



*Available RS data
in support of
the NEESPI*

V.Gershenzon R&D Center ScanEx

NEESPI, Washington 2004

Outline

- ScanEx RS vision
- Forest Watch Russia
- RS data availability for the NEESPI

Main thrusts of SCANEX R&D Center

www.scanex.ru

- **Designing and manufacturing the personal ground stations (PGS) Liana, Liana-M, Selena, ScanEx, ScanER, EOscan, UniScan for reception and processing of satellite images for the Earth monitoring from space.**
- **Remote sensing data archiving and cataloging: Resurs-O1, Meteor-3M, Terra/Aqua, Landsat 4/5/7, RADARSAT-1, IRS**
- **The technology of RS data acquisition, processing, archiving and thematic analysis: ScanViewer®-ScanEx Catalog Manager® – ScanMagic® – ScanEx Image Processor® – ScanEx-NeRIS®.**

RS Data Access

Archives

Direct Access

Если вы впервые знакомитесь с этим каталогом, вам также может быть интересно посмотреть следующие страницы:

- Описание аппаратуры landsat-7
- Карта покрытия
- Порядок заказа данных

Форма поиска снимков

Координаты области интереса

60 ° 00 ' С	Ш	Введите граничные значения широты и долготы
100 ° 00 ' В	Д	По умолчанию установлены координаты Москвы!
120 ° 00 ' В	Д	
50 ° 00 ' С	Ш	

Интервал времени съемки

С	1	Января	1999
По	1	Января	2001

Искать в каталоге



End Users

ИТЦ ScanEx 1

Search results

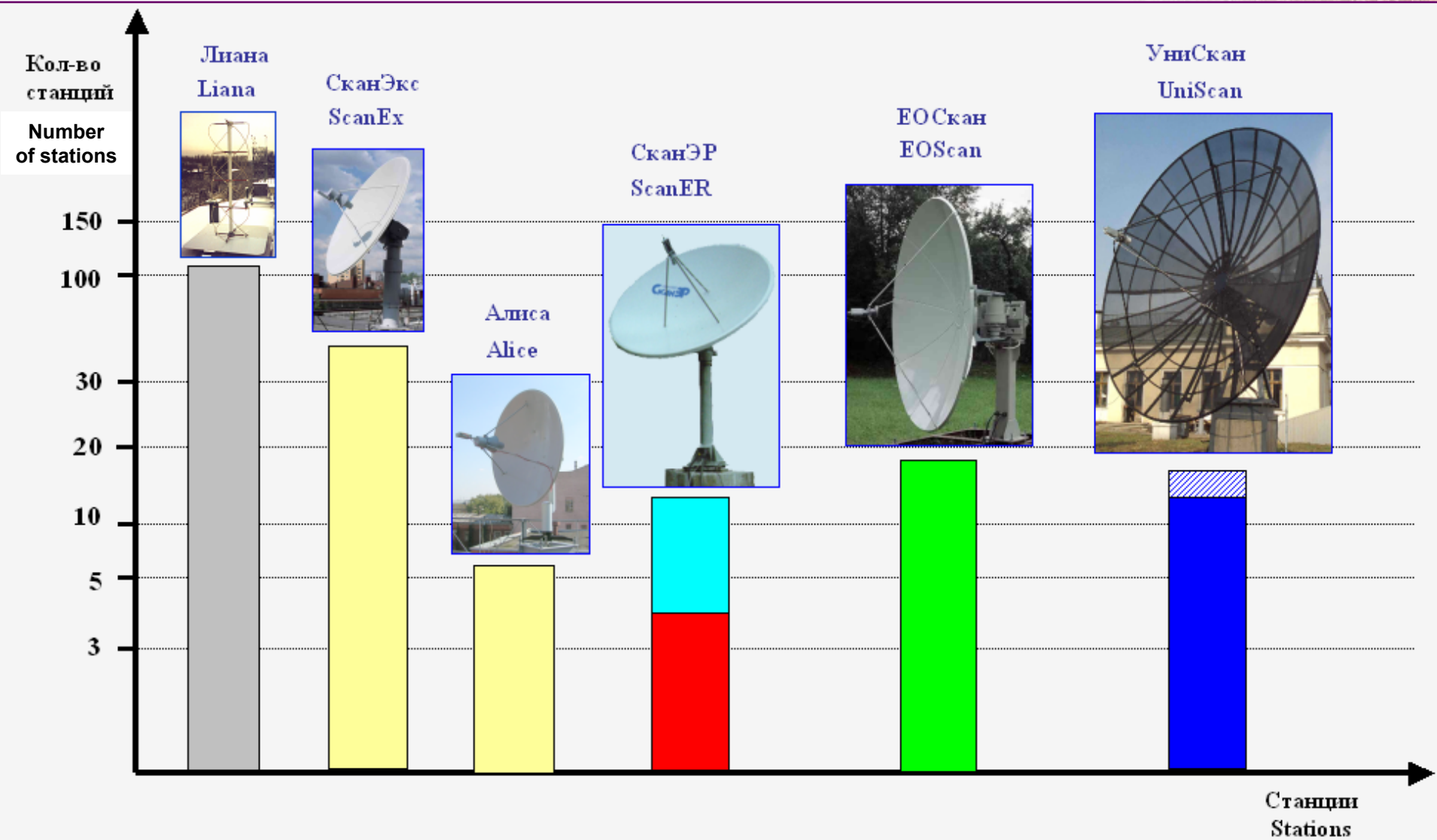
#	Imaging date	Path	Zone
1	1999-09-03	123	23
2	2000-08-08	125	21
3	2000-08-10	125	21
4	2000-08-10	123	24
5	2000-08-11	124	23

Total: 5 scenes

Select scenes you want to order in the list above and click the following button to proceed. You will be asked to specify order's options...

Proceed with Order

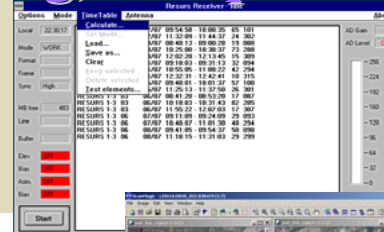
Number of compact ground stations manufactured by ScanEx R&D Center



Technology of ScanEx R&D Center for satellite data acquisition, archiving, and processing

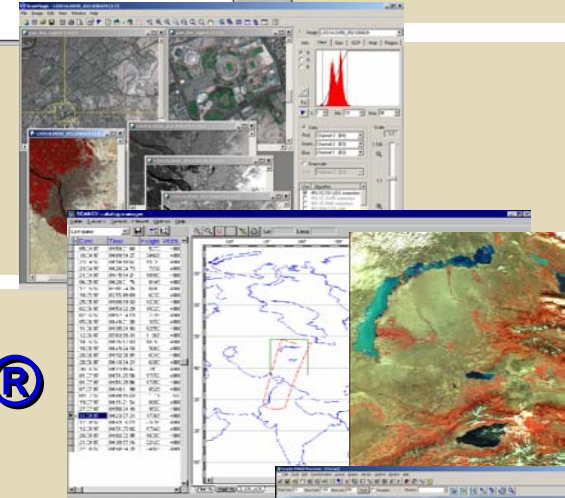
Scan Receiver®

Data reception and antenna control



ScanMagic®

Data viewing and preliminary processing

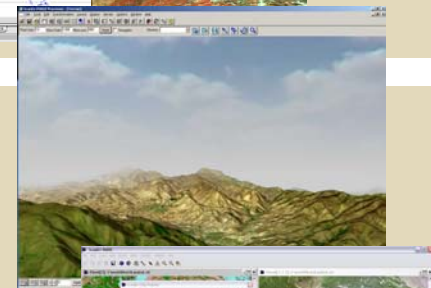


ScanEx Catalogue Manager®

Data archiving

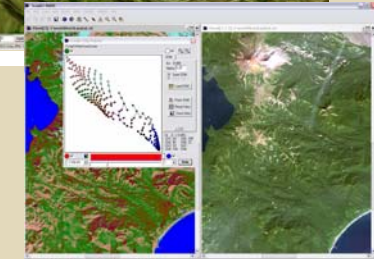
ScanEx Image Processor®

in-depth data processing and creation of added-value data products.



ScanEx NeRIS®

interpretation of spatial data on the basis of artificial neural networks



Satellite Portable Ground Stations (PGS) for meteorological purposes

Portable Ground Stations “ScanEx™” and “Alice™”

Data acquisition from NOAA satellites in HRPT format



40 “ScanEx™” and 6 “Alice™” Portable Ground Stations are currently in operation, among which 11 are installed in Federal Department of hydro-meteorology and environment protection of Russian Federation.

Portable Ground Station “Liana™”

Data acquisition from NOAA satellites series in APT format



Alice™



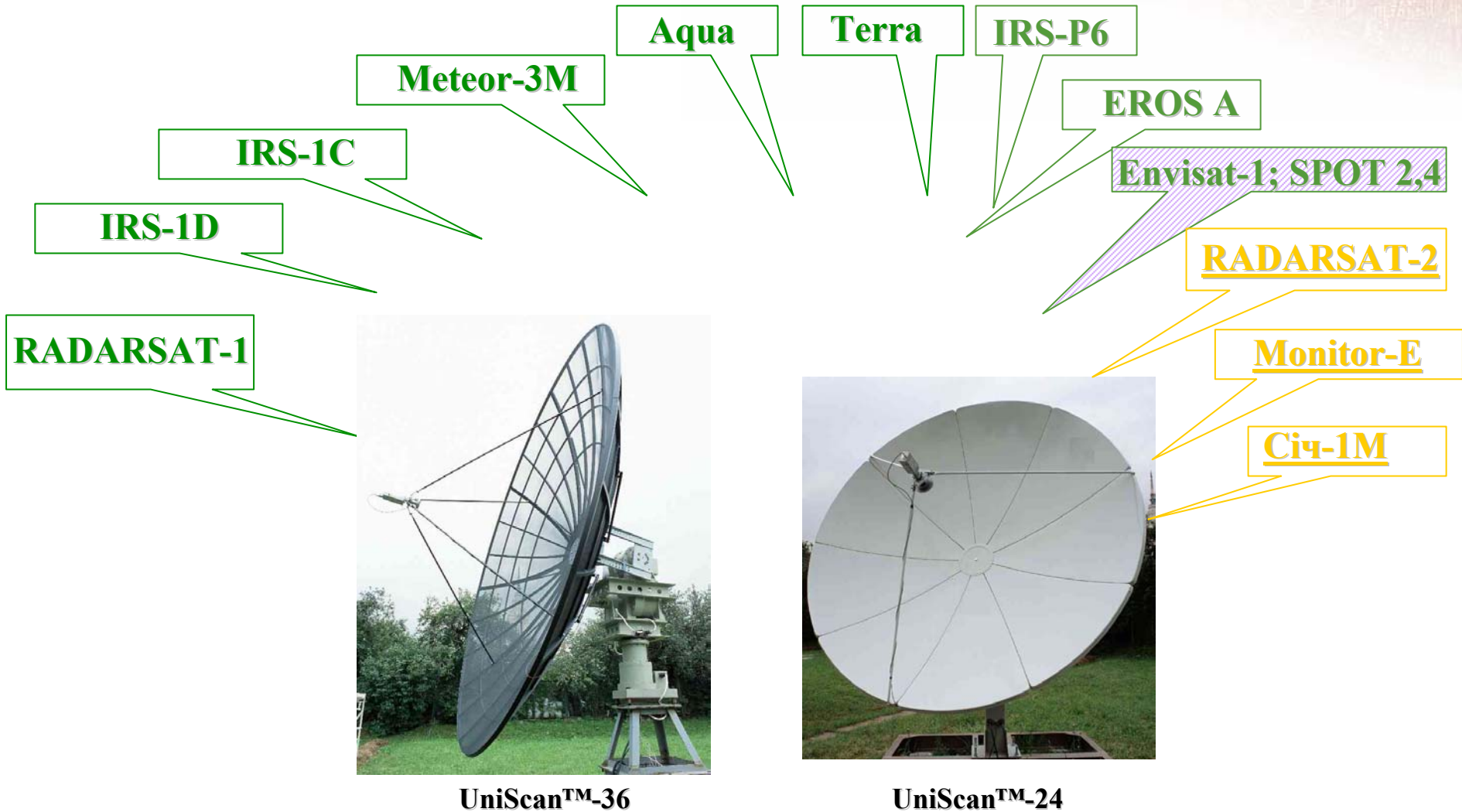
ScanEx™

81 “Liana™” Portable Ground Stations are currently in operation, among which 50 are installed in Federal Department of hydro-meteorology and environment protection of Russian Federation.

