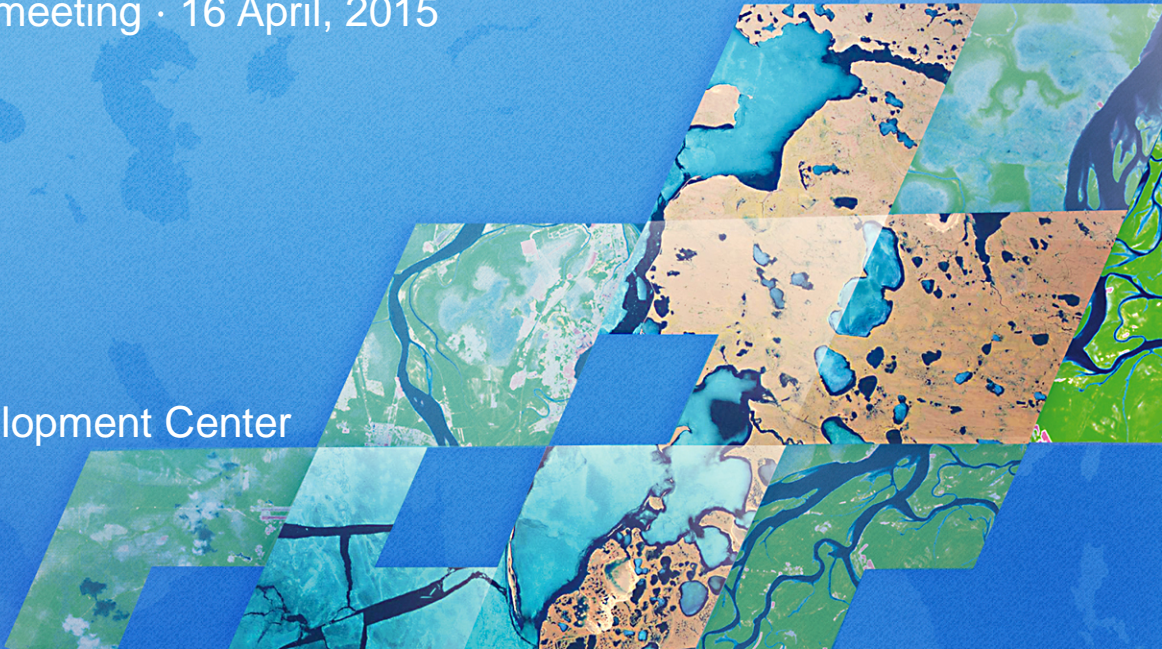


# An overview of meteorological near real-time satellite data usage in Russia

CSPP/IMAPP User's group meeting · 16 April, 2015

Katerina Melnik  
ScanEx Research and Development Center





## Why Russia needs the data from meteorological polar-orbiting satellites?



• • Meteorological stations

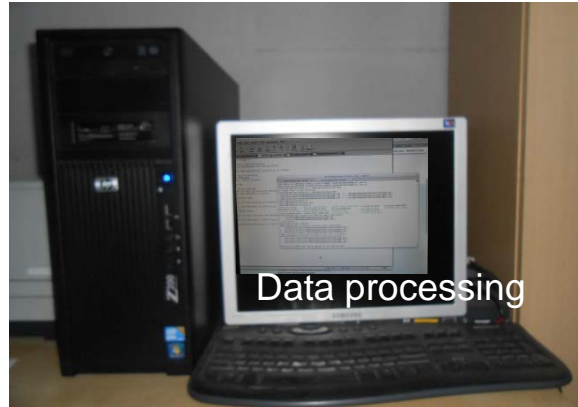


# What does ScanEx do?

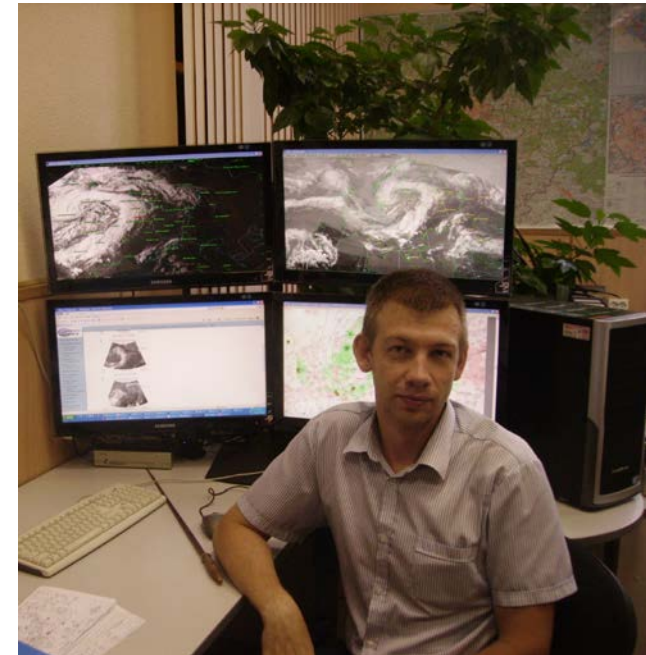
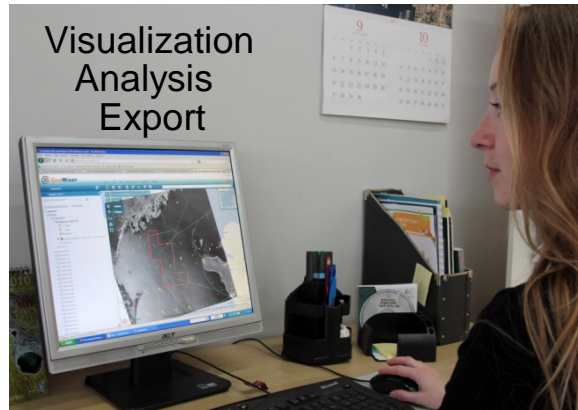
Data reception



Data processing



Visualization  
Analysis  
Export





# Real-time satellite data reception



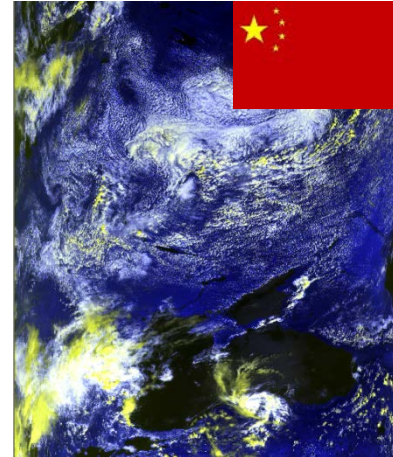
**UniScan**  
(X – band)



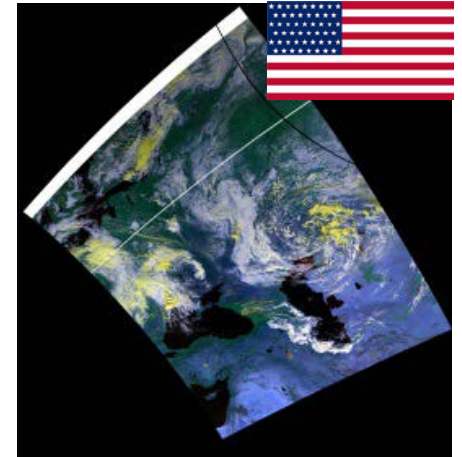
**Alice**  
(L – band)



