



Development of Distributed Research Center for monitoring and projecting regional climatic and environmental changes: first results

Evgeny Gordov (1,2), Alexander Shiklomanov (3), Igor Okladnikov (1), Alex Prusevich (3), and Alexander Titov (1)

(1) Institute of Monitoring of Climatic and Ecological Systems SB RAS, Siberian Center for Environmental Research and Training, Tomsk, Russian Federation (gordov@scert.ru), (2) Tomsk State University, (3) Earth Systems Research Center University of New Hampshire

Description and first results of the cooperative project “Development of Distributed Research Center for monitoring and projecting of regional climatic and environmental changes” recently started by SCERT IMCES and ESRC UNH are reported. The project is aimed at development of hardware and software platform prototype of Distributed Research Center (DRC) for monitoring and projecting regional climatic and environmental changes over the areas of mutual interest and demonstration the benefits of such collaboration that complements skills and regional knowledge across the northern extratropics. In the framework of the project, innovative approaches of “cloud” processing and analysis of large geospatial datasets will be developed on the technical platforms of two U.S. and Russian leading institutions involved in research of climate change and its consequences. Anticipated results will create a pathway for development and deployment of thematic international virtual research centers focused on interdisciplinary environmental studies by international research teams.

DRC under development will comprise best features and functionality of earlier developed by the cooperating teams’ information-computational systems RIMS (<http://rims.unh.edu>) and CLIMATE(<http://climate.scert.ru/>), which are widely used in Northern Eurasia environment studies.

The project includes several major directions of research (Tasks) listed below.

1. Development of architecture and defining major hardware and software components of DRC for monitoring and projecting of regional environmental changes.
2. Development of an information database and computing software suite for distributed processing and analysis of large geospatial data hosted at ESRC and IMCES SB RAS.
3. Development of geoportal, thematic web client and web services providing international research teams with an access to “cloud” computing resources at DRC; two options will be executed: access through a basic graphical web browser and using geographic information systems – (GIS).
4. Using the output of the first three tasks, compilation of the DRC prototype, its validation, and testing the DRC feasibility for analyses of the recent regional environmental changes over Northern Eurasia and North America.

Results of the first stage of the Project implementation are presented.

This work is supported by the Ministry of Education and Science of the Russian Federation, Agreement № 14.613.21.0037.