Operational network of EOScan™ ground stations manufactured by ScanEx R&D Center



Multi-mission ground station UniScan™



UniScan™ network



 in operation

 starts operating in 2004

IRS-P6 (Resourcesat-1) satellite (India)

Scanner		LISS-IV		LISS-III	AWiFS
Type		PAN (panchromatic)	MSS (multispectral)	MSS (multispectral)	MSS (multispectral)
Revisit, days		5	5	24	5
Spatial resolution, m	Green Red NIR SWIR	5.8	5.8 5.8 5.8	23.5 23.5 23.5 23.5	56 56 56 56
Swath, km		70	23	140	740
Quantisation, bits		10	10	7	10
Spectral range, nm	Green Red NIR SWIR	620-680	520-590 620-680 770-860	520-590 620-680 770-860 1550-1700	520-590 620-680 770-860 1550-1700

ScanEx R&D Center is the Network Operator for RADARSAT-1 within Russia and CIS

RADARSAT-1 SAR characteristics

Operating modes	Swath width, km	Incidence angle, deg	Spatial resolution (across x along flight direction), m
Standard	100	20...49	28 x 25
Wide	150	20...45	28 x 23-35
Fine	50	35...49	9 x 8
ScanSAR (Wide)	500	20...50	100 x100
ScanSAR (Narrow)	300	20...40, 32...36	50 x 50
Extended (High)	75	50...60	28 x 25
Extended (Low)	75	10..20	28 x 25

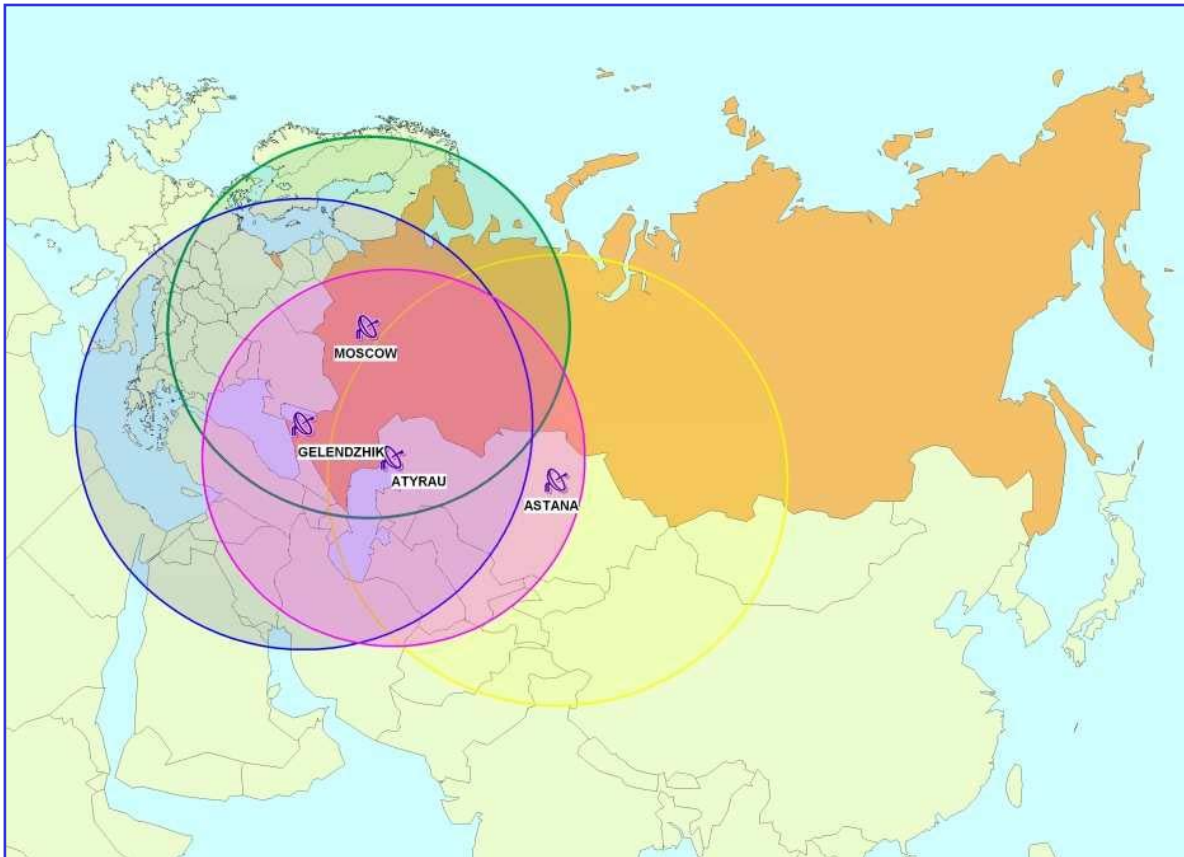
Moscow Archive and Reception Center (MARC) - the first Russian station within the International RADARSAT Network



On 13 October, 2004 R&D Center ScanEx was awarded RADARSAT Station Operations Certification by RADARSAT International and the Canadian Space Agency. This certification is based on successful data ordering, scheduling, reception, and processing during the verification and testing phases.

MARC is the first ground station within Russia and CIS that started receiving data from RADARSAT-1 satellite. Since Nov. 1, 2004 MARC has started acquisition and taking orders from customers for RADARSAT imaging.

Three UniScan™ ground stations for RADARSAT-1 within Russia and Kazakhstan



UniScan™ stations are already installed in receiving centers in Gelendzhik town (“Yuzhmorgeologia” Research Center, Russia), Astana city (Space Research Institute, Republic of Kazakhstan), Atyrau town (“KazGeoCosmos” Company, Republic of Kazakhstan). It is planned to certify these centers for RADARSAT-1 data acquisition and to include them into the International RADARSAT Network in 2004-2005. Each station will have the mask of a radius of 2,000 km

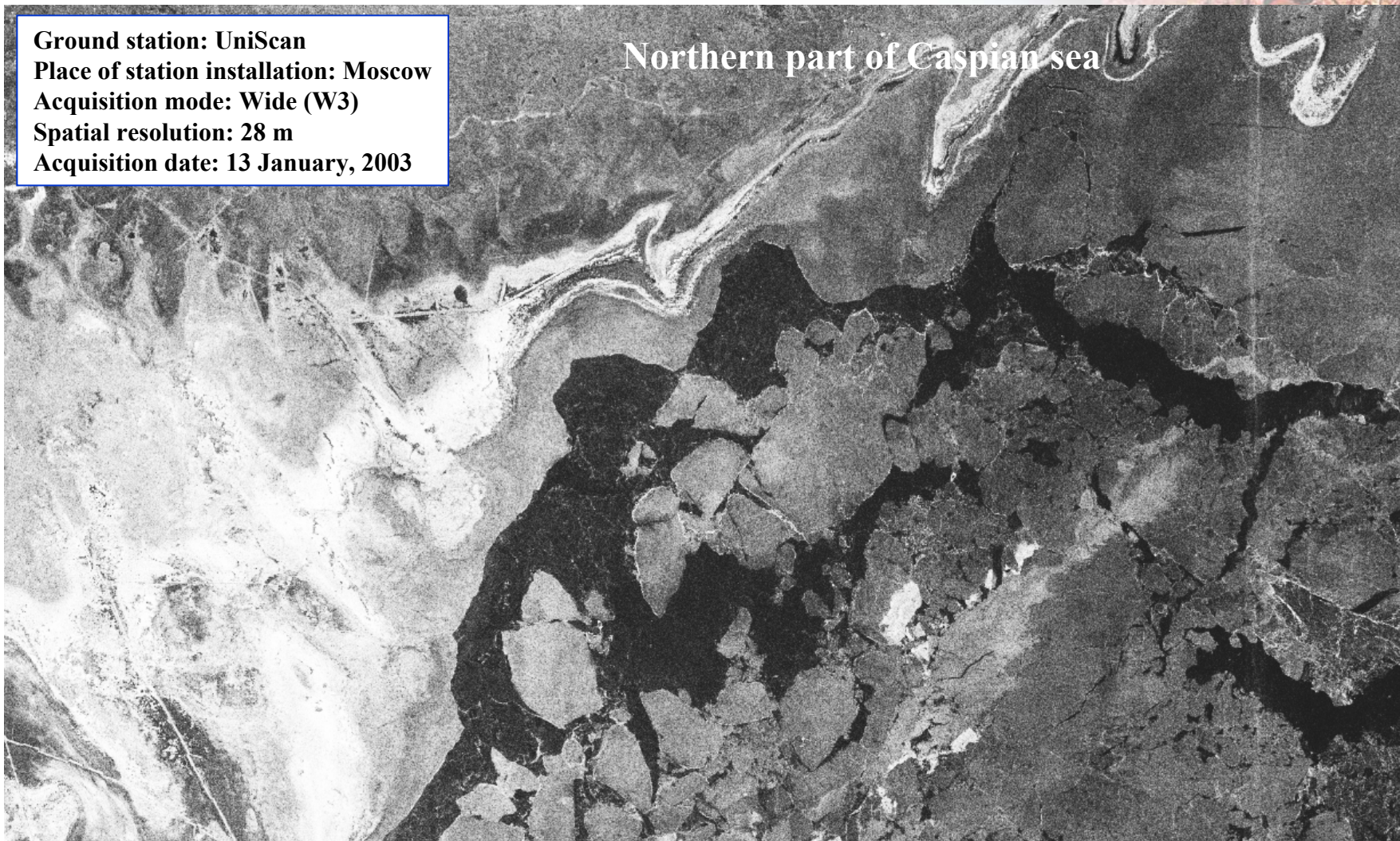
Key RADARSAT Applications

- Geology - Mineral Exploration
- Offshore Exploration - Oil Seeps
- Mapping - DEMs, Land Classification
- Defence - Land Surveillance
- Marine Surveillance - Ship Detection
- Sea Ice monitoring
- Disaster Assessment - Flood Monitoring, Oil Spills, etc.
- Coastal - Coastline Mapping
- Agriculture
- Forestry

One of the first RADARSAT-1 images acquired by UniScan™ station

Ground station: UniScan
Place of station installation: Moscow
Acquisition mode: Wide (W3)
Spatial resolution: 28 m
Acquisition date: 13 January, 2003

Northern part of Caspian sea



RADARSAT Data © Canadian Space Agency/Agence spatiale canadienne 2003.
Distributed under license by RADARSAT International, Inc. All rights reserved.
Data received and processed by RDC ScanEx. Image quality is not certified.
Data distribution is not allowed by RSI.



■ Forest Watch Russia

Global Forest Watch

Global Forest Watch (www.globalforestwatch.org) is an initiative of the World Resources Institute (www.wri.org). In Russia, this initiative has been known as Forest Watch Russia Project since 1998.

GREENPEACE

Participants of the Forest Watch Russia:

Greenpeace Russia,

Biodiversity Conservation Center,

International Socio-ecological Union,

International Forest Research Institute,

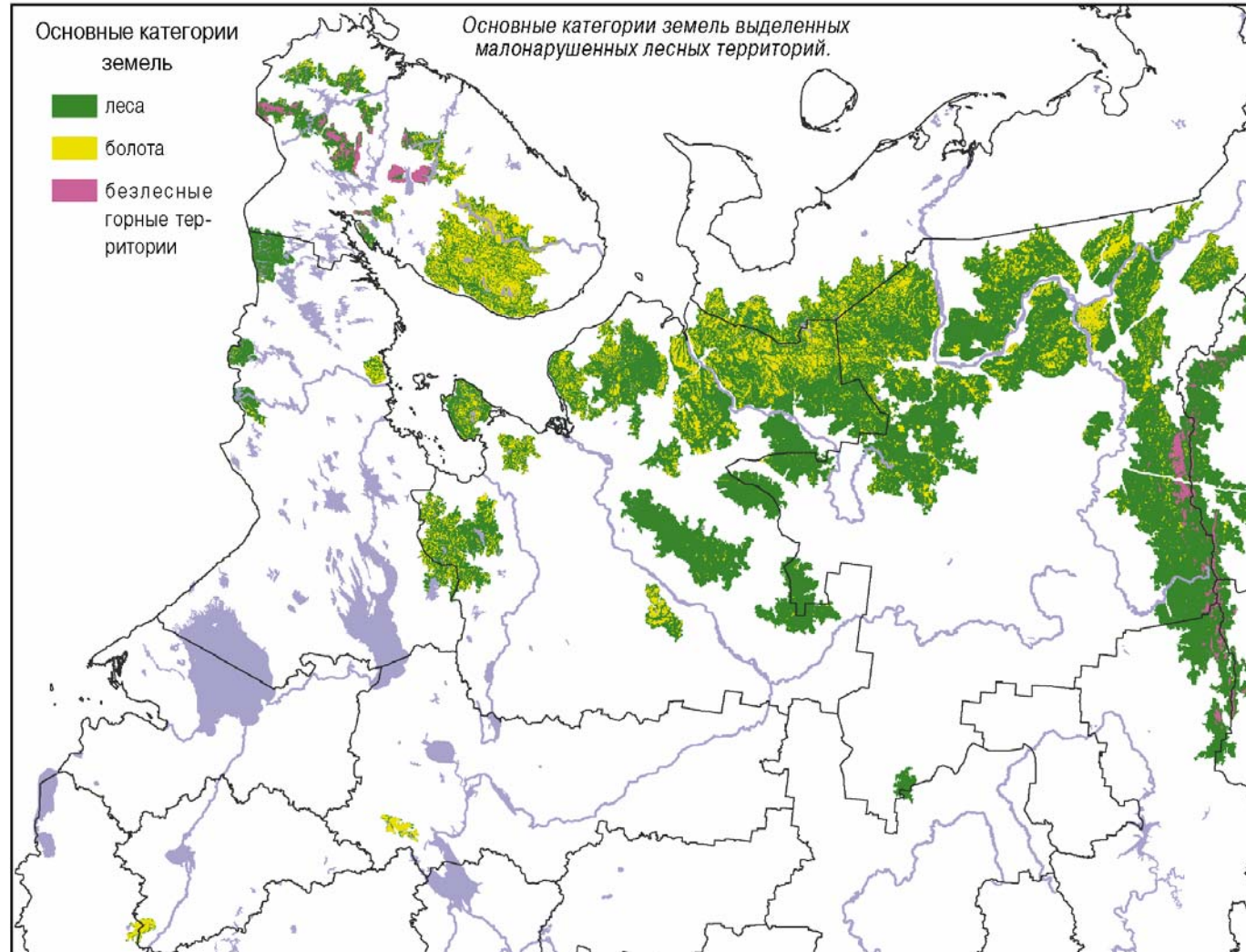
R&D Center ScanEx,

“Altai-XXI Century” Foundation,

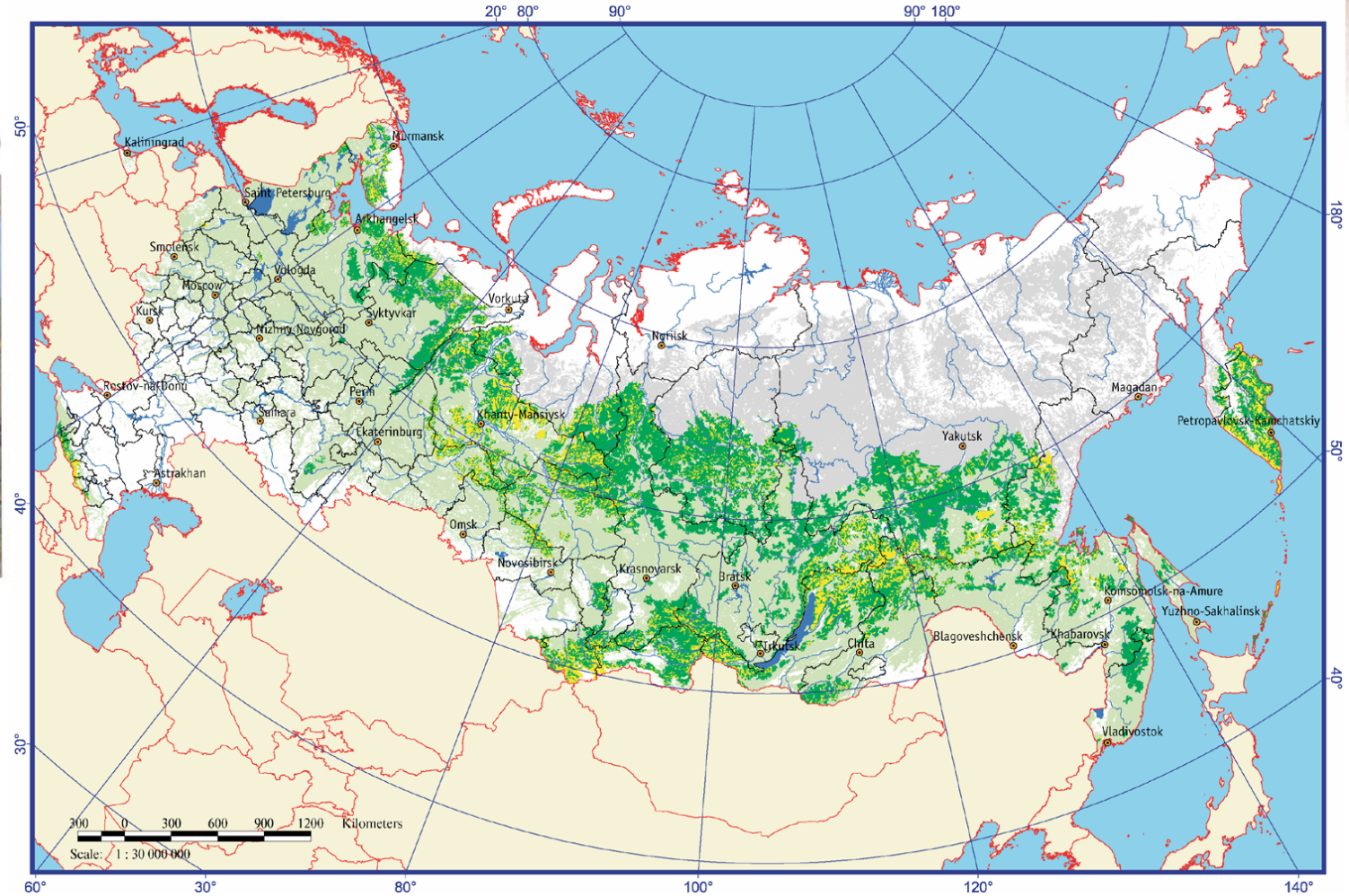
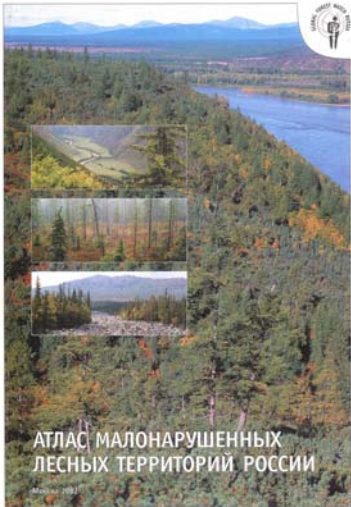
Friends of Siberian Forests (Krasnoyarsk)

and others.

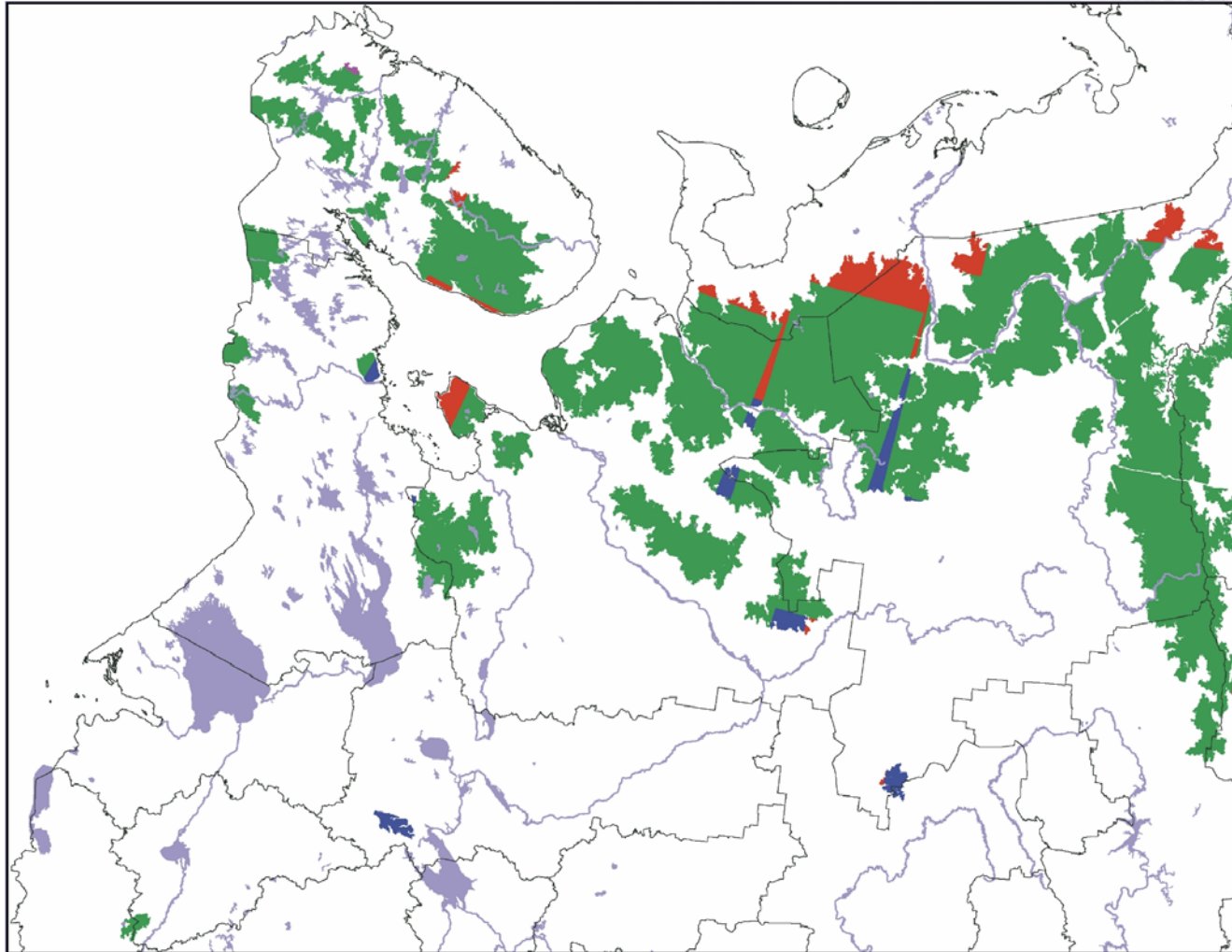
The map of intact forest landscapes of Northern European Russia, 2001



The map of intact forests of Russia, 2002



The RS data map for the Project, 2000



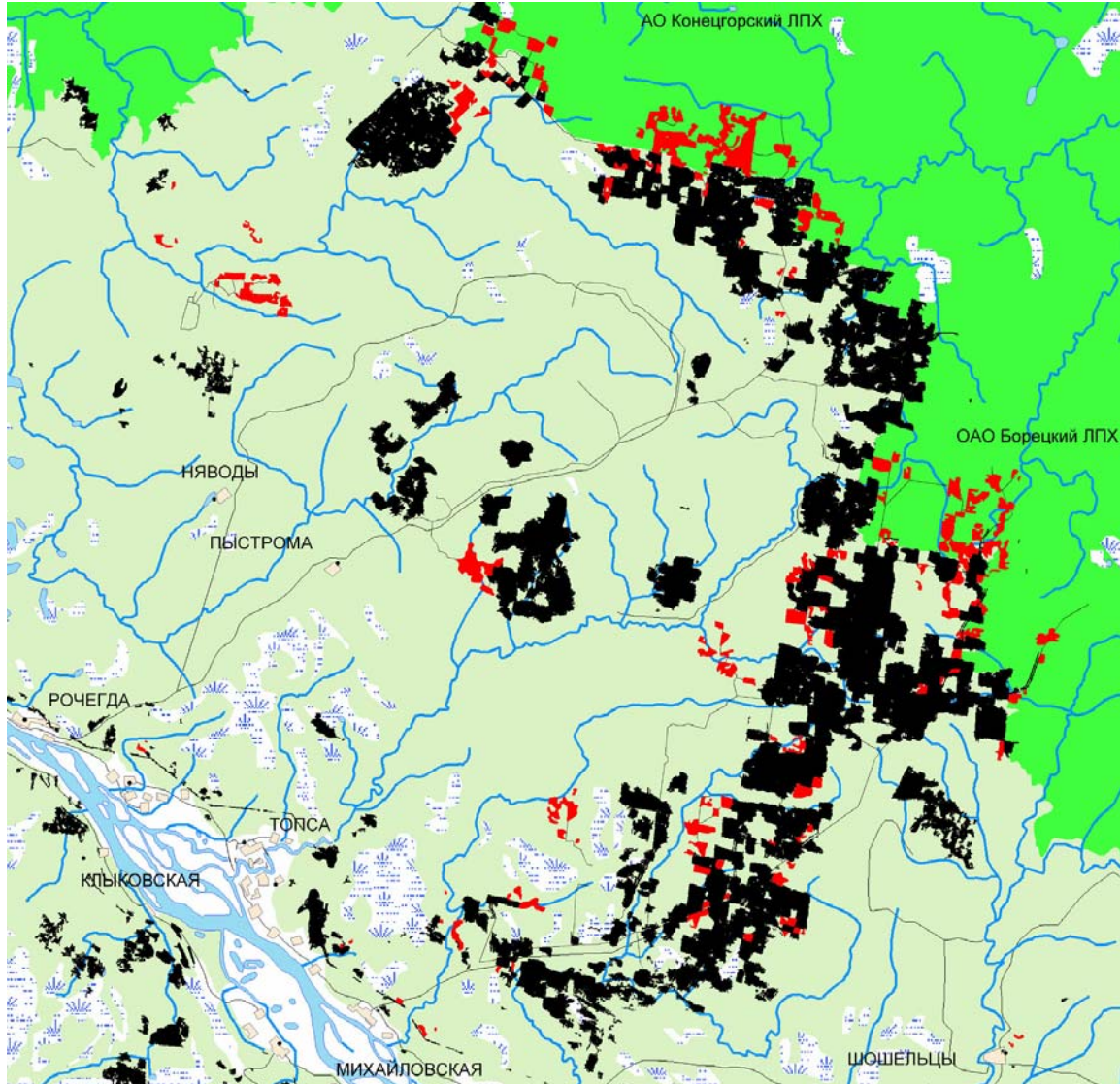
The sources of satellite imagery used to determine the final boundaries is indicated by different colors:

High-resolution images:

Medium-resolution images:

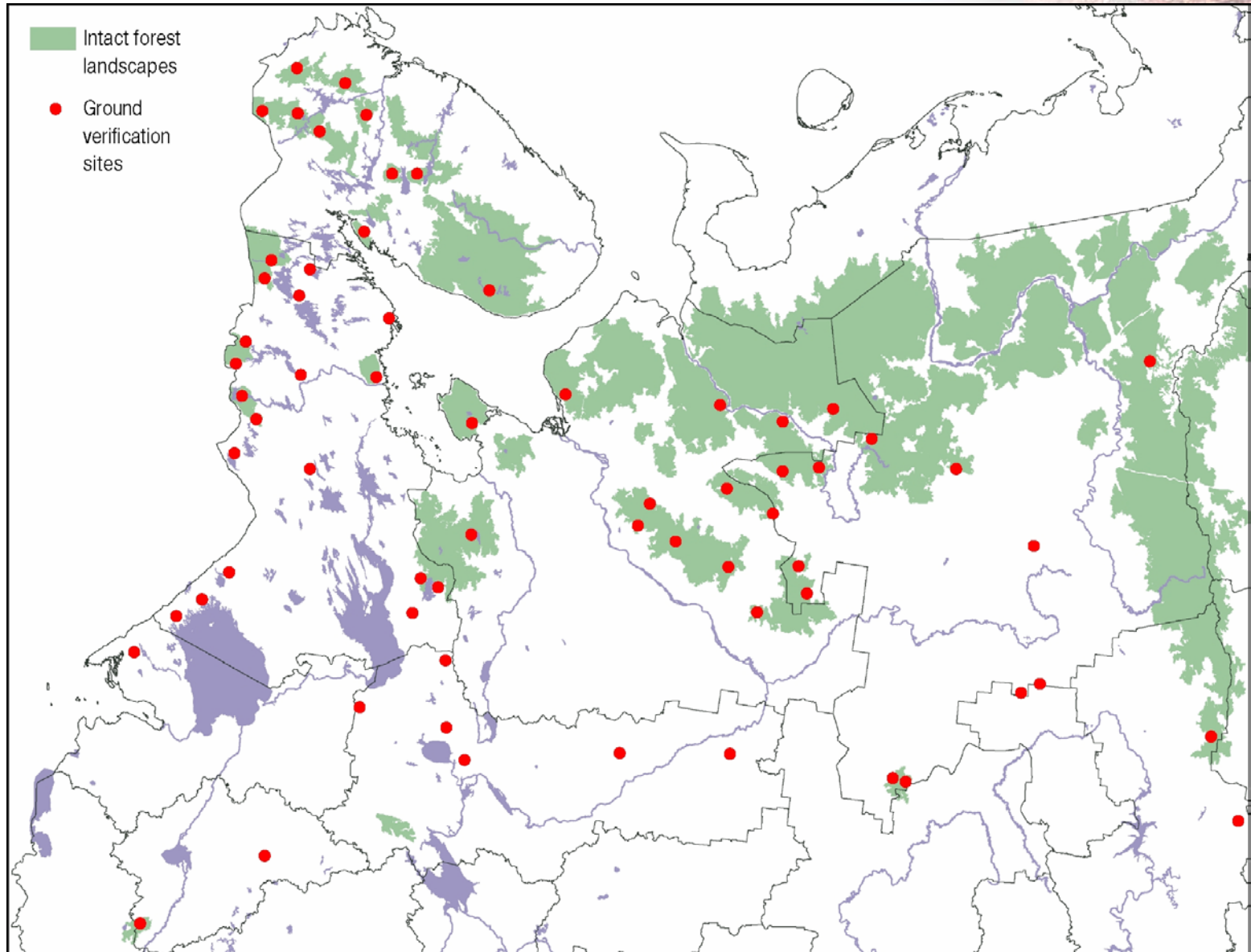
■ Landsat, ETM+ ■ Resurs, MSU-E ■ SPOT, HRV

