

ROSCOSMOS: Cal/Val Mission

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Russian Federal Space Agency

www.federspace.ru

Background

The development of the EO orbital group, ground infrastructure and data distribution system are in line with the concept of Russian Federal Space Program for the period up to 2025

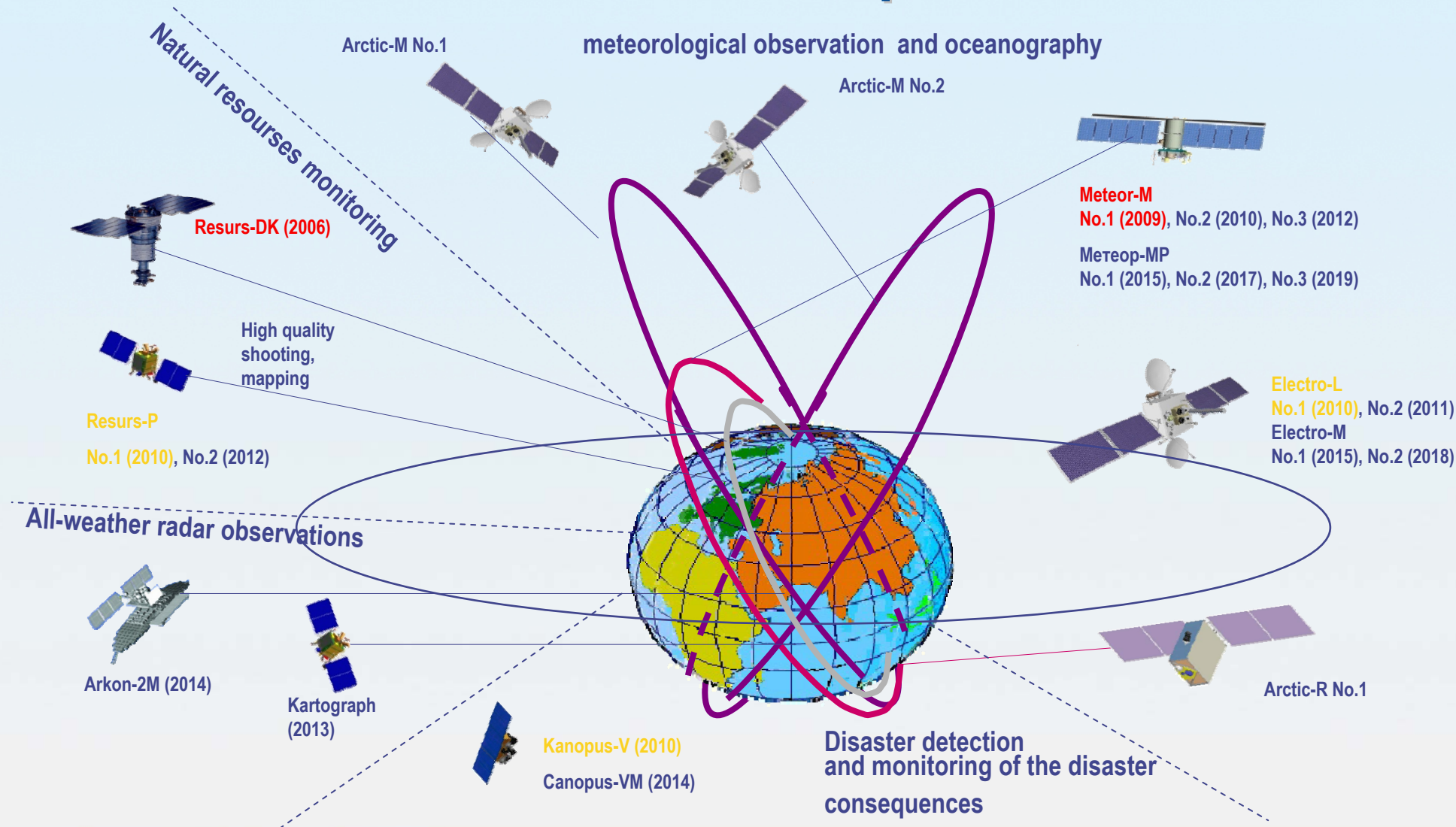
The major provisions of the Program for 2006-2015 can be found on the official Web portal of ROSCOSMOS



