Additional results for the paper entitled:
Modeling river flow for flood forecasting: a case study on the Ter river
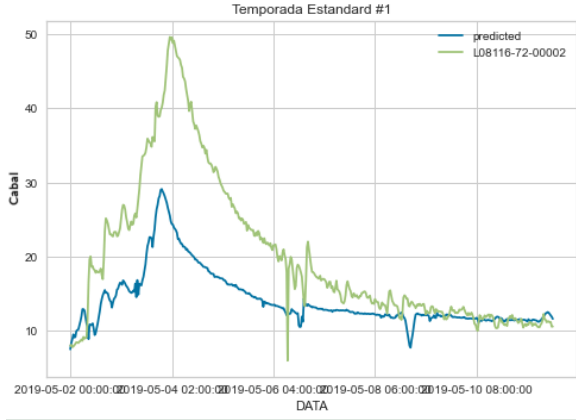
Fabián Serrano-López, Sergi Ger-Roca, Maria Salamó,
Jerónimo Hernández-González

Table 1: Results in the Upper course of the Ter river in terms of averaged RMSE (and standard deviation) using two validation strategies (TSS and CVS) plus 4 events using 4 different types of regressors. Results are shown with the complete dataset, and with the subsets of no-precipitation and precipitation-only data (normal and oversampled).
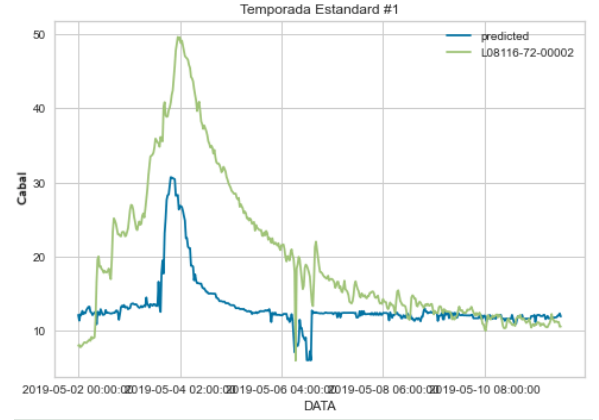
Model	TSS	CVS	E1	E2	Gloria	Leslie
KNN	13.21 ± 3.94	19.43 ± 1.82	10.18 ± 0.29	28.58 ± 1.77	233.93 ± 22.91	143.32 ± 10.28
LR	12.52 ± 4.67	16.29 ± 0.22	9.21 ± 0.70	23.66 ± 1.78	248.42 ± 8.01	81.94 ± 1.27
RF	13.23 ± 5.28	19.26 ± 2.77	9.13 ± 0.32	25.71 ± 0.89	245.35 ± 39.25	153.83 ± 25.16
XGB	14.62 ± 5.07	19.21 ± 3.54	10.65 ± 0.33	30.47 ± 1.82	216.85 ± 42.57	151.10 ± 30.42
			COMPLETE DATASET			
KNN	7.40 ± 1.68	7.35 ± 0.92	10.06 ± 0.30	26.91 ± 0.51	364.06 ± 13.82	204.28 ± 5.23
LR	6.13 ± 2.31	5.70 ± 0.13	10.85 ± 1.55	28.85 ± 1.50	286.06 ± 23.37	101.78 ± 6.03
RF	6.16 ± 1.39	7.56 ± 0.92	8.74 ± 0.70	20.16 ± 3.93	406.61 ± 3.72	221.77 ± 0.81
XGB	6.64 ± 2.51	8.03 ± 3.46	11.32 ± 0.66	27.27 ± 4.08	357.91 ± 16.55	203.38 ± 7.91
			NO-PRECIPITATION SUBSET			
KNN	60.40 ± 54.93	48.72 ± 32.06	8.44 ± 2.80	13.80 ± 2.28	230.63 ± 174.72	130.71 ± 86.84
LR	52.11 ± 22.40	43.90 ± 8.97	12.10 ± 4.26	19.08 ± 2.27	219.56 ± 61.94	80.20 ± 20.58
RF	57.84 ± 58.85	46.94 ± 38.95	9.35 ± 4.34	11.53 ± 0.84	221.40 ± 203.10	121.43 ± 112.77
XGB	57.88 ± 56.37	46.20 ± 36.64	8.42 ± 2.75	11.61 ± 1.69	215.55 ± 196.31	121.55 ± 105.09
			PRECIPITATION-ONLY SUBSET (OVERSAMPLED)			

