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## Study on inversing method of ionospheric properties with spaceborne radar data

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The fact that ionosphere can effect on radar image and ionospheric effect has become more significant with the increasing interest is noticed. Thus, the geophysical properties of the ionosphere will be embedded in the low-frequency Radar data after the electromagnetic waves transverse through or are reflected by the ionosphere. Correspondingly, the ionospheric major parameters, such as total electron content (TEC), can be inversed from the space-borne radar data. In order to do this, an inversing method for the ionospheric information is put forward. The advantage of data-driven thought is adopted and the strong nonlinear character is considered additionally, while having compared the merits of many different methods, eventually we choose Deep Neural Network (DNN) as the algorithm which can build the relationship between ionosphere and radar data. In machine learning, DNN is a class of deep feed-forward artificial neural networks that has successfully been applied to analyze big data. In this method, the input and output data of DNN are chosen carefully after preprocessing according to the obtainable data and knowledges of experts. The input data are radar data and the output data are the ionosphere with radar data has been built. At last, the data of radar in a certain area during a certain period of time are input into the trained model and the output data are the interesting information of the ionosphere.

## Biography

Xueqing Zhang has completed his PhD from China University of Geology. He is the Assistant Professor of Montana Tech of the University of Montana. He has published more than 30 papers in the fields of geophysics inversing and radio management.

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