

**National Committee of Russia for the International
Hydrological Programme of UNESCO**

**Report of the Russian National Committee for the IHP to the XVIIIth Session of the Inter-
governmental Council for the IHP of UNESCO
(June 2008)**

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Introduction

The present report is prepared at the State Hydrological Institute on the basis of materials received from the following agencies and organizations:

- Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET)
- Russian Agency on Water Resources (RosVodResursy)
- State Hydrological Institute (Roshydromet)
- Moscow State University
- Institute of Geography of the Russian Academy of Sciences (RAS)
- Russian State Hydrometeorological University
- Institute of Water Problems of the Russian Academy of Sciences (RAS)
- State Oceanographic Institute (Roshydromet)
- Altai State Technical University
- North-Caucasus Administration for Hydrometeorological Service (Roshydromet)

The Report is prepared according to the structure, format and volume, developed at the UNESCO IHP Secretariat.

ACTIVITIES OF THE RUSSIAN NC FOR THE IHP UNDERTAKEN IN THE PERIOD JUNE 2006– MAY 2008

1. Meetings of the IHP National Committee of Russia

NC RF exists since establishing within UNESCO the International Hydrological Programmes, however its personnel has been periodically renewed. According to the decision of the RF Government made in 2003 the present NC personnel includes Chairperson Mr. Alexander V. Frolov, Deputy Director of Roshydromet, and two deputy Chairpersons – Mr. Victor M. Kotlyakov, Academician of the Russian Academy of Sciences (RAS), Director of the Institute of Geography, (IG RAS), and Mr. Igor A. Shiklomanov, Director of the State Hydrological Institute (SHI, Roshydromet). At present the Committee consists of 24 members – scientists and specialists known both in Russia and all over the world, representatives of different ministries and departments, organizations and institutions who actively work in the fields of hydrometeorology, water resources, water management, and education. During the period under consideration the Committee personnel has changed. Mr. R.Z. Khamitov, Head of the Federal Agency for Water Resources (Roswaterresources) recommended Mr. S.E. Bednaruk of Roswaterresources to be appointed instead of Mr. S.S. Koskin who got a different work.

In the last meeting of the NC in May 2008 Igor A. Shiklomanov also recommended Ms. Jeanna A. Balonishnikova from State Hydrological Institute to be appointed as a member of the NC.

For the period under consideration three NC meetings have been held where discussed were the current issues and strategic plans for future within the frameworks of the 6TH and 7TH Phases of IHP. Also consideration was given to the results of work done in Russia in the fields of hydrology and water resources. Also NC has developed a common approach to the key issues of international cooperation in the areas in question, in particular, with participation of RF delegation at the sessions of IHP Intergovernmental Council of UNESCO.

2. Status of participation at IHP-VI and contribution into IHP-VII.

2.1. Participation in the activities of constitutional and working bodies of UNESCO.

The report of NC RF was prepared and submitted at the 17th session of the IHP Intergovernmental Council (UNESCO, Paris, 3-7 June 2006). All members of NC participated in the preparation of this report, which was submitted as in Russian and English versions.

The materials for this report are received from the following agencies and organizations:

➤ ***Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET)***

State Hydrological Institute (SHI)

State Oceanographic Institute (SOI)

North-Caucasus Administration for Hydrometeorological Service

➤ *Russian Agency on Water Resources (RosVodResursy)*

➤ *Ministry of education and sciences*

Moscow State University

Altai State Technical University
Russian State Hydrometeorological University

➤ *Russian Academy of Sciences (RAS)*
Institute of Geography
Institute of Water Problems

The Russian Delegation took part in work of the 17th Session of the IHP Intergovernmental Council. The Russian Delegation was headed by R.Z. Khamitov, Head of Roswaterresources, and included representatives of RosVodResursy, Roshydromet (SHI, SOI) and the Ministry of Foreign Affairs of the Russian Federation. The Russian Delegation worked actively at the plenary meetings of the session, making comments on all major issues of the Agenda.

