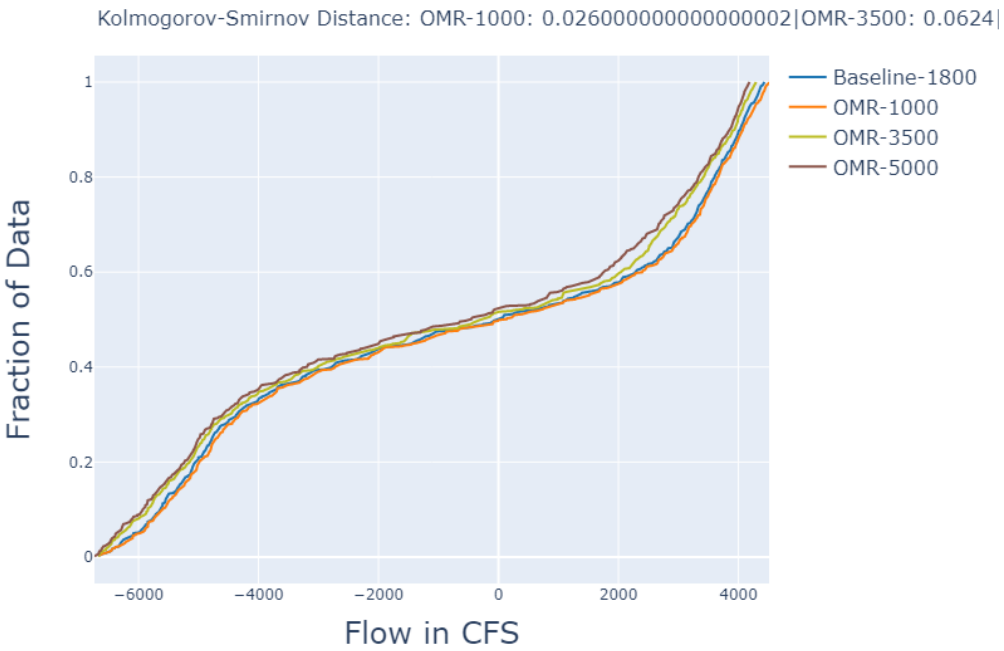


a)

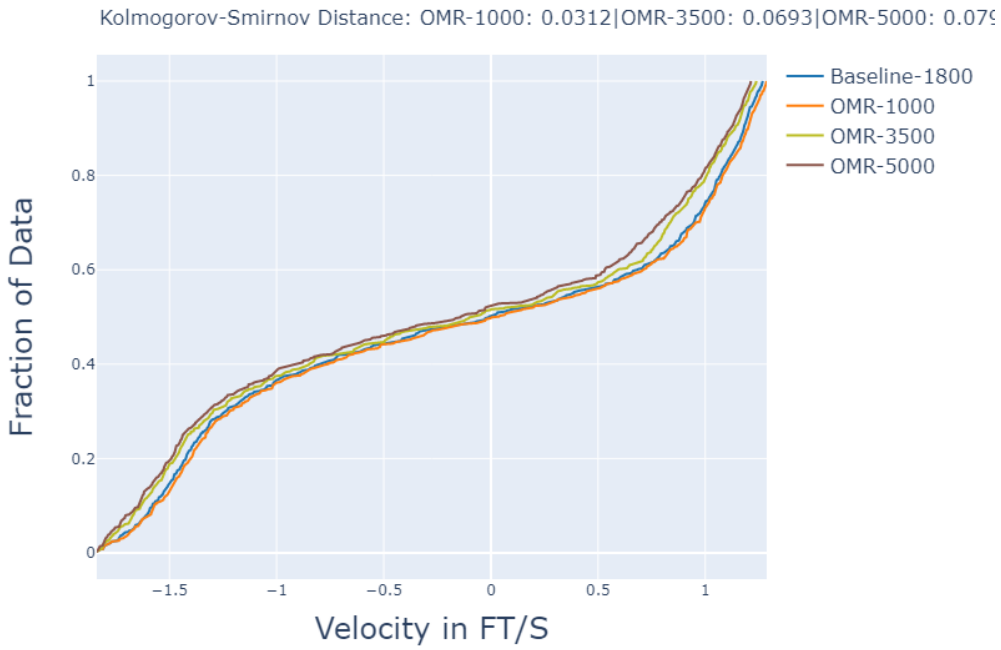


b)

Old River north of Railroad Cut (Channel 107). (a) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs, -3,500 cfs, and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

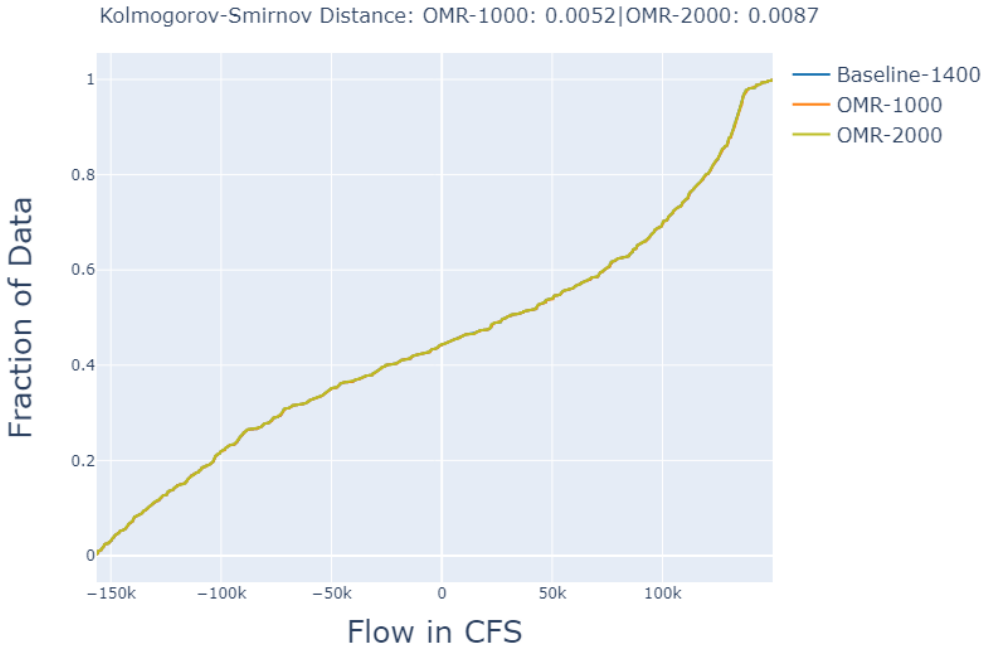
4/14/2020

DWR baseline forecast 04/07/2020 to 04/27/2020
CVO updated baseline and Scenarios on 04/13/2020.
CVO OMR action taking place on 04/15/2020 to 04/24/2020
DSM2 modeling results valid 04/15/2020 to 04/21/2020

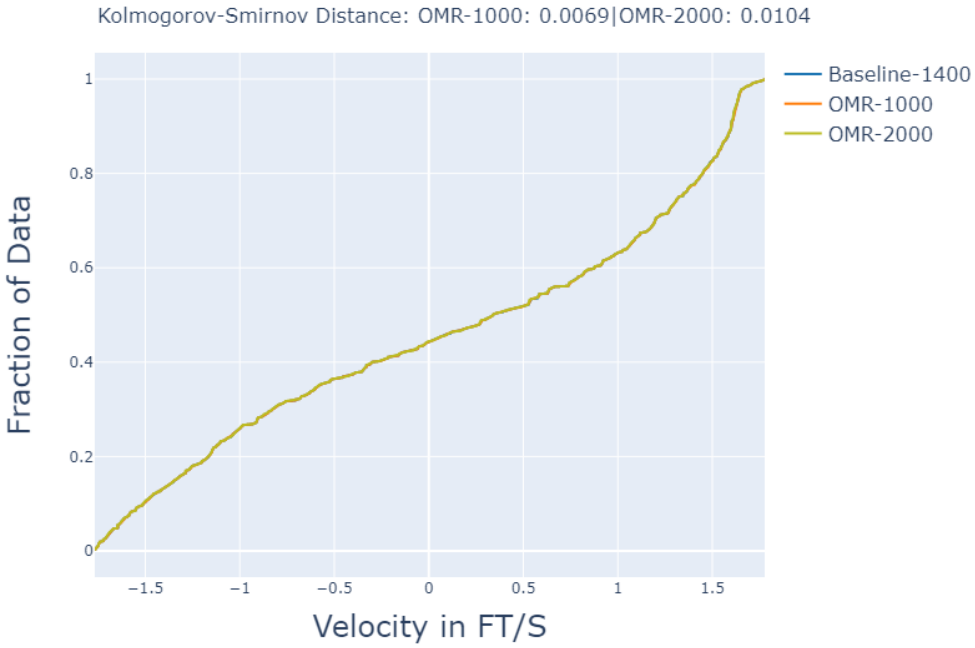
Baseline: -1,400 cfs OMR
Scenario -1,000: -1,000 cfs OMR
Scenario –2,000: -2,000 cfs OMR

DSM2 modeling for April 15 through April 21 shows little variation in modeled hydrodynamic conditions (Attachment A – figures and tables). This week three scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,400 cfs, hereafter referred to as Scenario -1,000) to –2,000 cfs (increasing pumping from OMR -1,400, hereafter referred to as Scenario –2,000).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

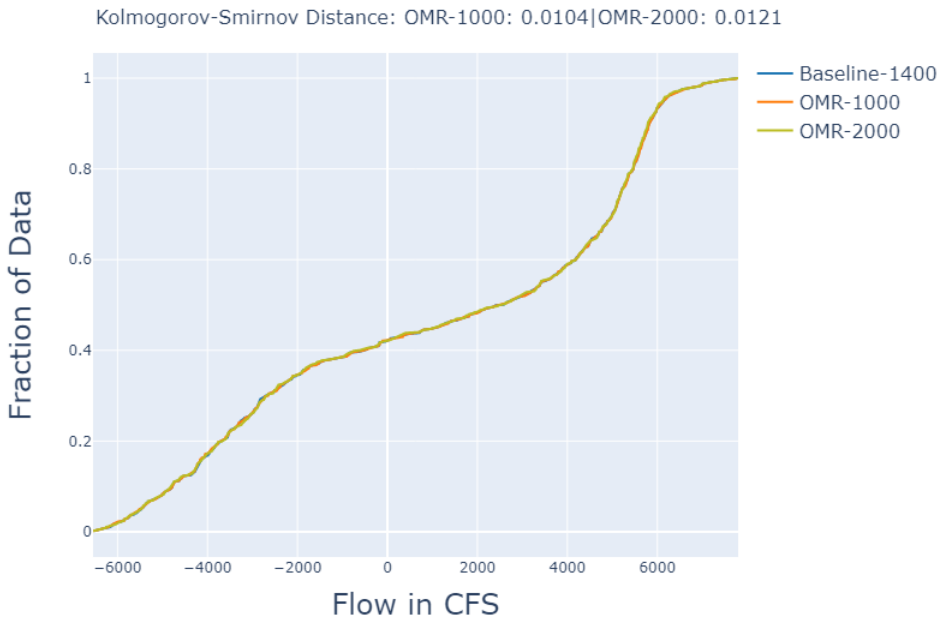


a)

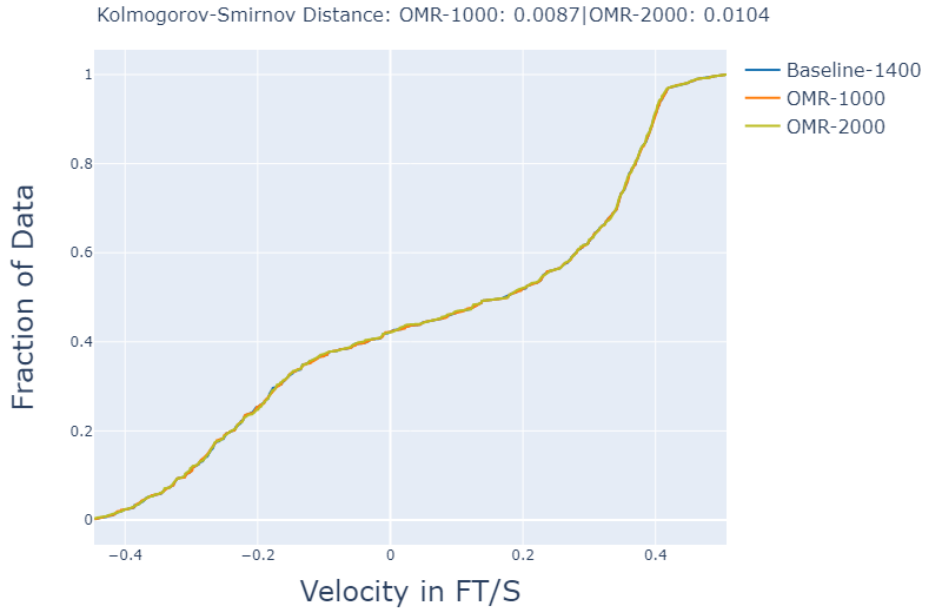


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

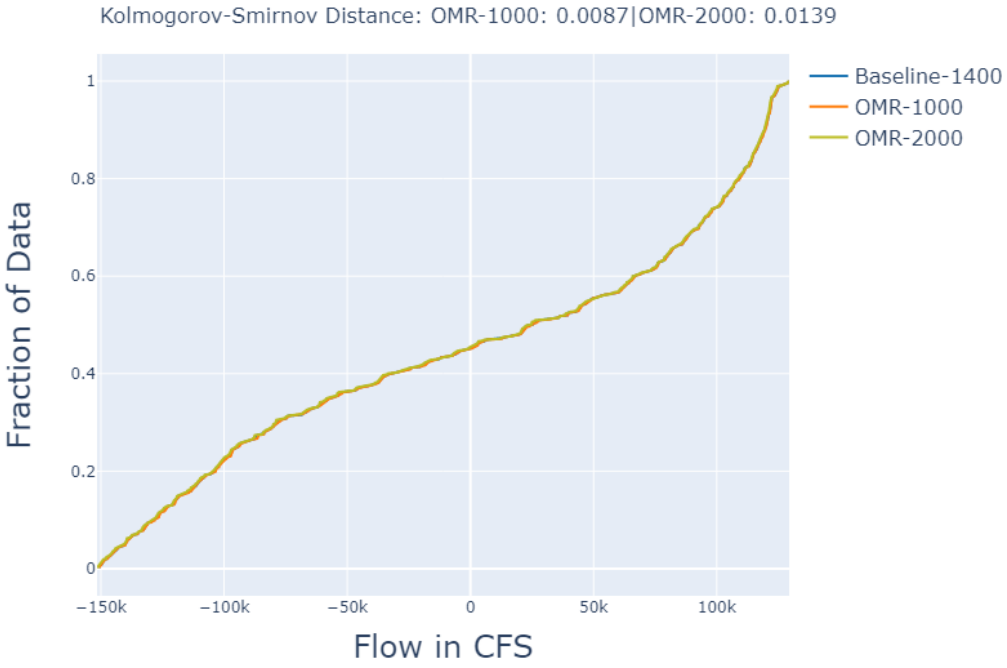


a)

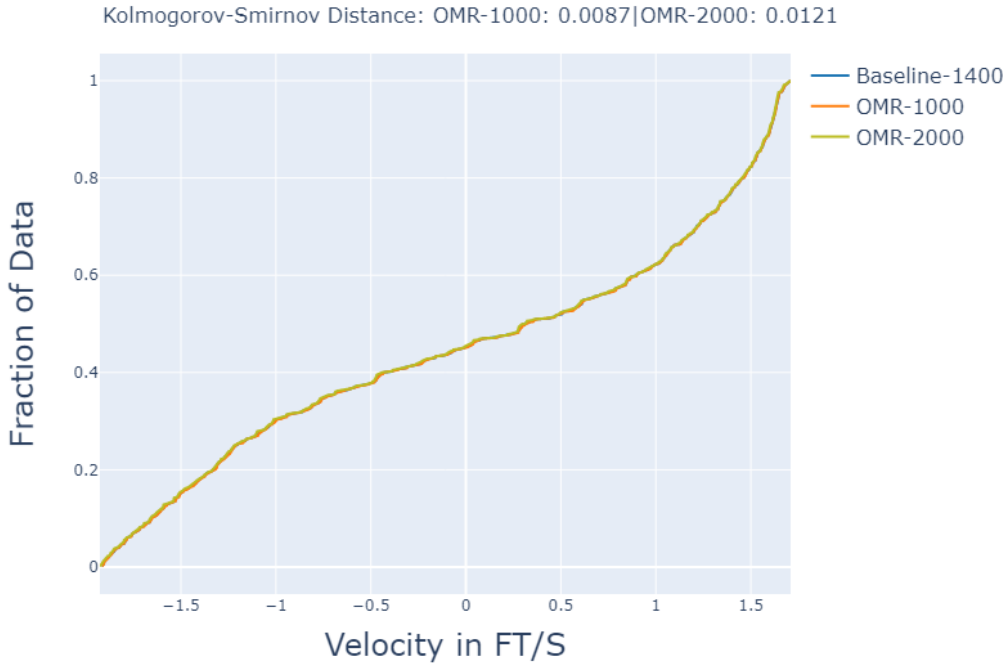


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



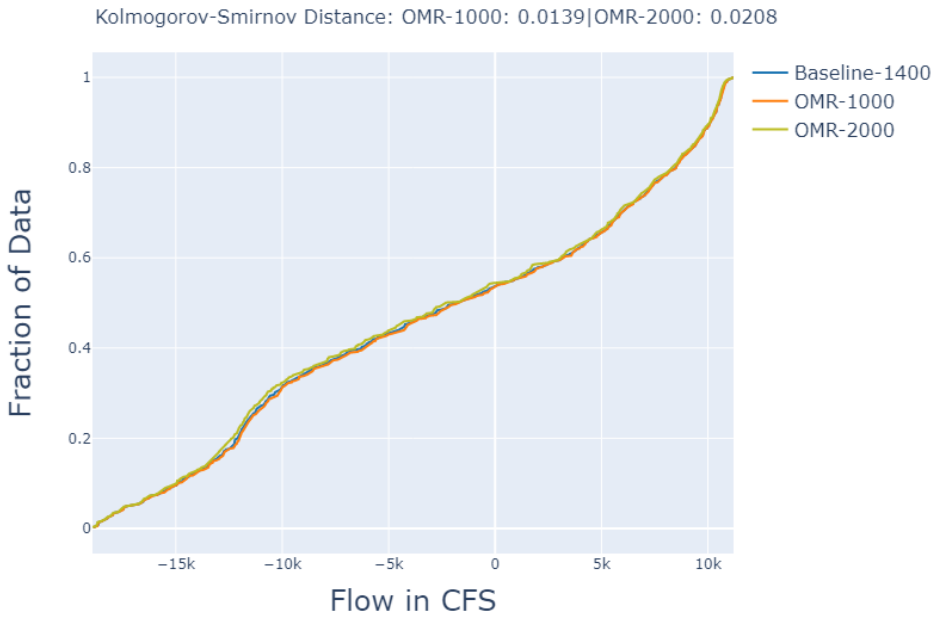
a)



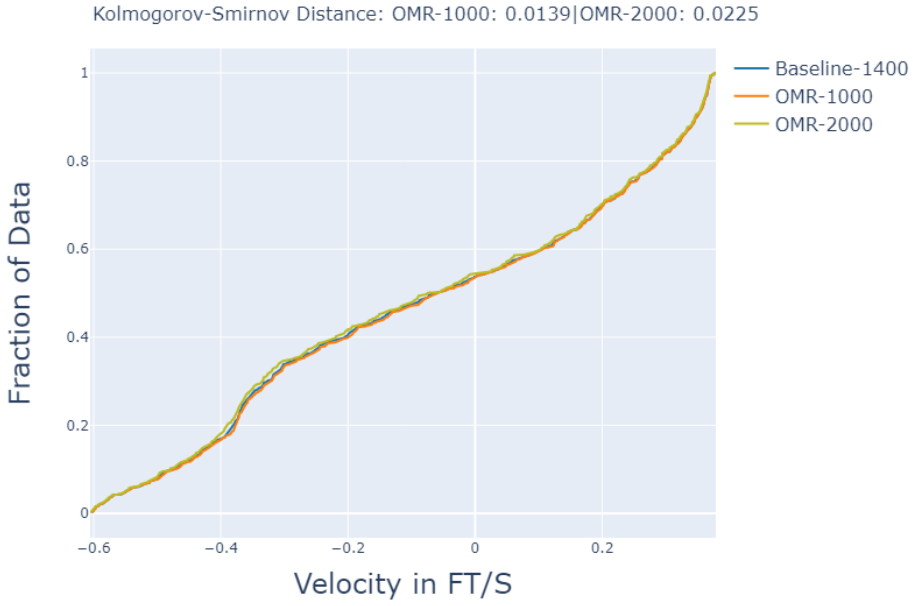
b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute

time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

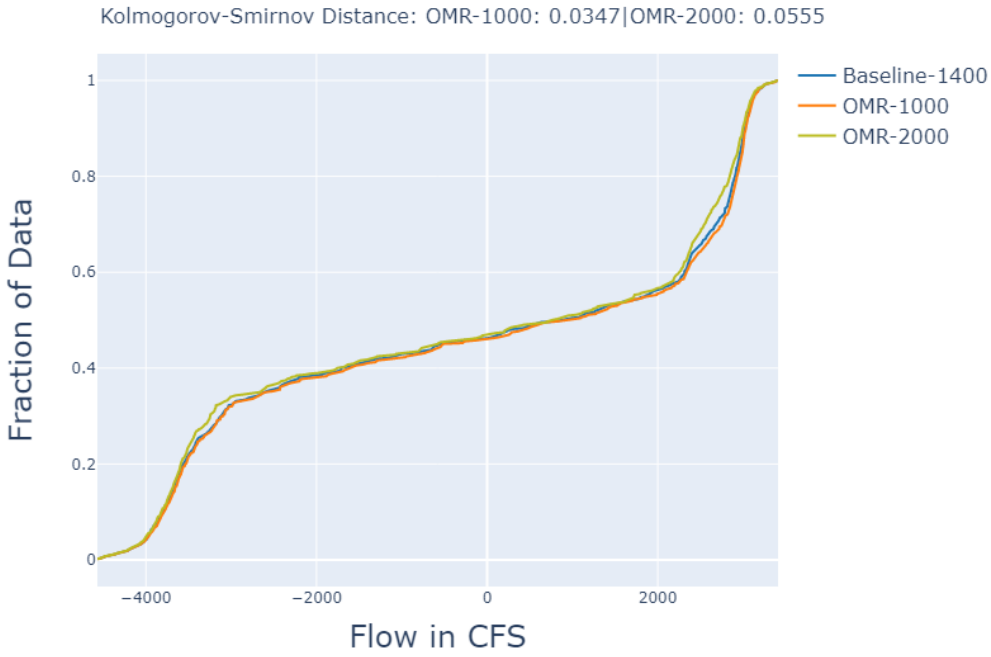


a)

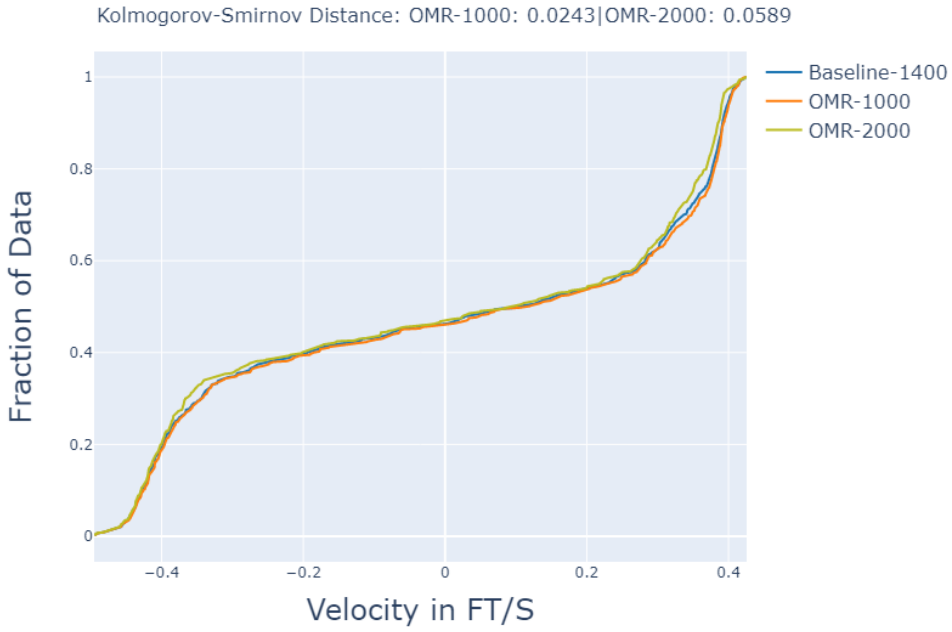


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

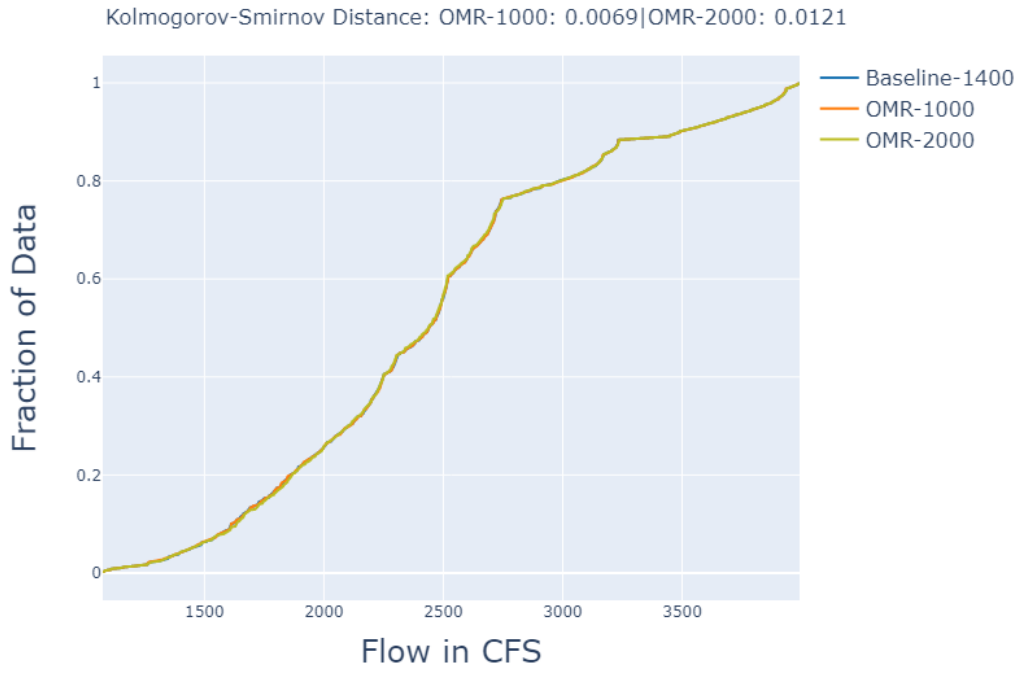


a)

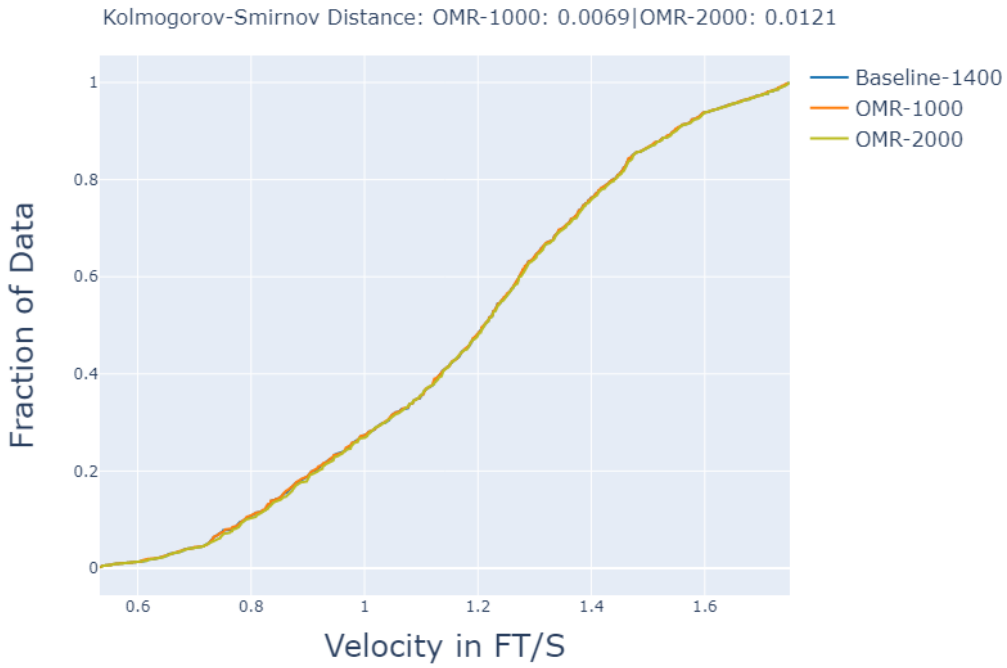


b)

Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



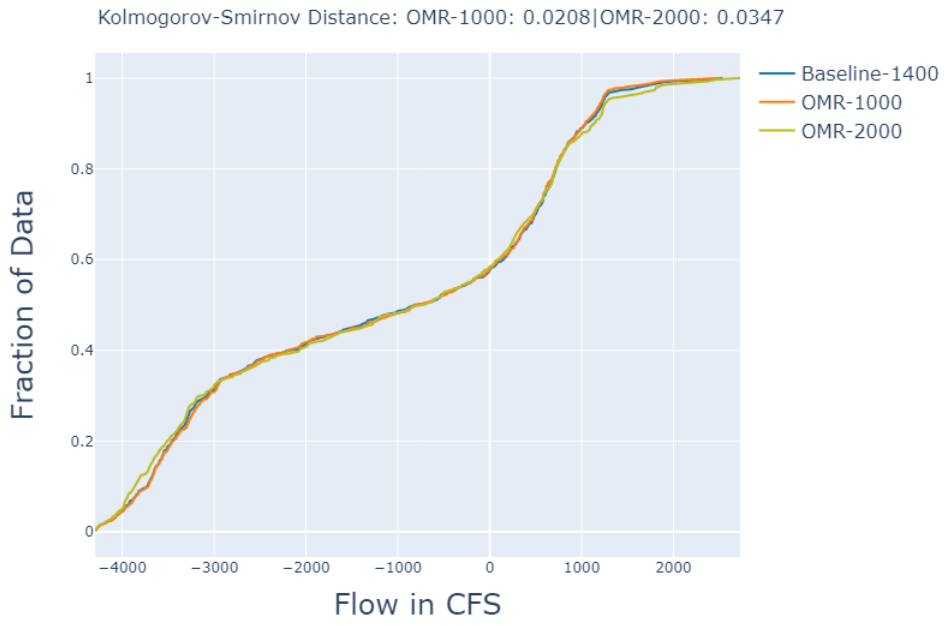
a)



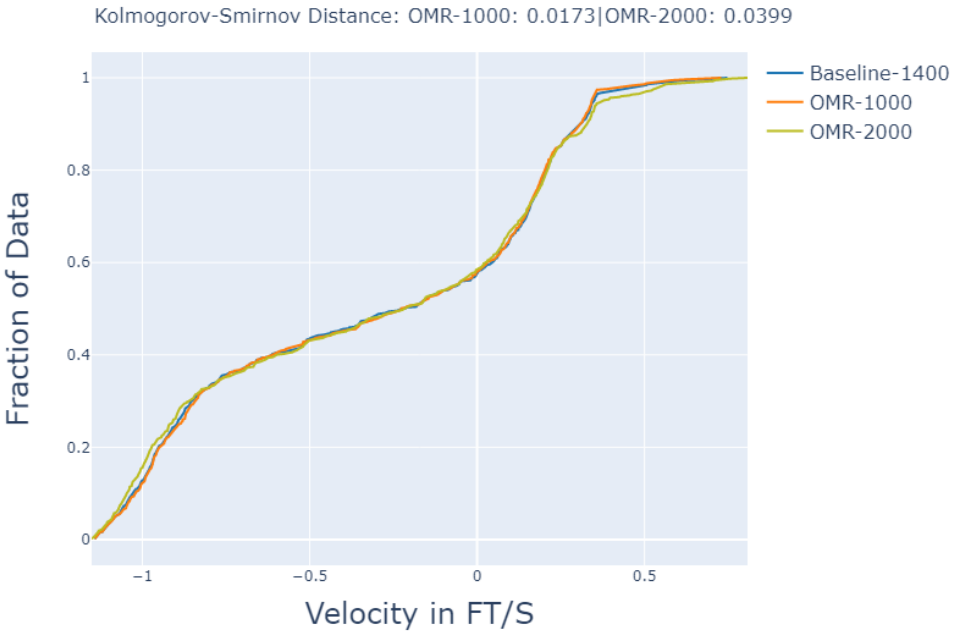
b)

Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b)

Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

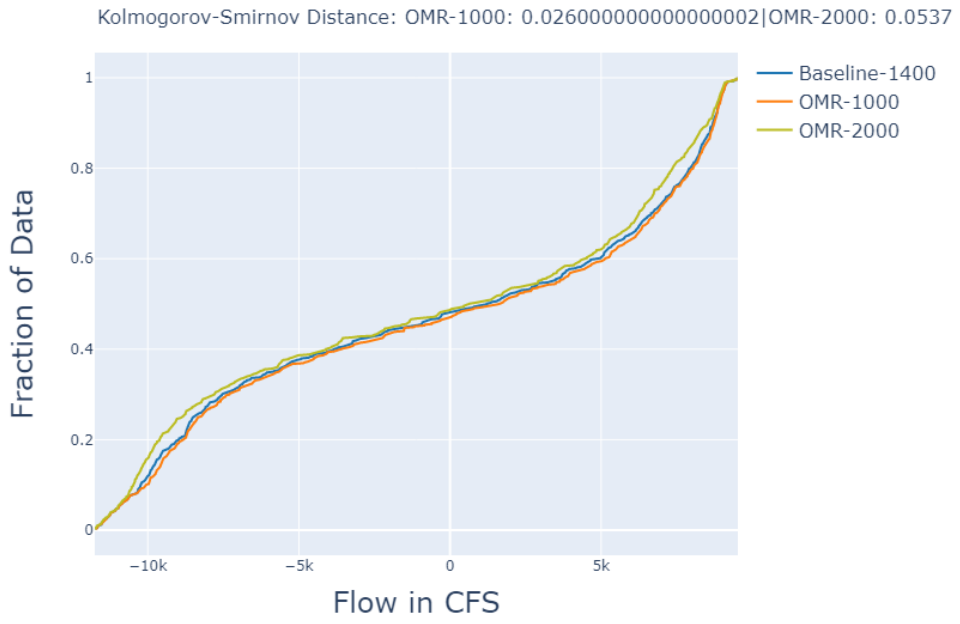


a)

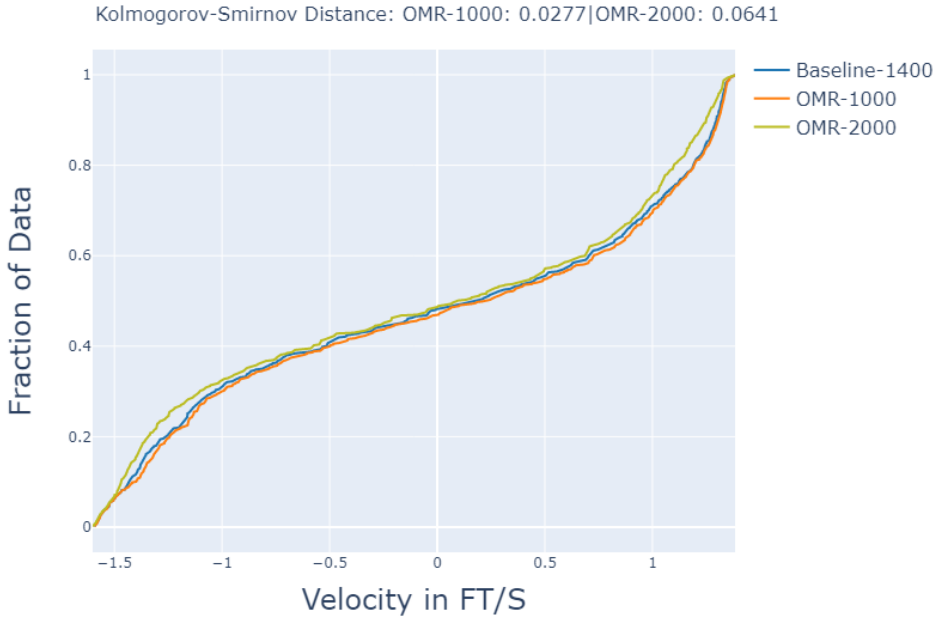


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

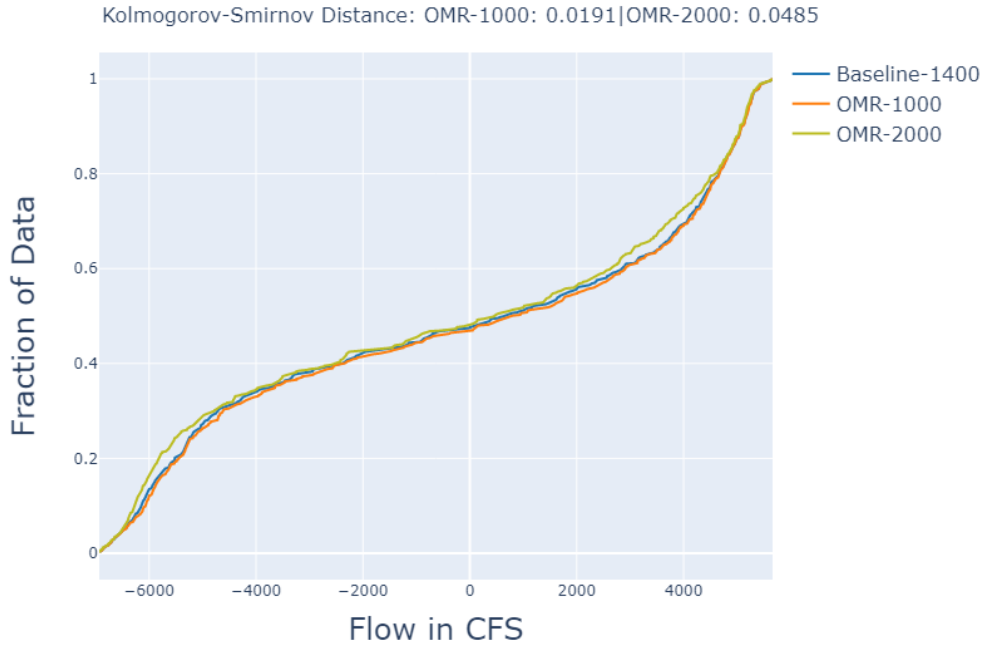


a)

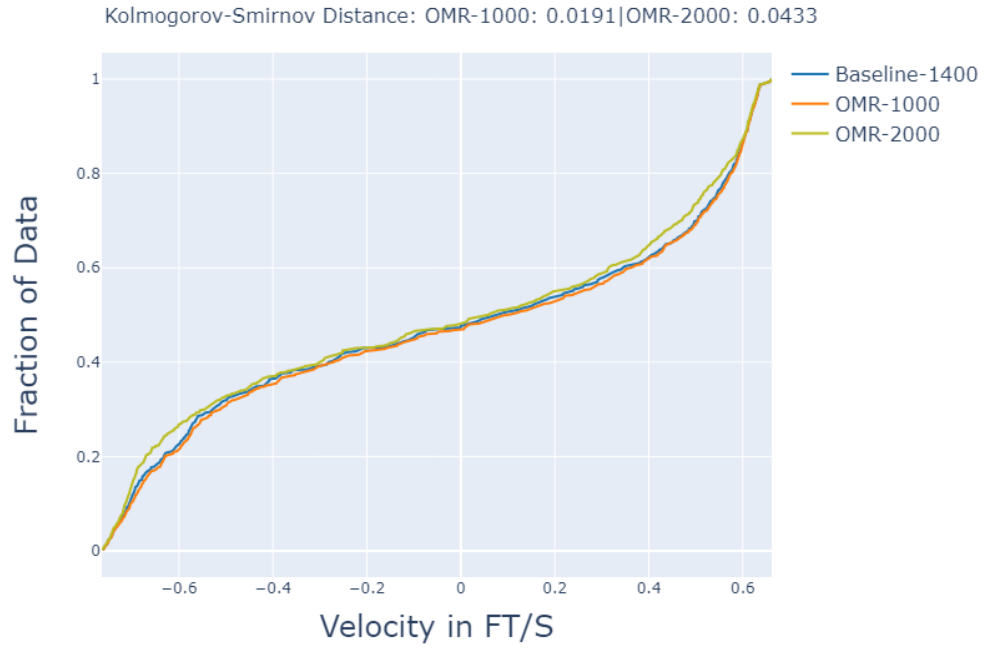


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

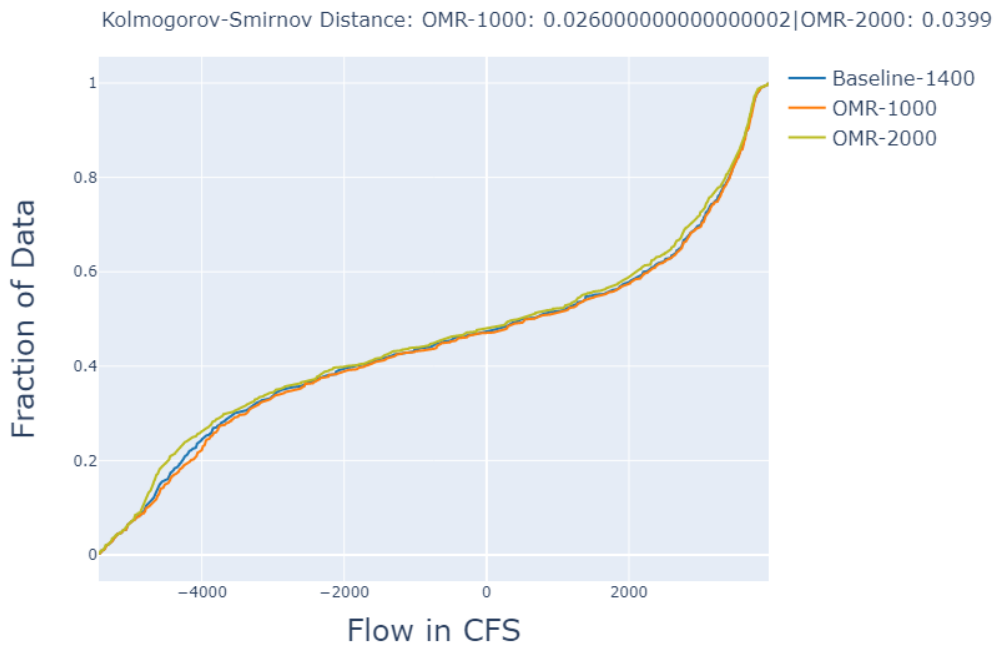


a)

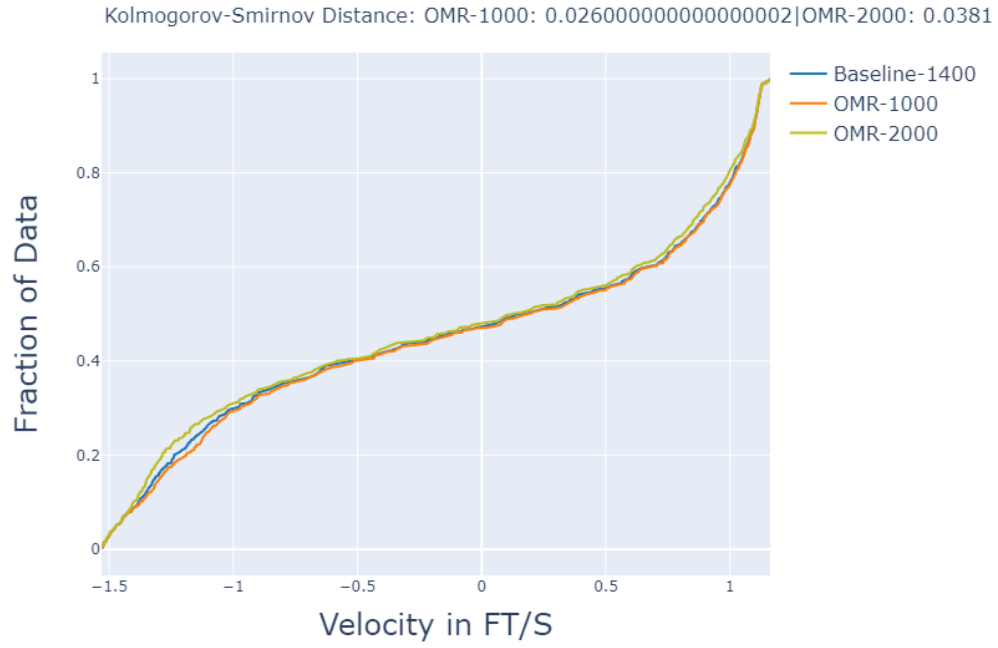


b)

Old River north of Railroad Cut (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

4/21/2020

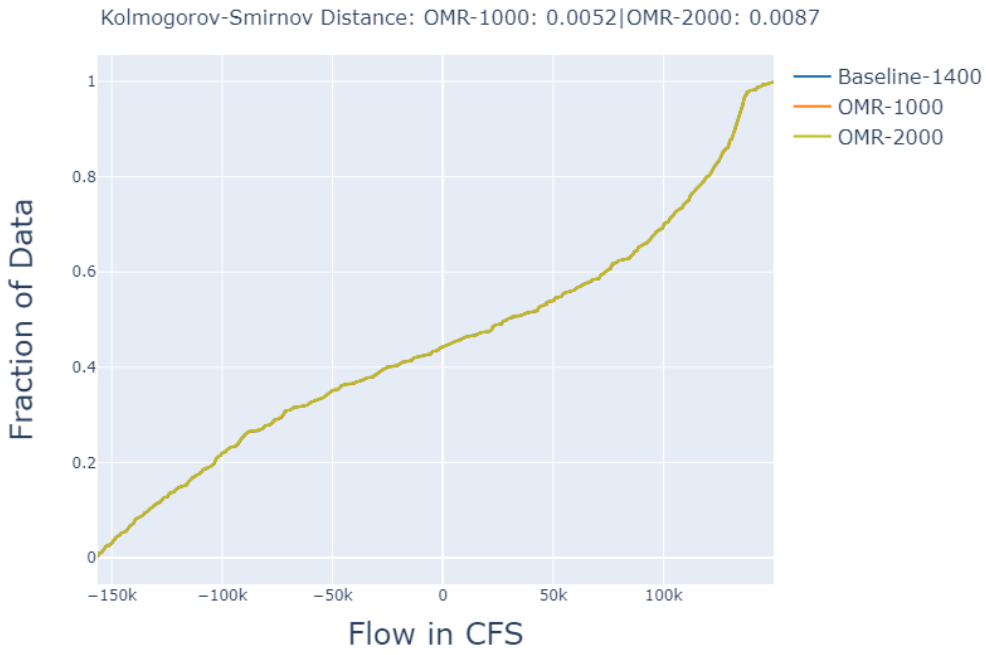
DWR baseline forecast 04/14/2020 to 05/04/2020

CVO updated baseline and Scenarios on 04/20/2020.
CVO OMR action taking place on 04/22/2020 to 05/01/2020
DSM2 modeling results valid 04/22/2020 to 04/28/2020

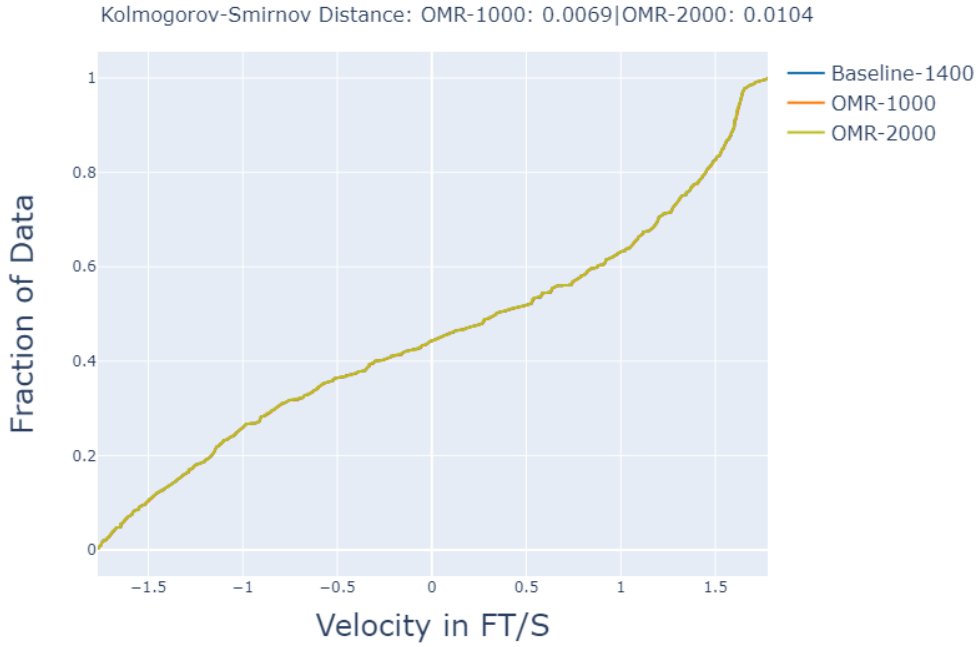
Baseline: -1,400 cfs OMR
Scenario -1,000: -1,000 cfs OMR
Scenario –2,000: -2,000 cfs OMR

DSM2 modeling for April 22 through April 28 shows little variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,400 cfs, hereafter referred to as Scenario -1,000) to –2,000 cfs (increasing pumping from OMR -1,400, hereafter referred to as Scenario –2,000).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

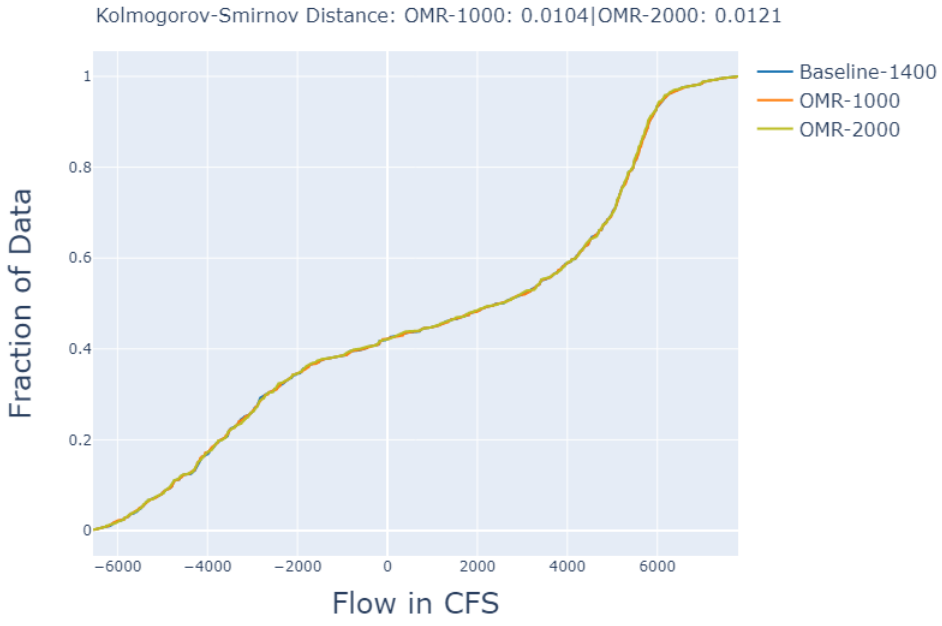


a)

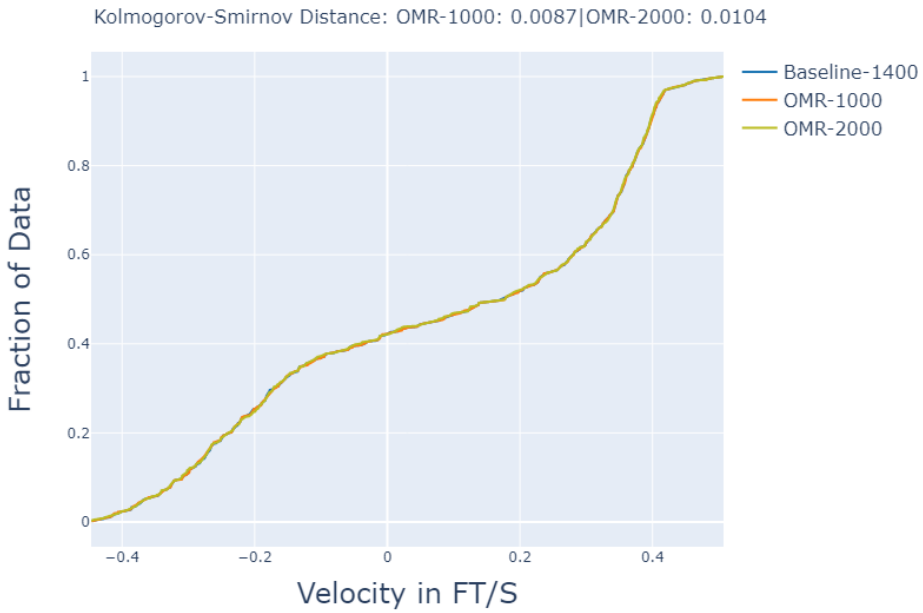


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

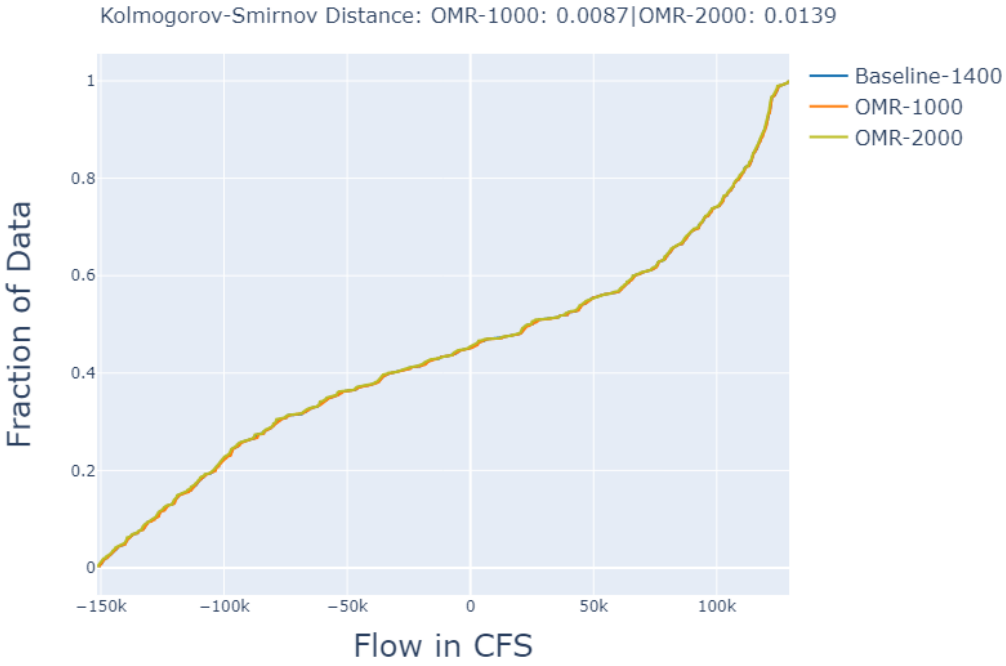


a)

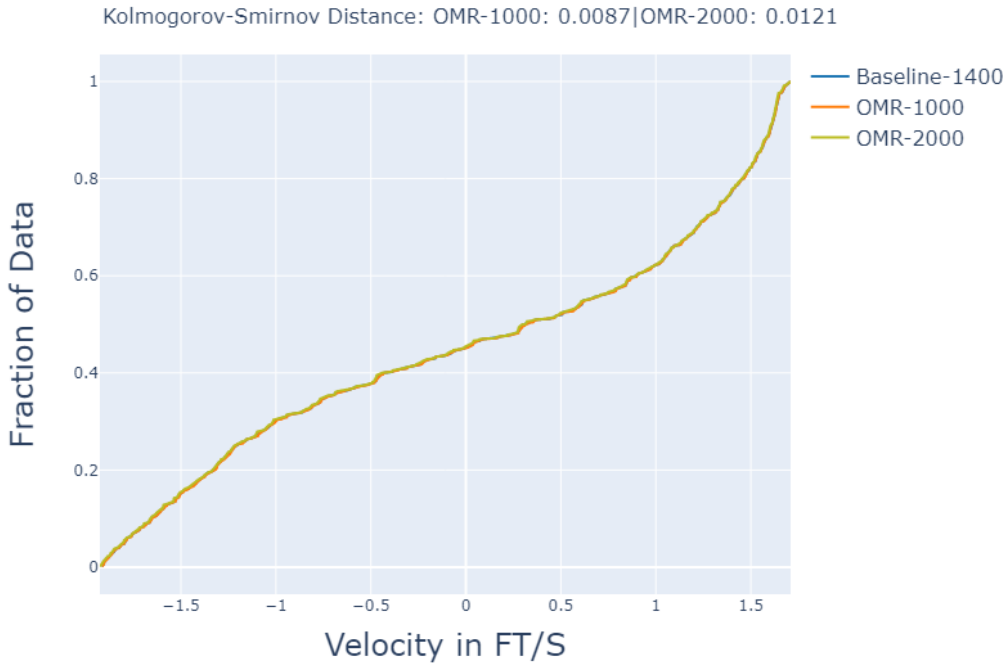


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

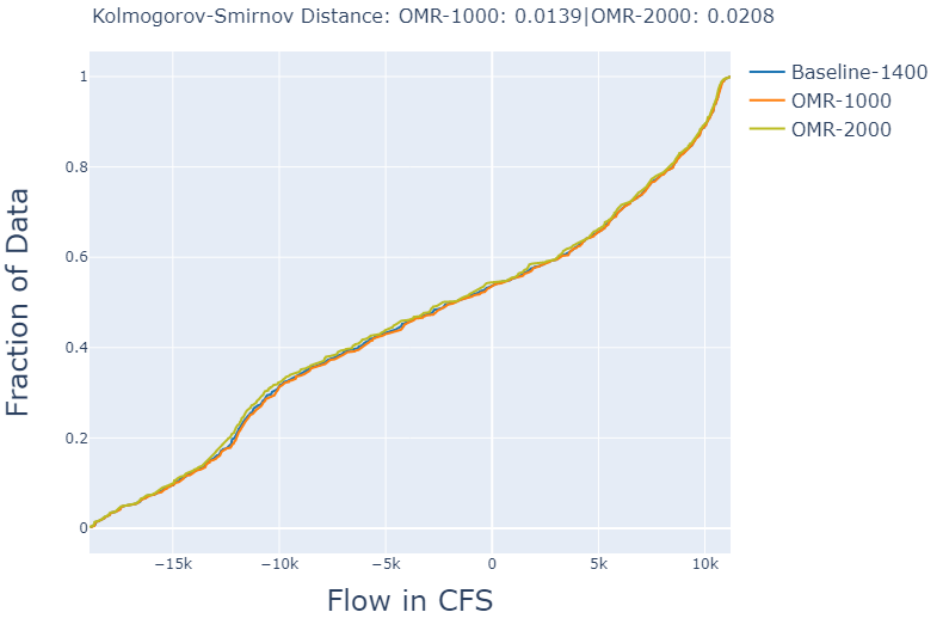


a)

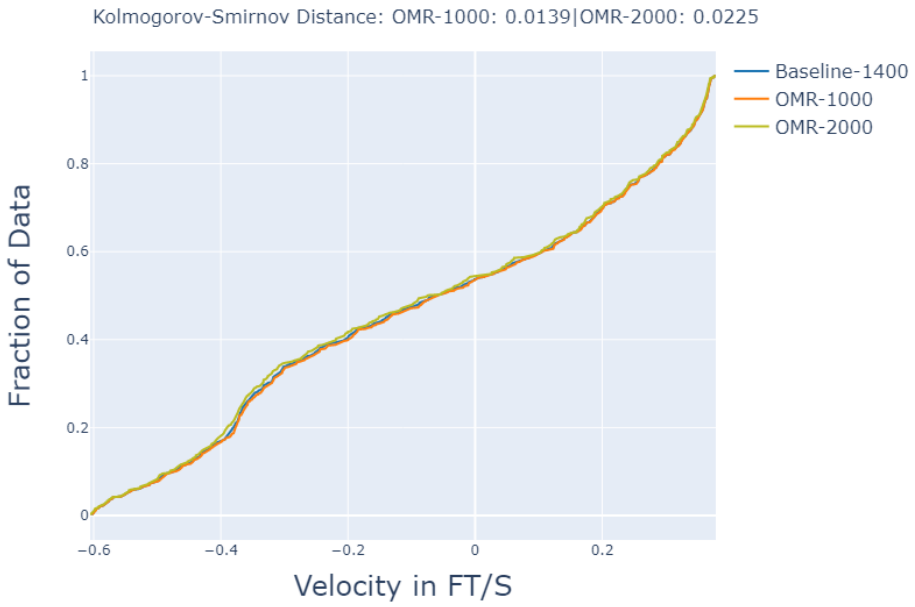


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

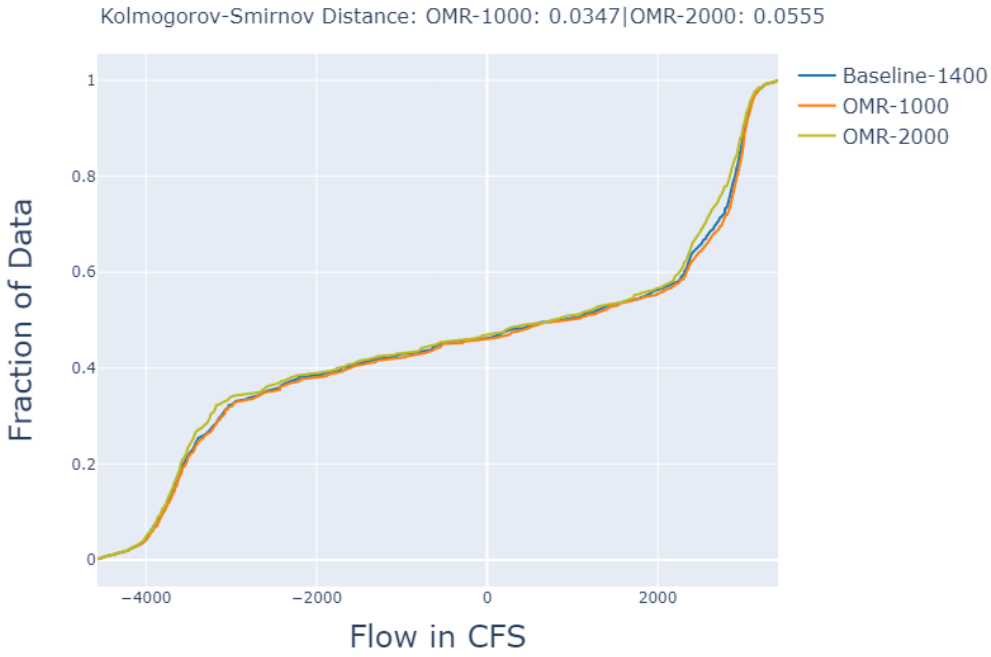


a)