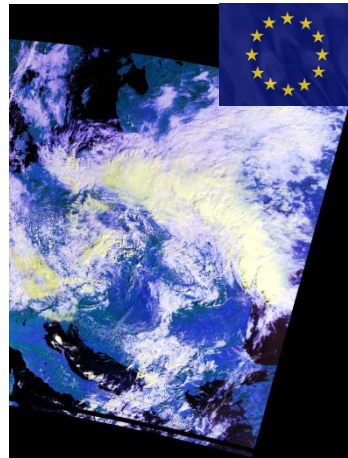
AQUA, TERRA



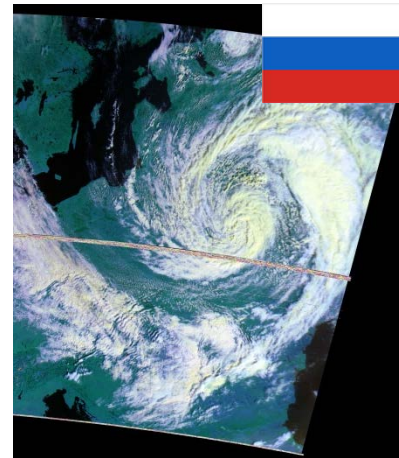
Feng-Yun 3A, 3B, 3C



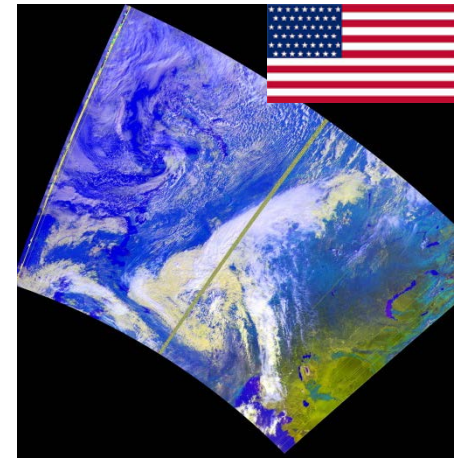
Suomi NPP



MetOp-A,B



Meteop-M №2

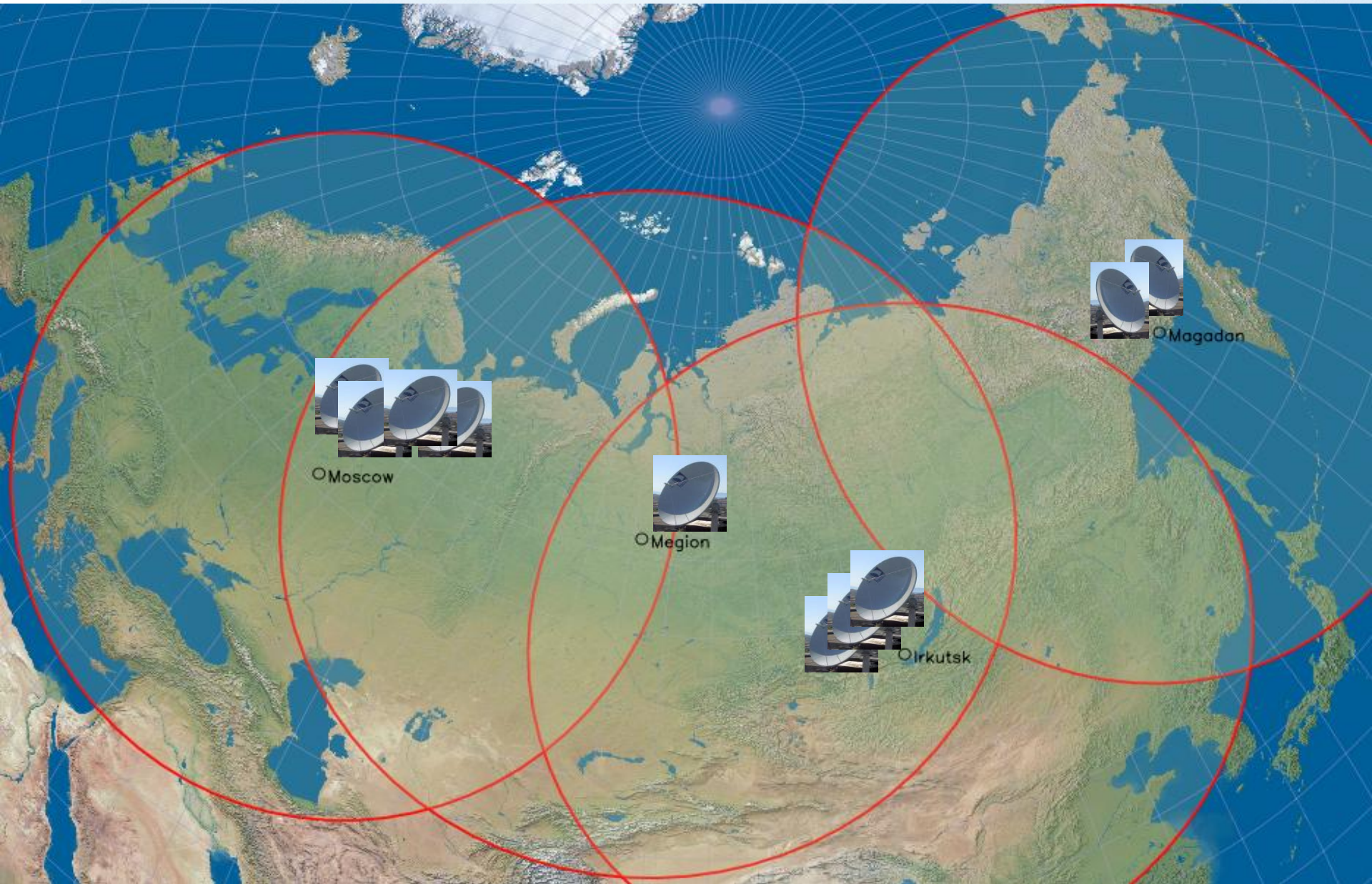


NOAA - 18,19

Each satellite overpasses a certain territory at least twice a day. More than 250 stations are installed around the world

