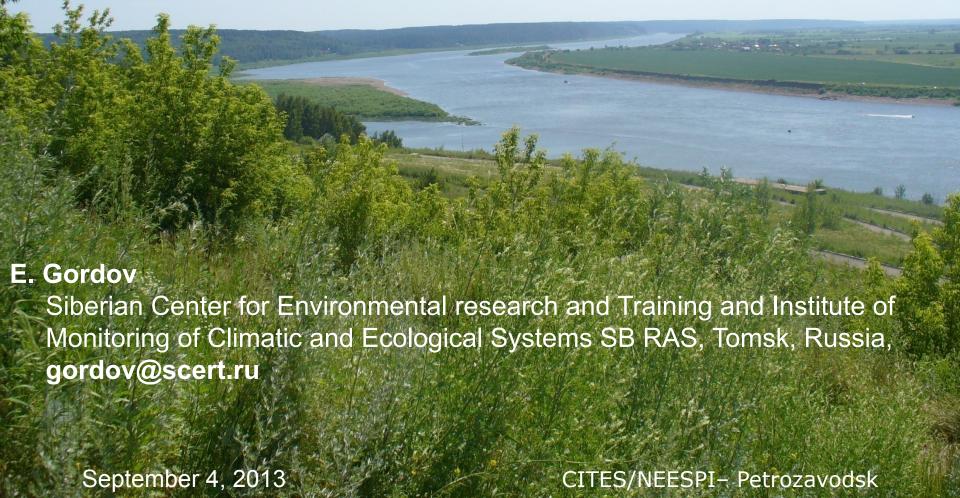
Siberia Integrated Regional Study: the state of the art and projections



Siberia Integrated Regional Study (SIRS, http://sirs.scert.ru/en/)

Siberia Integrated Regional Study (SIRS, http:// sirs.scert.ru/en/) is a NEESPI megaproject coordinating national and international activity in the region in line with Future Earth Initiative (http://www.icsu.org/future-earth) approach whose overall objectives are to understand impact of Global change on on-going regional climate and ecosystems dynamics; to study future potential changes in both, and to estimate possible influence of those processes on the whole Earth System dynamics as well as on social and economic situation in the region.

Siberia Integrated Regional Study (SIRS, http://sirs.scert.ru/en/)

Approach adopted

- National and international projects clusterization (knowledge and data sharing)
- Development of information-computational infrastructure to support multidisciplinary studies
- YS Training&Education

Organizationally SIRS is supervised by the Russian National Committee for IGBP and managed by its Siberian Branch

Major regional challenges:

- Permafrost fate, especially its border shift (serious threats to infrastructure and significant potential carbon source);
- Desert steppe- forest-tundra ecosystems borders shifts (change of region carbon cycle and serious socio-economical consequences for local population; and
- Temperature/precipitation/hydrology regime change (increase risks of forest and peat fires leading to enormous carbon release from the region).

The state of the art Gone optimism

October 2010 SB RAS Presidium sitting
Report: E. Gordov and E. Vaganov "Russian National
Committee for IGPB and its Siberian Branch activity
on development of the Siberia Intehrated Regional
Study" (http://www.scert.ru/ru/SB/materials/)

As an outcome a contract SB RAS multidisciplinary integrated project "Dynamics of on-going climatic processed in Siberia and elaboration of strategy for relevant mitigation/adaptation measures" (2012-2015) was promised. Nothing happens.

- Currently SIRS oriented activity is supported by two SB RAS basic research multiyear Programs initiated and carried out by IMCES.
- VIII.77.1. "Environmental and climatic changes in Siberia and Arctic under impact of global and regional factors",
- VIII.80.2. "Scientific and methodical basis for information-computational technologies and measuring complexes for climatic and ecosystem monitoring"; and
- by several thematic integrated projects in which researchers from different Institutes work jointly on one of SIRS specific problems.

Several SIRS backbone projects are funded by the RF Ministry of Education and Science and RFBR:

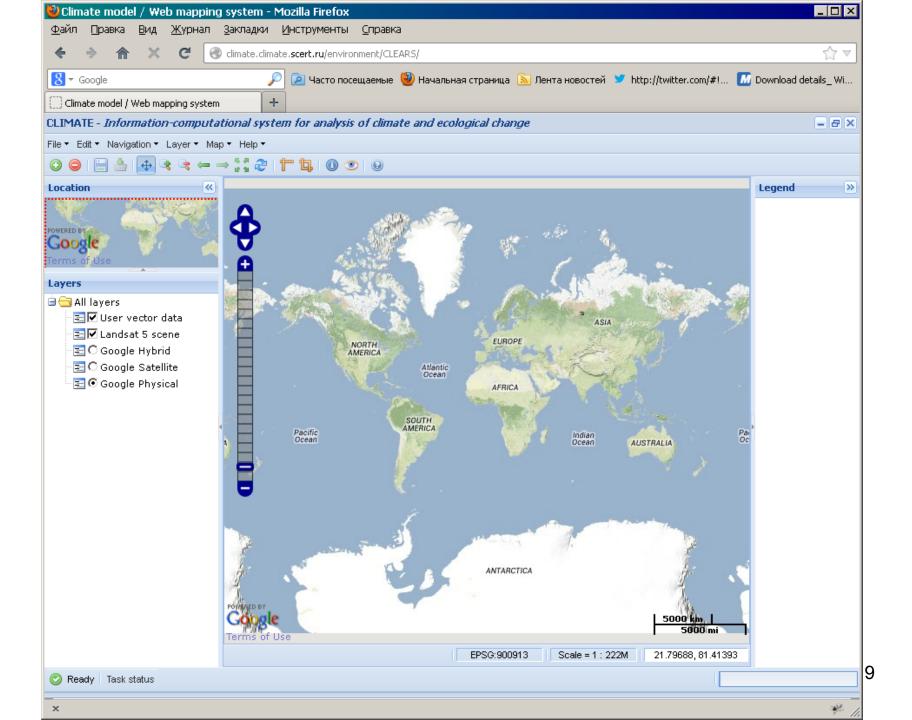
- Web-GIS platform "Climate" for monitoring and projections of regional climatic and ecological changes and support of continuous education (07.514.11.4044);
- Monitoring and projections of Siberia environment state under climatic and ecological changes in the region (8345);
- Study of regional climatic changes and their manifestation in environment dynamics on the base of geoinformation services of processing, analysis and integration of different origin data and thematic geoportal (13-05-12034).