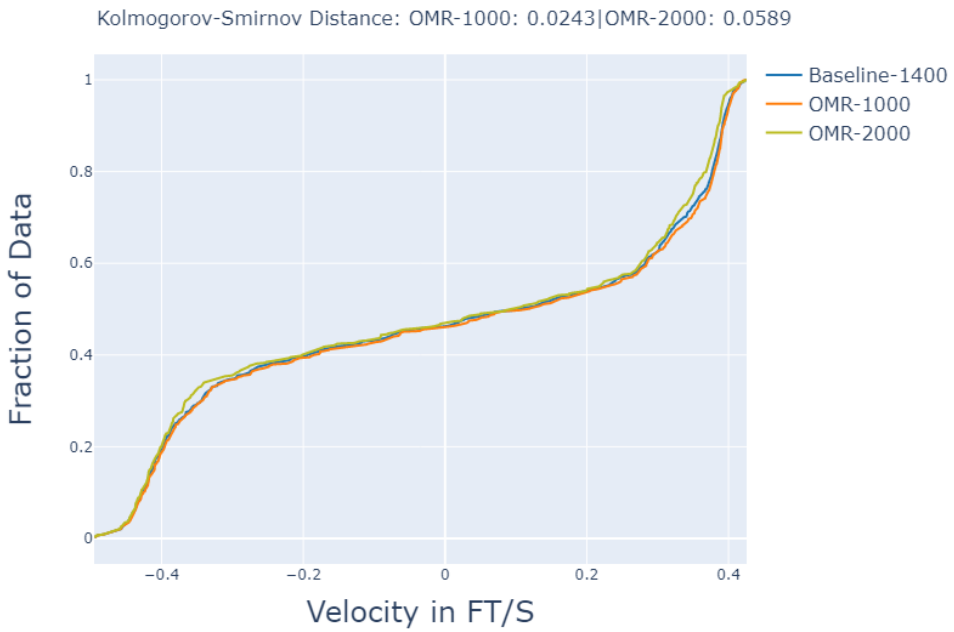


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

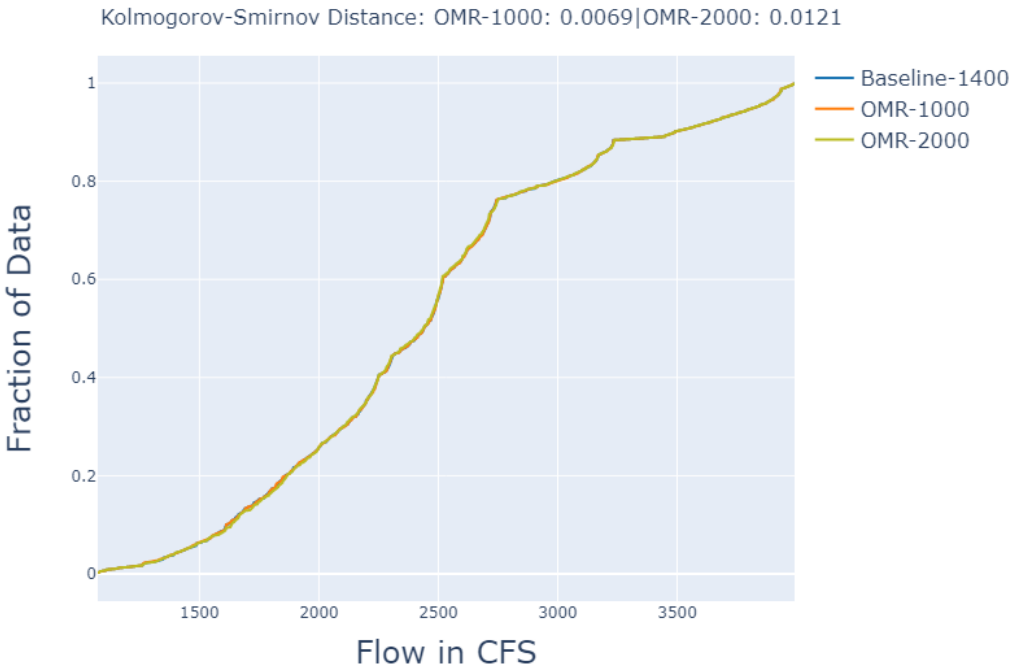


a)

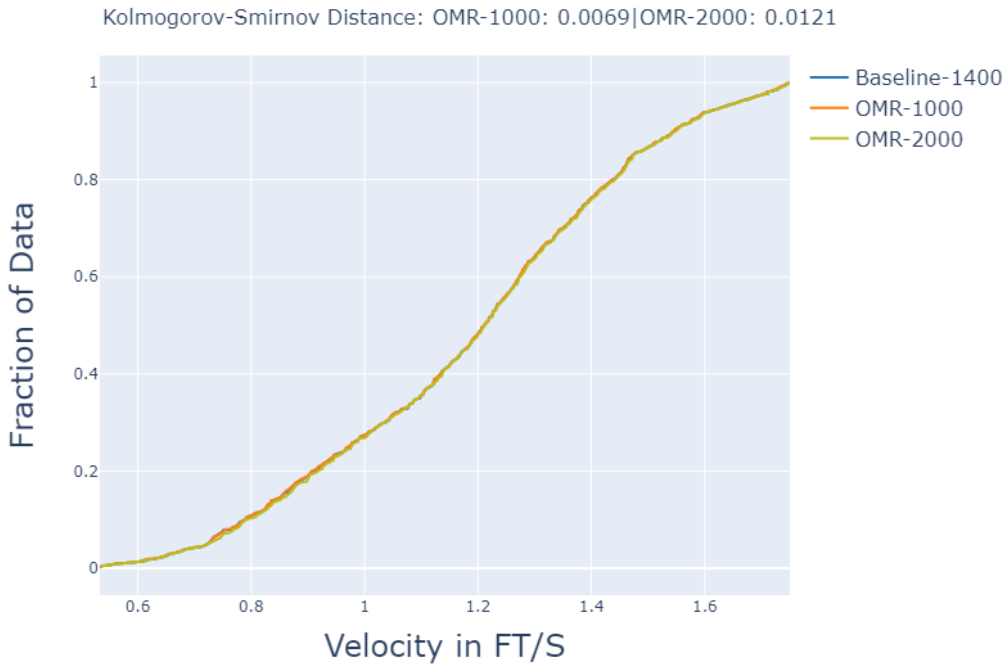


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

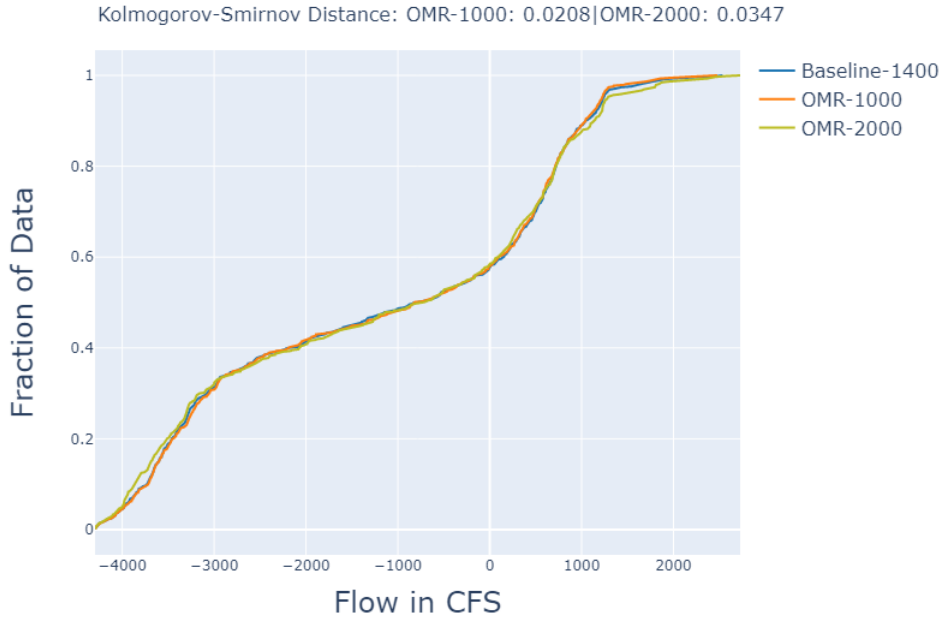


a)

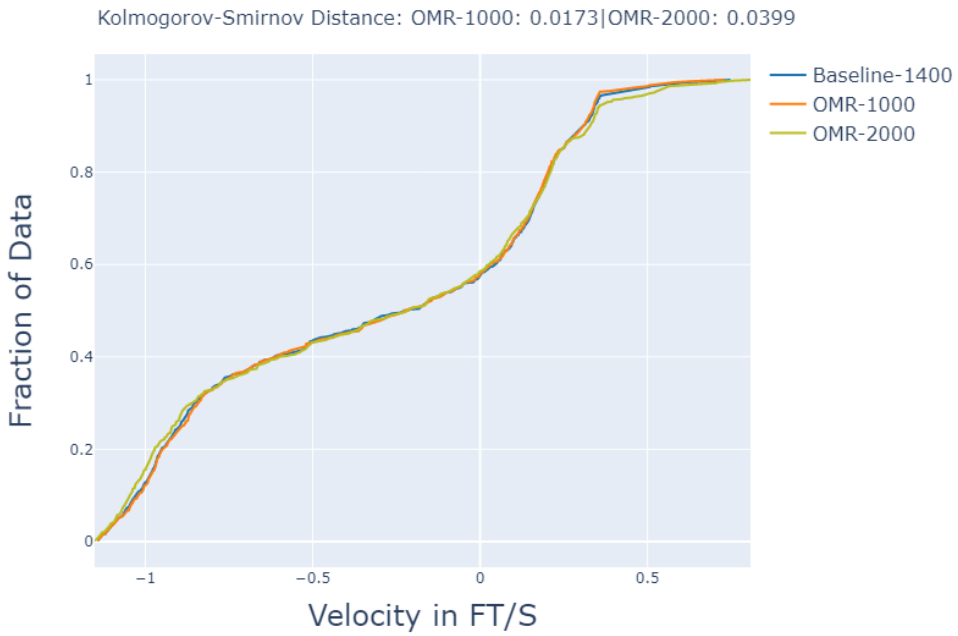


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

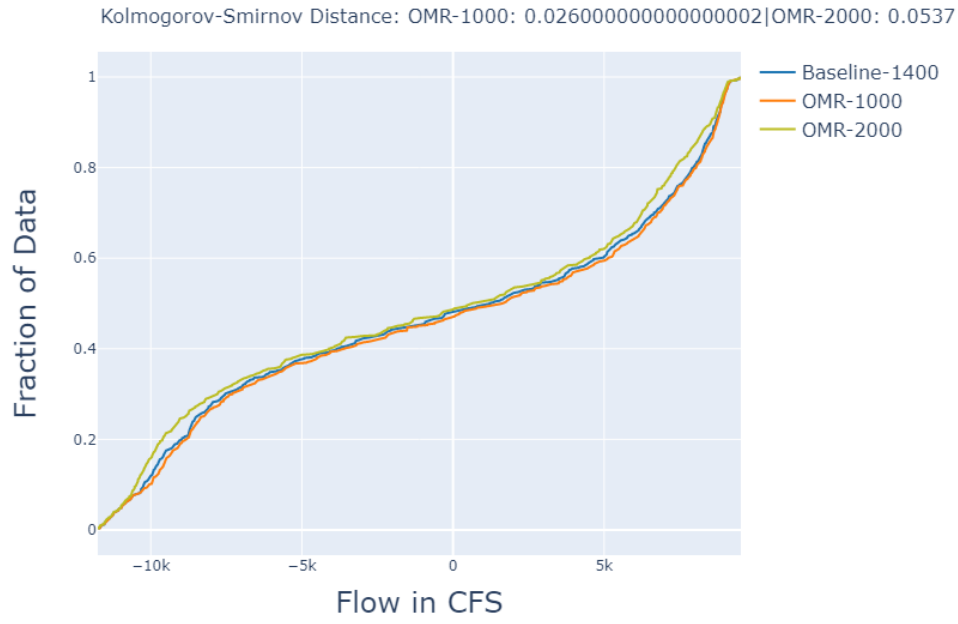


a)

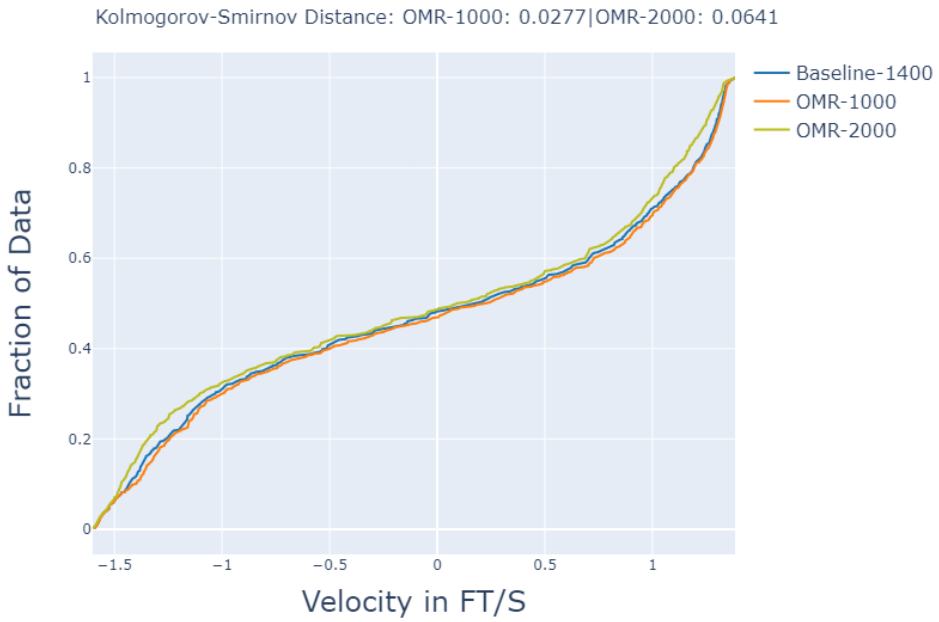


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

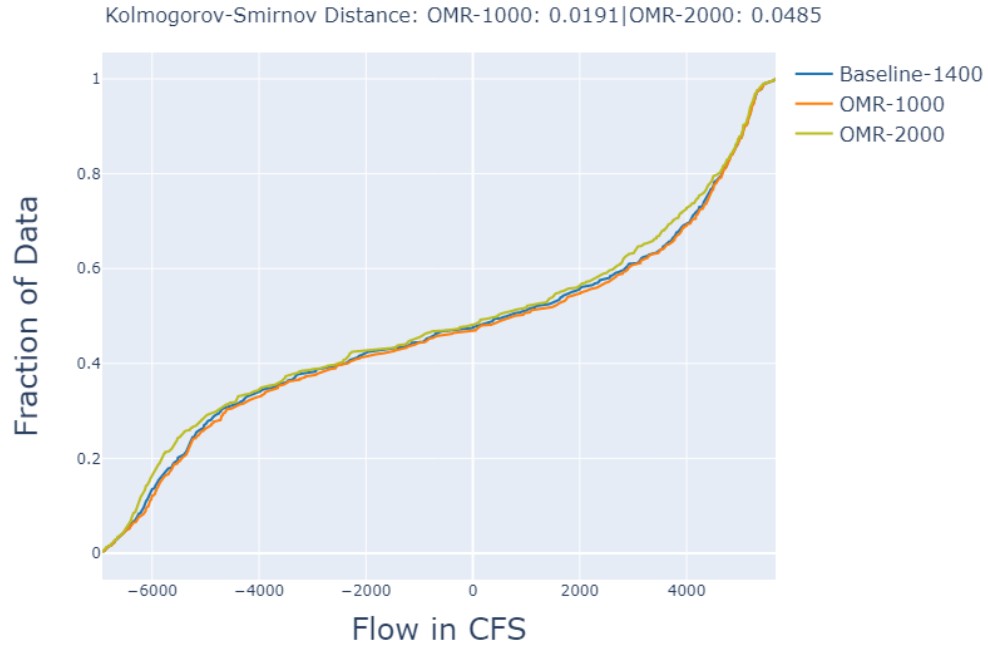


a)

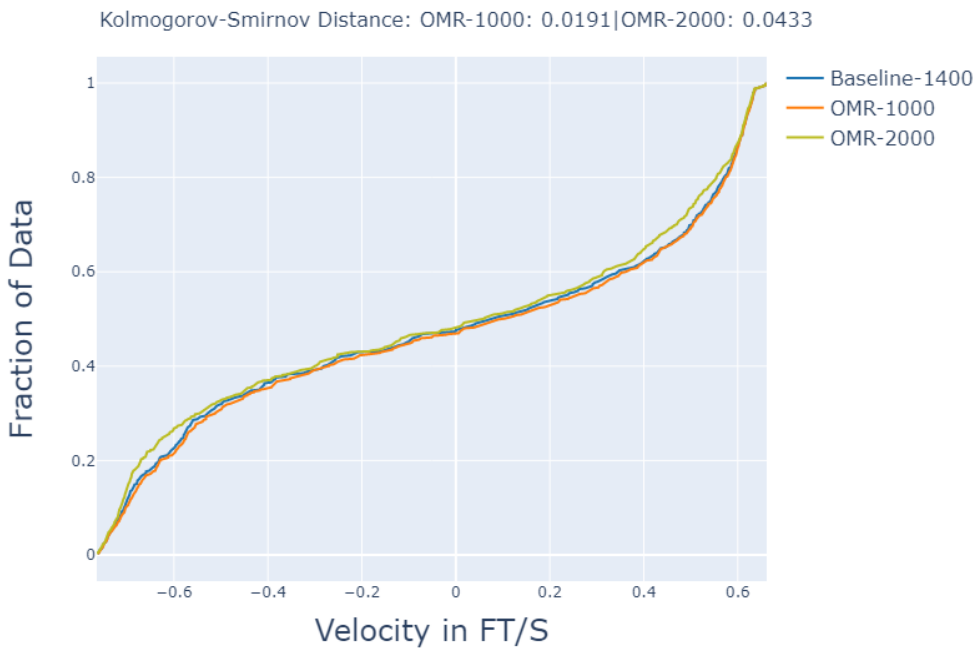


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

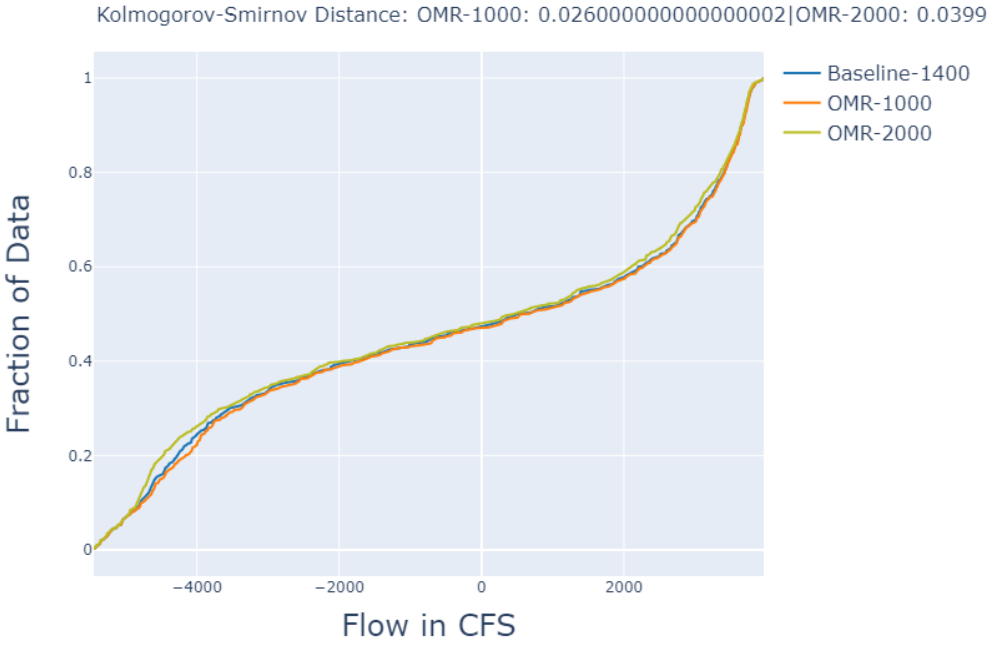


a)

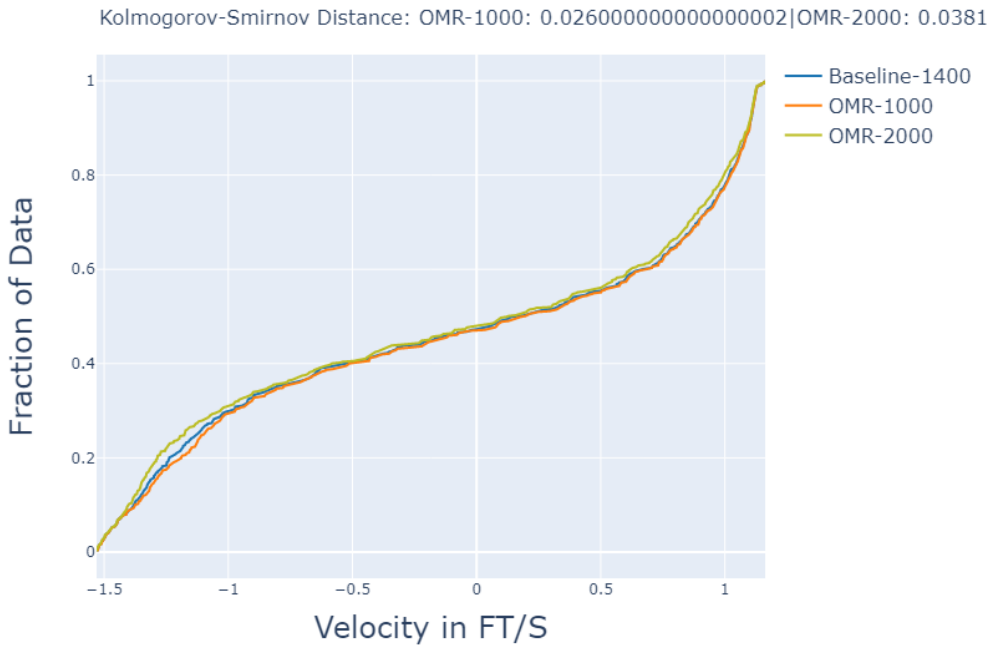


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

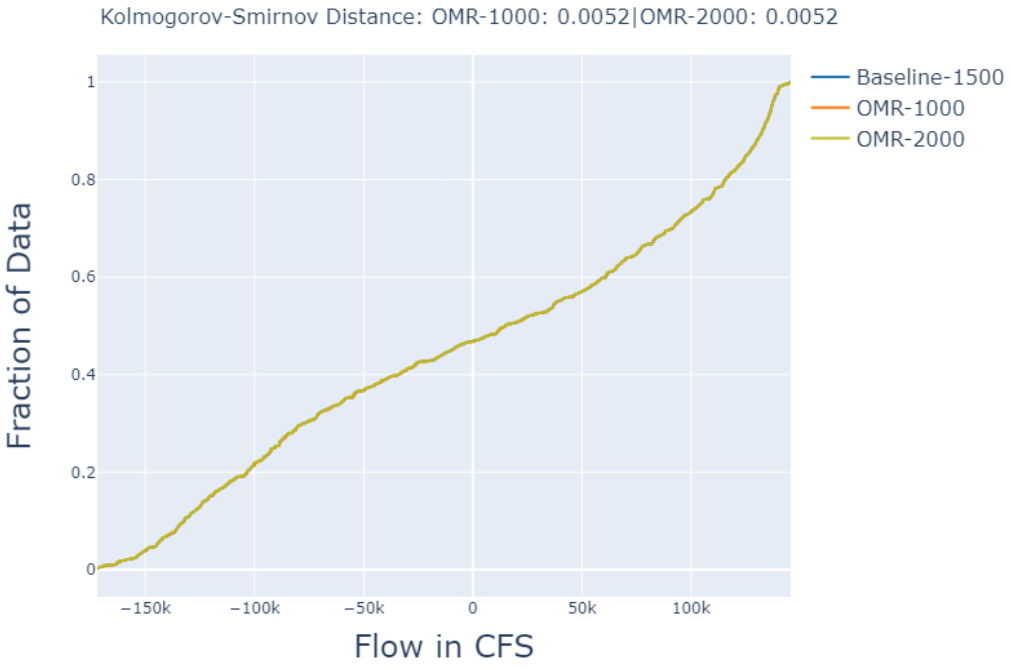
4/28/2020

DWR baseline forecast 04/21/2020 to 05/11/2020
CVO updated baseline and Scenarios on 04/20/2020.
CVO OMR action taking place on 04/29/2020 to 05/04/2020
DSM2 modeling results valid 04/29/2020 to 05/05/2020

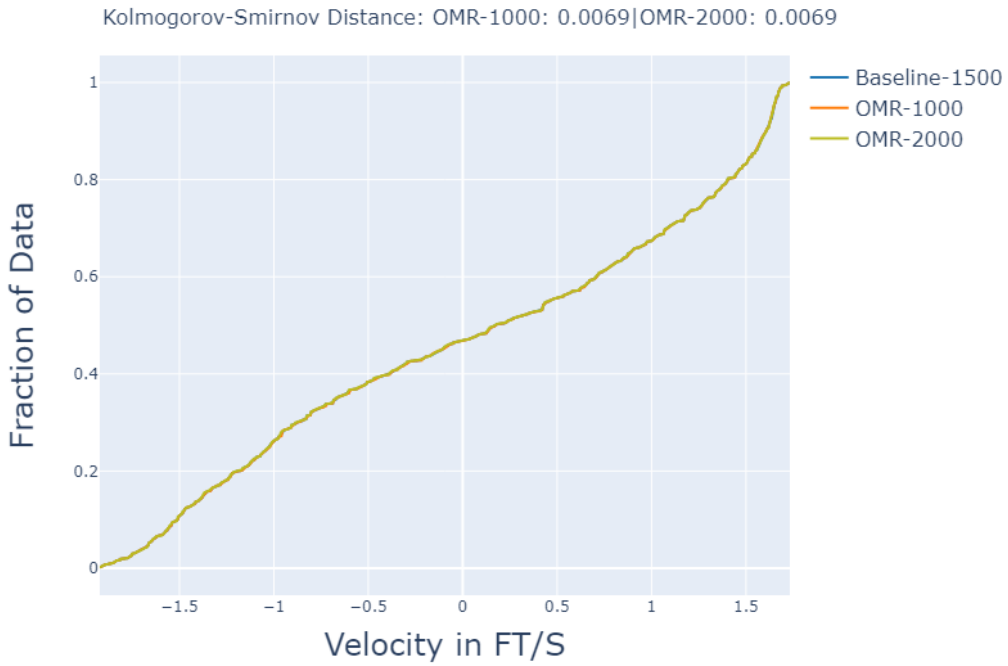
Baseline:	–1,500 cfs OMR
Scenario –1,000:	–1,000 cfs OMR
Scenario –2,000:	–2,000 cfs OMR

DSM2 modeling for April 29 through May 4 shows little variation in modeled hydrodynamic conditions (Attachment A – figures and tables). This week two scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,500 cfs, hereafter referred to as Scenario -1,000 cfs) to –2,000 cfs (increasing pumping from OMR -1,500, hereafter referred to as Scenario –2,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



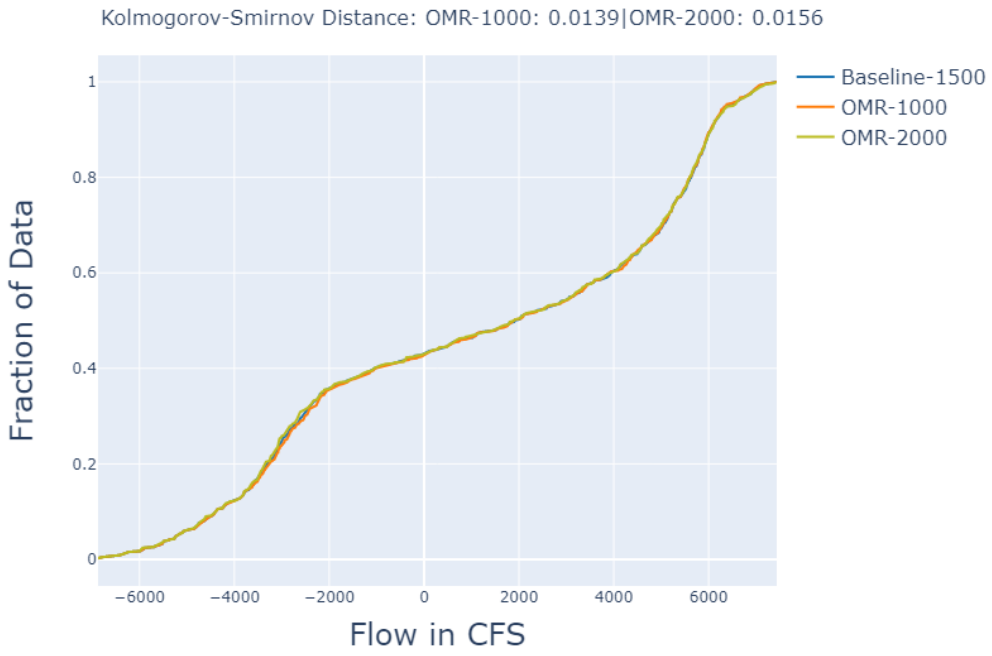
a)



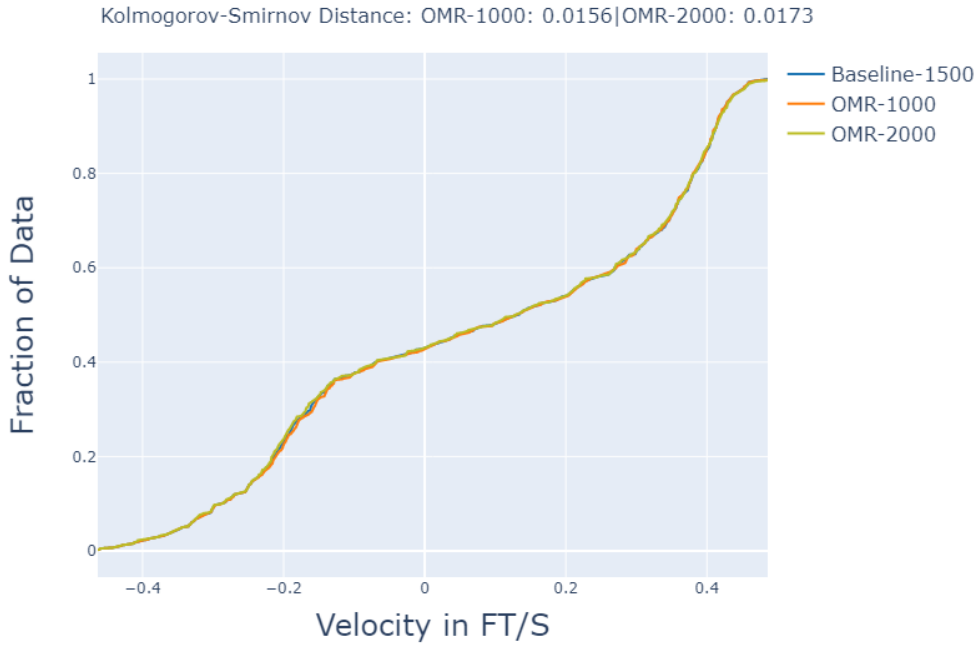
b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage

of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



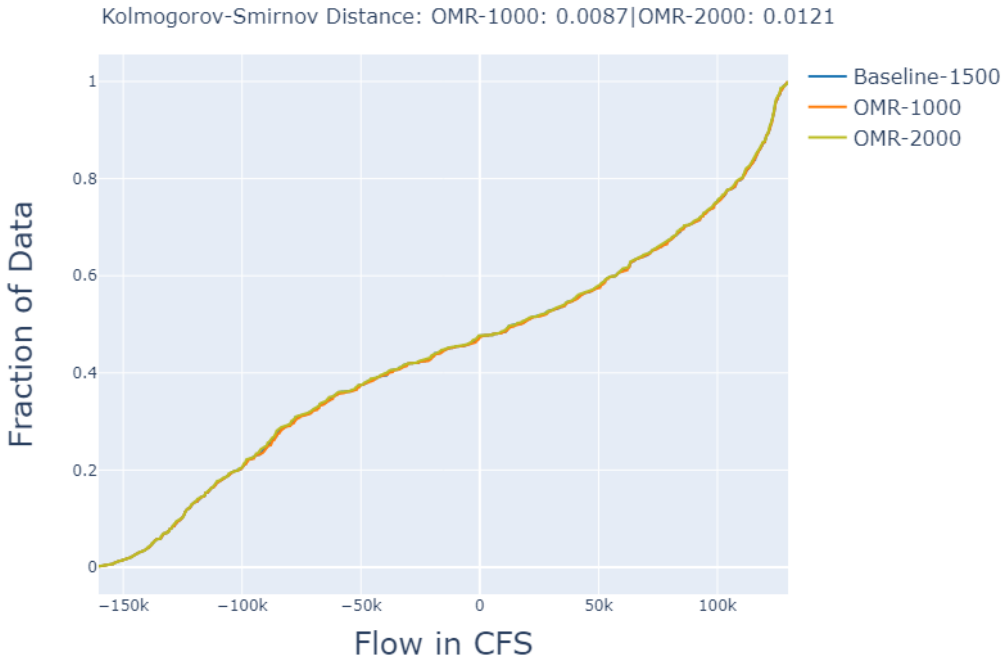
a)



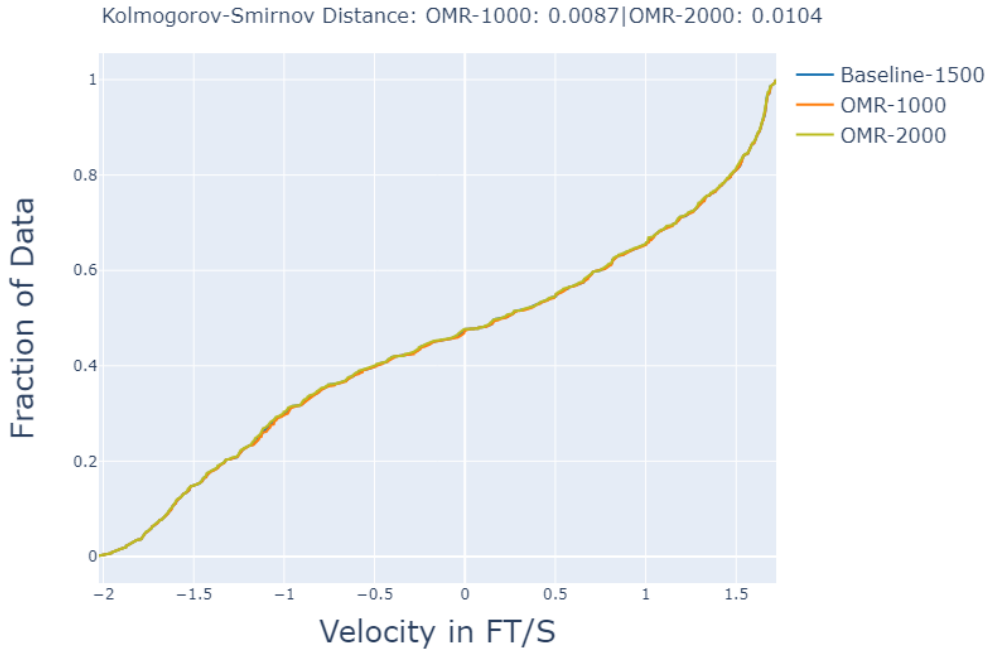
b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



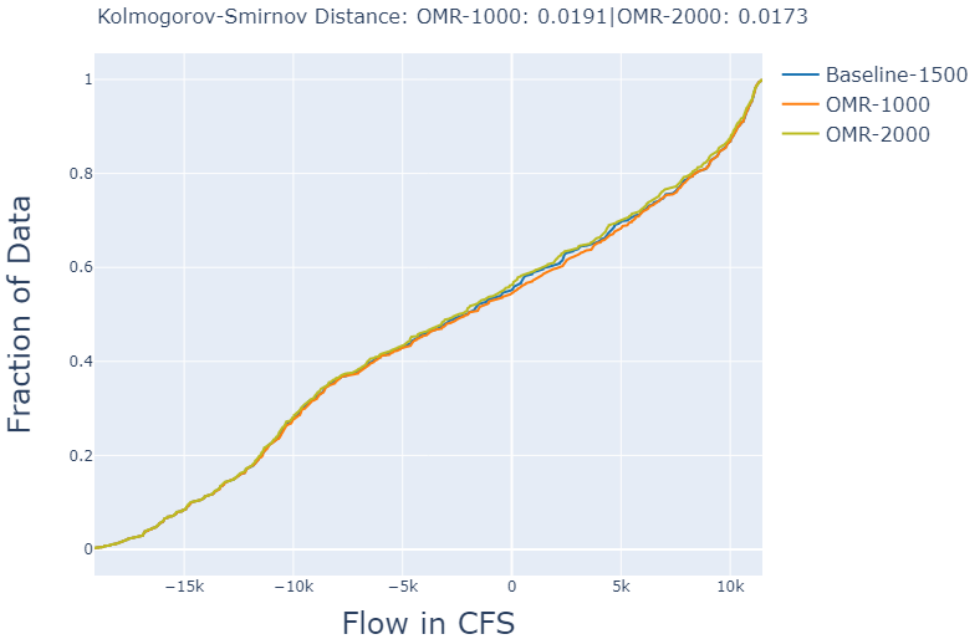
a)



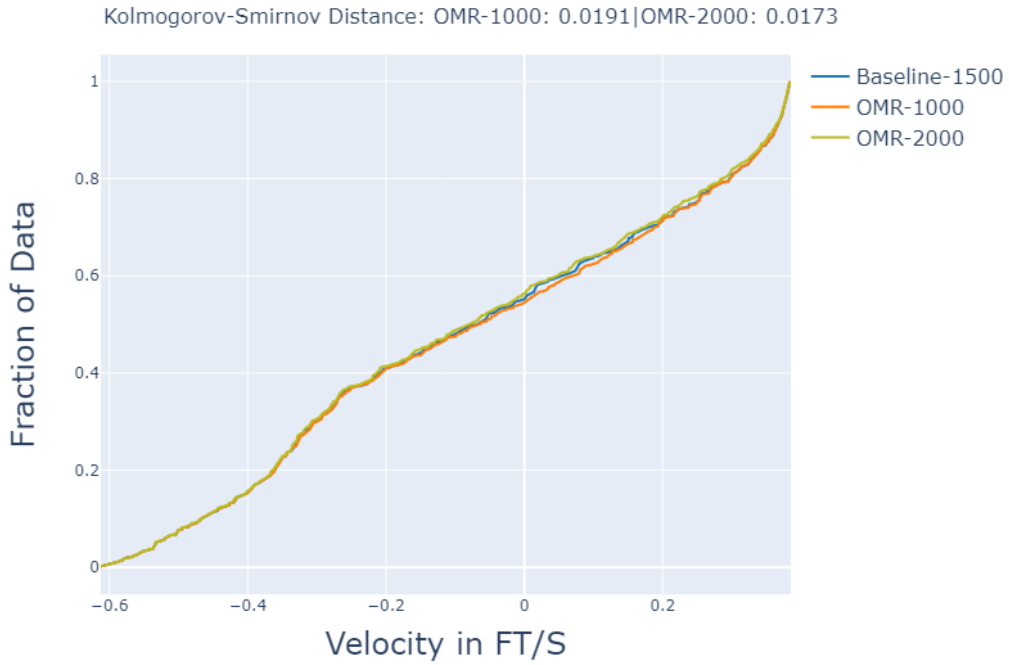
b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute

time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



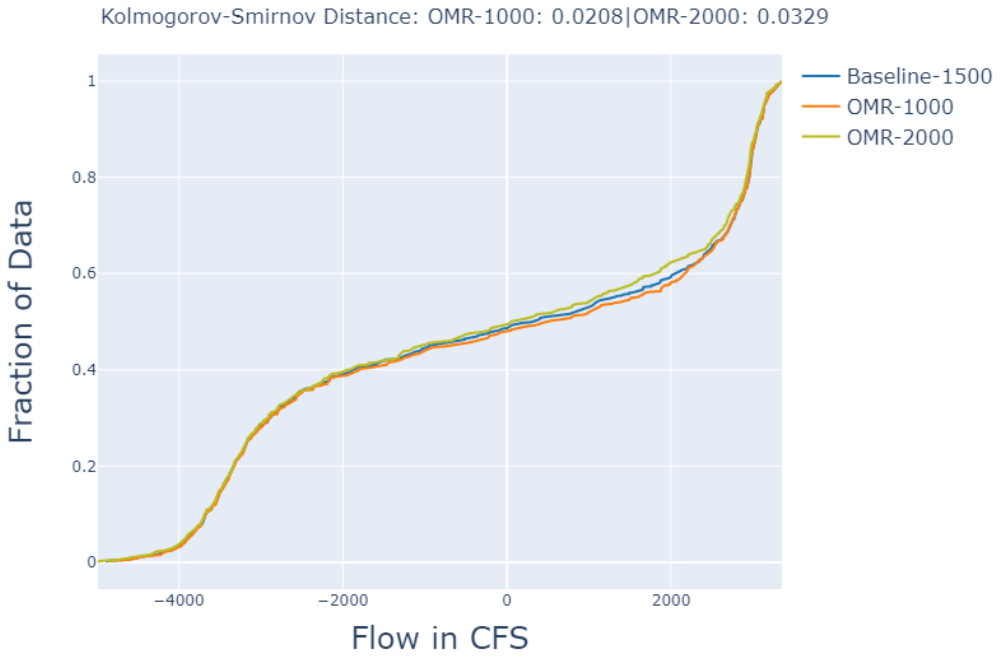
a)



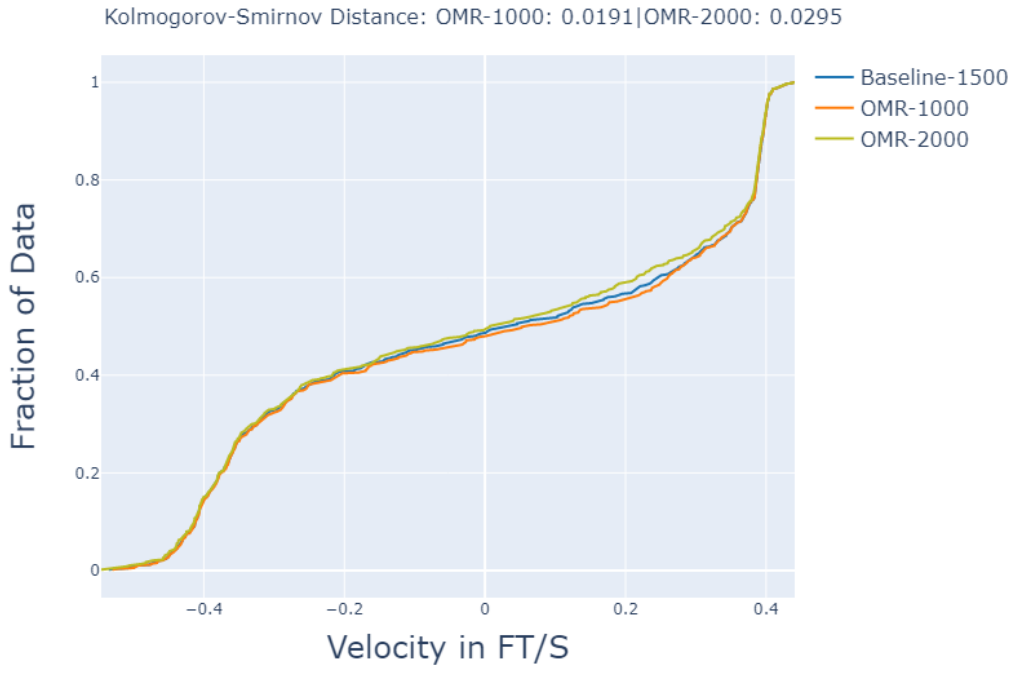
b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow

values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

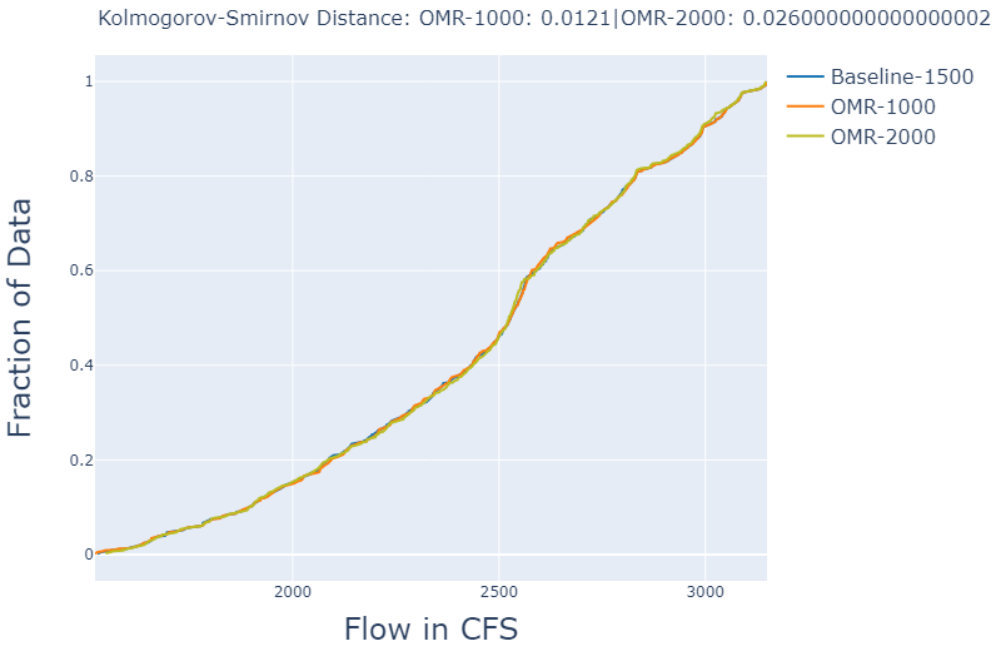


a)

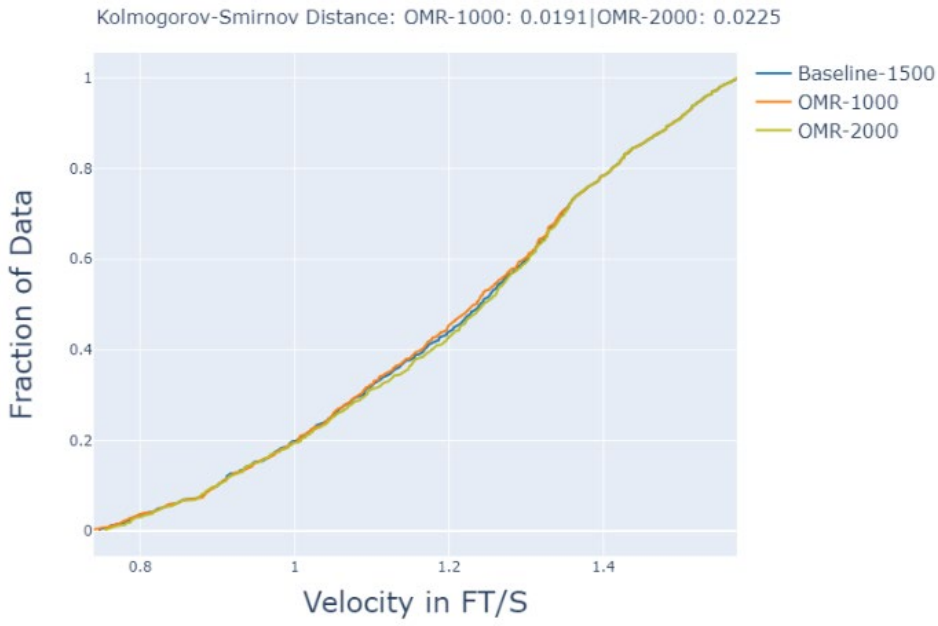


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

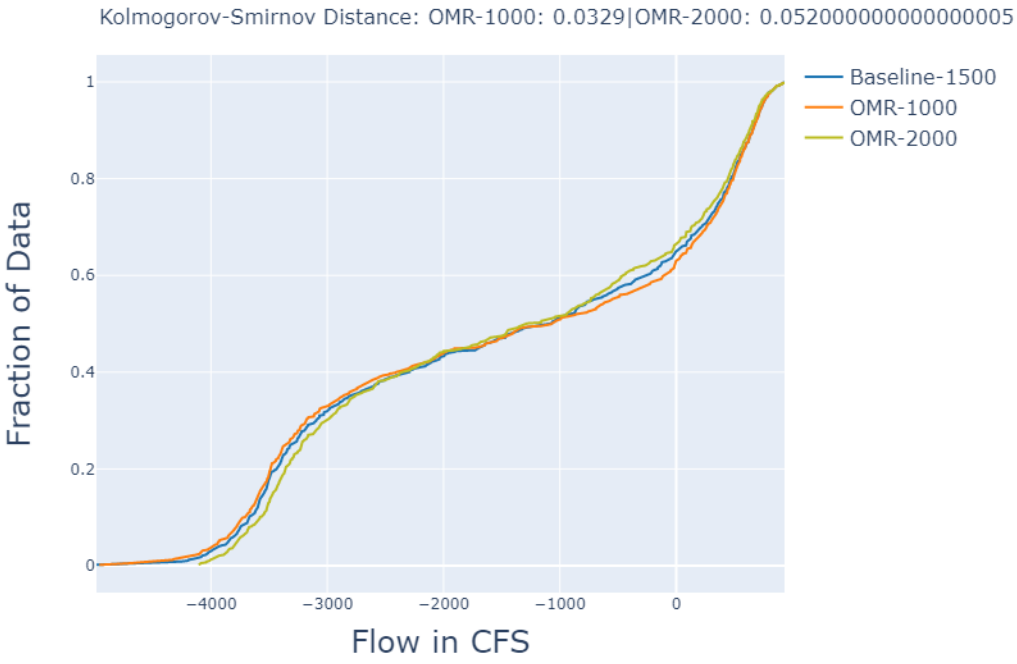


a)

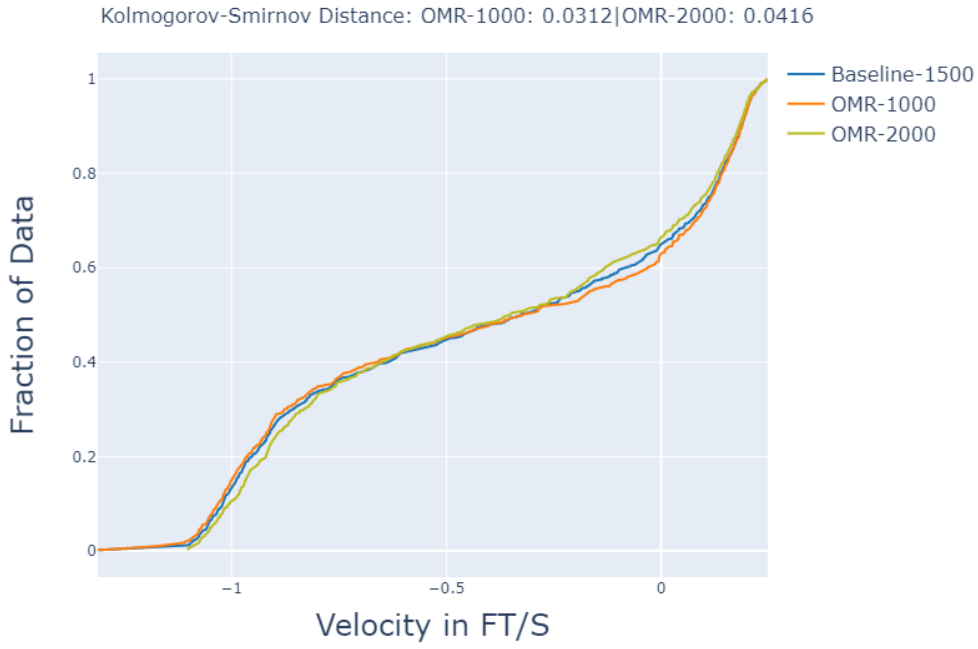


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

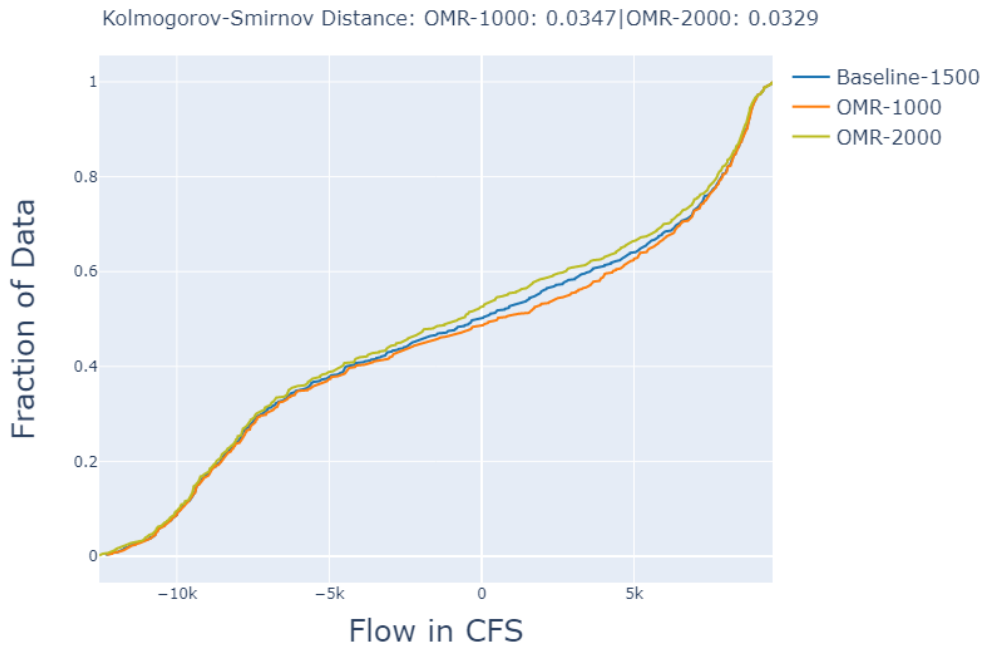


a)

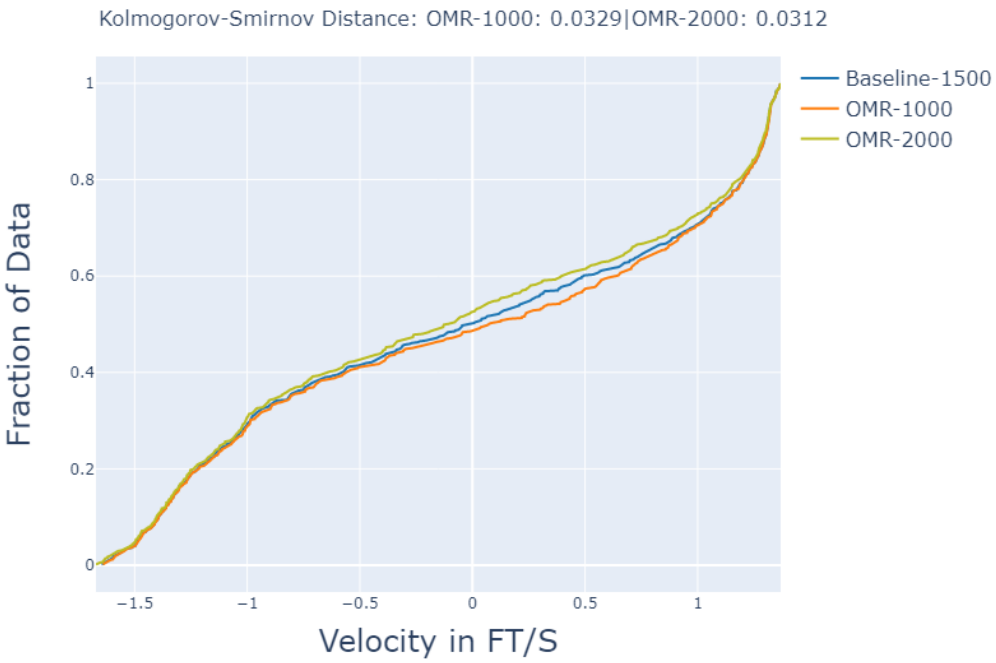


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

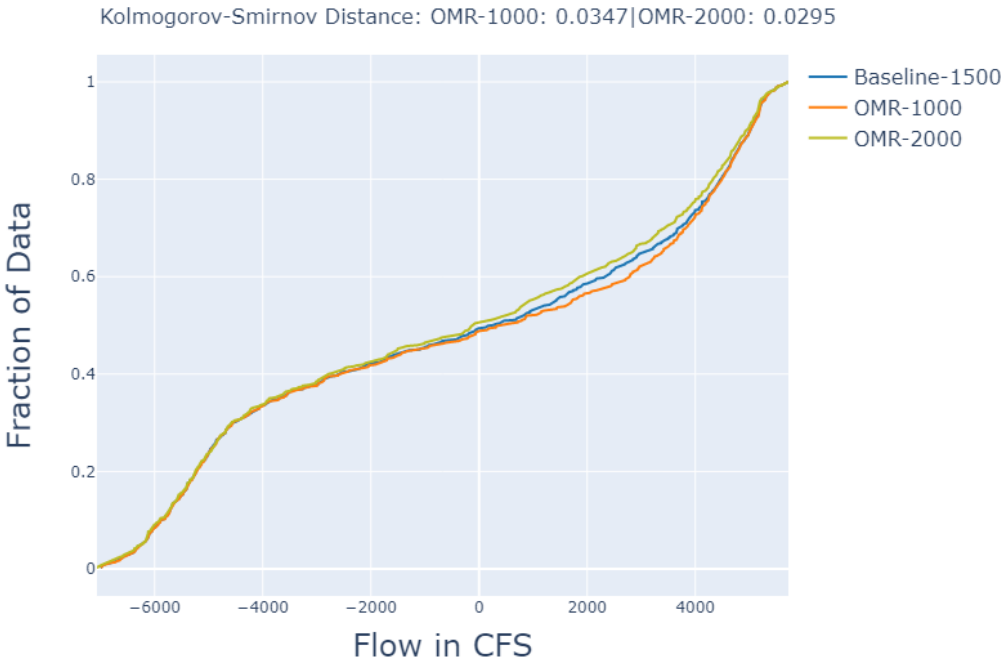


a)

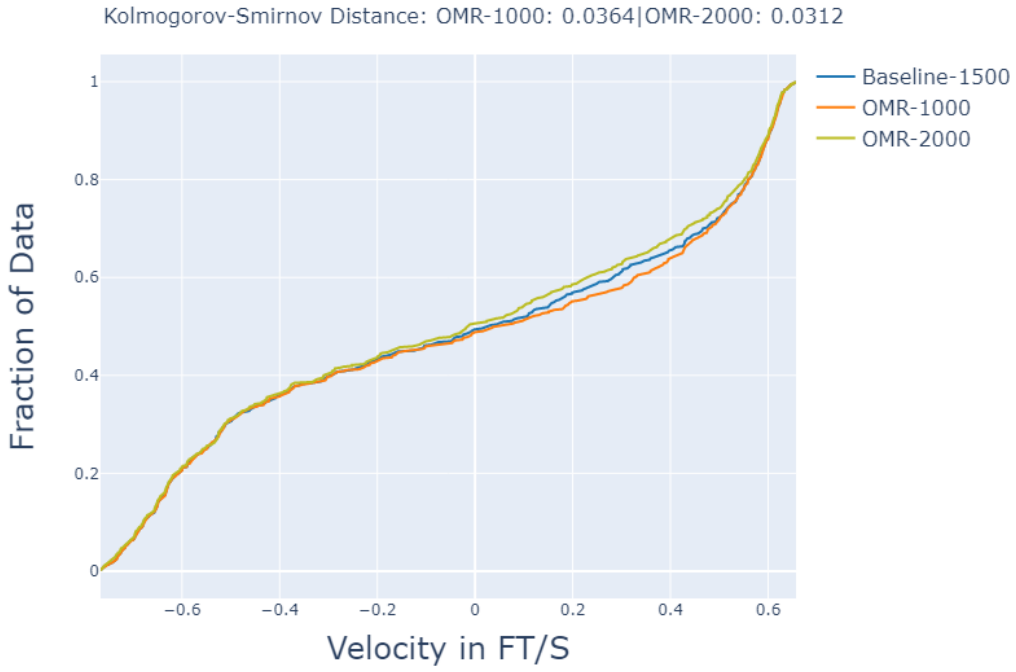


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

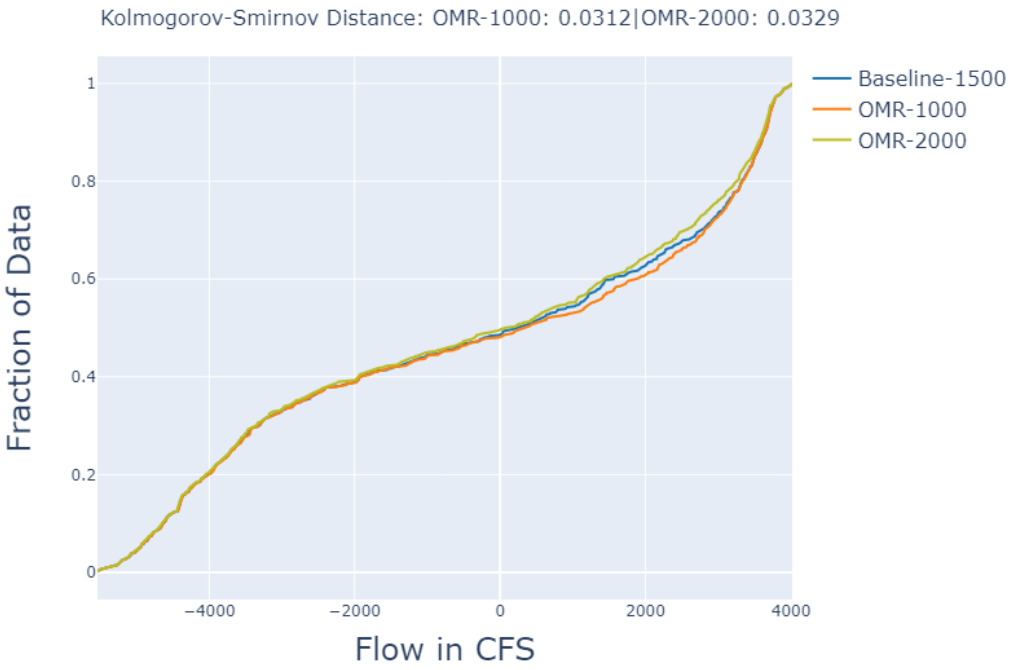


a)

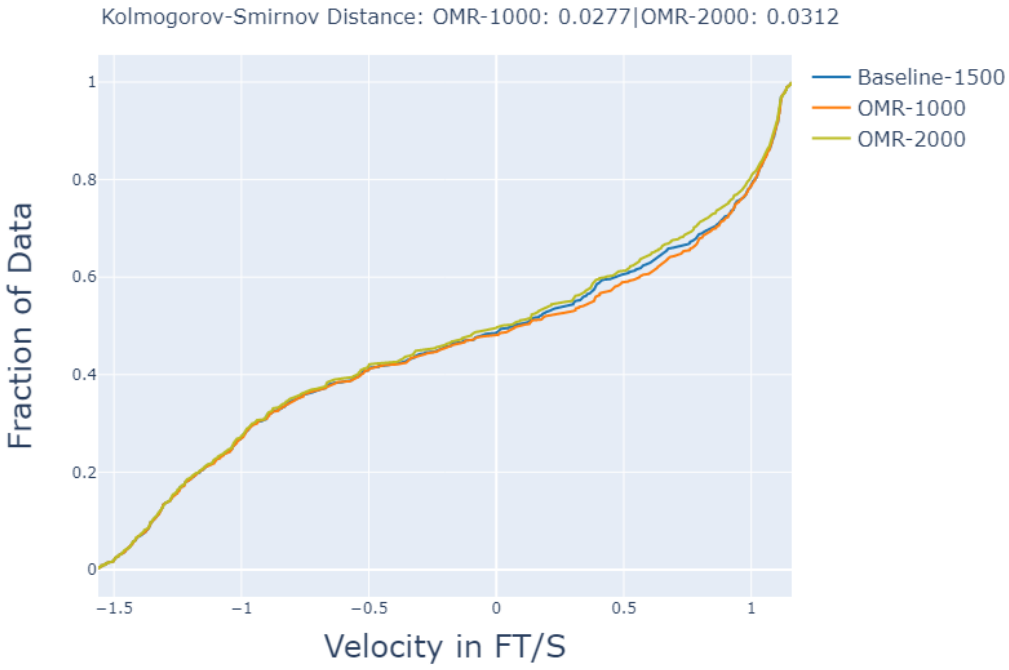


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -2,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)


Kolmogorov-Smirnov Distance: OMR-1000: 0.0277|OMR-2000: 0.0312
Baseline-1500
OMR-1000
OMR-2000
Fraction of Data
Velocity in FT/S
0
0.2
0.4
0.6
0.8
1
−1.5
−1
−0.5
0
0.5
1

b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

		Flow (cfs)				Velocity (ft/s)			
DSM2 Channel		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-1,500 cfs)	6	1527	3149	2474	100	0.8	1.6	1.2	100
Scenario OMR -1,000 cfs	6	1521	3149	2474	100	0.7	1.6	1.2	100
Scenario OMR -2,000 cfs	6	1547	3147	2474	100	0.8	1.6	1.2	100
Baseline (-1,500 cfs)	21	-6872	7434	1193	57.0	-0.5	0.5	0.1	57.0
Scenario OMR -1,000 cfs	21	-6872	7436	1208	57.2	-0.5	0.5	0.1	57.2
Scenario OMR -2,000 cfs	21	-6874	7427	1173	57.0	-0.5	0.5	0.1	57.0
Baseline (-1,500 cfs)	49	-160316	129642	3769	52.5	-2.0	1.7	0.1	52.5
Scenario OMR -1,000 cfs	49	-160314	129603	4064	52.7	-2.0	1.7	0.1	52.7
Scenario OMR -2,000 cfs	49	-160344	129719	3318	52.3	-2.0	1.7	0.1	52.3
Baseline (-1,500 cfs)	81	-4984	930	-1427	35.0	-1.3	0.3	-0.4	35.0
Scenario OMR -1,000 cfs	81	-4959	929	-1429	37.1	-1.3	0.3	-0.4	37.1
Scenario OMR -2,000 cfs	81	-4106	931	-1425	33.6	-1.1	0.3	-0.4	33.6
Baseline (-1,500 cfs)	94	-12331	9544	-444	50.1	-1.7	1.4	0.0	50.1
Scenario OMR -1,000 cfs	94	-12287	9541	-237	51.5	-1.6	1.4	0.0	51.5
Scenario OMR -2,000 cfs	94	-12546	9546	-746	47.5	-1.7	1.4	-0.1	47.5
Baseline (-1,500 cfs)	107	-5535	4015	-295	51.5	-1.6	1.2	-0.1	51.5
Scenario OMR -1,000 cfs	107	-5535	4015	-246	52.0	-1.6	1.2	-0.1	52.0
Scenario OMR -2,000 cfs	107	-5536	4017	-370	50.4	-1.6	1.2	-0.1	50.4
Baseline (-1,500 cfs)	124	-19105	11461	-2131	44.9	-0.6	0.4	-0.1	44.9
Scenario OMR -1,000 cfs	124	-19105	11456	-2025	45.6	-0.6	0.4	-0.1	45.6
Scenario OMR -2,000 cfs	124	-19107	11475	-2276	43.9	-0.6	0.4	-0.1	43.9
Baseline (-1,500 cfs)	148	-6998	5719	-296	50.6	-0.8	0.7	0.0	50.6
Scenario OMR -1,000 cfs	148	-6991	5717	-214	51.3	-0.8	0.7	0.0	51.3
Scenario OMR -2,000 cfs	148	-7066	5721	-432	49.4	-0.8	0.7	0.0	49.4

Baseline (-1,500 cfs)	160	-4890	3349	-109	51.5	-0.5	0.4	0.0	51.5
Scenario OMR -1,000 cfs	160	-4846	3350	-64	52.2	-0.5	0.4	0.0	52.2
Scenario OMR -2,000 cfs	160	-4984	3347	-180	50.8	-0.6	0.4	0.0	50.8
Baseline (-1,500 cfs)	434	-172009	145623	5934	53.4	-1.9	1.7	0.1	53.4
Scenario OMR -1,000 cfs	434	-172007	145635	6011	53.4	-1.9	1.7	0.1	53.4
Scenario OMR -2,000 cfs	434	-172027	145595	5827	53.4	-1.9	1.7	0.1	53.4

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -1,500 cfs.

