

## **NIRS Develops JISCARD for Web-based Calculation of Radiation Doses aboard Aircraft**

**On September 16, the National Institute of Radiological Sciences (NIRS) announced its development of the Japanese Internet System for Calculation of Route Doses (JISCARD), which enables the Web-based calculation and display of the amount of cosmic radiation received by persons flying on typical international routes from Japan. The system also began operation on the same day.**

JISCARD provides for the instantaneous calculation and display of the estimated amounts of extraterrestrial radiation received aboard aircraft traveling along specific international flight paths, with the user selecting the initial and destination airports, along with the month and the year of the flight, on a world map that appears on the screen. One can find out how much radiation is received on average during flights from Japan's Tokyo (Narita) and Kansai International Airports to 35 major cities worldwide, including Europe, America and Asia. For example, a person making a roundtrip flight from Narita to Bangkok in September would receive a dosage of 30 $\mu$ Sv (micro sieverts), while someone flying from Narita to Paris roundtrip during the same month would receive a dosage of 155 $\mu$ Sv.

The calculation of the route doses is based on data of the projected average monthly solar activity from 2001 to 2011, and is executed with the CARI-6 code developed and provided for by the U.S. Federal Aviation Administration (FAA). As the intensity of the cosmic radiation dose depends on the plane's altitude, JISCARD gives multiple dose calculations: namely, for the standard flight altitude of 36,000ft (approx. 11km), as well as for the upper and lower ranges of 40,000ft (approx. 12km) and 28,000ft (approx. 8.5km).

People aboard aircraft are exposed to cosmic radiation, which is stronger than the natural radiation normally received by landlubbers. That has led to concern for the radiation effects on the health of people whose occupations force them to fly frequently, including pilots and cabin crew. Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) is currently deliberating ways to protect aircrews from such radiation.

Furthermore, interest has been growing about the cosmic radiation received by ordinary passengers, such as businessmen and tourists. With the aim of responding to such heightened social interest, NIRS set out to develop JISTARD, accurately and broadly informing the public about the cosmic radiation received while aboard airplanes, and giving them the latest scientific views on the issue.

Note: The system is only available in Japanese, and for flights to and from Japan's two main international airports (NRT and KIX).

URL: <http://www.nirs.go.jp:8080/jiscard/data.htm>

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