At working meetings with the Secretariat and at the meetings with participation of countries of Region II (Eastern and Central Europe), discussed were the candidatures of Russian representatives proposed by the Committee for elections into the governing bodies of IHP and steering councils of the UNESCO centres. As a result of all discussions, the Intergovernmental Council elected a Russian representative to the Financial Committee of UNESCO-IHP with a 4-year mandate (O.V. Gorelits, SOI). Russian experts were elected into the governing councils of the UNESCO International Research and Educational Centre for Erosion and Sediments, Beijing, China, (Mr. Zurab Kopaliani, SHI) and the European Regional Centre for Eco-hydrology, Lodz, Poland (Mr. O.V. Gorelits, SOI).

In the course of the discussion, the Russian Delegation approved the draft Plan of IHP-VII for 2008-2013, as a whole, mentioning, however, the necessity of developing scientific hydrology within IHP-VII to avoid an illusion that in hydrology, there are no unstudied phenomena or processes and the only task for hydrologists remains to correctly apply the existing knowledge.

During the discussion of the 2006-2007 Plans and the Seventh Phase of IHP (IHP-VII), the Russian Delegation emphasized the necessity of more active participation of UNESCO- IHP in the Arctic hydrological studies, in particular, within the International Polar Year Programme created by the initiative of Russia. This proposal was supported by the delegations of Iceland, Canada, the Netherlands and other countries and was reflected in the decisions of the Council.

When discussing work of UNESCO-IHE Institute for Water Education, the Russian Delegation proposed establishing a closer cooperation between IHE and the Russian State Hydrometeorological University (RSHMU), which was supported by UNESCO authorities. This proposal was also supported by the Governing Board and Director of UNESCO-IHE who assured the Russian Delegation that he would undertake immediate necessary actions in this direction.

A detailed report on work of the Russian Delegation was submitted to the RF Commission for UNESCO affairs.

Deputy Chairman of NC RF Igor Shiklomanov, as a member of the Governing Board of UNESCO – IHE Institute for Water Education, participated in its meetings in Delft, the Netherlands, 2006-2007.

At the meetings, UNESCO-IHE Working Plan and Budget for 2007-2008 were discussed, as well as the contents of the Academic plan and other current issues of IHE activities. The participants of the December 2007 Meeting expressed great interest in the results of external complex evaluation of UNESCO-IHE activities for the past three years. As a whole, the results were recognized to be positive. However, the Commission made a number of remarks and proposals to improve the future institute activities. A few postgraduate students from different countries presented brief reports on their scientific activities which aroused great interest in the IHE Governing Board members and personnel.

In the period of 25 September to 11 October 2007, Paris, France, the 177th Session of the UNESCO Executive Board was held. At the Session, the thematic discussion took place: “Solving the arising tasks and problems related to knowledge societies and global climate change: multidisciplinary contribution of UNESCO on the regional and country levels.” The Roshydromet institutions prepared proposals for this discussion which were presented by Mr. Oleg Anisimov, Head of the Climate Change Research Department of the State Hydrological Institute.

During the discussion of most interest was the report presented by Mr. R. Pachauri, Chairman of International Group of Experts on Climate Change. In his report, Mr. Pachauri presented major conclusions from the IPCC report which stated that climate change consequences exerted the adverse and even catastrophic effects in most countries. To illustrate these conclusions, Mr. Pachauri gave multiple references to the chapters of the report where consideration was given to climate effects on different sectors of economy and individual regions.

Many Russian experts on climate mentioned a serious disadvantage of Mr. Pachauri’s report based on the IPCC report. Both reports disproportionably reflected adverse and positive aspects of the climate change problem, including the effects on economy and natural processes. During the UNESCO discussion, Mr. Oleg Anisimov mentioned this disadvantage of the reports. In particular, Mr. Anisimov indicated that neither the IPCC report, nor Mr. Pachauri’s report reflected the position of the Russian researchers that many of expected global warming consequences would exert positive effects on economy. Among them are reduced heating expenses, a less severe climate, improved ice conditions for river and sea navigation, an extended navigation period, the development of northern agriculture and other changes. For example, the Resume for politicians does not reflect the dual character of predictable seasonal changes in river runoff depending on the fact if the round-year rain feeding prevails in a river basin or there is a prolonged winter ice period with low river runoff typical of most river basins. The Resume mentions only a predictable decrease in minimum river runoff with rain feeding that occurs in the end of the summer period. This statement leads to the conclusion that the unevenness of seasonal distribution of river runoff would increase, which would exert unfavourable aftereffects. However, this is typical of only the rivers in moderate and southern regions, not of most rivers in Russia, where minimum river runoff occurring in the winter period has considerably increased for the past 20 years and continues to increase. As a result, the seasonal runoff variability decreases, which is a favourable factor.

