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IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing

Special Issue on
"Artificial Intelligence for Data-driven Weather Recognition and Prediction"

Disaster weather is becoming more common in our daily life. For example, the year 2022 may be the hottest year in recent decades due to the extremely powerful subtropical high. There are many areas that are experiencing risky heat. This causes the outbreak of bushfires and the excessive melting of snow mountains with the flood disasters occurring downstream. The sea also receives a lot of heat from the sun, which makes out a great basal environment for tropical cyclone genesis. It causes a rare occurrence that three typhoons appear simultaneously in the Pacific Ocean in September 2022. The region or country of higher latitude will also face natural disasters, including gales, storm surges, rainstorms, and floods, that ensue from the strong typhoon as that of lower latitude. Meanwhile, a great prediction system can help us decrease the economic losses and casualties from disaster weather. Thus, the requirements for accurate prediction of disaster weather are growing.

Numerical Weather Prediction (NWP) systems have become the mainstream for weather prediction, used by many official meteorological forecasting agencies. This method uses supercomputers to simulate various factors influencing the genesis and the development of disaster weather (e.g., typhoons, rainstorms, dust storms, extreme heat). However, because the principle of development of disaster weather is complex, supercomputers need to use massive amount of expensive computing resources to execute weather forecasting. In comparison, deep learning is widely used in many domains, including time series prediction, and other interdisciplinary disciplines. Due to the availability of rich heterogeneous meteorological data, deep learning technology can also be applied to the task of weather recognition and prediction. Fortunately, there are already some deep learning researches aiming at rainfall prediction, tropical cyclone prediction, and so on. However, there is still a gap between the results of these researches and the actual requirements of people because there are many challenges in suspension. Therefore, we organize this special issue to explore new techniques, applications, and datasets of disaster weather forecasting and to help meteorologists improve the abilities of disaster weather forecasting.

The broad topics include (but are not limited to):

- Hyperspectral image intelligent processing for weather recognition
- Multispectral image intelligent processing for weather recognition and prediction
- Radar-echo image intelligent processing based weather recognition and prediction
- Multi-source remote sensing for weather recognition and prediction
- Multi-modal remote sensing for weather recognition and prediction
- Intelligent sensors for weather recognition and prediction
- Benchmark datasets for weather recognition and prediction
- Deep learning theory and its applications for weather recognition and prediction-

Schedule
Feb 1, 2023, Submission system opening
Sep 30, 2023, Submission system closing

Format
All submissions will be peer reviewed according to the IEEE Geoscience and Remote Sensing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on http://mc.manuscriptcentral.com/jstars, using the Manuscript Central interface and select the "**Artificial Intelligence for Data-driven Weather Recognition and Prediction**" special issue manuscript type. Prospective authors should consult the site https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9082768 for guidelines and information on paper submission. All submissions must be formatted using the IEEE standard format (double column, single spaced). Please visit http://www.ieee.org/publications_standards/publications/authors/author_templates.html to download a template for transactions. Please note that as of Jan. 1, 2020, IEEE J-STARS has become a fully open-access journal charging a flat publication fee $1,250 per paper.

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