Table 2: Results in the Lower course of the Ter river in terms of averaged RMSE (and standard deviation) using two validation strategies (TSS and CVS) plus 4 events using 4 different types of regressors. Results are shown with the complete dataset, and with the subsets of no-precipitation and precipitation-only data (normal and oversampled).
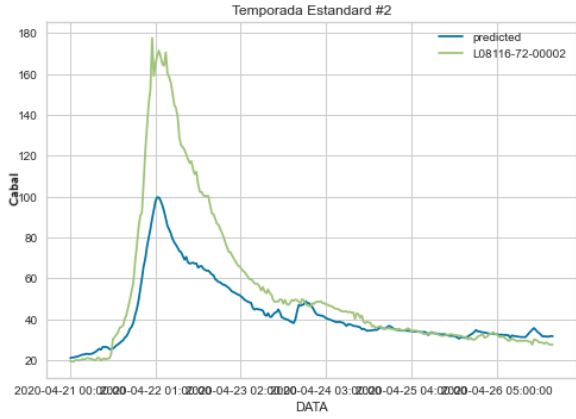
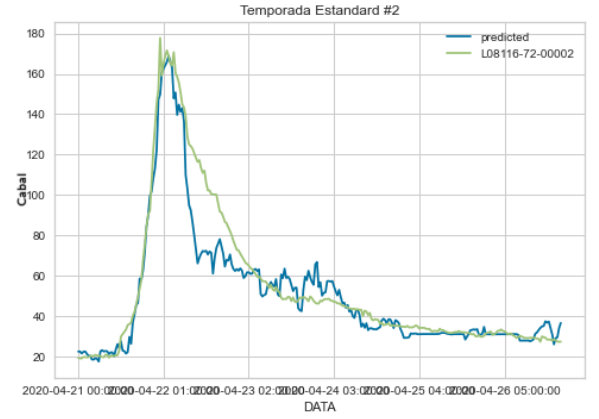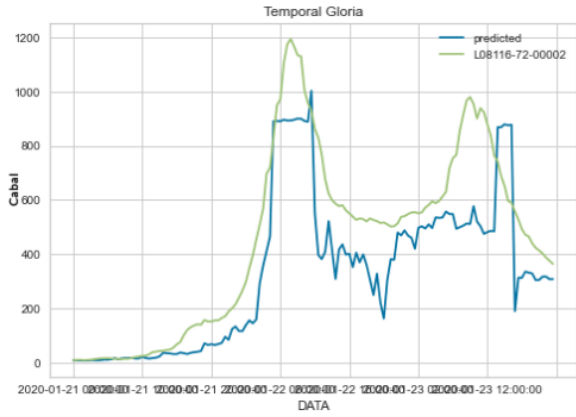| Model	TSS	CVS	E1	E2	Gloria	Leslie
KNN	20.95 ± 16.01	37.83 ± 0.82	5.19 ± 0.07	100.21 ± 14.54	206.88 ± 46.09	74.29 ± 1.25
LR	24.96 ± 22.21	51.16 ± 2.47	6.29 ± 0.68	78.99 ± 9.54	283.85 ± 15.94	49.68 ± 16.17
RF	18.24 ± 13.67	32.84 ± 1.85	3.02 ± 0.46	85.33 ± 3.43	214.28 ± 60.00	49.87 ± 5.53
XGB	20.09 ± 14.93	19.78 ± 15.39	3.12 ± 1.27	95.84 ± 0.59	244.26 ± 39.57	71.50 ± 9.34
			COMPLETE DATASET			
KNN	13.40 ± 9.95	23.95 ± 0.21	5.10 ± 0.17	143.29 ± 9.82	320.37 ± 7.75	83.42 ± 0.51
LR	25.94 ± 30.98	66.53 ± 18.04	5.25 ± 0.50	178.88 ± 120.79	476.66 ± 191.80	66.77 ± 11.21
RF	10.05 ± 6.99	18.81 ± 1.26	3.23 ± 1.00	141.97 ± 19.27	343.13 ± 48.69	86.72 ± 24.75
XGB	10.86 ± 6.79	10.43 ± 7.16	3.39 ± 0.74	126.45 ± 9.18	287.90 ± 35.60	54.47 ± 3.14
			NO-PRECIPITATION SUBSET			
KNN	123.90 ± 114.31	90.37 ± 31.67	18.91 ± 26.57	67.91 ± 70.97	198.69 ± 165.52	52.51 ± 31.62
LR	111.05 ± 82.07	74.06 ± 3.76	9.09 ± 6.68	74.67 ± 21.82	152.39 ± 5.05	44.79 ± 7.49
RF	113.01 ± 130.70	80.10 ± 33.70	31.56 ± 19.38	69.94 ± 77.45	196.87 ± 183.08	50.26 ± 60.13
XGB	136.84 ± 109.86	138.04 ± 109.12	23.41 ± 19.25	70.86 ± 78.13	203.95 ± 177.32	58.08 ± 56.73
			PRECIPITATION-ONLY SUBSET (OVERSAMPLED)			