■ Resurs, MSU-SK

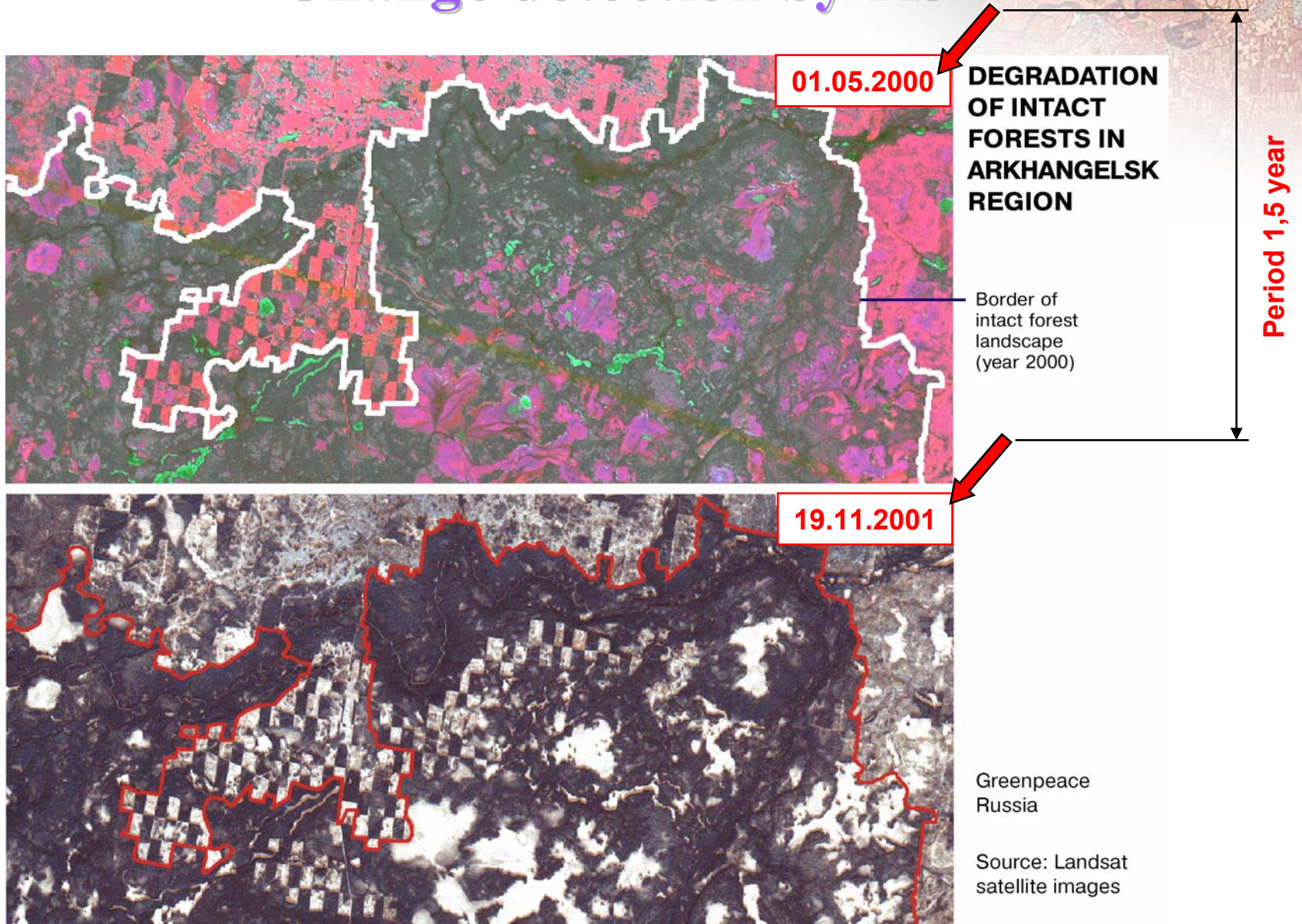


Felling for the period of 1990-2000 (by Landsat 7 mosaics, black) and after year 2000 (by IRS-1C/1D images, red) for the part of watershed of Severnaya Dvina and Pinega. The intact forests are shown in green according to the Atlas of Intact Forests of Russia

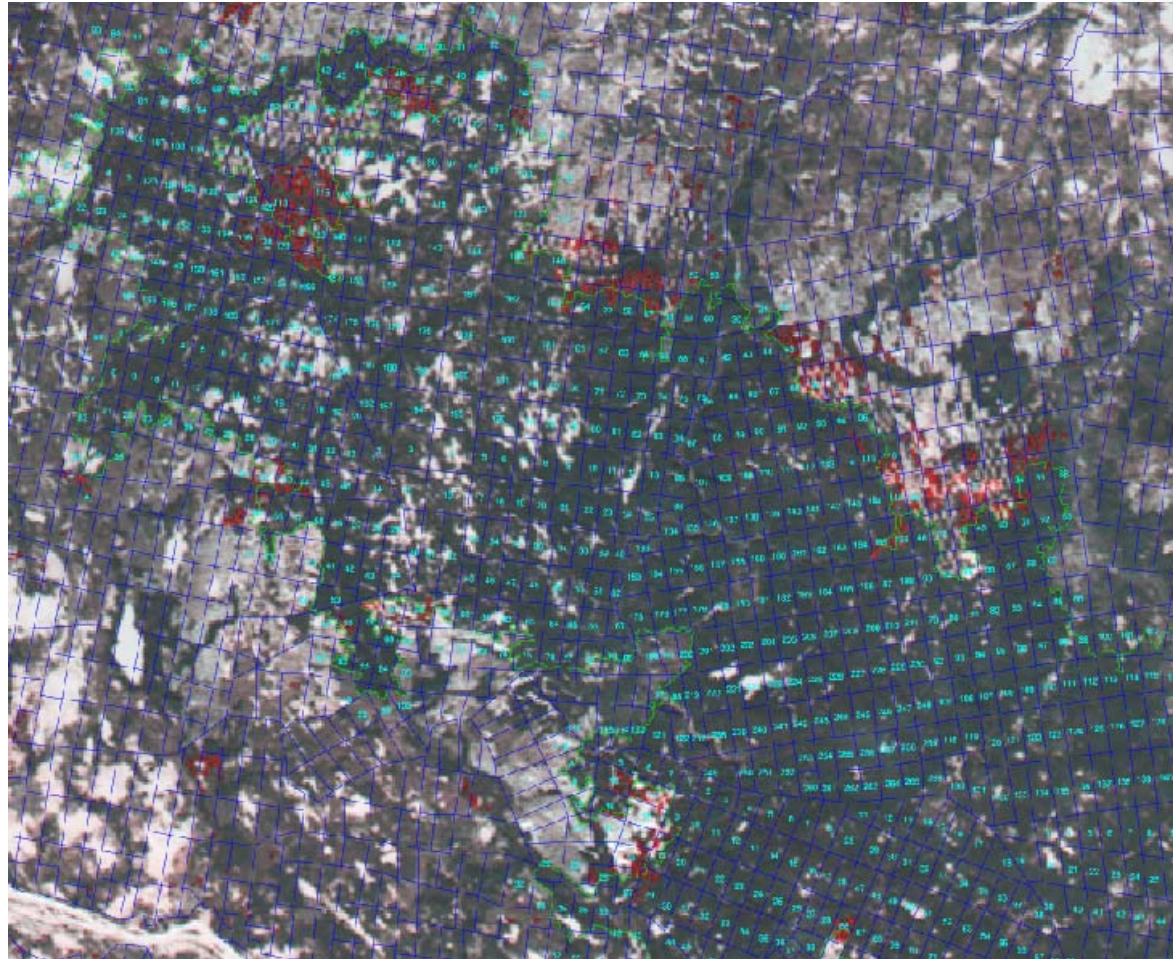
The ground verification sites



Change detection by RS

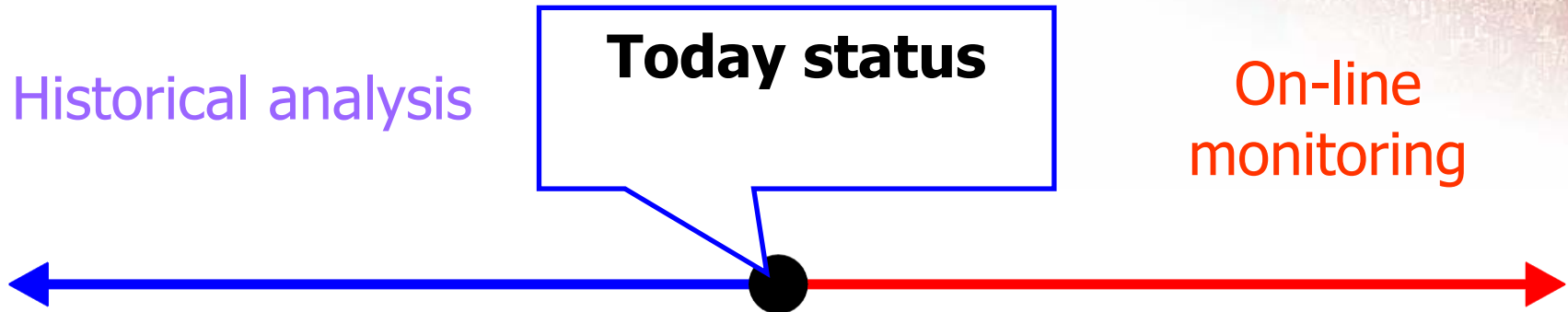


MODIS data detect changes (shown in red) as a result of felling in 2001-2004



Watershed of Dvina and Pinega rivers

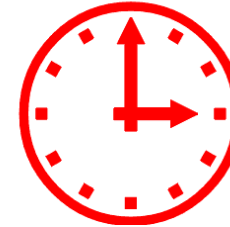
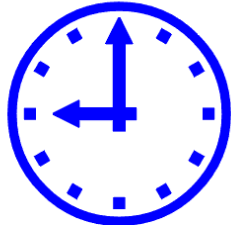
Monitoring of intact forests



Historical analysis

Today status

On-line
monitoring



Landsat MSS (1972...)

Landsat TM(1989...)

Landsat 7 ETM+ (1999...)

Resource-O1 – Meteor-3M (1996...)

IRS LISS, PAN (since 2002...)

Terra ASTER (since 2000...)

Terra MODIS (since 2000...)

On-line monitoring of intact forests

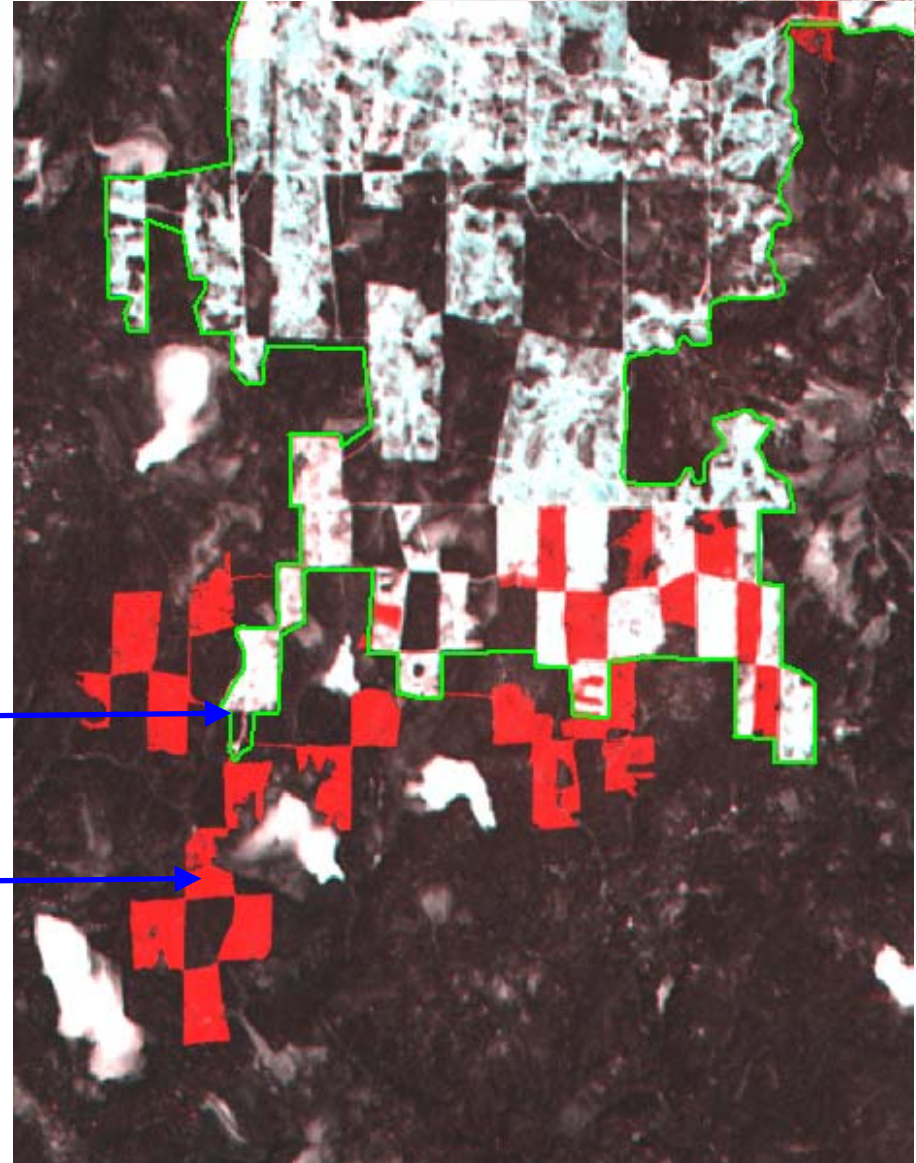
Monitoring of intact forests using the high resolution satellite images.