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Prospective Structure of the Orbital EO Satellite Group

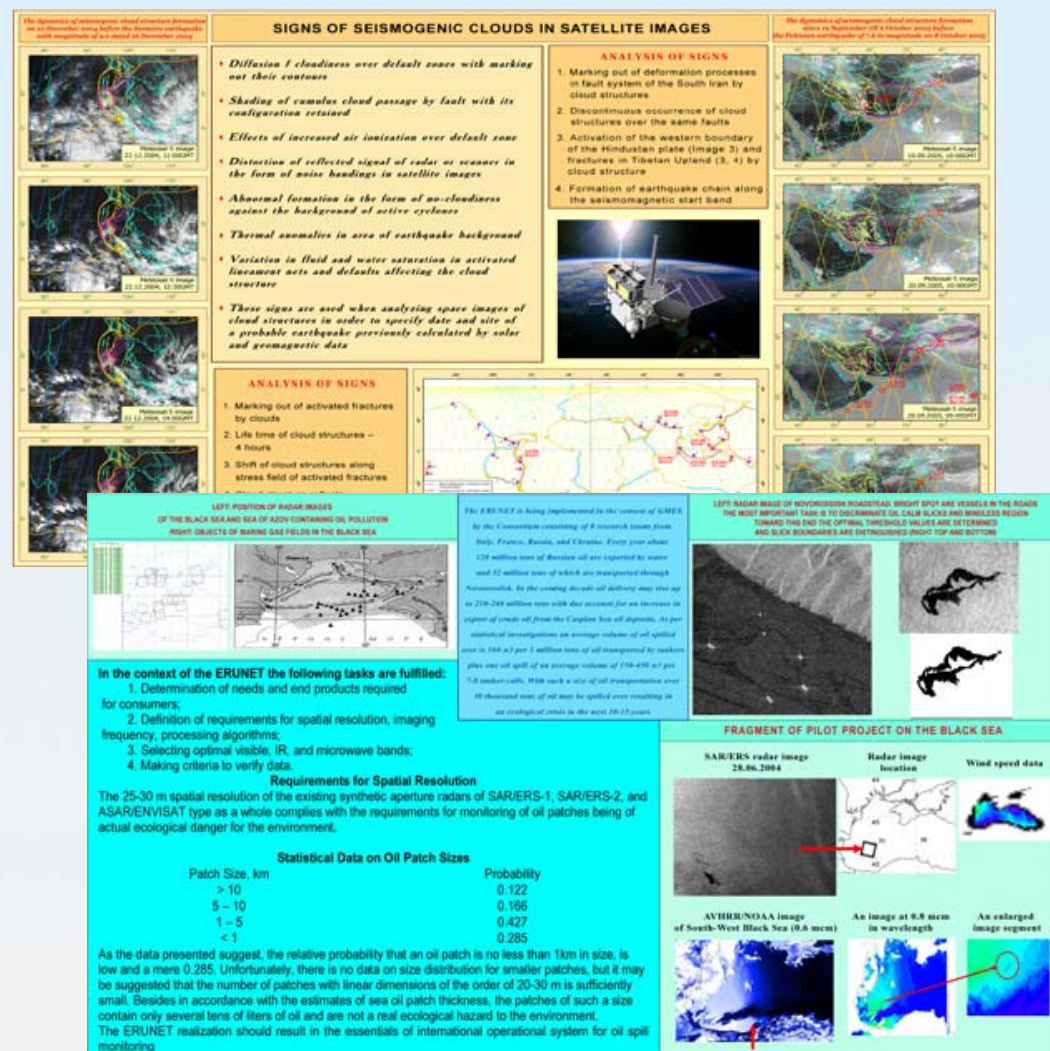


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Russia and the International Space

Russia, represented by organizations of ROSCOSMOS actively participates in remote sensing international projects. The most important areas of involvement are the polar researches, forest monitoring, monitoring of earthquake precursors and others



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Cal/Val Tasks

Since 2006, the activities relevant to establishing the system of cal/val in-situ measurements and a network of instrumented cal/val test-sites in the framework of the Federal Space Program

