



Compression of Climate Data Using Multilayer Neural Networks

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We describe a method for lossless compression of climate data based on predictive and differential coding. The prediction of climate data is performed by using multilayer neural networks (MLNN). The difference between actual and predicted data is calculated and encoded using Huffman coding. As training data sets, the humidity data for year 2013 and temperature data for years 1999 to 2011 were used. For testing, humidity data for year 2014 and temperature data for year 2012 were used. Root mean square error (RMSE) was used as the evaluation parameter to test the network performance. Compared to standard data compression algorithms, higher compression ratios (CRs) are achieved using the MLNN prediction method. High CRs increase bandwidth and storage capacity; therefore, this study could help relieve the congestion in climate data storage and transmission and improve the effectiveness of climate data analysis.



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