	Flow (cfs)		Velocity (ft/s)	
DSM2 Channel	**Scenario OMR -1,000 cfs**	**Scenario OMR -2,000 cfs**	**Scenario OMR -1,000 cfs**	**Scenario OMR -2,000 cfs**
6	0.01	0.03	0.02	0.02
21	0.01	0.02	0.02	0.02
49	0.01	0.01	0.01	0.01
81	0.03	0.05	0.03	0.04
94	0.03	0.03	0.03	0.03
107	0.03	0.03	0.03	0.03
124	0.02	0.02	0.02	0.02
148	0.03	0.03	0.04	0.03
160	0.02	0.03	0.02	0.03
434	0.01	0.01	0.01	0.01

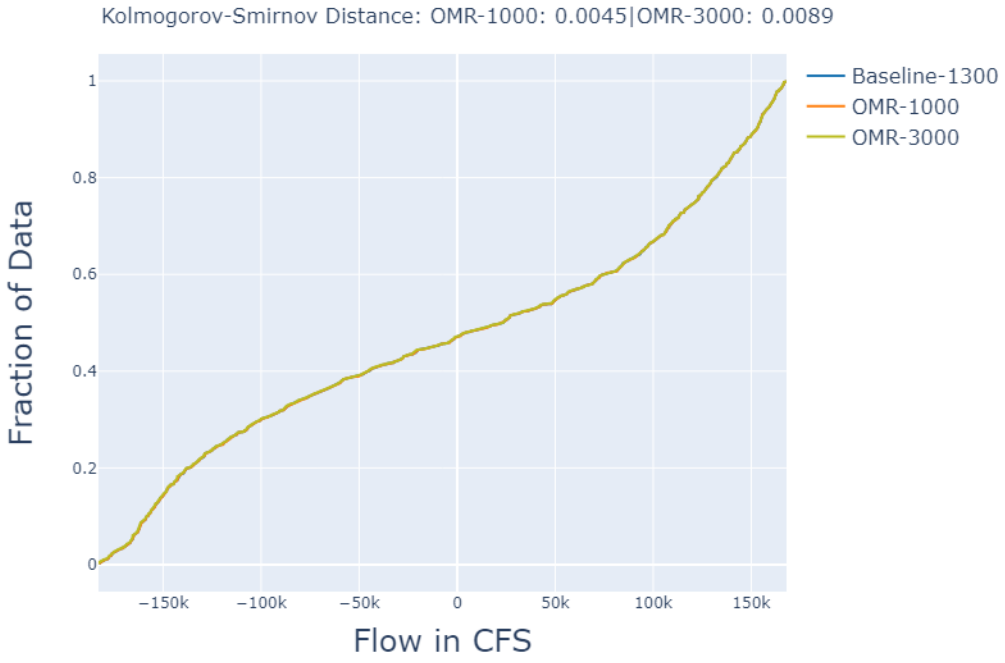
5/5/2020

DWR baseline forecast 04/28/2020 to 05/18/2020
CVO updated baseline and Scenarios on 05/04/2020.
CVO OMR action taking place on 05/06/2020 to 05/11/2020
DSM2 modeling results valid 05/06/2020 to 05/12/2020

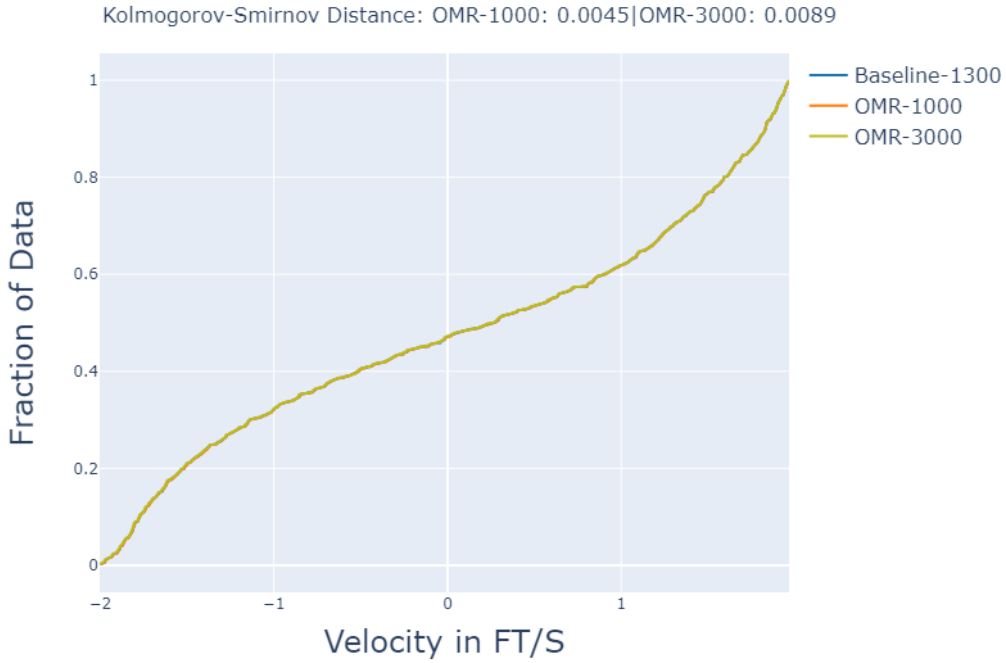
Baseline: –1,300 cfs OMR
Scenario –1,000: –1,000 cfs OMR
Scenario –3,000: –3,000 cfs OMR

DSM2 modeling for April 29 through May 4 shows little variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,000 cfs (increasing pumping from OMR -1,300 cfs, hereafter referred to as Scenario -1,000 cfs) to –3,000 cfs (increasing pumping from OMR -1,300 cfs, hereafter referred to as Scenario –3,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



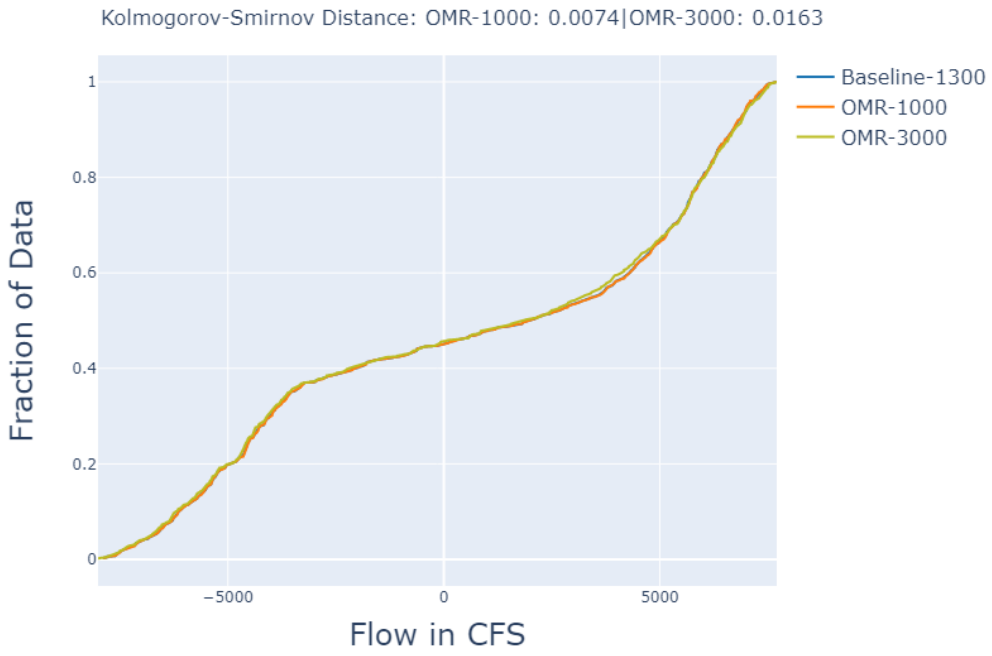
a)



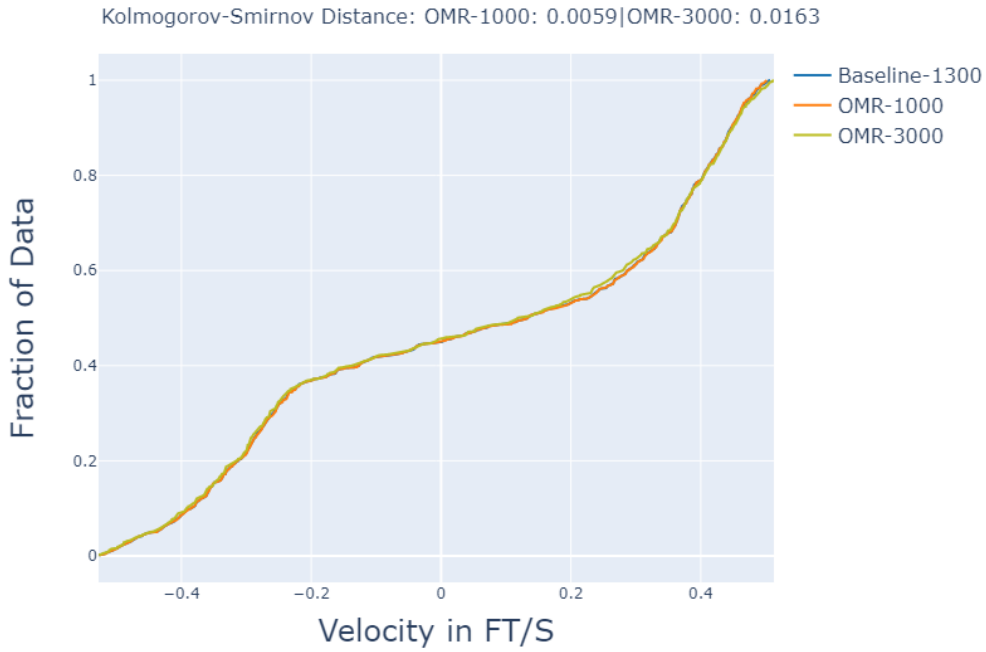
b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage

of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



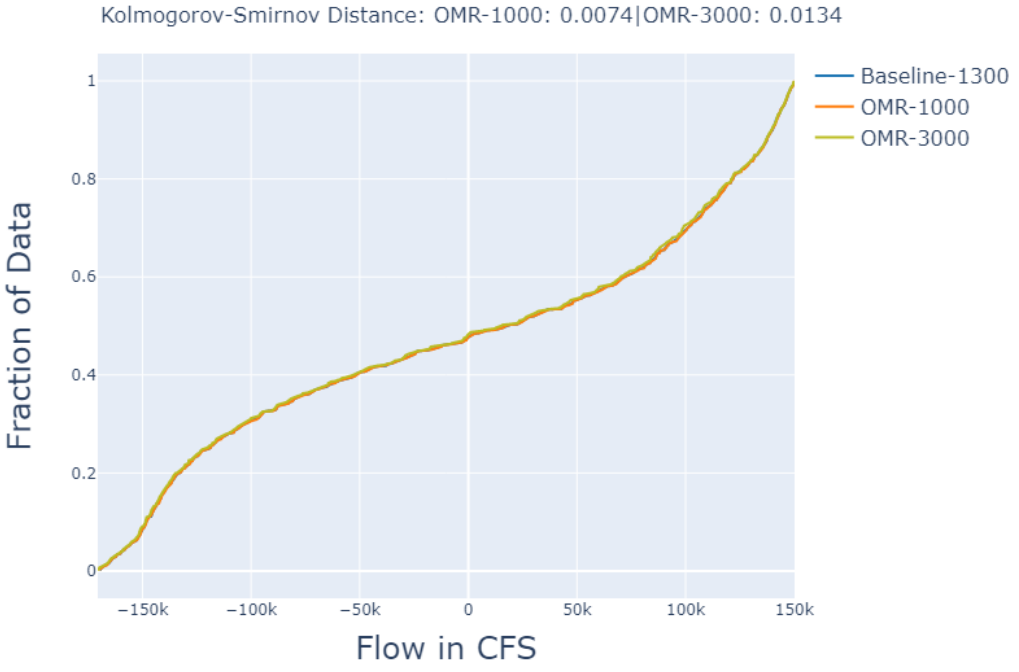
a)



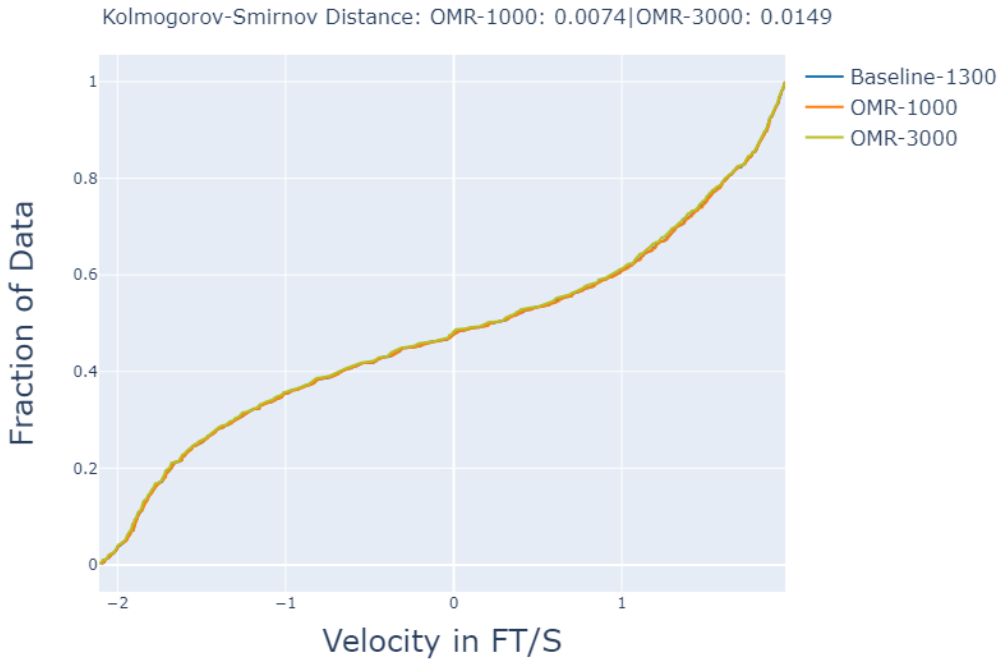
b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

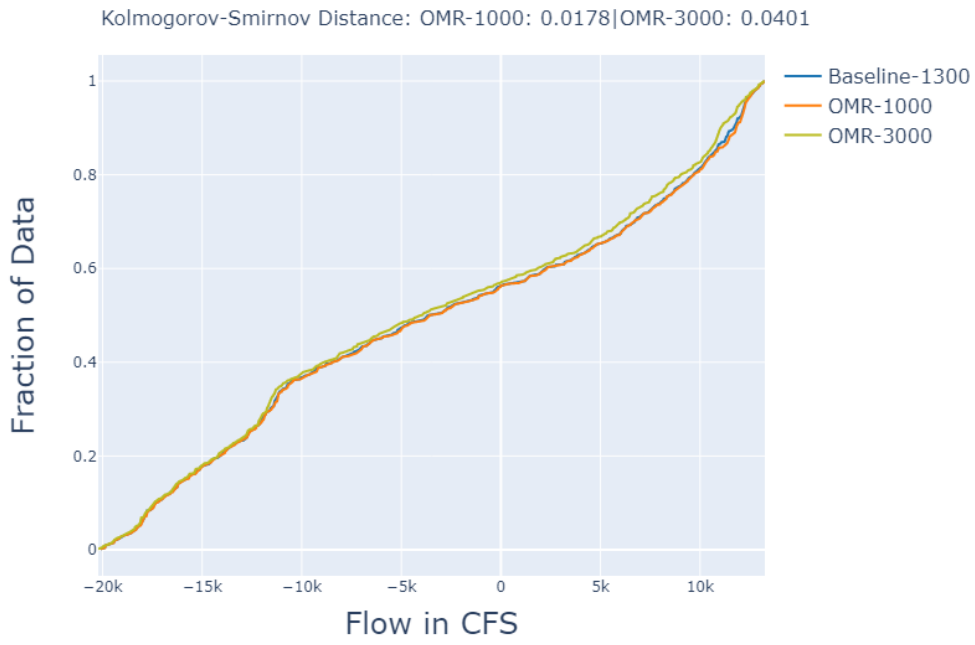


a)

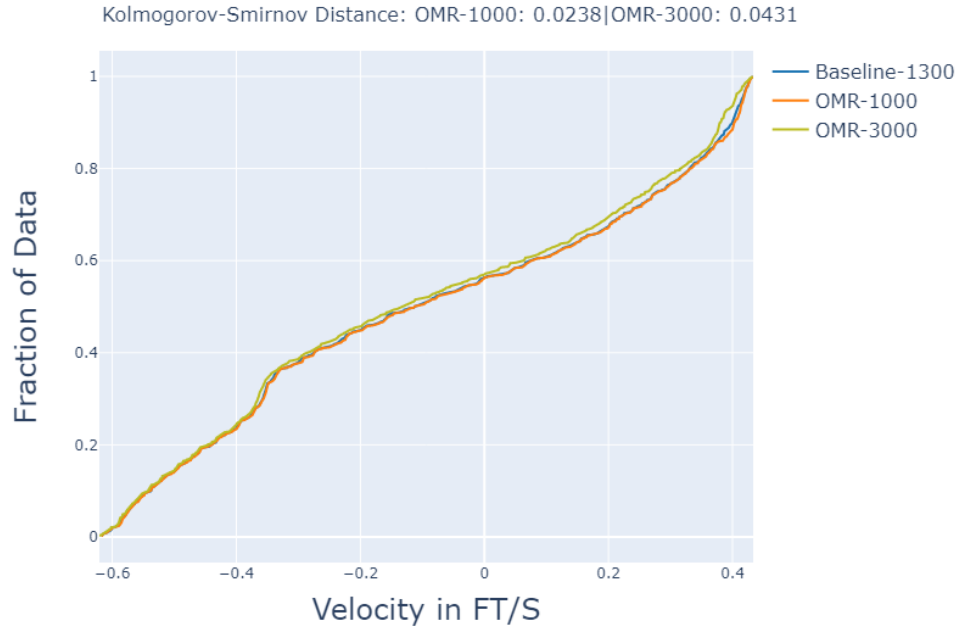


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

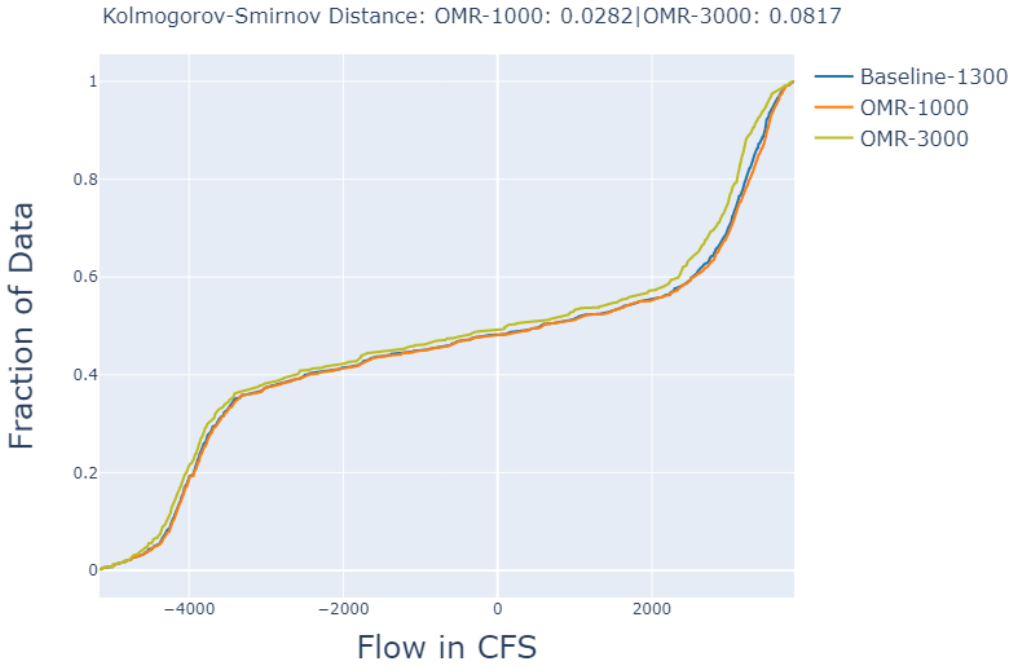


a)

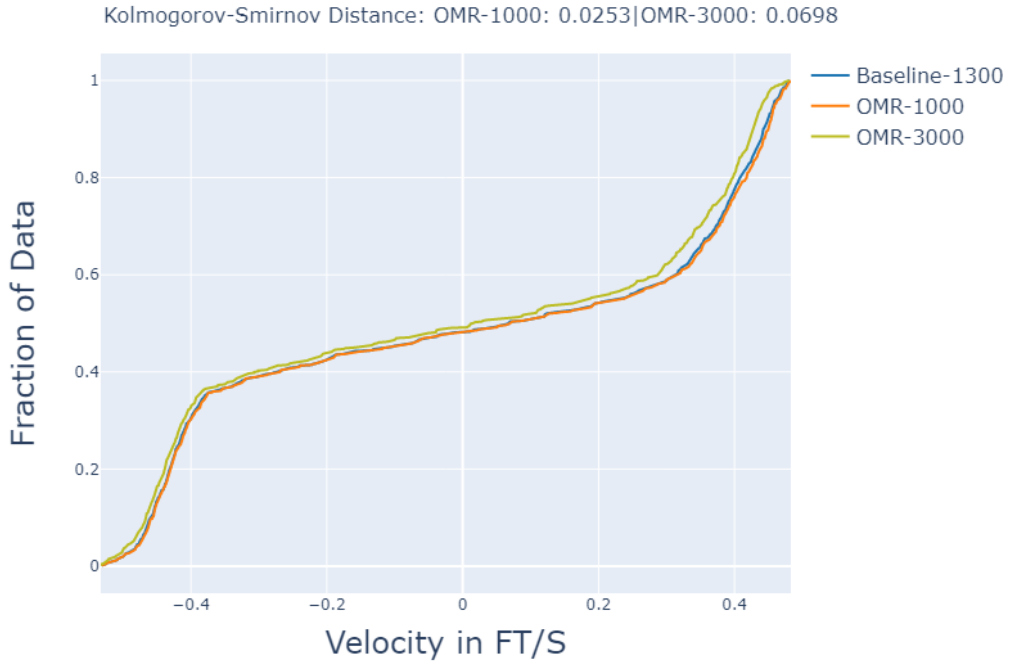


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

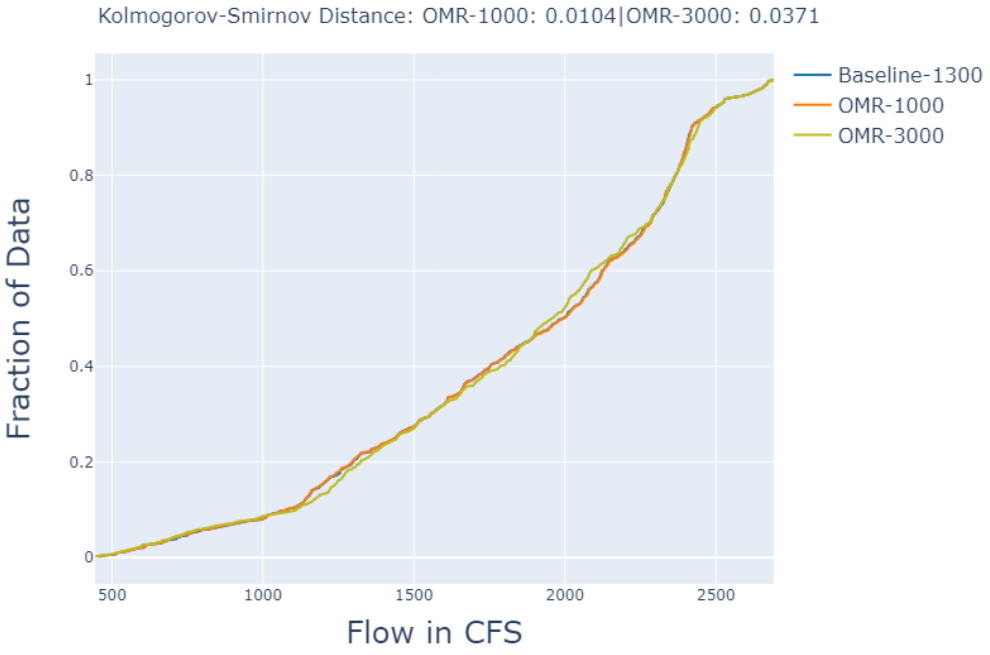


a)

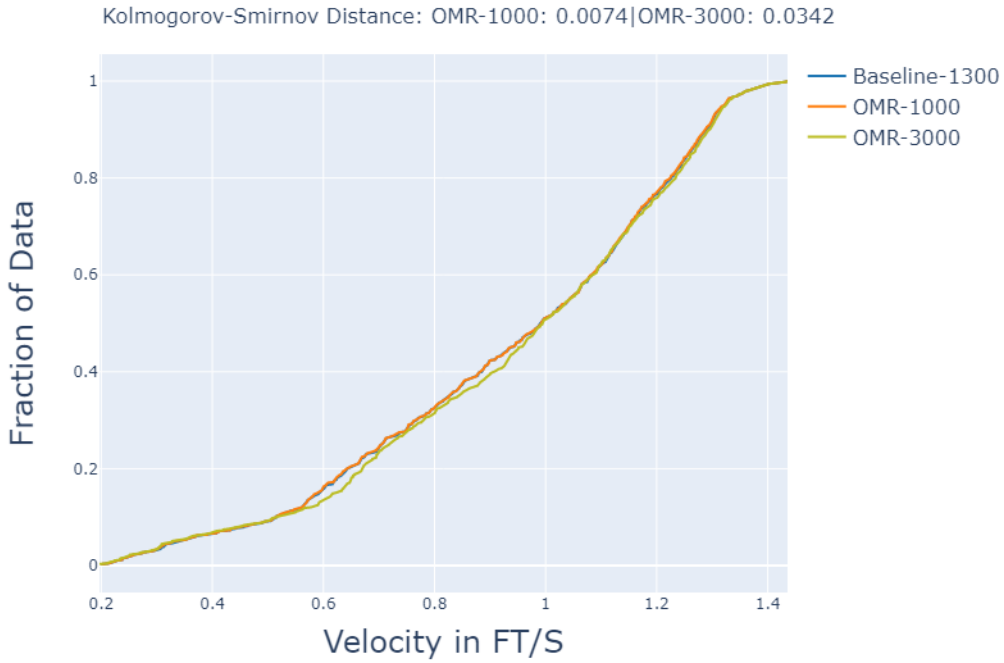


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

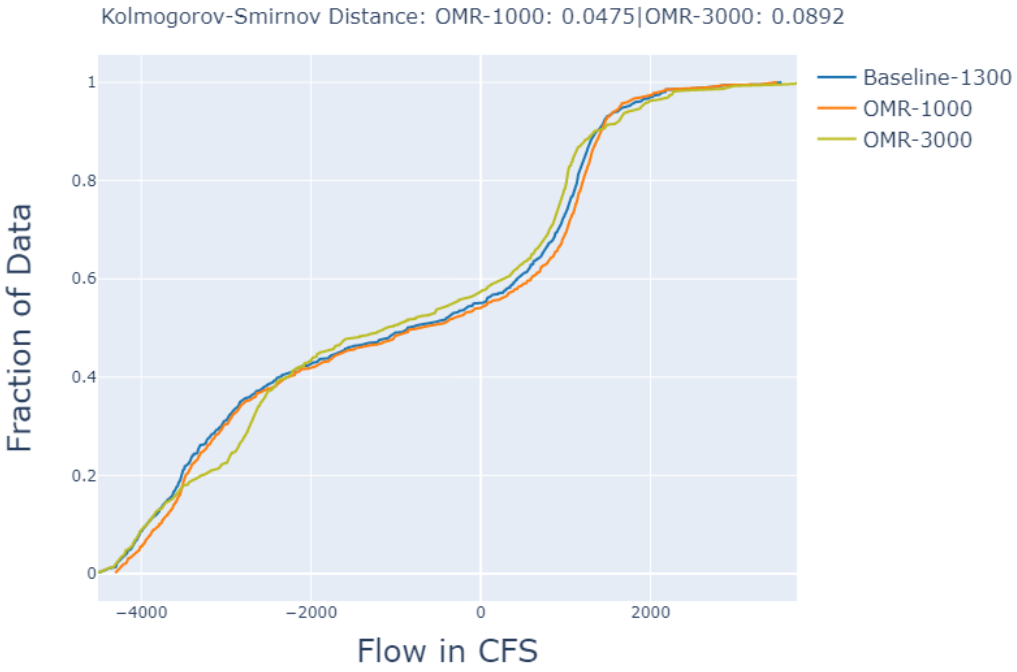


a)

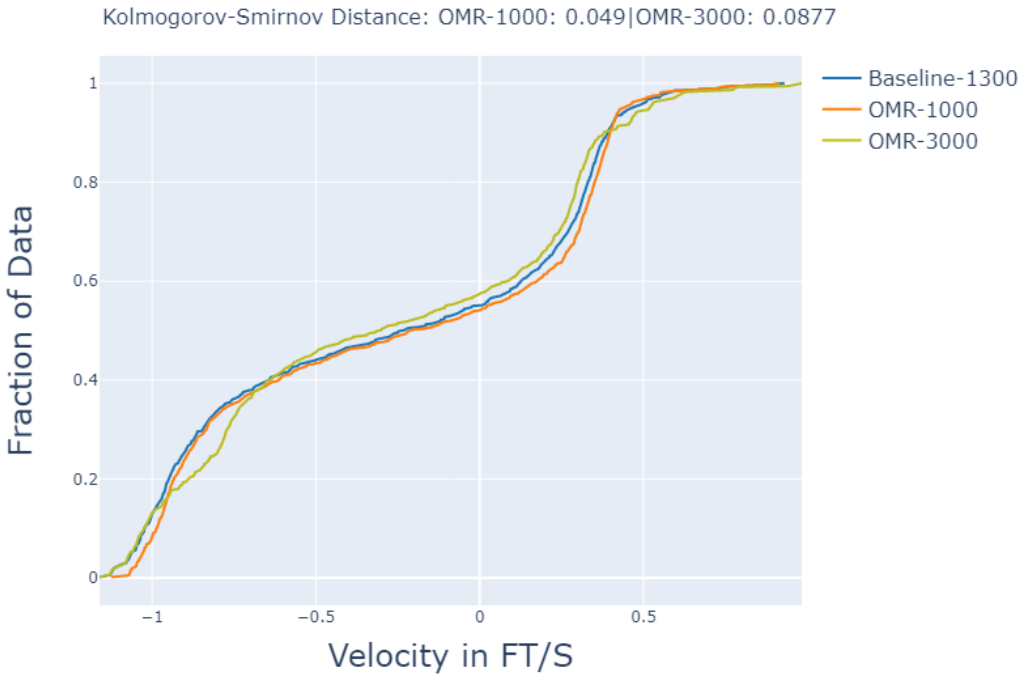


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

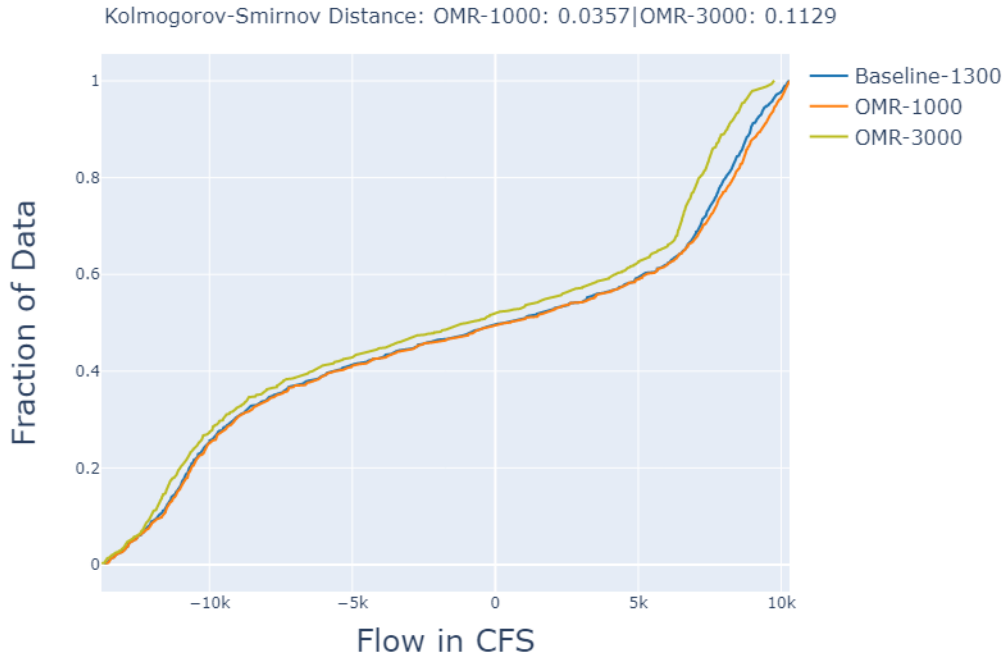


a)

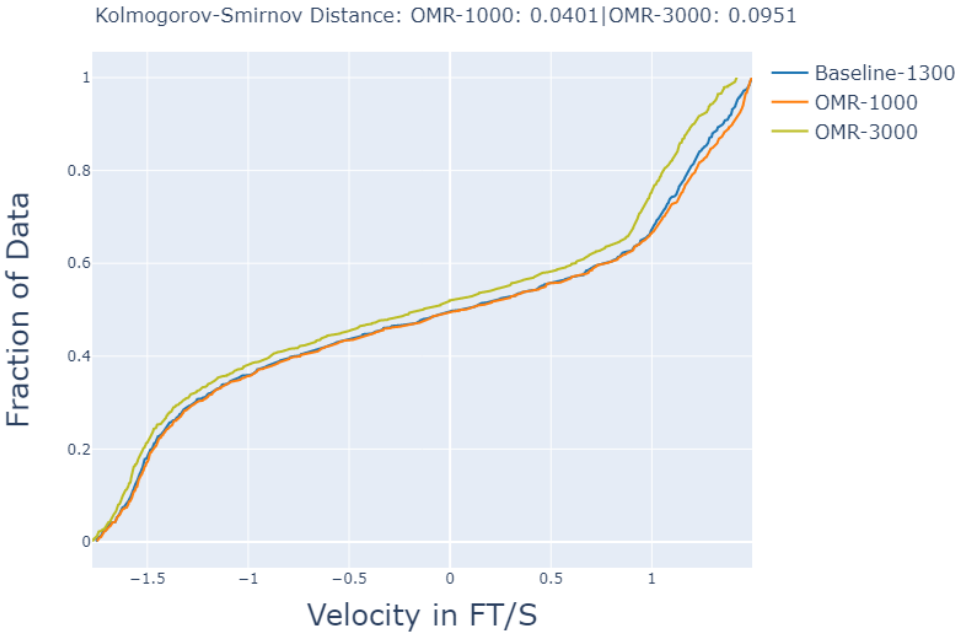


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

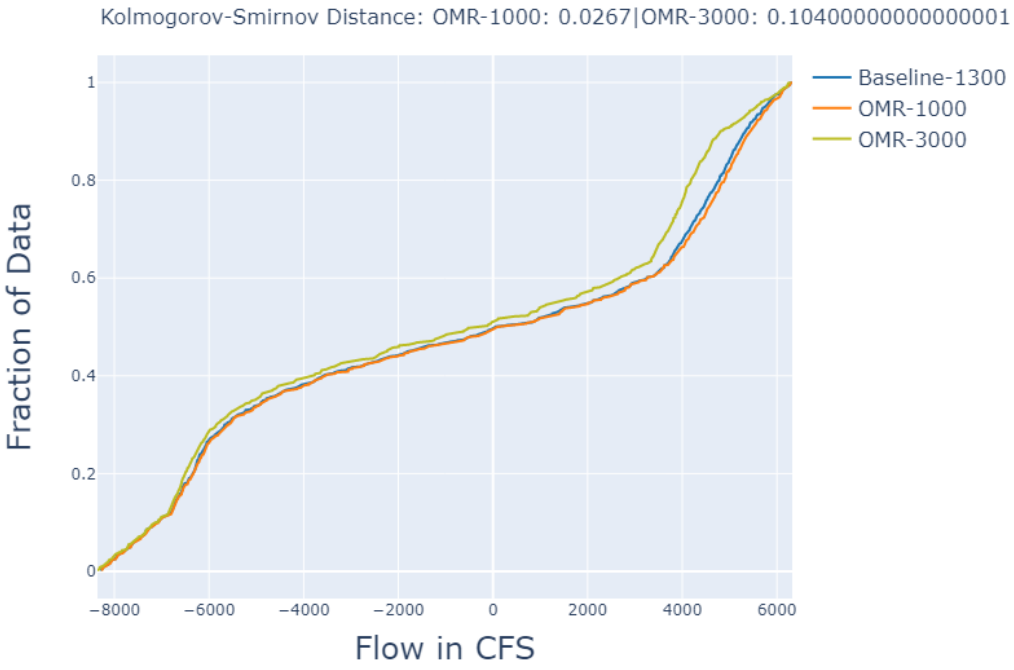


a)

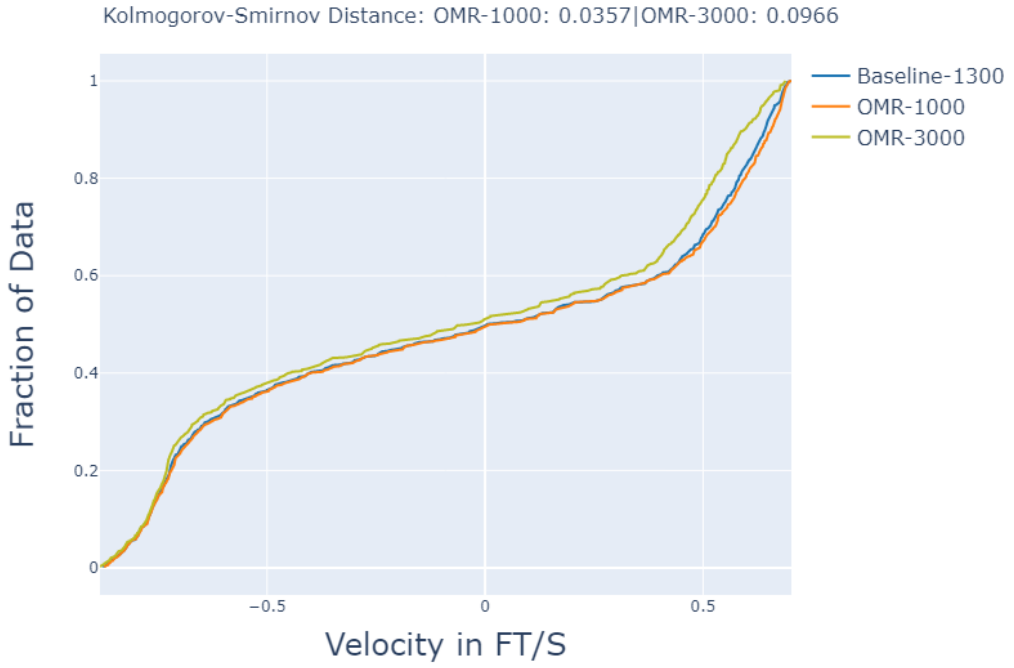


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



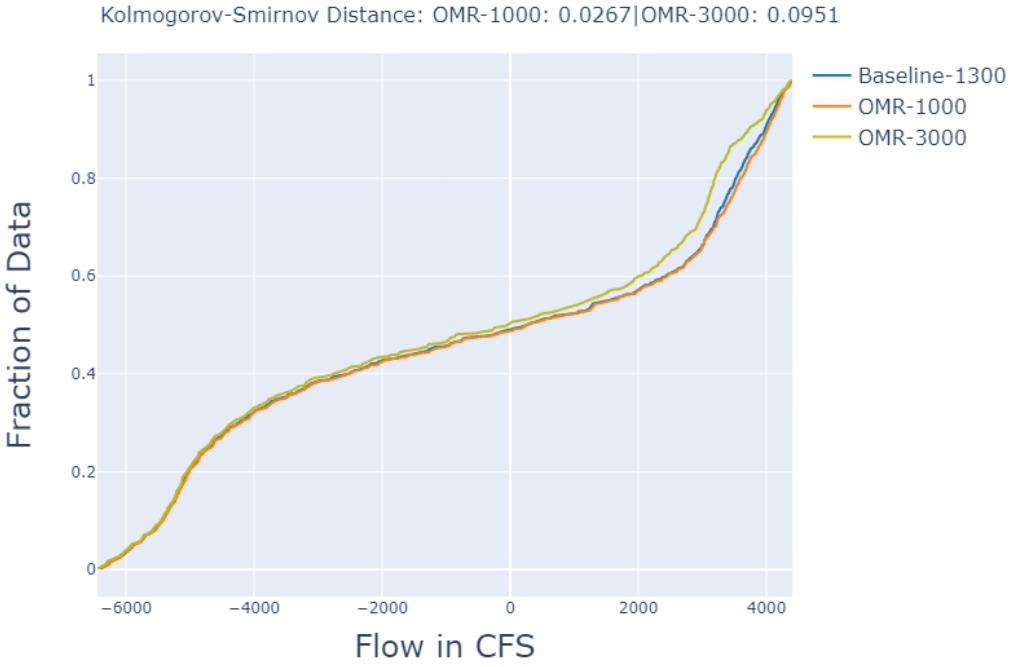
a)



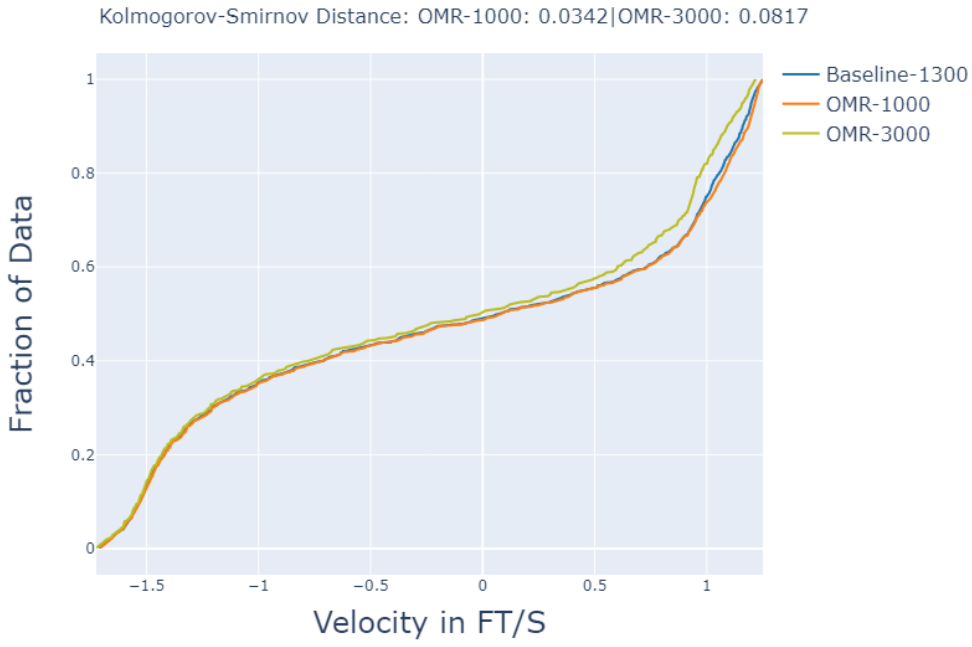
b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,000 cfs and OMR -3,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-1,300 cfs)	6	457	2691	1847	100	0.2	1.4	0.9	100
Scenario OMR -1,000 cfs	6	456	2691	1847	100	0.2	1.4	0.9	100
Scenario OMR 3,000 cfs	6	444	2691	1847	100	0.2	1.4	0.9	100
Baseline (-1,300 cfs)	21	-7890	7710	709	55.1	-0.5	0.5	0.1	55.1
Scenario OMR -1,000 cfs	21	-7888	7710	715	55.1	-0.5	0.5	0.1	55.1
Scenario OMR 3,000 cfs	21	-8007	7709	663	54.4	-0.5	0.5	0.1	54.4
Baseline (-1,300 cfs)	49	-169611	150121	1092	52.3	-2.1	2.0	0.1	52.3
Scenario OMR -1,000 cfs	49	-169536	150142	1273	52.3	-2.1	2.0	0.1	52.3
Scenario OMR 3,000 cfs	49	-170551	149945	-13	51.7	-2.1	2.0	0.0	51.7
Baseline (-1,300 cfs)	81	-4506	3543	-1075	45.0	-1.2	0.9	-0.3	45.0
Scenario OMR -1,000 cfs	81	-4305	3489	-993	46.1	-1.1	0.9	-0.3	46.1
Scenario OMR 3,000 cfs	81	-4508	3723	-1072	42.6	-1.2	1.0	-0.3	42.6
Baseline (-1,300 cfs)	94	-13677	10287	-884	50.4	-1.8	1.5	-0.1	50.4
Scenario OMR -1,000 cfs	94	-13647	10289	-758	50.5	-1.8	1.5	-0.1	50.5
Scenario OMR 3,000 cfs	94	-13775	9764	-1613	48.0	-1.8	1.4	-0.2	48.0
Baseline (-1,300 cfs)	107	-6408	4402	-487	51.1	-1.7	1.3	-0.1	51.1
Scenario OMR -1,000 cfs	107	-6387	4404	-454	51.4	-1.7	1.3	-0.1	51.4
Scenario OMR 3,000 cfs	107	-6446	4381	-675	49.6	-1.7	1.2	-0.2	49.6
Baseline (-1,300 cfs)	124	-20106	13249	-2770	43.7	-0.6	0.4	-0.1	43.7
Scenario OMR -1,000 cfs	124	-20092	13253	-2710	43.8	-0.6	0.4	-0.1	43.8
Scenario OMR 3,000 cfs	124	-20218	13218	-3129	43.1	-0.6	0.4	-0.1	43.1
Baseline (-1,300 cfs)	148	-8280	6320	-577	50.4	-0.9	0.7	0.0	50.4
Scenario OMR -1,000 cfs	148	-8272	6323	-517	50.7	-0.9	0.7	0.0	50.7
Scenario OMR 3,000 cfs	148	-8356	6283	-913	49.0	-0.9	0.7	-0.1	49.0

Baseline (-1,300 cfs)	160	-5152	3844	-199	51.9	-0.5	0.5	0.0	51.9
Scenario OMR -1,000 cfs	160	-5150	3845	-173	52.0	-0.5	0.5	0.0	52.0
Scenario OMR 3,000 cfs	160	-5160	3829	-359	51.0	-0.5	0.5	0.0	51.0
Baseline (-1,300 cfs)	434	-182313	167979	4646	52.9	-2.0	2.0	0.1	52.9
Scenario OMR -1,000 cfs	434	-182296	167987	4687	52.9	-2.0	2.0	0.1	52.9
Scenario OMR 3,000 cfs	434	-182946	167908	4382	52.9	-2.0	2.0	0.1	52.9

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -1,300 cfs.

	Flow (cfs)		Velocity (ft/s)	
DSM2 Channel	Scenario OMR -1,000 cfs	Scenario OMR -3,000 cfs	Scenario OMR -1,000 cfs	Scenario OMR -3,000 cfs
6	0.01	0.04	0.01	0.03
21	0.01	0.02	0.01	0.02
49	0.01	0.01	0.01	0.01
81	0.05	0.09	0.05	0.09
94	0.04	0.11	0.04	0.10
107	0.03	0.10	0.03	0.08
124	0.02	0.04	0.02	0.04
148	0.03	0.10	0.04	0.10
160	0.03	0.08	0.03	0.07
434	0.00	0.01	0.00	0.01

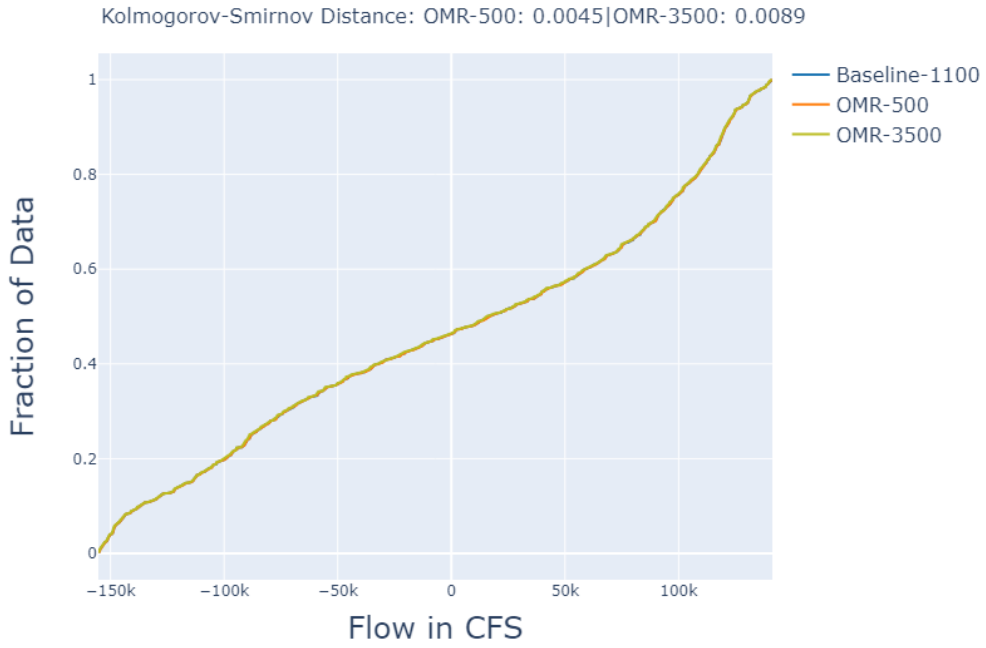
5/12/2020

DWR baseline forecast 05/25/2020 to 05/25/2020
CVO updated baseline and Scenarios on 05/11/2020.
CVO OMR action taking place on 05/13/2020 to 05/18/2020
DSM2 modeling results valid 05/13/2020 to 05/19/2020

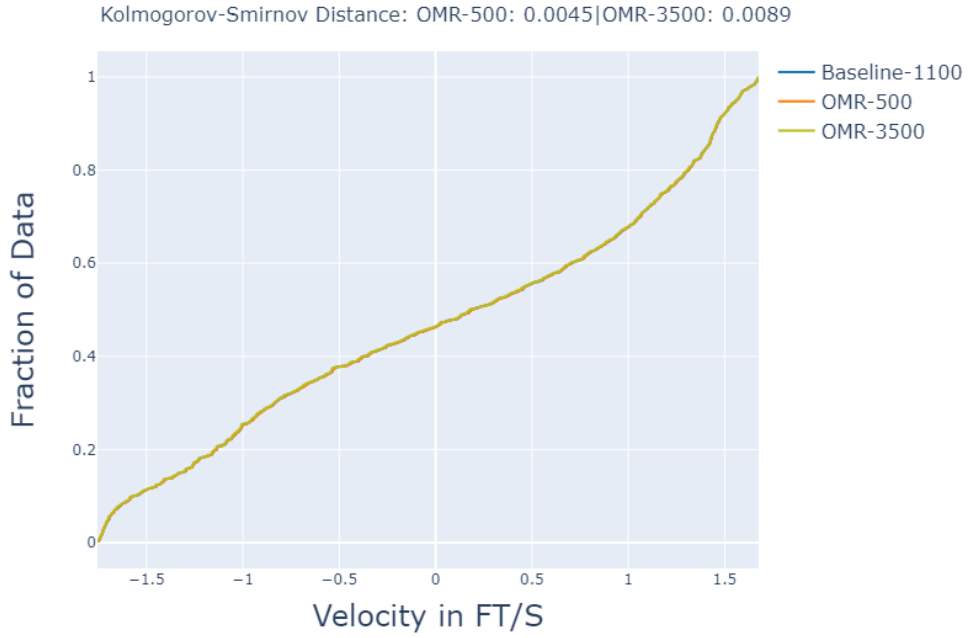
Baseline: –1,100 cfs OMR
Scenario –500: –500 cfs OMR
Scenario –3,500: –3,500 cfs OMR

DSM2 modeling for May 13 through May 18 shows variation in modeled hydrodynamic conditions (Attachment A – figures and tables). This week two scenario operations were assessed. The range of proposed operations is from -500 cfs (decreasing pumping from OMR -1,100 cfs, hereafter referred to as Scenario -500 cfs) to –3,500 cfs (increasing pumping from OMR -1,100 cfs, hereafter referred to as Scenario –3,500 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

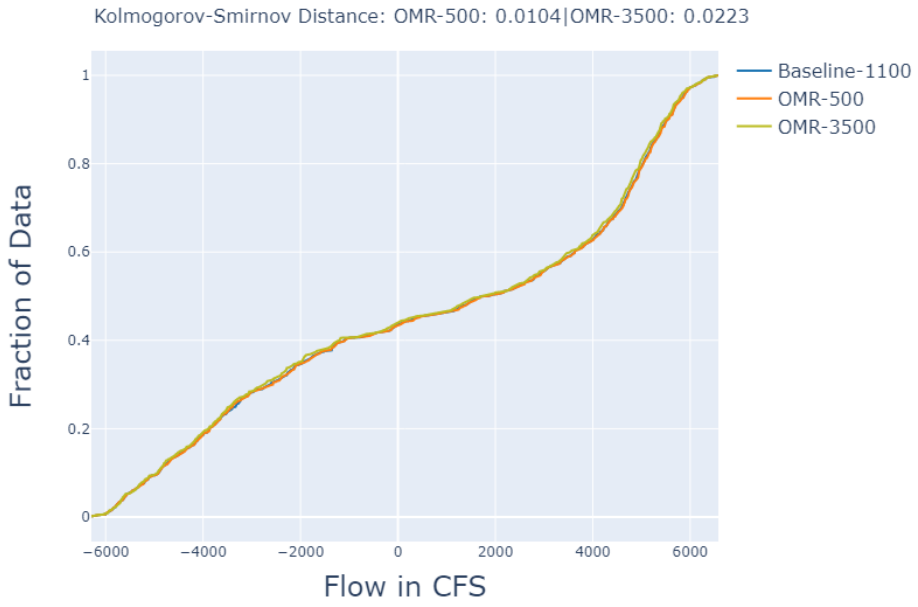


a)

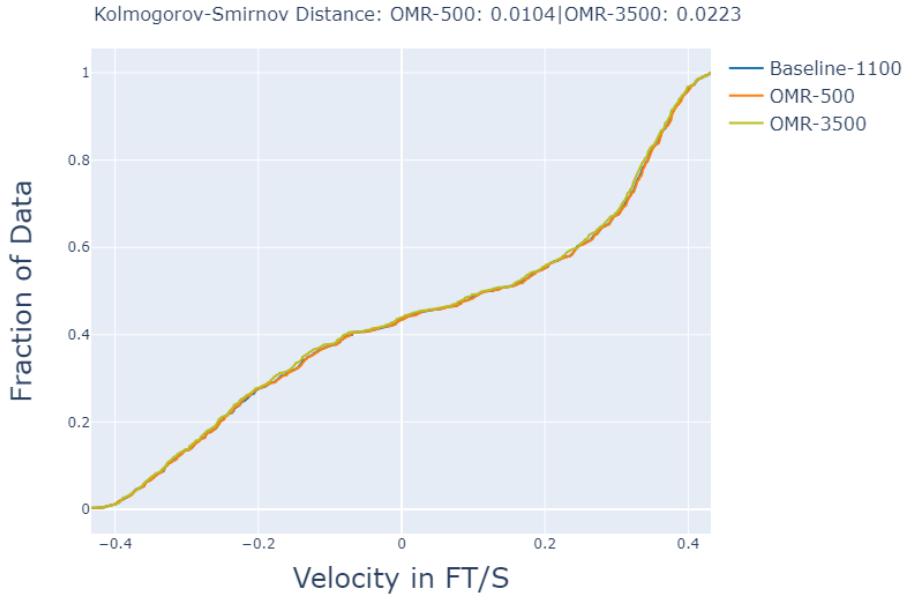


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

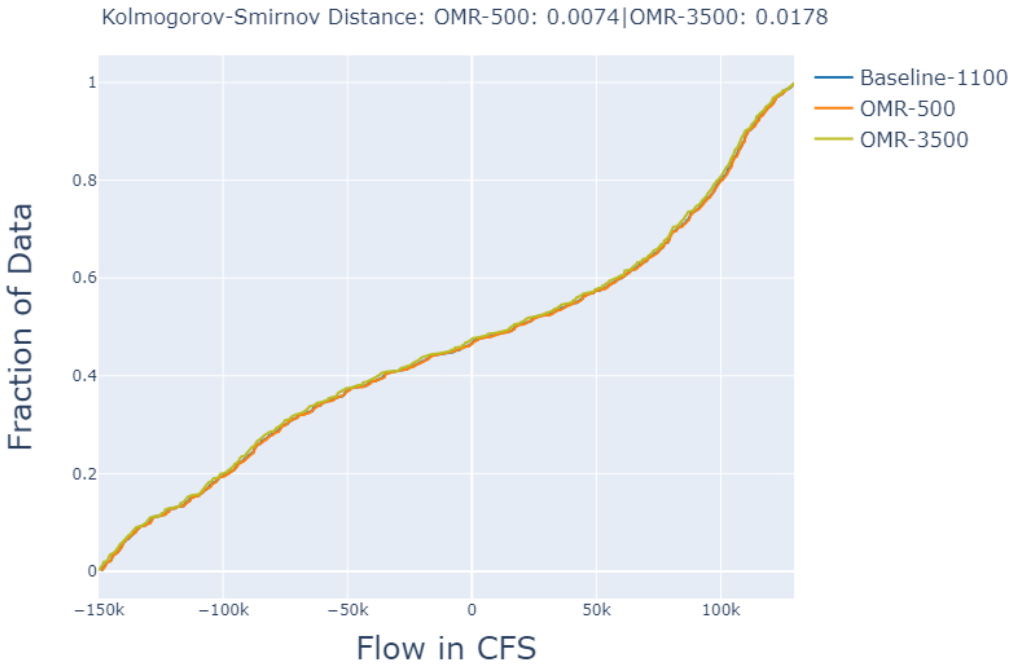


a)

