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Reported are several important steps in development of information-computational and instrumental infrastructure of the NEESPI mega-project Siberia Integrated Regional Study, which is devoted to investigation of global change impact on Siberia environment and related feedback.

Firstly, development of scientific and technological basis and creation of a reference network for monitoring of climatic changes in Siberia is planned for 2012-2017. The network will include 12 reference monitoring stations equipped with modern instrumentation for monitoring spread across Siberia as well as data center aimed at storage of instrumental and modeling data and providing an access to those. The stations will be created at the following sites: Barnaul (Aktru), Chita (Arakhley), Irkutsk (Mondy), Khaty-Mansiisk (Shapsha), Krasnoyarsk (Zotino), Kyzyl (Dolinnaya), Nadym (Polyarnaya), Novosibirsk (Chany), Tomsk (Vasyuganie), Tomsk (Akademgorodok), Ulan-Ude (Istomino) and Yakutsk (Spasskaya Pad') and supported in operation by relevant SB RAS research Institutes and Siberian Universities.

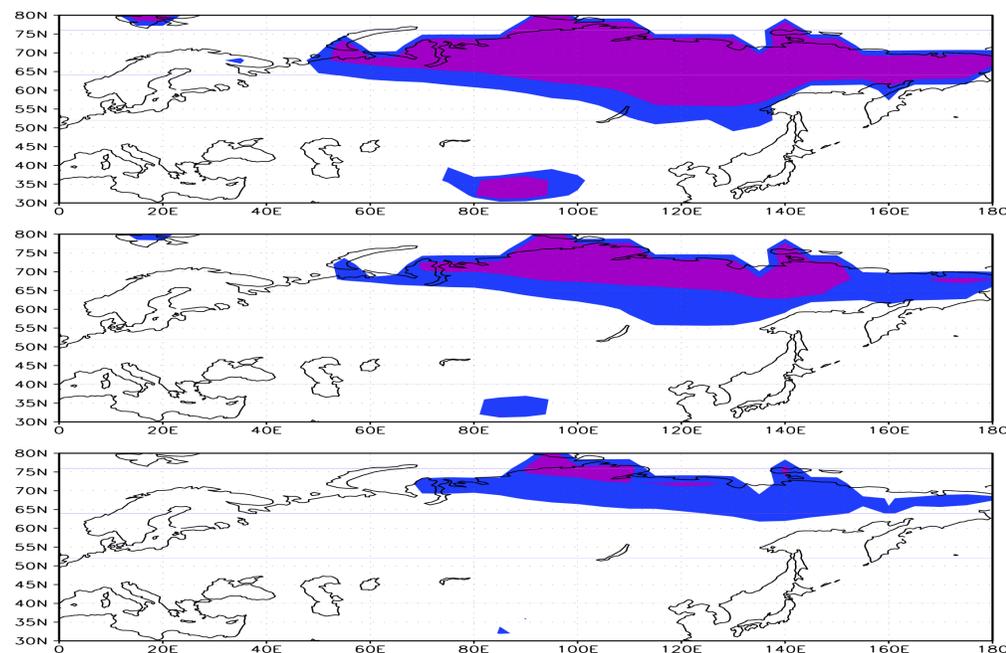
Also a suite of models is under development now, which comprises global and regional climatic and meteorological models run at the Moscow and Tomsk State Universities Centers SU, and SB RAS Supercomputer Center.

Among those is the INM RAS climatic model INMCM4, participating in CMIP5 and the INM Earth system model (Volodin et al., 2010); ICMMG SB RAS Regional ECSib climatic model (Kuzin et al., 2009), Arctic ocean model (Golubeva and Platov, 2007); WRF and RCC MSU mesoscale models (Bogomolov et al., 2010 and Stepanenko et al., 2010).