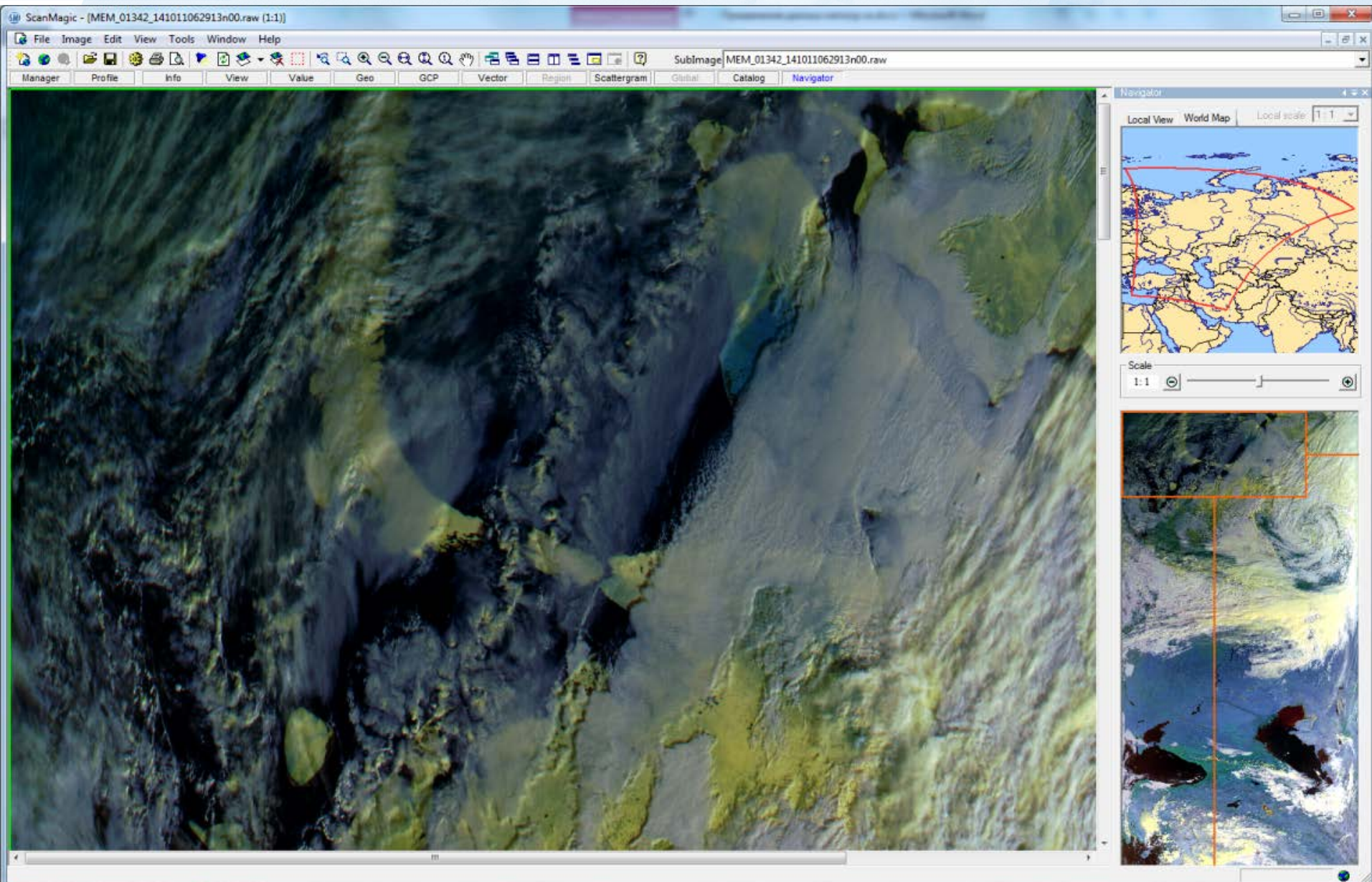


# ScanEx's network of receiving stations





# Interactive visualization tool ScanMagic: Meteor-M imagery

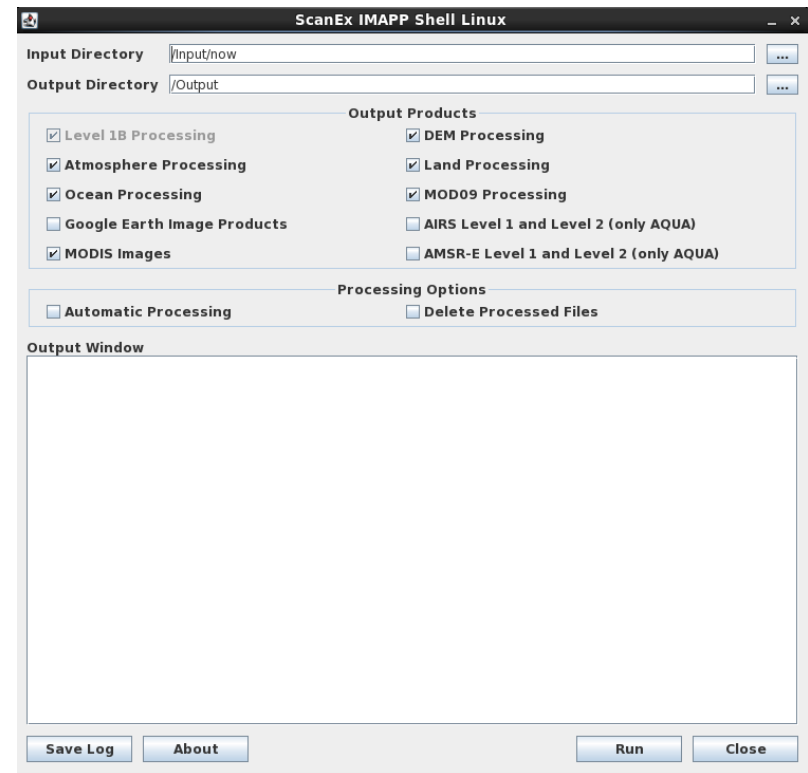
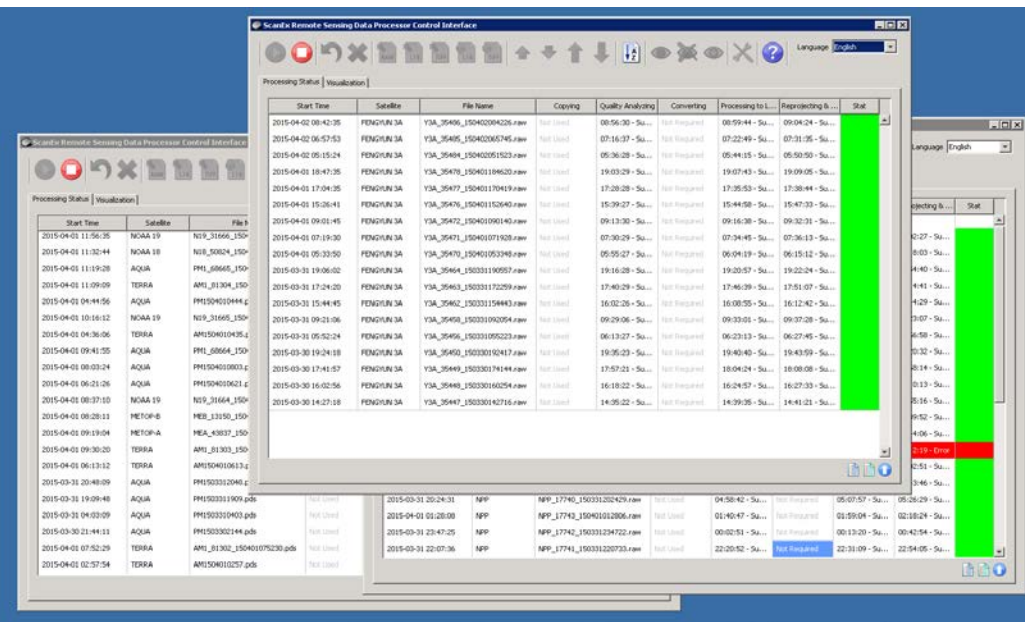




Software that we use: RT-STPS, AAPP, IAPP, CSPP, IMAPP, Feng Yun-3 software  
 “Coming soon”: CLAVR-X, HSRTV, ACSPO, IDEA-I...

