

Supplement for: Inertia and seasonal climate prediction as sources of skill in lake temperature, discharge and ice-off forecasting tools

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You can find all the codes and data files related to this manuscript at:

https://github.com/NIVANorge/seasonal_forecasting_watexr

Table S1: Time series of observations available at each case-study. Note: Temperature is lake water temperature and N is the number of seasons with data (out of 91 seasons).

Site	Variable	Start	End	N	Sampling season	Frequency
Norway	Discharge	1994	2016	91	Year-round	Daily
	Temperature	2005	2015	33	Apr-Oct	Monthly
Spain	Discharge	1994	2016	91	Year-round	Daily
	Temperature	1997	2016	72	Year-round	Weekly-Monthly
Australia	Discharge	2003	2013	43	Year-round	Daily
	Temperature	2006	2016	20	Year-round	Daily (irregular)
Germany	Discharge	1994	2016	91	Year-round	Daily
	Temperature	1994	2016	90	Year-round	Weekly-biweekly

Table S2: Goodness of fit statistics (NSE, R², RMSE/sd, bias) for Lake_PO for each case-study for each season. The percentage of seasons (S), months (M) and days (D) covered by observations is also given as “Obs coverage”. Statistics are calculated on daily data.

			Obs coverage			NSE	R ²	RMSE/sd	bias
			S	M	D				
Norway	Discharge	WI	100	100	93	0.46	0.47	0.73	0.15
		SP	100	96	93	0.40	0.41	0.77	-1.02
		SU	100	100	96	0.05	0.43	0.97	2.75
		AU	100	100	95	0.57	0.66	0.66	-3.13
	Surface Temperature	WI	0			-	-	-	-
		SP	48	0	5	0.87	0.92	0.36	0.53
		SU	48	48	11	0.67	0.81	0.57	0.38
		AU	48	0	5	0.81	0.99	0.43	-1.03
	Bottom Temperature	WI	0			-	-	-	-
		SP	43	0	4	0.53	0.7	0.68	-0.65
		SU	43	39	10	0.37	0.60	0.79	0.84
		AU	43	0	5	0.80	0.92	0.44	-0.58
Ice-on		100	-	-	0.97	0.99	0.16	1.8	
Ice-off		100	-	-	0.36	0.76	1.09	-14.7	
Spain	Discharge	WI	100	100	99	0.69	0.69	0.56	-0.63
		SP	100	100	99	0.54	0.57	0.38	-3.15
		SU	100	100	98	0.37	0.40	0.80	-1.53
		AU	100	100	98	0.60	0.63	0.63	-0.73
	Surface Temperature	WI	77	45	3	0.76	0.77	0.48	0.12
		SP	83	65	4	0.81	0.88	0.43	-0.90
		SU	78	30	3	0.60	0.66	0.62	-0.45
		AU	87	70	4	0.82	0.92	0.42	-1.28
	Bottom Temperature	WI	27	5	2	0.38	0.40	0.76	0.06
		SP	48	17	3	-0.27	0.26	1.10	0.07
		SU	48	4	2	0.48	0.55	0.70	-0.25
		AU	35	4	3	-0.72	0.00	1.27	-0.38
Germany	Discharge	WI	100	100	100	0.62	0.63	0.62	0.04
		SP	100	100	100	0.61	0.68	0.62	-1.08
		SU	100	100	100	-0.06	0.35	1.03	-0.51
		AU	100	100	100	0.35	0.58	0.80	1.00
	Surface Temperature	WI	95	41	3	-0.22	0.50	1.09	-0.36
		SP	100	96	6	0.92	0.95	0.28	0.61
		SU	100	100	7	0.51	0.89	0.70	1.24
		AU	100	96	6	0.92	0.97	0.27	-0.24
	Bottom Temperature	WI	95	41	3	0.59	0.66	0.64	0.15
		SP	100	96	6	-0.46	0.72	1.20	1.28
		SU	100	100	7	-1.04	0.75	1.42	3.54
		AU	100	96	5	0.50	0.90	0.70	1.01
Australia	Discharge	WI	50	47	97	-1.69	0.01	1.64	-1.02
		SP	48	48	100	-6.22	0.04	2.69	-0.16
		SU	48	43	93	-0.12	0.15	1.06	0.48
		AU	43	43	100	0.02	0.34	0.99	-1.26
	Surface Temperature	WI	23	23	82	-0.04	0.55	1.02	0.62
		SP	22	13	57	0.90	0.94	0.31	0.15
		SU	17	9	47	0.88	0.89	0.34	0.10
		AU	26	13	57	0.88	0.89	0.34	0.21
	Bottom Temperature	WI	23	23	82	0.12	0.40	0.94	1.25
		SP	22	13	57	-0.02	0.28	1.01	0.84
		SU	17	9	46	0.86	0.87	0.38	-0.18
		AU	26	13	48	0.16	0.42	0.92	0.10