

Space environment predictions for manned spacecrafts in China

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The Space Environment Prediction Center (SEPC) was established in 1992 in the Center for Space Science and Applied Research (CSSAR) to ensure the security in space environment for manned spacecrafts in China. In this paper, the history and the development of SEPC are summarized at first. Secondly, the space environment safety guarantee services for the series of manned spacecrafts in China (from Sz-1 to Sz-6) are introduced. Through the missions, SEPC had provided space environment predictions and their effect evaluations, including space environment predictions for launch period and in-orbit flight, radiation dose analysis, large debris collision risk assessments, and so on. In order to provide accurate and valid services, SEPC did associated research work, developed the space environment monitoring system, database and space environment service technical system. Meanwhile, to ensure the safety of cosmonaut and spacecrafts, SEPC had especially developed a radiation dose analyzing software and a large debris collision warning software in 2003 before the first Chinese manned spacecraft launched successfully.