## Automatic Data Processing System

## Interactive user-friendly data processing tool





# Monitoring a certain territory - KosmoRegion

СОЧИ 2014  
Гидрометцентр России

Прогнозы

Климат

Наблюдения

Презентации

Блог/Новости

Ссылки

Логин

Пароль

Запомнить меня

ВОЙТИ

- [Забыли пароль?](#)
- [Забыли логин?](#)

Наблюдения

ОПЕРАТИВНЫЕ ДАННЫЕ ПОЛЯРНО-ОРБИТАЛЬНЫХ СПУТНИКОВ ПО РЕГИОНУ СОЧИ  
Предоставлено ИТЦ «СКАНЭКС»

Спутник: Terra

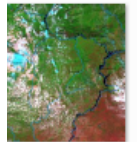
<<<

29.10.2013 07:45:49

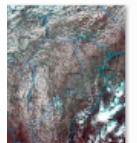


logy

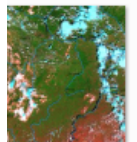
ssing



1130607\_074614  
AM1\_HKM.png



1130712\_093244  
\_N19.png



1130708\_084058  
AM1\_HKM.png

Казань 2013  
Управление по гидрометеорологии и  
охране окружающей среды

главная

прог

Интерактивная карта  
метеостанций по г. Казани и  
Республике Татарстан

Качество воздуха

Карта расположения Web-  
камер и автоматических  
метеостанций Метеосон

Карты экстремальных  
температур и осадков

Спутниковые снимки

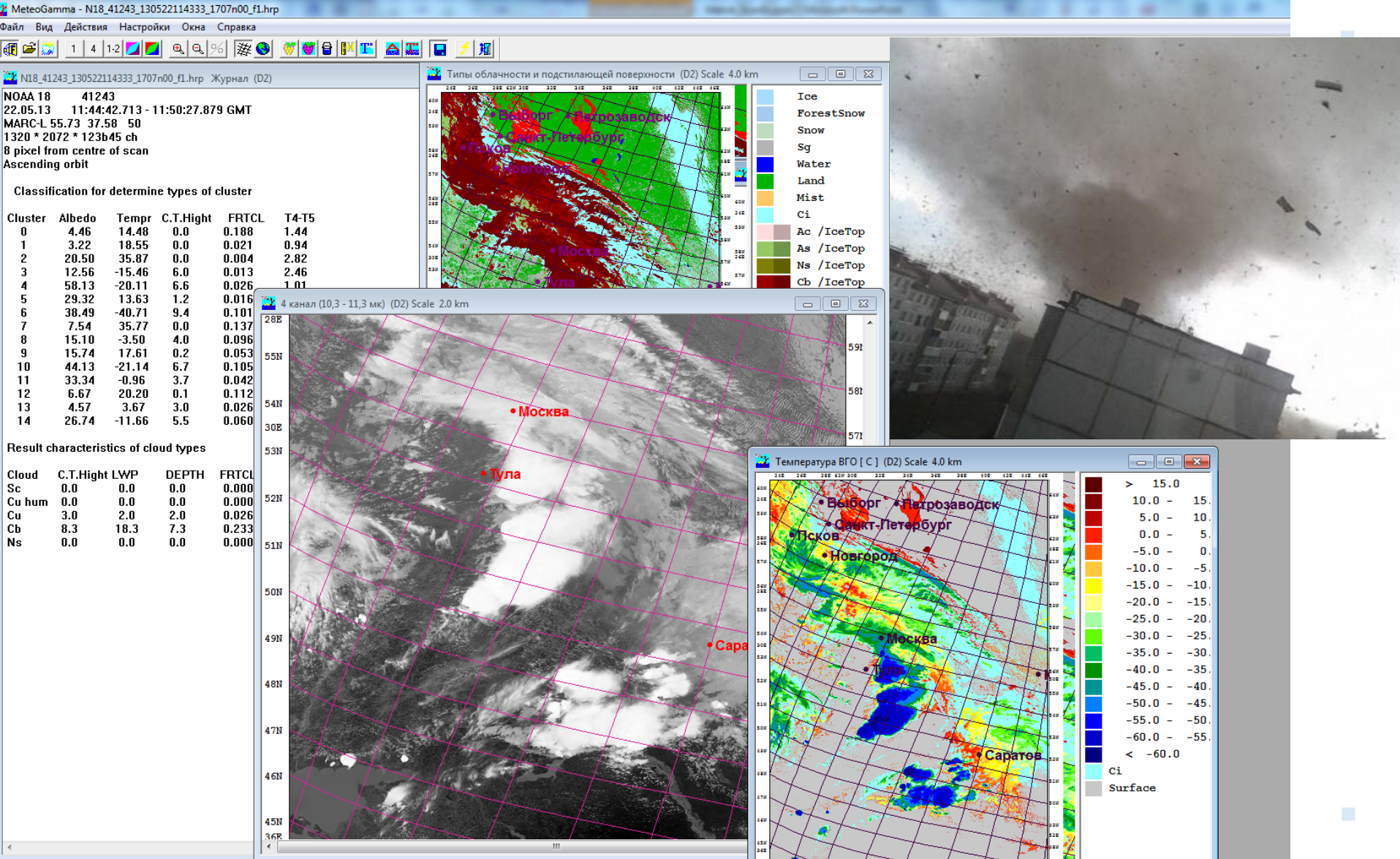
Кольцевые карты погоды

Карты ДМРП

Карты абсолютной барической  
топографии



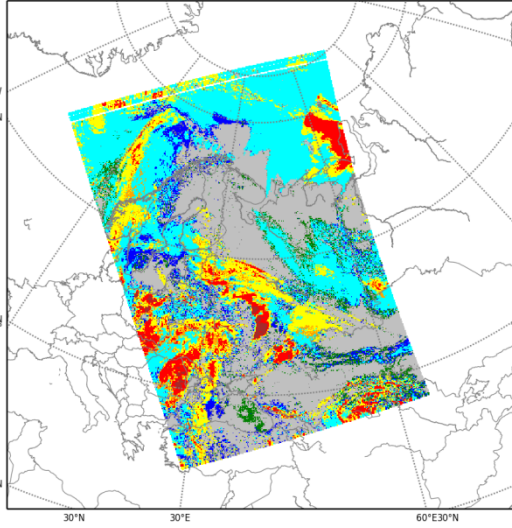
# Thematic products: MeteoGamma - 22 May overpass



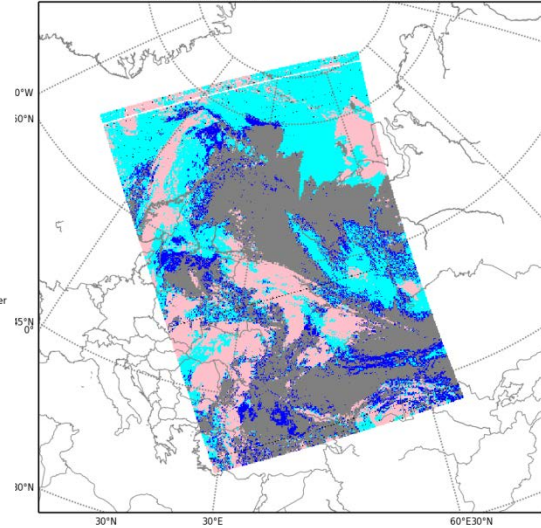


# Thematic products: CLAVR-X and Overshooting tops - 22 May overpass

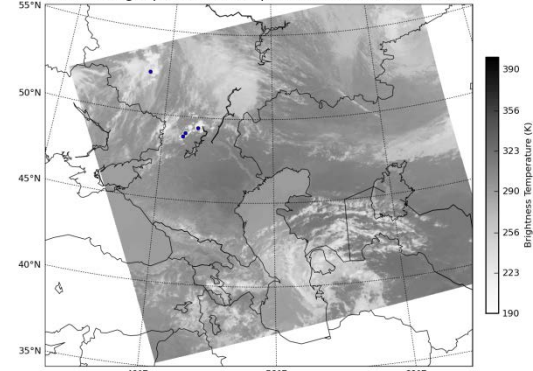
CSPP CLAVR-x Cloud Type 2013-05-22 11:43:48-11:55:20