Besides the report does not reflect the principal position of Russian scientists that the current climate change consequences are caused by the combined effect of natural and anthropogenic factors, therefore at present, there are no reasons to solely attribute them to man's activities.

In addition to the above problem of studying climate change consequences, in the framework of UNESCO discussion, consideration was given to the issue of the future development of the Regional Climate Centres existing in different countries. Mr. Anisimov expressed the idea of their gradual transformation into multidisciplinary centres of "action" for using climatic information in different applications, including the climate risk management in the corresponding regions. An important task for these centres is to develop measures to mitigate the consequences of extreme climatic phenomena and, as a whole, to provide hydrometeorological safety, i.e., the defense of life-important personal interests, society and state from the effects of dangerous natural phenomena and climate change. As to Russia, one of the most economically dangerous climate change consequences is permafrost melting resulting in an increased risk of damaged and ruined dwelling, transport and engineering constructions built on the permafrost areas. UNESCO could play an important role in educational work aimed at forming a scientifically-grounded societal position on this problem, as well as mobilizing necessary intellectual, financial and economic resources to develop the strategy for its solution that could include a comprehensive scientific model-based analysis, engineering methods for mitigating adverse effects of permafrost melting, as well as the system for detecting, forecasting and preventing dangerous situations.

The question was also raised that in the framework of UNESCO activities, along with social and economically-orientated programmes, it is necessary to pay more attention to the scientific problems that have not yet been solved and have alternative points of view from different groups of scientists. In this connection, it is important to determine the role of different factors in the present climate change, in particular, non-anthropogenic; to use various climate prediction methodologies alternative to dynamic modeling and supplementing their results (palaeoclimatic reconstructions, building empiric models based on observation data); to find possible compensation for anthropogenic effects on climatic system at the expense of carbon exchange between atmosphere and ocean; to forecast regional climate on spatial scales from season to several years and decades.

As a whole, participants of the discussion came to the unanimous conclusion that UNESCO, as an influential and competent organization, could play a noticeable role in many aspects of activities related to studying the climate change problem and adaptation to this change. One of the important directions mostly corresponding to UNESCO profile is dissemination of knowledge on the expected climate change.

2.2. Scientific activities in the framework of IHP-VI

Different aspects of the Russian contributions to the IHP-VI projects are always discussed at the NC meetings. A necessity and importance of research to be made within the framework of the IHP-VI projects at the national level are emphasized, which is a specific feature of this programme. The NC members decided to take the account of the main aspects of activities noted in the IHP-VI during a development of the current themes for

scientific and technical studies and works of the leading hydrological and water management organizations in Russia as the first-priority problems.

A particular emphasis was focused on a necessity of active participation of Russian scientists and specialists in the implementation of the following very important IHP-VI Themes where it is possible to obtain the results of a great scientific and applied importance not only for the territory of Russia but on the global scale.

Theme 1. “Global Changes and Water Resources”

Theme 2.1. “Extreme Events on Land and Water Resources Control”

Theme 2.2. “International River Basins and Subsurface Water Storage”

Theme 2.3. “Endorheic Basins”

Theme 5. “Education and Training”.

In the framework of Theme 1, the State Hydrological Institute has accomplished two basic works: 1) water resources of Russia and their change were scientifically estimated and the results were presented in the monograph “Water Resources of Russia and Their Use” and 2) the International Data Centre on Lake and Reservoir Hydrology” was created.

