ISO 16698:2019-12 (E)

Space environment (n atural and artificial) - Methods for estimation of future geomagnetic activity

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Symbols and abbreviated terms 1

5 General parameters 2
5.1 Geomagnetic field variations 2
5.2 Quiet level and disturbance fields 2
5.3 K index (local 3 h range index) 2
5.4 Kp, Kp, ap and Ap indices (planetary indices) 3
5.4.1 General 3
5.4.2 Kp index (planetary 3 h range index) 3
5.4.3 Kp index (planetary daily range index) 3
5.4.4 ap index (planetary 3 h equivalent amplitude index) 3
5.4.5 Ap index (planetary daily equivalent amplitude index) 4
5.5 aa index (antipodal amplitude index) 4
5.6 Dst index (storm time disturbance index) 4
5.7 ASY and SYM indices (mid-latitude disturbance indices) 5
5.8 AU, AL, AE and AO indices (auroral electrojet indices) 5
5.9 am index 6
5.10 PC index 7
5.11 Time lag in the derivation and temporal resolution (sampling) 7

6 Classification of prediction 8
6.1 General 8
6.2 Short-term prediction 8
6.3 Middle-term prediction 8
6.4 Long-term prediction 8

7 Methods of prediction 9
7.1 General 9
7.2 Prediction based on statistical models 9
7.2.1 Linear or non-linear prediction filter 9
7.2.2 Machine learning 9
7.2.3 Probabilistic prediction 9
7.3 Prediction based on physical principle 9

8 Evaluation of prediction efficiency 9
8.1 Definition of prediction error 9
8.2 Methods of evaluation 10

9 Compliance criteria 10
9.1 Rationale 10
9.2 Reporting 10

9.3 Documenting 10
9.4 Publishing 11
9.5 Archiving 11

10 Useful Informative Documents 11

Annex A (informative) Websites where geomagnetic indices are available 12

Annex B (informative) Websites where the space weather predictions and/or "now casting" are presented 13

Annex C (informative) Definition of various skill scores 14

Annex D (informative) Useful academic documents related with this document's fields are presented (These are not cited in the document) 15

Bibliography 22