Mission:

- atmospheric correction;
- high quality post-launched calibration;
- validation and certification of the higher-level products from Russian EO satellites

This task is extremely urgent for lack of pre-flight calibration of devices installed on Russian EO satellites



Cal/Val Test-Sites Network

The network structure is formed on the principle of the natural-climatic distribution over the territory of Russia with due account for thematic areas. Besides this principle, this test site structure in the form of network implies an unified geoinformation space allowing for users, primarily for developers of imagery equipment and processing means to receive via the Internet all the data required in accessible format, to participate in the network activities by editing database and loading it with their own effort results



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Test-Site Network Web GIS

http://87.237.43.66:8090/DubovskyUsp/ - Windows Internet Explorer

http://87.237.43.66:8090/DubovskyUsp/ QIP Search

ГИС "ВАЛИДАЦИЯ" | Состояние посевов | Агрометеорологические данные | Биологические особенности культур | Словарь агротехнических терминов | Помощь | Разработчик

Печать | Поиск по атрибутам

Результаты поиска

Слой карты

☒ Dubovsky

- ☒ Карта_Дубовский
- ☒ Планы_посевов
- ☒ Ресурс-ДК_метада
- ☒ Ставропольский_
- ☒ Ресурс-ДК_1.0-1,5
- ☐ Ресурс-ДК_4м
- ☒ Данные зарубежн
- ☒ RDK_20m
- ☐ MOD_250m_214_a
- ☒ общая карта (Вас

Агрометеорологический обзор №10 за 2-ю ...

Запасы продуктивной влаги в слое почвы 0-100 см под озимыми культурами на 18 мая 2008 г.

Среднеквевая температура воздуха за 2-ю декаду мая 2008 г.

Т,°C

30
25
20
15
10
5
0

11 12 13 14 15 16 17 18 19 Дата

Температура — средняя, — максимальная, — минимальная

Интернет | Защищенный режим: выкл. 50%

оз.пшеница (План_на_2009_год)

FID	13
Номер_поля	1
Площадь_по	442
Ном_севооб	1
раб_участк	4
раб_учас0	115
KULTURA	оз.пшеница
Предшеств	мн.травы
Сорт	Писанка
Гунус	4,2
PH	7,9
P205	32
K20	263
CO	0,05
7N	0,4

Dubovsky > План_на_2009_год

[Add to Results](#)

Интернет | Защищенный режим: выкл. 100%

The agricultural test site founded as a part of one pilot farm in the Stavropol Region in 2008 formed the basis on the network being established



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Test-Site Network Web GIS

http://87.237.43.66:8090/TverskoyUsr/ - Windows Internet Explorer

http://87.237.43.66:8090/TverskoyUsr/ QIP Search

Web Mapping Application

Справка

Результаты

Таблица содержания

☒ Tverskoy

- ☒ Гипеспектрметр_самолет
- ☒ R-Dk_data_info
- ☒ Лесничества
- ☒ Карта тест. участка "Тверско
- ☒ Цифр_камера_Змеёво_u37_1
- ☒ Resurs-DK_2009
- ☒ map_o_36_120_and_o_37_10
- ☐ Зарубежный спутник ALOS,
- ☐ Российские спутники, архив
- ☒ Рельеф_SRTM_DEM_90m

Естеств (Савватьевский лесхоз)

FID	38
Id	38
uchastok	12
kvartal	33
vydel	4
kz	41
kzem	Естеств
pl	19
zapga	170
klv	7
voz	70
bon	3
q	8
tl	ПРЧ
him	Г4

Tverskoy > Савватьевский лесхоз

[Добавить к результатам](#)