The manuscript “Water Resources of Russia and Their Use” consists of 12 chapters:

Chapter 1 (introductory). Actuality of the problem. A review of the completed studies. Features, structure and contents of the monograph.

Chapter 2. Physico-geographical and hydrographic conditions in the territory of the Russian Federation.

Chapter 3. Hydrological cycle and water resources.

Chapter 4. Static (gross) water resources in the RF territory.

Chapter 5. Water resources of river and sea basins.

Chapter 6. Water resources and lake levels.

Chapter 7. Quality of surface waters (State Chemical Institute - SCI).

Chapter 8. Renewable ground water resources (Hydrological and Geological Corporation - HYDEC).

Chapter 9. Anthropogenic changes in water resources of river basins.

Chapter 10. Water resources, water use and water availability of RF subjects.

Chapter 11. Water resources of Russia in future.

Chapter 12. World water resources and their use. Comparison of data on Russia and other countries and regions.

The monograph has been prepared by SHI with participation of SCI (water quality) and HYDEC (ground waters). The scientific leader is Mr. Igor Shiklomanov, Director of SHI, and the responsible executives of SHI are Mr. Vladimir Babkin, Head of Laboratory, Ms. Jeanna Balonishnikova, Head of Department, Mr. Vladimir Georgiyevsky, Head of Department; of SCI - Mr. Anatoly Nikanorov, the Corresponding Member of Russian Academy of Sciences, and of HYDEC - Mr. Boris Borevsky.

The Monograph is based on the analyses of the long-term observation data on hydrological cycle and the quality of surface and ground water bodies and the calculation of using water resources and studying the changes in their formation because of anthropogenic activities on watersheds. The Monograph presents the data

for all major river watersheds, administrative territories of Russian Federation, and hydro-climatic regions, including the data on spatial and temporal, including future, distribution of water resources.

The Monograph thoroughly covers the problems of studying and estimating renewable water resources of Russia (surface and ground waters and their quality), as well as their long-term spatial and temporal (to 2010-2020) distribution under the conditions of economic activities and anthropogenic climate change.

The Monograph summarizes the results obtained by the Russian scientists at present and for the past two decades. This is very important because in Russia, during the past twenty years serious changes occurred to major factors determining variations in water resources and their spatial and temporal distribution, i.e., anthropogenic climate change and drastic transformations in social and economic spheres. Therefore, the major goal of the Monograph was to reveal how these changes affected the major characteristics of water resources and their use in different river basins and regions of the country and what can be expected in this connection in future.

Taking into account the huge territory of Russia occupying more than 10% of the entire land territory on our planet, as well as a large diversity of physico-geographical conditions, it is obvious that Russia is the most important object on the global scale. This means that on one hand, any changes in the global hydrological cycle would greatly affect it, and on the other hand, changes in hydrological cycle components in Russia are a significant factor in the global hydrological cycle. Therefore, the Monograph presents modern ideas about changes in the components of global hydrological cycle and peculiarities of hydrological cycle over the territory of Russia that can noticeably affect the formation and dynamics of water resources.

In the Monograph, major emphasis is given to the renewable water resources whose integral index is the river runoff with its ground component.

Major sections of the Monograph deal with studying and assessing the resources of river runoff on all river watersheds and sea basins, administrative and physico-geographical regions of Russia, their changes because of water consumptive use and other types of economic activities, as well as a result of anthropogenic effects on global climate. All the estimates and analysis of different characteristics of water resources and their use are considered in dynamics for the entire long-term period of observations and individually for the period of stationary climate and stable social and economic development since the start of performing massive hydrological observations to the early 1980s, as well as for the past 20-25 years under the conditions of intensive climate change and drastic changes in social and economic situation in Russia.

The important practical conclusions have been made as to changing annual distribution of water resources in river basins. The analysis of long-term data on monthly runoff of medium rivers with natural hydrological regimes shows that for the past 20-25 years practically over the entire territory of Russia serious changes have taken place in the annual distribution of river runoff, primarily, due to increased river water content in low-water periods, especially in winter months.