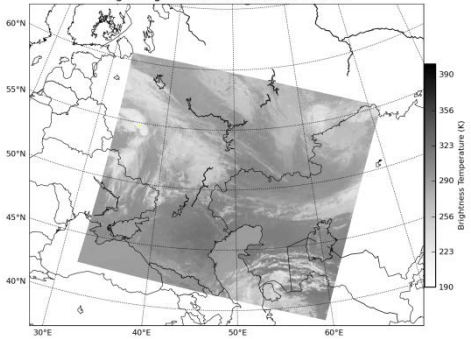
CSPP CLAVR-x Cloud Phase 2013-05-22 11:43:48-11:55:20



Overshooting Tops/Thermal Couplets: 2013-05-22 at 09:35 UTC



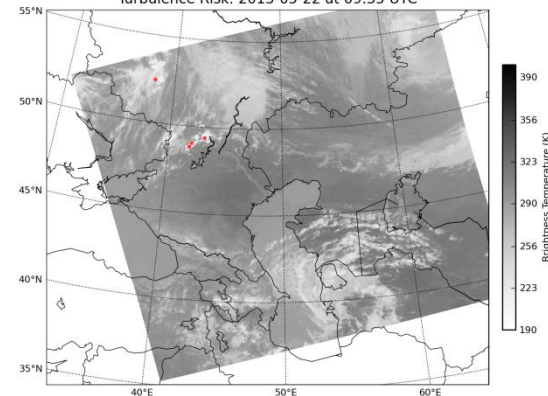
Lightning Risk: 2013-05-22 at 07:50 UTC



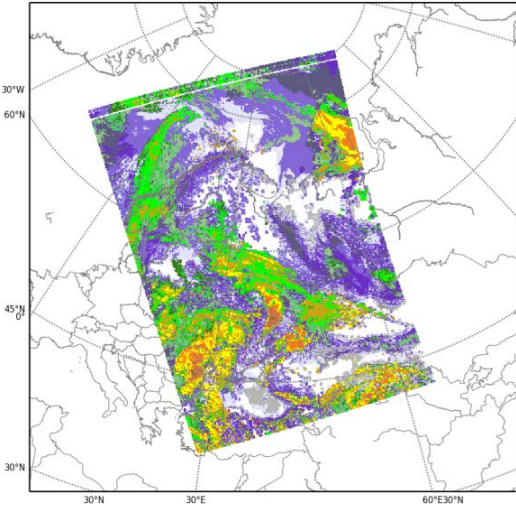
70 65 50 35

1 km radius circle within 1 km of measurement from 2013

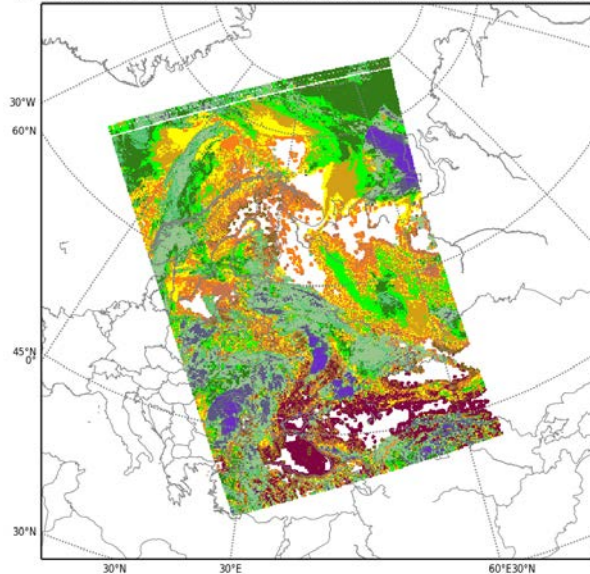
Turbulence Risk: 2013-05-22 at 09:35 UTC



CSPP CLAVR-x Cloud-top Height from AWG Cloud Height Algorithm 2013-05-22 11:43:48-11:55:20



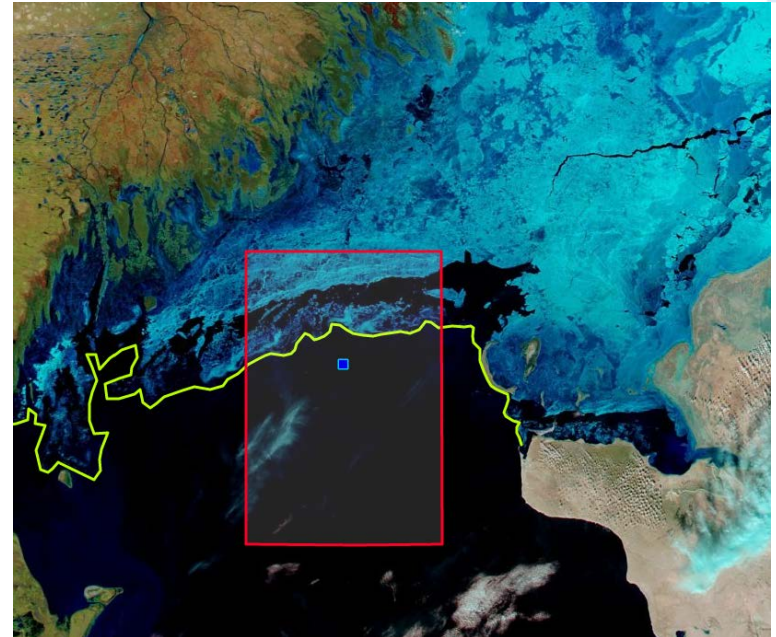
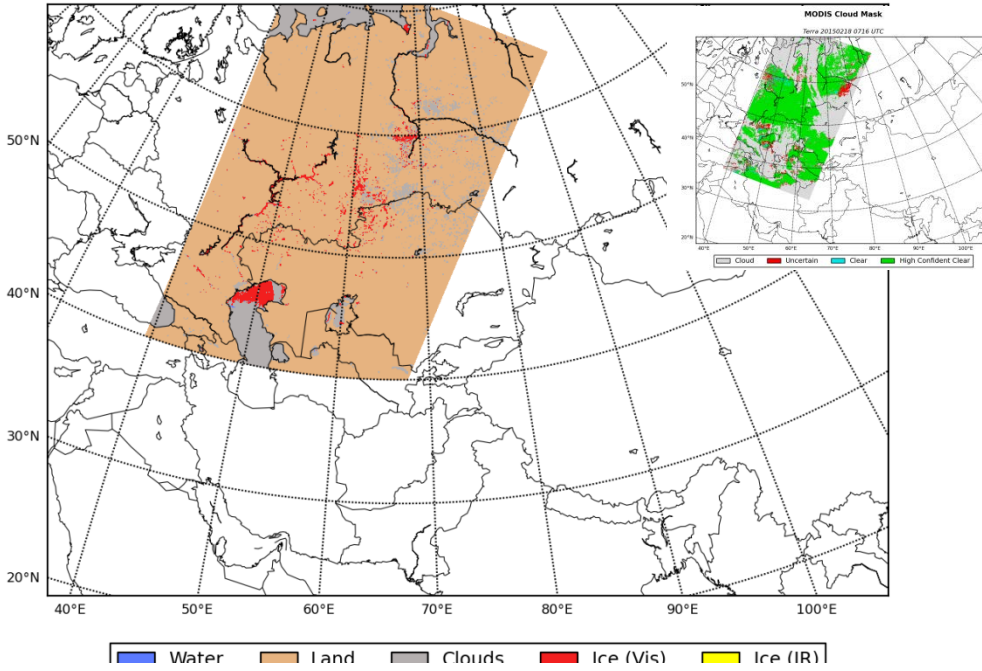
CSPP CLAVR-x Cloud-top Temperature from AWG Cloud Height Algorithm 2013-05-22 11:43:48-11:55:20