Готово

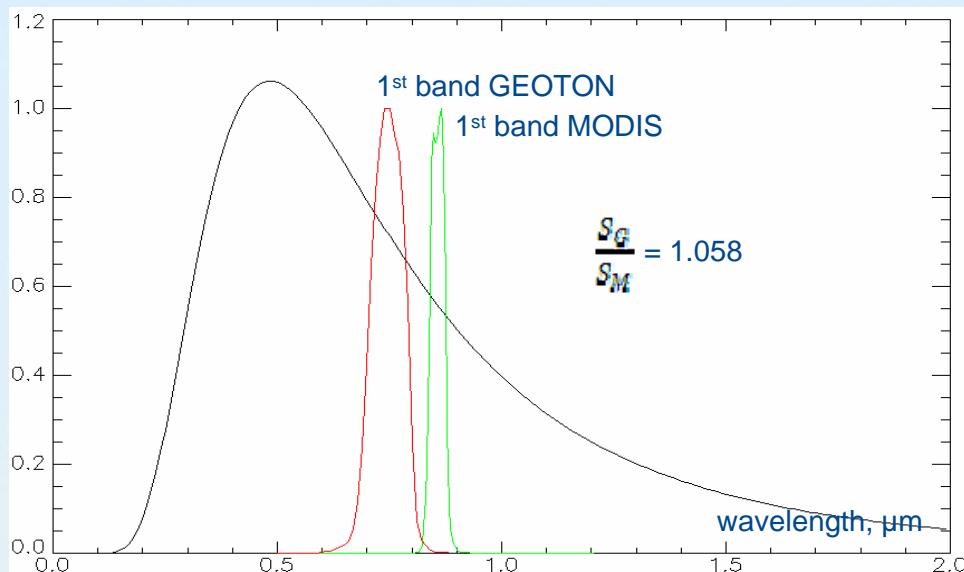
Интернет | Защищенный режим: выкл. 100%



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Cross-Calibration Task



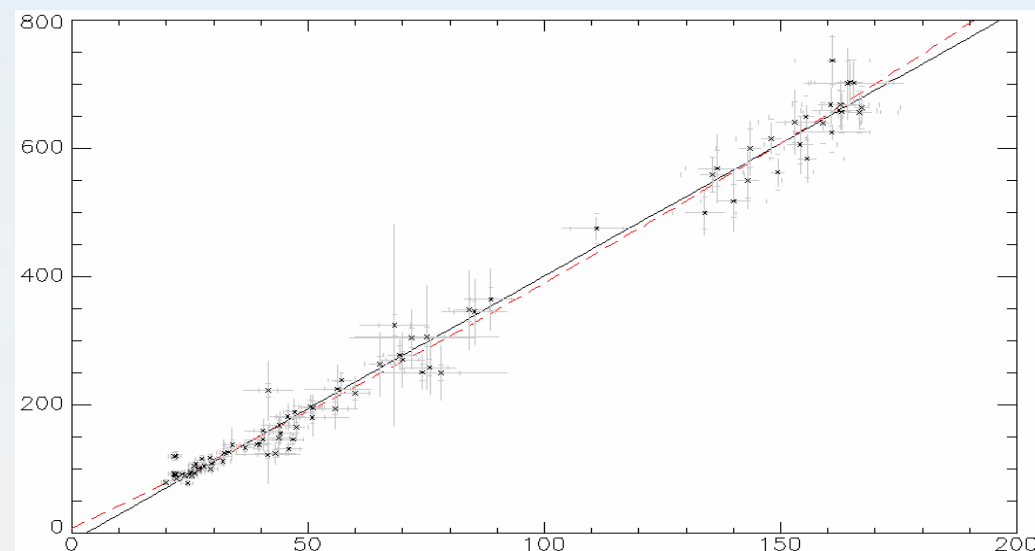
Parameter $\frac{S_G}{S_M}$ (the ratio of the solar constant)

depends only on the ratio of the spectral transmission functions in a pair of channels and is calculated once for each pair of channels

GEOTON (RESURS-DK) / MODIS (TERRA)

Cross-calibration equation

$$aDN_G + b = L_M \frac{S_G}{S_M} \frac{\cos \theta_{sG}}{\cos \theta_{sM}}$$



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Conclusions

1. The urgent need to post-launched calibration of sensors and obtain standard higher-level products, based on various types of Russian remote sensing data: optical, radar, hyperspectral.
2. At present, Russia is at the 1st step of developing a cal/val system, in the first place – organizing the instrumented test-sites network with Web GIS.
3. Need to attract international experience through participation in cal/val community and using CEOS recommendations and standards



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We are open for collaboration!

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