2023第十一届中国指挥控制大会

特邀专题论坛简介

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| **特邀专题名称**机场飞行区特殊气象精准预警与主动防范技术 |
| **召集人的姓名、职称、单位和邮箱**张国平，研究员，中国气象局公共气象服务中心，zhanggp@cma.gov.cn |
| **特邀专题简介（背景、目的、意见和内容）**智慧空管体系中的流量动态控制对机场飞行区雷暴、低空风切变、低能见度、道面冰雪等特殊气象的监测、预报和预警准确性提出了越来越高的要求。随着雷达、卫星等气象探测新设备的升级以及人工智能技术的发展，当今气象新资料和新方法的应用可以大幅度提升机场飞行区气象灾害监测预警能力。在探测方面，我国新一代多谱勒天气雷达组网探测体系已经完成升级，双偏振、分钟级观测模式可以再次提升雷暴、风切变、冰雹、短时强降水等的探测能力。X波段和相控阵雷达的建设也提升了机场百米甚至十米级尺度强风探测能力。此外，风云四号卫星闪电成像、多光谱扫描和红外干涉扫描模式提供了秒级、公里级和近千个光谱通道的大气探测资料，为开展机场飞行区三维大气资料同化提供了海量的观测数据。基于气象大数据，近年来人工智能技术在特殊气象预报预警中的应用也越来越深入，这极大的提升了特殊气象预报预警的准确率。本特邀专题邀请以下与“机场飞行区特殊气象精准预警与主动防范技术”主题相关的包含创新思想、概念、新发现、改进以及新应用的原创论文。* 雷暴、风切变、低能见度、道面冰雪等监测技术
* 雷暴、风切变、低能见度、道面冰雪、高温预报预警技术
* 特殊气象评估与主动防范技术
* 机场飞行区百米尺度资料同化技术
* 机场飞行区气象大数据仓库技术
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**C2-China 2022**

**Invited Session Summary**

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| **Title of Session**Precise early warning and active prevention technology of special weather in flight area of airport |
| **Name, Salutation, Affiliation and Email of Organizers**Zhang Guoping, Professor, Public Weather Service Center of CMA |
| **Details of Session (background, purpose, significance and scope)**The dynamic flow control in the intelligent air traffic management system puts forward higher and higher requirements for the accuracy of monitoring, forecasting and early warning of special weather such as thunderstorms, low-altitude wind shear, low visibility, runway ice and snow in the airport flight area. With the upgrading of new meteorological detection equipment such as radar and satellite and the development of artificial intelligence technology, the application of new data and new methods in meteorology can greatly improve the monitoring and early warning capabilities of meteorological disasters in the airport flight area. In terms of detection, Chinese new generation of Doppler weather radar network detection system has been upgraded, and the dual-polarization and minute-level observation mode can further enhance the detection capabilities of thunderstorms, wind shear, hail, short-term heavy precipitation, etc. The construction of X-band and phased array radars also enhances the strong wind detection capability of the airport at a scale of 100 meters or even 10 meters. In addition, the Fengyun-4 satellite lightning imaging, multi-spectral scanning and infrared interferometric scanning modes provide atmospheric detection data with second-level, kilometer-level and nearly a thousand spectral channels, providing massive observation data for carrying out three-dimensional atmospheric data assimilation in the airport flight area. In recent years, based on meteorological big data, artificial intelligence technology has also been applied more and more deeply, which greatly improves the accuracy of special weather forecasting and early warning. This special issue invites original papers containing innovative ideas, concepts, new discoveries, improvements and new applications related to the theme of “Precision Early Warning and Active Prevention Technology for Special Weather in Airport Flight Area”.* Monitoring techniques for thunderstorms, wind shear, low visibility, snow and ice on the track surface, etc
* Forecast and warning technology of thunderstorms, wind shear, low visibility, snow and ice on track and high temperature
* Special meteorological assessment and active prevention technology
* 100-meter scale data assimilation technology in airport flight area
* Meteorological big data warehouse technology in airport flight area
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