Trait Model Selection

Bijan Seyednasrollah

May 17, 2016

Model Selection for Trait Model using GJAM

The most appropriate model is selected using a model selection approach and based on the Deviance Information Criterion (DIC) and a Bayesian score. The model with the highest score or the lowest DIC value is selected.

Predictors

The proposed models may consist of climatological variables (including mean winter temperature, soil moisture, hydrothermal deficit and hydrothermal surplus), soil data, topographical data (slope and aspect) and their interactions. The table below shows how different models explain the response variables throughout the dataset.

No	Predictors	DIC	xScore	yScore
63	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, temp:soil, deficit:soil	0	-13.1	143737
66	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, temp:soil, deficit:soil	1.67e+32	-12.6	144699
69	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, temp:soil, deficit:soil	2.31e+32	-9.56	144164
57	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:soil, temp:soil, deficit:soil	3.3e+32	-7.56	143176
55	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp, moisture:soil, temp:soil	1.05e+33	-6.17	142043
39	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:soil, deficit:soil	1.12e+33	-6.4	143728
62	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:soil, deficit:soil	1.14e+33	-10.7	142681
48	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:soil, temp:soil	1.28e+33	-9.26	143579
38	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:soil, temp:soil	1.35e+33	-5.25	142480
40	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, temp:soil, deficit:soil	1.35e+33	-4.97	144097
64	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, moisture:soil, temp:soil	1.4e+33	-10	143219

No	Predictors	DIC	xScore	yScore
56	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp, moisture:soil, deficit:soil	1.49e+33	-7.33	141865
65	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, moisture:soil, deficit:soil	1.49e+33	-11	142392
59	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:temp, temp:soil	1.58e+33	-13.4	143061
54	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:soil, deficit:soil	1.7e+33	-7.27	142815
60	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:temp, deficit:soil	1.9e+33	-11.7	143702
49	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:soil, deficit:soil	1.92e+33	-10.1	142315
43	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, temp:soil	1.96e+33	-13.3	141488
68	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, moisture:soil, deficit:soil	2.13e+33	-8.1	142315
67	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, moisture:soil, temp:soil	2.18e+33	-10	142120
30	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, deficit:soil	2.21e+33	-9.83	143769
46	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, temp:soil	2.36e+33	-9.79	141512
47	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, deficit:soil	2.39e+33	-10.7	142510
37	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp, deficit:soil	2.56e+33	-6.8	141809
53	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:soil, temp:soil	2.67e+33	-9.6	142435
58	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:temp, moisture:soil	2.84e+33	-11.3	141818
61	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:soil, temp:soil	2.9e+33	-12.7	143571
34	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, deficit:soil	2.98e+33	-6.7	142596

No	Predictors	DIC	xScore	yScore
51	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, temp:soil	3e+33	-10	143416
28	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:soil	3.29e+33	-7.47	141466
45	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp, moisture:soil	3.35e+33	-8.1	142228
50	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, moisture:soil	3.44e+33	-8.4	140634
35	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp, moisture:soi	3.5e+33	-5.38	141920
32	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:soil	3.78e+33	-7.36	140990
42	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:soil	3.78e+33	-10.1	141286
31	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp	3.89e+33	-8.17	142118
18	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp	4.02e+33	-4.68	141719
15	~ temp, moisture, deficit, soil, u1, u2, u3+ moisture:surplus	4.06e+33	-7.07	142631
20	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:soil	4.08e+33	-5.25	140708
14	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus	4.1e+33	-6.97	140997
27	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:temp	4.35e+33	-7.79	141818
25	~ temp, moisture, deficit, soil, u1, u2, u3+ deficit:soil	4.44e+33	-5.75	141790
26	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit	4.63e+33	-9.21	141853
23	~ temp, moisture, deficit, soil, u1, u2, u3+ temp:soil	4.65e+33	-2.86	142229
21	~ temp, moisture, deficit, soil, u1, u2, u3+ moisture:soil	4.68e+33	-5.87	140970
7	~ temp, moisture, deficit, surplus , soil, u1, u2, u3	5.11e+33	-2.24	141027
33	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, temp:soil	5.29e+33	-9.61	141475
19	~ temp, moisture, deficit, soil, u1, u2, u3+ moisture:temp	5.43e+33	-4.8	140988
29	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, temp:soil	5.45e+33	-9.42	143229

No	Predictors	DIC	xScore	yScore
22	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, temp:soil	5.65e+33	-2.89	143536
36	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:temp, temp:soil	5.82e+33	-5.67	142243
44	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, deficit:soil	5.97e+33	-10.7	141868
52	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit, moisture:temp, deficit:soil	6.14e+33	-7.92	141503
17	~ temp, moisture, deficit, soil, u1, u2, u3+ moisture:deficit	6.23e+33	-7.17	140282
9	~ temp, moisture, surplus, soil, u1, u2, u3	6.64e+33	-2.11	140953
16	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:deficit	6.65e+33	-7.43	140854
24	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, deficit:soil	6.79e+33	-4.05	140663
41	~ temp, moisture, deficit, surplus , soil, u1, u2, u3, moisture:surplus, moisture:deficit, moisture:temp	7.62e+33	-11.2	140703
8	~ temp, moisture, deficit, soil, u1, u2, u3	8.6e+33	-2.09	138833
6	~ temp, moisture, deficit, surplus, soil	8.88e+33	-1.35	139150
10	~ temp, deficit, surplus, soil, u1, u2, u3	9.12e+33	-2.27	140072
4	~ temp, moisture, deficit , soil	9.76e+33	-0.645	137967
13	~ temp, deficit, moisture, u1, u2, u3	1.06e+34	-1.97	135975
5	~ temp, moisture, surplus, soil	1.08e+34	-0.817	138564
11	~ temp, deficit, surplus, u1, u2, u3	1.09e+34	-2.19	135176
2	~ temp, deficit , soil	1.1e+34	-0.103	137200
1	~ temp, moisture, soil	1.11e+34	-0.409	137991
12	~ temp, moisture, surplus, u1, u2, u3	1.13e+34	-2.04	134806
3	~ temp, surplus , soil	1.13e+34	-0.371	137571