

Case study	Mean % increase in R^2	Mean % decrease in RMSE	Mean % decrease in MBE	Mean % increase in R^2	Mean % decrease in RMSE	Mean % decrease in MBE
CO ₂ models				O ₃ models		
Benefit of models optimized for case studies over the best models from Casey et al. (2018)						
Dawson summer 2014				14.51	44.42	50.00
SJ Basin spring 2015				0.00	0.00	0.00
SJ Basin summer 2015	10.56	11.52	82.60	0.00	0.00	0.00
BAO summer 2015	5.84	11.27	11.95	0.00	0.00	0.00
BAO summer 2016	5.72	78.27	98.49	−5.01	48.82	98.19
GRET fall 2016	11.17	79.66	108.73	−0.54	68.99	82.22
GRET spring 2017	0.00	0.00	0.00	0.00	0.00	0.00
Benefit of the best models from Casey et al. (2018) over simple linear models						
Dawson summer 2014				−12.67	−79.92	−99.99
SJ Basin spring 2015				3.20	56.88	77.09
SJ Basin summer 2015	−8.41	−7.29	331.39	−1.34	−11.53	−38.41
BAO summer 2015	8.70	6.05	−106.48	6.79	22.48	−53.85
BAO summer 2016	−5.41	−360.09	−6543.84	2.57	−111.22	−310.71
GRET fall 2016	−10.05	−391.73	1244.99	2.88	−1.12	−0.86
GRET spring 2017	51.92	36.13	278.55	10.00	56.90	146.65
Benefit of models optimized for case studies over simple linear models						
Dawson summer 2014				0.00	0.00	0.00
SJ Basin spring 2015				3.20	56.88	77.09
SJ Basin summer 2015	1.26	5.06	140.25	−1.34	−11.53	−38.41
BAO summer 2015	15.04	16.64	−81.80	6.79	22.48	−53.85
BAO summer 2016	0.00	0.00	0.00	−2.57	−8.10	92.59
GRET fall 2016	0.00	0.00	0.00	2.33	68.64	82.07
GRET spring 2017	51.92	36.13	278.55	10.00	56.90	146.65