# IMAPP Polar products below 60N

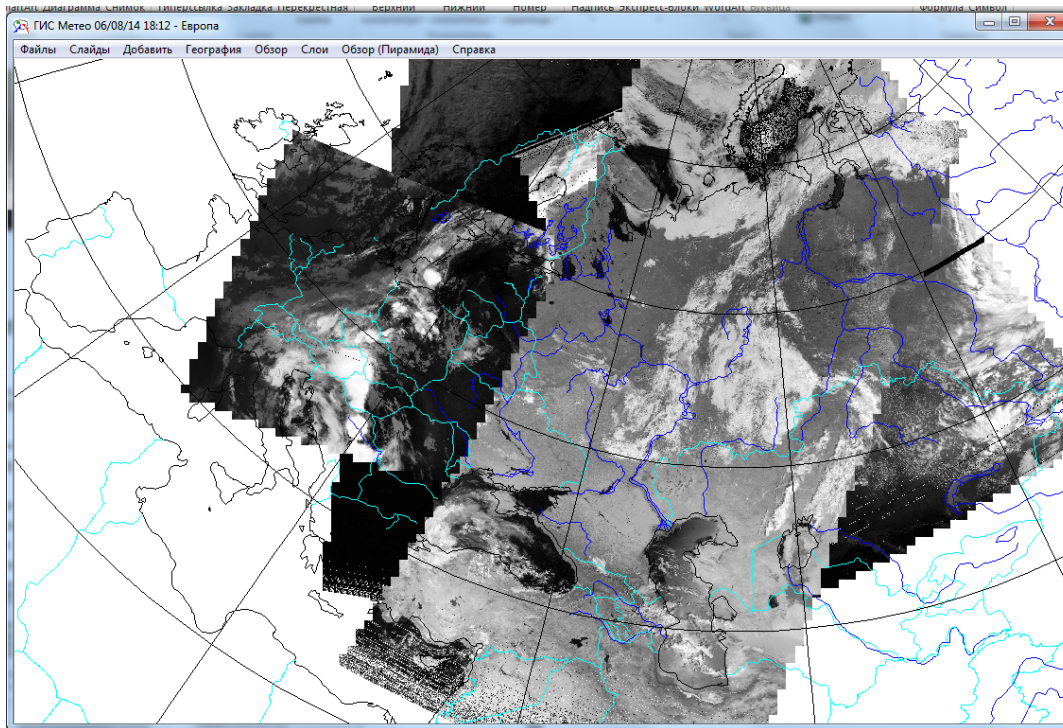
**MODIS Ice Mask**  
Terra 20150218 0716 UTC



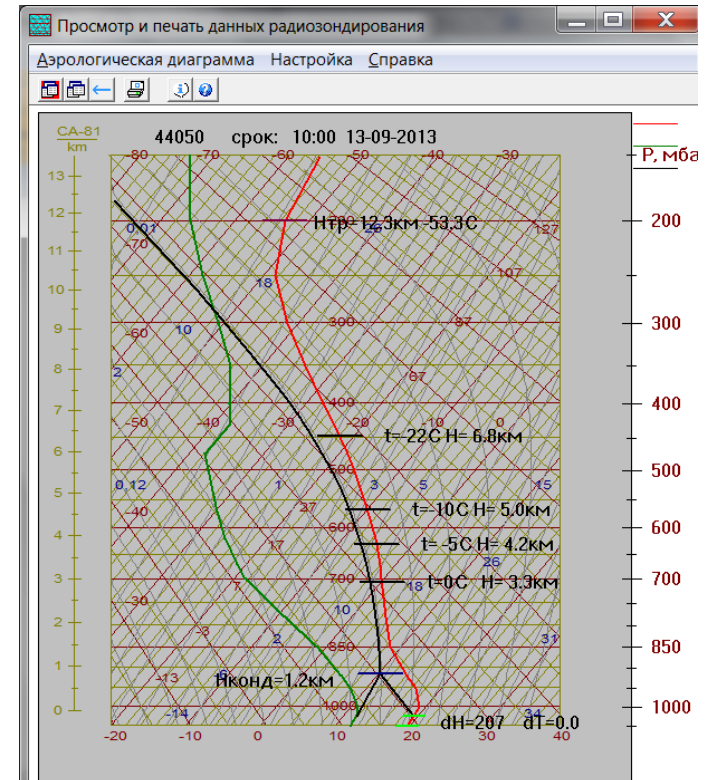
Using MODIS images and data for sea-ice monitoring for navigation and oil extraction safety



# Satellite data in interactive meteorological systems



NOAA images in GIS Meteo



IAPP temperature and moisture vertical profile displayed on a Skew-T in MeteoExpert



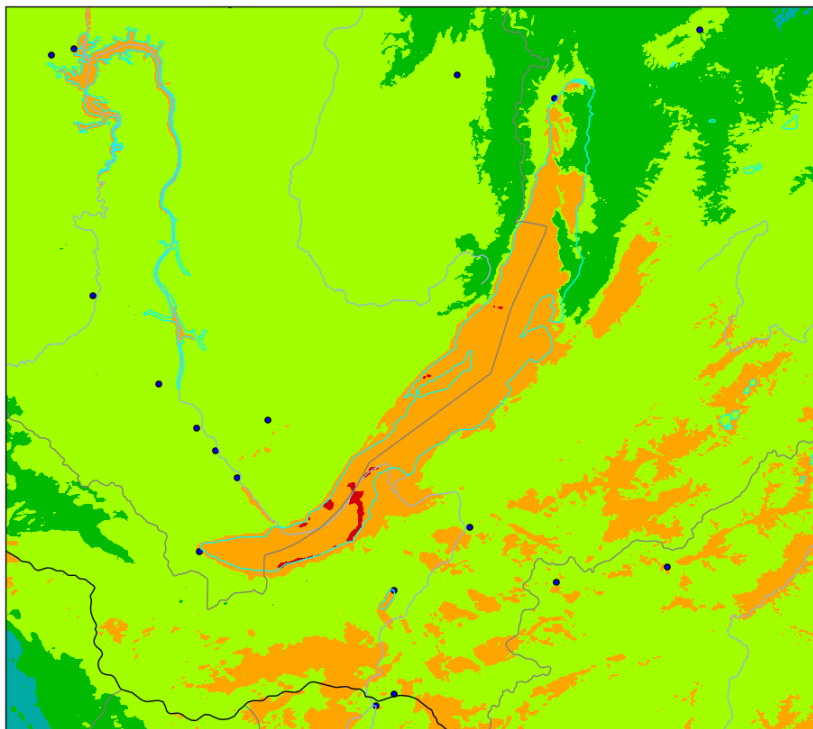
# Atmospheric soundings in Russia



• • Atmospheric soundings stations



# Fog product in MeteoExpert



Fog product for different sensors:

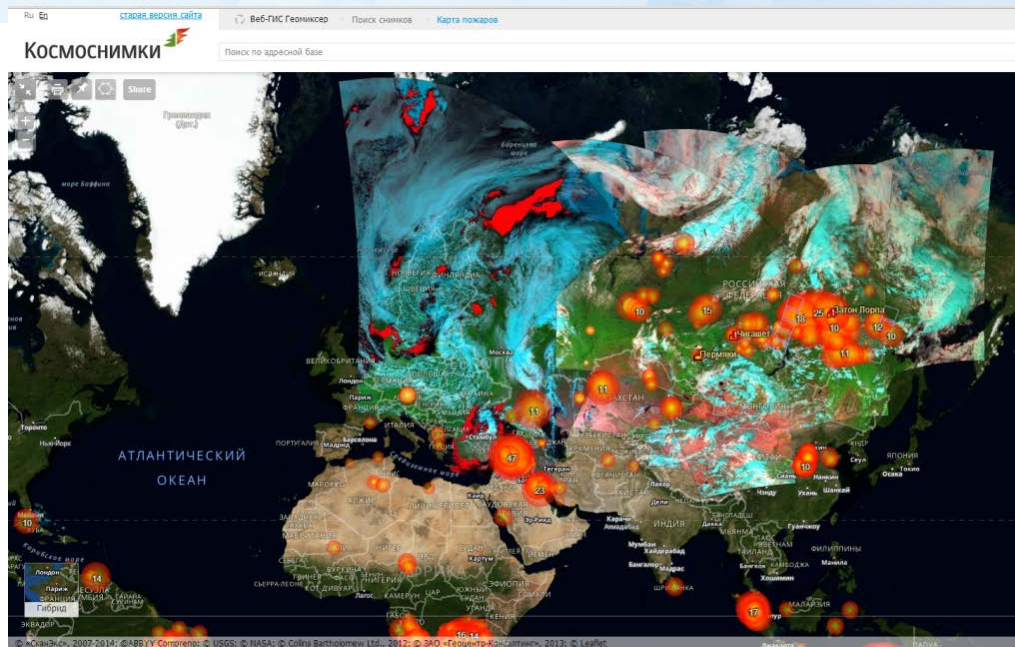
Sensor	Channel 11 micron	Channel 3.7 micron	Threshold
MODIS	31	20	1
VIIRS	M15	M12	1,5
AVHRR	4	3 B (nighttime)	2,5



# Active fires monitoring using our own network of stations

Near-real time MODIS Active fires + FIRMS data are displayed on a 2D-geoportal:

<http://fires.kosmosnimki.ru/>

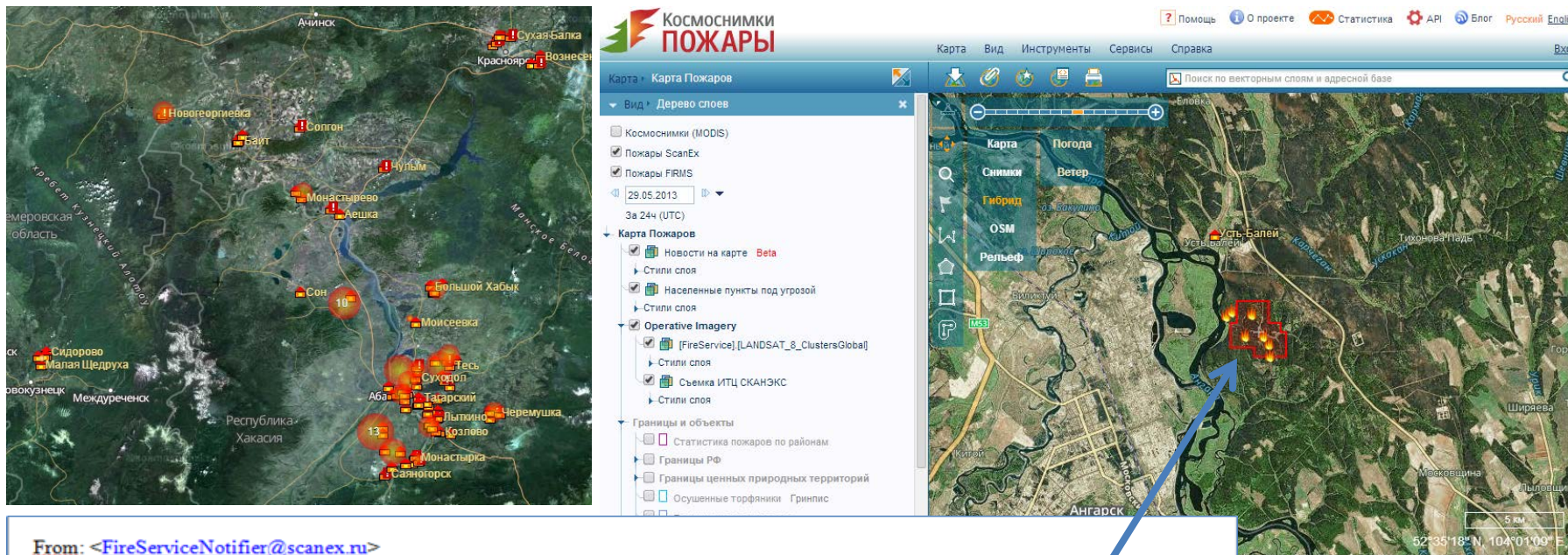


Clustering hotspots (spatially and temporally)






# Active fires alert system: e-mail and sms service



From: <[FireServiceNotifier@scanex.ru](mailto:FireServiceNotifier@scanex.ru)>  
 Date: Wed, May 29, 2013 at 4:48 PM  
 Subject: Обнаружены новые точки пожаров по зоне: Иркутск  
 To:

Зона: Иркутск, Спутник: Terra (29.05.2013 04:34:00 UTC)

Период горения	Lat, Lon	Кол-во точек пожара	Площадь за 24ч	Общая площадь, km2	Статическая карта	Ссылка	Тип	Ближайший город (в радиусе <10km)
29.05.2013 - 29.05.2013	52.5885,104.0193	4	0,75	0,75		<a href="#">Перейти на карту</a>	Пожар	Усть-Балей



# Geo-located data on a 3D globe GEOBOX

Browser address bar: <http://maps.scanex.ru/en/index.html> | ScanEx World :: Main project x