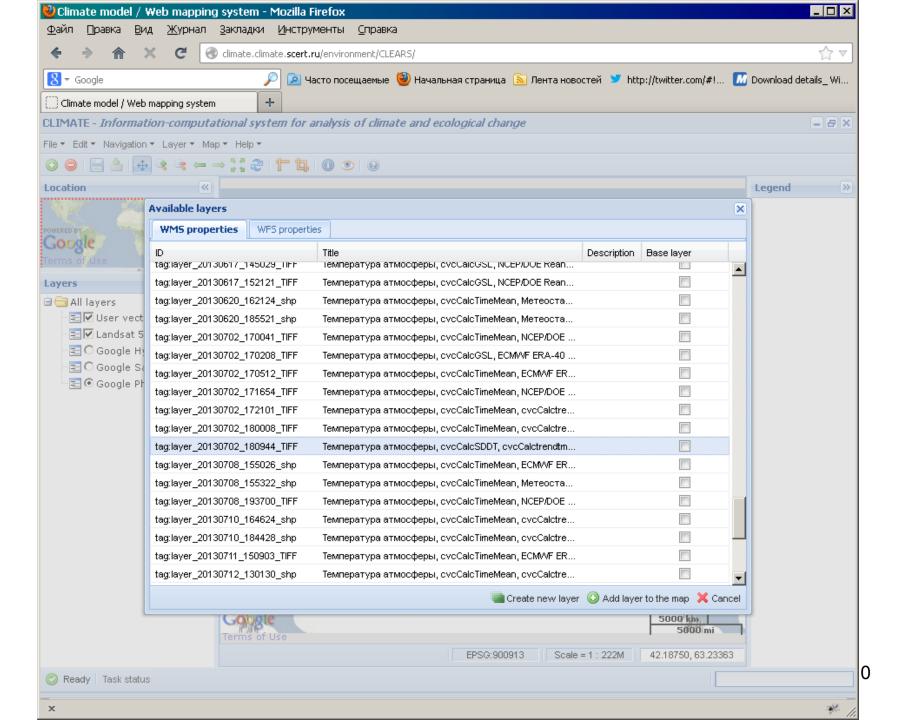
Backbone projects outcomes

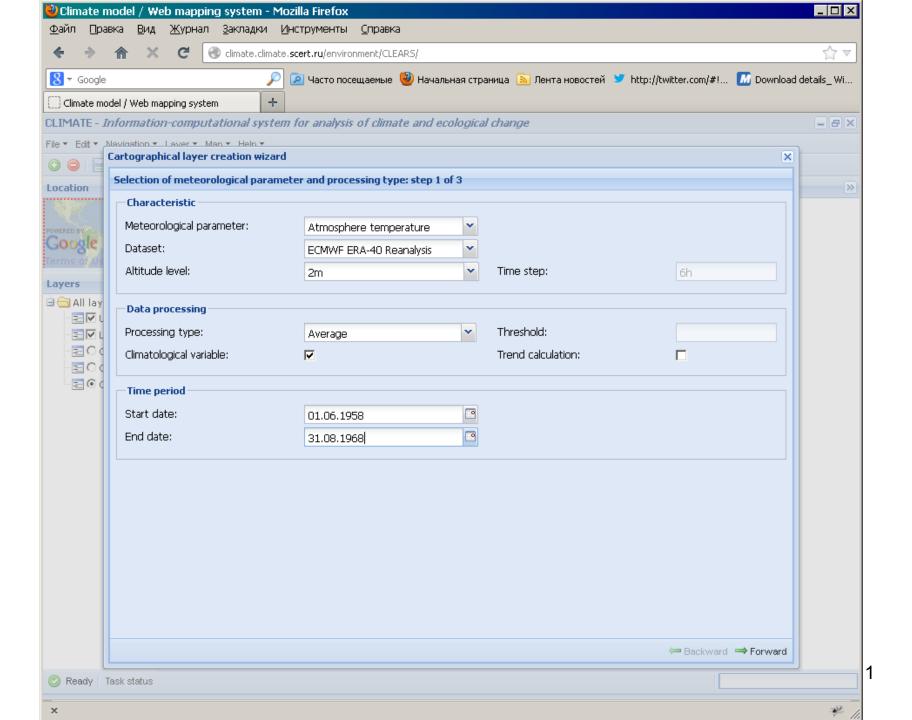
Web-GIS platform "Climate" as distributed system with geoportal functionality to analyze big arrays of geophysical data and to train students' and YS is in test operation now.

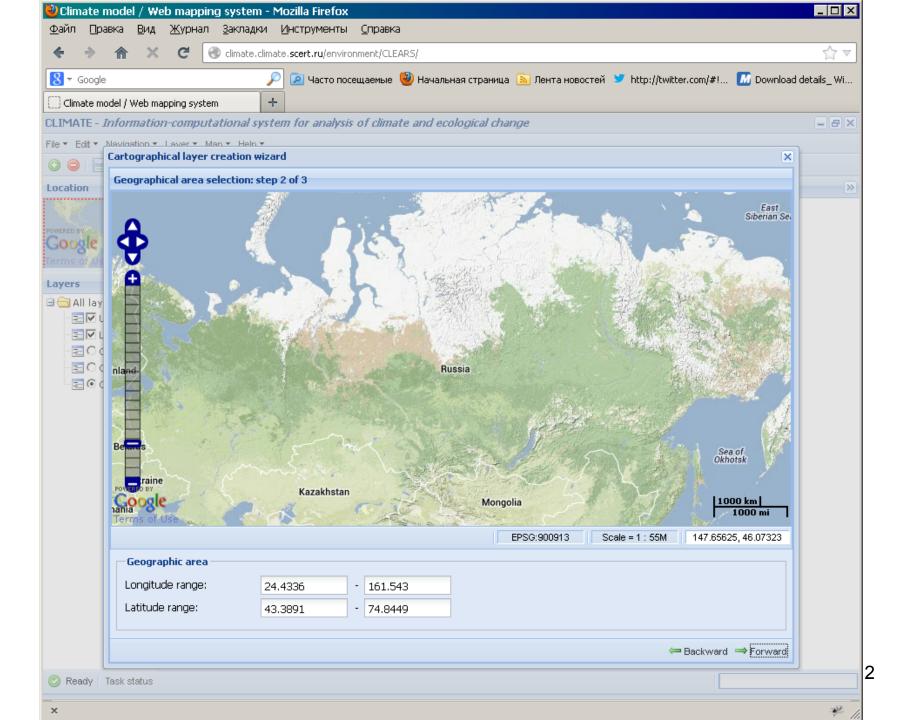
- Gordov E.P., et al. Geo-information system for investigation of regional climatic changes and first results obtained / Atmospheric and Ocean Optics, vol. 25, 2012, No.02, pp.137-143.
- Gordov E.P., Lykosov V.N., Krupchatnikov V.N., Okladnikov I.G., Titov A.G., Bogomolov V.Yu., Shulgina T.M. Computational-informational technologies of monitoring and modeling of climatic changes and their consequences. 2013, Novosibirsk, Nauka, in press.
- Gordova et al.Support of educational process in modern climatology within the web-GIS platform "Climate". Open and distant learning, 2013, No 1, pp. 14-19.