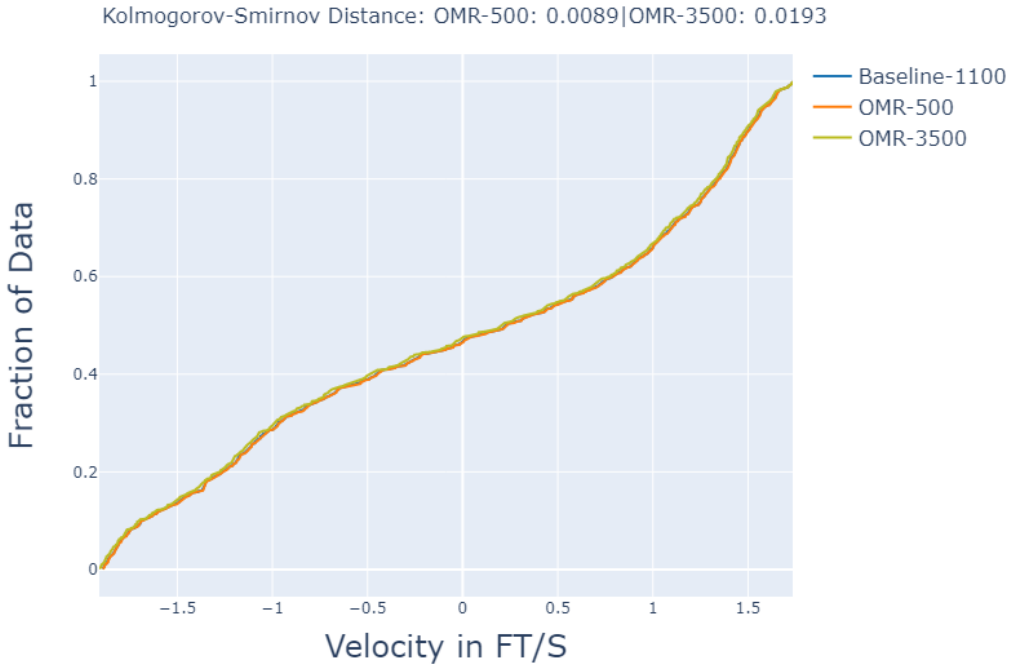


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



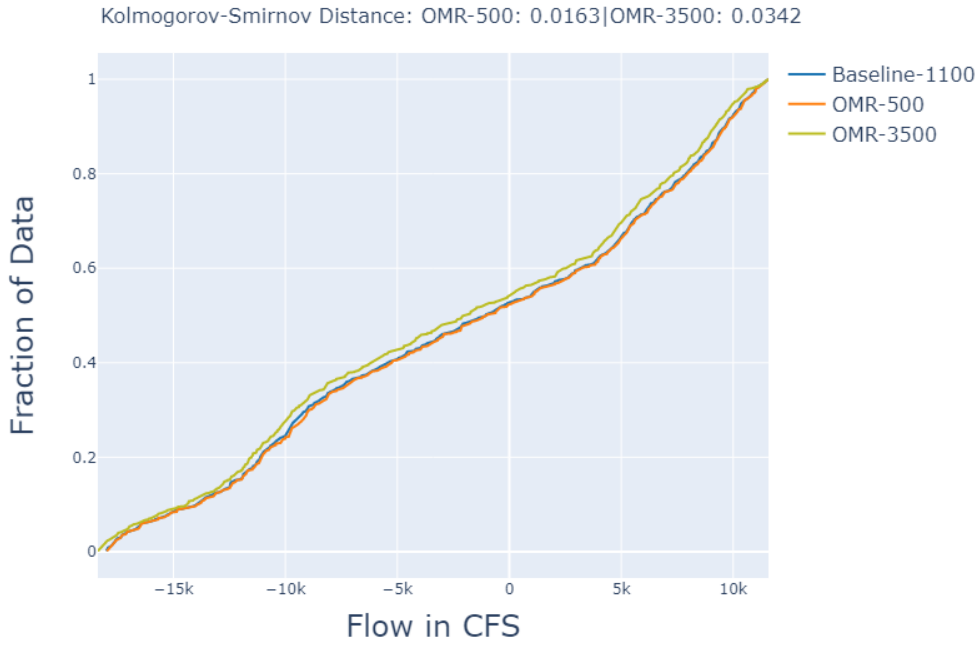
a)



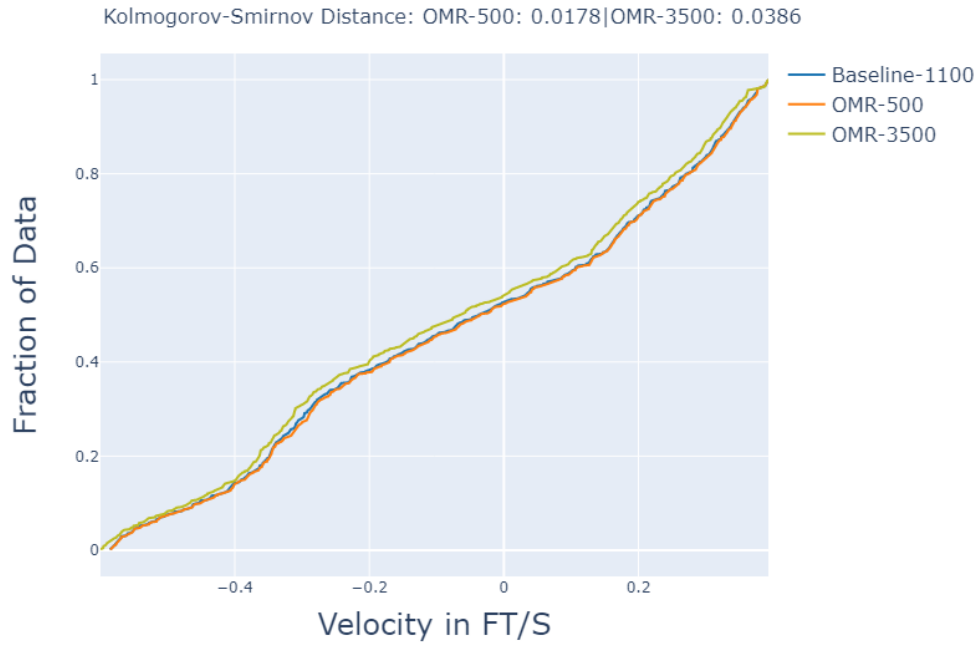
b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute

time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



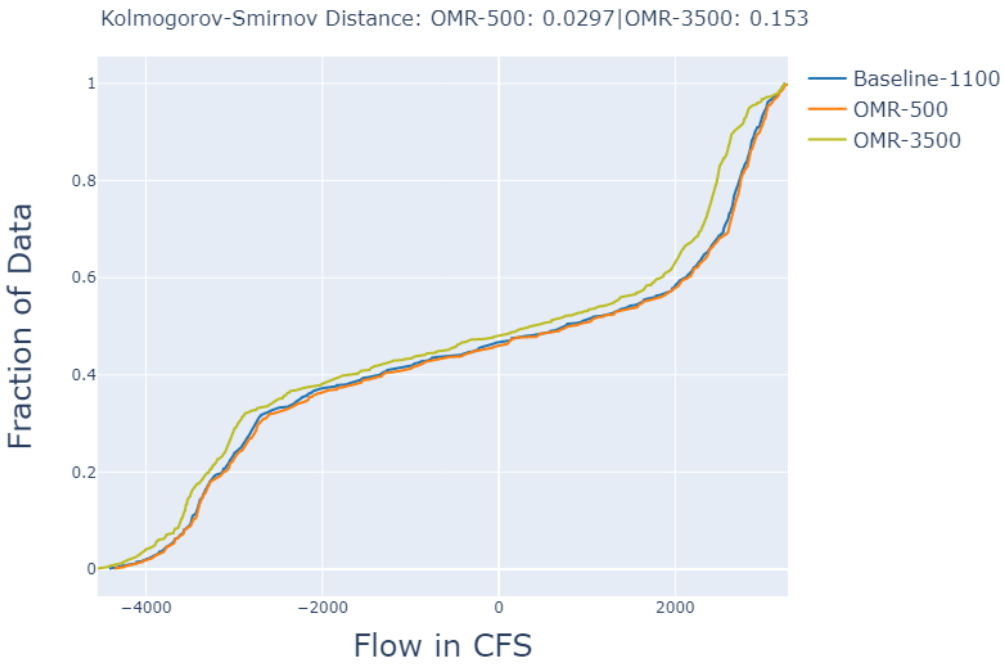
a)



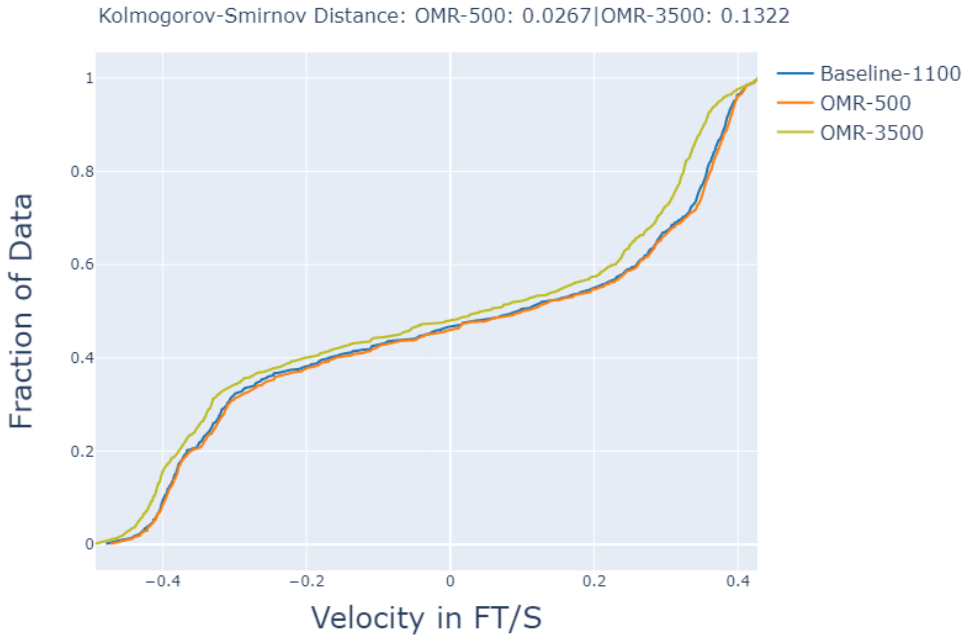
b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs.

OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

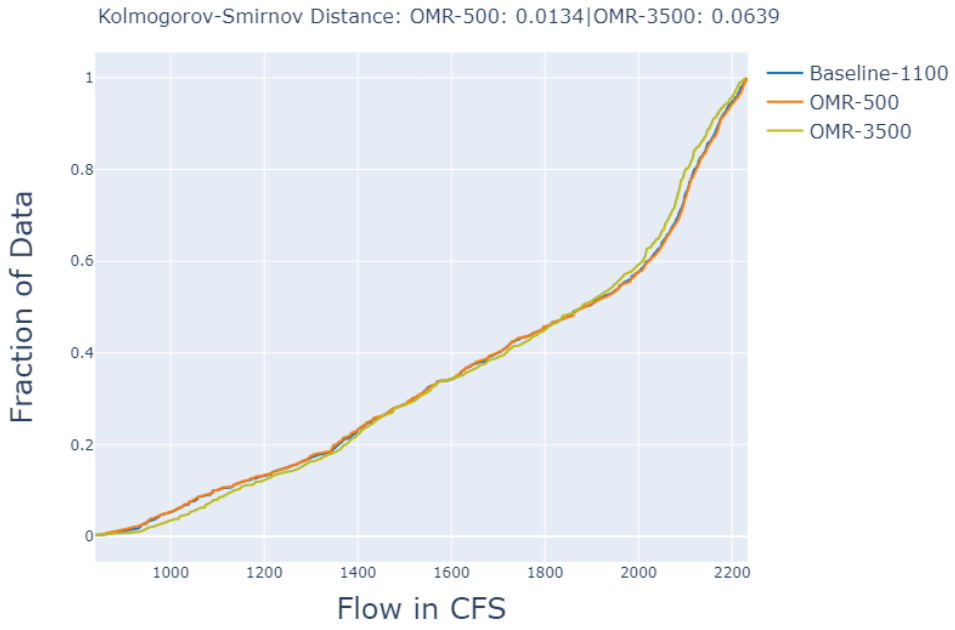


a)

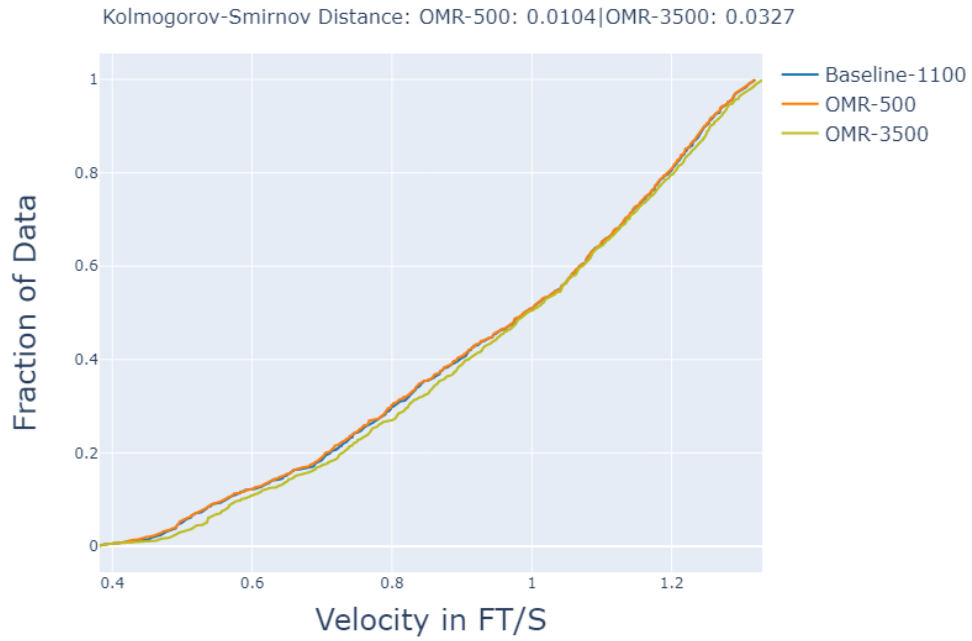


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

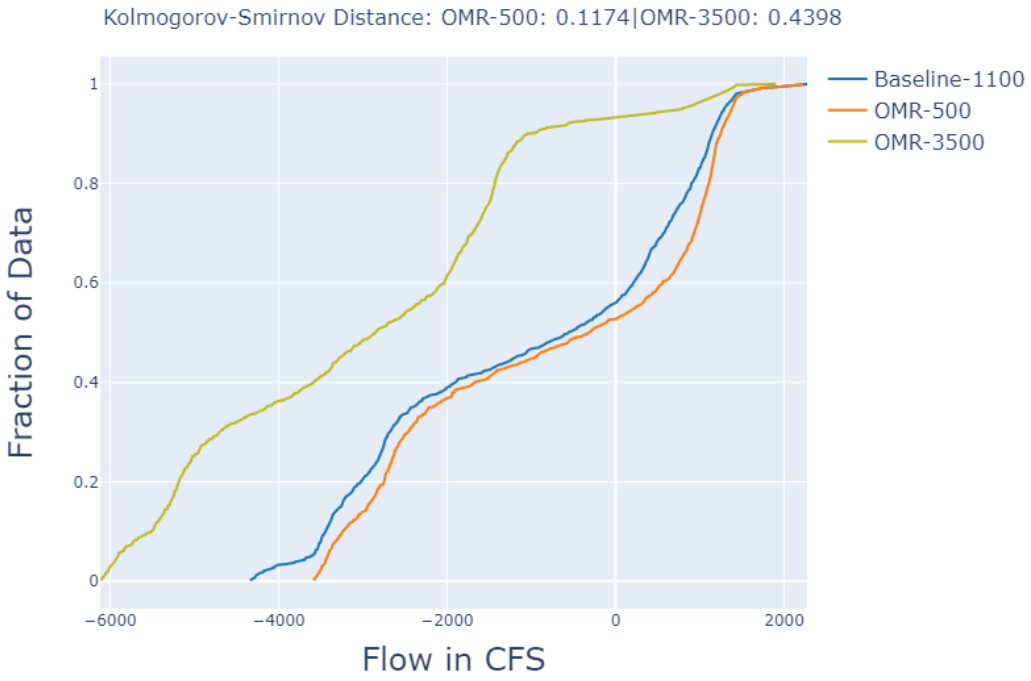


a)

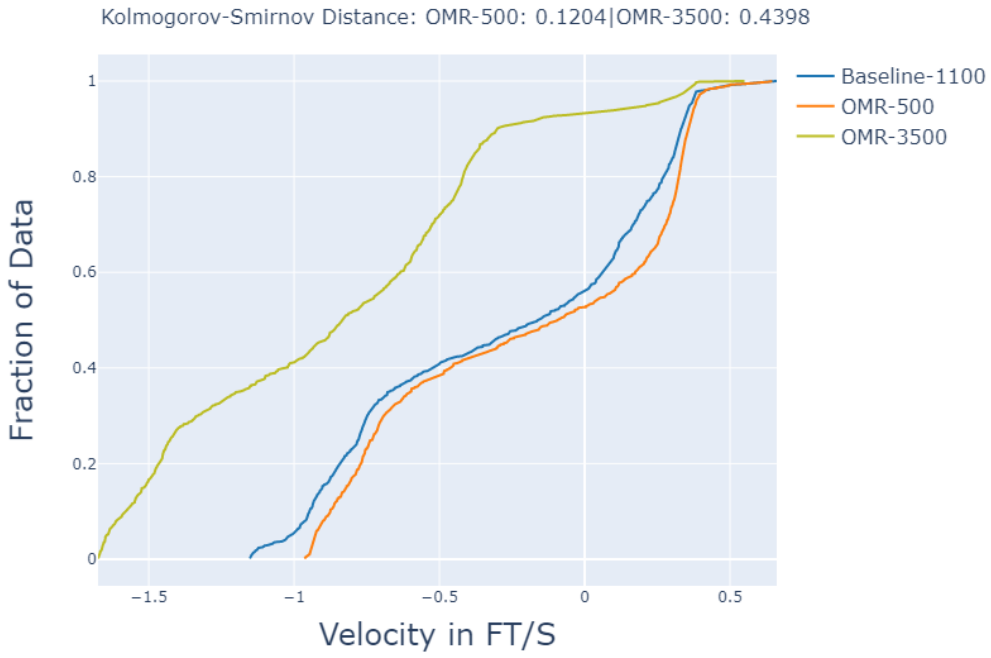


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

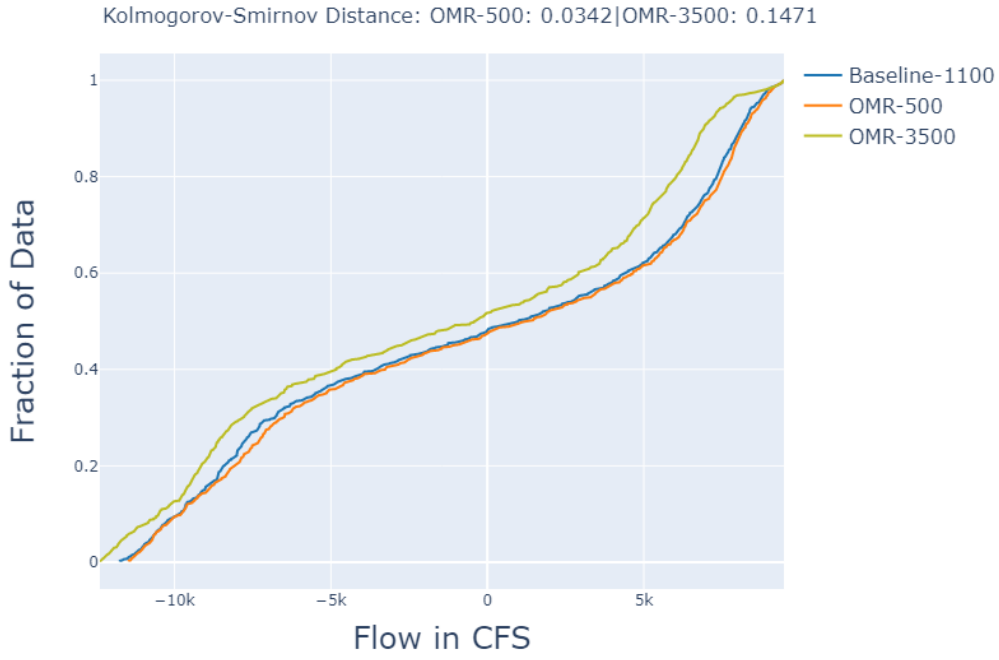


a)

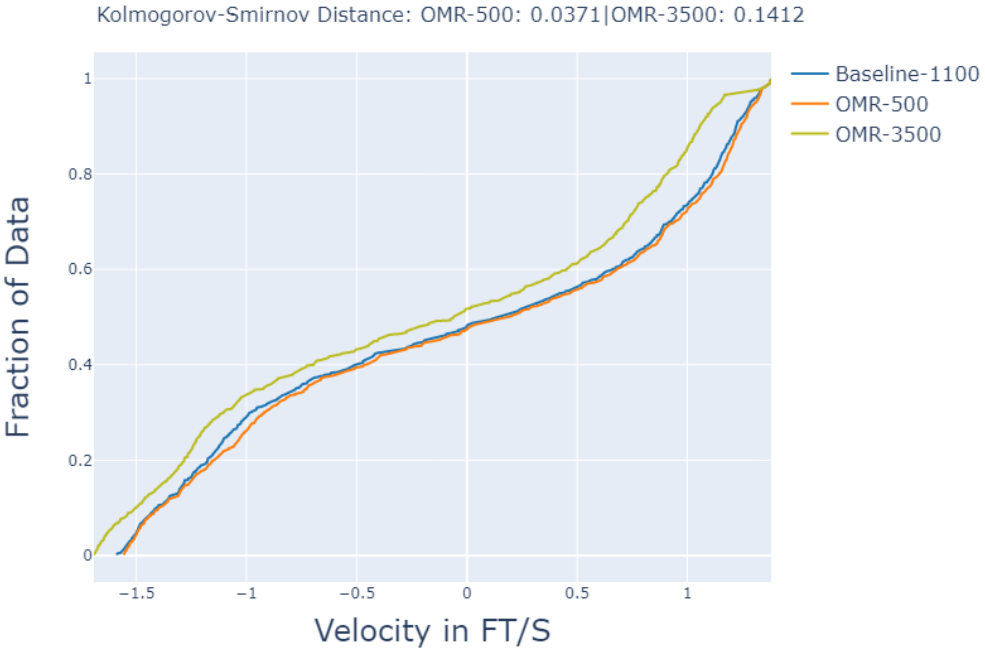


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

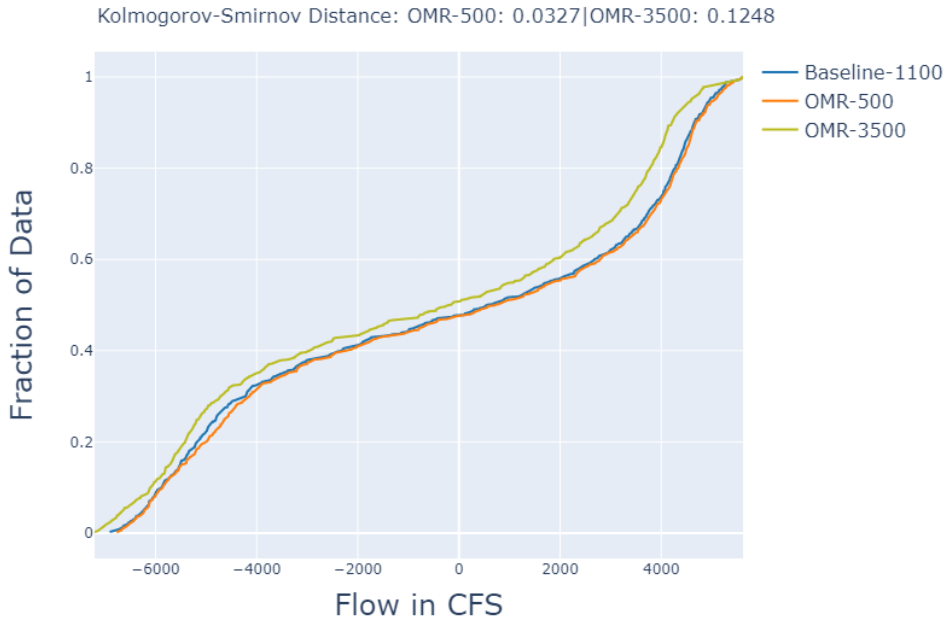


a)

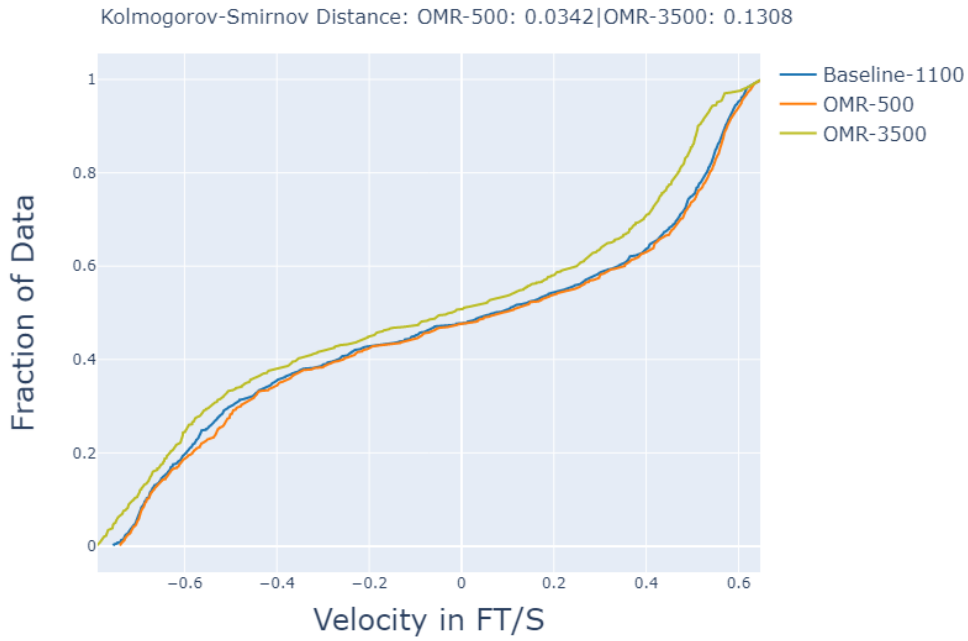


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

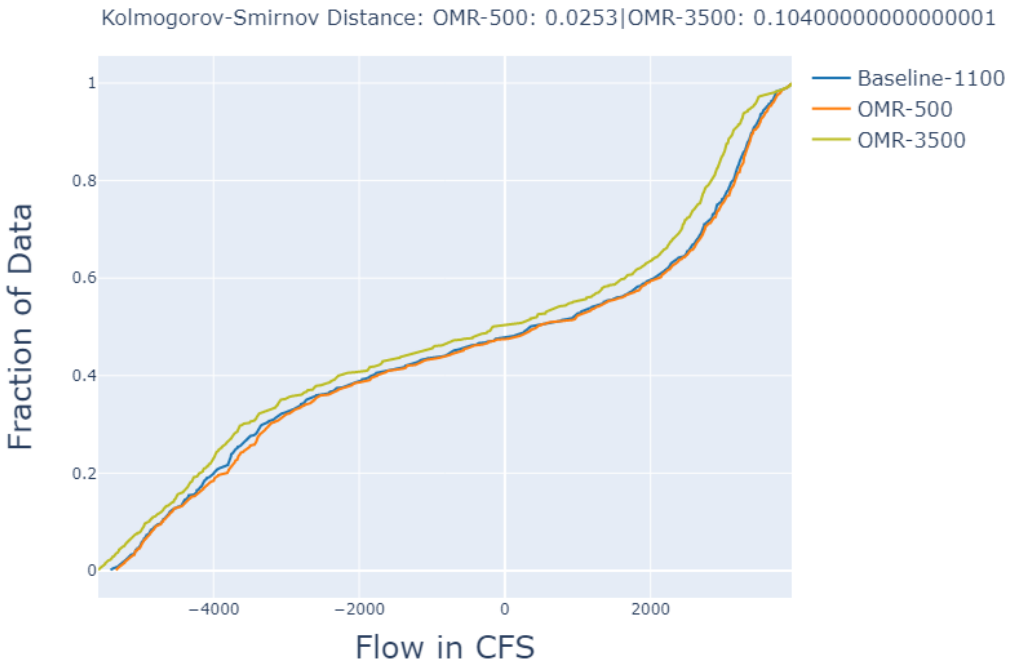


a)

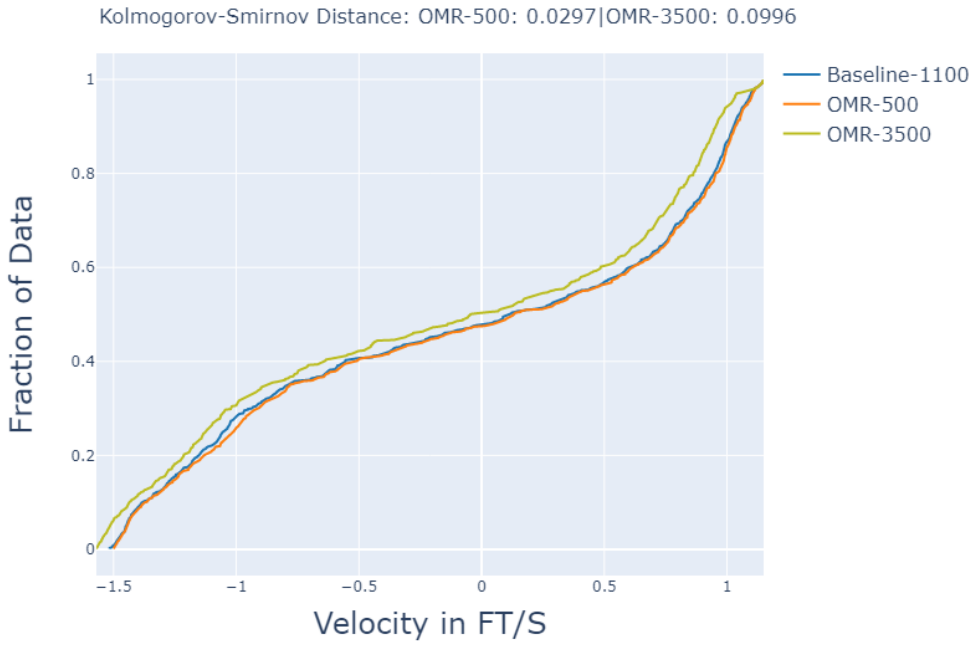


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -500 cfs and OMR -3,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-1,100 cfs)	6	839	2230	1754	100	0.38	1.32	0.95	100
Scenario OMR -3,500 cfs	6	839	2227	1755	100	0.38	1.33	0.96	100
Scenario OMR -500 cfs	6	839	2233	1753	100	0.38	1.32	0.95	100
Baseline (-1,100 cfs)	21	-6293	6575	839	56.5	-0.43	0.43	0.06	56.5
Scenario OMR -3,500 cfs	21	-6293	6567	776	56.0	-0.43	0.43	0.06	56.0
Scenario OMR -500 cfs	21	-6293	6578	849	56.8	-0.43	0.43	0.06	56.8
Baseline (-1,100 cfs)	49	-149005	129428	2674	53.5	-1.89	1.73	0.06	53.5
Scenario OMR -3,500 cfs	49	-150026	129428	1071	52.6	-1.91	1.73	0.03	52.6
Scenario OMR -500 cfs	49	-148613	129428	2944	53.6	-1.89	1.73	0.06	53.6
Baseline (-1,100 cfs)	81	-4341	2273	-998	44.1	-1.15	0.66	-0.27	44.1
Scenario OMR -3,500 cfs	81	-6118	1904	-3021	6.8	-1.67	0.55	-0.87	6.8
Scenario OMR -500 cfs	81	-3588	2224	-754	47.4	-0.96	0.64	-0.2	47.4

Baseline (-1,100 cfs)	94	-11742	9479	-274	52.0	-1.59	1.38	-0.01	52.0
Scenario OMR -3,500 cfs	94	-12385	9479	-1379	48.3	-1.69	1.38	-0.17	48.3
Scenario OMR -500 cfs	94	-11471	9479	-80	52.8	-1.56	1.38	0.02	52.8
Baseline (-1,100 cfs)	107	-5414	3938	-271	52.3	-1.52	1.15	-0.06	52.3
Scenario OMR -3,500 cfs	107	-5582	3938	-564	49.6	-1.57	1.15	-0.15	49.6
Scenario OMR -500 cfs	107	-5340	3938	-219	52.6	-1.5	1.15	-0.05	52.6
Baseline (-1,100 cfs)	124	-17994	11574	-1758	47.3	-0.59	0.39	-0.05	47.3
Scenario OMR -3,500 cfs	124	-18373	11574	-2304	45.8	-0.6	0.39	-0.07	45.8
Scenario OMR -500 cfs	124	-17973	11574	-1664	47.7	-0.59	0.39	-0.05	47.7
Baseline (-1,100 cfs)	148	-6898	5618	-232	52.3	-0.75	0.65	-0.01	52.3
Scenario OMR -3,500 cfs	148	-7205	5618	-726	49.3	-0.79	0.65	-0.07	49.3
Scenario OMR -500 cfs	148	-6767	5618	-146	52.5	-0.74	0.65	0	52.5
Baseline (-1,100 cfs)	160	-4418	3248	-14	53.3	-0.48	0.43	0.02	53.3
Scenario OMR -3,500 cfs	160	-4547	3248	-243	52.0	-0.49	0.43	-0.01	52.0
Scenario OMR -500 cfs	160	-4361	3277	28	54.2	-0.47	0.43	0.02	54.2
Baseline (-1,100 cfs)	434	-155133	141143	4839	53.8	-1.75	1.68	0.08	53.8
Scenario OMR -3,500 cfs	434	-155332	140951	4446	53.6	-1.75	1.68	0.08	53.6
Scenario OMR -500 cfs	434	-155049	141224	4907	53.8	-1.75	1.68	0.09	53.8

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -1,100 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -500 cfs**	**Scenario OMR -3,500 cfs**	**Scenario OMR -500 cfs**	**Scenario OMR -3,500 cfs**
6	0.01	0.06	0.01	0.03
21	0.01	0.02	0.01	0.02
49	0.01	0.02	0.01	0.02
81	0.12	0.44	0.12	0.44
94	0.03	0.15	0.04	0.14
107	0.03	0.10	0.03	0.10
124	0.02	0.03	0.02	0.04
148	0.03	0.12	0.03	0.13
160	0.03	0.15	0.03	0.13
434	0.00	0.01	0.00	0.01

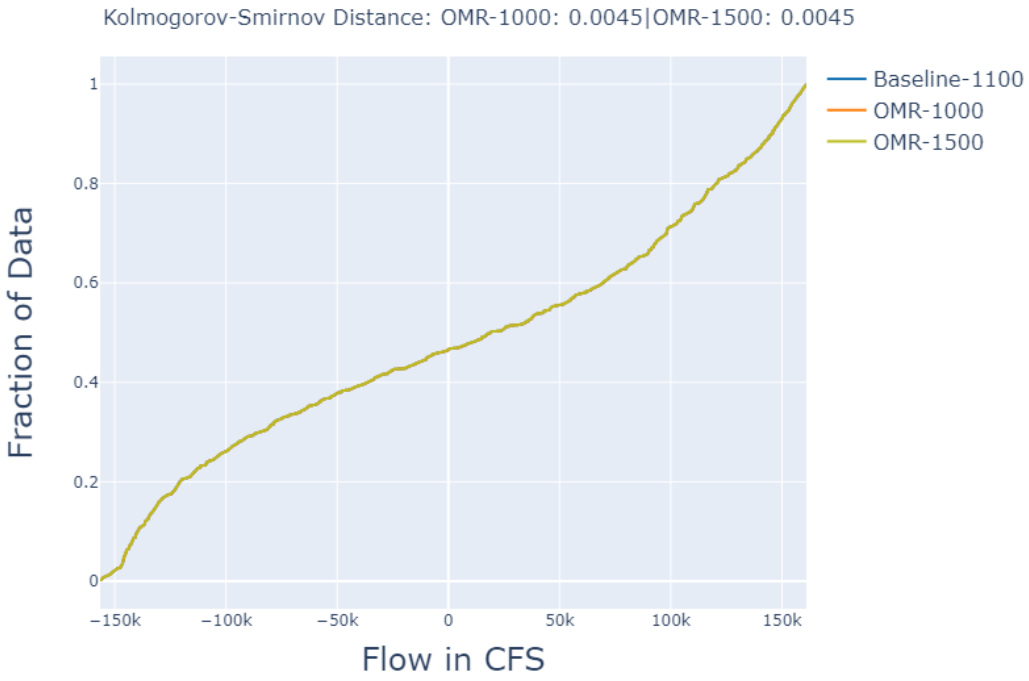
5/19/2020

DWR baseline forecast 05/12/2020 to 06/01/2020
CVO updated baseline and Scenarios on 05/18/2020.
CVO OMR action taking place on 05/20/2020 to 05/25/2020
DSM2 modeling results valid 05/20/2020 to 05/26/2020

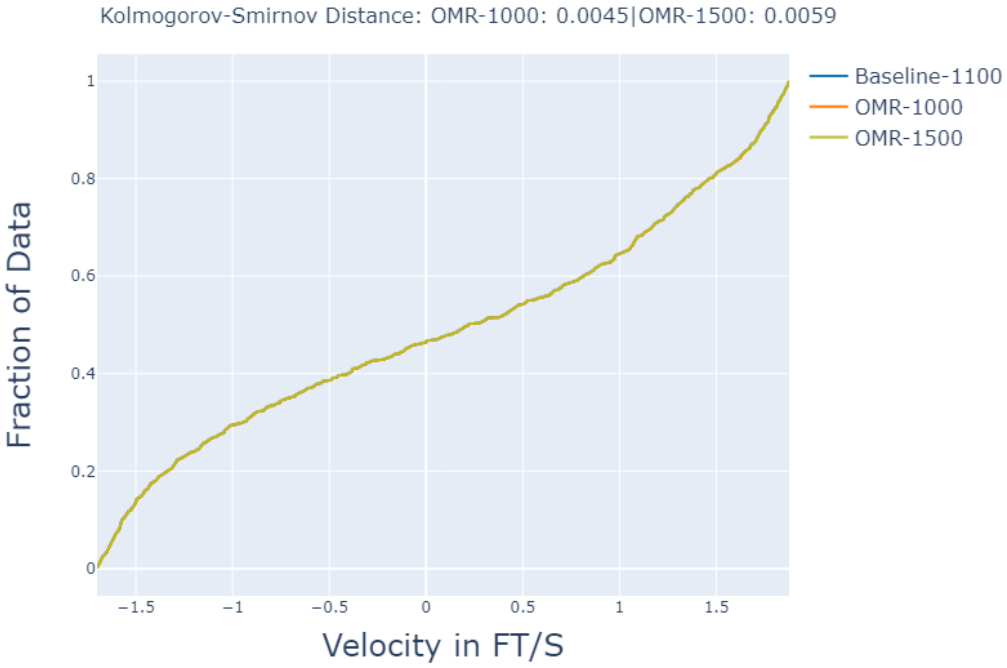
Baseline: –1,100 cfs OMR
Scenario –1,000: –1,000 cfs OMR
Scenario –1,500: –1,500 cfs OMR

DSM2 modeling for May 20 through May 25 shows little variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,000 cfs, hereafter referred to as Scenario -500 cfs) to –1,500 cfs (increasing pumping from OMR -1,100 cfs, hereafter referred to as Scenario –1,500 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

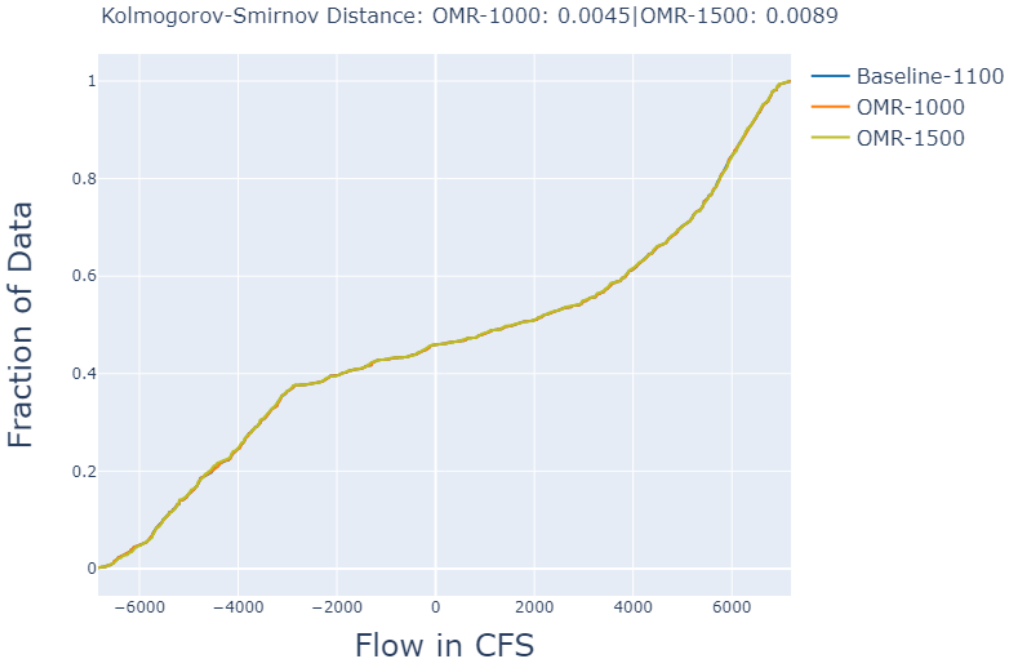


a)

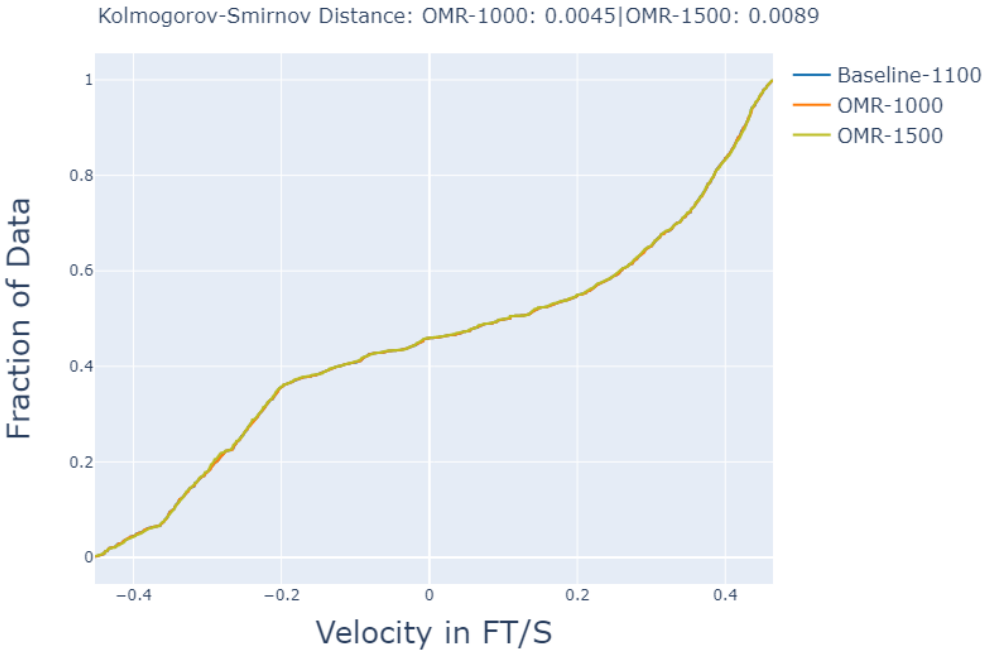


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

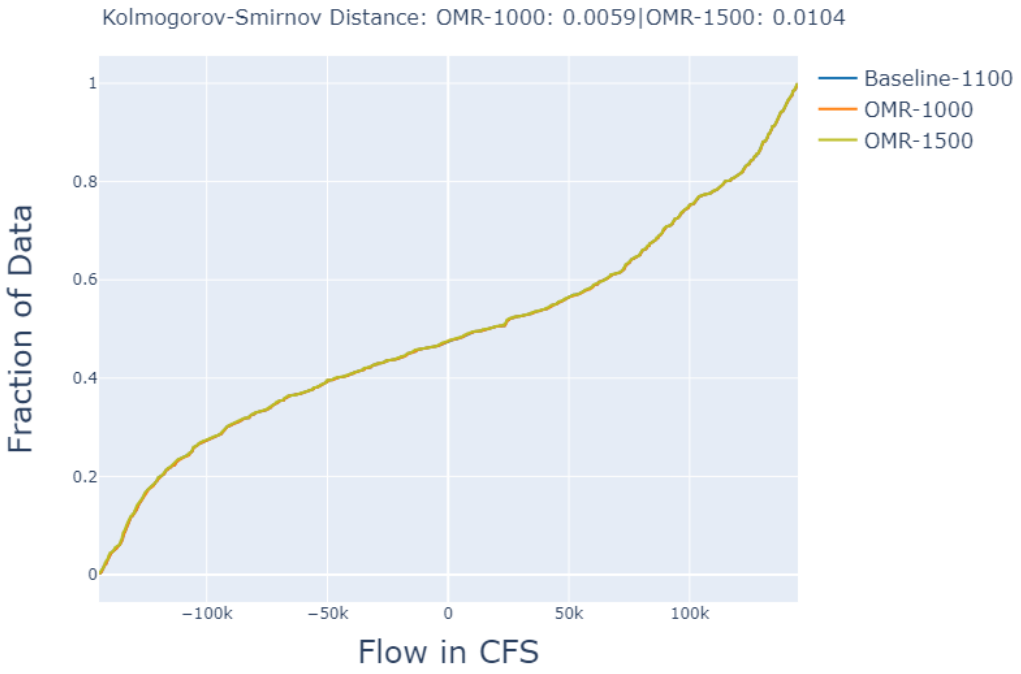


a)

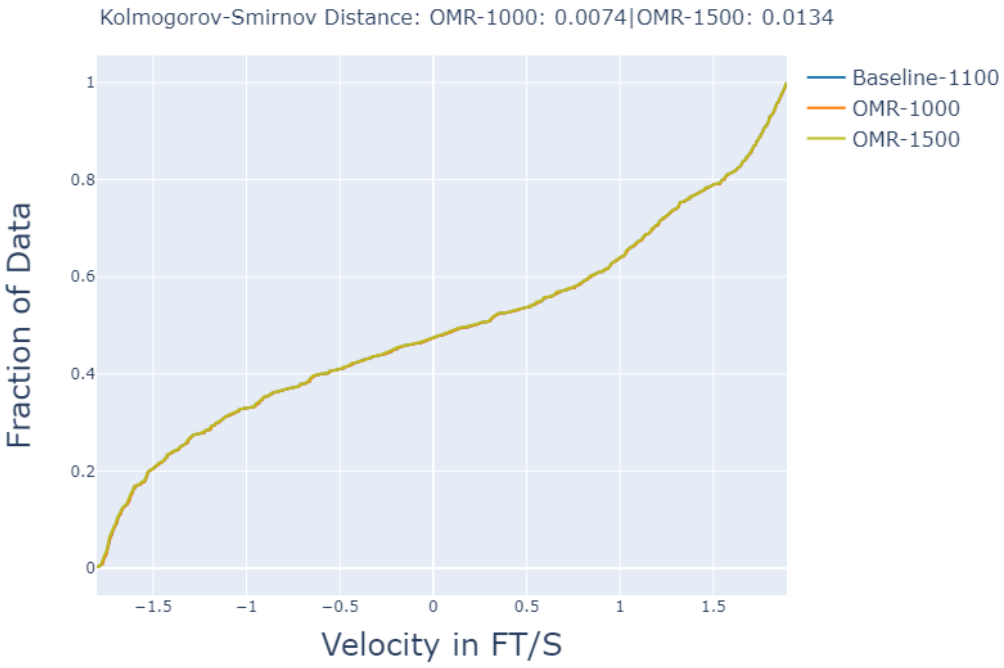


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



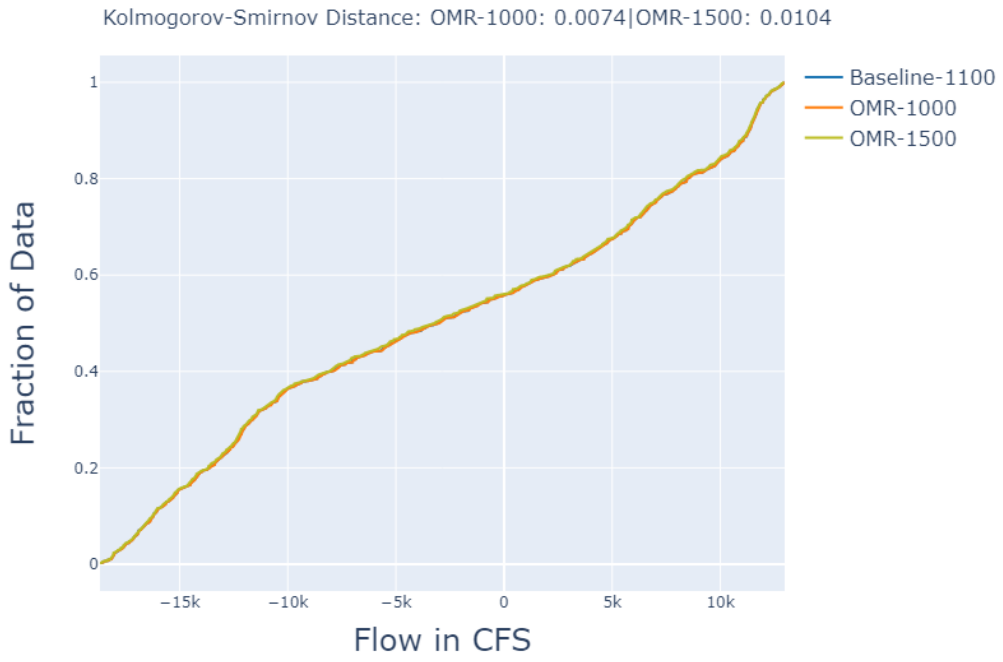
a)



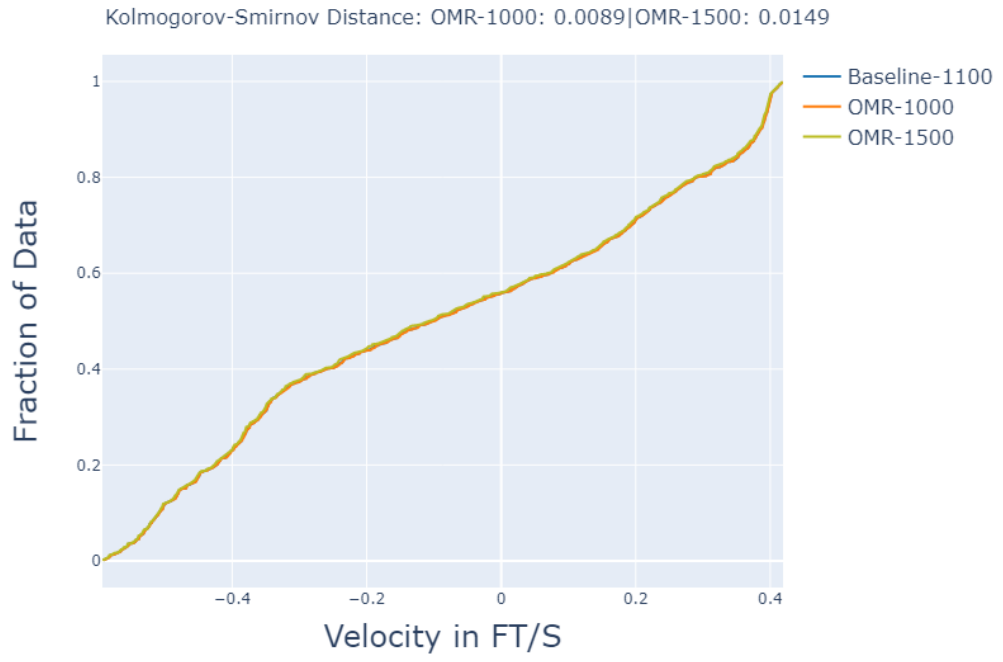
b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute

time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



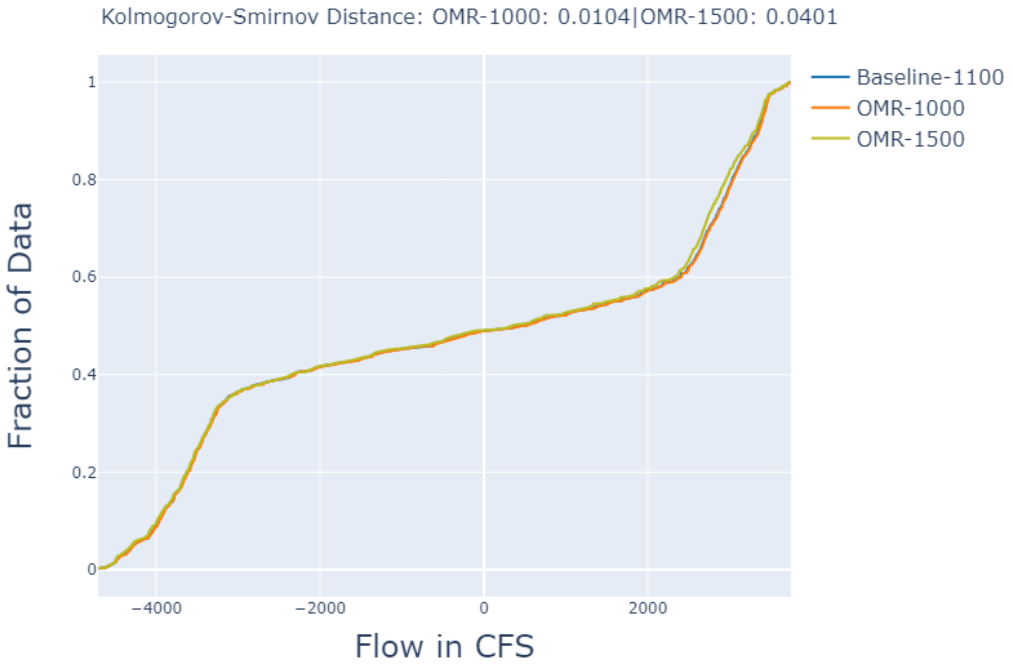
a)



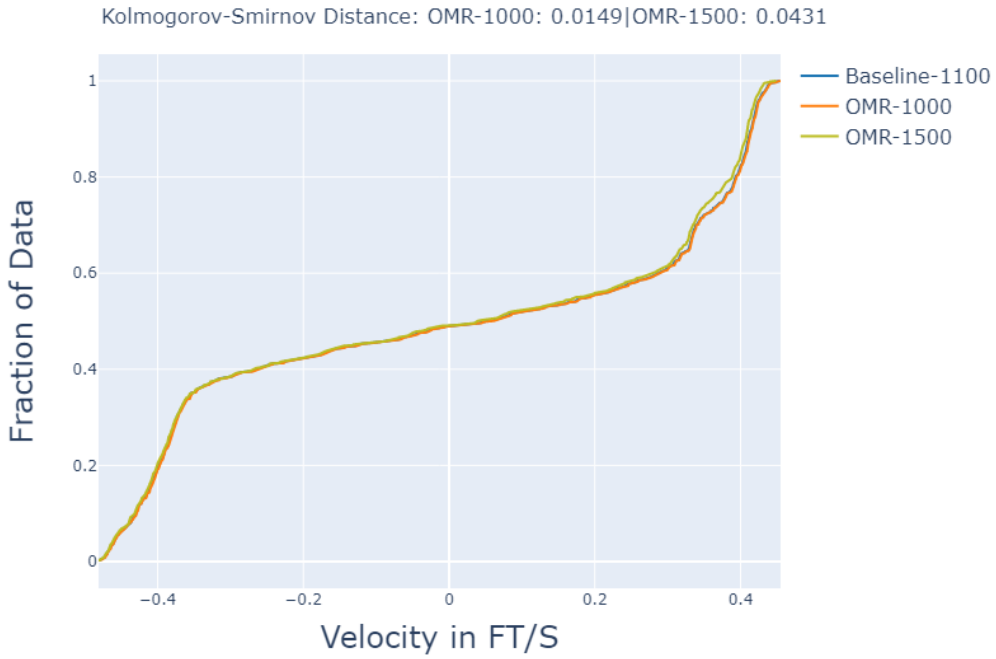
b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow

values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

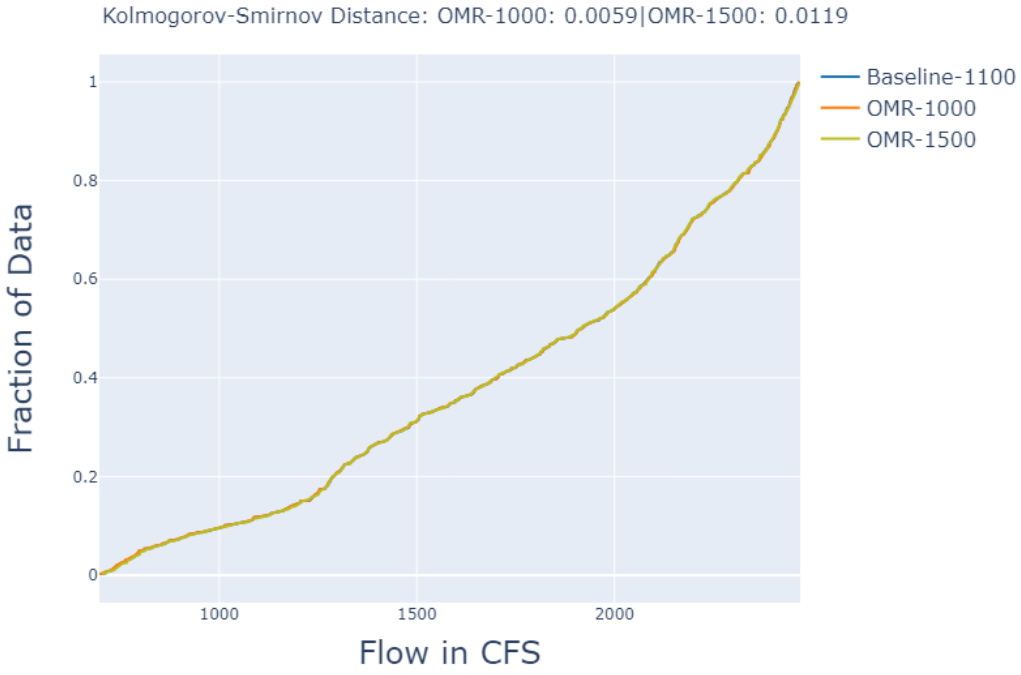


a)

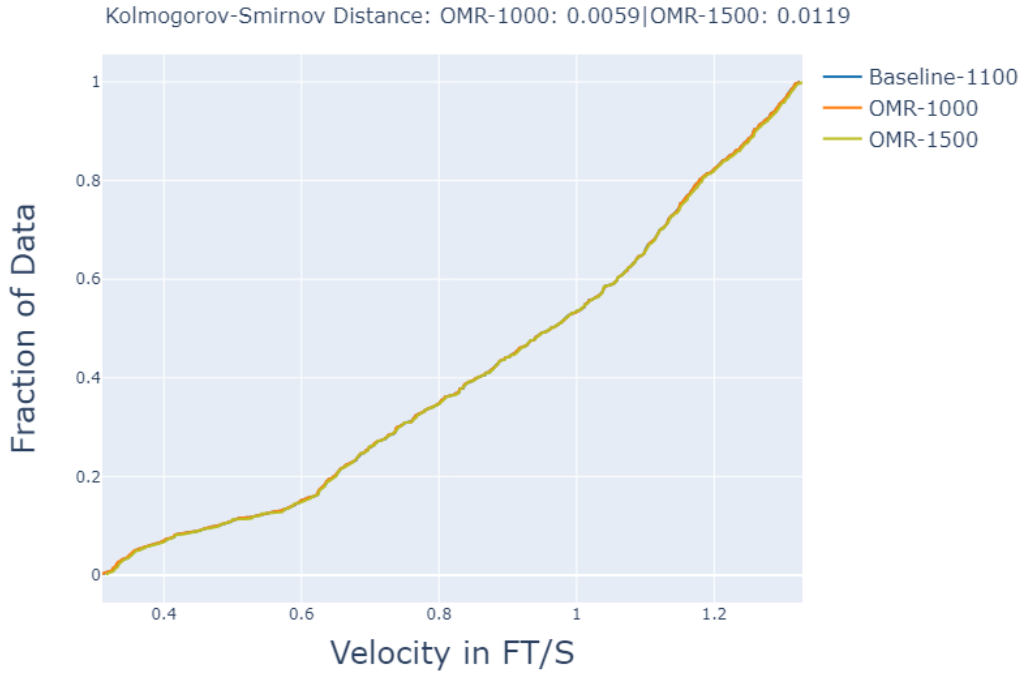


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

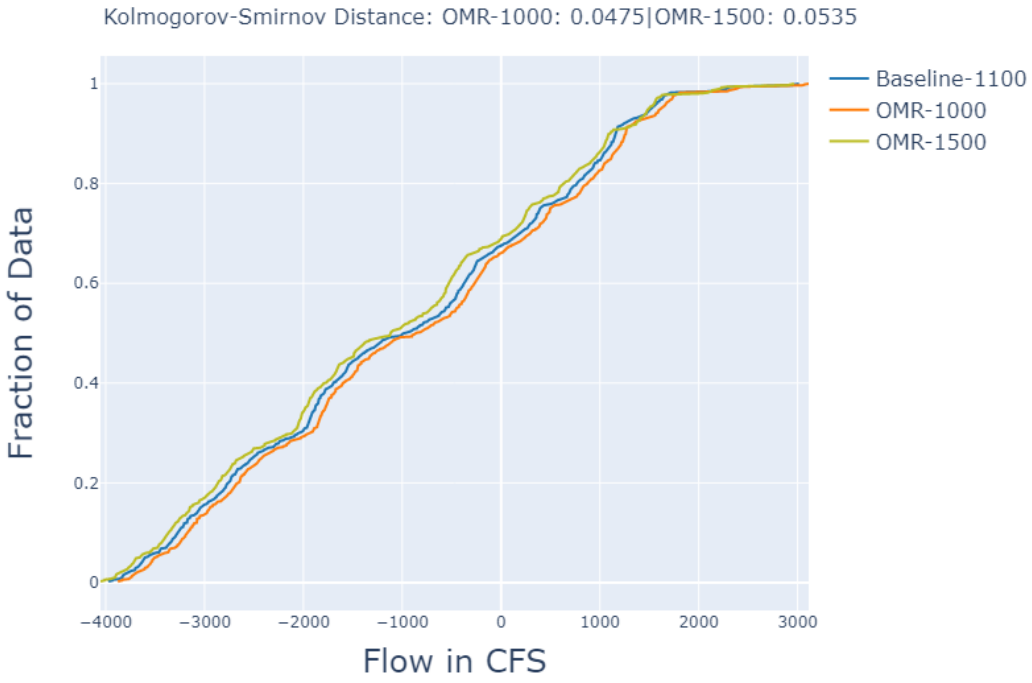


a)