Navigation: About | Help | Sign in |

## GEOBOX 3D

Menu » ADPS

- ▼ AQUA ✓
- ▼ FY-3A ✓
- ▼ METOP-A ✓
- ▼ METOP-B ✓
- ▼ NOAA-18 ✓
- ▼ NOAA-19 ✓
- ▼ NPP ✓
- ▼ TERRA ✓

Map | Hybrid | Satellite

© NASA

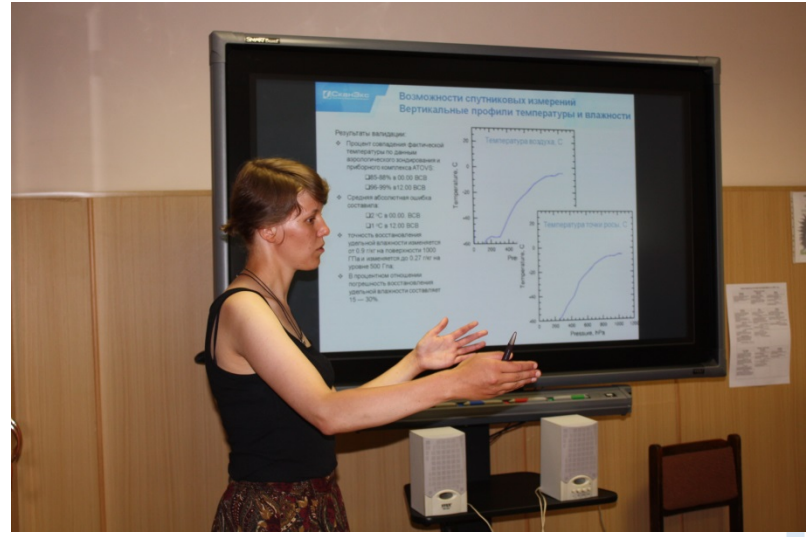
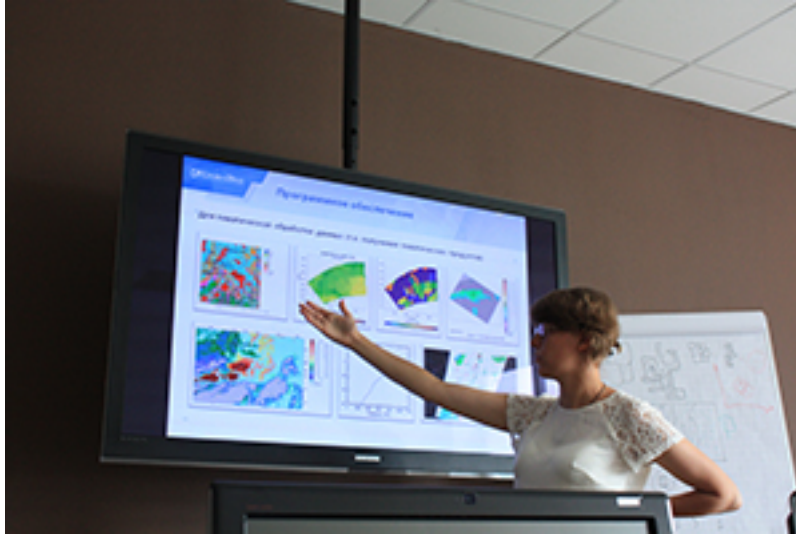
Scale: 1000 km

Coordinates: N 18°38'38" E 58°44'7" | 0.0 m

© 2010-2015 RDC «ScanEx», v0.1.41

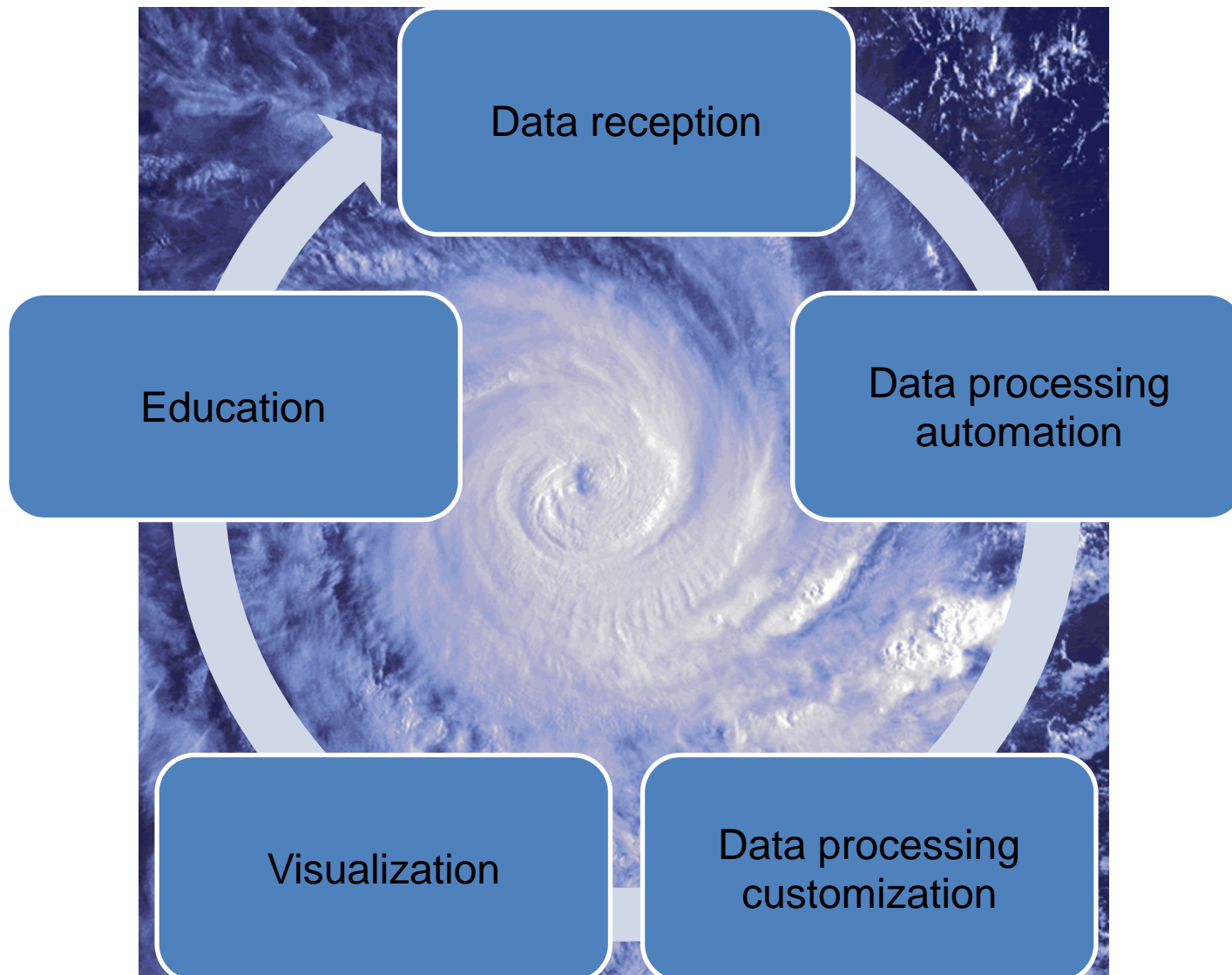


# Education and outreach





... and to sum up:







Thank you for your attention!

[kmelnik@scanex.ru](mailto:kmelnik@scanex.ru)

+7 (495) 739 – 73 – 85

[www.scanex.com](http://www.scanex.com)

[info@scanex.ru](mailto:info@scanex.ru)