Classification with imbalanced cloud data using deep convolutional neural network

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Image classification using deep convolutional neural network is effective technique to detect extreme phenomenafrom climate data. However, the number of extreme phenomena such as tropical cyclone (TC) is overwhelmingly small compared with others. It is knon that classification performance decline du to this imbalance between positive (TCs) and negative examples (non-TCs). In the present study, we developed a new negative data selection method for binary classification for cloud images. We analyze the relationship between the ease of classification and the characteristics of data, and optimize the training data in order to decrease the false alarm ratio (FAR). As the results, we succeeded in decrease FAR from 32.8–53.4% to 60.0–70.0% in the western North Pacific in the period from July to November.

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