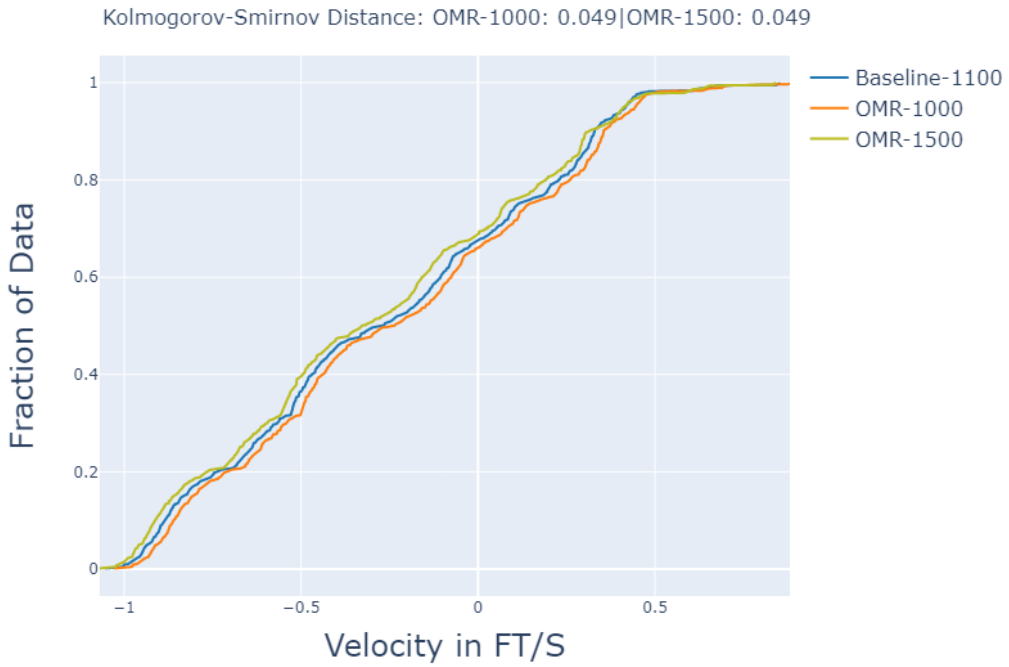


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

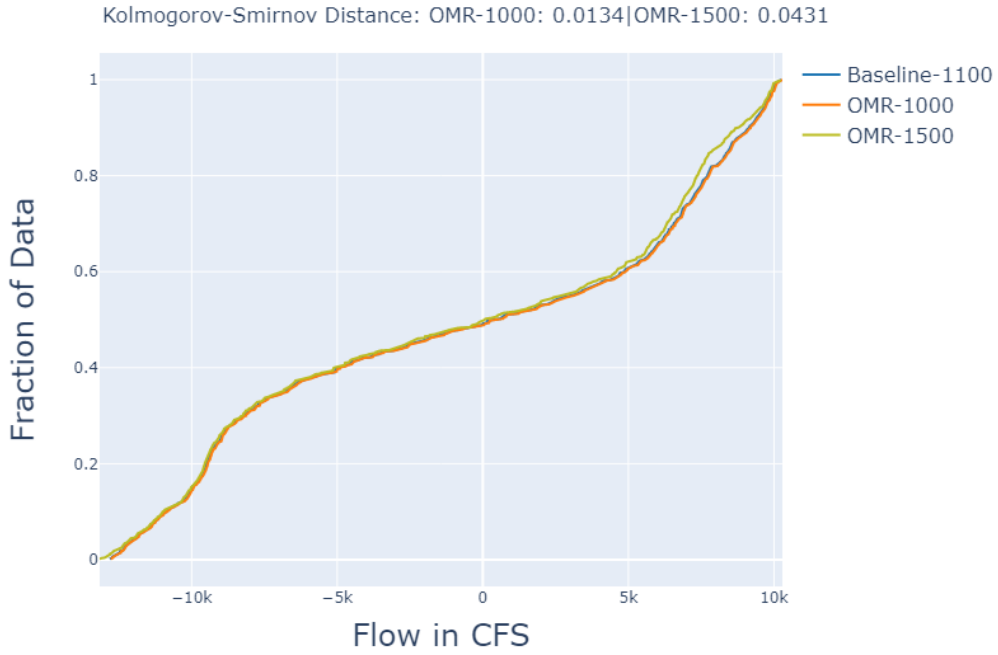


a)

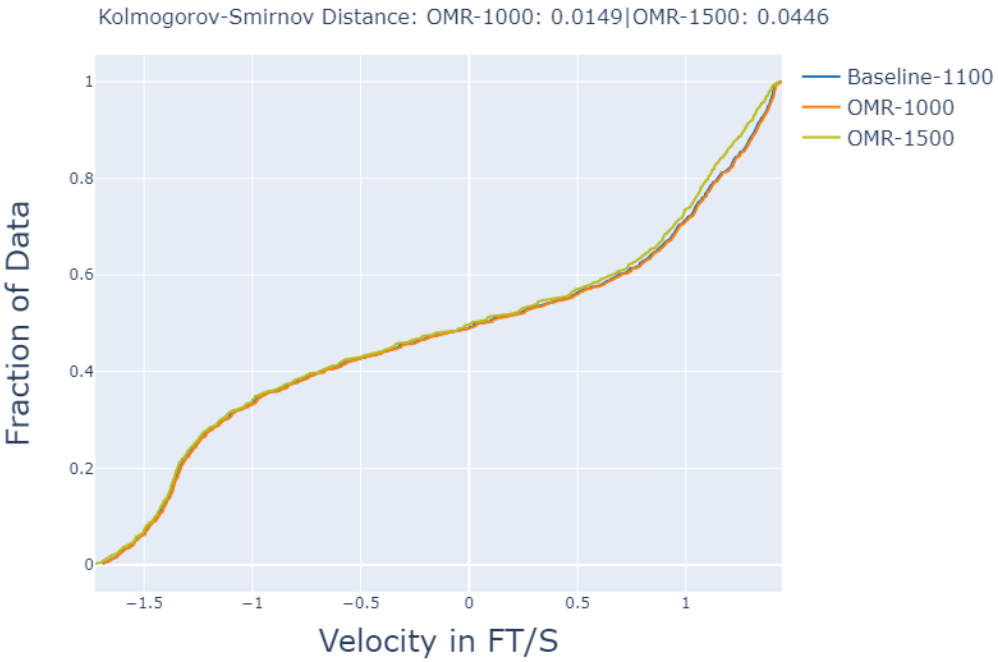


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

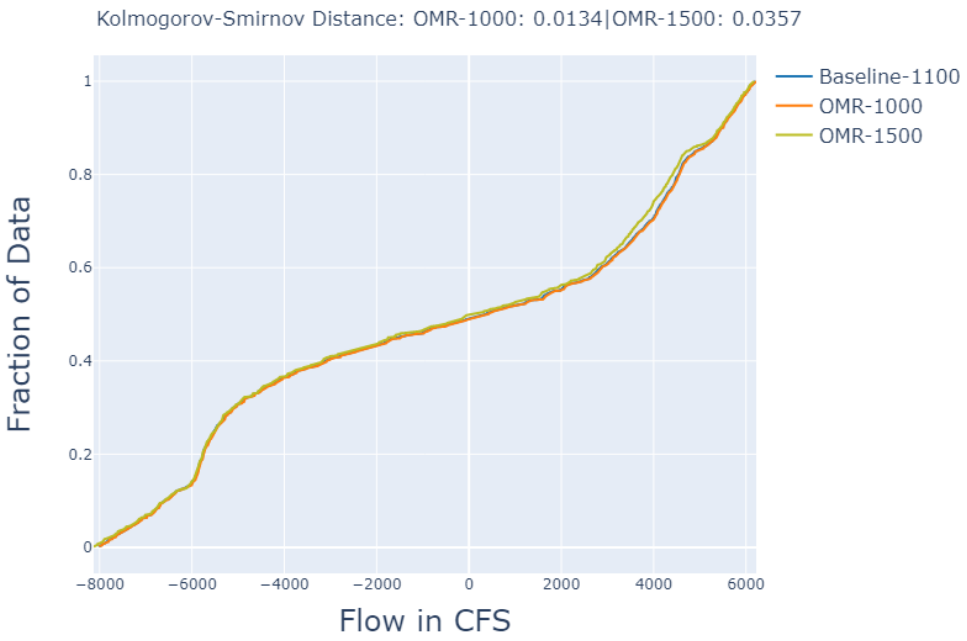


a)

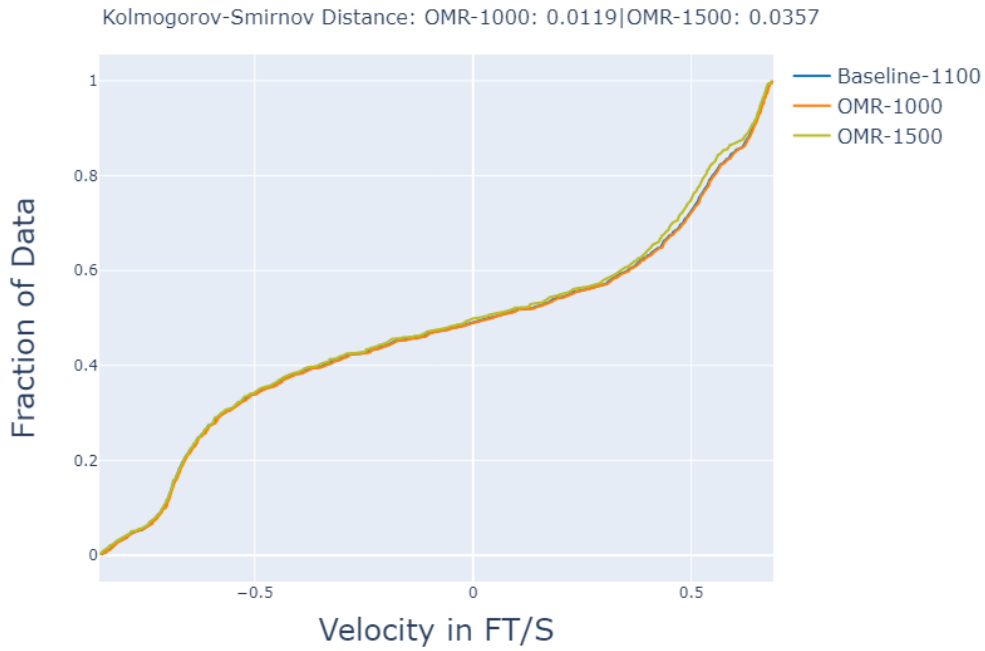


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

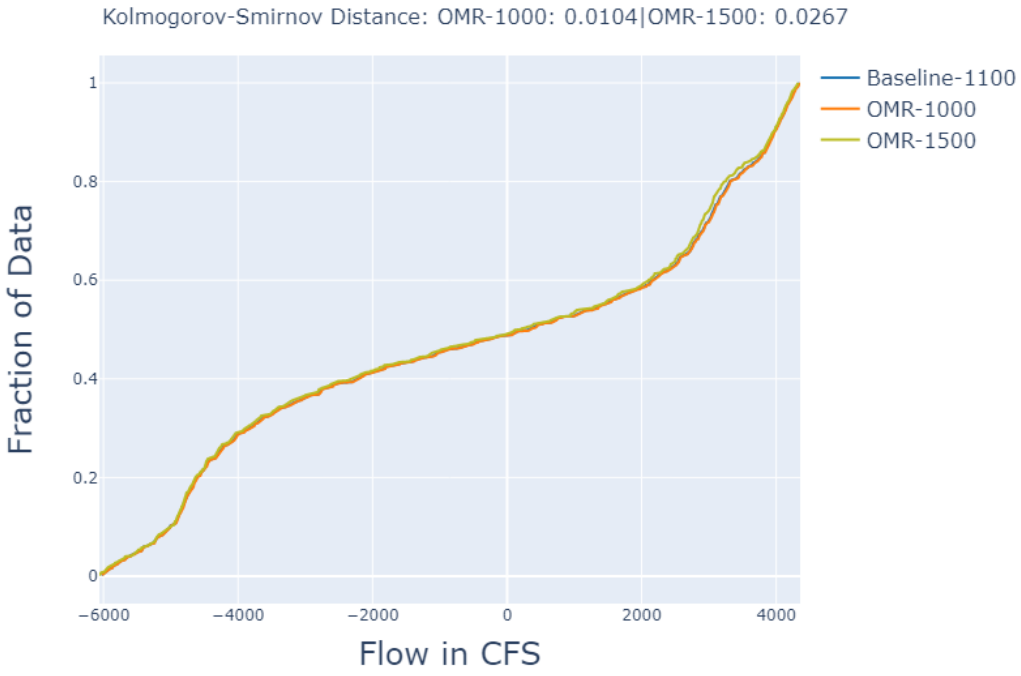


a)

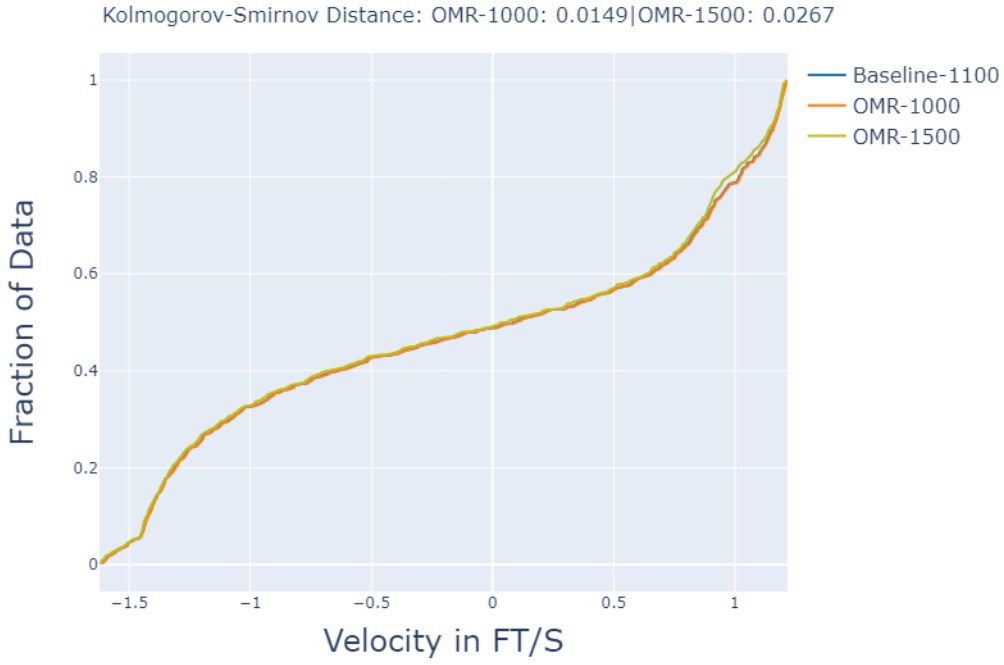


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -1,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.


Kolmogorov-Smirnov Distance: OMR-1000: 0.0104|OMR-1500: 0.0267
Baseline-1100
OMR-1000
OMR-1500
Fraction of Data
Flow in CFS
1
0.8
0.6
0.4
0.2
0
−6000
−4000
−2000
0
2000
4000

a)


Kolmogorov-Smirnov Distance: OMR-1000: 0.0149|OMR-1500: 0.0267
Baseline-1100
OMR-1000
OMR-1500
Fraction of Data
Velocity in FT/S
1
0.8
0.6
0.4
0.2
0
−1.5
−1
−0.5
0
0.5
1

b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-1,100 cfs)	6	700	2467	1801	100	0.31	1.32	0.91	100
Scenario OMR -1,000 cfs	6	697	2468	1801	100	0.31	1.32	0.91	100
Scenario OMR -1,500 cfs	6	703	2470	1801	100	0.32	1.33	0.92	100
Baseline (-1,100 cfs)	21	-6833	7195	731	54.1	-0.45	0.46	0.05	54.1
Scenario OMR -1,000 cfs	21	-6835	7197	735	54.1	-0.45	0.46	0.05	54.1
Scenario OMR -1,500 cfs	21	-6830	7177	724	54.1	-0.45	0.46	0.05	54.1
Baseline (-1,100 cfs)	49	-144509	144778	3345	52.8	-1.8	1.89	0.07	52.8
Scenario OMR -1,000 cfs	49	-144459	144826	3422	52.8	-1.8	1.89	0.07	52.8
Scenario OMR -1,500 cfs	49	-144560	144642	3054	52.6	-1.8	1.89	0.06	52.6
Baseline (-1,100 cfs)	81	-3972	3014	-998	32.4	-1.05	0.85	-0.26	32.4
Scenario OMR -1,000 cfs	81	-3876	3111	-896	34.2	-1.03	0.88	-0.24	34.2
Scenario OMR -1,500 cfs	81	-4053	2964	-1096	31.2	-1.07	0.84	-0.29	31.2

Baseline (-1,100 cfs)	94	-12811	10247	-587	51.0	-1.69	1.44	-0.05	51.0
Scenario OMR -1,000 cfs	94	-12783	10287	-536	51.3	-1.69	1.44	-0.04	51.3
Scenario OMR -1,500 cfs	94	-13158	10207	-783	50.4	-1.72	1.43	-0.08	50.4
Baseline (-1,100 cfs)	107	-6022	4345	-380	51.3	-1.61	1.21	-0.09	51.3
Scenario OMR -1,000 cfs	107	-6015	4355	-366	51.3	-1.61	1.22	-0.08	51.3
Scenario OMR -1,500 cfs	107	-6061	4326	-432	51.0	-1.62	1.21	-0.1	51.0
Baseline (-1,100 cfs)	124	-18624	12957	-2768	44.1	-0.59	0.42	-0.08	44.1
Scenario OMR -1,000 cfs	124	-18611	12972	-2742	44.3	-0.59	0.42	-0.08	44.3
Scenario OMR -1,500 cfs	124	-18680	12926	-2867	44.1	-0.59	0.42	-0.08	44.1
Baseline (-1,100 cfs)	148	-8010	6202	-407	51.0	-0.85	0.69	-0.03	51.0
Scenario OMR -1,000 cfs	148	-7999	6221	-383	51.1	-0.85	0.69	-0.03	51.1
Scenario OMR -1,500 cfs	148	-8128	6169	-499	50.2	-0.86	0.68	-0.04	50.2
Baseline (-1,100 cfs)	160	-4709	3739	-185	51.1	-0.48	0.45	0	51.1
Scenario OMR -1,000 cfs	160	-4701	3747	-174	51.1	-0.48	0.45	0	51.1
Scenario OMR -1,500 cfs	160	-4702	3725	-228	51.0	-0.48	0.45	-0.01	51.0
Baseline (-1,100 cfs)	434	-156537	160959	7918	53.5	-1.7	1.88	0.13	53.5
Scenario OMR -1,000 cfs	434	-156524	160967	7939	53.5	-1.7	1.88	0.13	53.5
Scenario OMR -1,500 cfs	434	-156547	160912	7842	53.5	-1.7	1.88	0.13	53.5

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -1,100 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -1,000 cfs**	**Scenario OMR -1,500 cfs**	**Scenario OMR -1,000 cfs**	**Scenario OMR -1,500 cfs**
6	0.01	0.01	0.01	0.01
21	0.00	0.01	0.00	0.01
49	0.01	0.01	0.01	0.01
81	0.05	0.05	0.05	0.05
94	0.01	0.04	0.01	0.04
107	0.01	0.03	0.01	0.03
124	0.01	0.01	0.01	0.01
148	0.01	0.04	0.01	0.04
160	0.01	0.04	0.01	0.04
434	0.00	0.00	0.00	0.01

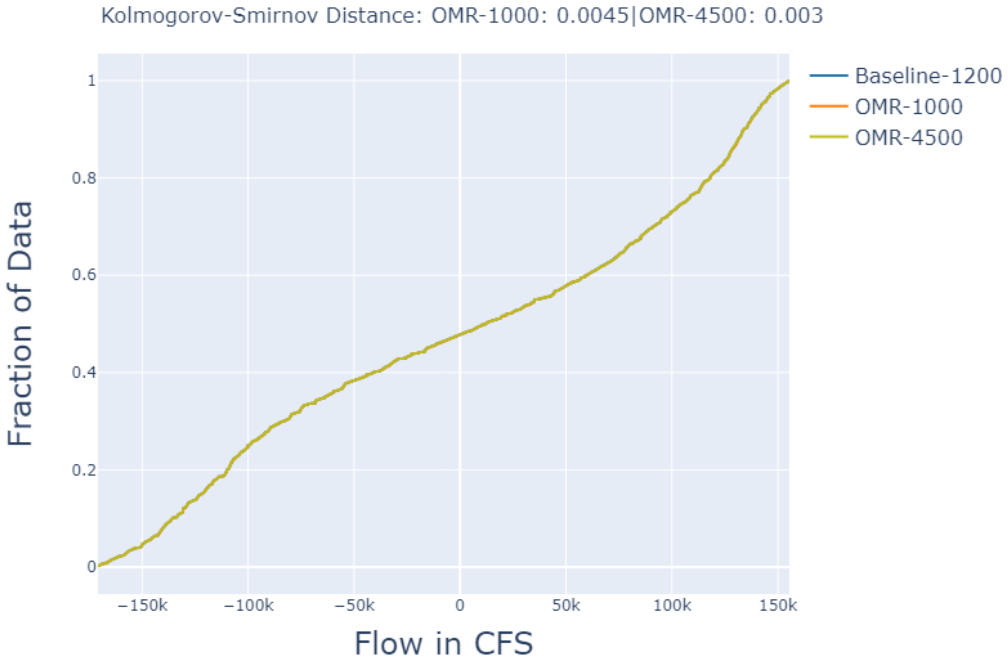
5/26/2020

DWR baseline forecast 05/19/2020 to 06/08/2020
CVO updated baseline and Scenarios on 05/26/2020
CVO OMR action taking place on 05/27/2020 to 06/01/2020
DSM2 modeling results valid 05/27/2020 to 06/02/2020

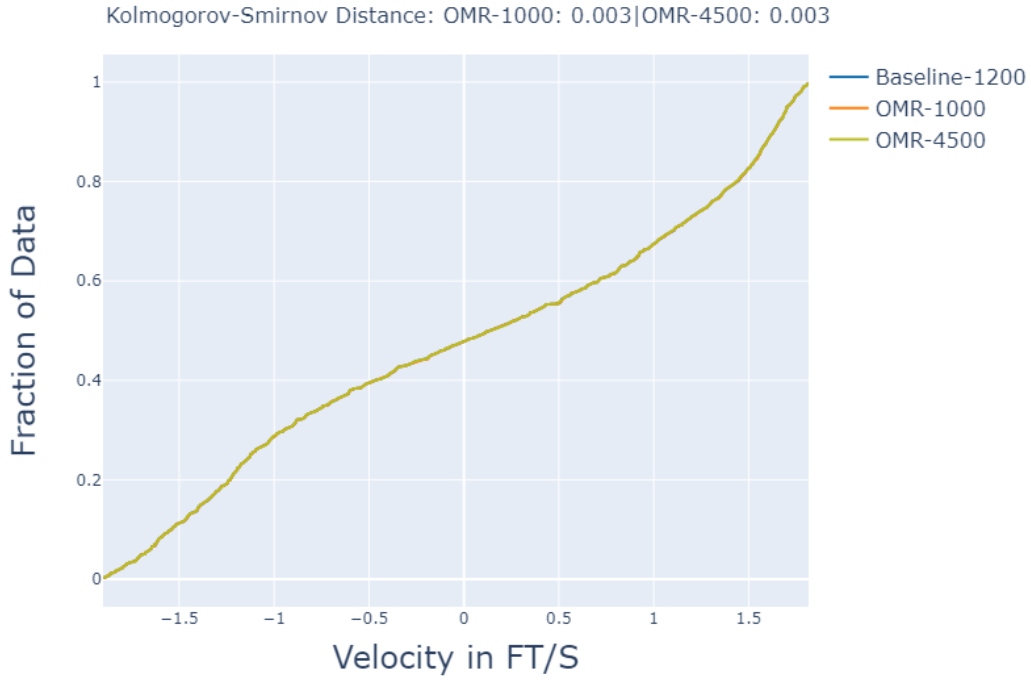
Baseline: –1,200 cfs OMR
Scenario –1,000: –1,000 cfs OMR
Scenario –1,500: –4,500 cfs OMR

DSM2 modeling for May 20 through May 25 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,000 cfs (decreasing pumping from OMR -1,200 cfs, hereafter referred to as Scenario -500 cfs) to –4,500 cfs (increasing pumping from OMR -1,200 cfs, hereafter referred to as Scenario –4,500 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

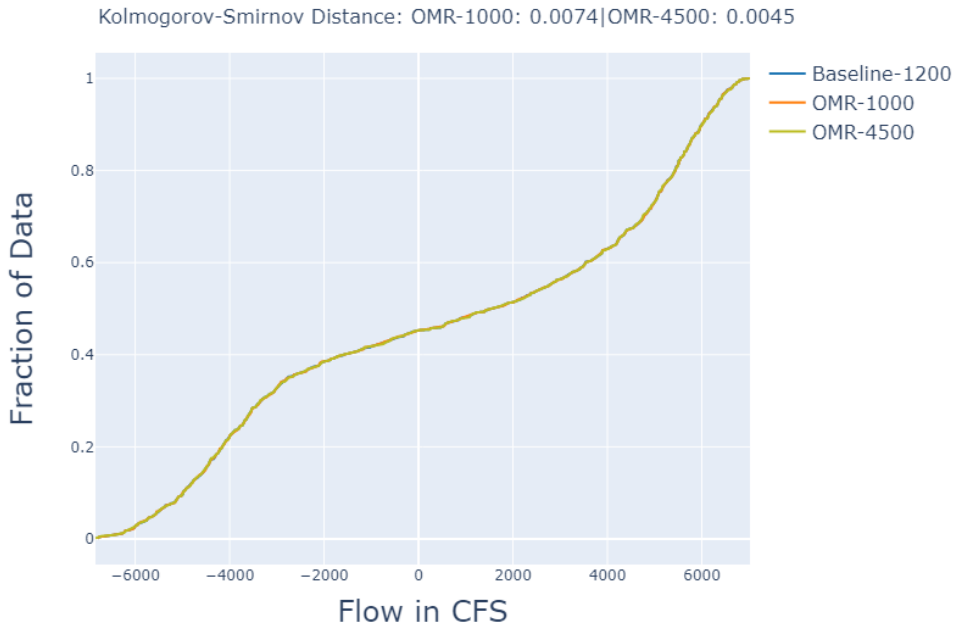


a)

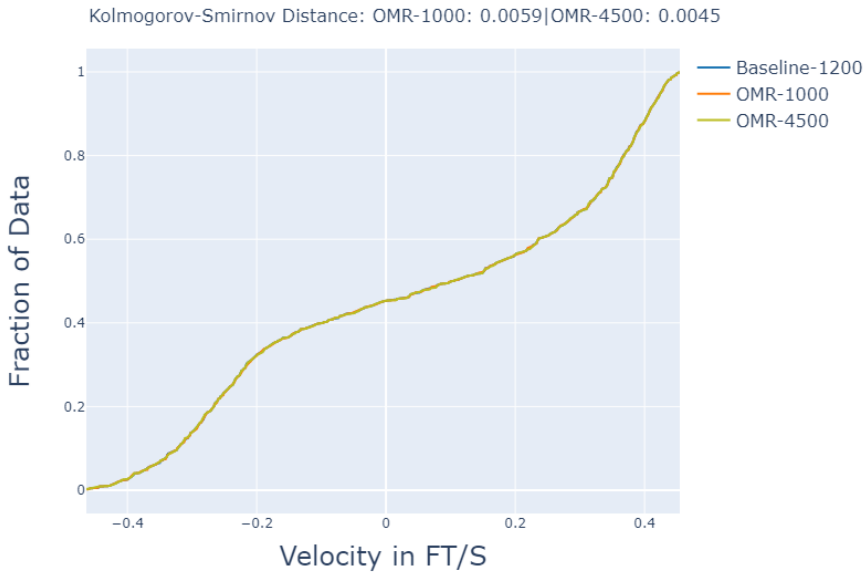


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



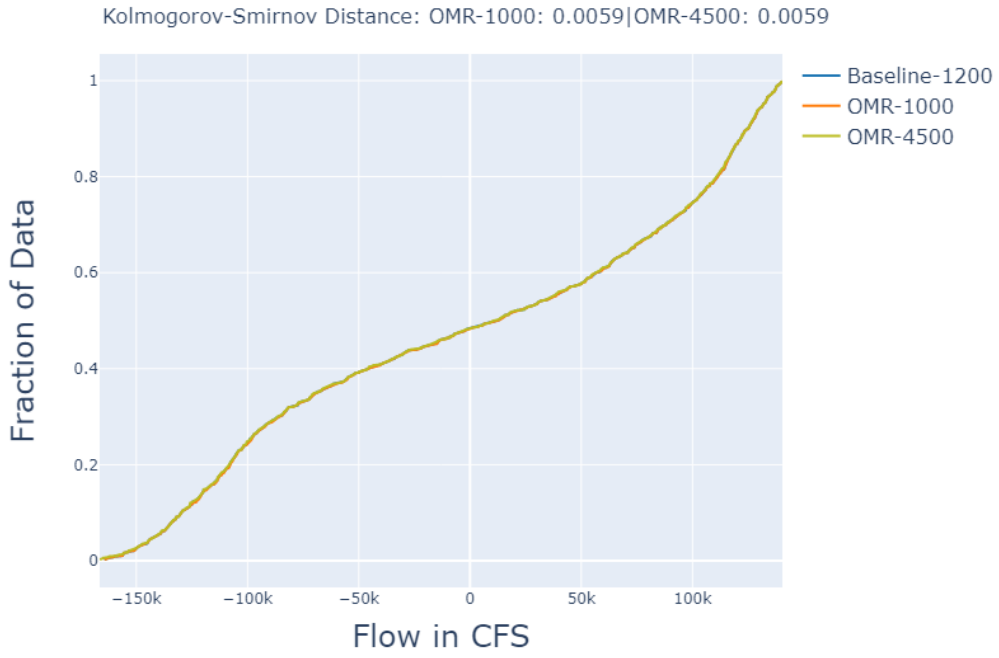
a)



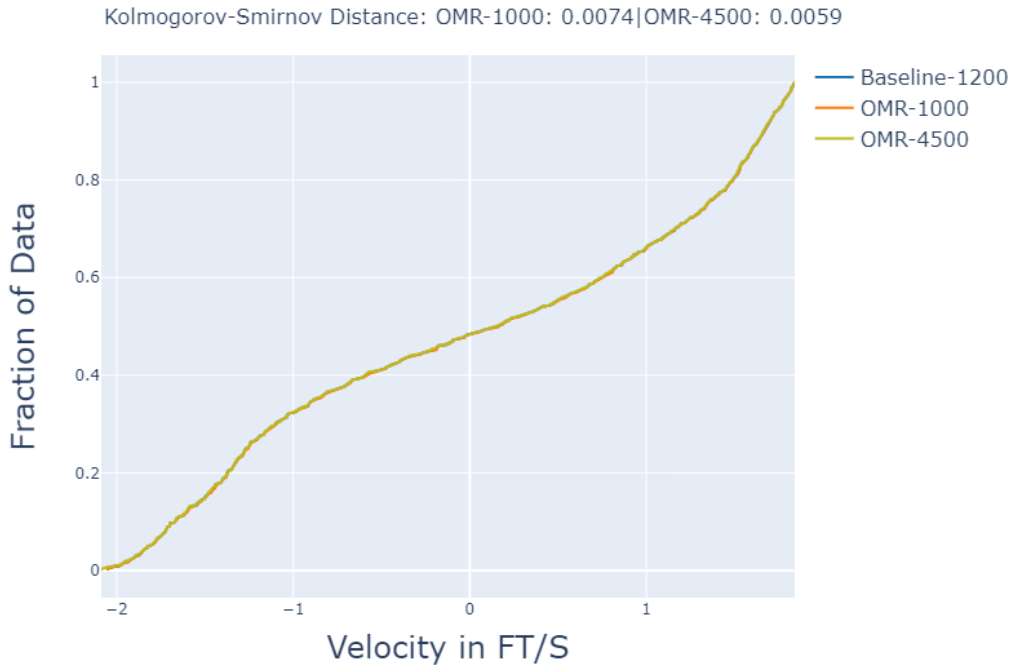
b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

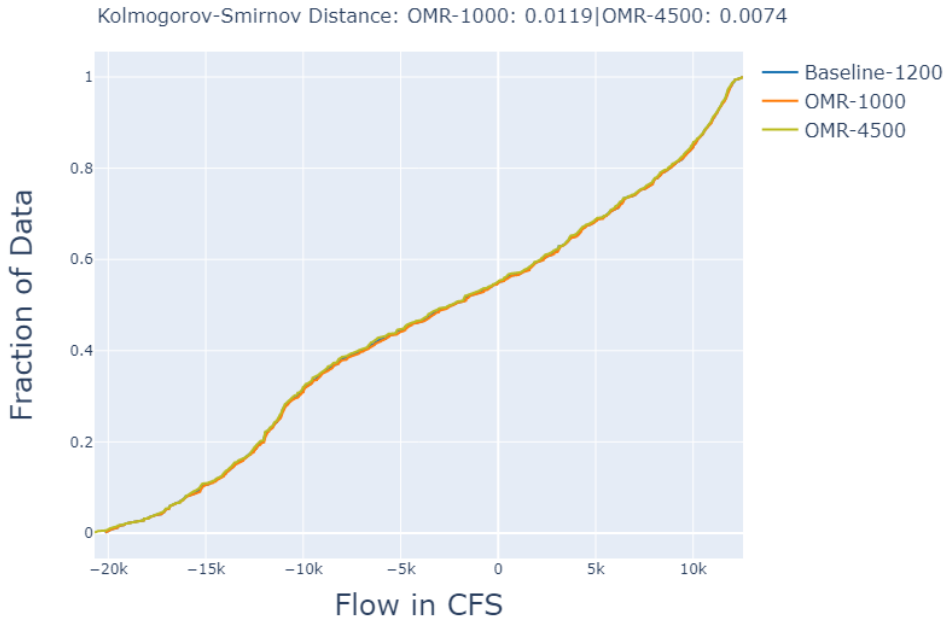


a)

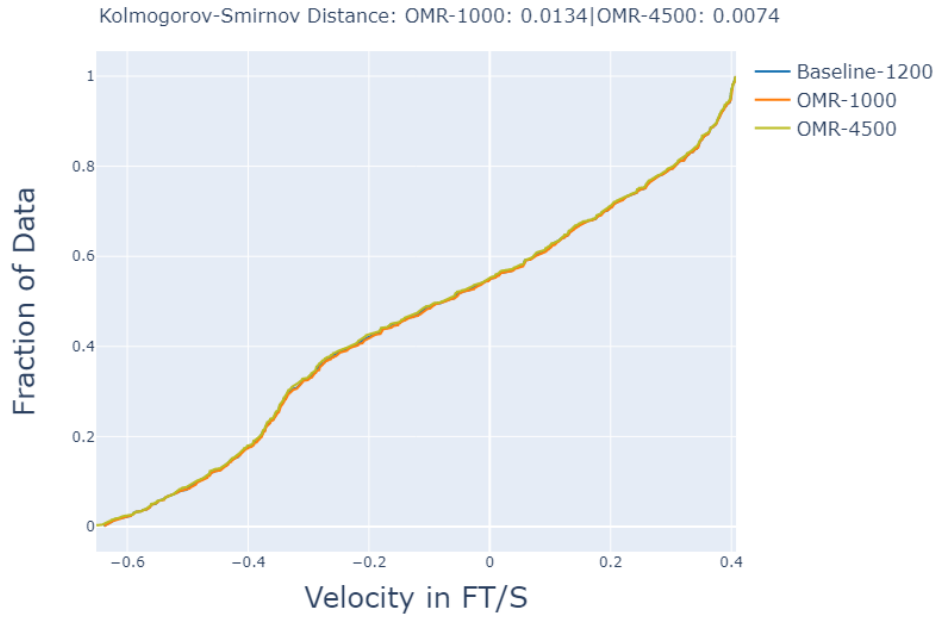


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and
OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

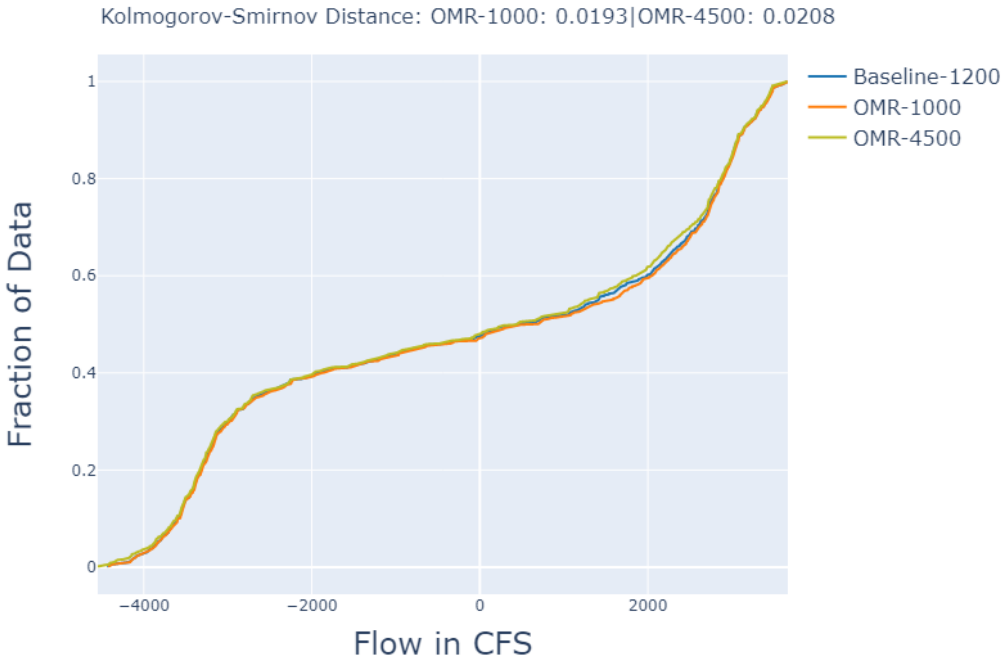


a)

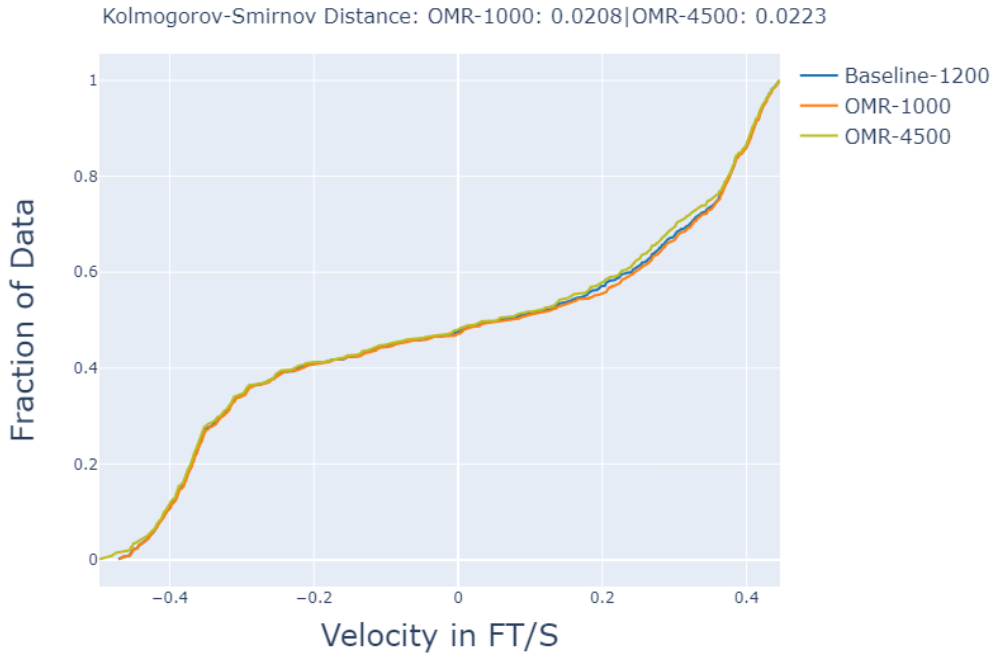


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

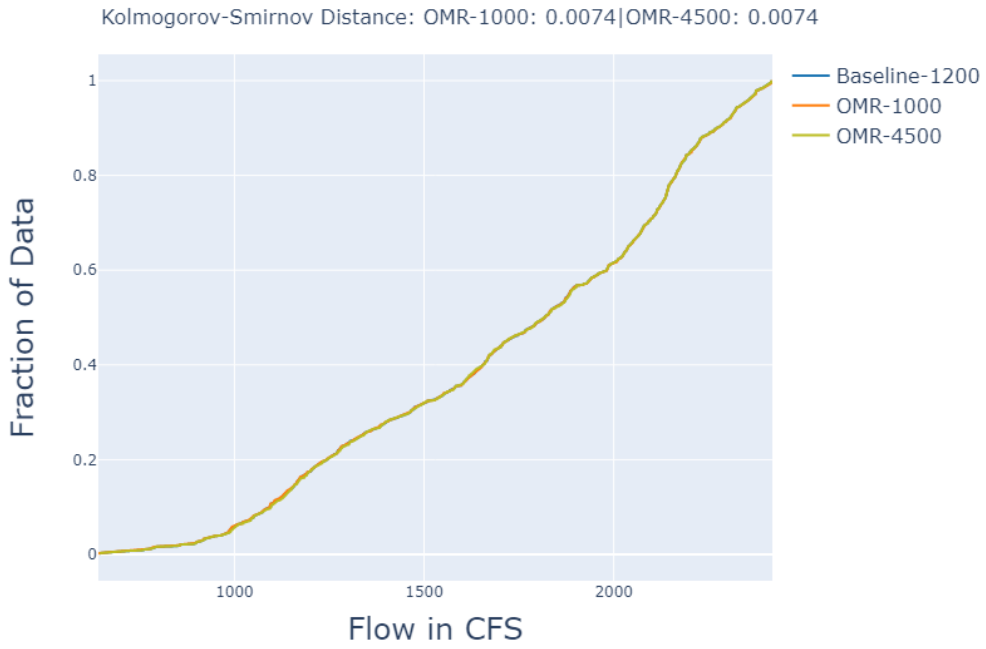


a)

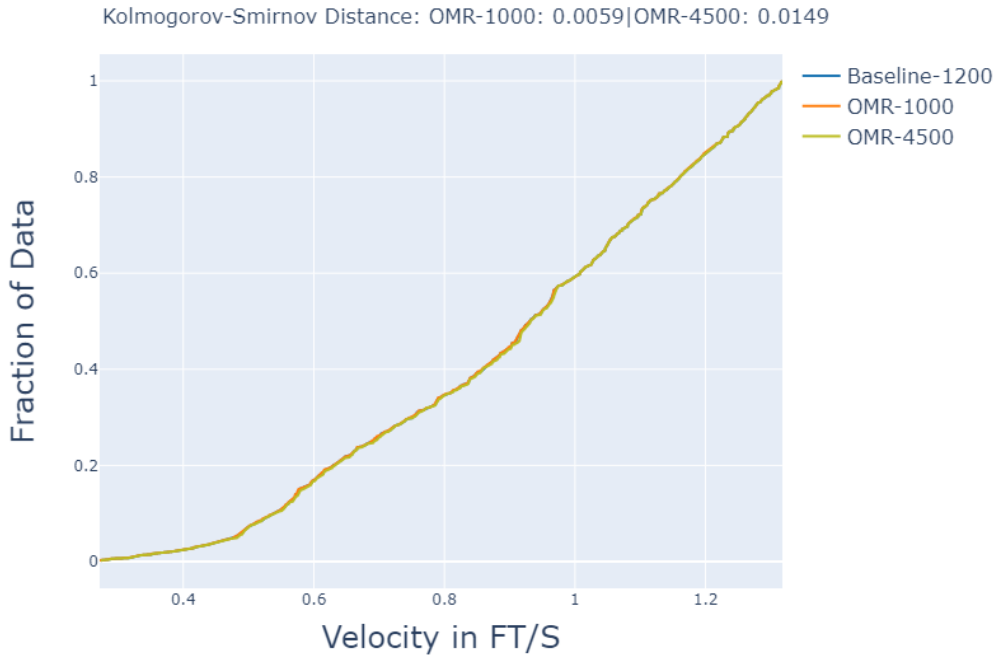


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

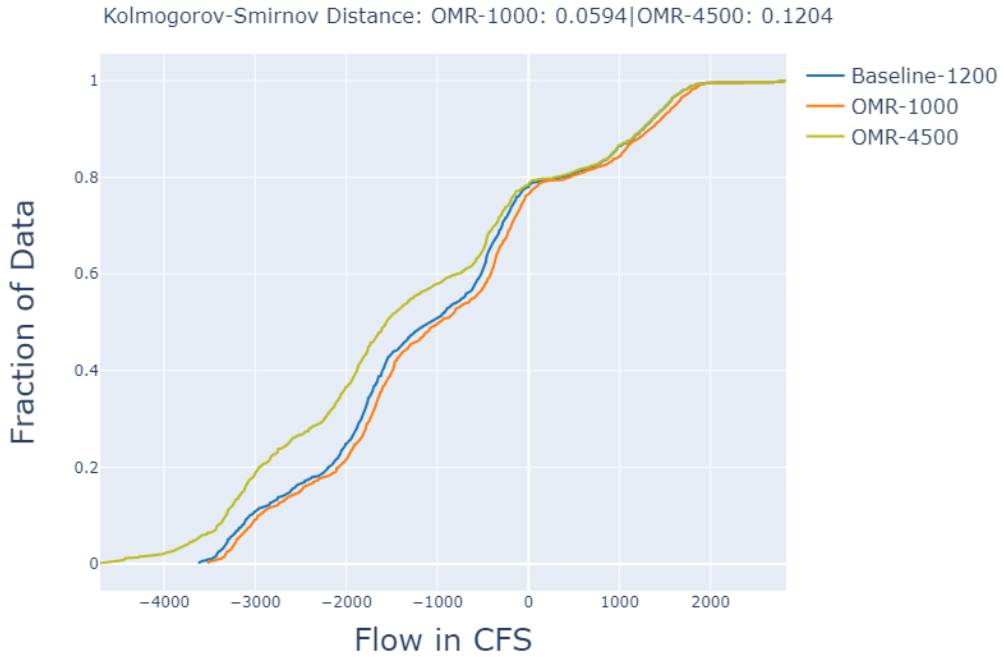


a)

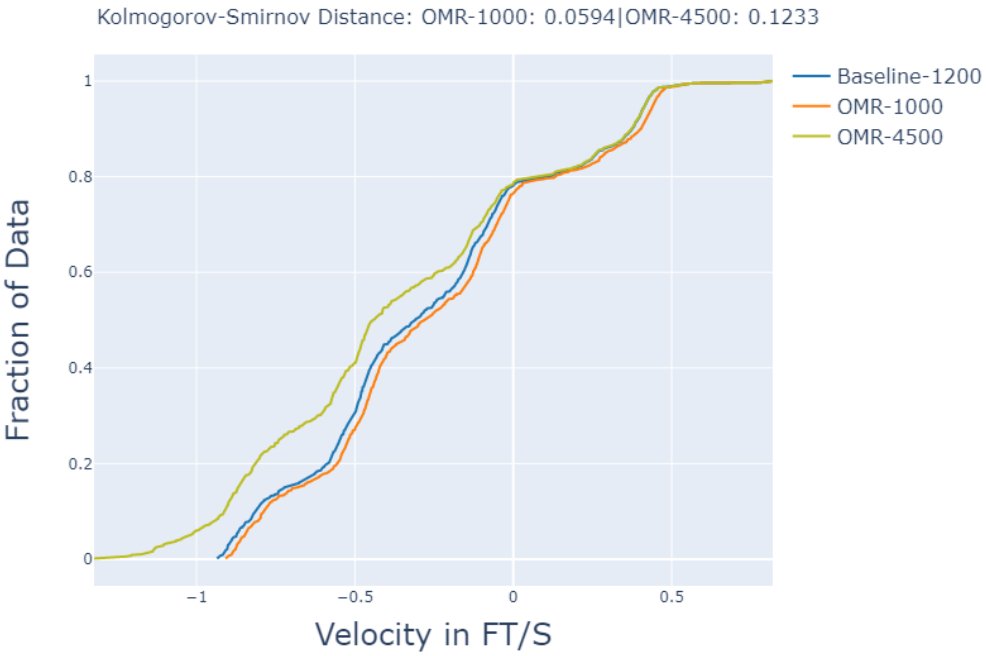


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

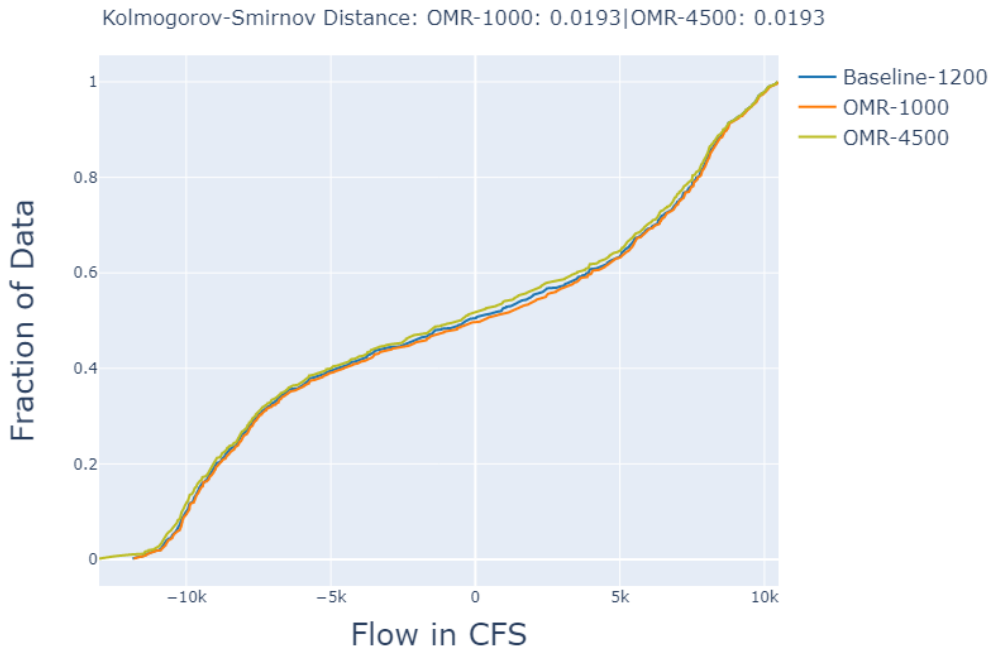


a)

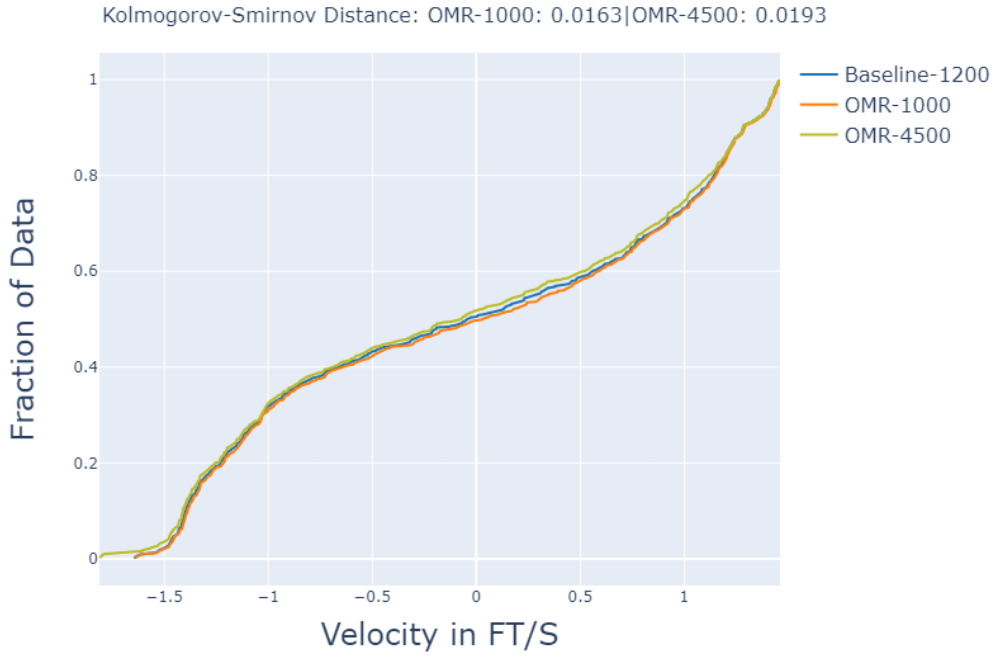


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

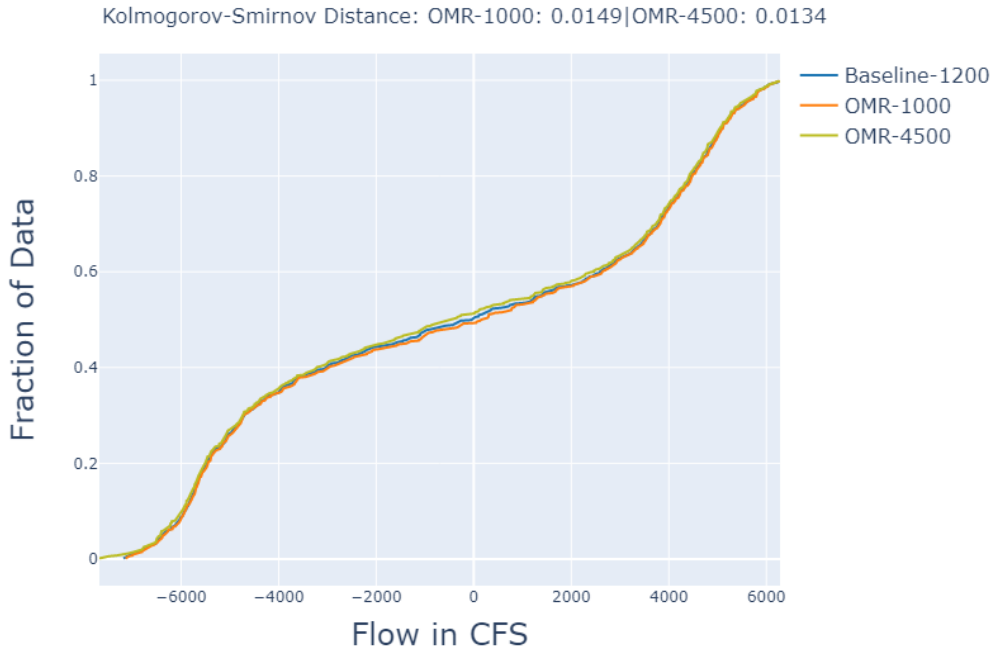


a)

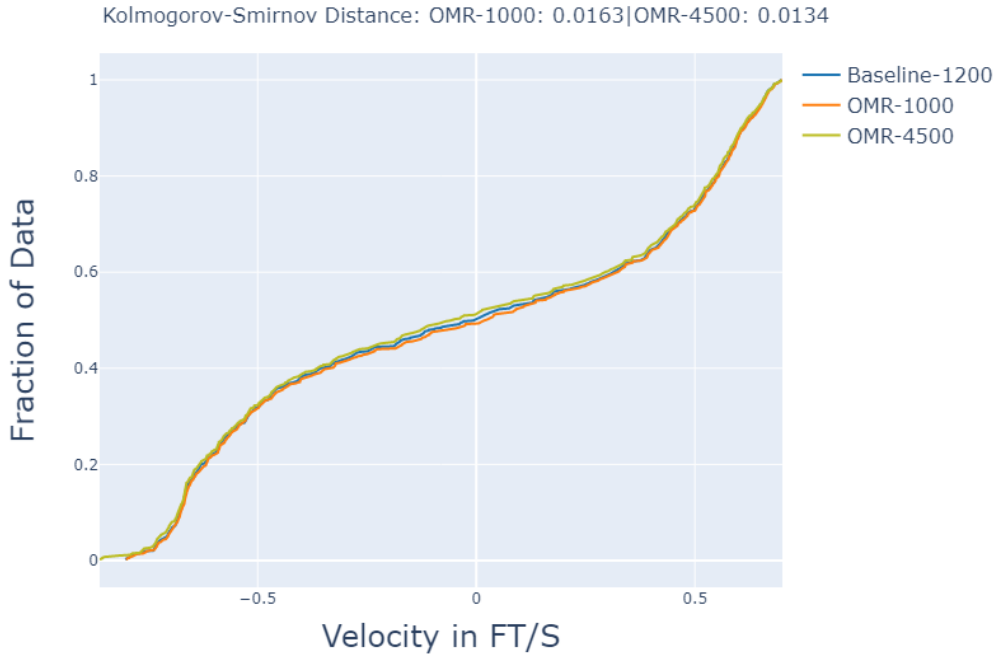


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

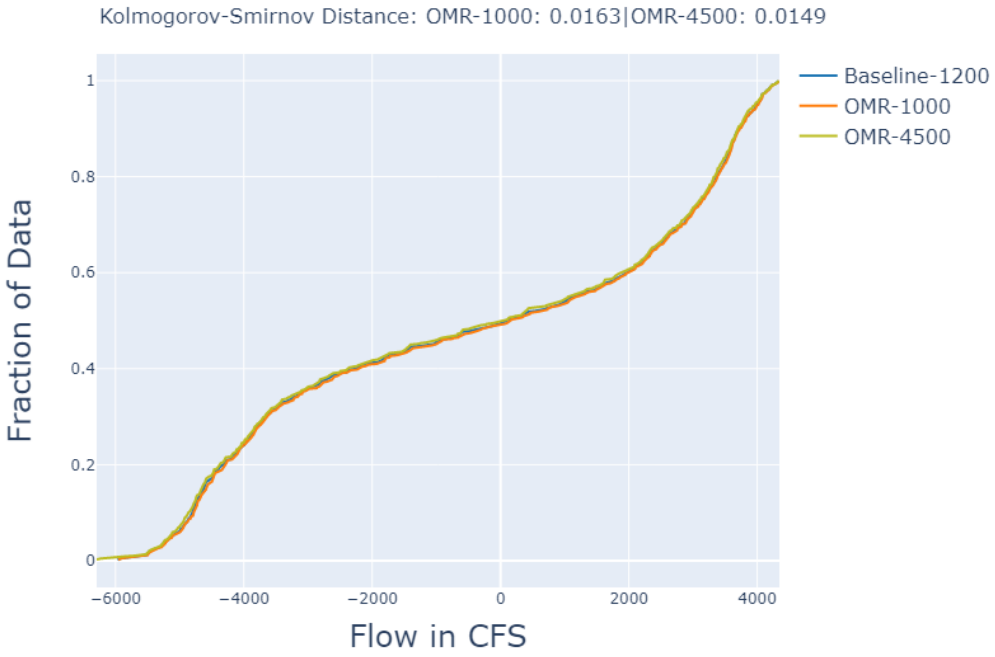


a)

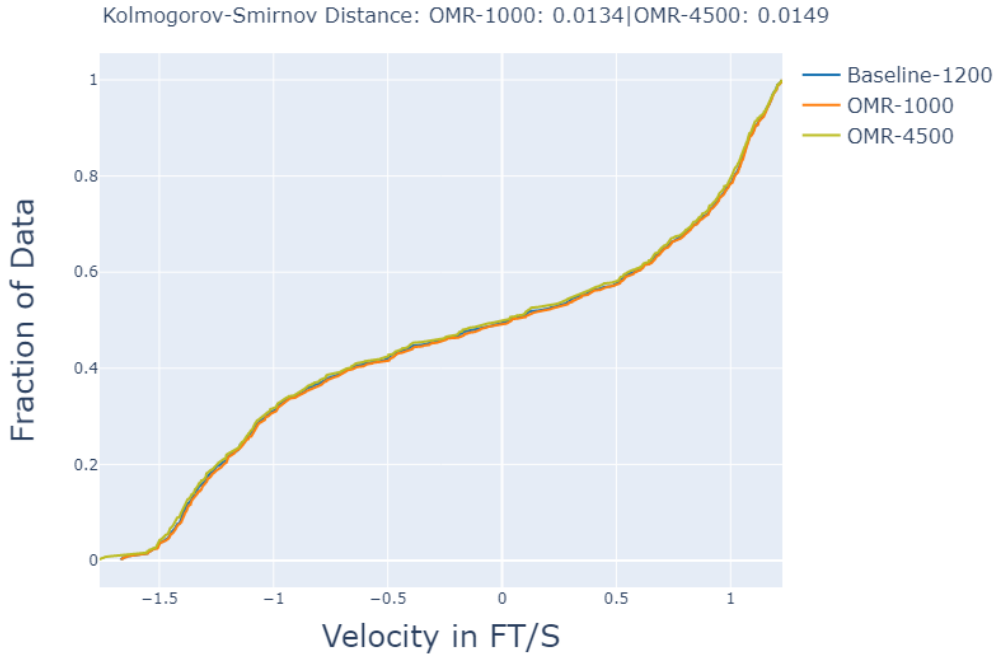


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,000 cfs and OMR -4,500 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-1,100 cfs)	6	700	2467	1801	100	0.31	1.32	0.91	100
Scenario OMR -1,000 cfs	6	697	2468	1801	100	0.31	1.32	0.91	100
Scenario OMR -1,500 cfs	6	703	2470	1801	100	0.32	1.33	0.92	100
Baseline (-1,100 cfs)	21	-6833	7195	731	54.1	-0.45	0.46	0.05	54.1
Scenario OMR -1,000 cfs	21	-6835	7197	735	54.1	-0.45	0.46	0.05	54.1
Scenario OMR -1,500 cfs	21	-6830	7177	724	54.1	-0.45	0.46	0.05	54.1
Baseline (-1,100 cfs)	49	-144509	144778	3345	52.8	-1.8	1.89	0.07	52.8
Scenario OMR -1,000 cfs	49	-144459	144826	3422	52.8	-1.8	1.89	0.07	52.8
Scenario OMR -1,500 cfs	49	-144560	144642	3054	52.6	-1.8	1.89	0.06	52.6
Baseline (-1,100 cfs)	81	-3972	3014	-998	32.4	-1.05	0.85	-0.26	32.4
Scenario OMR -1,000 cfs	81	-3876	3111	-896	34.2	-1.03	0.88	-0.24	34.2
Scenario OMR -1,500 cfs	81	-4053	2964	-1096	31.2	-1.07	0.84	-0.29	31.2

Baseline (-1,100 cfs)	94	-12811	10247	-587	51.0	-1.69	1.44	-0.05	51.0
Scenario OMR -1,000 cfs	94	-12783	10287	-536	51.3	-1.69	1.44	-0.04	51.3
Scenario OMR -1,500 cfs	94	-13158	10207	-783	50.4	-1.72	1.43	-0.08	50.4
Baseline (-1,100 cfs)	107	-6022	4345	-380	51.3	-1.61	1.21	-0.09	51.3
Scenario OMR -1,000 cfs	107	-6015	4355	-366	51.3	-1.61	1.22	-0.08	51.3
Scenario OMR -1,500 cfs	107	-6061	4326	-432	51.0	-1.62	1.21	-0.1	51.0
Baseline (-1,100 cfs)	124	-18624	12957	-2768	44.1	-0.59	0.42	-0.08	44.1
Scenario OMR -1,000 cfs	124	-18611	12972	-2742	44.3	-0.59	0.42	-0.08	44.3
Scenario OMR -1,500 cfs	124	-18680	12926	-2867	44.1	-0.59	0.42	-0.08	44.1
Baseline (-1,100 cfs)	148	-8010	6202	-407	51.0	-0.85	0.69	-0.03	51.0
Scenario OMR -1,000 cfs	148	-7999	6221	-383	51.1	-0.85	0.69	-0.03	51.1
Scenario OMR -1,500 cfs	148	-8128	6169	-499	50.2	-0.86	0.68	-0.04	50.2
Baseline (-1,100 cfs)	160	-4709	3739	-185	51.1	-0.48	0.45	0	51.1
Scenario OMR -1,000 cfs	160	-4701	3747	-174	51.1	-0.48	0.45	0	51.1
Scenario OMR -1,500 cfs	160	-4702	3725	-228	51.0	-0.48	0.45	-0.01	51.0
Baseline (-1,100 cfs)	434	-156537	160959	7918	53.5	-1.7	1.88	0.13	53.5
Scenario OMR -1,000 cfs	434	-156524	160967	7939	53.5	-1.7	1.88	0.13	53.5
Scenario OMR -1,500 cfs	434	-156547	160912	7842	53.5	-1.7	1.88	0.13	53.5

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -1,200 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -1,000 cfs**	**Scenario OMR -1,500 cfs**	**Scenario OMR -1,000 cfs**	**Scenario OMR -1,500 cfs**
6	0.01	0.01	0.01	0.01
21	0.00	0.01	0.00	0.01
49	0.01	0.01	0.01	0.01
81	0.05	0.05	0.05	0.05
94	0.01	0.04	0.01	0.04
107	0.01	0.03	0.01	0.03
124	0.01	0.01	0.01	0.01
148	0.01	0.04	0.01	0.04
160	0.01	0.04	0.01	0.04
434	0.00	0.00	0.00	0.01

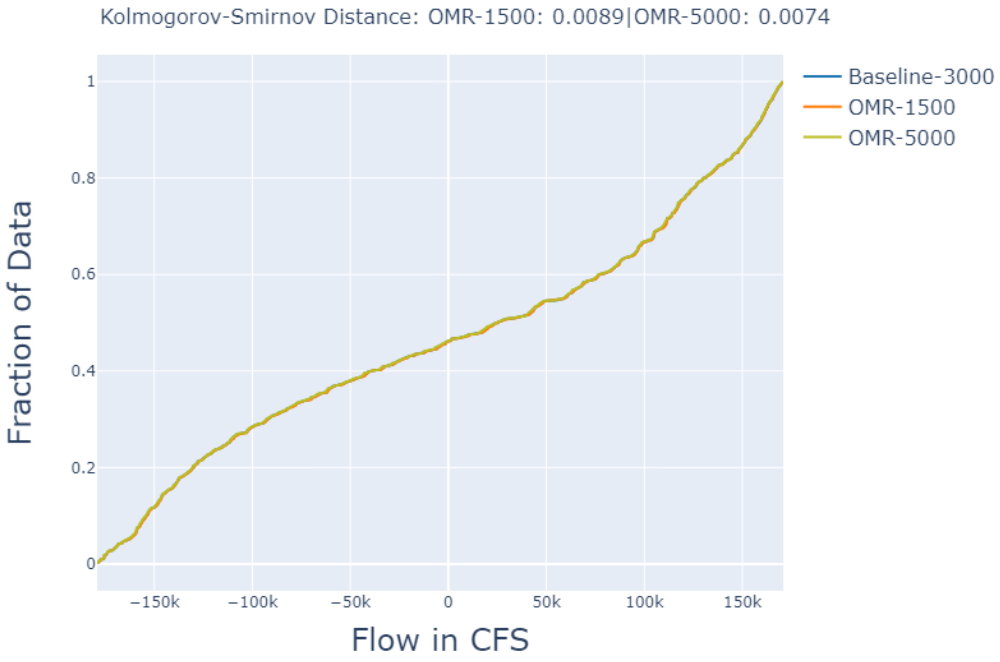
6/2/2020

DWR baseline forecast 05/26/2020 to 06/15/2020
CVO updated baseline and Scenarios on 06/01/2020
CVO OMR action taking place on 06/02/2020 to 06/08/2020
DSM2 modeling results valid 06/03/2020 to 06/09/2020

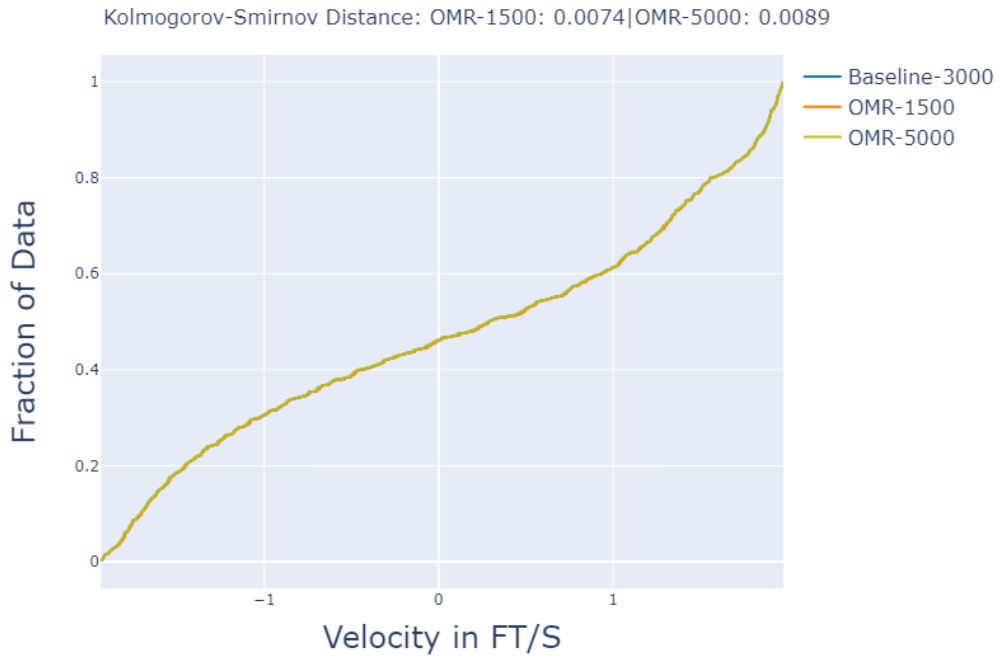
Baseline: –3,000 cfs OMR
Scenario –1,500: –1,500 cfs OMR
Scenario –5,000: –5,000 cfs OMR
All three scenarios assume the Grant Line Canal barrier was installed 6/1/20 and OMR was calculated accordingly.