Network monitoring stations

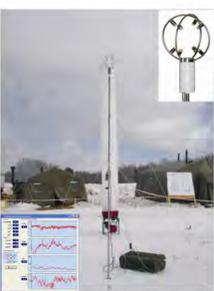
1. Tomsk (city)
2. Tomsk (Vasyuganie)
3. Ulan-Ude (Istomino)
4. Chita (Arakhley)
5. Krasnoyarsk (Zotino)
6. Barnaul (Aktru)
7. Novosibirsk (Chany)
8. Kyzyl (Dolinnaya)
9. Yakutsk (Spasskaya Pad')
10. Irkutsk (Mondy)
11. Khaty-Mansiisk (Shapsha)
12. Nadym (Polyarnaya)



Spatial distribution of continuous and sporadic permafrost as follows from INM CM3 climate model experiments: in 1981-2000 (top), 2081-2100 under scenario B1 (middle) and in 2081-2100 under scenario A2 (bottom) (Lykosov V. et al., 2008)

Instrumentation for monitoring

1. Foreign and Russian certified devices.
2. Import-substituting certified devices.
3. Designing and certification of new instruments during project implementation.



Automated meteorological complex (IMCES SB RAS)
Monitoring of meteorological quantities fluctuations in surface atmospheric layer



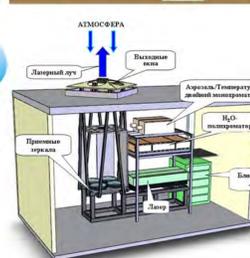
Aerosol lidar (IAO SB RAS)
Monitoring of altitude profile of troposphere aerosol



Solar spectrophotometer (IAO SB RAS)
Monitoring of atmosphere optical thickness

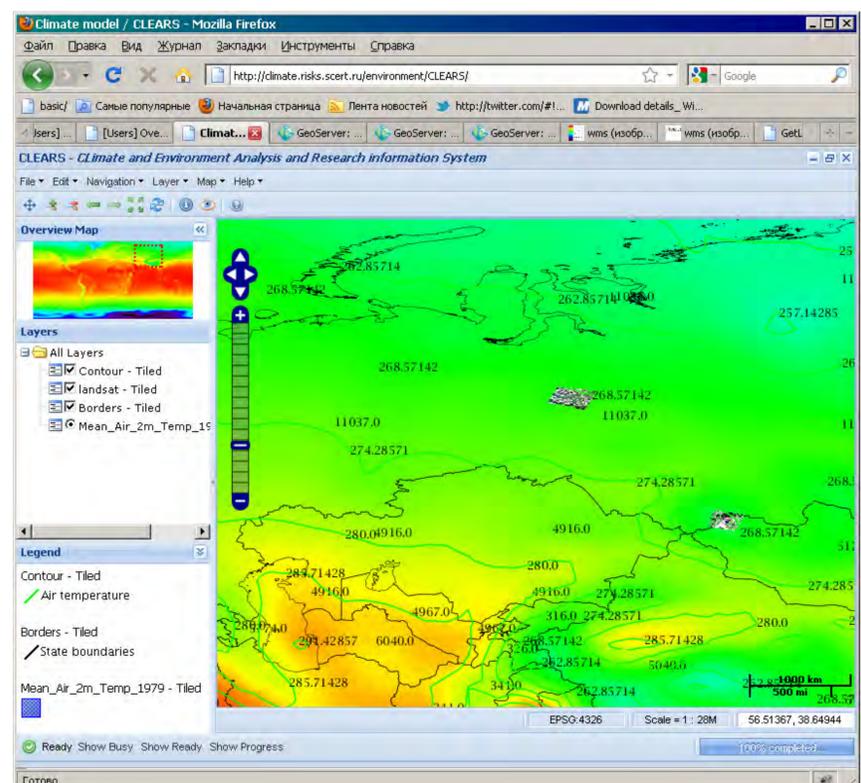


Soil thermal hydrometer (IMSEC SB RAS)
Monitoring of subsurface temperature and soil humidity profiles



Raman lidar (IMCES SB RAS, IAO SB RAS)
Monitoring of altitude profiles of trace gases in the atmosphere

The CLEARs (CLimate and Environment Analysis and Research System) information-computational web-GIS is planned to be deployed at the data center and used for analysis of recent and future climatic and environmental changes in Siberia ([visit GC43F-07](#) and [IN54A-05](#))



Institute of Monitoring of Climatic and Ecological Systems leads the Program, which is open to abroad Partners.

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Conclusions

Altogether these components will form a SB RAS megascience facility aimed at detailed monitoring of on-going natural and climatic processes on this territory and prognoses of their dynamics in future. It should create an information basis for decision-making on future socio-economic development of Siberia and facilitate international cooperation.

SIRS is open for cooperating efforts devoted to study global change induced dynamics of Siberia environment and related feedbacks to the Earth system.

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