(a) *E1*, model learned with all the data

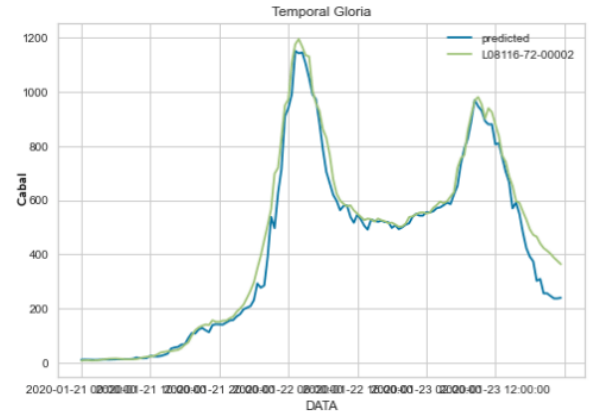(b) *E1*, model learned with precipitation data (ov.)

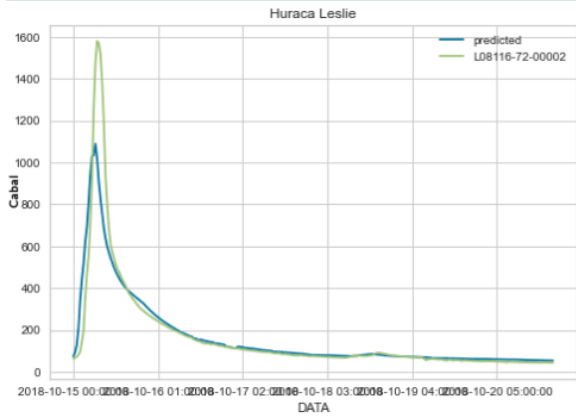(c) *E2*, model learned with all the data

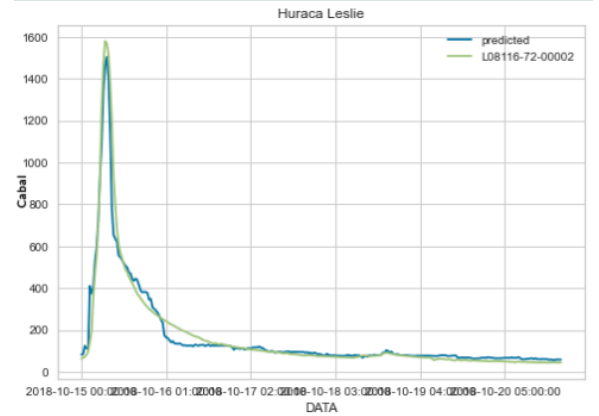(d) *E2*, model learned with precipitation data (ov.)