Joint Project of Greenpeace Russia and ScanEx R&D Center

Landsat 7, 2000 + IRS PAN, 2004

Border of intact forests

New clearings

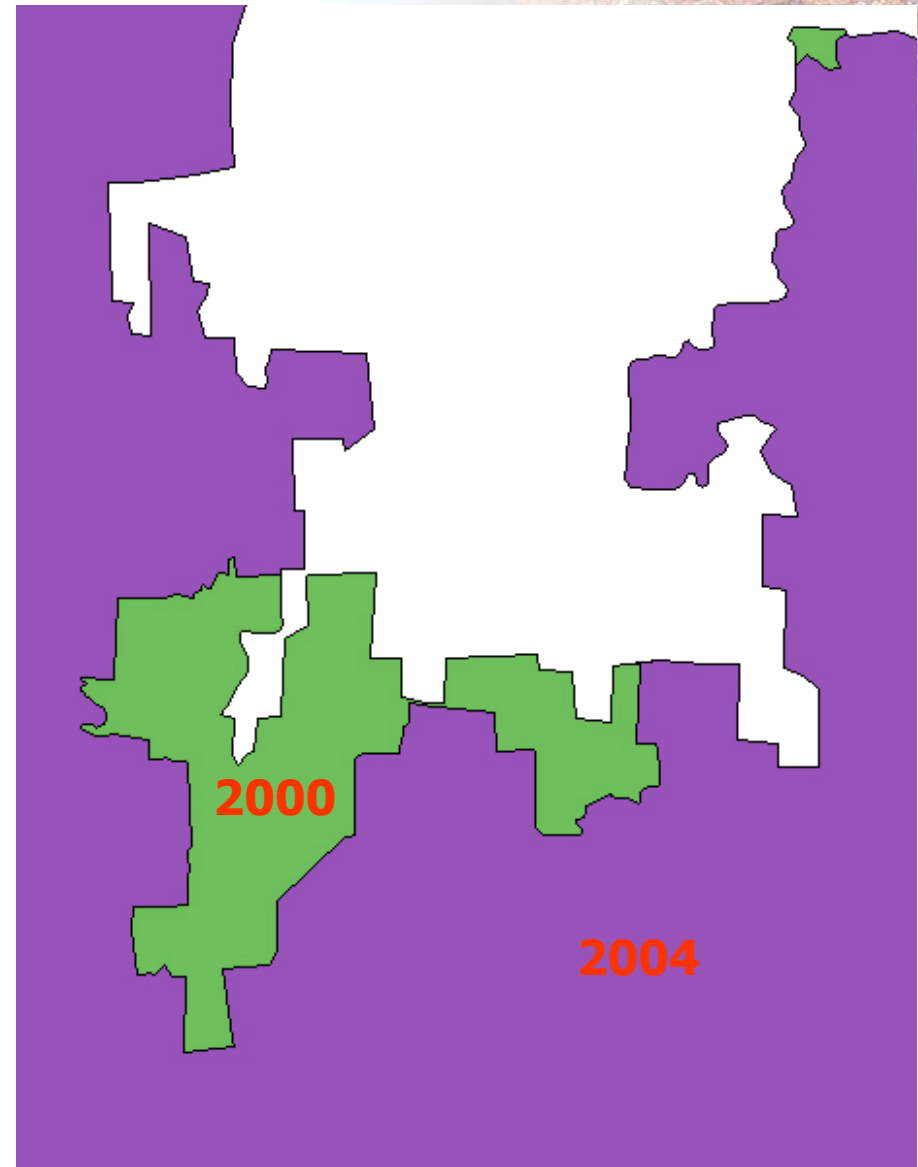


On-line monitoring of intact forests

Monitoring of intact forests using the high resolution satellite images.

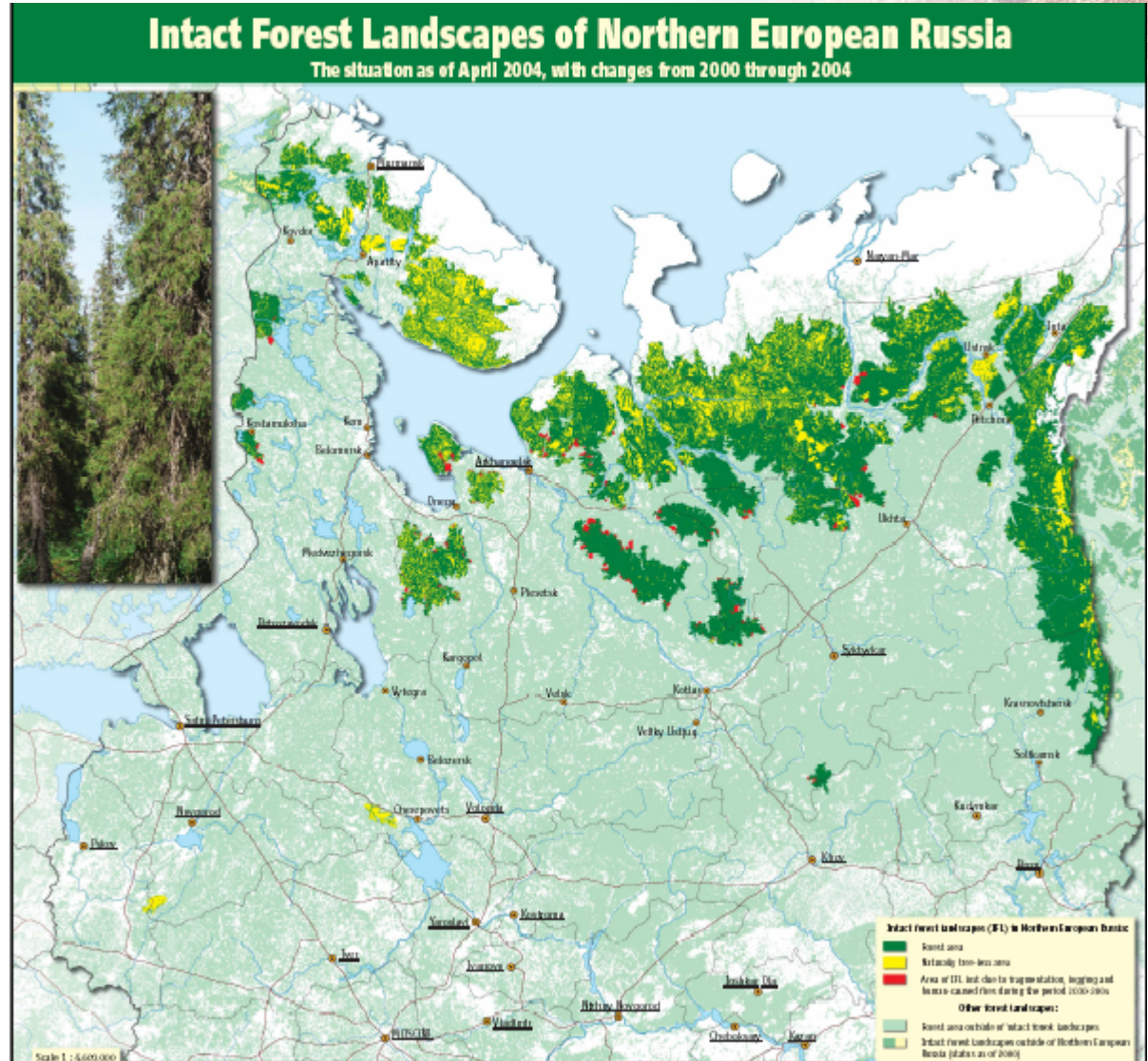
Joint Project of Greenpeace Russia and ScanEx R&D Center