DSM2 modeling for June 3 through June 9 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,500 cfs (decreasing pumping from OMR -3,000 cfs, hereafter referred to as Scenario -1,500 cfs) to –5,000 cfs (increasing pumping from OMR -3,000 cfs, hereafter referred to as Scenario –5,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

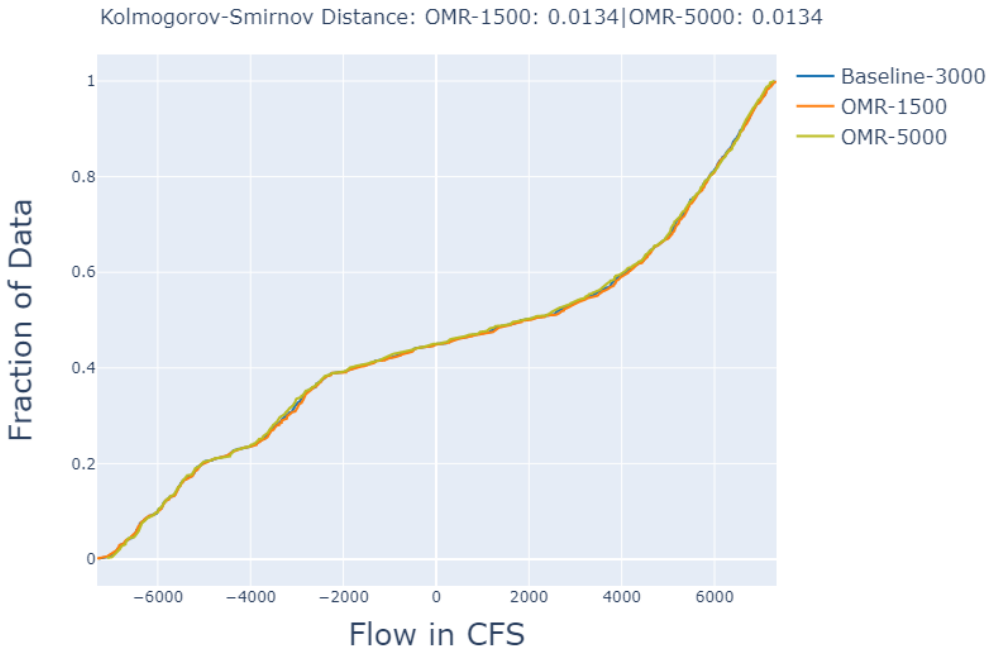


a)

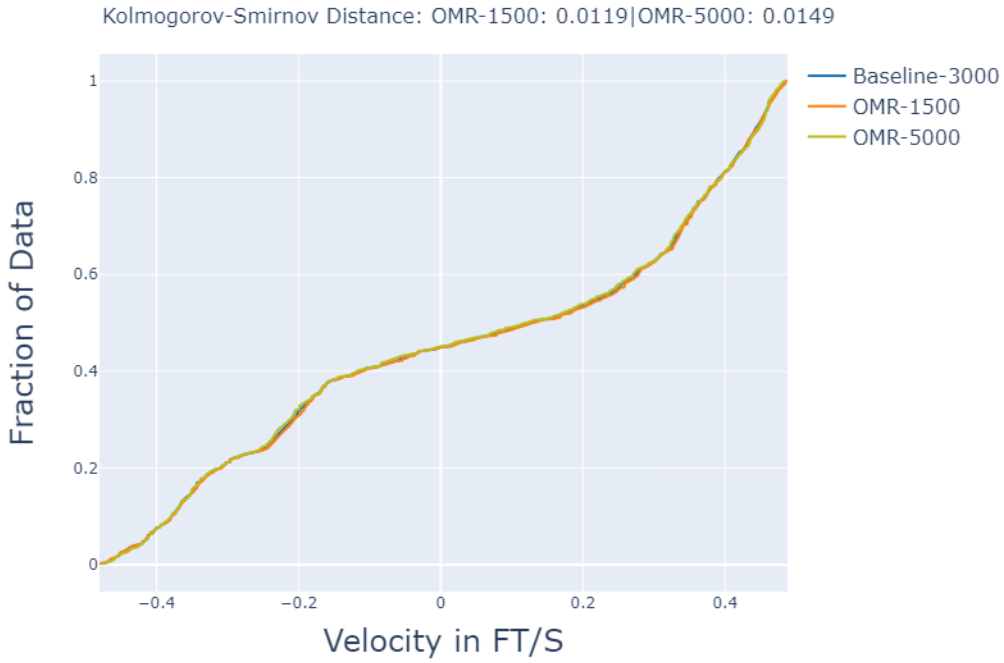


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

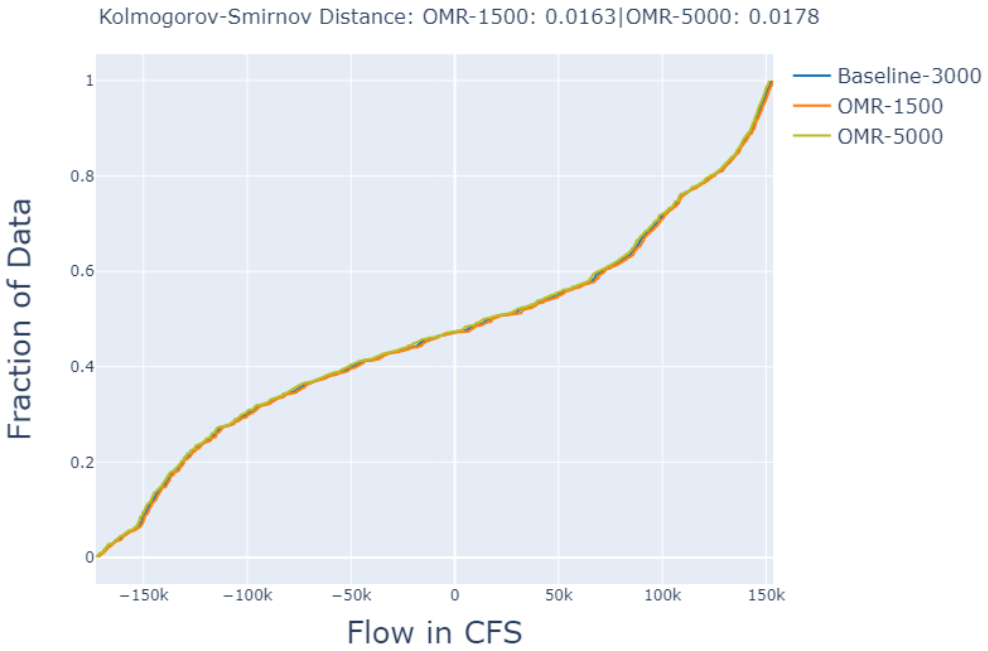


a)

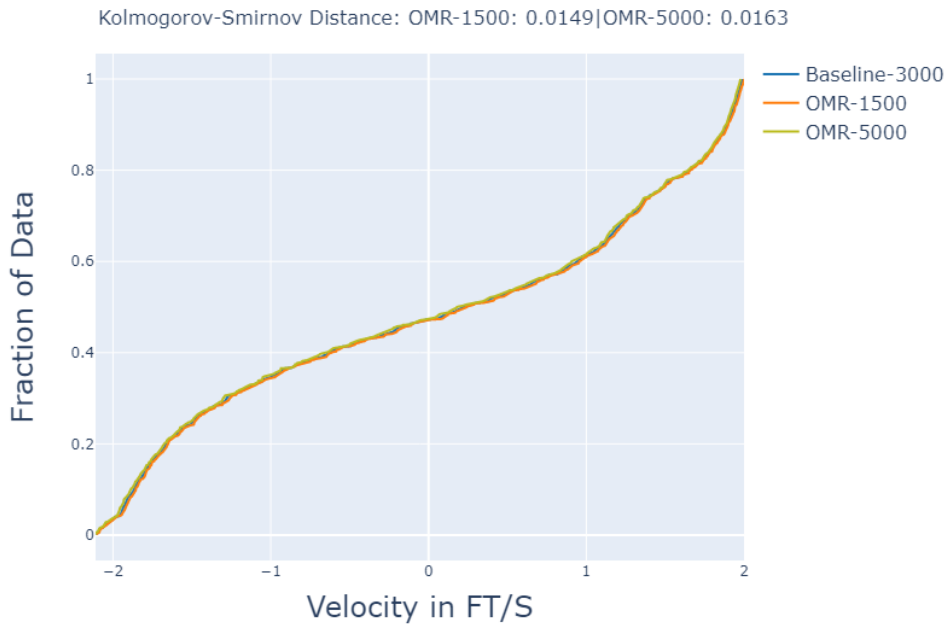


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

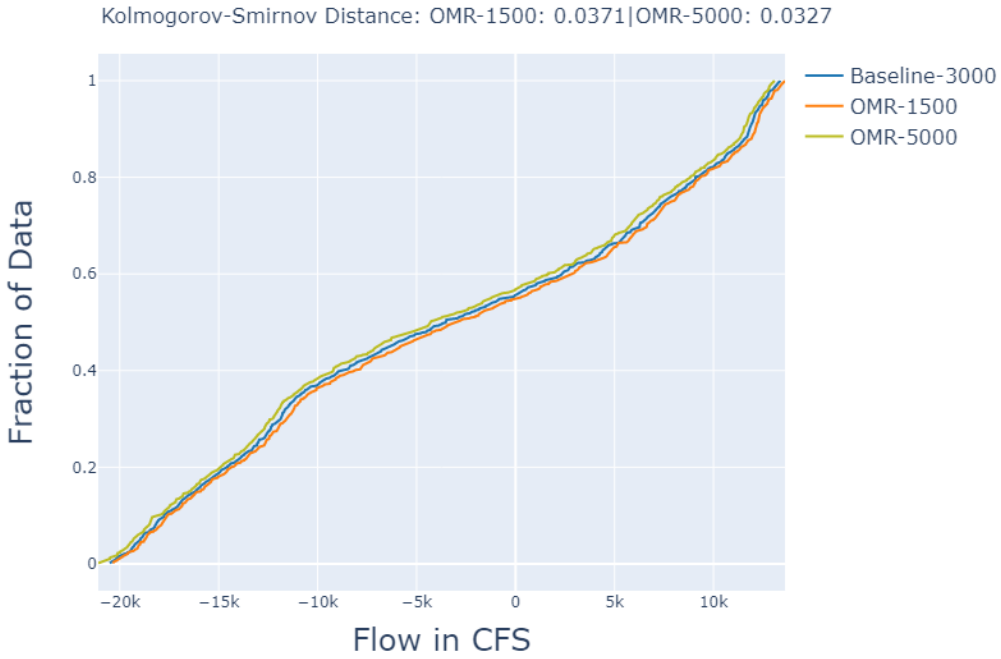


a)

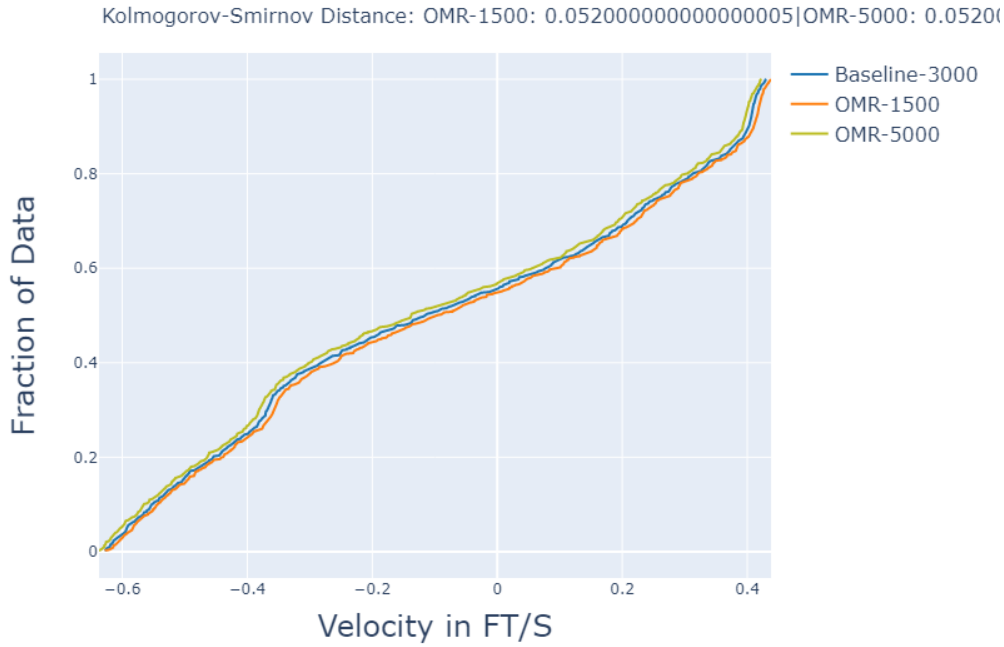


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and
OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

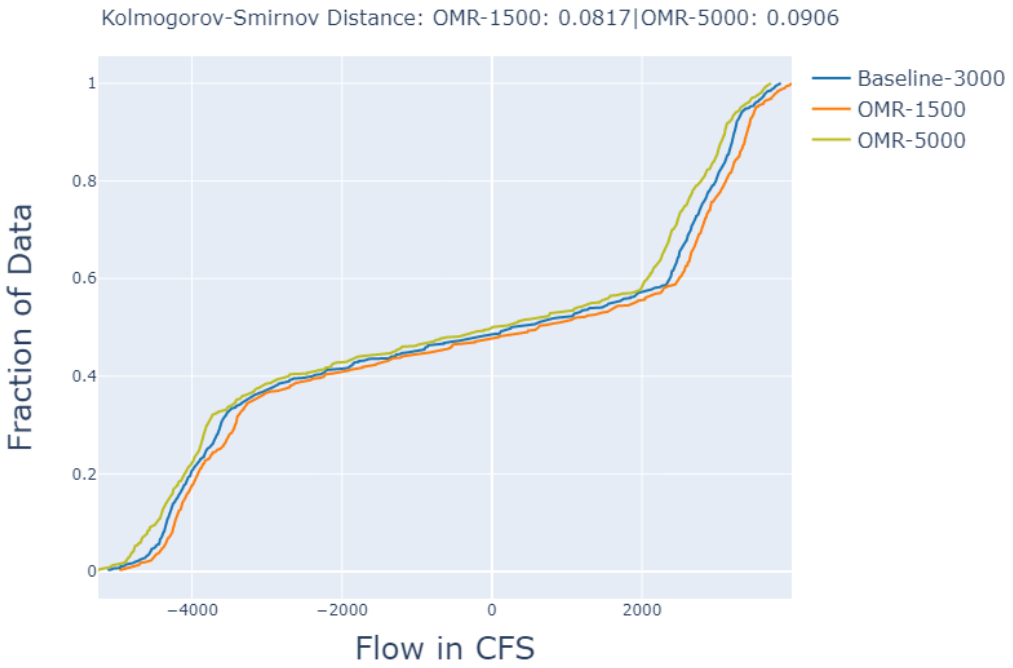


a)

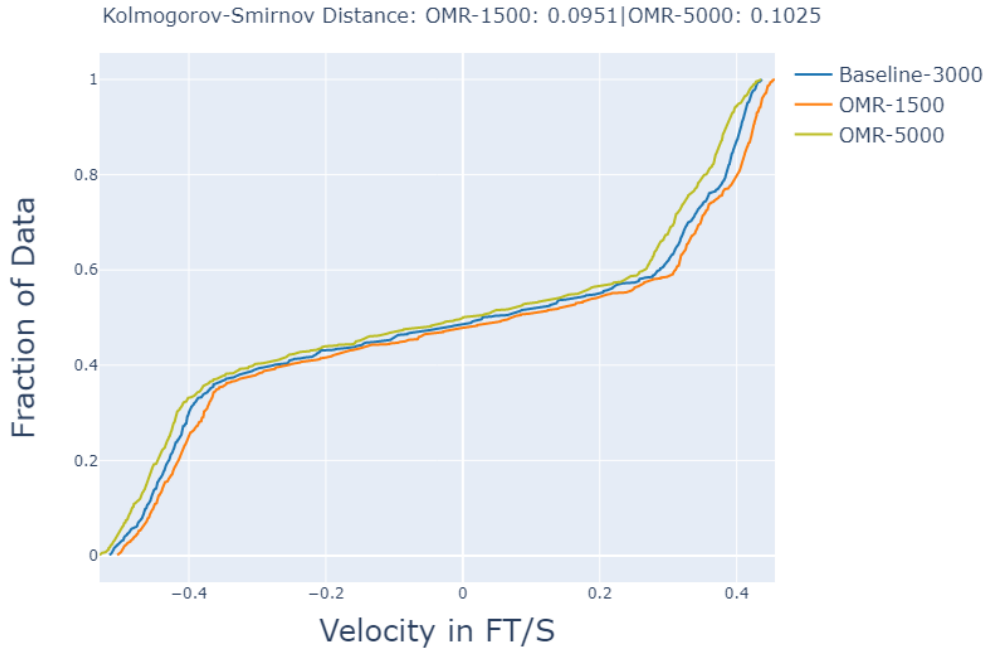


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

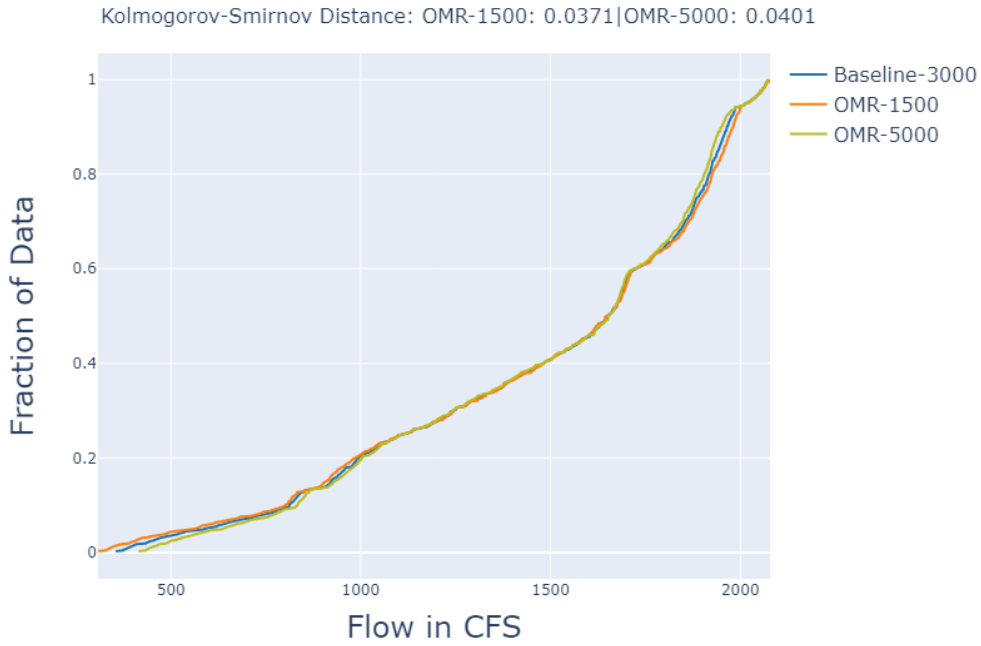


a)

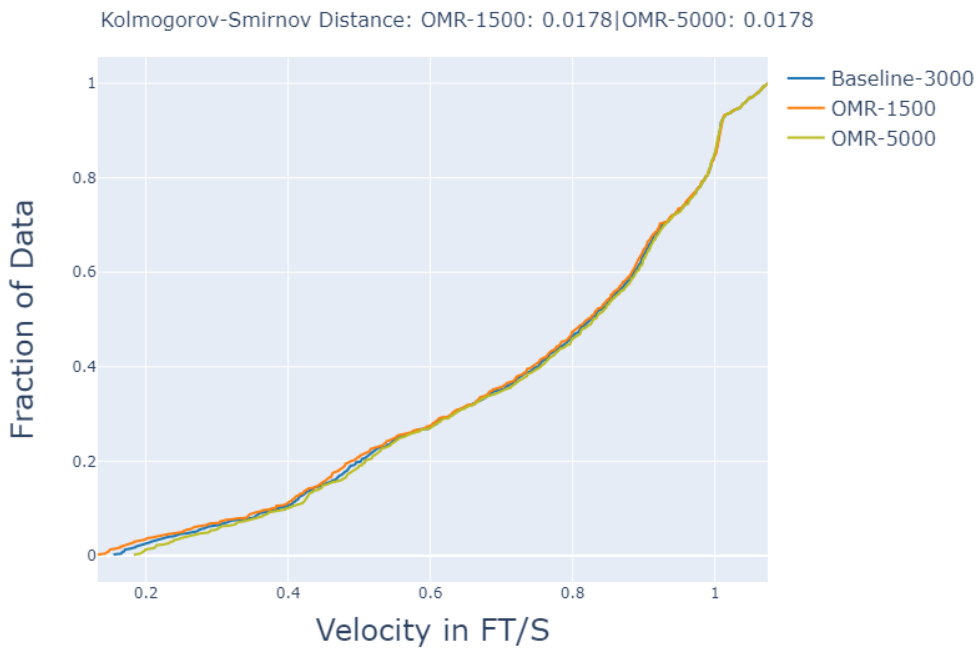


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

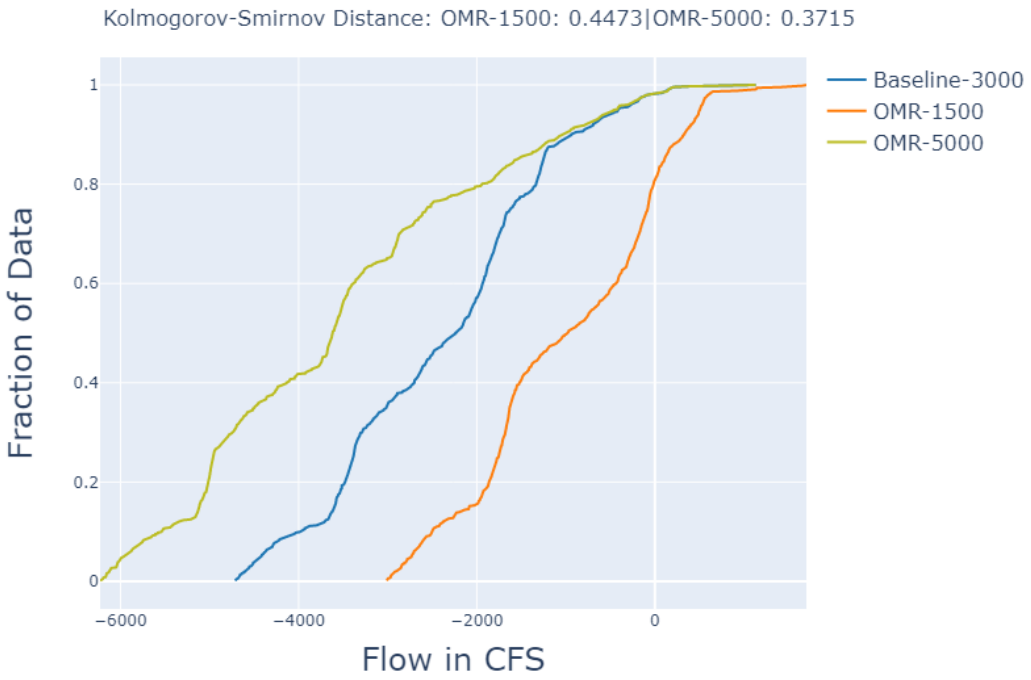


a)

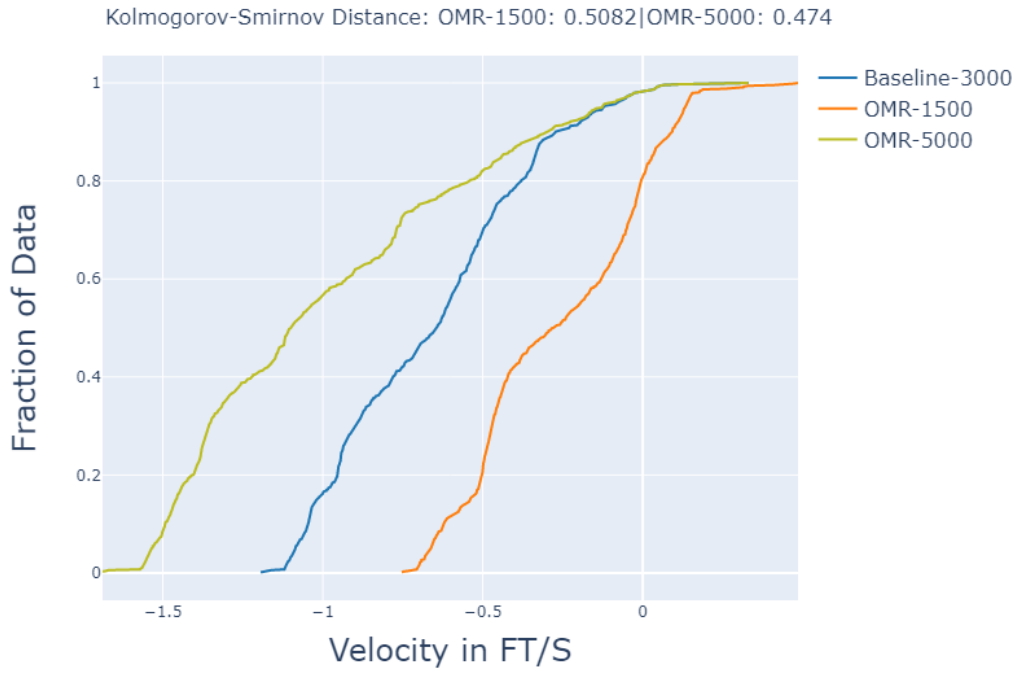


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



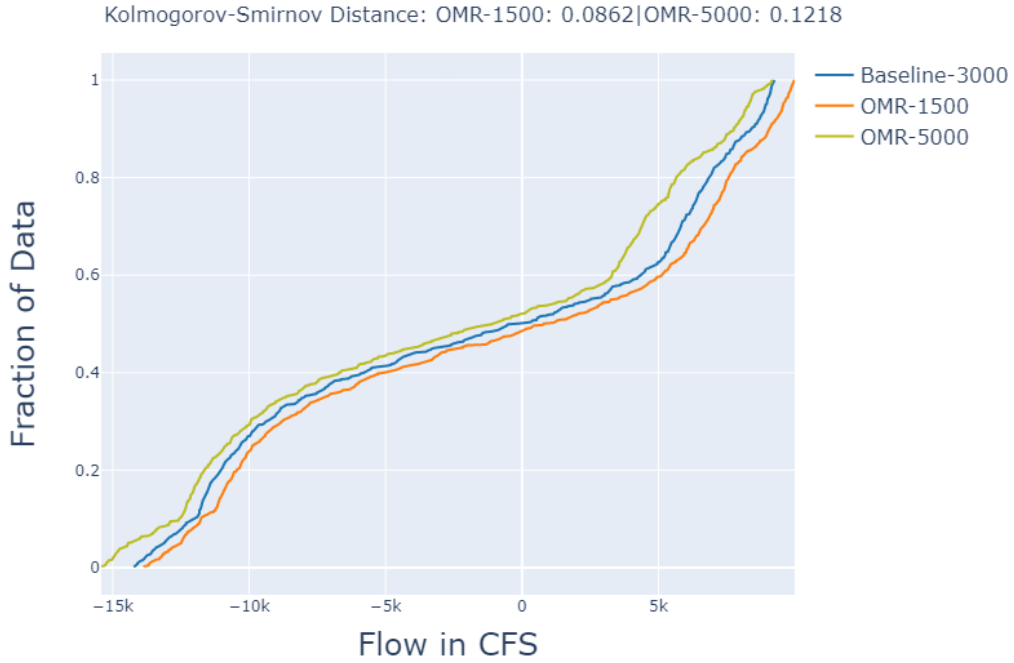
a)



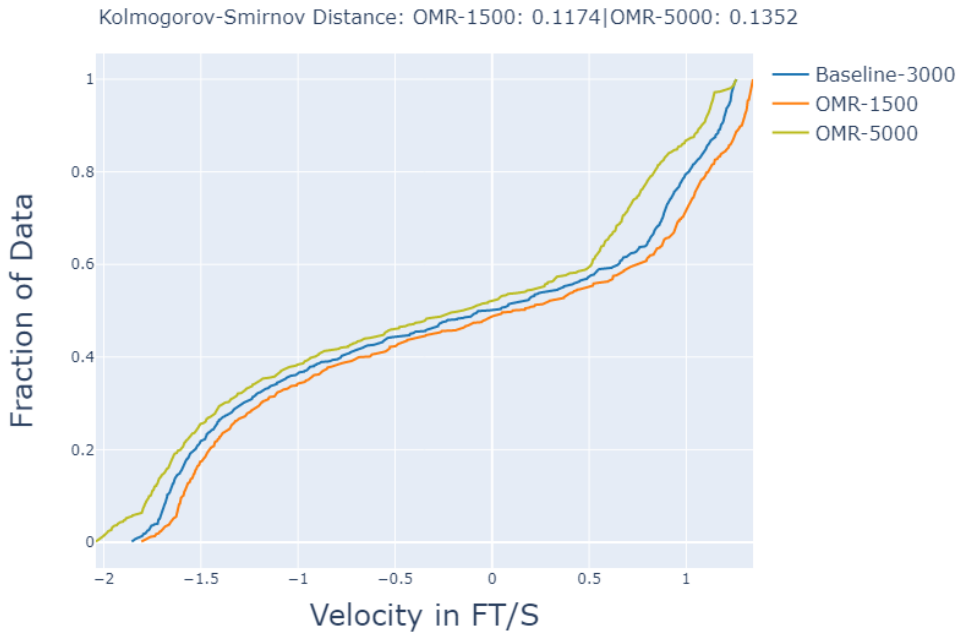
b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b)

Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



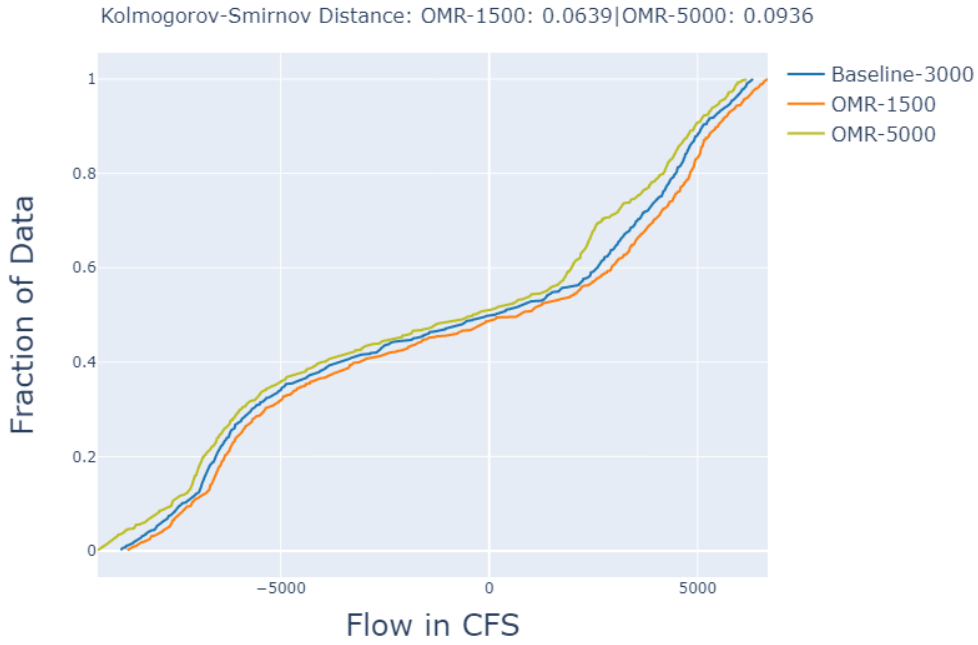
a)



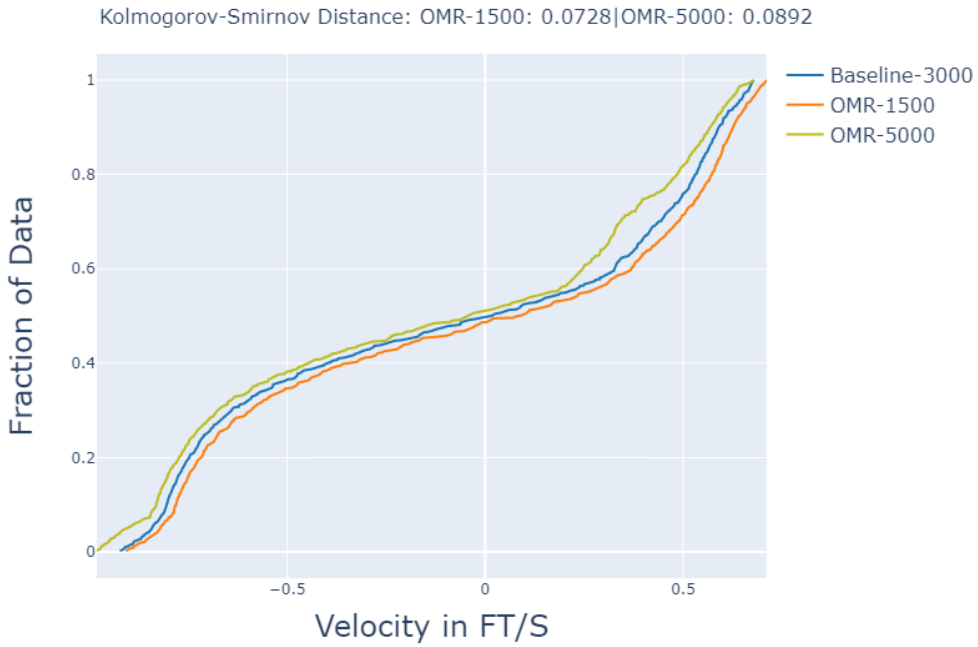
b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



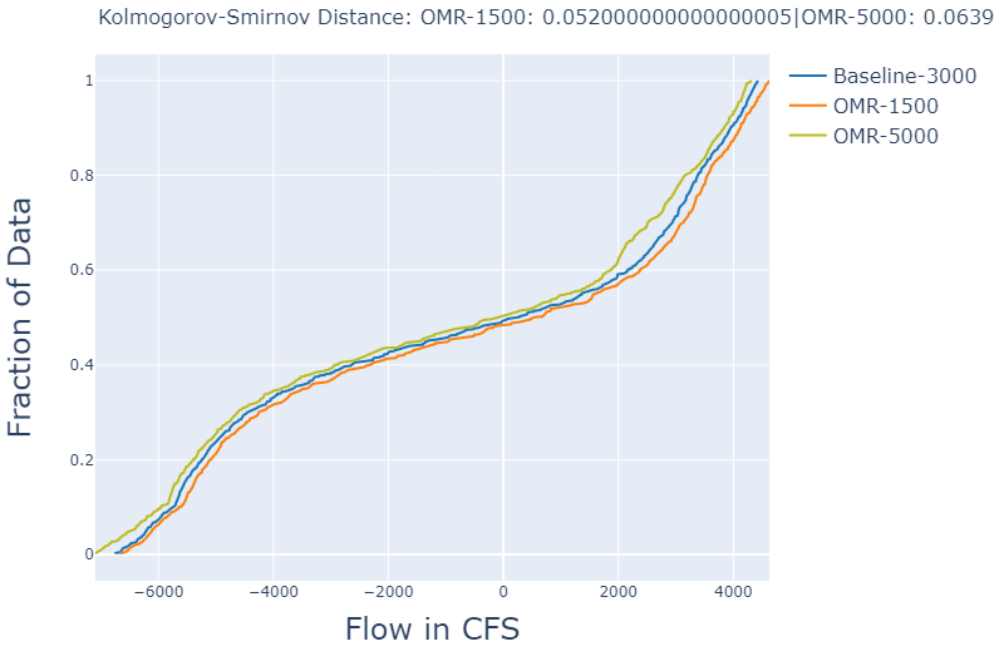
a)



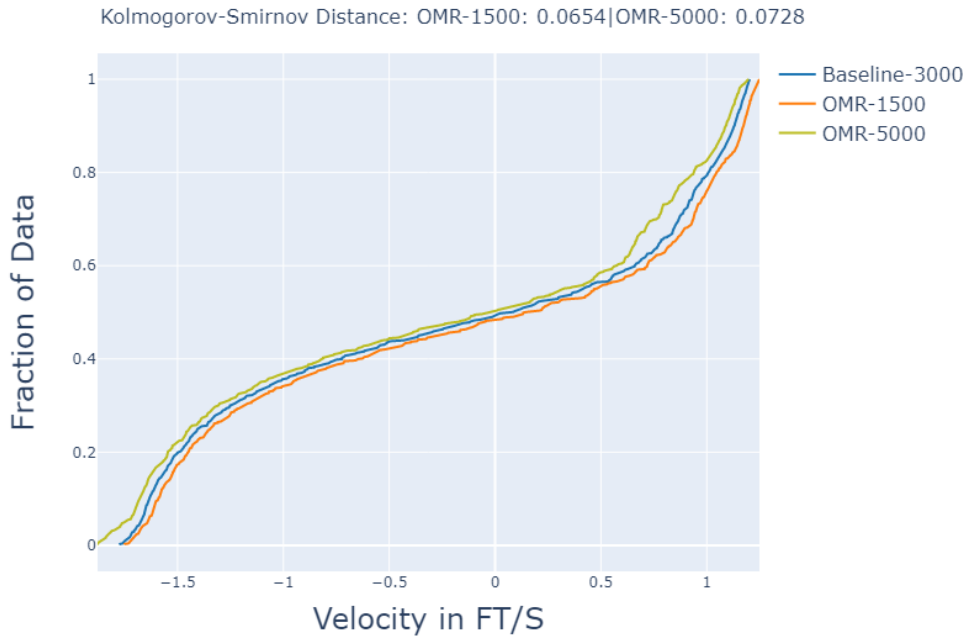
b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-3,000 cfs)	6	355	2074	1490	100	0.2	1.1	0.8	100
Scenario OMR -1,500 cfs	6	308	2078	1489	100	0.1	1.1	0.8	100
Scenario OMR -5,000 cfs	6	417	2074	1491	100	0.2	1.1	0.8	100
Baseline (-3,000 cfs)	21	-7272	7303	806	55.1	-0.5	0.5	0.1	55.1
Scenario OMR -1,500 cfs	21	-7305	7335	834	55.1	-0.5	0.5	0.1	55.1
Scenario OMR -5,000 cfs	21	-7089	7283	778	55.0	-0.5	0.5	0.1	55.0
Baseline (-3,000 cfs)	49	-172026	152527	1930	52.8	-2.1	2.0	0.1	52.8
Scenario OMR -1,500 cfs	49	-171618	153403	2980	52.9	-2.1	2.0	0.1	52.9
Scenario OMR -5,000 cfs	49	-172940	151502	689	52.8	-2.1	2.0	0.0	52.8
Baseline (-3,000 cfs)	81	-4714	1132	-2399	1.8	-1.2	0.3	-0.7	1.8
Scenario OMR -1,500 cfs	81	-3010	1701	-989	19.3	-0.8	0.5	-0.3	19.3
Scenario OMR -5,000 cfs	81	-6228	1132	-3524	1.8	-1.7	0.3	-1.0	1.8
Baseline (-3,000 cfs)	94	-14225	9253	-1539	49.9	-1.9	1.3	-0.2	49.9

Scenario OMR -1,500 cfs	94	-13845	9992	-818	51.3	-1.8	1.3	-0.1	51.3
Scenario OMR -5,000 cfs	94	-15417	9182	-2421	48.0	-2.0	1.3	-0.3	48.0
Baseline (-3,000 cfs)	107	-6746	4428	-645	50.7	-1.8	1.2	-0.2	50.7
Scenario OMR -1,500 cfs	107	-6662	4625	-451	51.7	-1.8	1.3	-0.1	51.7
Scenario OMR -5,000 cfs	107	-7095	4318	-877	49.8	-1.9	1.2	-0.2	49.8
Baseline (-3,000 cfs)	124	-20502	13360	-3031	44.4	-0.6	0.4	-0.1	44.4
Scenario OMR -1,500 cfs	124	-20351	13611	-2678	45.2	-0.6	0.4	-0.1	45.2
Scenario OMR -5,000 cfs	124	-21084	13086	-3453	43.2	-0.6	0.4	-0.1	43.2
Baseline (-3,000 cfs)	148	-8833	6326	-833	50.2	-0.9	0.7	-0.1	50.2
Scenario OMR -1,500 cfs	148	-8681	6680	-490	51.4	-0.9	0.7	0.0	51.4
Scenario OMR -5,000 cfs	148	-9389	6170	-1233	49.2	-1.0	0.7	-0.1	49.2
Baseline (-3,000 cfs)	160	-5112	3851	-337	51.4	-0.5	0.4	0.0	51.4
Scenario OMR -1,500 cfs	160	-4958	3996	-177	52.2	-0.5	0.5	0.0	52.2
Scenario OMR -5,000 cfs	160	-5250	3719	-521	50.1	-0.5	0.4	0.0	50.1
Baseline (-3,000 cfs)	434	-178930	170702	8681	53.9	-1.9	2.0	0.1	53.9
Scenario OMR -1,500 cfs	434	-178742	170857	8939	53.9	-1.9	2.0	0.2	53.9
Scenario OMR -5,000 cfs	434	-179117	170443	8372	53.8	-1.9	2.0	0.1	53.8

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -3,000 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -1,500 cfs**	**Scenario OMR -5,000 cfs**	**Scenario OMR -1,500 cfs**	**Scenario OMR -5,000 cfs**
6	0.04	0.04	0.02	0.02
21	0.01	0.01	0.01	0.01
49	0.02	0.02	0.01	0.02
81	0.45	0.37	0.51	0.47
94	0.09	0.12	0.12	0.14
107	0.05	0.06	0.07	0.07
124	0.04	0.03	0.05	0.05
148	0.06	0.09	0.07	0.09
160	0.08	0.09	0.10	0.10
434	0.01	0.01	0.01	0.01

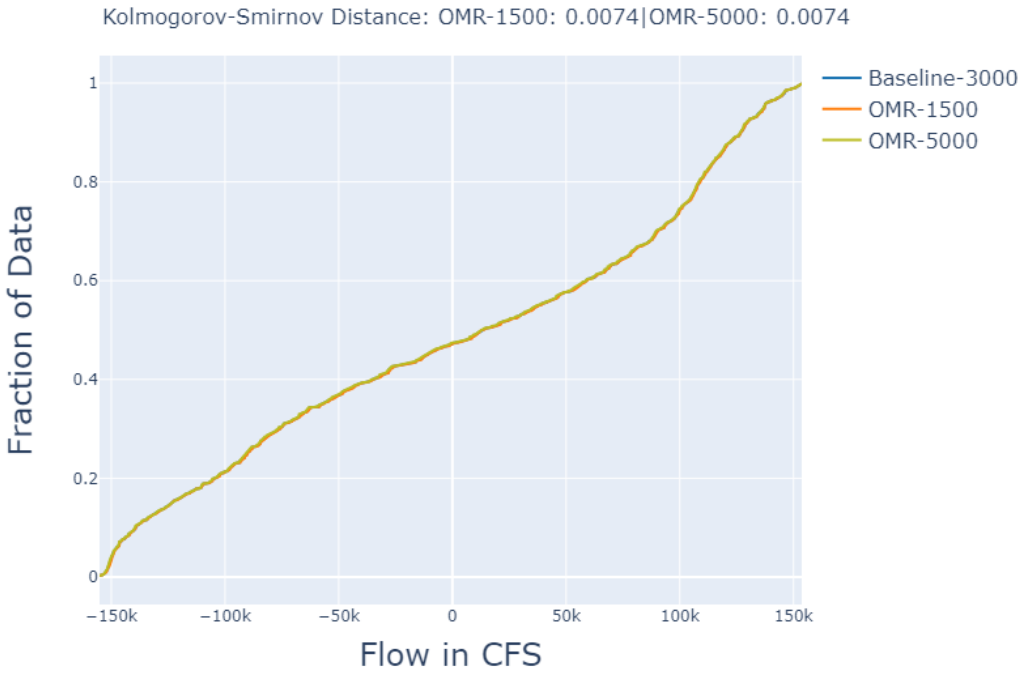
6/9/2020

DWR baseline forecast 06/02/2020 to 06/22/2020
CVO updated baseline and Scenarios on 06/08/2020
CVO OMR action taking place on 06/09/2020 to 06/15/2020
DSM2 modeling results valid 06/10/2020 to 06/16/2020

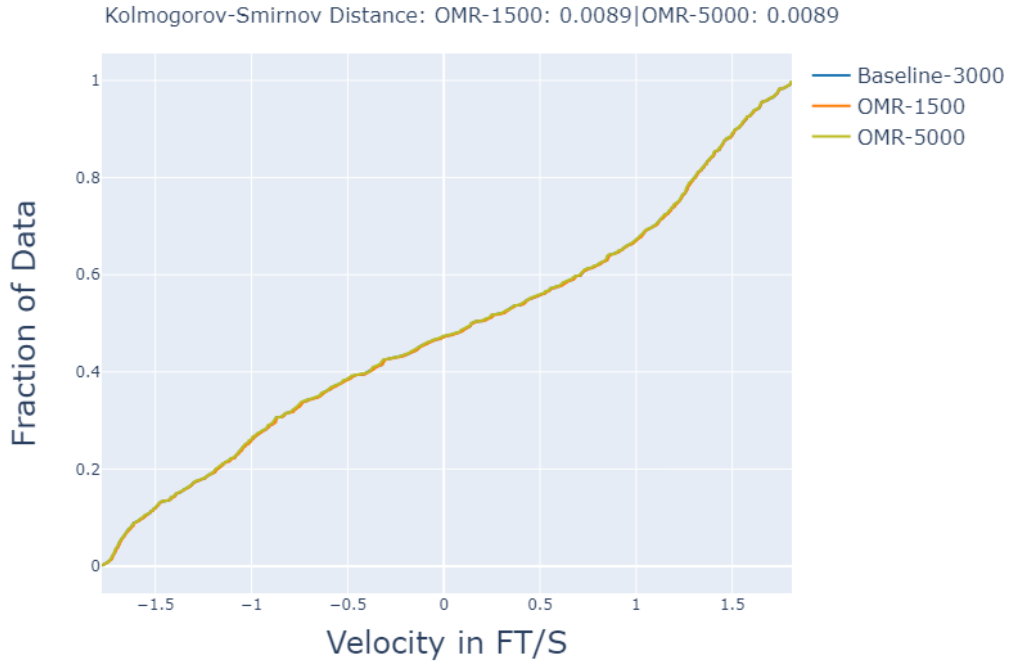
Baseline: –3,000 cfs OMR
Scenario –1,500: –1,500 cfs OMR
Scenario –5,000: –5,000 cfs OMR

DSM2 modeling for June 9 through June 15 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -1,500 cfs (decreasing pumping from OMR -3,000 cfs, hereafter referred to as Scenario -1,500 cfs) to –5,000 cfs (increasing pumping from OMR -3,000 cfs, hereafter referred to as Scenario –5,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

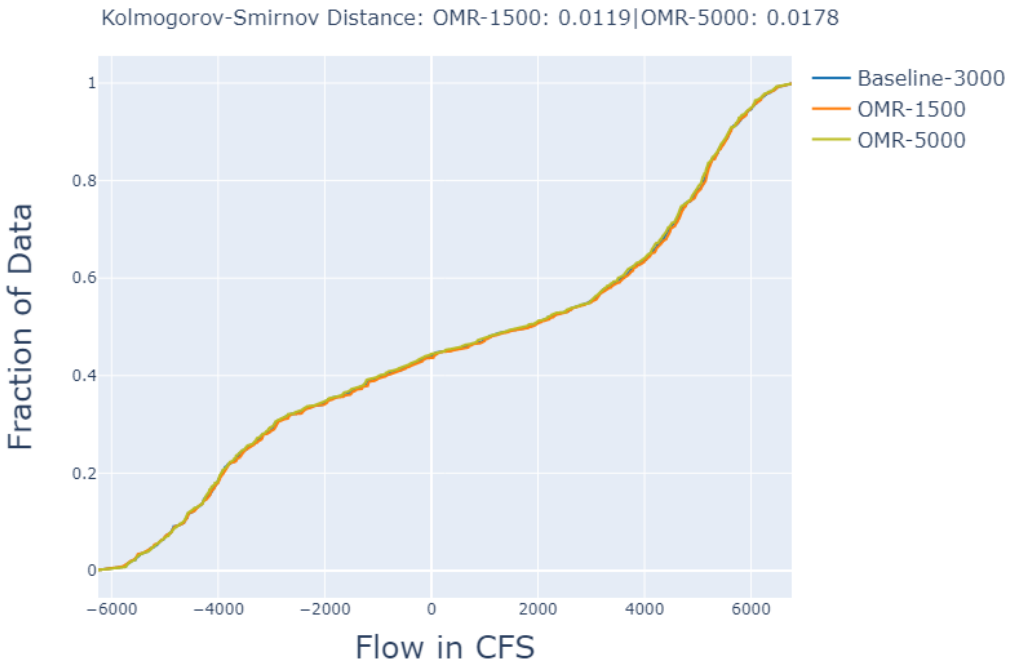


a)

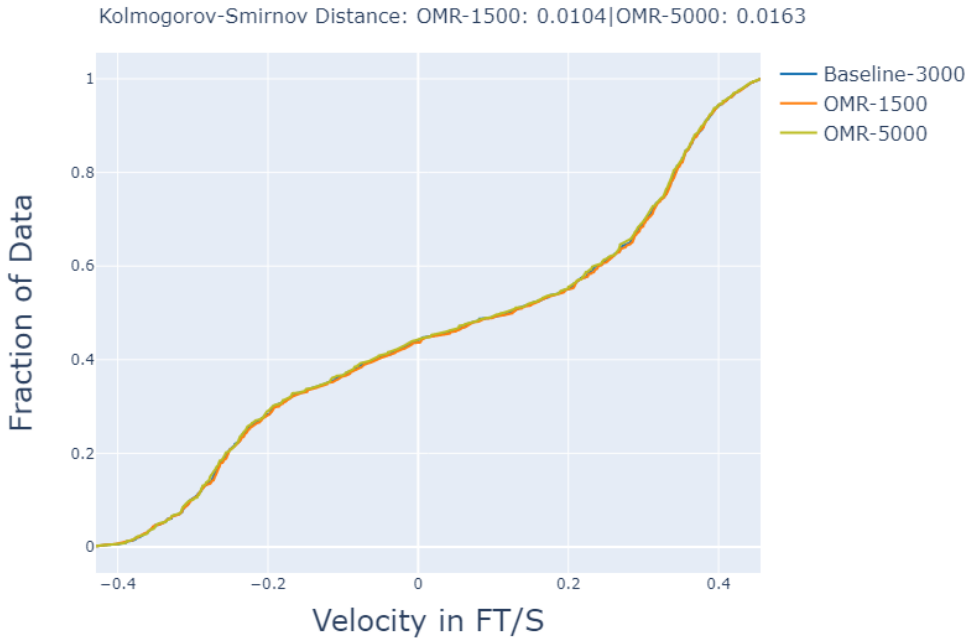


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

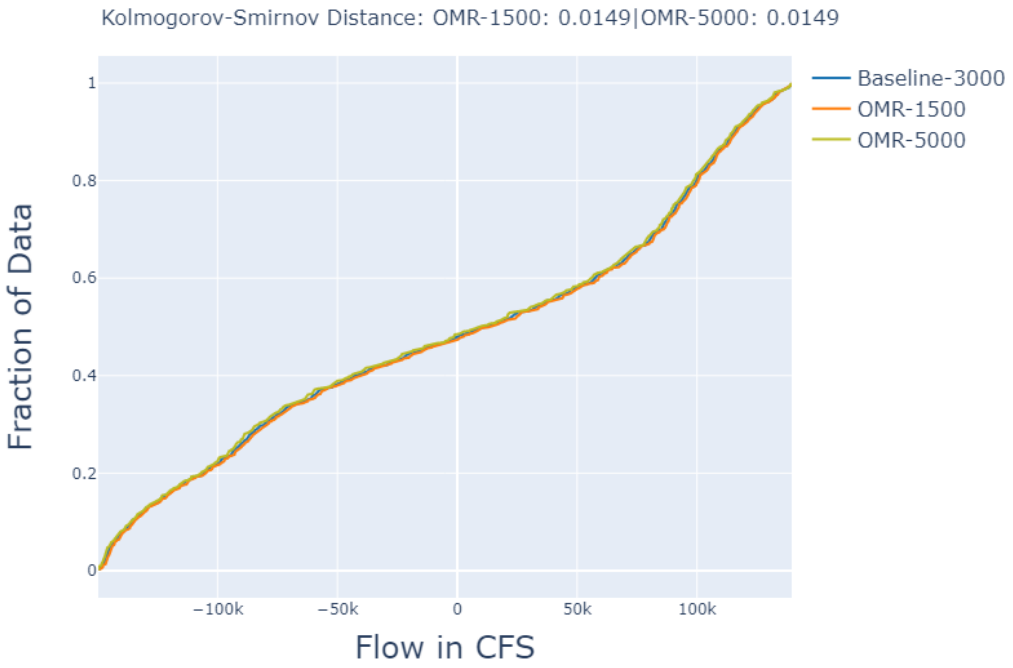


a)

