

A Dst-based space weather conditions machine learning classification model for GNSS PNT performance analysis

NOTES

1. INTRODUCTION

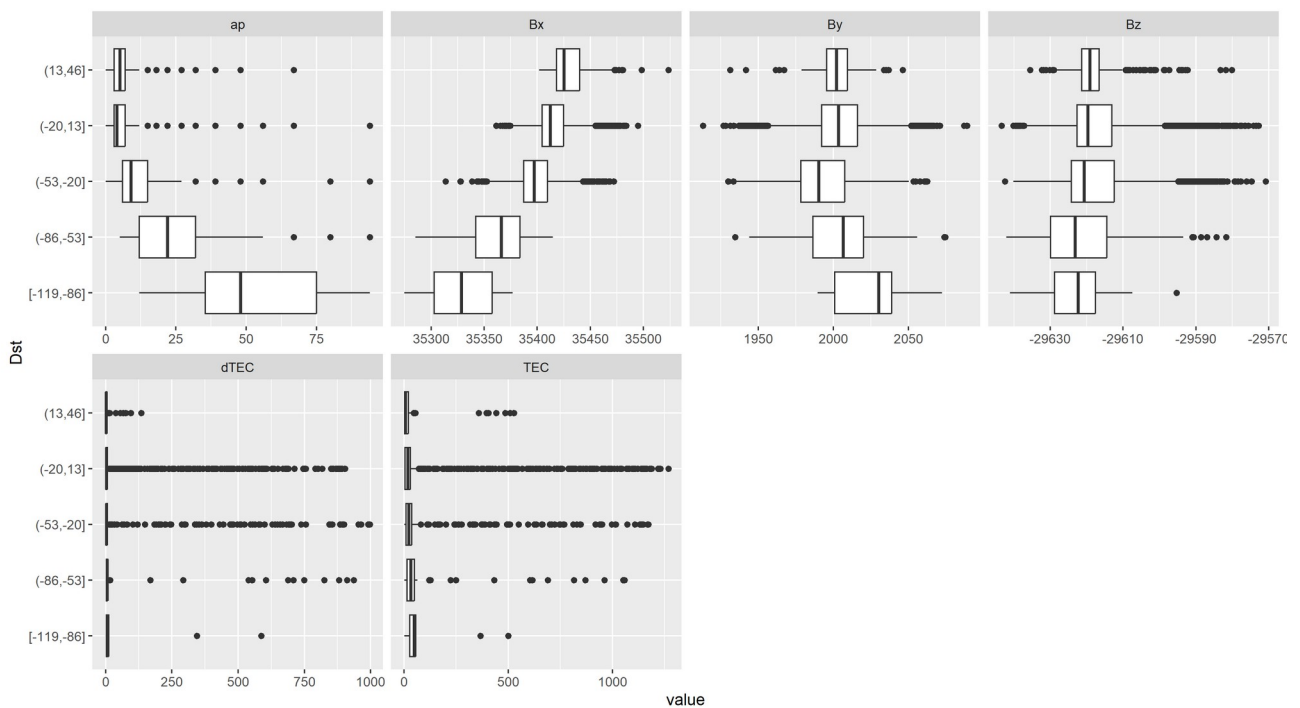
Cause-effect relations between space weather & geomagnetic conditions drive the ionospheric conditions, which cause the GNSS ionospheric delay, and, consequently, degradations of the GNSS Positioning, Navigation, and Timing (PNT) performance (service quality) – Space weather – GNSS performance Coupling Model (Filić, Filjar, 2018).

A need for classification of geomagnetic/ionospheric conditions, in regard to GNSS PNT effect intensity.

2. METHOD AND DATA

2.1 Method

2.2 Data description and analysis



3. RESEARCH RESULTS

Decision tree

Confusion Matrix and Statistics

		Reference				
Prediction		E	N	P	R	T
E		3	0	0	0	0
N		0	1170	0	0	0
P		0	0	27	0	0
R		0	0	0	379	0
T		0	0	0	0	19

Overall Statistics

Accuracy : 1
95% CI : (0.9977, 1)
No Information Rate : 0.7322
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 1

	svmPoly	nnet	c5.0	nb
svmPoly	1.0000000	-0.40191162	-0.57622533	-0.2985761
nnet	-0.4019116	1.00000000	-0.08974332	0.3410527
c5.0	-0.5762253	-0.08974332	1.00000000	0.2316129
nb	-0.2985761	0.34105266	0.23161285	1.0000000

4. DISCUSSION

5. CONCLUSION.

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