The result – the map of intact forests for year 2004

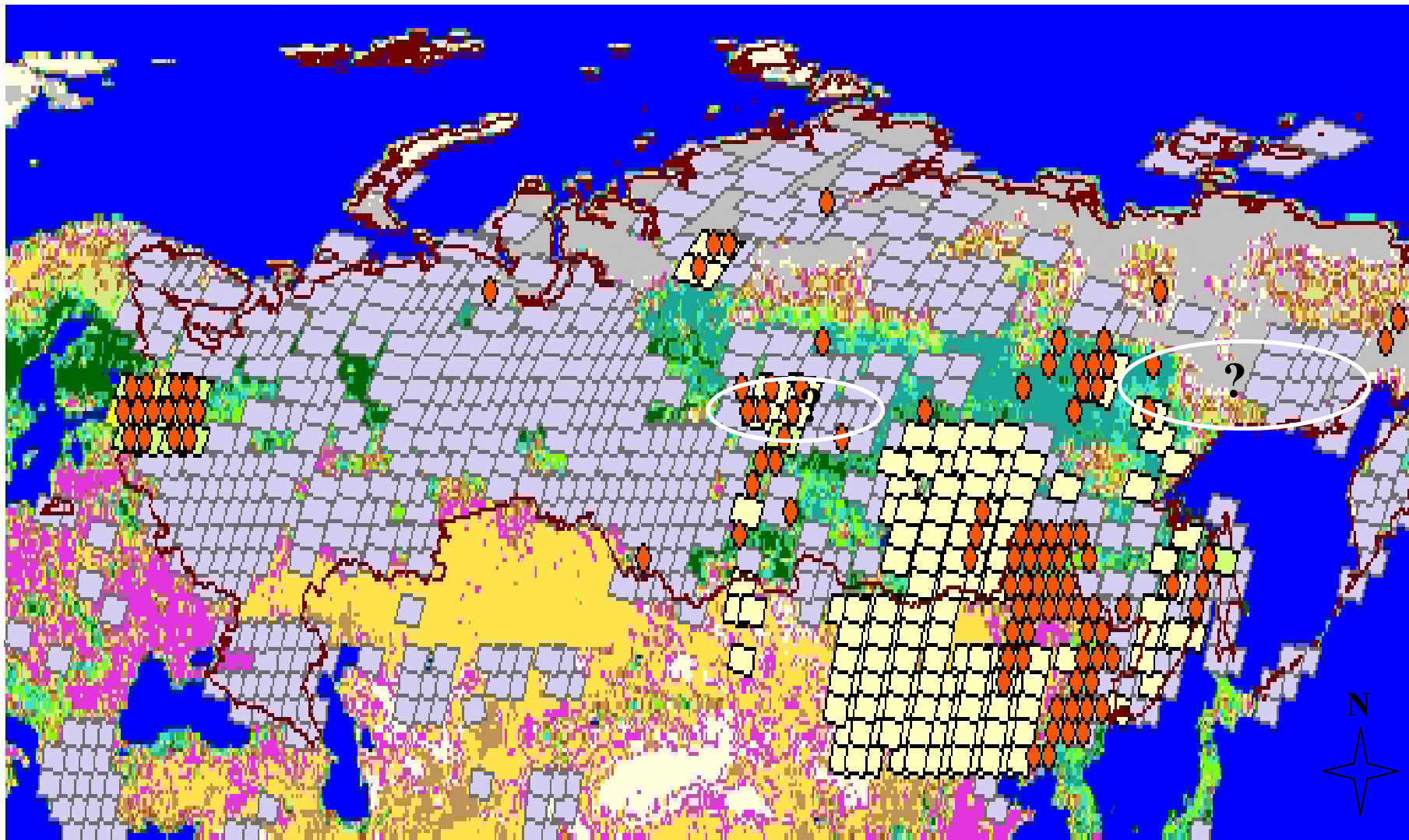


On-line monitoring of intact forests

Results of monitoring of intact forests of Northern European Russia in 2000-2004

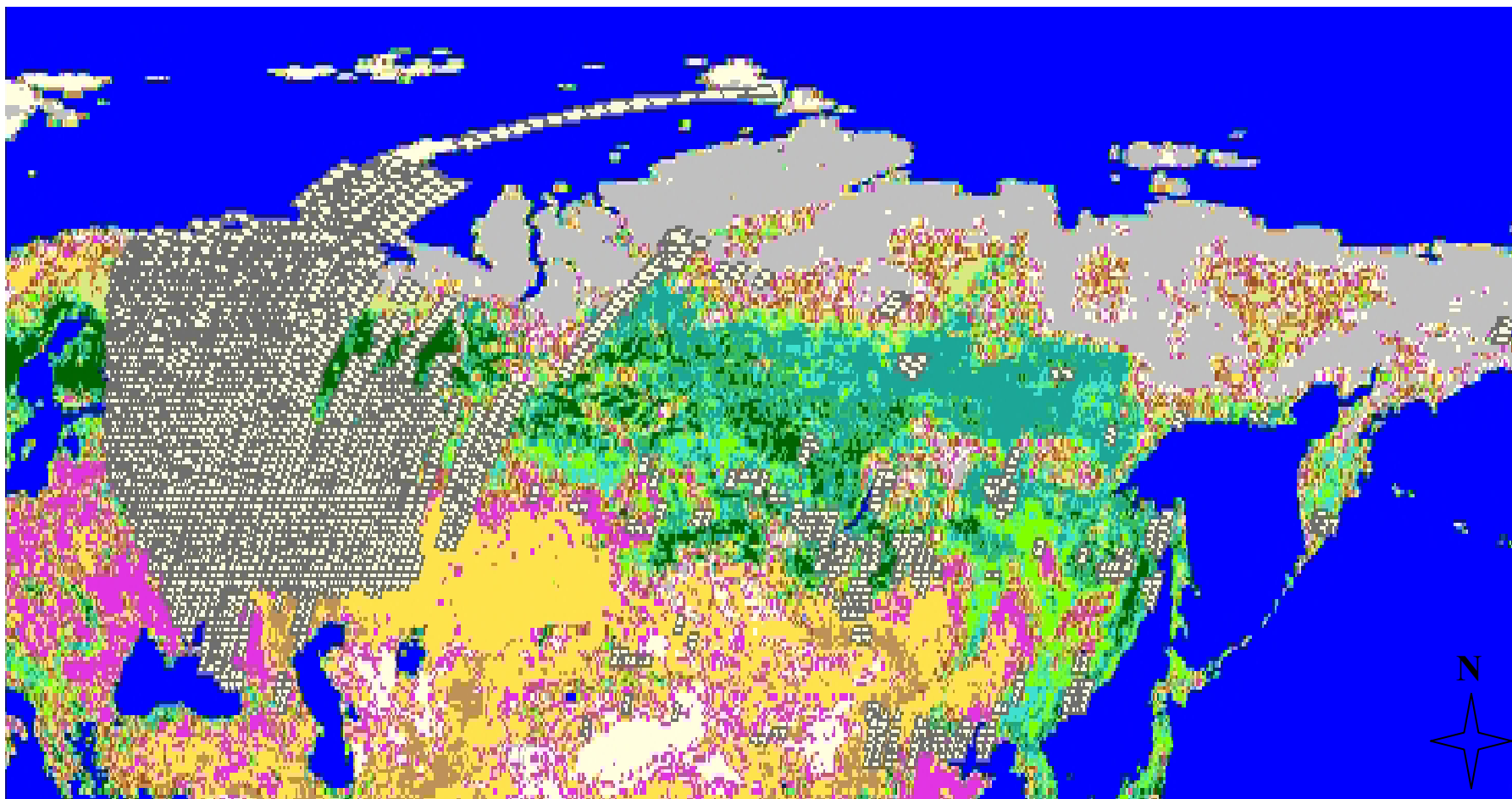


- RS data availability for the
NEESPI

















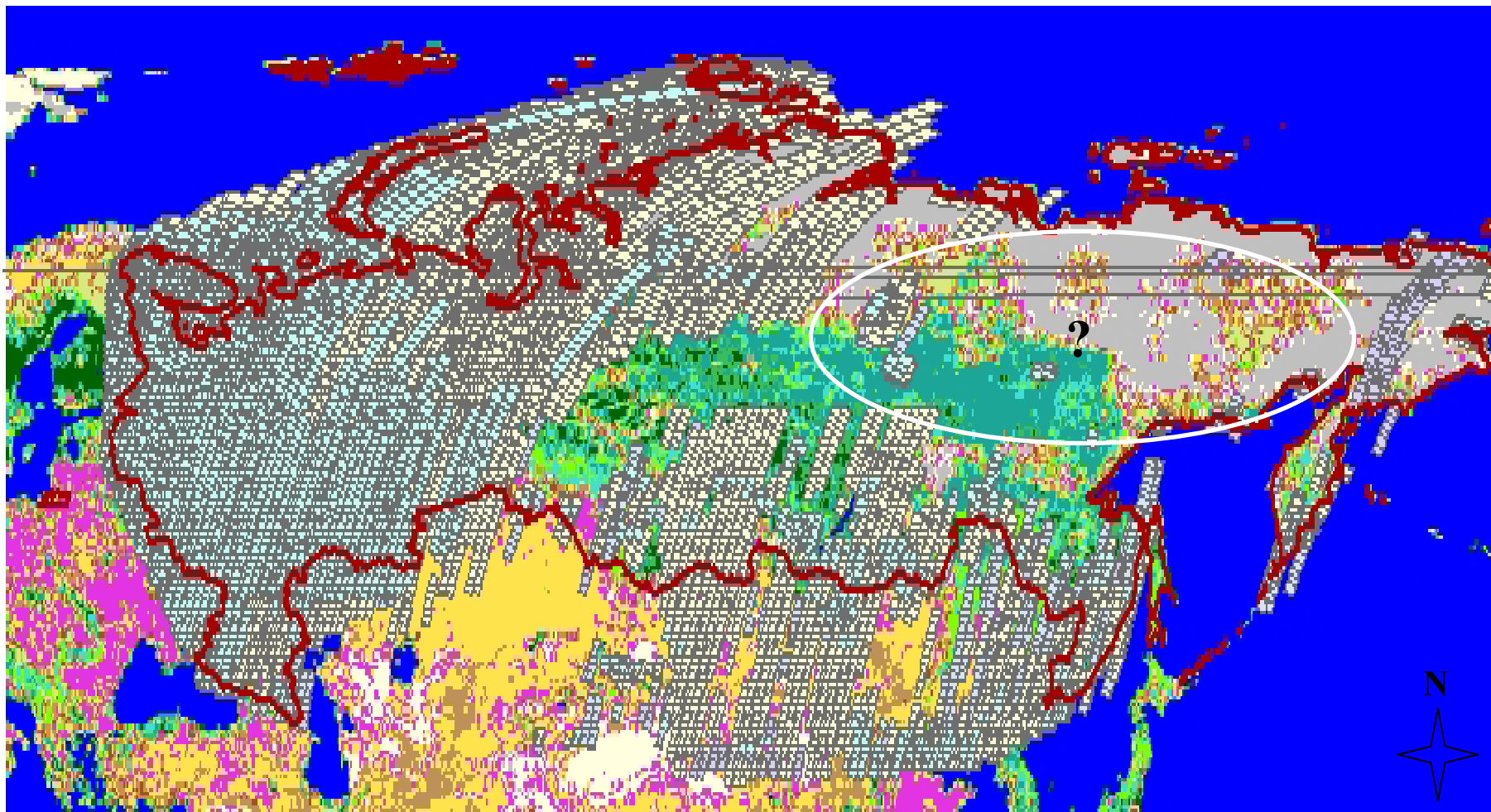
- NEESPI, Landsat ETM+ (158 scenes)
- SCANEX, Landsat ETM+
- MAPSTER, Landsat ETM+
- NEESPI, Landsat TM
- NEESPI, Landsat MSS

- | | |
|-------------------------------|--------------------|
| ■ Water | ■ Closed Shrubland |
| ■ Evergreen Needleleaf Forest | ■ Open Shrubland |
| ■ Evergreen Broadleaf Forest | ■ Grassland |
| ■ Deciduous Needleleaf Forest | ■ Cropland |
| ■ Deciduous Broadleaf Forest | ■ Bare Ground |
| ■ Mixed Forest | ■ Tundra/Taiga |
| ■ Woodland | |

















SPOT 10m Pan (early)
(10193 scenes), 1986-1987

- | | |
|---|--|
|  Water |  Closed Shrubland |
|  Evergreen Needleleaf Forest |  Open Shrubland |
|  Evergreen Broadleaf Forest |  Grassland |
|  Deciduous Needleleaf Forest |  Cropland |
|  Deciduous Broadleaf Forest |  Bare Ground |
|  Mixed Forest |  Tundra/Taiga |
|  Woodland | |
|  | |

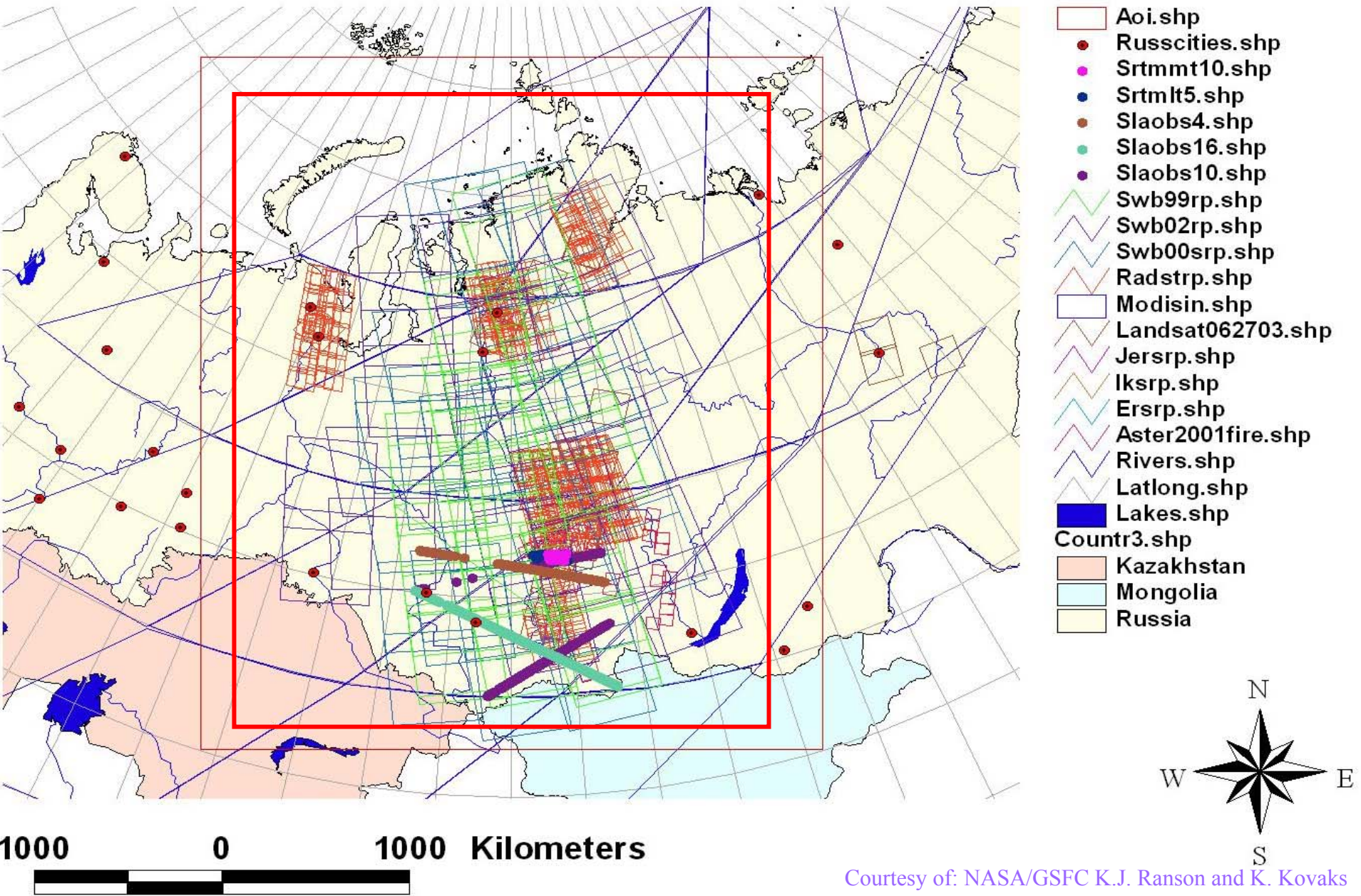


SPOT 10m Pan
(48159 scenes), 1986-1996

- | | |
|---|--|
|  Water |  Closed Shrubland |
|  Evergreen Needleleaf Forest |  Open Shrubland |
|  Evergreen Broadleaf Forest |  Grassland |
|  Deciduous Needleleaf Forest |  Cropland |
|  Deciduous Broadleaf Forest |  Bare Ground |
|  Mixed Forest |  Tundra/Taiga |
|  Woodland | |
|  | |

Siberia Mapping Project Data

Note: These data are a small portion of existing data



RS data Archives of ScanEx R&D Center

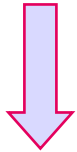
www.scanex.ru

SENSOR	SATELLITE	NUMBER OF SPECTRAL BANDS (RANGE)	SPATIAL RESOLUTION, M	SWATH WIDTH, KM	TERMS OF DATA COLLECTION, YEARS
PAN	IRS-1C/1D	1 (visible)	5.8	70	2002 - ...
<i>LISS-3</i>	<i>IRS-1C/1D</i>	<i>3 (visible ... near IR)</i>	<i>23</i>	<i>140</i>	<i>2002 - ...</i>
ETM+	Landsat 7	8 (visible ... thermal IR)	15, 30, 60	185	1999 - ...
<i>TM</i>	<i>Landsat 4, 5</i>	<i>7 (visible ... thermal IR)</i>	<i>30, 120</i>	<i>180</i>	<i>1984 - 1996</i>
MODIS	Terra, Aqua	36 (visible ... thermal IR)	250, 500, 1000	2 300	2000 - ...
<i>ASTER</i>	<i>Terra</i>	<i>14 (visible ... thermal IR)</i>	<i>15, 30, 90</i>	<i>60</i>	<i>2000 - ...</i>
MSU-E	Resurs-O1 Meteor-3M	3 (visible ... near IR)	35 40	45 60	1996 - ...
<i>MSU-SK</i>	<i>Resurs-O1</i>	<i>4 (visible ... near IR)</i>	<i>140</i>	<i>600</i>	<i>1996 - 2000</i>

