

Cosmic-ray exposure during aircraft operation

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Effects of exposure to cosmic-ray during aircraft operation, are divided into the exposure of the crew and operational impact.

International Commission on Radiological Protection(ICRP) issued a recommendation to include occupational exposure of aircrew with a jet operated exposure from natural radiation source in 1990.

Radiation Council consists of the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Health, Labour and Welfare, the Ministry of Land, Infrastructure, Transport and Tourism established "Guidelines for management of aircrew exposure to cosmic radiation" in 2006.

In response to this, airlines manage doses on each aircrew using Japanese Internet System for Calculation of Aviation Route Doses(JISCARD) developed by National Institute of Radiological Sciences(NIRS).

Examples of operational impacts are, communication difficulty on short wave due to Dellinger Phenomenon during international flight, and rewrite the data in memory known as soft error on electronic equipment onboard aircrafts.

Use of Space Weather forecast for major solar flare, how to provide the information to aircrew and how to make decisions are urgent consideration.