During the 20th century there have been no analogs of the extraordinarily increased low-water river runoff, especially in winter time (to 50-100%), observed synchronously over a huge territory. This increase in low-water runoff has caused an increase in water resources even in the river basins with a decreased spring

flood runoff. This situation occurred in Russia for the first time. Earlier all significant low-water and high-water phases were determined first of all by the value of spring flood runoff. The trend to an increased winter river runoff is typical also of the majority of large river systems with natural hydrological regime.

Considerable attention is given to the problems of complex anthropogenic changes in water resources of river basins under the present conditions of social and economic development of the country.

It is shown that under the conditions of modern Russia, the major kinds of economic activities that can noticeably affect the quantitative characteristics of water resources in large regions and river basins are the direct water consumption for industrial and municipal needs, irrigation and agricultural water supply, construction and exploitation of reservoirs, as well as the factors related to anthropogenic influence on climate causing changes in the atmosphere gas composition. Analyzed are the status of calculation of fresh water use in Russia and the results of assessing the long-term dynamics of water consumption and water withdrawal for different economy needs.

Along with anthropogenic changes in quantitative characteristics of water resources, for the first time an assessment of surface water quality is presented for the Russian Federation based on summarizing hydro-chemical data obtained on the Roshydromet network between 1991 and 2005.

Based on all the available data, tendencies and developed methodological approaches, the approximate forecast assessments have been made for 2010, 2015 and 2020 for industrial, municipal and agricultural (irrigation and agricultural water supply) water use (consumption and withdrawal) for all RF subjects, major river basins and hydro-climatic regions. The total water use is supposed to increase by 9% by 2020 and agricultural water use by 85-90%. The industrial fresh water use is planned to decrease approximately by 10% and municipal by 25%, i.e. the total volume of water use in Russia would be about 30% less by 2020 than it was in the 1980s.

The concluding chapter treats on the global scale the most important aspects of complex water problem related to changes in renewable water resources, water availability and water deficiency in countries and world regions. The data cited in the Monograph is mainly based on the results of complex studies made recently at the State Hydrological Institute.

The Monograph considers technical, social, economic and ecological aspects of the possible reduction of fresh water use and increase in the available water resources due to various water management measures. Sooner or later these aspects will find a wide application in the regions and countries where they will turn to be most appropriate, ecologically safe and economically profitable according to their physico-geographical conditions and the type of water use.

To solve the problems related to studying the global hydrological cycle and its changes under man's impact, the international organizations perform a lot of work on collecting and analyzing observation data and creating global databases along with developing the automated technologies for their summarization and free dissemination for use when solving different problems, as applied to individual regions or on the global scale.

According to the Roshydromet proposal supported by the WMO Committee for Hydrology and Executive Council, as well as by UNESCO and other international organizations, in 2006 the decision was made

to create on the basis of SHI the International Data Centre for Lake and Reservoir Hydrology. The Centre started functioning in January 2007 and the period of 2007-2008 was determined as a preparatory stage of its work. For the past year the following work has been done:

- developed are the Concept and other legal documents for establishing the Centre;
- developed are the structure of data base, composition of metadata and coding system;
- developed are suggestions for data sources for the Centre and the procedure for collecting this data;
- determined are the types of information products of the Centre;
- prepared is the draft of legal WMO-Roshydromet agreement on establishing the Centre;
- prepared is the passport information about lakes and reservoirs of Russia and the former USSR, as well as observation stations on them, to be downloaded into the Database Prototype of the Centre;

In addition a number of necessary measures have been undertaken to create the material and technical basis of the Centre: the repair of offices, including the replacement of electric circuits, purchasing the necessary computer facilities, establishing the high-speed Internet, etc.

Upon agreement with the international organizations, in particular UNESCO, the International Scientific-Coordination Committee of the Centre has been created. In June 2007, in Saint-Petersburg, SHI, at the first meeting of the Committee, the work done on creation of the Centre and the start of its functioning were approved, as well as the plan of work for 2008. It was stated that there were all grounds to believe that the Data Centre for Lakes and Reservoirs would occupy with time a decent place in the row of other successfully functioning World Centres collecting observation data on different components of the environment (precipitation, river runoff, water quality, ground water, etc.).