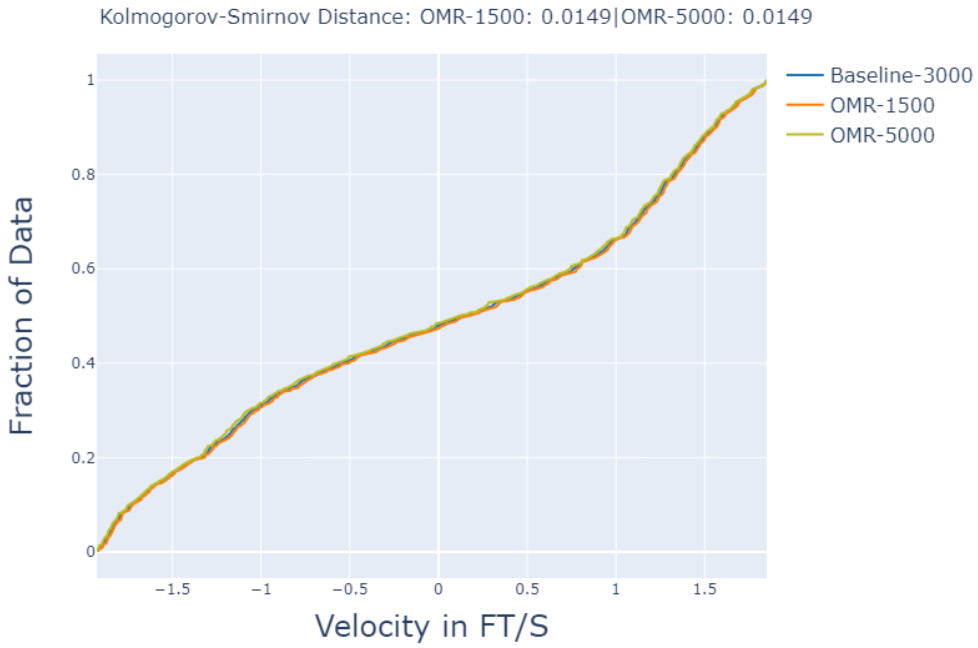


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

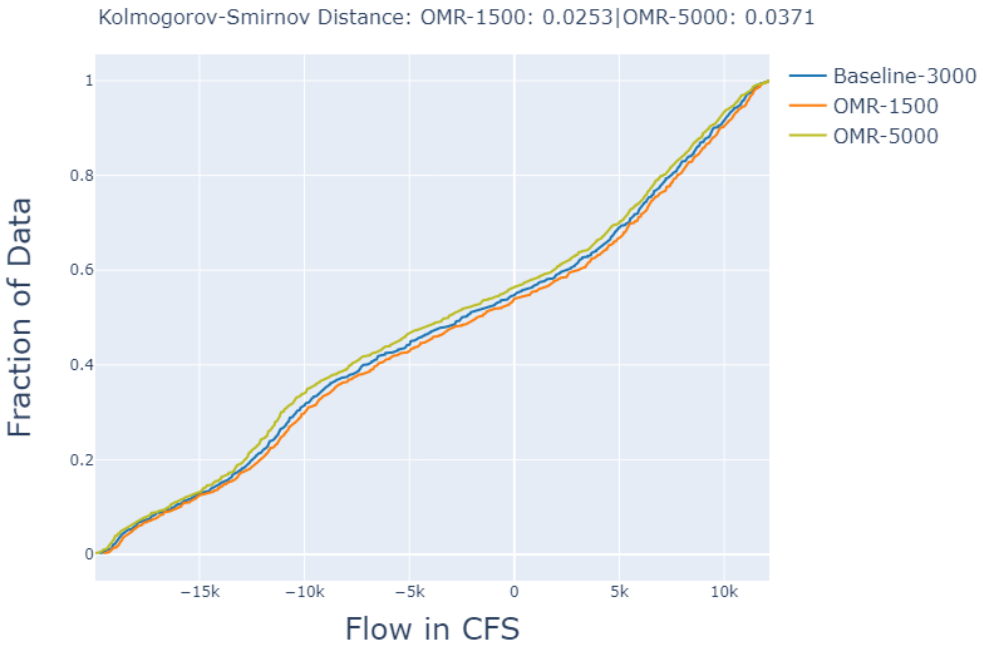


a)

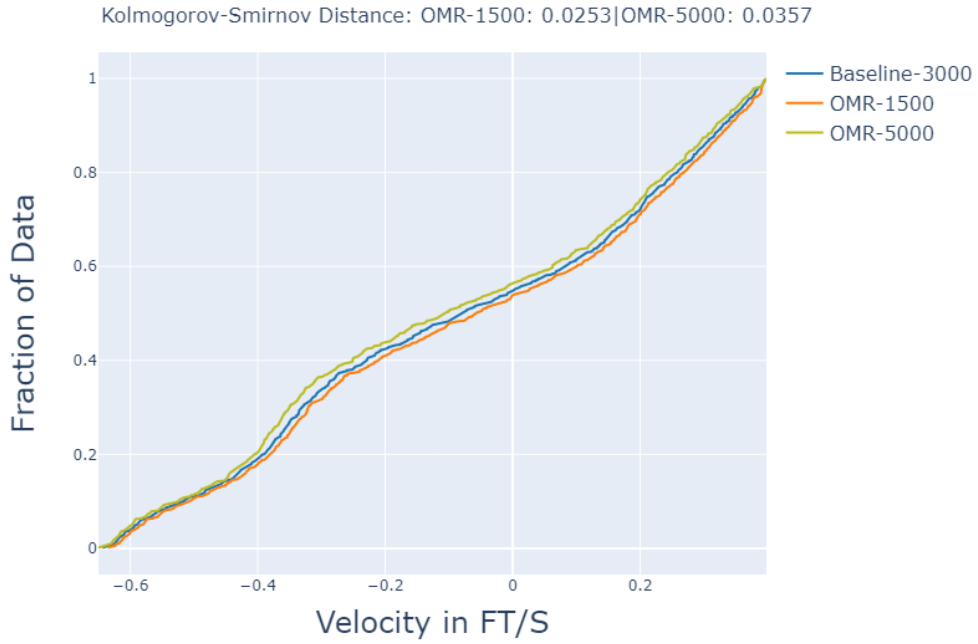


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and
OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

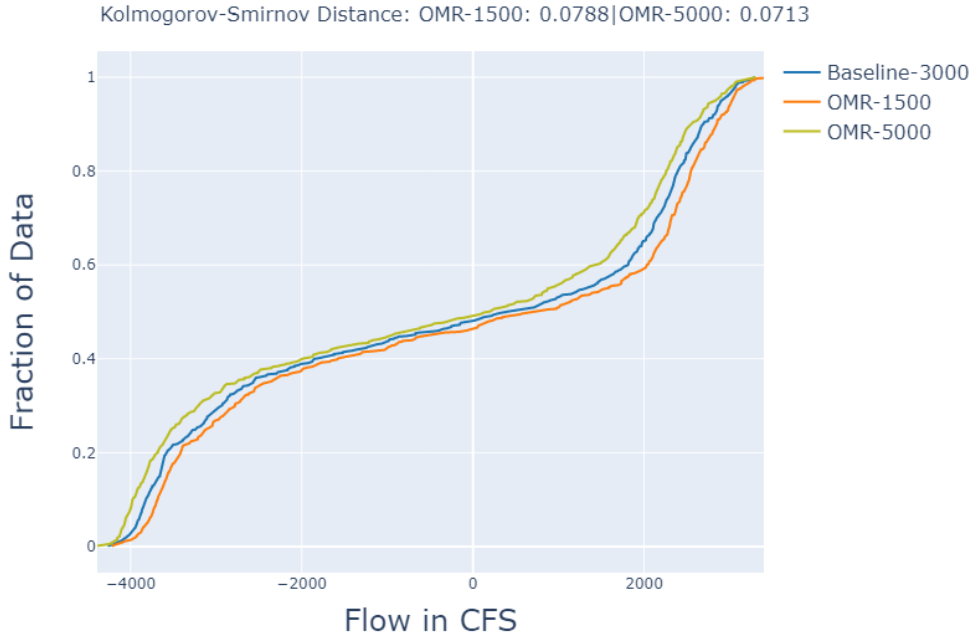


a)

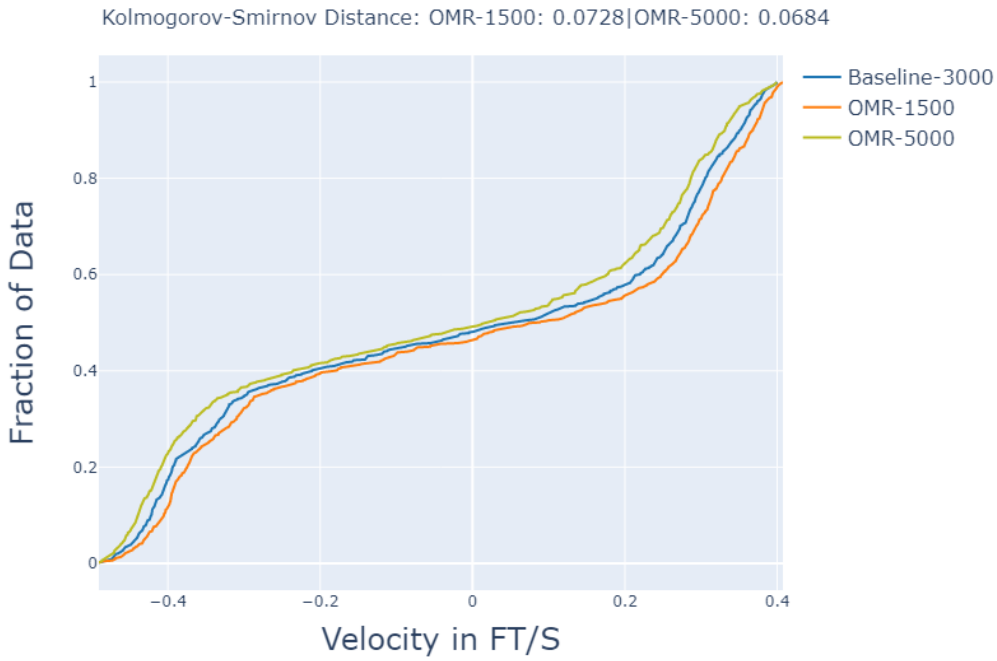


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

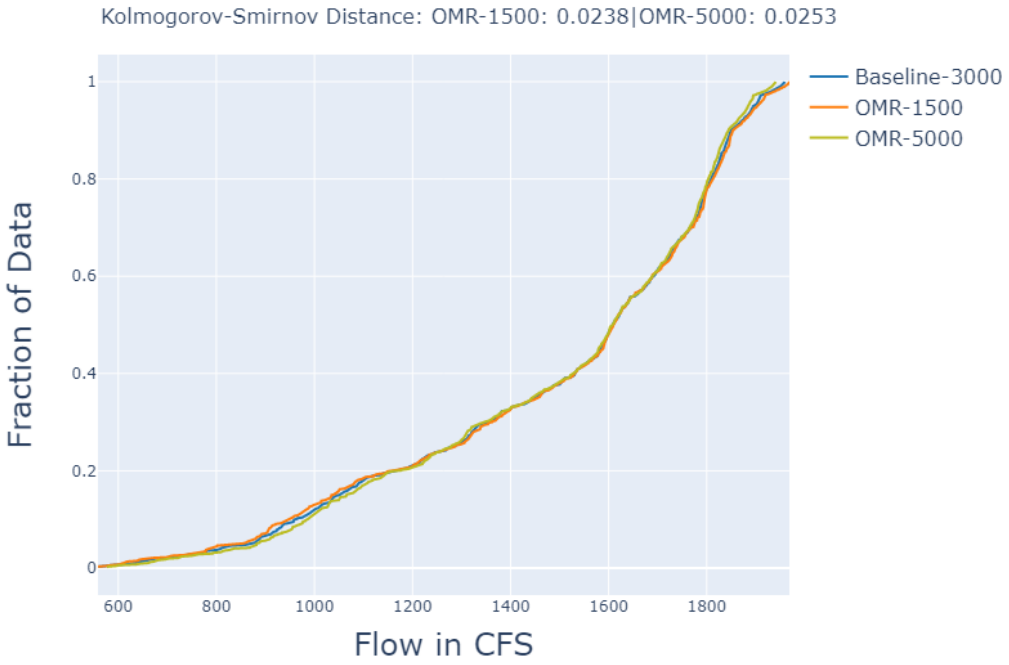


a)

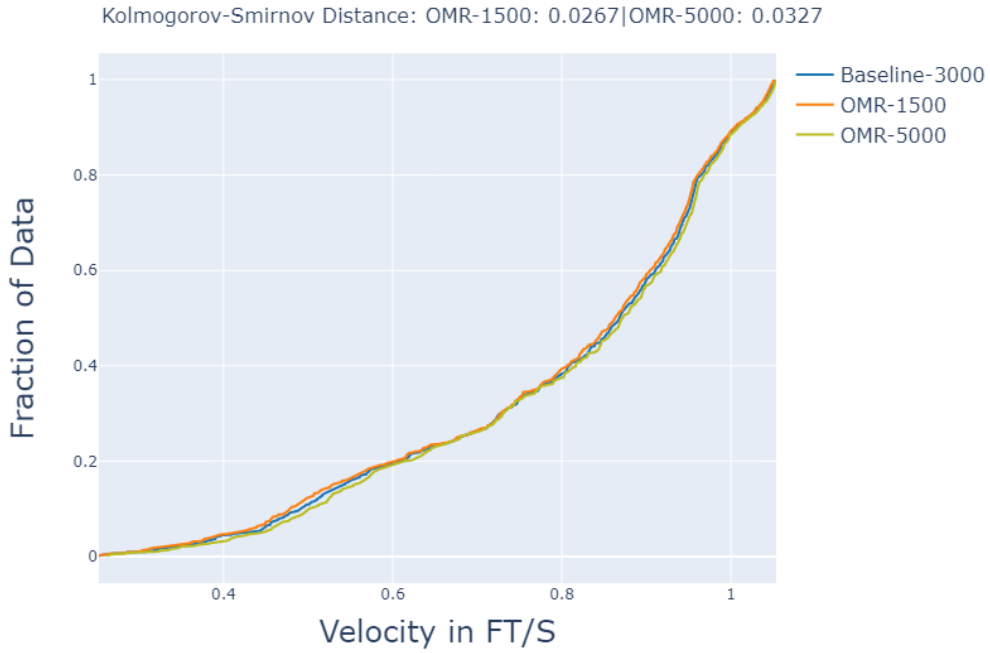


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

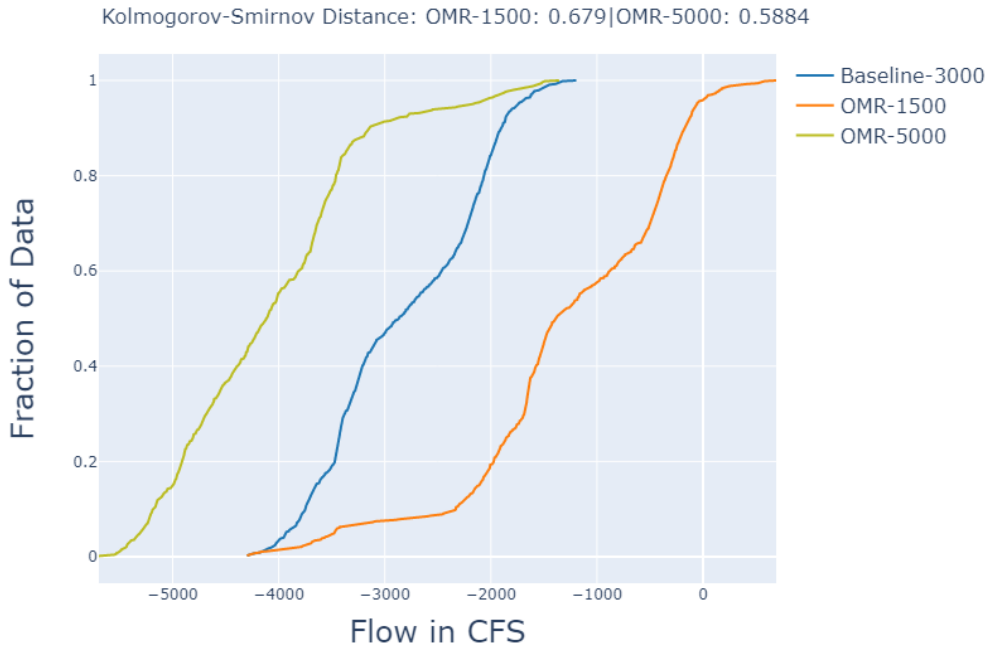


a)

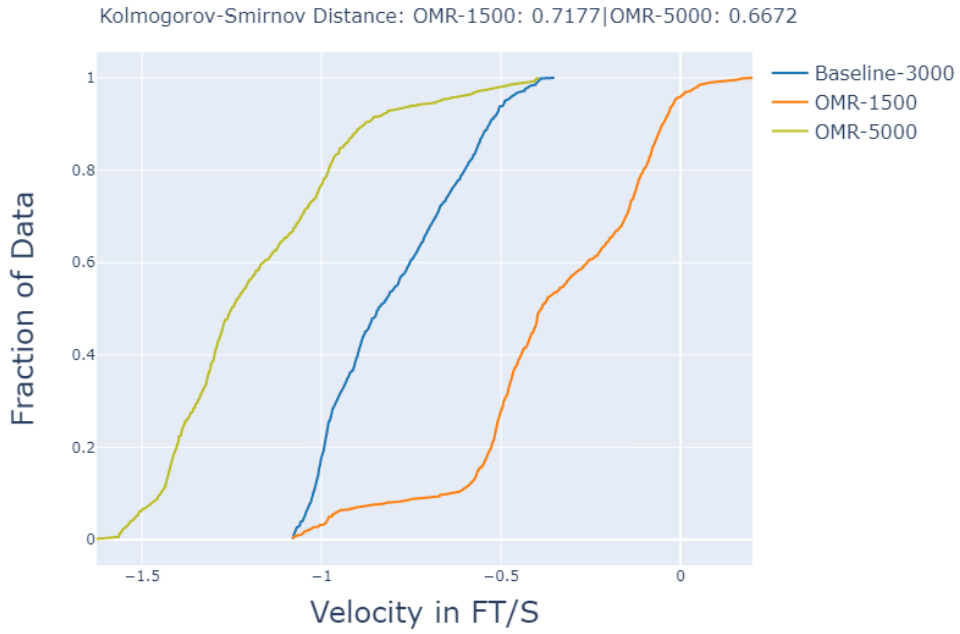


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

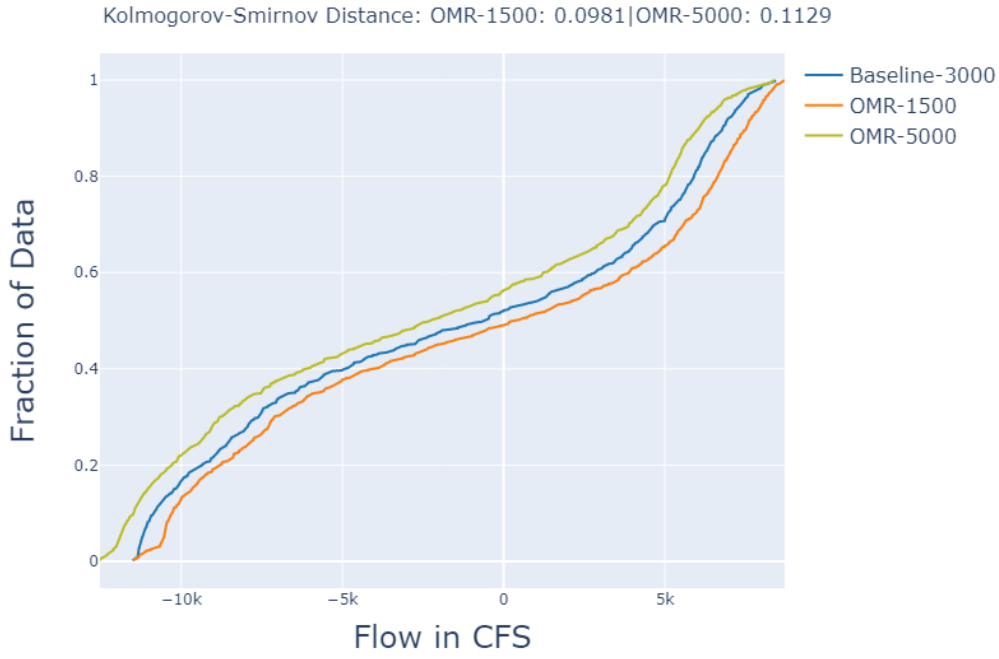


a)

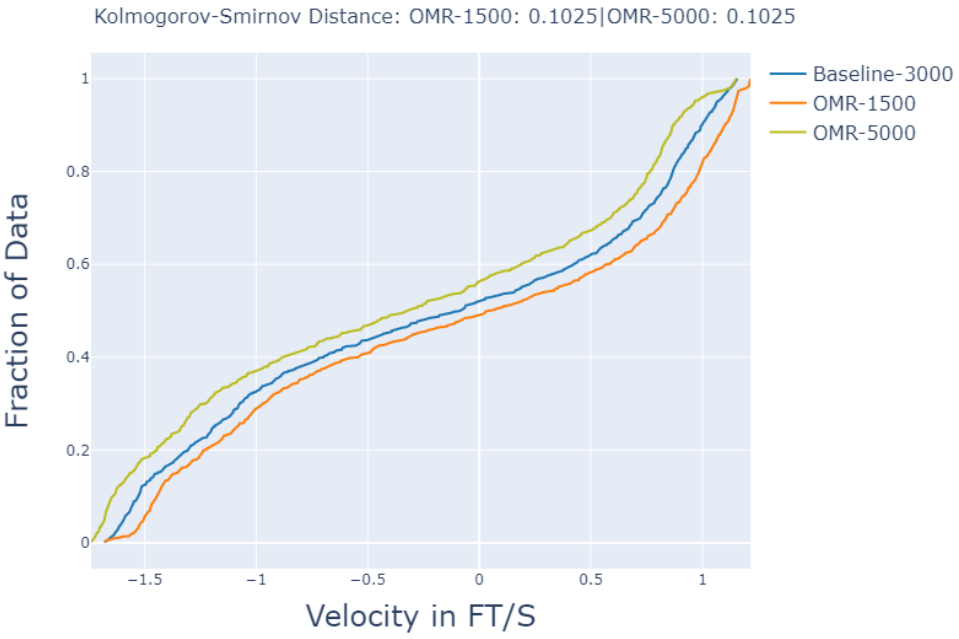


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

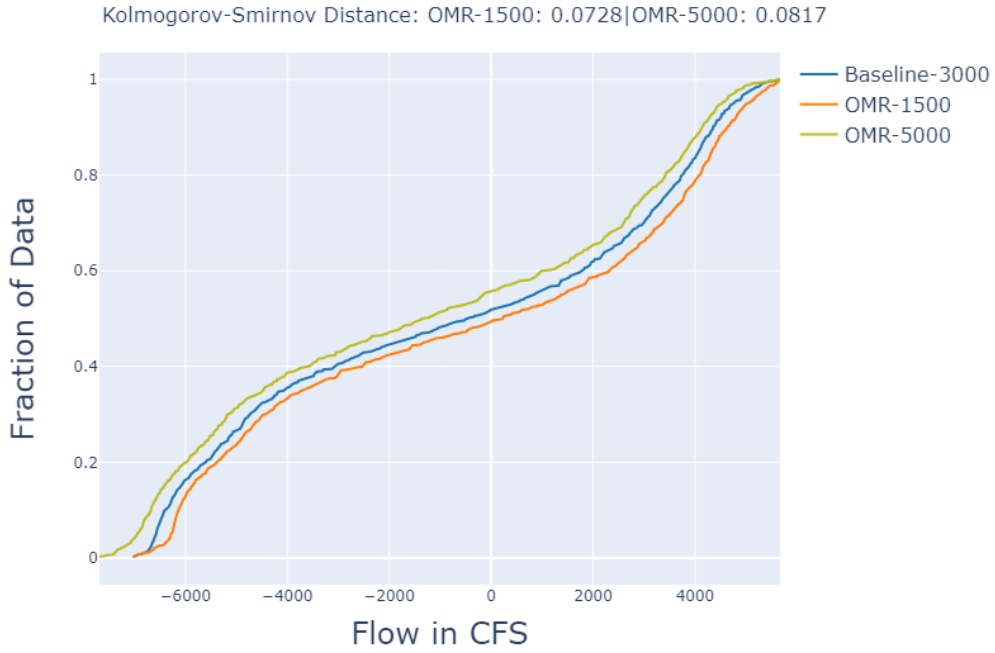


a)

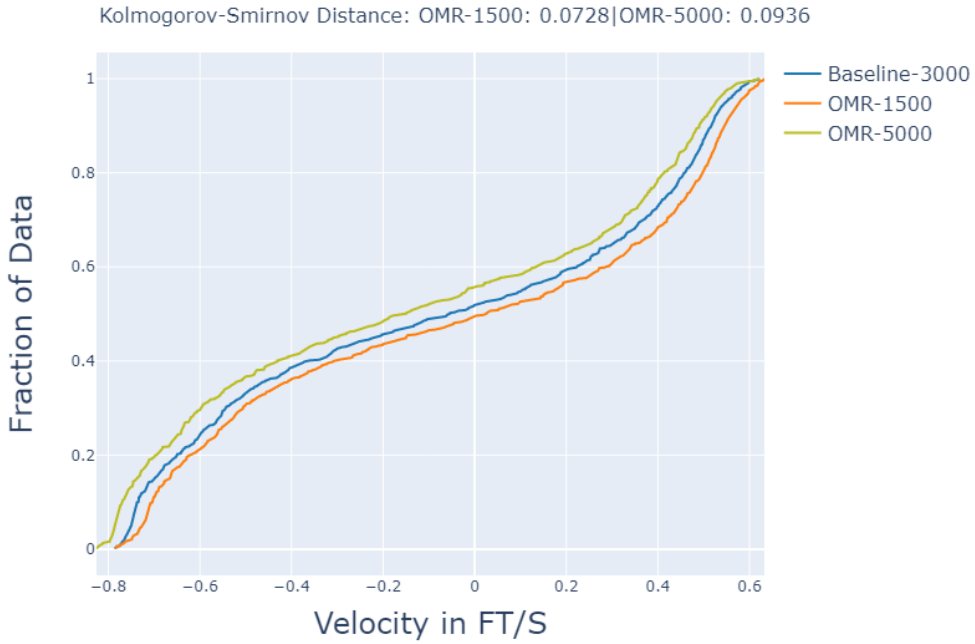


b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

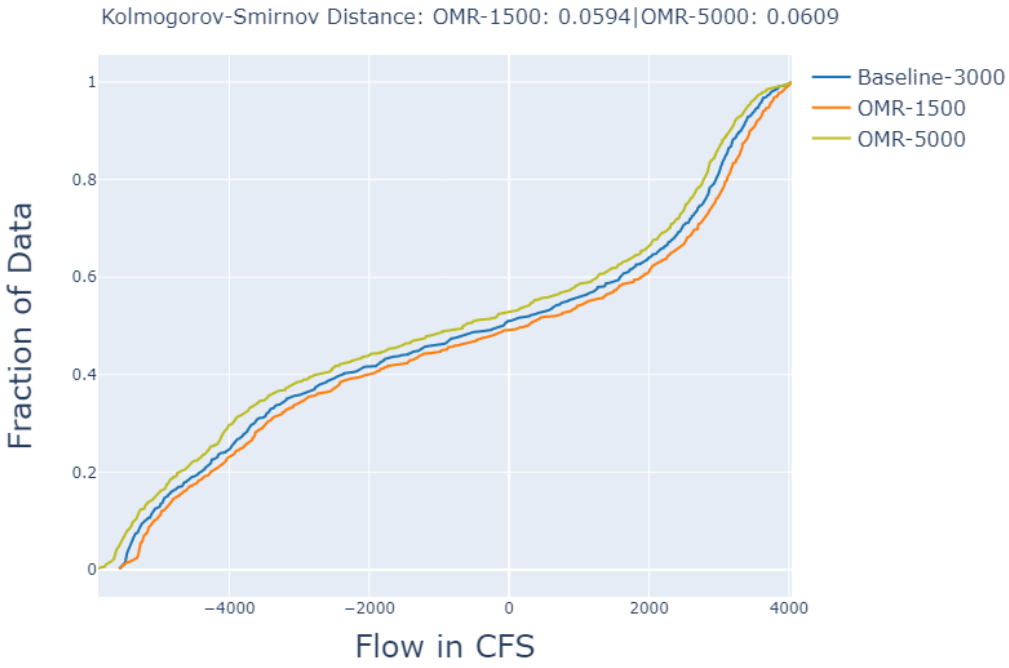


a)

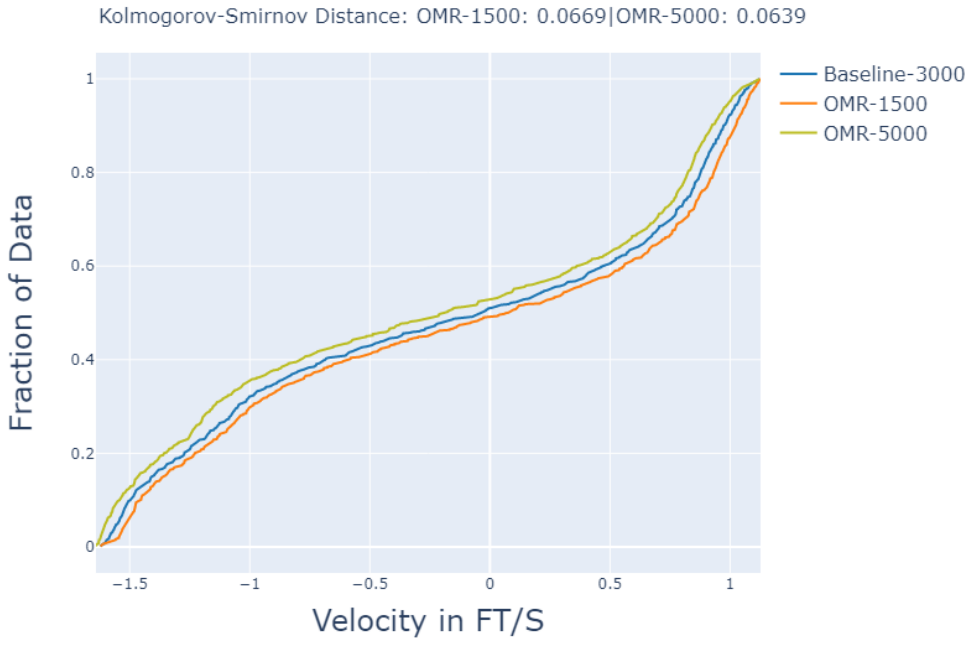


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -1,500 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.


Kolmogorov-Smirnov Distance: OMR-1500: 0.0594|OMR-5000: 0.0609
Baseline-3000
OMR-1500
OMR-5000
Fraction of Data
0
0.2
0.4
0.6
0.8
1
−4000
−2000
0
2000
4000
Flow in CFS

a)


Kolmogorov-Smirnov Distance: OMR-1500: 0.0669|OMR-5000: 0.0639
Baseline-3000
OMR-1500
OMR-5000
Fraction of Data
0
0.2
0.4
0.6
0.8
1
−1.5
−1
−0.5
0
0.5
1
Velocity in FT/S

b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-3,000 cfs)	6	559	1959	1507	100	0.3	1.1	0.8	100
Scenario OMR -1,500 cfs	6	559	1969	1507	100	0.3	1.1	0.8	100
Scenario OMR -5,000 cfs	6	577	1941	1507	100	0.3	1.1	0.8	100
Baseline (-3,000 cfs)	21	-6245	6761	861	56	-0.4	0.5	0.1	56
Scenario OMR -1,500 cfs	21	-6245	6761	887	56	-0.4	0.5	0.1	56
Scenario OMR -5,000 cfs	21	-6249	6742	830	56	-0.4	0.5	0.1	56
Baseline (-3,000 cfs)	49	-149530	139482	-44	52	-1.9	1.9	0.0	52
Scenario OMR -1,500 cfs	49	-149530	139482	1072	53	-1.9	1.9	0.0	53
Scenario OMR -5,000 cfs	49	-149726	139326	-1407	52	-1.9	1.9	0.0	52
Baseline (-3,000 cfs)	81	-4296	-1196	-2815	0	-1.1	-0.4	-0.8	0
Scenario OMR -1,500 cfs	81	-4296	689	-1292	4	-1.1	0.2	-0.4	4
Scenario OMR -5,000 cfs	81	-5695	-1357	-4081	0	-1.6	-0.4	-1.2	0
Baseline (-3,000 cfs)	94	-11487	8433	-1507	48	-1.7	1.2	-0.2	48

Scenario OMR -1,500 cfs	94	-11487	8717	-727	51	-1.7	1.2	-0.1	51
Scenario OMR -5,000 cfs	94	-12520	8394	-2485	44	-1.7	1.2	-0.3	44
Baseline (-3,000 cfs)	107	-5573	4039	-627	49	-1.6	1.1	-0.2	49
Scenario OMR -1,500 cfs	107	-5573	4039	-420	51	-1.6	1.1	-0.1	51
Scenario OMR -5,000 cfs	107	-5873	4033	-889	47	-1.6	1.1	-0.3	47
Baseline (-3,000 cfs)	124	-19773	12151	-2739	45	-0.6	0.4	-0.1	45
Scenario OMR -1,500 cfs	124	-19531	12151	-2354	46	-0.6	0.4	-0.1	46
Scenario OMR -5,000 cfs	124	-19962	12150	-3217	44	-0.7	0.4	-0.1	44
Baseline (-3,000 cfs)	148	-7014	5667	-818	48	-0.8	0.6	-0.1	48
Scenario OMR -1,500 cfs	148	-7014	5667	-457	51	-0.8	0.6	0.0	51
Scenario OMR -5,000 cfs	148	-7688	5661	-1264	44	-0.8	0.6	-0.1	44
Baseline (-3,000 cfs)	160	-4267	3297	-305	52	-0.5	0.4	0.0	52
Scenario OMR -1,500 cfs	160	-4218	3398	-136	54	-0.5	0.4	0.0	54
Scenario OMR -5,000 cfs	160	-4389	3301	-506	51	-0.5	0.4	0.0	51
Baseline (-3,000 cfs)	434	-155118	153609	4328	53	-1.8	1.8	0.1	53
Scenario OMR -1,500 cfs	434	-155118	153609	4615	53	-1.8	1.8	0.1	53
Scenario OMR -5,000 cfs	434	-155157	153506	3970	53	-1.8	1.8	0.1	53

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -3,000 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -1,500 cfs**	**Scenario OMR -5,000 cfs**	**Scenario OMR -1,500 cfs**	**Scenario OMR -5,000 cfs**
6	0.02	0.03	0.03	0.03
21	0.01	0.02	0.01	0.02
49	0.01	0.01	0.01	0.01
81	0.68	0.59	0.72	0.67
94	0.10	0.11	0.10	0.10
107	0.06	0.06	0.07	0.06
124	0.03	0.04	0.03	0.04
148	0.07	0.08	0.07	0.09
160	0.08	0.07	0.07	0.07
434	0.01	0.01	0.01	0.01

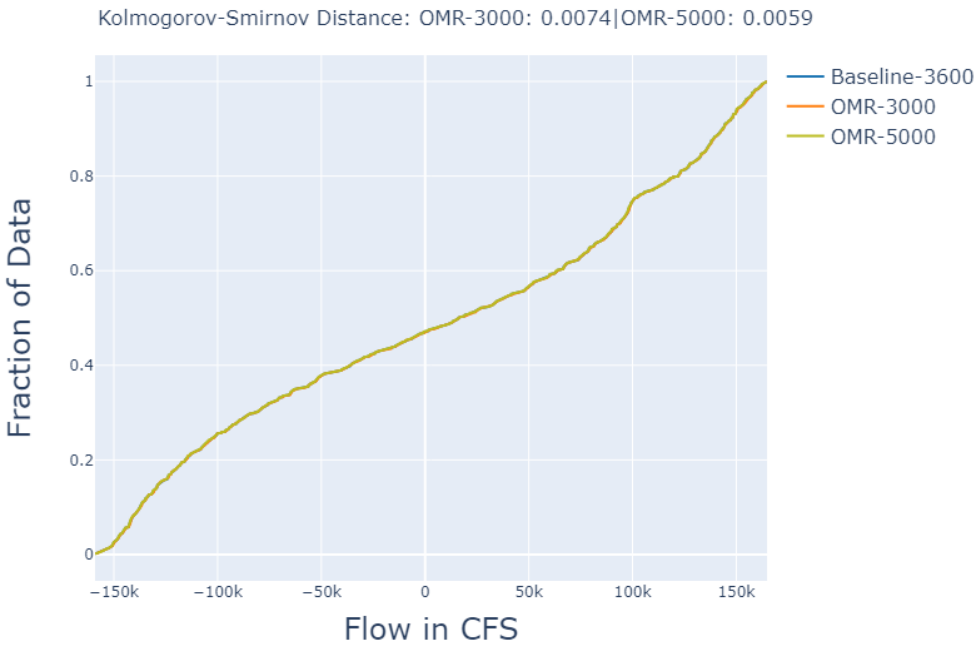
6/16/2020

DWR baseline forecast 06/09/2020 to 06/29/2020
CVO updated baseline and Scenarios on 06/15/2020
CVO OMR action taking place on 06/16/2020 to 06/22/2020
DSM2 modeling results valid 06/17/2020 to 06/23/2020

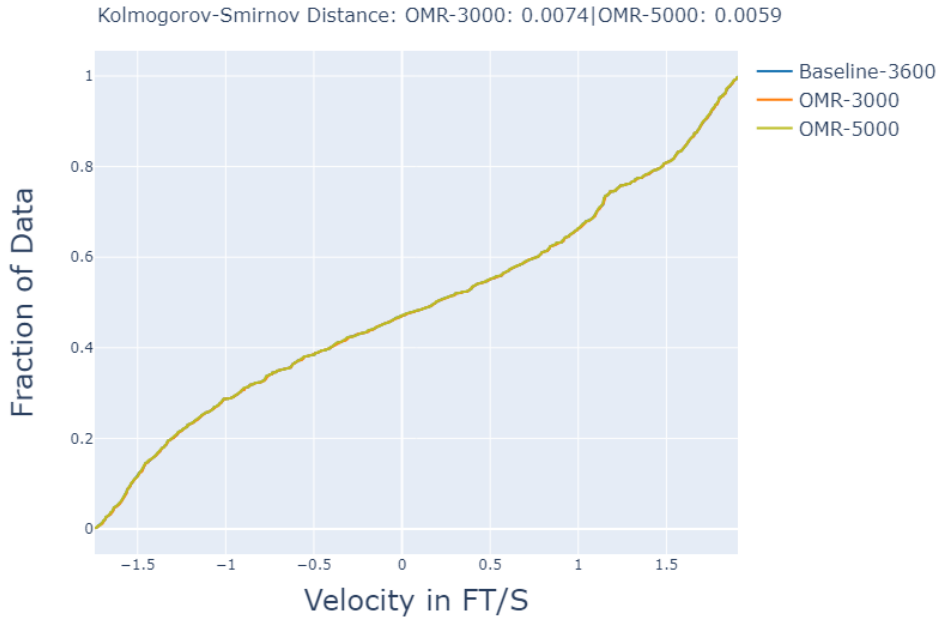
Baseline: –3,600 cfs OMR
Scenario –3,000: –3,000 cfs OMR
Scenario –5,000: –5,000 cfs OMR

DSM2 modeling for June 16 through June 22 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -3,000 cfs (decreasing pumping from OMR -3,600 cfs, hereafter referred to as Scenario -3,000 cfs) to –5,000 cfs (increasing pumping from OMR -3,600 cfs, hereafter referred to as Scenario –5,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

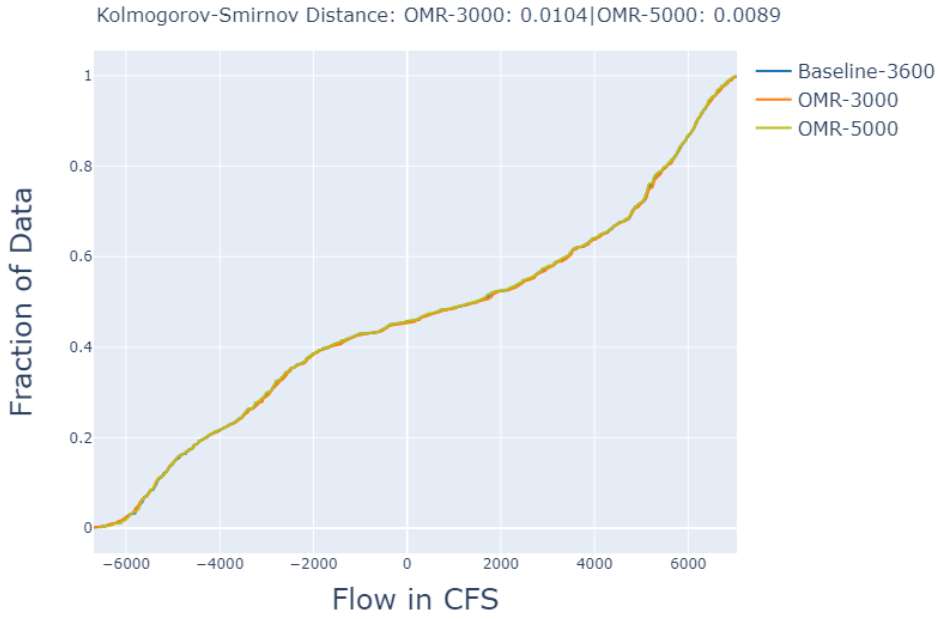


a)

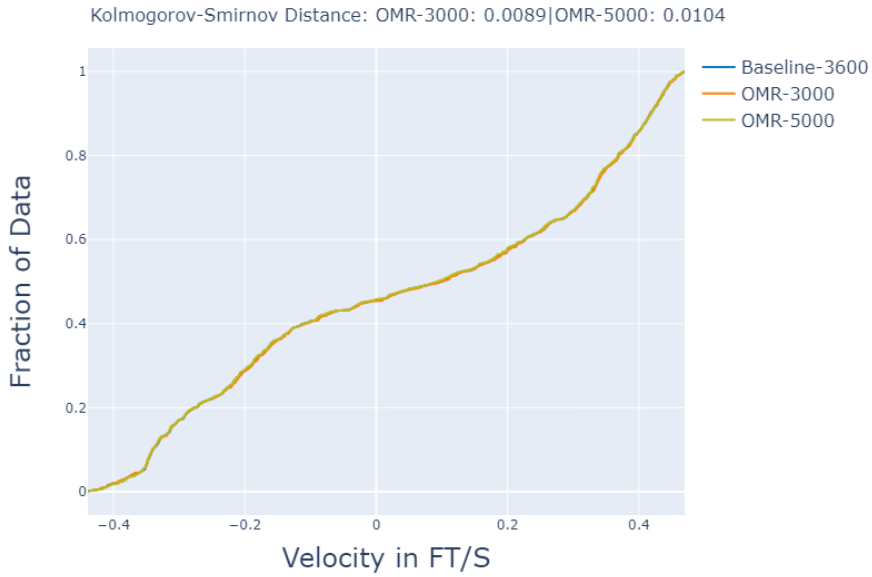


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



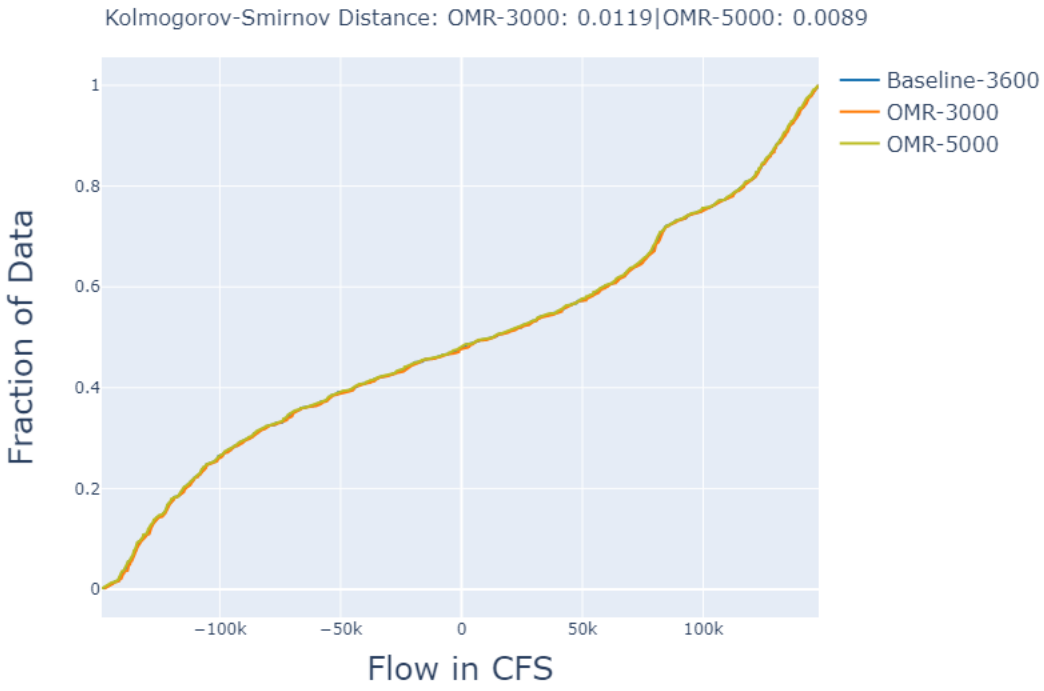
a)



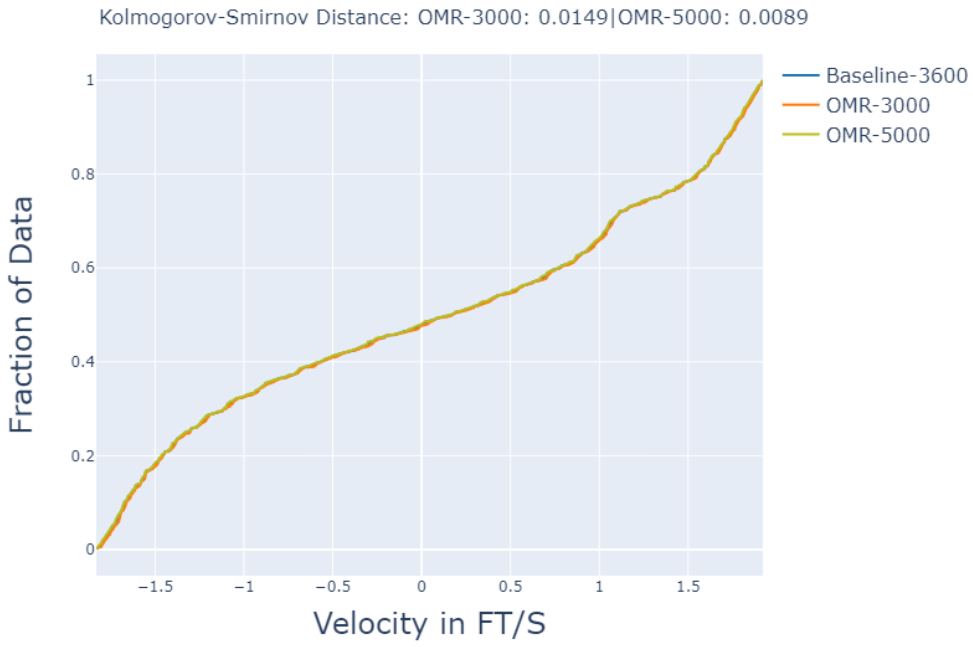
b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

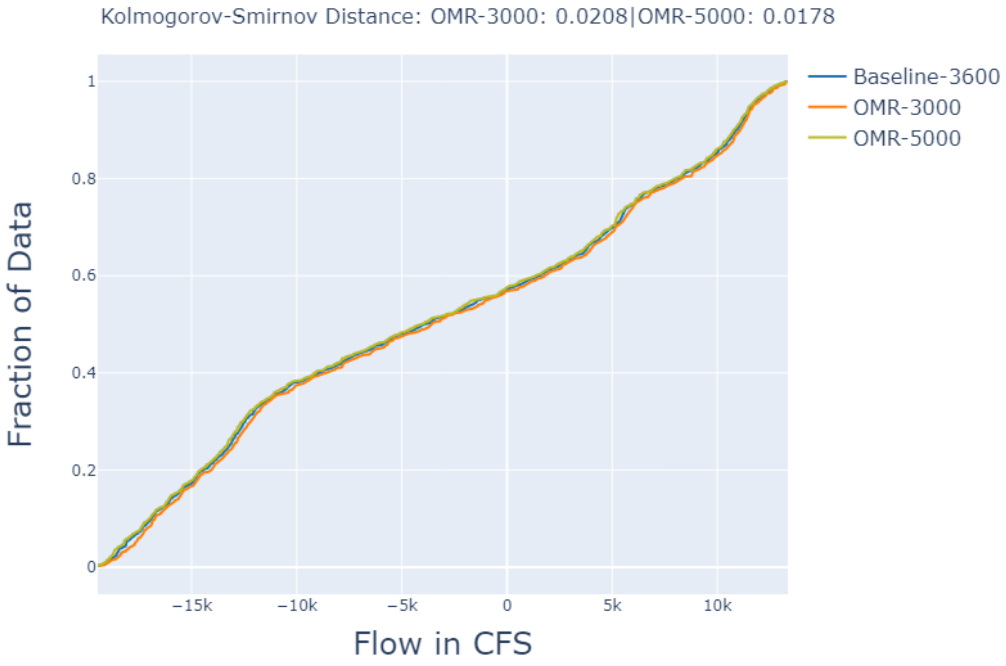


a)

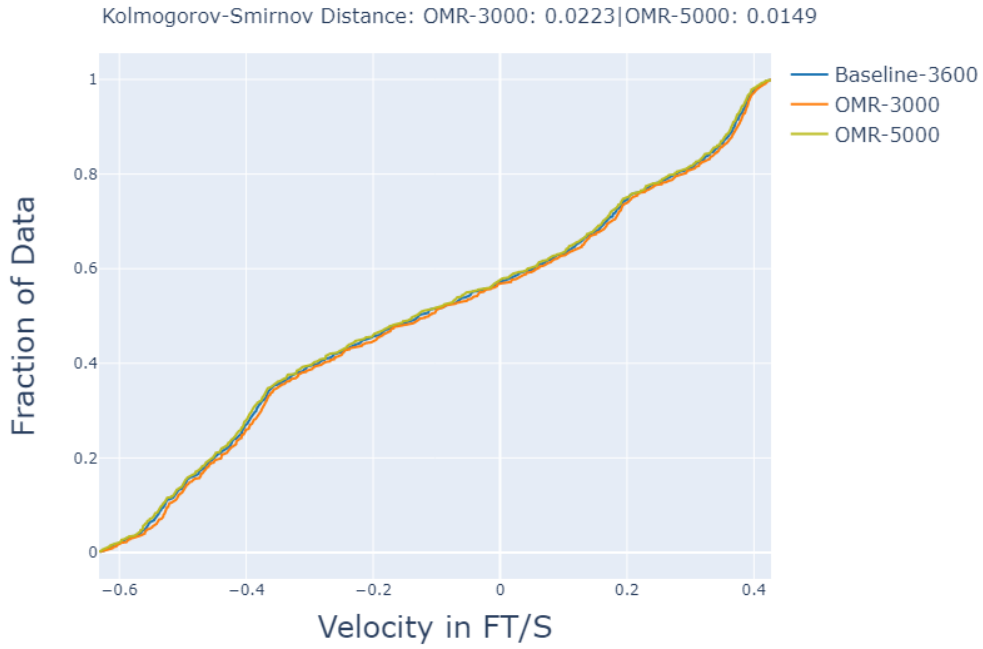


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and
OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

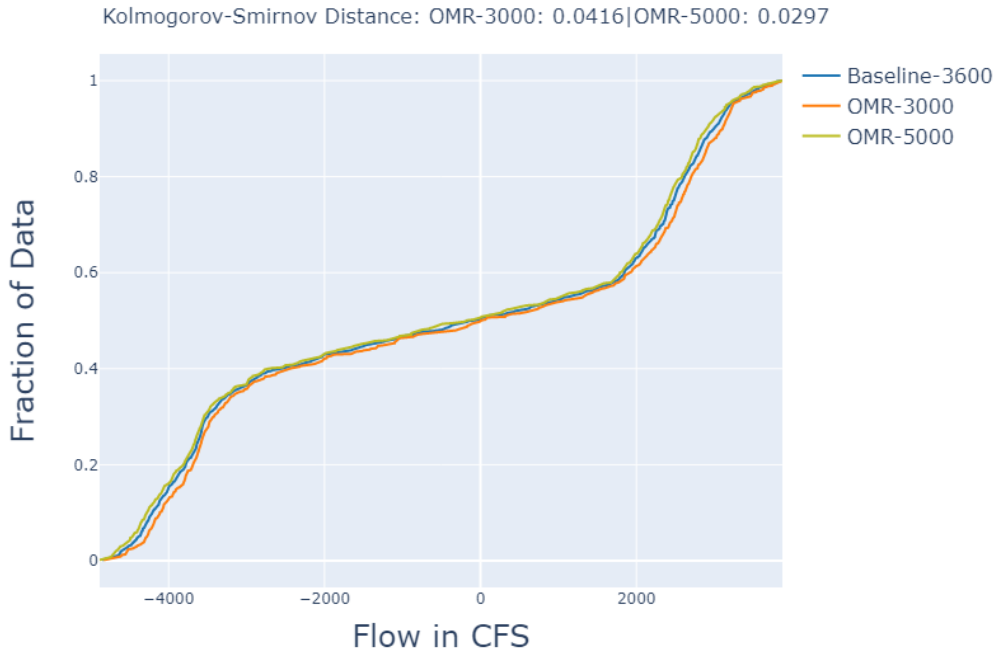


a)

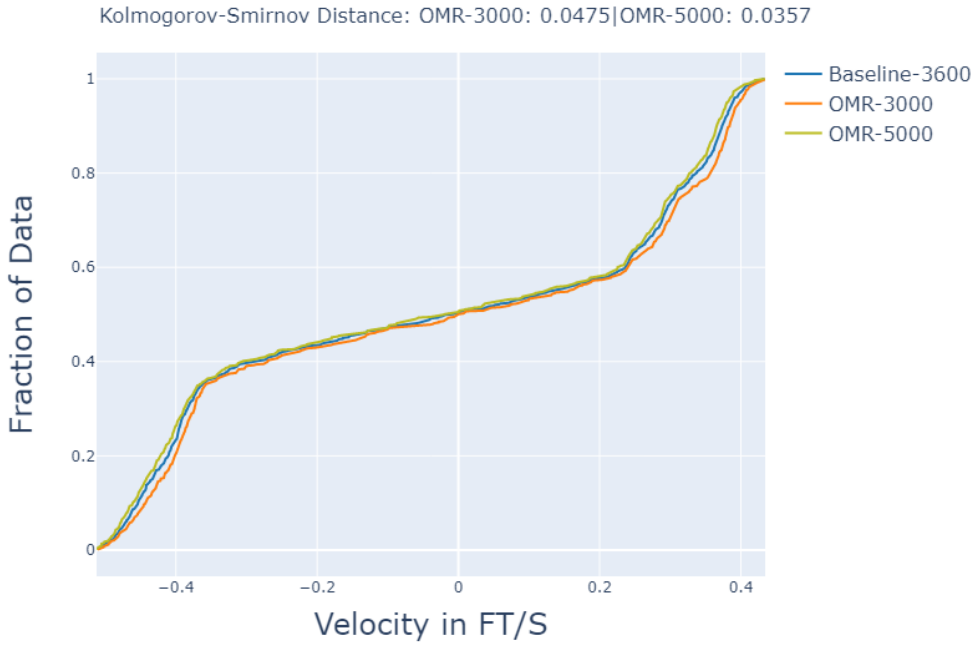


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

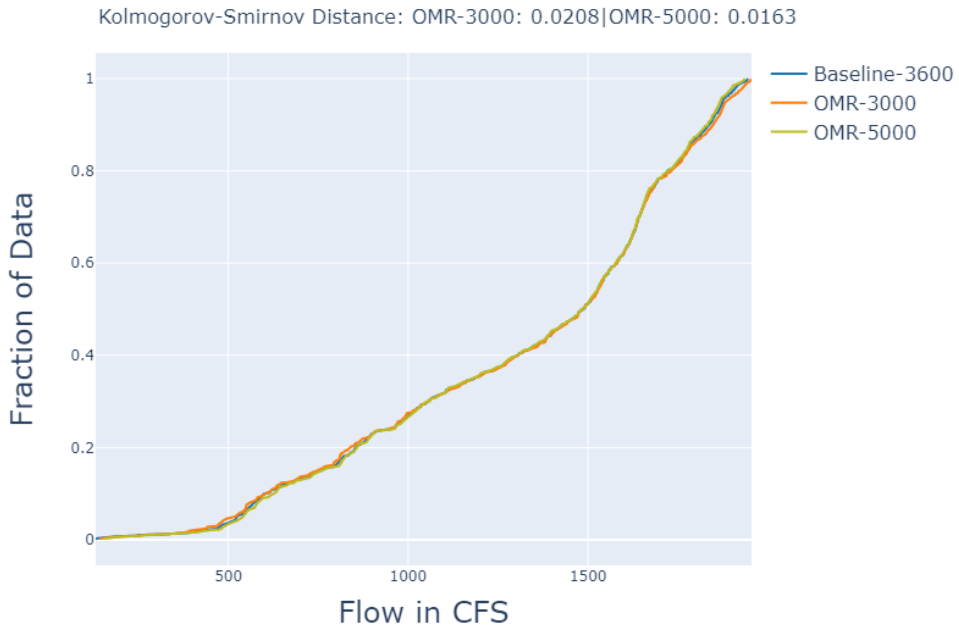


a)

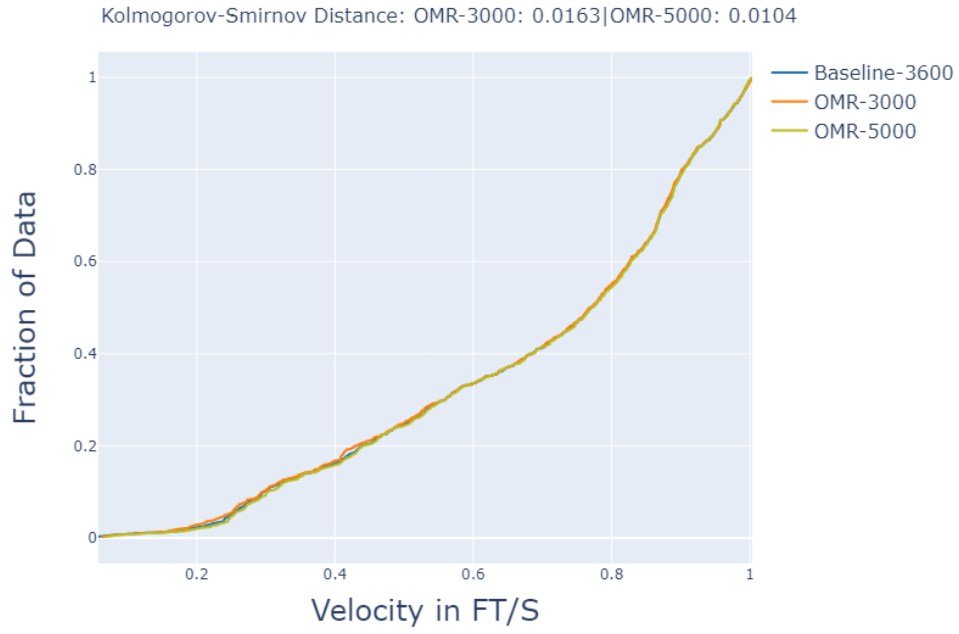


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

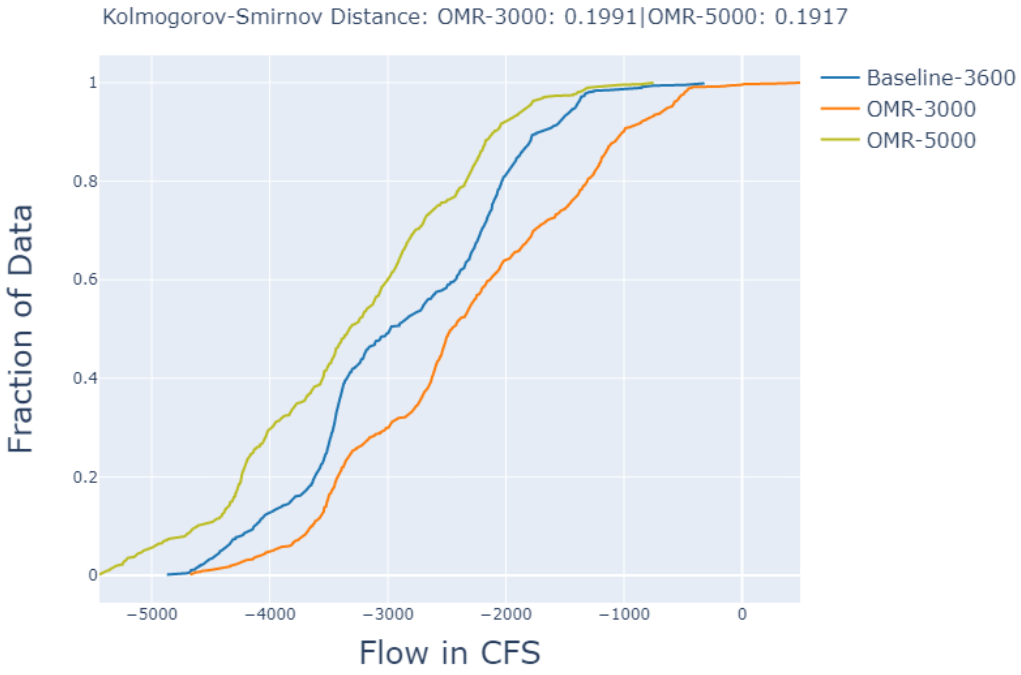


a)