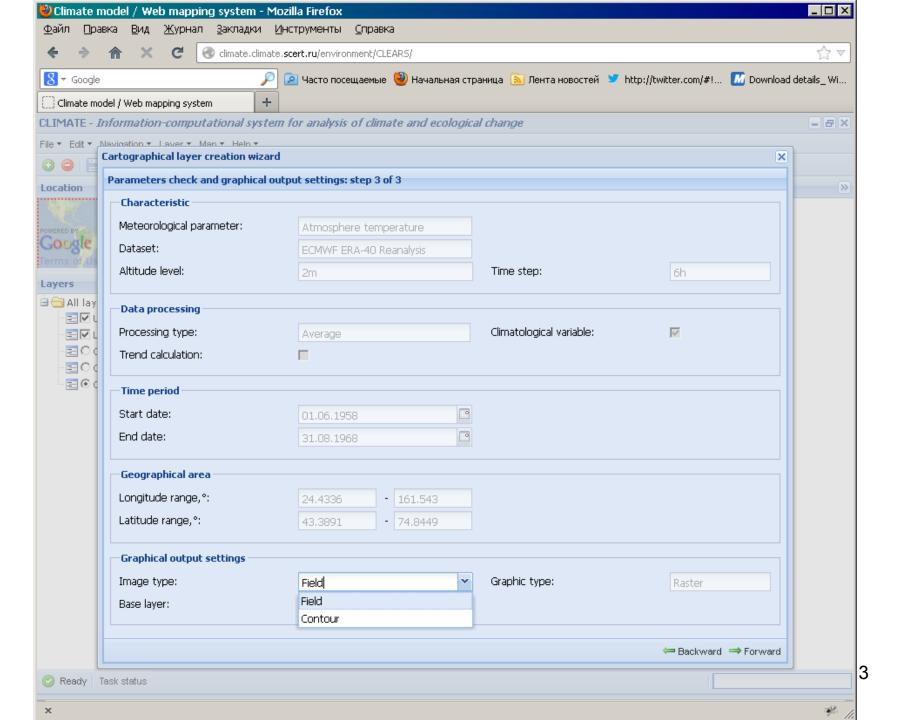
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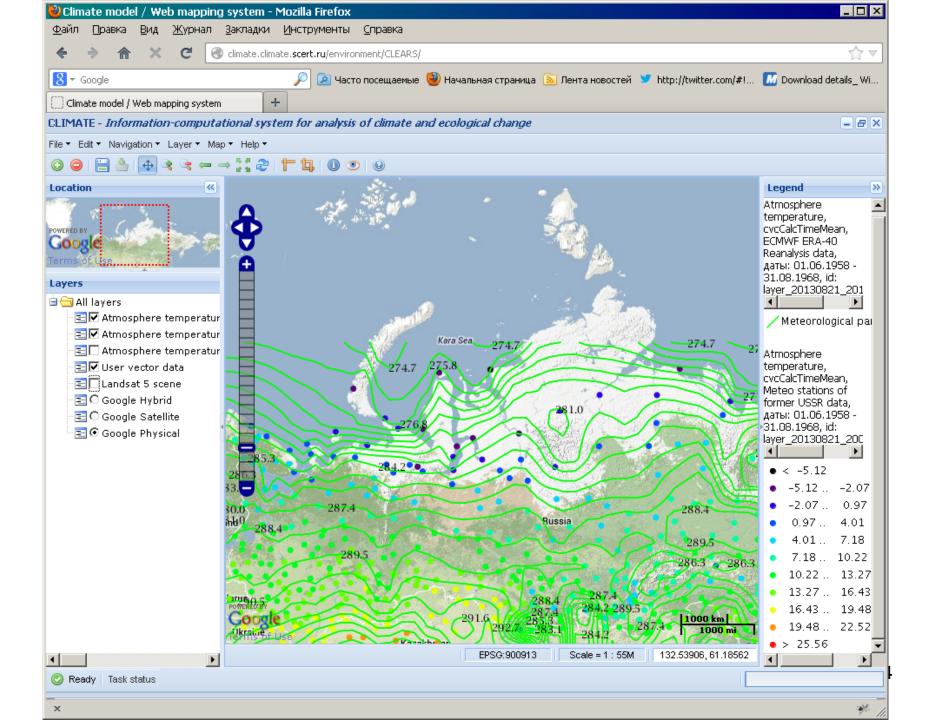


