

Preface

The Advanced Research Workshop (ARW) on “Environmental security of the European cross-border energy supply infrastructure” was held in Moscow, Russia, from 30 to 31 October 2012. It was organized by Academician Victor Osipov and Professor Alexey Victorov (Sergeev Institute of Environmental Geoscience, Russian Academy of Sciences) and Professor Martin Culshaw (British Geological Survey and University of Birmingham) in the framework of the NATO Science for Peace and Security (SPS) Programme, under the patronage of the Russian Academy of Sciences.

The workshop dealt with a wide spectrum of environmental security issues for the European cross-border energy supply infrastructure, including:

- The impact of environmental hazards on the energy supply infrastructure
- Environmental problems for underwater oil and gas transportation systems
- The scientific grounds for the design of environmental monitoring systems for the energy supply infrastructure
- Remote sensing control for environmental security of the energy supply infrastructure
- GIS techniques for environmental monitoring

Besides these topics, attention was given to conceptual issues of environmental and energy security and the role of education, to help resolve environmental problems for cooperation in the development of the European energy supply infrastructure.

The Workshop participants regarded development of new approaches to environmental and geohazard monitoring as one of the most important tools for environmental security of the European cross-border energy supply infrastructure. Thus, the main scientific result of the ARW was working out requirements and stating conditions for the development of a new generation of environmental monitoring systems for increasing environmental security of the infrastructure.

The most relevant reports presented at the ARW are published in this volume of proceedings. In particular, the majority of environmental hazards to the European cross-border energy supply infrastructure have been analyzed. New approaches have been examined for monitoring of landslide hazardous processes, including early warning systems, and near-real-time 3D data processing and visualization. The scientific problems of environmental systems design have been revealed and approaches to their implementation have been suggested, such as adaptive measurement frequency and control point arrangements according to the detected migration flows. New integrated remote sensing techniques consist mainly of hyperspectral and radar imagery. Another topic relates to the processing of monitoring data using GIS techniques and, in particular, dynamic visualization. Environmental monitoring during construction of subaqueous cross-border pipelines was a further monitoring-related topic in the ARW discussion.

In the ARW proceedings, new elements for environmental monitoring of energy supply infrastructure are suggested, such as:

- Safeguarding of units: realizing certain safety measures in case of alarm-triggering values of controlled parameters being reached
- Risk assessment

The book will be useful to those interested in problems associated with the environmental security of energy supply infrastructure across borders and, indeed, the whole European continent.

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