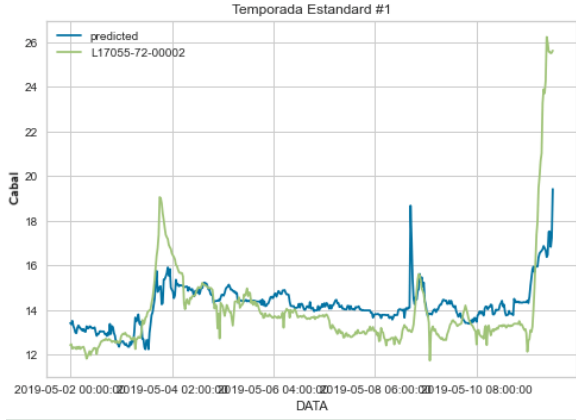(e) *Gloria*, model learned with all the data

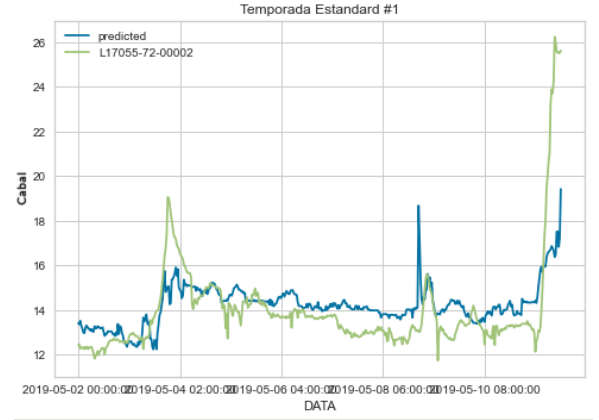(f) *Gloria*, model learned with precipitation data (ov.)
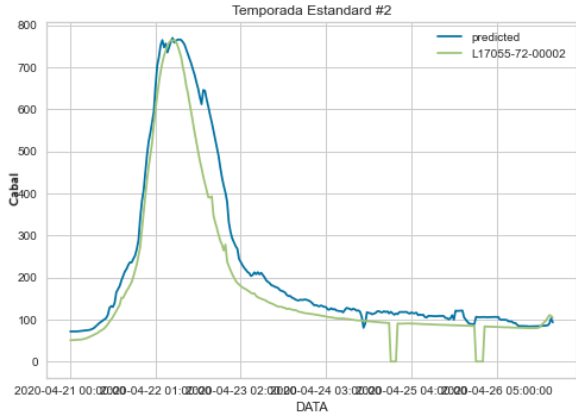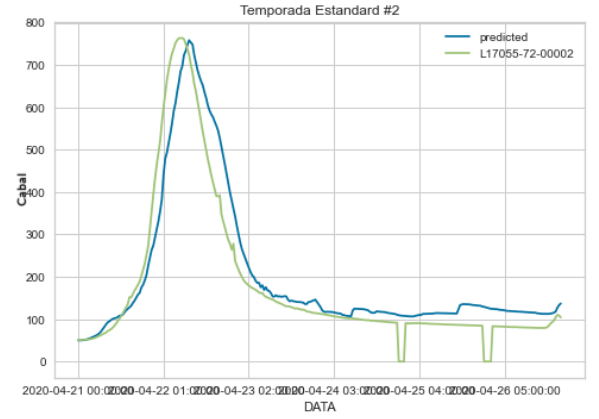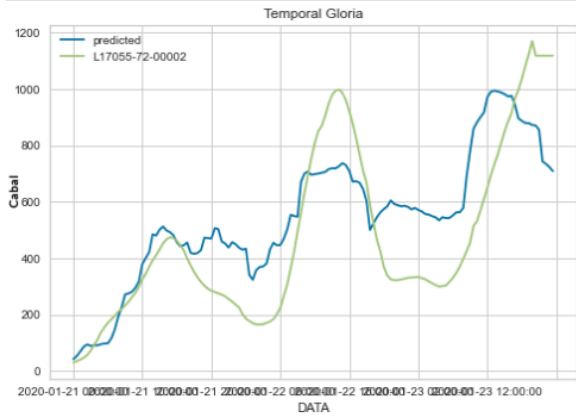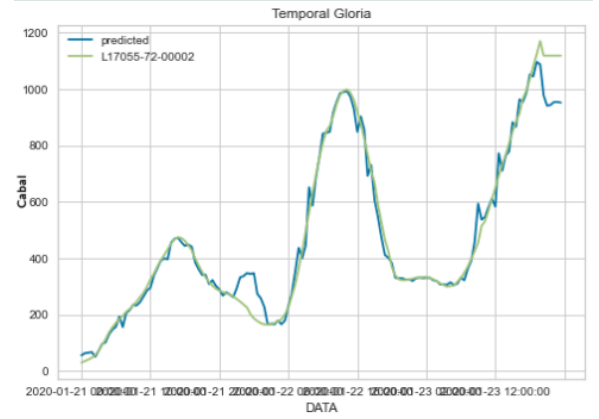
(g) *Leslie*, model learned with all the data