RS data Archives of R&D Center ScanEx

www.scanex.ru

Commercial Archives



IRS-1C/1D – Pan, LISS-3

RESURS-O1/Meteor-3M – MSU-E

RESURS-O1 – MSU-SK

Terra/Aqua - MODIS

Landsat 7 – ETM+

Non-Commercial Archives



Landsat 7 – ETM+

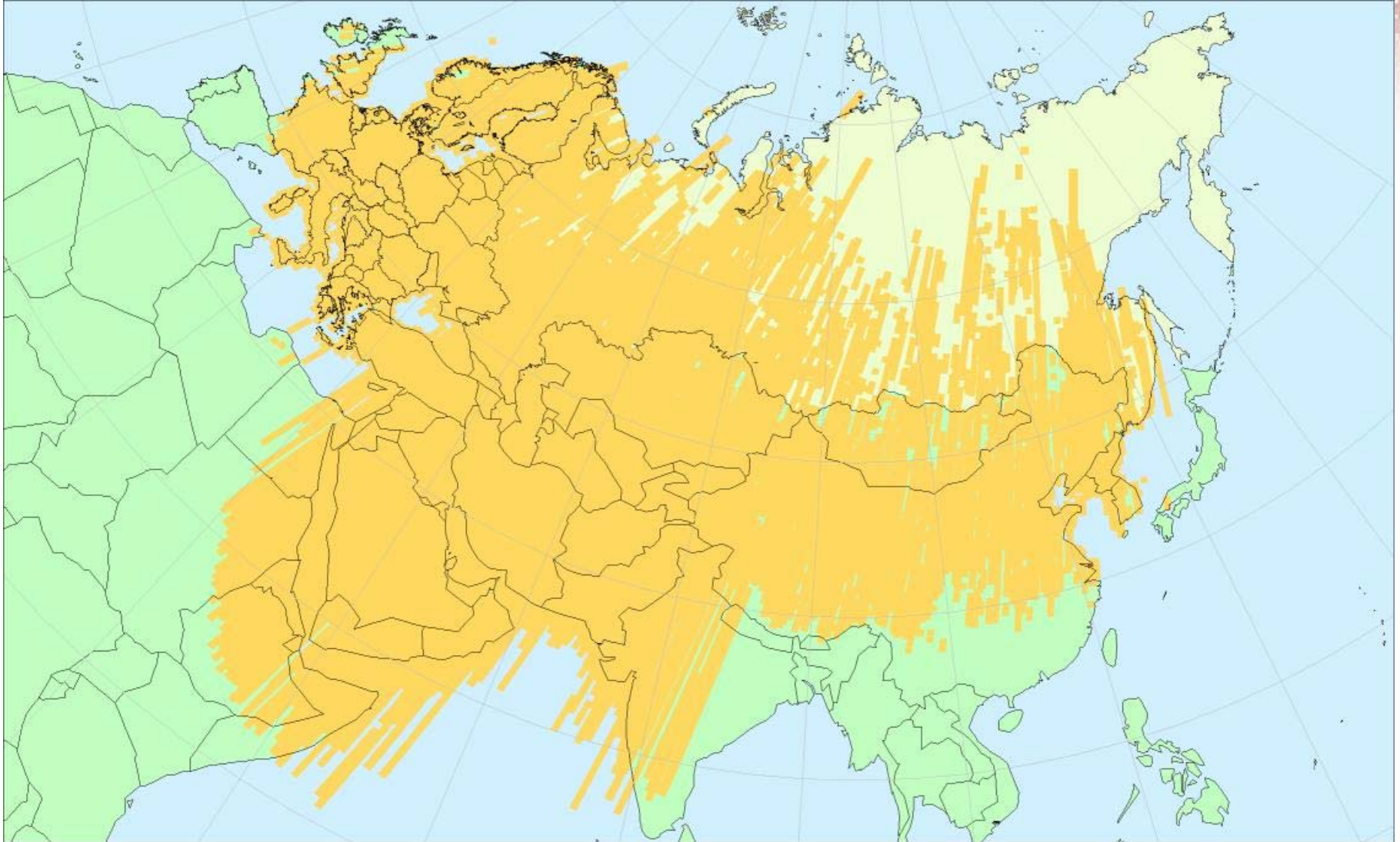
Landsat 4,5 – TM

Terra - ASTER

Terra/Aqua - MODIS

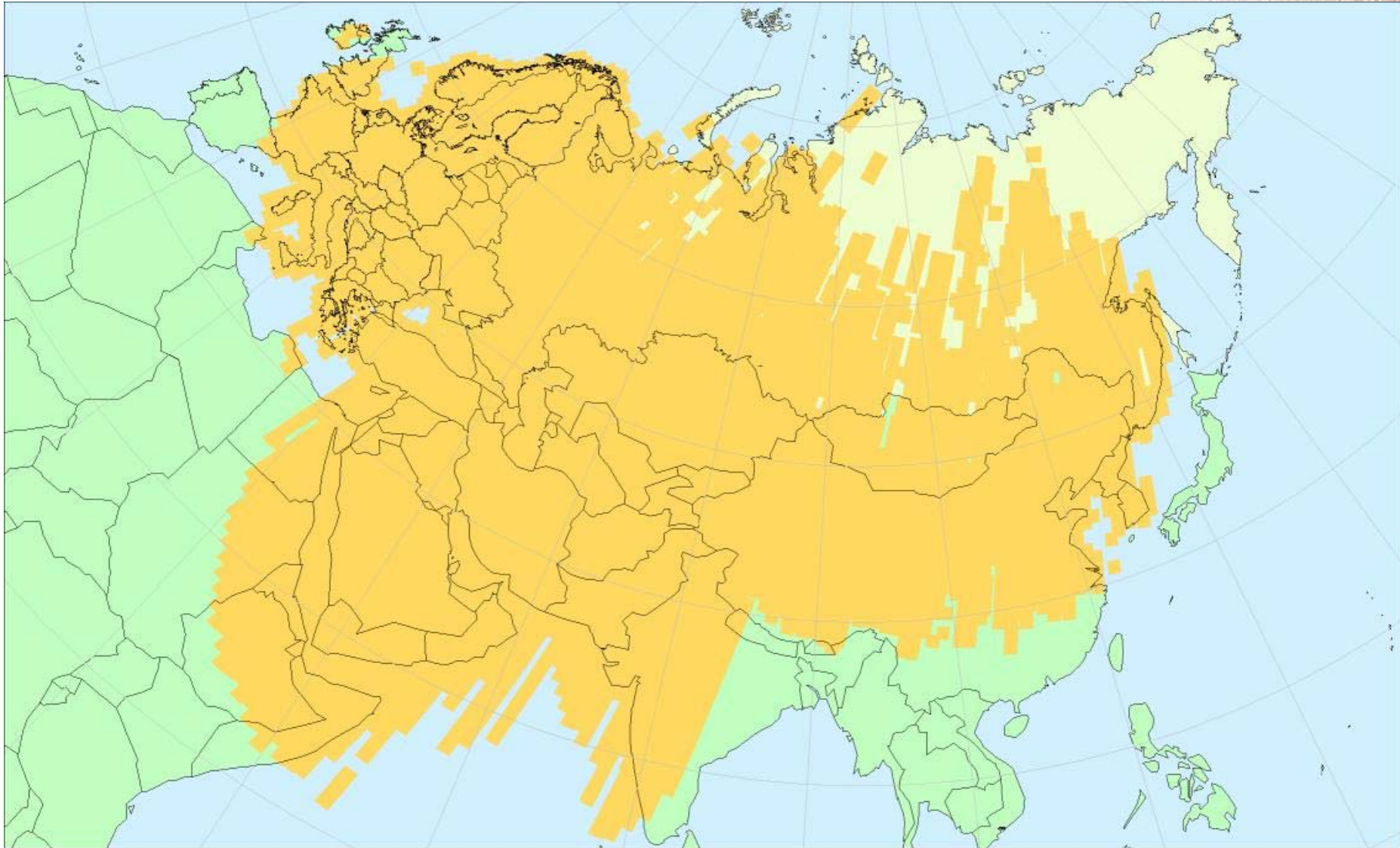
IRS-1C/1D PAN image archive of R&D Center ScanEx

(December, 2004 – **total 48,050 scenes**)

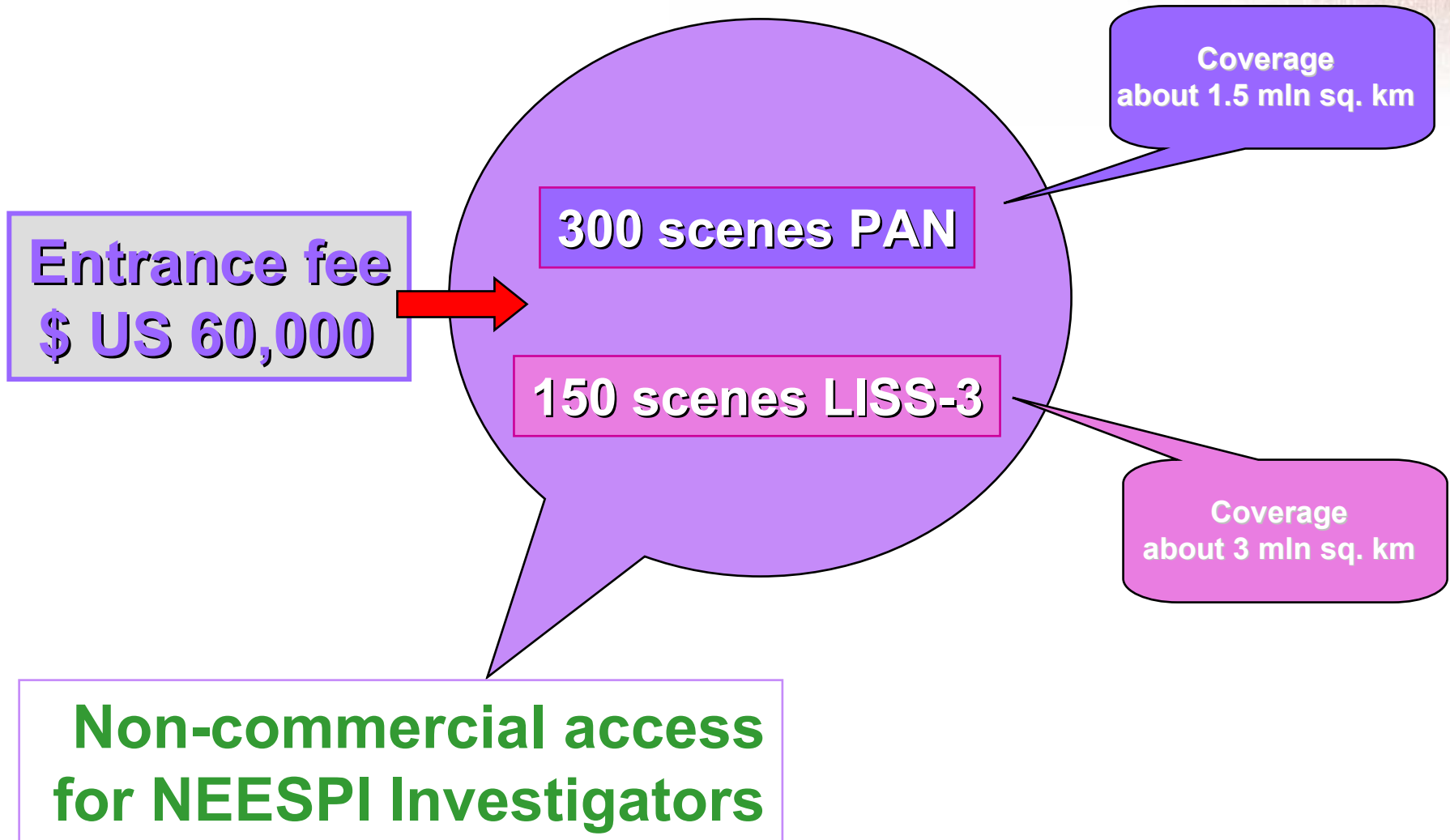


IRS-1C/1D LISS-3 image archive of R&D Center ScanEx

(December, 2004 – **total 22,685 scenes**)



How to implement IRS-1C/1D data for NEESPI?



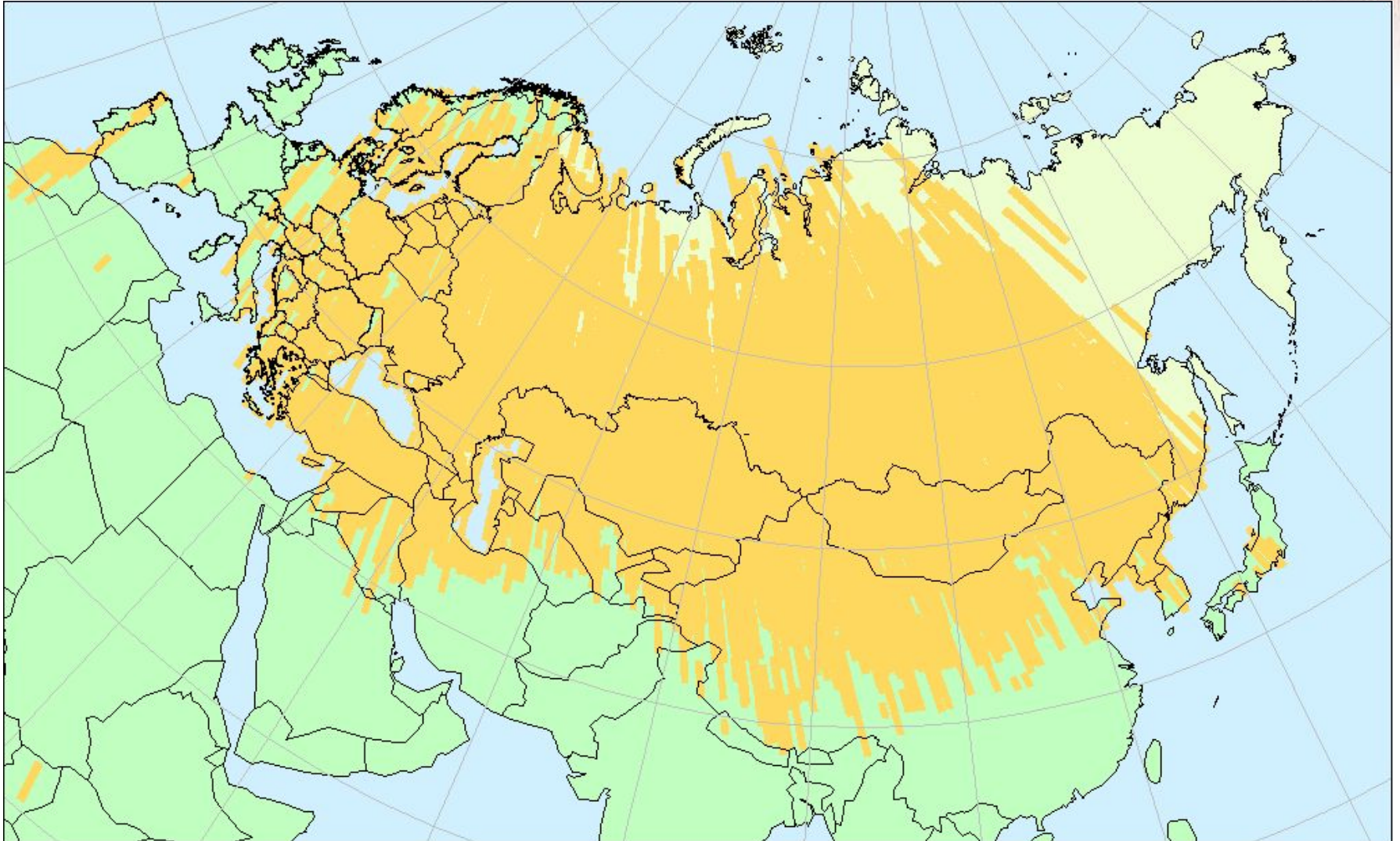
Resource-O1 MSU-E image commercial archive of R&D Center ScanEx

(December, 2004 – total 5,181 scenes)



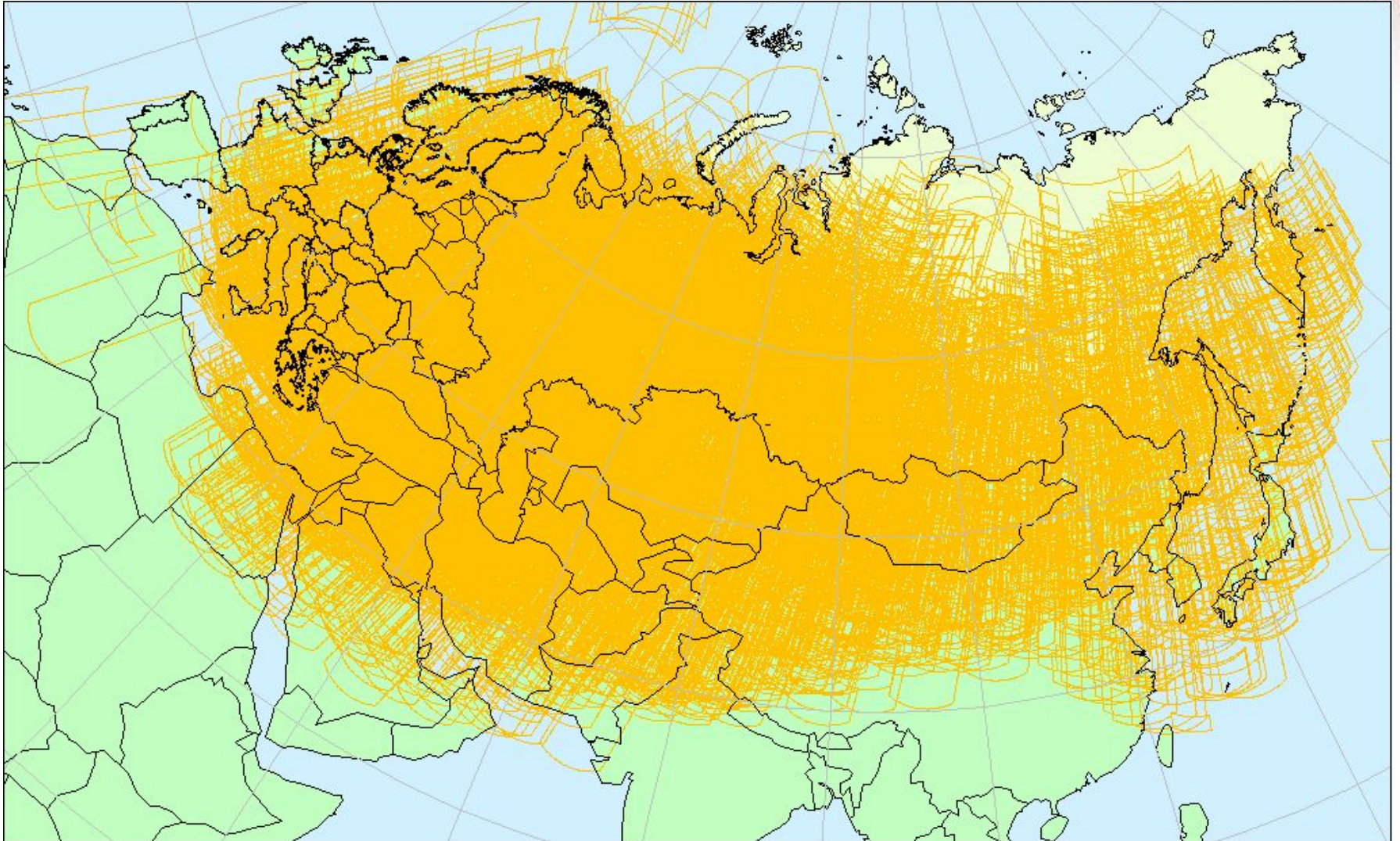
Meteor-3M MSU-E image commercial archive of R&D Center ScanEx

