

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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Author: Dr. Zheng Yan
China, yznudt@qq.com

Mr. Xiaole Zhu
China, 7015867@qq.com

PUNCTUAL LAUNCH STRATEGY RESEARCH OF TYPHOON RESPONSE FOR MARS
EXPLORATION MISSION

Abstract

Mars exploration has long been the hot spot and focus of deep space exploration. The Mars exploration window in 2020 is from mid-to-late July to early August, which coincides with summer of the northern hemisphere. Major coastal launch sites are vulnerable to tropical extreme weather such as typhoon, and all three international Mars exploration missions are at risk of encountering typhoon at the launch area. The launch window interval of Mars exploration mission is as long as 26 months, In order to make full use of the annual launch opportunity, it is necessary to study the typhoon emergency response strategy at the launch area. In view of China's first Mars exploration mission, based on the analysis of typhoon distribution statistical characteristics and typhoon forecasting capability, the meteorological support strategy and general strategy for typhoon response are studied. In response to the situation of return to the technical area, the research on the influence analysis of typhoon on launch window, the reverse process emergency disposal of the launch area, and the process optimization of re-entering the launch area are carried out. The punctual launch strategy of the Mars exploration mission is proposed, which improved the launch opportunity within the annual launch window.