(h) *Leslie*, model learned with precipitation data (ov.)

Figure 1: Results in the upper course of the Ter river

(a) *E1*, model learned with all the data

(b) *E1*, model learned with precipitation data (ov.)
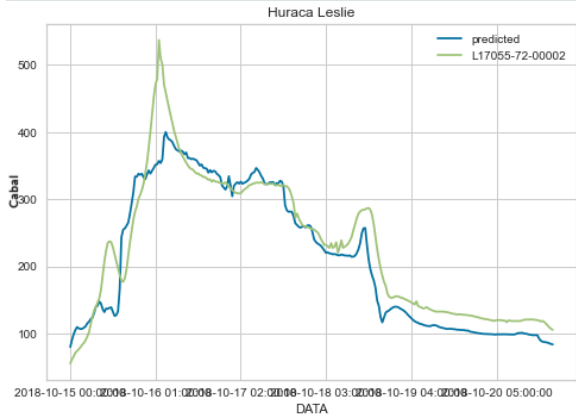
(c) *E2*, model learned with all the data

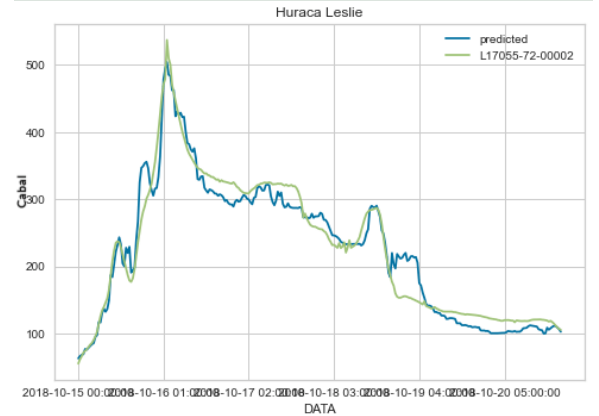(d) *E2*, model learned with precipitation data (ov.)

(e) *Gloria*, model learned with all the data

(f) *Gloria*, model learned with precipitation data (ov.)

(g) *Leslie*, model learned with all the data

(h) *Leslie*, model learned with precipitation data (ov.)

Figure 2: Results in the lower course of the Ter river