AGU FALL MEETING
San Francisco | 14 – 18 December 2015

A31C-0055: Measurement of the Earth's Radiation Budget components from Russian satellites "Meteor-M" № 1 and "Meteor-M" № 2

ABSTRACT

Wednesday, 16 December 2015 **08:00 - 12:20**

Moscone South - Poster Hall

One of the foremost challenges to monitoring the climate system is the ability to make a precise measurement of Earth's radiation budget components from space. Thereupon a new "Meteor-M" satellite program has been started in Russia. The first satellite of new generation "Meteor-M" № 1 was put into orbit in September, 2009 and second satellite "Meteor-M" № 2 - in July, 2014. Some measurements results obtained by the nadir looking medium field of view radiometers IKOR-M which was installed on "Meteor-M" satellites are presented. These equipments were created in Saratov State University under the direction of Yu. A. Sklyarov for monitoring of outgoing shortwave radiation (OSR), albedo and absorbed solar radiation (ASR) at TOA. The basic products of data processing are given in the form of global maps of distribution OSR, albedo and ASR. Such maps were made for each month during observation period. Fig. 1 presents the map of global distribution of monthly averaged values of albedo in April, 2014.

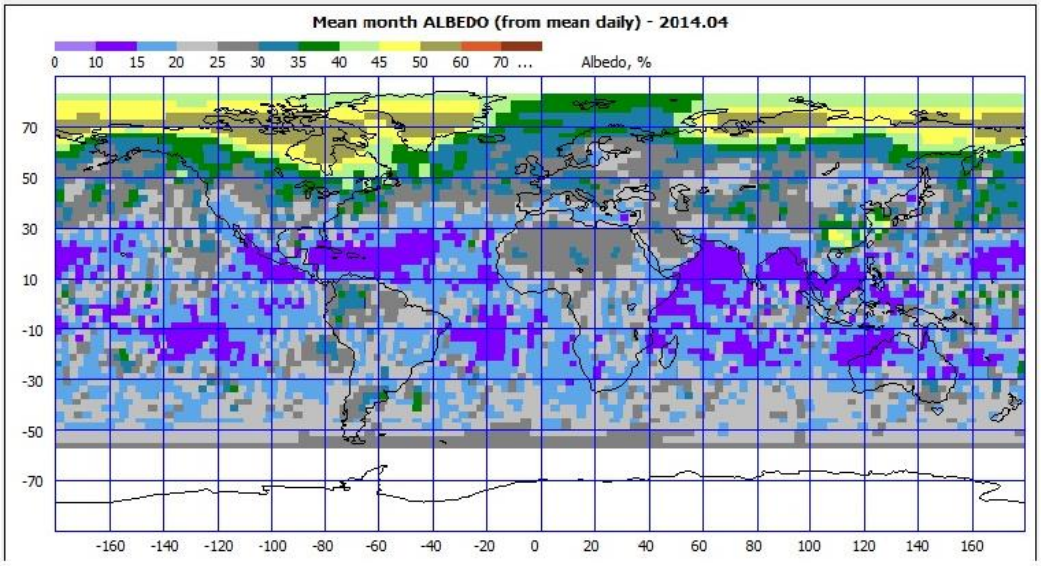
Two series of measurements from two different IKOR-M are available. The first radiometer had worked from October, 2009 to August, 2014 and second - from August, 2014 to the present. Therefore, there is a period when both radiometers work at the same time. TOA fluxes deduced from the "Meteor-M" № 1 measurements in August, 2014 show very good agreement with the fluxes determined from "Meteor-M" № 2.

The seasonal and interannual variations of OSR, albedo and ASR were discussed. The variations between SW radiation budget components seem to be within observational uncertainty and natural variability governed by cloudiness, water vapor and aerosol variations.

It was assessed spatial and temporal variations of albedo and ASR over different regions. Latitudinal distributions of albedo and ASR were estimated in more detail. Meridional cross sections over oceans and land were used separately for this estimation. It was shown that the albedo and ASR data received from the radiometer IKOR-M can be used to detect El-Nino in the Pacific Ocean and monitoring of the East Asian Summer Monsoon.

Other details of received data will are presented.

The work was carried out under financial support of the Ministry of education and science of the Russian Federation within the framework of the base part (project code 2179).



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