



Multivariate Adaptive Regression B-Splines for Regional VTEC Modeling

Mahmut Onur Karslioglu (1,2) and Murat Durmaz (2)

(1) Middle East Technical University, Civil Engineering, Department of Geomatics Engineering, Ankara, Turkey (karsliog@metu.edu.tr, +90(312) 2105401), (2) Middle East Technical University (METU), Institute of Applied and Natural Sciences, Department of Geodetic and Geographic Information Technologies

Multivariate Adaptive Regression B-Splines (BMARS) is a non-parametric regression technique that utilizes compactly supported tensor product B-Splines as basis functions, which are automatically obtained from the observations. BMARS algorithm uses a scale-by-scale model building strategy that searches for B-Splines at each scale fitting adequately to the data. The algorithm is capable to process high dimensional problems with large amounts of data and can easily be parallelized. In this work, we test the BMARS algorithm for regional spatio-temporal VTEC modeling over Europe. 10-fold cross-validation is applied to assess the performance of the VTEC modeling established by BMARS. The results are compared numerically and visually with the regional VTEC modeling generated via Multivariate Adaptive Regression Splines (MARS).