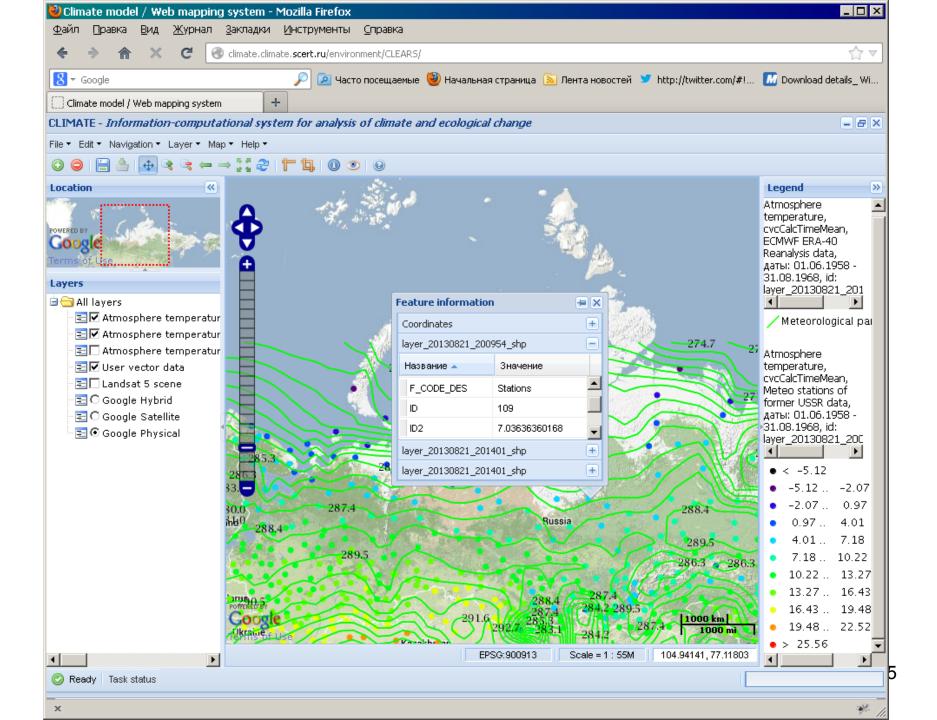




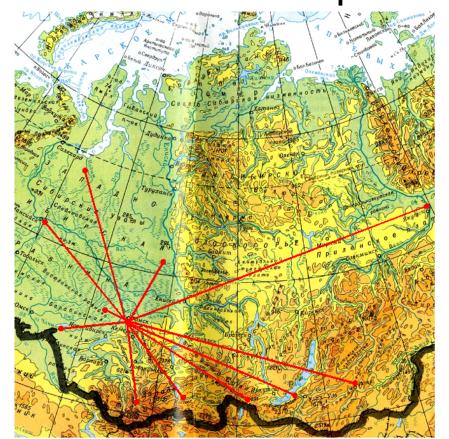








 2 reference monitoring stations equipped with modern instrumentation for monitoring from the planned reference network for monitoring of climatic changes in Siberia planned for 2012-2017 are operating now.



Monitoring stations network

- 1. Tomsk (city)
- 2. Tomsk (Vasyuganie)
- 3. Buryatiya (Baikal)
- 4. Chita (Arakhley)
- 5. Krasnoyarsk (Zotino)
- 6. Barnaul (Aktru)
- 7. Novosibirsk (Chany)
- 8. Kyzyl (Dolinnaya)
- 9. Yakutsk (Spasskaya Pad')
- 10. Irkutsk (Mondy)
- 11. Khaty-Mansiisk (Shapsha)
- 12. Nadym (Polyarnaya)

Educational/capacity building (http://scert.ru/en/conferences/)

Threefold approach:

ENVIROMIS – biannual Multidisciplinary Conference with elements of YSS (Invited lectures embedded as well as thematic Workshops);

CITES (Computational and Information Technologies for Environmental Sciences) biannual YSS and Conference (Lecture courses, Training sessions as well as Invited lectures)

Thematic Web portals with embedded tools for distant professional education/training



Participants of the CITES 2007 YS School (life long learning)

Projections

Suggested SB RAS megascience facility to monitor and analyze on-going and possible in future natural and climatic processes and their consequences on Russia territory:

- the network of monitoring stations equipped with modern instrumentation for monitoring spread across Russia;
- the dedicated computing and data center providing an access to instrumental and modeling data; and
- information-computational infrastructure supporting knowledge generation on the basis of data available.

Crucial scientific questions for new projects:

- Regional geosphere-biosphere interactions (including the surface air layer, the vegetation layer, soil, and inland water bodies): role and feedbacks to the Earth System dynamics;
- Adaptation and mitigation strategy meeting challenges from on-going and projected processes:
 - permafrost, desert steppe- forest-tundra ecosystems borders shifts,;
 - weather and climate extremes.

Thank you for attention!