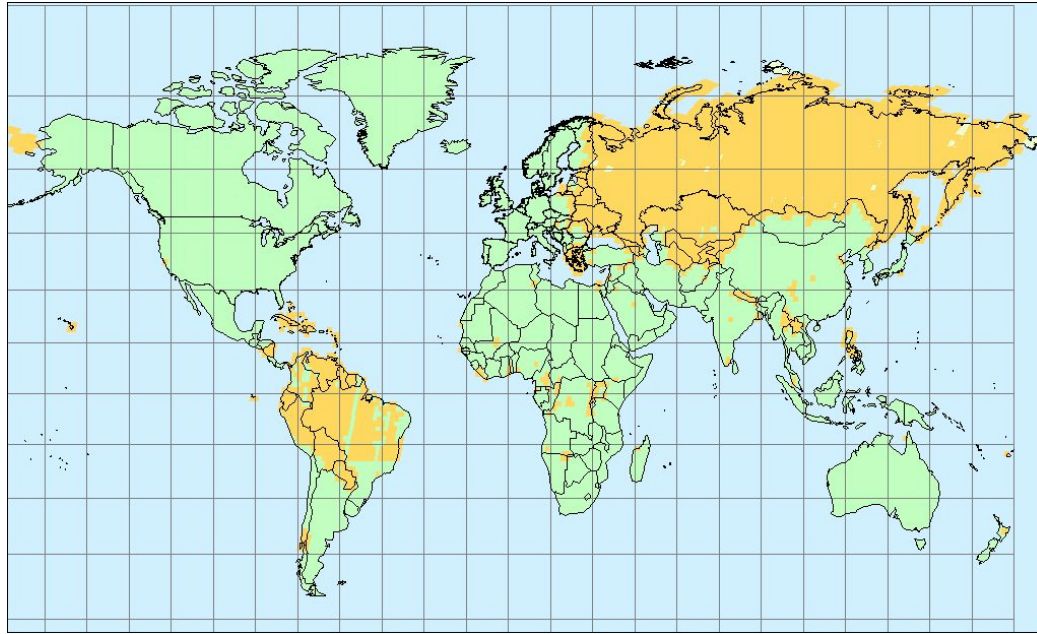
(December, 2004 – total 3,707 scenes)



Resource-O1 MSU-SK image commercial archive of R&D Center ScanEx

(December, 2004 – total 4,382 scenes)



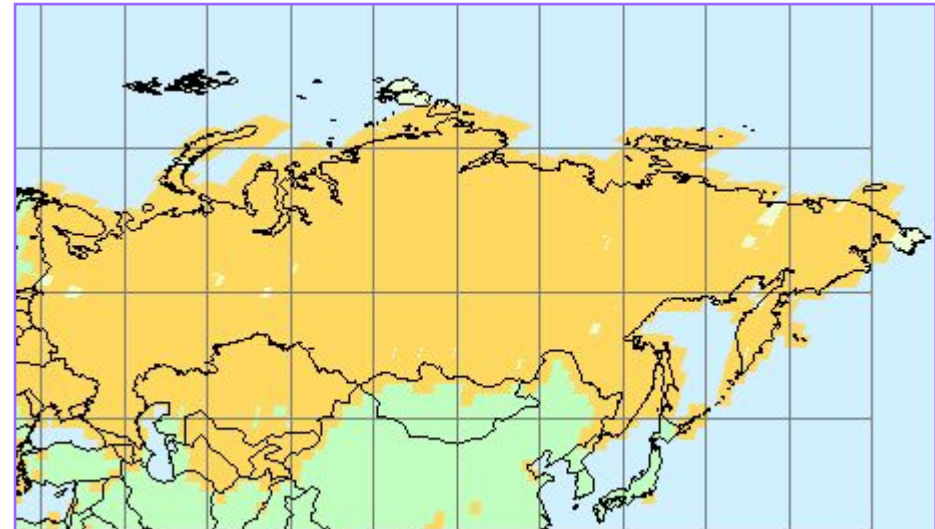


World

Present status
December, 2004

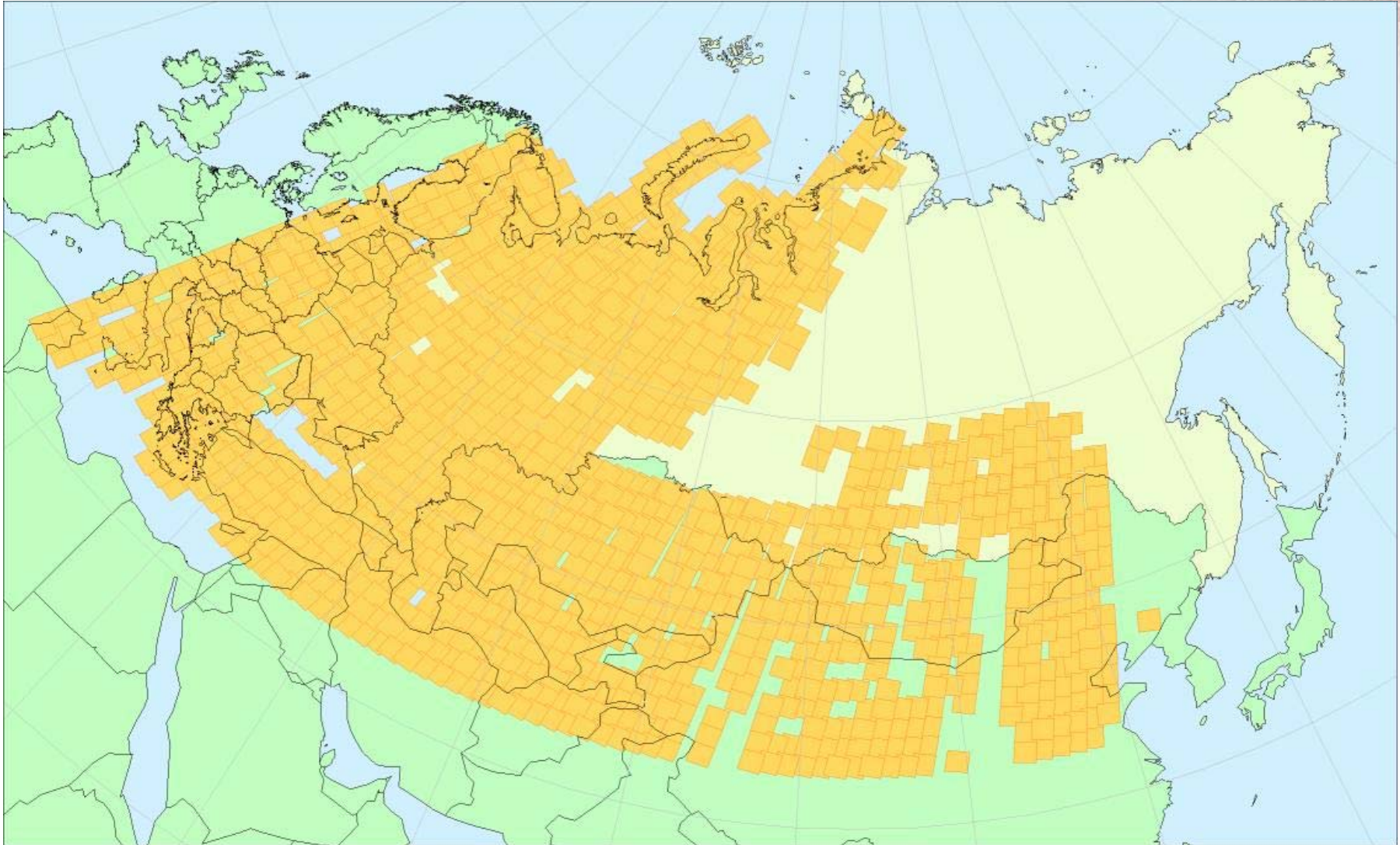
51 participants,
~ 2 900 scenes

Russia



Landsat 4,5 image non-profit archive of R&D Center ScanEx for Russia

(April, 2004 – **total 1,327 scenes**)



Terms of Membership

Russian non-commercial environmental organizations.

Participation in the Project is provided by **World Resources Institute** within the frame of the **Global Forest Watch Project**

- Entrance fee – none.
- Period of participation – unlimited.
- Cost of a scene copying – US \$ 5.

Governmental, research and non-commercial organizations.

- Entrance fee - 1 scene, or a financial contribution of an equivalent amount.
- Period of participation – unlimited.
- Cost of a scene copying – US \$ 25.

Educational organizations

- Entrance fee - 1 scene, or a financial contribution of equivalent amount.
- Period of participation – unlimited.
- Cost of a scene copying – US \$ 25.

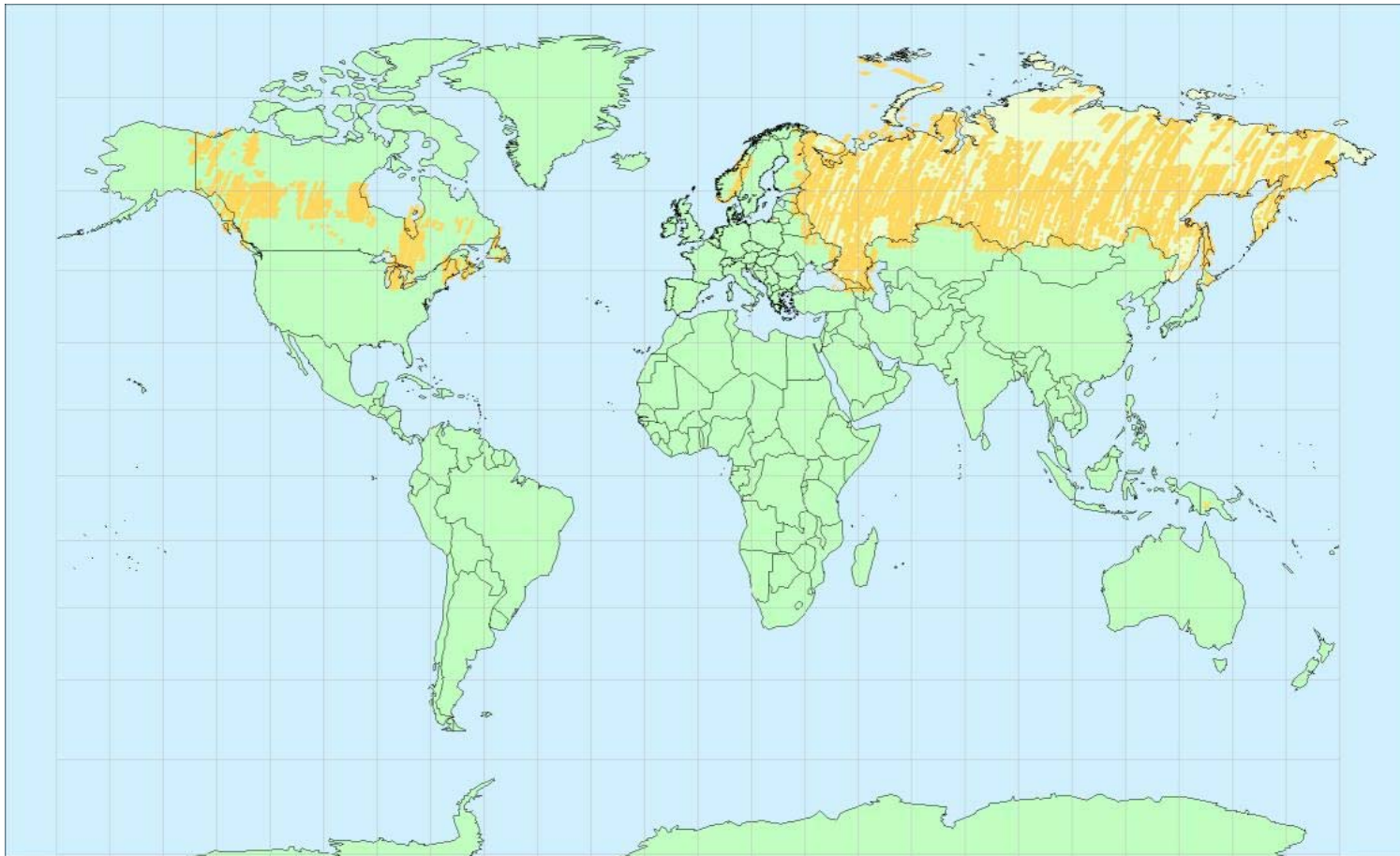
Commercial organizations

- Entrance fee (one-time payment) – 10 Landsat 7 images or a financial equivalent of commercial price of 10 images.
- Period of participation – unlimited.
- Cost of a scene copying – US \$ 25.

Joint Project of Socio-Ecological Union International, Biodiversity Conservation Center and R&D Center ScanEx with support of World Resources Institute (www.wri.org) in frames of Global Forest Watch Project (www.globalforestwatch.org)

www.transparentworld.ru

ASTER data coverage in frames of the Project. April, 2004 (total 7,791 scenes)



Cost of 1 image:

Russian non-profit environmental organizations - \$ 5

Governmental, research, non-profit, educational organizations - \$ 25

Commercial organizations - \$ 120

Internet-store of satellite images will be opened in December, 2004

www.kosmosnimki.ru

The screenshot displays the kosmosnimki.ru website interface. On the left, a browser window shows a satellite image preview of a river valley. The main area features a map with various regions highlighted in green and red, and a search bar containing 'Жуковский'. To the right, there are navigation controls, a search button, and product details for a 10x10 km satellite image priced at 40 rubles. Below the map, there are links for 'примеры снимков' and 'как можно использовать космические снимки'. At the bottom left, the word 'ИНСТРУКЦИЯ:' is visible. In the bottom right, a search results window shows the search term 'Жуковский' and a link to 'Жуковский - МОСКОВСКАЯ ОБЛАСТЬ (Раменский район)'.

kosmosnimki.ru

online каталог | инструкция | примеры снимков
| спец. заказ | получить снимки | контакты

Величина окна карты: 400 500 600 700

< > > включить покрытие
> показать карту целиком

населенный пункт: Жуковский Поиск

Размер: 10x10 км. Цена: 40 руб.

Предварительный просмотр
Добавить снимок в корзину
Моя корзина

Вы искали: Жуковский.

[Жуковский](#)
[Жуковский - МОСКОВСКАЯ ОБЛАСТЬ \(Раменский район\)](#)

ИНСТРУКЦИЯ:

Conclusion

- Large amount of various RS data is available for the NEESPI
- To reach the NEESPI goals, significant efforts on data unification are required
- This process can be facilitated by participation of commercial organizations

Thank you!

Please, contact us: www.scanex.ru