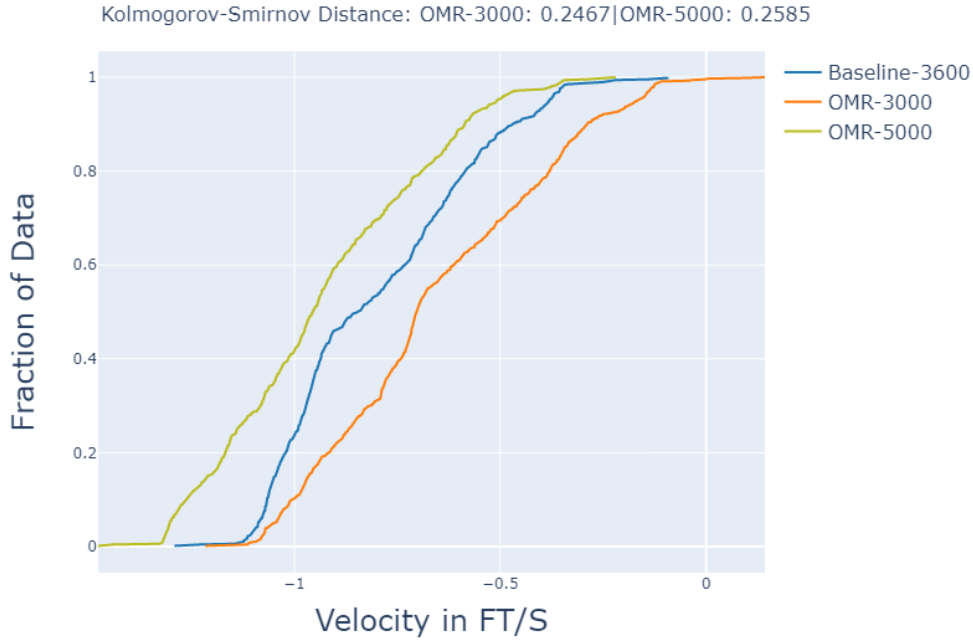


b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

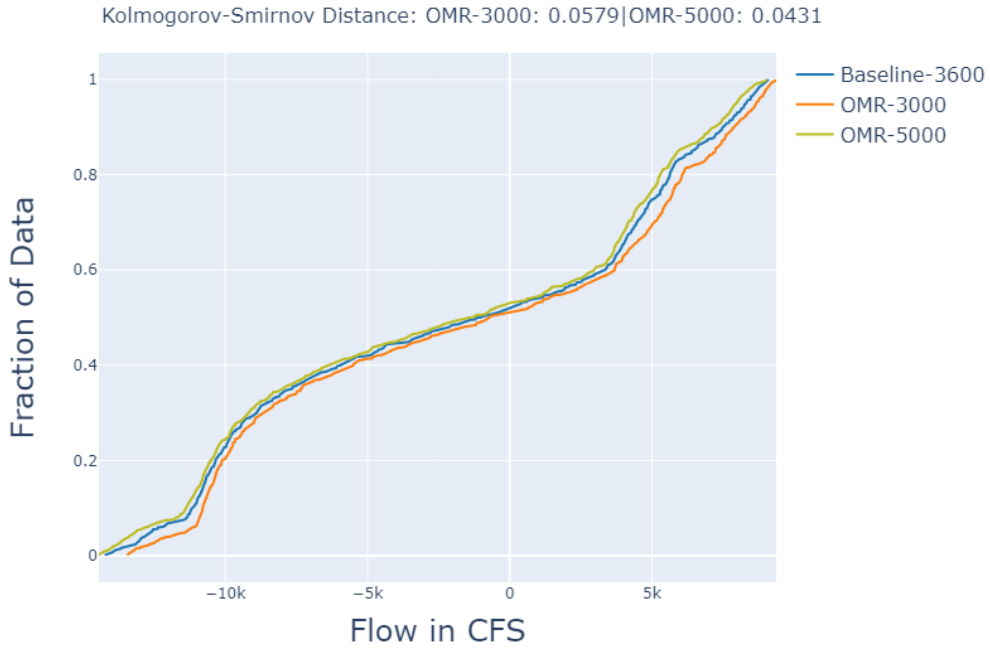


a)

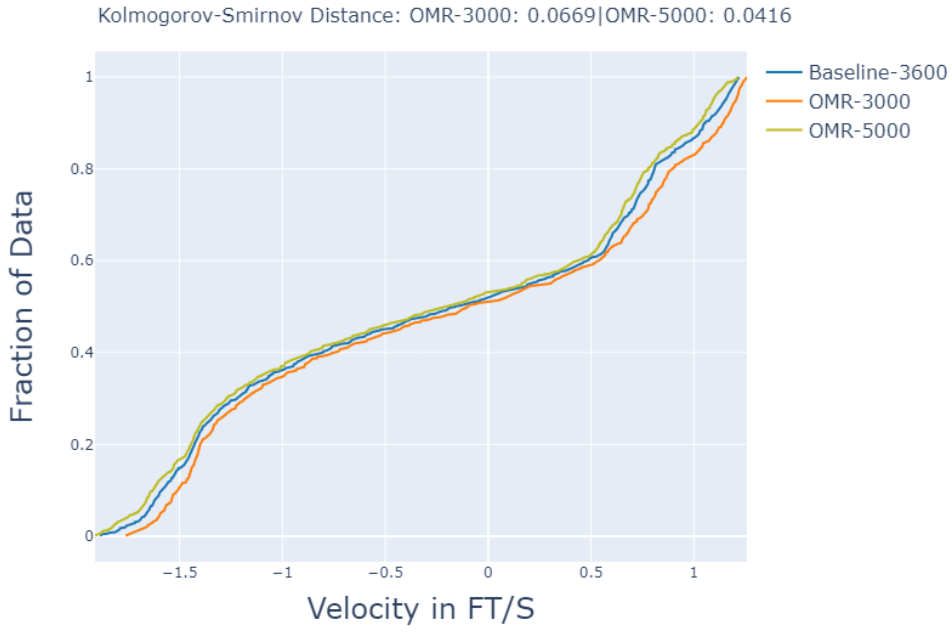


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



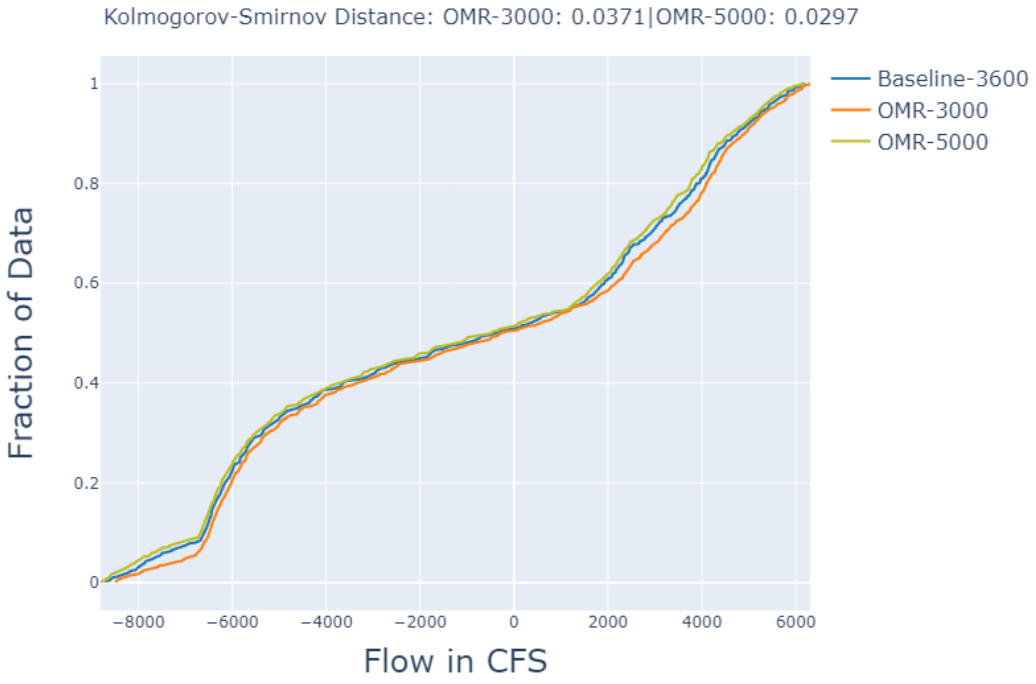
a)



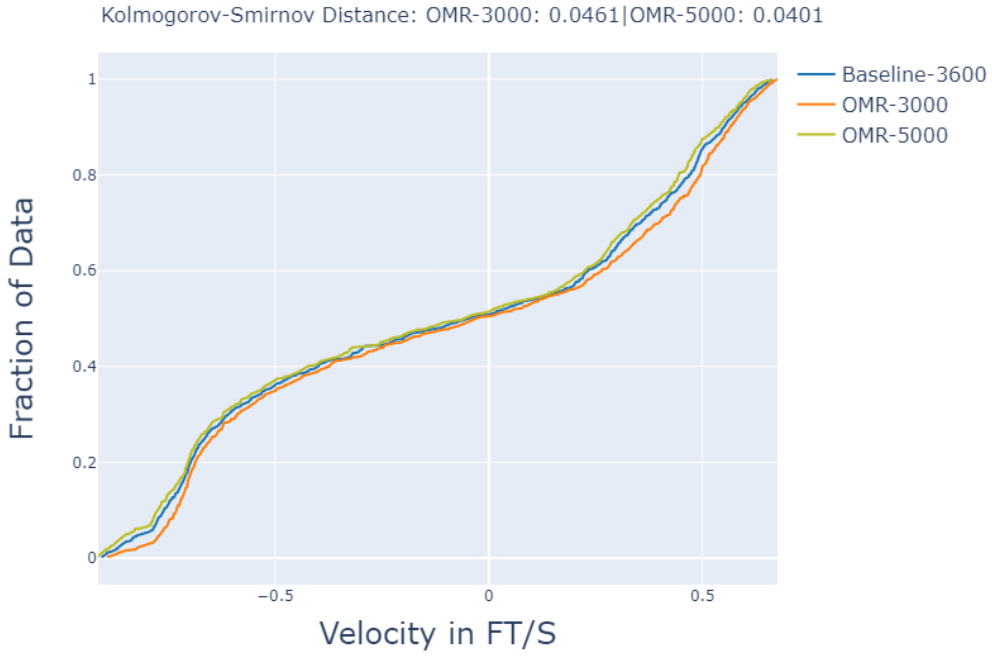
b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

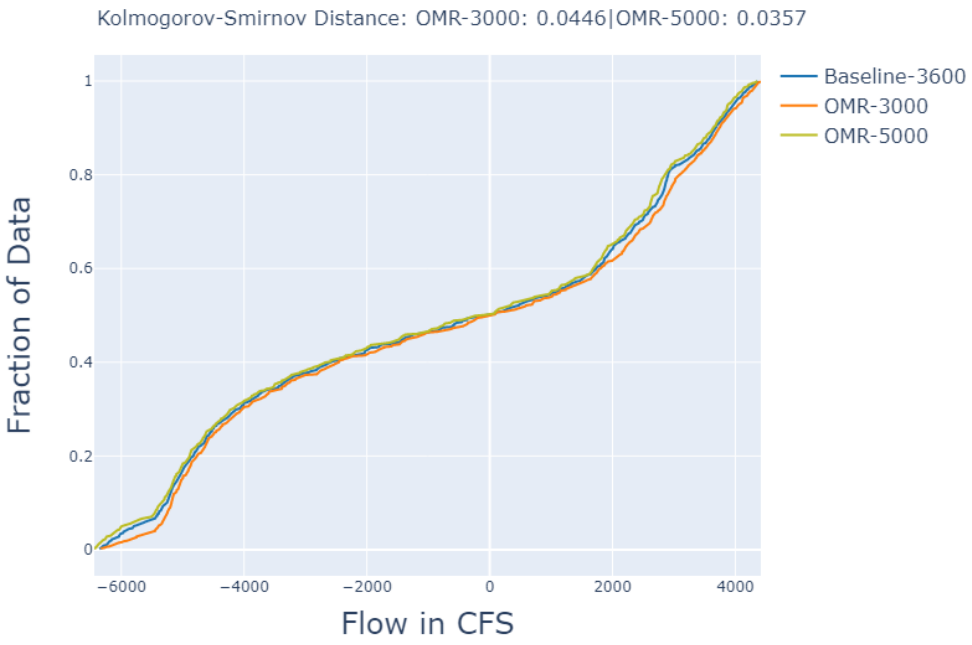


a)

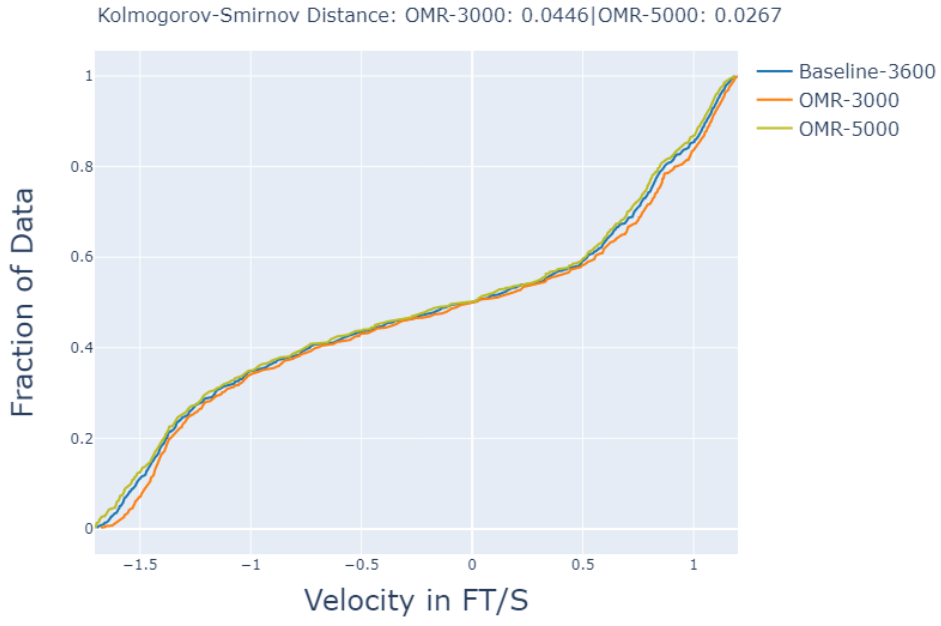


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



a)



b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-3,600 cfs)	6	131	1945	1327	100	0.06	1.00	0.69	100
Scenario OMR -3,000 cfs	6	144	1954	1327	100	0.06	1.00	0.69	100
Scenario OMR -5,000 cfs	6	155	1936	1327	100	0.07	1.00	0.69	100
Baseline (-3,600 cfs)	21	-6671	7037	753	54.4	-0.44	0.47	0.06	54.4
Scenario OMR -3,000 cfs	21	-6688	7035	769	54.7	-0.44	0.47	0.06	54.7
Scenario OMR -5,000 cfs	21	-6580	7013	740	54.2	-0.44	0.47	0.05	54.2
Baseline (-3,600 cfs)	49	-148169	147722	2718	52.2	-1.83	1.92	0.06	52.2
Scenario OMR -3,000 cfs	49	-147773	147682	3366	52.3	-1.83	1.92	0.07	52.3
Scenario OMR -5,000 cfs	49	-148788	147502	2287	52.0	-1.83	1.92	0.05	52.0
Baseline (-3,600 cfs)	81	-4871	-321	-2870	0.00	-1.29	-0.09	-0.80	0.0
Scenario OMR -3,000 cfs	81	-4674	492	-2362	0.45	-1.22	0.14	-0.65	0.5
Scenario OMR -5,000 cfs	81	-5443	-750	-3322	0.00	-1.48	-0.22	-0.93	0.0
Baseline (-3,600 cfs)	94	-14240	9099	-1899	48.1	-1.89	1.22	-0.24	48.1

Scenario OMR -3,000 cfs	94	-13454	9371	-1447	49.0	-1.76	1.26	-0.18	49.0
Scenario OMR -5,000 cfs	94	-14447	9028	-2197	47.0	-1.91	1.21	-0.29	47.0
Baseline (-3,600 cfs)	107	-6354	4367	-695	50.1	-1.69	1.19	-0.18	50.1
Scenario OMR -3,000 cfs	107	-6329	4416	-574	50.2	-1.67	1.20	-0.15	50.2
Scenario OMR -5,000 cfs	107	-6440	4354	-775	49.9	-1.70	1.19	-0.21	49.9
Baseline (-3,600 cfs)	124	-19431	13353	-3414	42.9	-0.63	0.43	-0.10	42.9
Scenario OMR -3,000 cfs	124	-19433	13349	-3188	43.2	-0.63	0.43	-0.09	43.2
Scenario OMR -5,000 cfs	124	-19458	13330	-3564	42.5	-0.63	0.43	-0.11	42.5
Baseline (-3,600 cfs)	148	-8710	6197	-983	49.2	-0.91	0.66	-0.10	49.2
Scenario OMR -3,000 cfs	148	-8497	6305	-775	49.6	-0.89	0.68	-0.08	49.6
Scenario OMR -5,000 cfs	148	-8799	6183	-1121	48.6	-0.91	0.66	-0.12	48.6
Baseline (-3,600 cfs)	160	-4851	3870	-479	49.9	-0.51	0.43	-0.04	49.9
Scenario OMR -3,000 cfs	160	-4833	3872	-381	50.2	-0.51	0.43	-0.02	50.2
Scenario OMR -5,000 cfs	160	-4884	3870	-544	49.6	-0.51	0.43	-0.04	49.6
Baseline (-3,600 cfs)	434	-158939	164808	7046	52.9	-1.74	1.91	0.11	52.9
Scenario OMR -3,000 cfs	434	-158827	164787	7227	53.2	-1.74	1.90	0.12	53.2
Scenario OMR -5,000 cfs	434	-159050	164652	6925	52.9	-1.74	1.90	0.11	52.9

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -3,600 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -3,000 cfs**	**Scenario OMR -5,000 cfs**	**Scenario OMR -3,000 cfs**	**Scenario OMR -5,000 cfs**
6	0.02	0.02	0.02	0.01
21	0.01	0.01	0.01	0.01
49	0.01	0.01	0.01	0.01
81	0.20	0.19	0.25	0.26
94	0.06	0.04	0.07	0.04
107	0.04	0.04	0.04	0.03
124	0.02	0.02	0.02	0.01
148	0.04	0.03	0.05	0.04
160	0.04	0.03	0.05	0.04
434	0.01	0.01	0.01	0.01

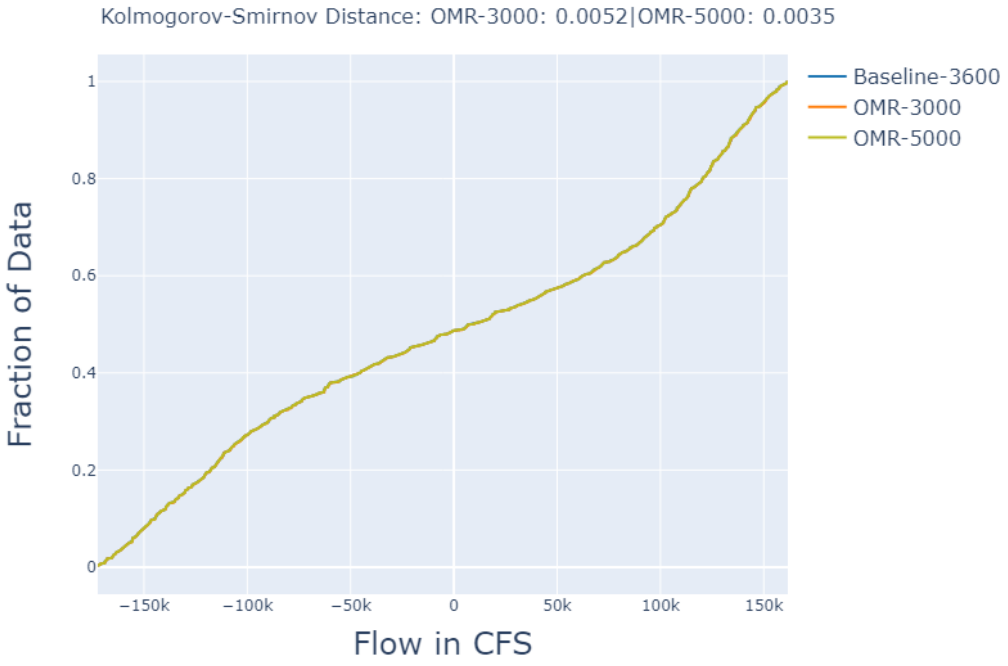
6/23/2020

DWR baseline forecast 06/16/2020 to 07/06/2020
CVO updated baseline and Scenarios on 06/22/2020
CVO OMR action taking place on 06/23/2020 to 06/29/2020
DSM2 modeling results valid 06/24/2020 to 06/30/2020

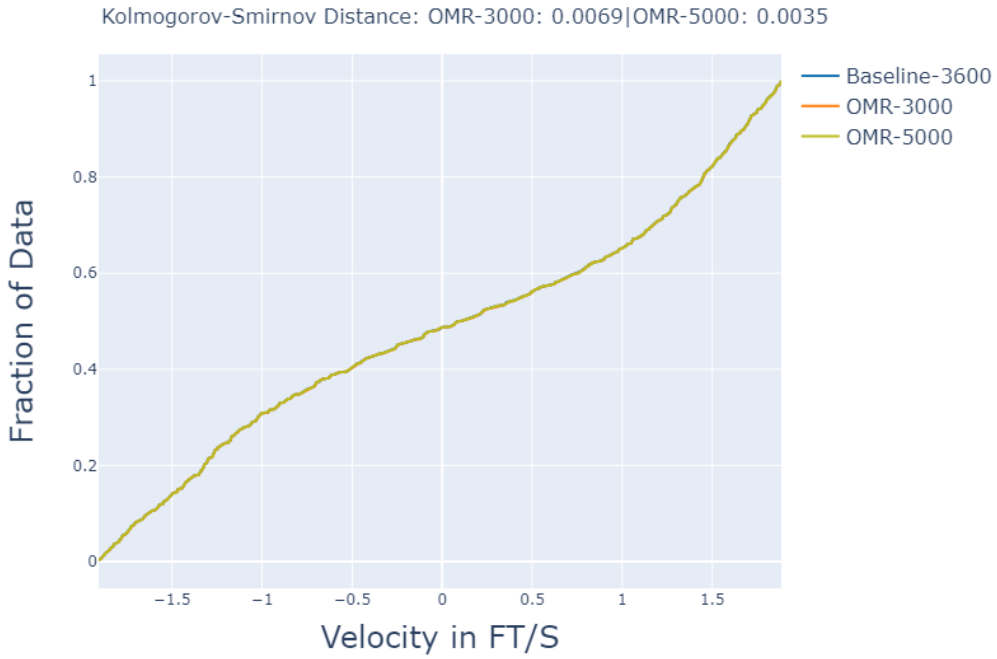
Baseline: –3,600 cfs OMR
Scenario –3,000: –3,000 cfs OMR
Scenario –5,000: –5,000 cfs OMR

DSM2 modeling for June 23 through June 29 shows variation in modeled hydrodynamic conditions (Attachment A – figures and table**s**). This week two scenario operations were assessed. The range of proposed operations is from -3,000 cfs (decreasing pumping from OMR -3,600 cfs, hereafter referred to as Scenario -3,000 cfs) to –5,000 cfs (increasing pumping from OMR -3,600 cfs, hereafter referred to as Scenario –5,000 cfs).

Sacramento River at Sherman Island (Channel 434). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

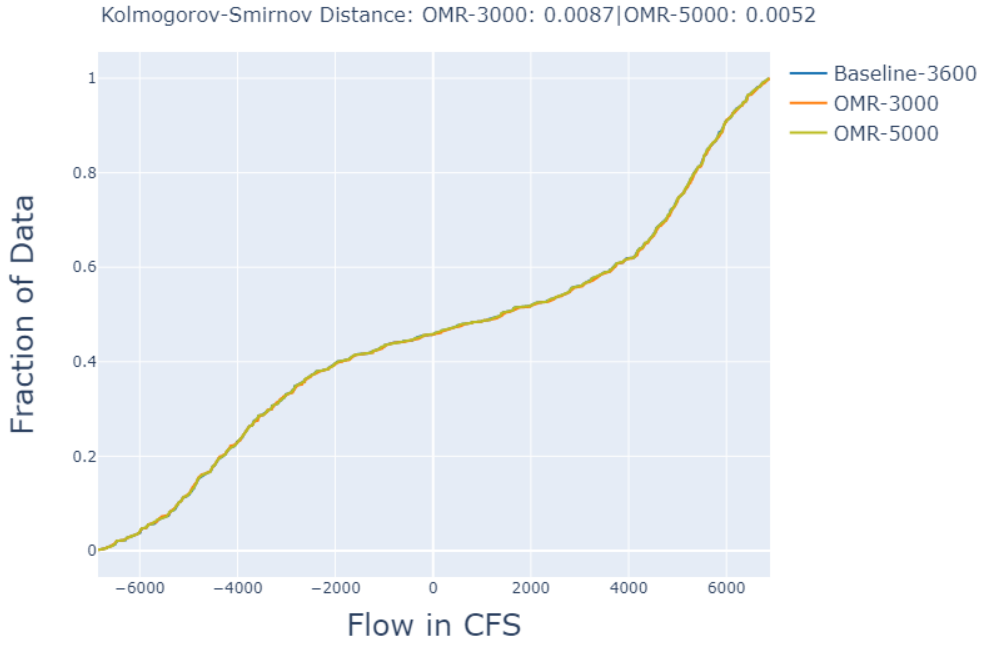


a)

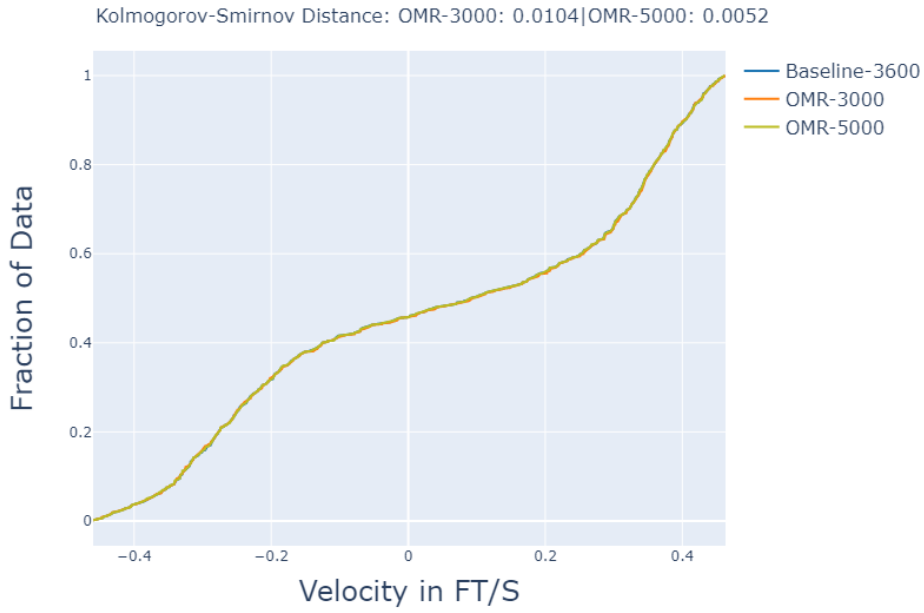


b)

San Joaquin River downstream of confluence with Calaveras River (Channel 21). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

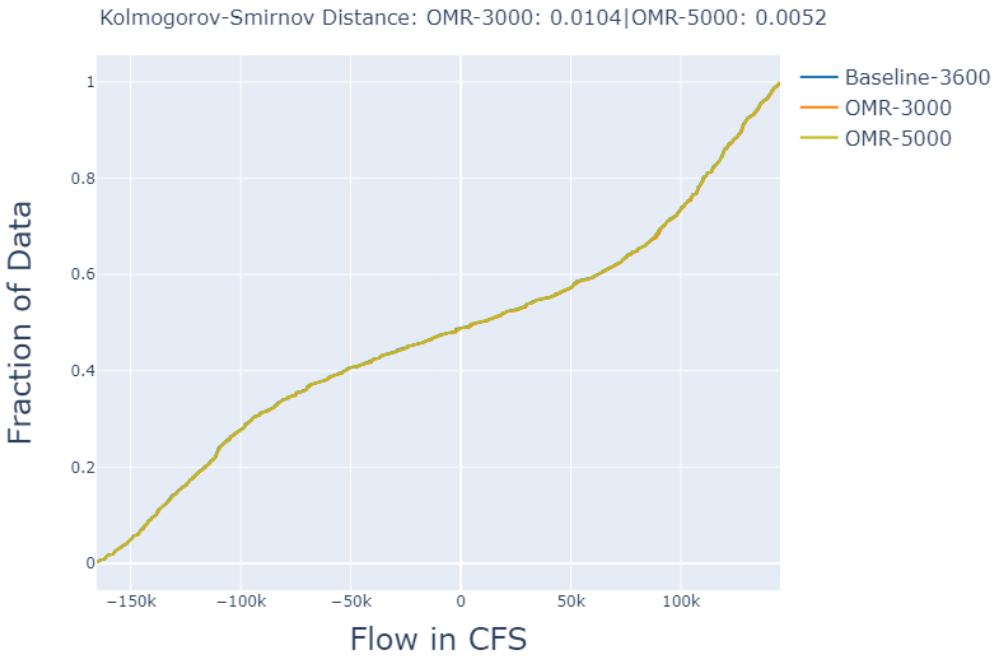


a)

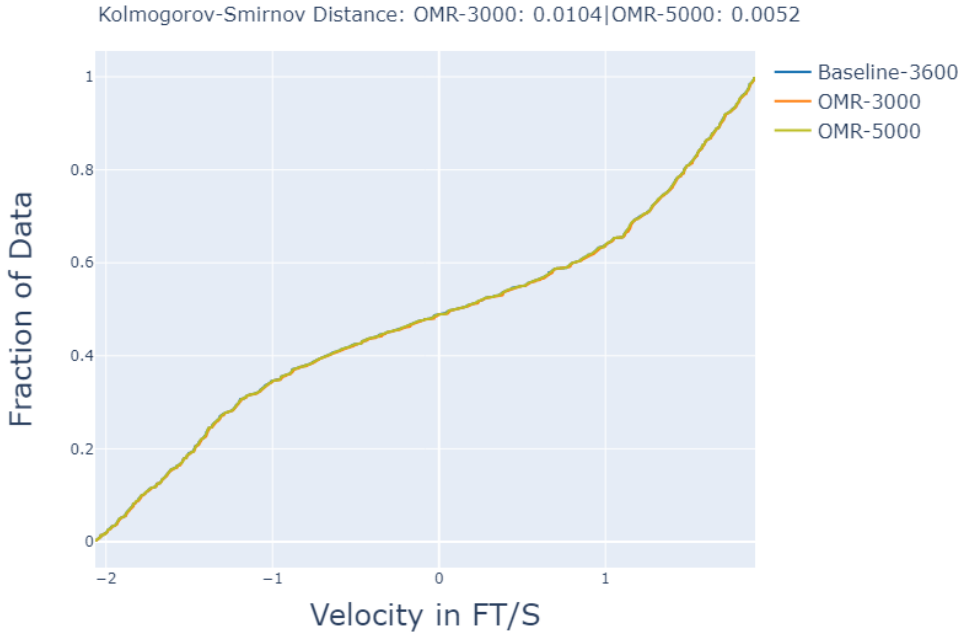


b)

San Joaquin River at Sherman Island (Channel 49). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

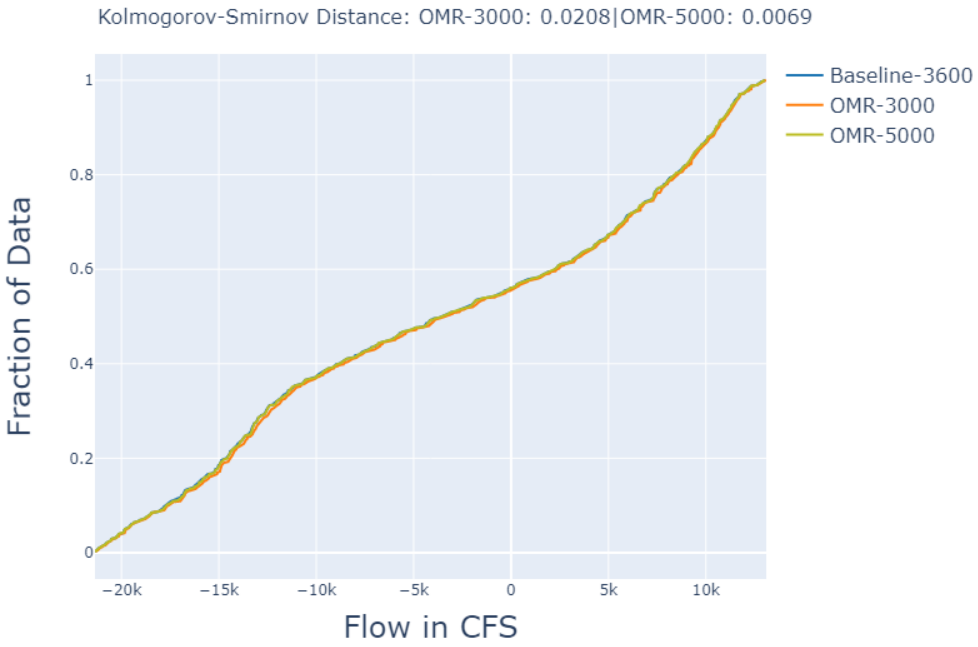


a)

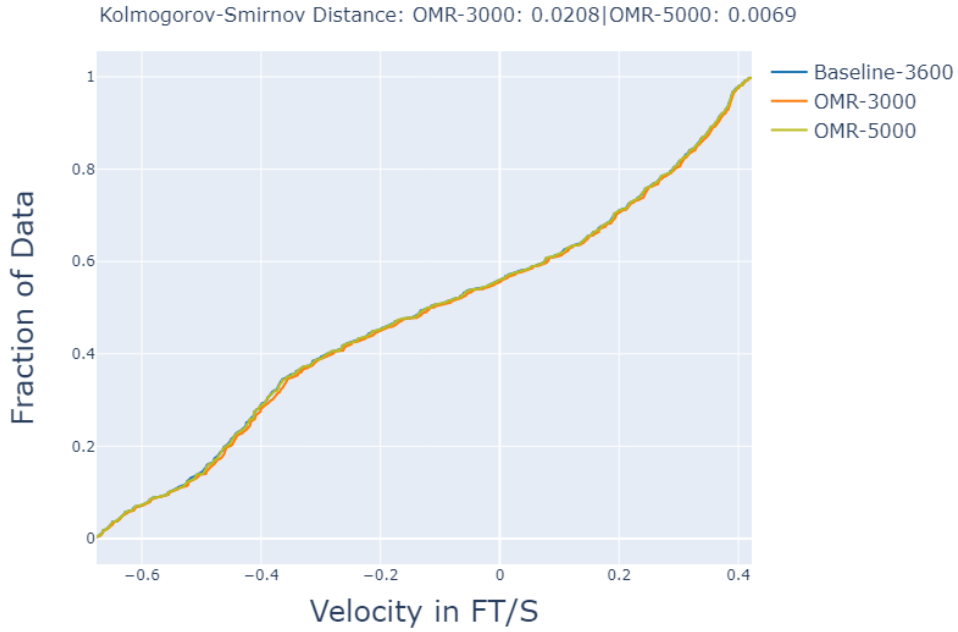


b)

Old River between Franks Tract and San Joaquin River (Channel 124). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and
OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

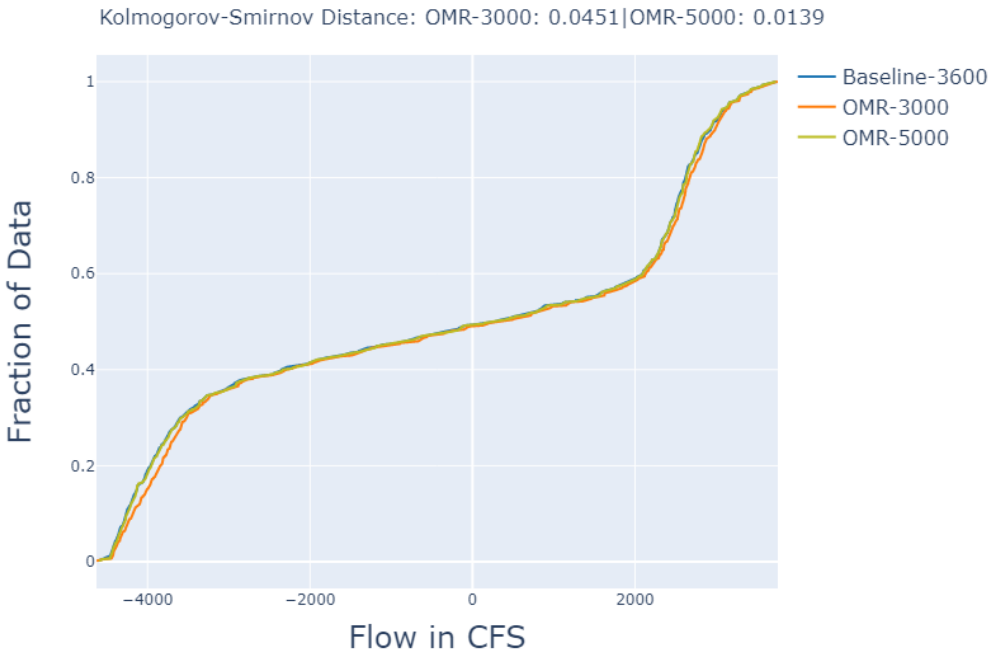


a)

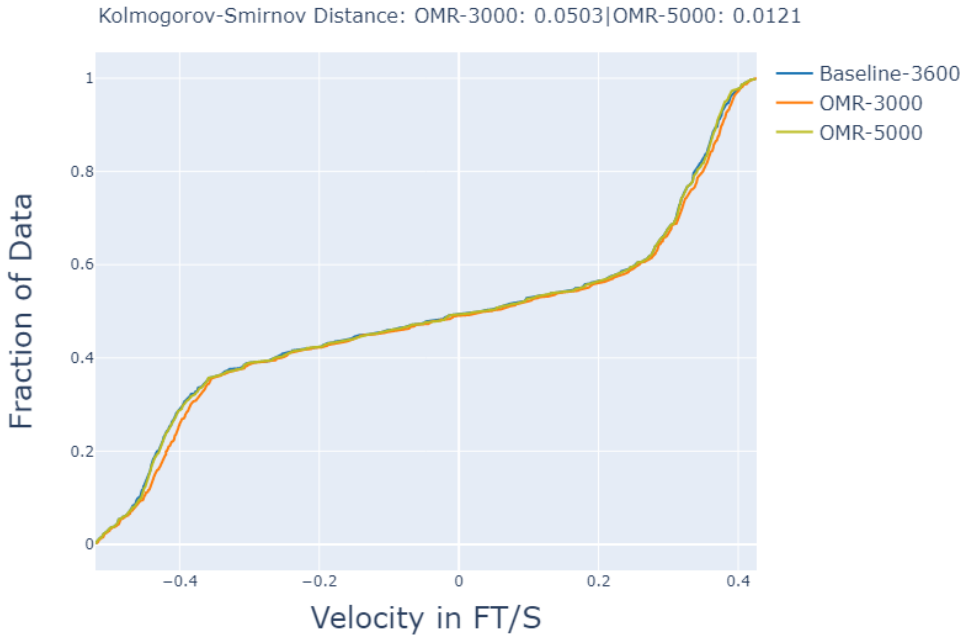


b)

Lower San Joaquin River at Columbia Cut (Channel 160). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

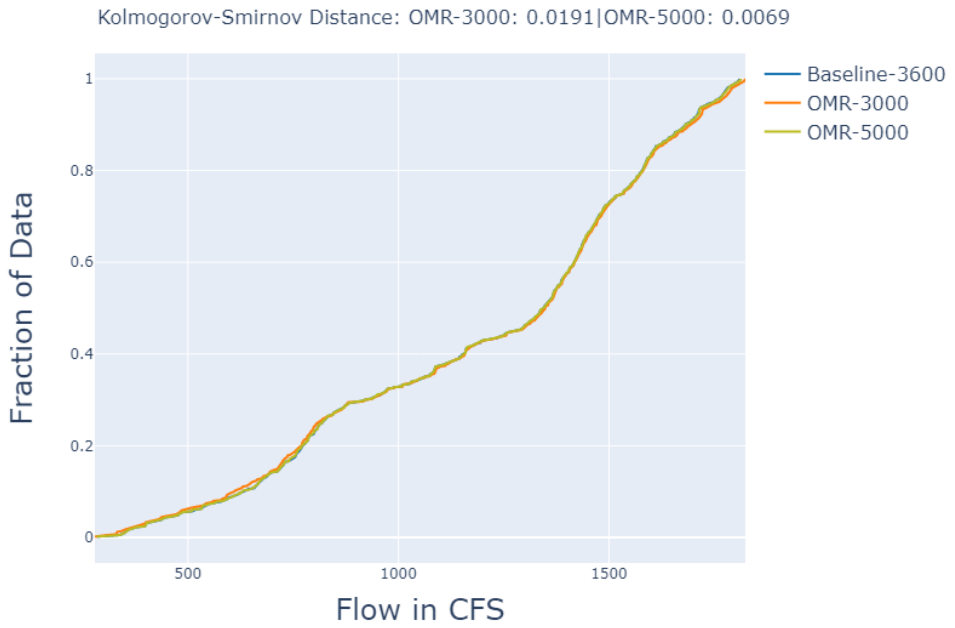


a)

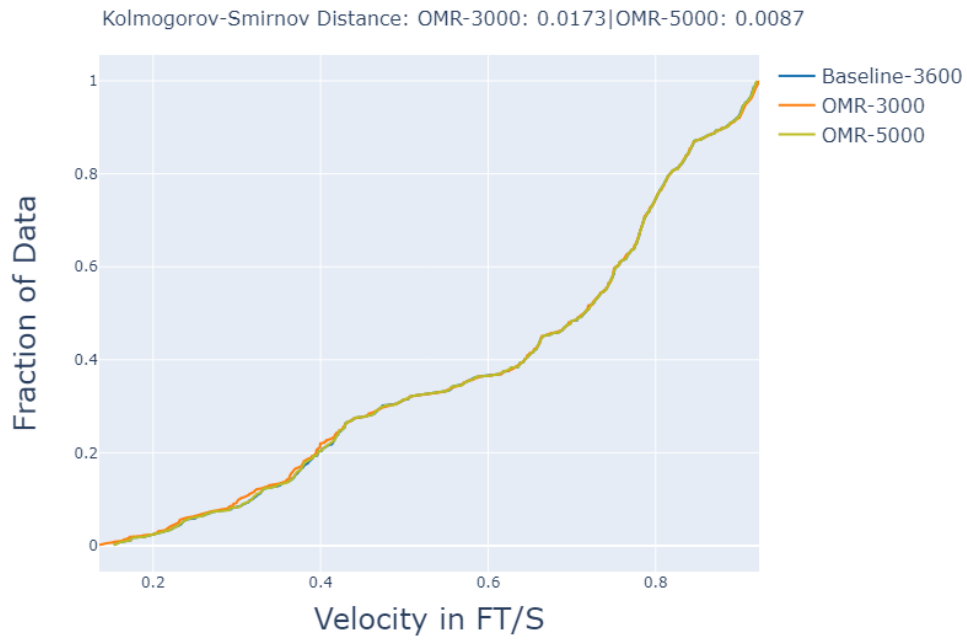


b)

Slightly upstream of Head of Old River (Channel 6). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



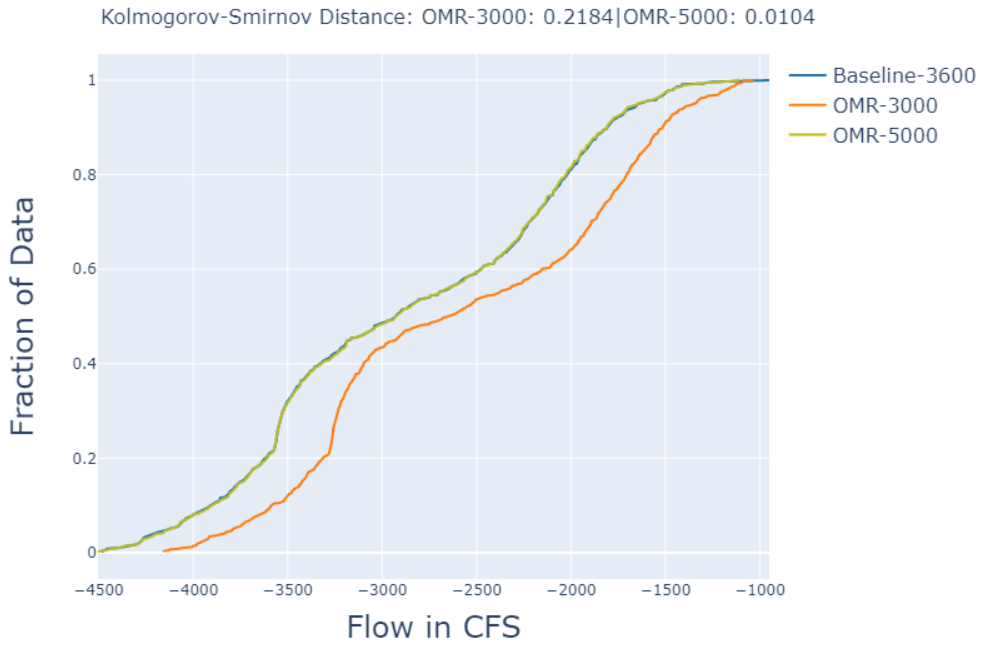
a)



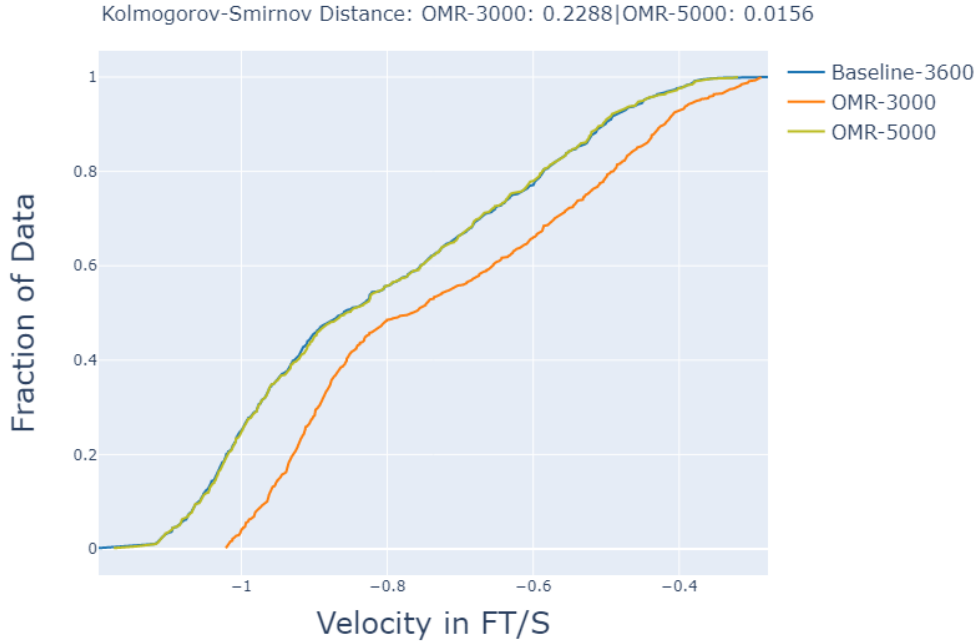
b)

Old River adjacent to Grant Line Canal (Channel 81). (a) Baseline vs. OMR

-3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

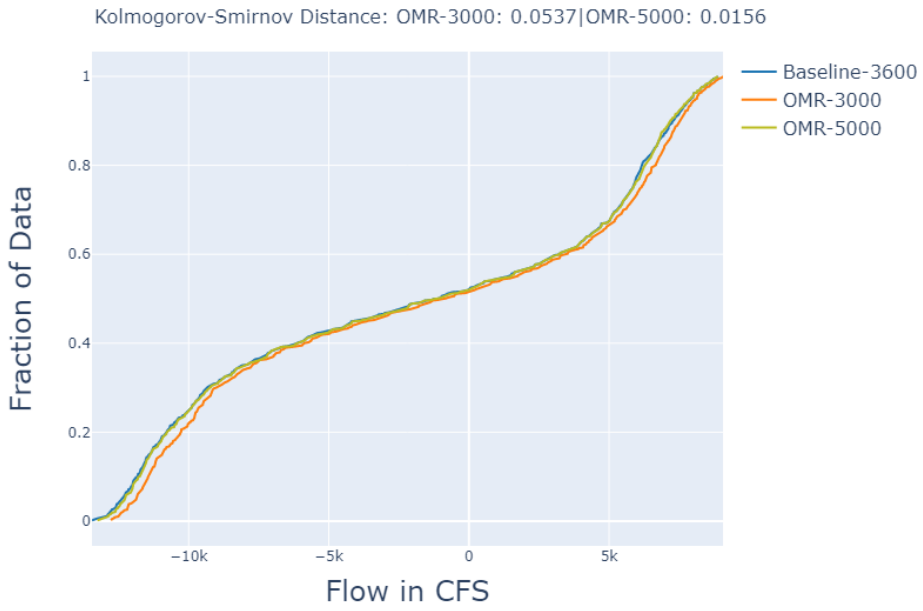


a)

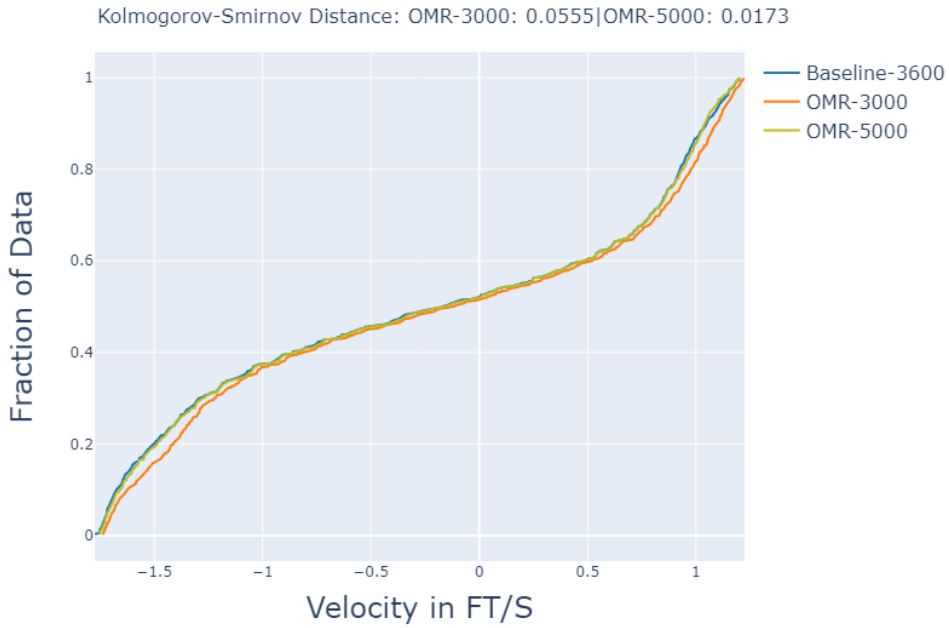


b)

South Delta along Old River (Channel 94). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.



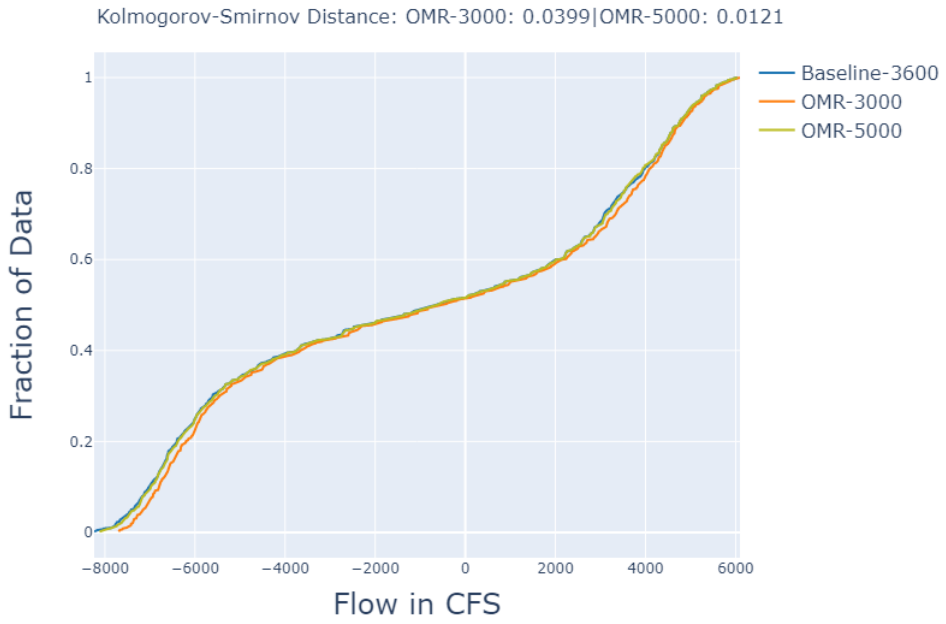
a)



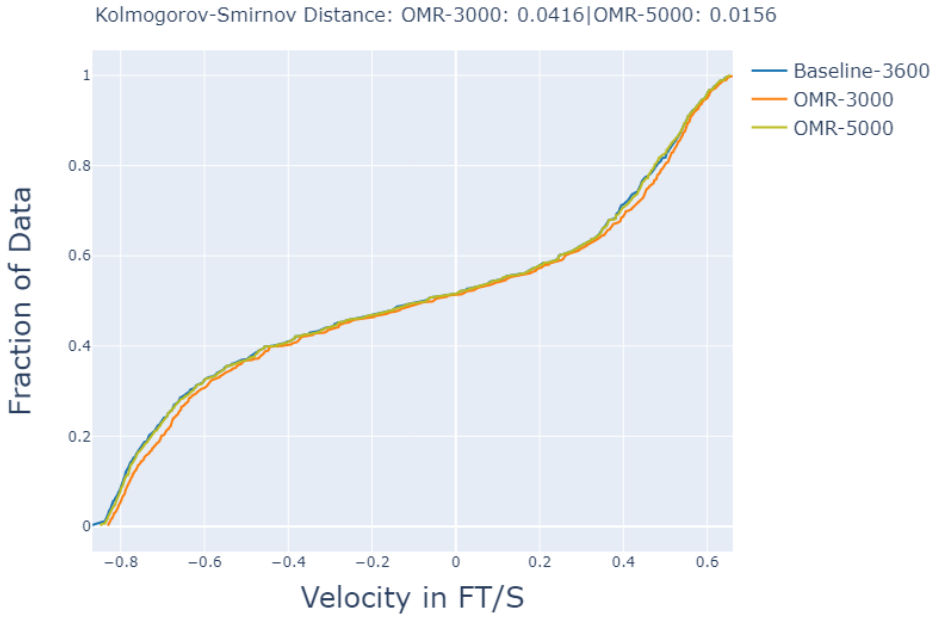
b)

South Delta along Middle River (Channel 148). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values.

(b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.

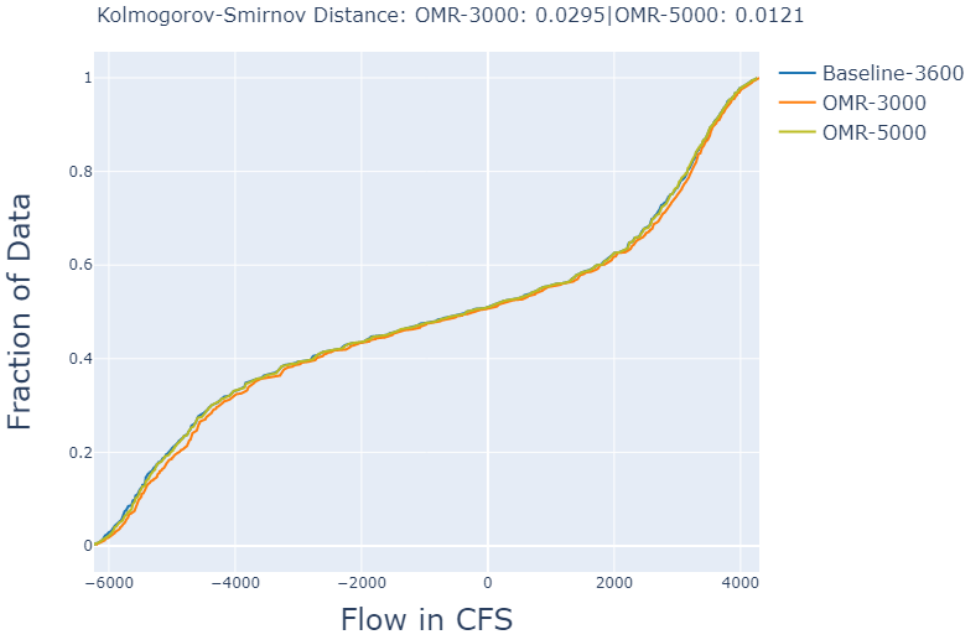


a)

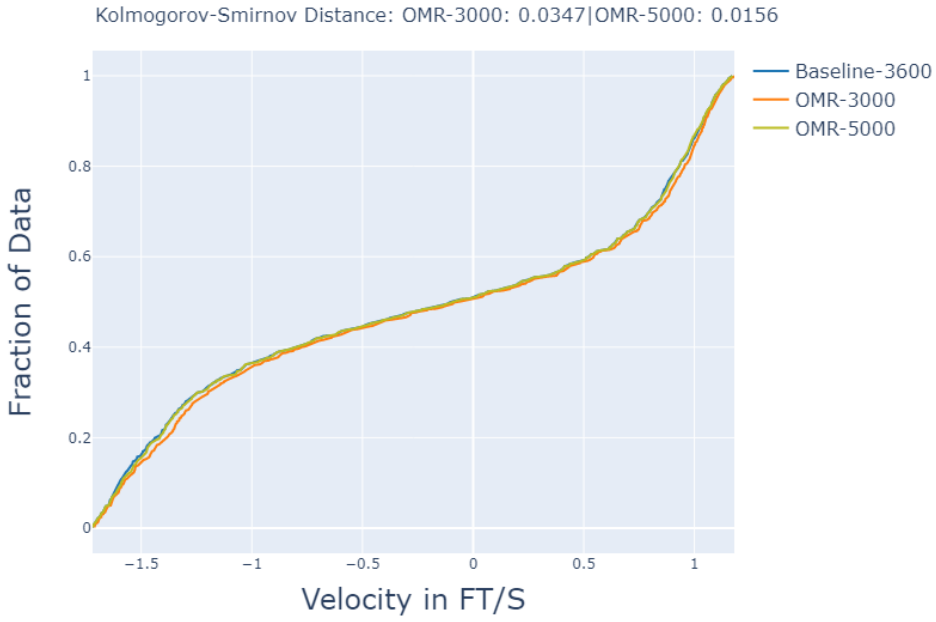


b)

Old River north of Rock Slough (Channel 107). (a) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents flow (cfs) and y-axis represents percentage of 15-minute time-step flow values. (b) Baseline vs. OMR -3,000 cfs and OMR -5,000 cfs: X-axis represents velocity (cfs) and y-axis represents percentage of 15-minute time-step flow values.


Kolmogorov-Smirnov Distance: OMR-3000: 0.0295|OMR-5000: 0.0121
Baseline-3600
OMR-3000
OMR-5000
Fraction of Data
Flow in CFS
1
0.8
0.6
0.4
0.2
0
−6000
−4000
−2000
0
2000
4000

a)


Kolmogorov-Smirnov Distance: OMR-3000: 0.0347|OMR-5000: 0.0156
Baseline-3600
OMR-3000
OMR-5000
Fraction of Data
Velocity in FT/S
1
0.8
0.6
0.4
0.2
0
−1.5
−1
−0.5
0
0.5
1

b)

Summary of minimum, maximum, mean, and percent positive flows and velocities by DSM2 channel for OMR scenarios over a 6-day time period.

DSM2 Channel		Flow (cfs)				Velocity (ft/s)			
		Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow	Minimum Flow	Maximum Flow	Mean Flow	% Positive Flow
Baseline (-3,600 cfs)	6	283	1810	1206	100	0.2	0.9	0.6	100
Scenario OMR -3,000 cfs	6	279	1824	1206	100	0.1	0.9	0.6	100
Scenario OMR -5,000 cfs	6	283	1813	1206	100	0.2	0.9	0.6	100
Baseline (-3,600 cfs)	21	-6849	6867	666	54	-0.5	0.5	0.1	54
Scenario OMR -3,000 cfs	21	-6852	6891	679	54	-0.5	0.5	0.1	54
Scenario OMR -5,000 cfs	21	-6849	6866	666	54	-0.5	0.5	0.1	54
Baseline (-3,600 cfs)	49	-165439	144681	-955	51	-2.1	1.9	0.0	51
Scenario OMR -3,000 cfs	49	-165315	145046	-486	51	-2.1	1.9	0.0	51
Scenario OMR -5,000 cfs	49	-165439	144678	-908	51	-2.1	1.9	0.0	51
Baseline (-3,600 cfs)	81	-4486	-952	-2869	0	-1.2	-0.3	-0.8	0
Scenario OMR -3,000 cfs	81	-4158	-1035	-2571	0	-1.0	-0.3	-0.7	0
Scenario OMR -5,000 cfs	81	-4504	-1110	-2869	0	-1.2	-0.3	-0.8	0
Baseline (-3,600 cfs)	94	-13450	8890	-1935	48	-1.8	1.2	-0.3	48

Scenario OMR -3,000 cfs	94	-12772	9065	-1604	49	-1.7	1.2	-0.2	49
Scenario OMR -5,000 cfs	94	-13259	8885	-1899	48	-1.8	1.2	-0.2	48
Baseline (-3,600 cfs)	107	-6234	4257	-801	49	-1.7	1.2	-0.2	49
Scenario OMR -3,000 cfs	107	-6204	4297	-710	49	-1.7	1.2	-0.2	49
Scenario OMR -5,000 cfs	107	-6234	4257	-791	49	-1.7	1.2	-0.2	49
Baseline (-3,600 cfs)	124	-21357	13032	-3460	44	-0.7	0.4	-0.1	44
Scenario OMR -3,000 cfs	124	-21323	13097	-3293	45	-0.7	0.4	-0.1	45
Scenario OMR -5,000 cfs	124	-21357	13025	-3442	44	-0.7	0.4	-0.1	44
Baseline (-3,600 cfs)	148	-8238	6035	-1054	49	-0.9	0.7	-0.1	49
Scenario OMR -3,000 cfs	148	-7693	6096	-901	49	-0.8	0.7	-0.1	49
Scenario OMR -5,000 cfs	148	-8119	6038	-1038	49	-0.9	0.7	-0.1	49
Baseline (-3,600 cfs)	160	-4609	3736	-437	51	-0.5	0.4	0.0	51
Scenario OMR -3,000 cfs	160	-4629	3758	-369	51	-0.5	0.4	0.0	51
Scenario OMR -5,000 cfs	160	-4598	3734	-428	51	-0.5	0.4	0.0	51
Baseline (-3,600 cfs)	434	-172361	161473	2473	51	-1.9	1.9	0.1	51
Scenario OMR -3,000 cfs	434	-172329	161656	2614	51	-1.9	1.9	0.1	51
Scenario OMR -5,000 cfs	434	-172361	161534	2487	51	-1.9	1.9	0.1	51

Reported KS-statistic values for each scenario's OMR value compared with baseline OMR value of -3,600 cfs.

	Flow (cfs)		**Velocity (ft/s)**	
DSM2 Channel	**Scenario OMR -3,000 cfs**	**Scenario OMR -5,000 cfs**	**Scenario OMR -3,000 cfs**	**Scenario OMR -5,000 cfs**
6	0.02	0.01	0.02	0.01
21	0.01	0.01	0.01	0.01
49	0.01	0.01	0.01	0.01
81	0.22	0.01	0.23	0.02
94	0.05	0.02	0.06	0.02
107	0.03	0.01	0.03	0.02
124	0.02	0.01	0.02	0.01
148	0.04	0.01	0.04	0.02
160	0.05	0.01	0.05	0.01
434	0.01	0.00	0.01	0.00