International Session (Oral) | Symbol P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM08_2AM2]Space Weather and Space Climate

Convener:*Ryuho Kataoka(National Institute of Polar Research), Yusuke Ebihara(Research Institute for Sustainable Humanosphere, Kyoto University), Kanya Kusano(Solar-Terrestrial Environment Laboratory, Nagoya University), Toshifumi Shimizu(Institute of Space and Astronautical Science, JAXA), Yoshizumi Miyoshi(Solar-Terrestrial Environement Laboratory, Nagoya University), Ayumi Asai(Unit for Synergetic Studies of Space, Kyoto University), Tatsuhiko Sato(Japan Atomic Energy Agency), Hidekatsu Jin(National Institude of Information and Communications Technology), Kiminori Itoh(Graduate School of Engineering, Yokohama National University), Hiroko Miyahara(College of Art and Design, Musashino Art University), Chair:Hidekatsu Jin(National Institude of Information and Communications Technology)
Fri. May 2, 2014 10:55 AM - 12:45 PM 411 (4F)

Space weather is referred to the conditions in the solar-terrestrial system, including the Sun, solar wind, magnetosphere, ionosphere and thermosphere, that can influence human activities in space and on ground. Possible influences and forcings on the terrestrial climate from the space are also important topics to be investigated together with the detailed understanding of the space weather. This session invites papers discussing recent advances in (1) fundamental studies on physical processes that emerge in the solar-terrestrial system, (2) data analysis of space weather events and application studies on space weather, including the forecasting technique and the influence on human activities in space and on ground, (3) understanding of the possible relationships and mechanisms between the space weather and terrestrial climate.

12:30 PM - 12:45 PM

△[PEM08-P01_PG]Cosmic-ray exposure Space weather information during aircraft operation

3-min talk in an oral session

*Retsu AKUTSU[1], Kazuaki ASADA[1] (1.Airline Pilots' Association of Japan)

Effects of exposure to cosmic-ray during aircraft operation are divided into exposure of aircrew and operational impact.International Commision 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 establised Guidelines for management of aircrew exposure to cosmic radiation in 2006. In response tothis, airlines keep record of assessed doses on each aircrew using Japanese Internet System for Calculation of Aviation Route Doses (JISCARD-EX) developed by National Institute of Radiological Sciences (NIRS).Impacts of space weather on aircraft operations can be classified into communications and navigations.For communicaton, it includes difficulties on HF radio due to Dellinger Phenomenon while flying out of range of VHF coveragesas international flight. And also includes difficulties on SATCOM voice communication and Controller Pilot Data Link Communication (CPDLC) in oceanic region.Modern navigation by Global Navigation Satellite System (GNSS) is becoming mainstream. GNSS are used all phase of aircraft operation during on the ground, depareture, en-route, and approach. Future of operations aim high category precision approach using automatic approach and landing by GNSS even extremely low visibility until stop on runway. Cosmic-ray re-writethe data in memory known as soft error on electronic equipment onboard aircrafts.Use of SpaceWeather forecast, how to provide the information to aircrew and how to make decisions are urgent consideration.For these problems International Airways

VolcanoWatch Operations Group (IAWOPSG) which one of operations group of International Civil Aviation Organization (ICAO) is making draft Concept of Operations (ConOps) for international space weather information in support of international air navigation. Adoption of ConOps is targeted for ICAO/WMO divisional meeting in 2014.