In the beginning of 2008, SHI composed the Questionnaire aimed at collection of information about available observation data on lake and reservoir hydrology in other countries. SHI applied to WMO with the request to disseminate this Questionnaire in all countries. In the fourth quarter of 2008, SHI will hold the Second meeting of the International Scientific-Coordination Committee of the Centre.

Problems on Theme 2.2, in particular in the part of international river basins, are also of great importance for Russia because after the USSR disintegration a large number of new states bordering RF were formed. Much work is being done on this problem by specialists of the Russian Agency for Water Resources and the Roshydromet institutions as to monitoring boundary water bodies and assessing trans-boundary water and pollution transport. The basins of 70 large and medium rivers are trans-boundary for RF.

Studies on Theme 2.3 “Enclosed Basins” are traditionally being carried out in Russia on the problem of the Caspian Sea basin, one of the largest in area and population and economically developed enclosed basins of the world. The Caspian Sea is very important not only for Russia but for all five countries sharing its coast (Russia, Azerbaijan, Iran, Kazakhstan, Turkmenistan). The sea level variations of large amplitude caused by climatic factors and economic activities in the basin affect much the economies, ecology and social conditions

in the Caspian countries. Multipurpose studies of these processes are very important in terms of science and technology. The leading role in these studies belongs to specialists in the field of hydrometeorology.

For the period in question SHI with participation of SOI and other Roshydromet institutions published the monograph “Hydrometeorological Aspects of the Problem of the Caspian Sea and its Basin.”

Within the framework of Theme 4 IHP-VI “Water and Society” the Altai State Technical University developed a unique system for support of decisions (DSS) “Hydromanager” aimed at the economic optimization of managing the quality by means of the complex consideration of the status of the environment condition, and social, economic, and legal aspects, as applied to the Russian Federation. This system is adapted to the requirements of considering the status of the environment expressed in the EU Water Directive and Economic Principles as to managing the water resources.

2.3. Contribution and proposals for participation of NC RF in IHP-VII

The problems of formation of IHP-VII within UNESCO have been repeatedly considered at the NC RF meetings.

The National Committee of RF for IHP fully supported the idea of the major directions of UNESCO activities in the framework of IHP-VII to help first of all solving the problems mentioned in the “Plan of Realization” ratified at the Johannesburg World Summit on Sustainable Development, September 2002.

The International group of experts has developed the draft Strategic Plan for Phase VII of UNESCO-IHP. Based on this draft plan the National Committee has prepared proposals for participation of Russian experts in realization of the forthcoming IHP phase. These proposals were submitted to the UNESCO-IHP Secretariat in April 2008.

Personal particulars (CV’s) of 17 RF experts for participation in the activities of IHP-VII were also submitted to the UNESCO-IHP Secretariat.

The lists of themes and experts recommended by NC IHP RF for participation in certain IHP-VII sub-themes, as well as the proposed forms of cooperation and the methods for accomplishing the themes, are presented in Tables A and B, respectively.

In the course of IHP-VII preparation, including the meetings of the 17th Session of Intergovernmental Council in 2006, it was repeatedly mentioned that the forthcoming IHP phase, like the previous 2-3 phases, in spite of their extraordinary importance and practical significance for the world community goes farther away from scientific and even general hydrology, though the permanent International UNESCO Programme had been created to serve these tasks, as compared to the programmes of WMO, UNEP, FAO and other international organizations aimed at different practical aspects and problems of hydrology and boundary water sciences.

In particular, out of five IHP-VII themes pure hydrology is presented only in Theme 1 (in its five sub-themes) “Adaptation to Global Changes in River Basins and Ground Water Horizons.” The rest four IHP-VII themes are related to a wide circle of problems on water resources management (cultural, social, ecological, economic, financial, organizational and educational aspects).

The above notation supports and strengthens the illusion (under the UNESCO competence) that modern hydrology has no unstudied phenomena and processes and the problem, as a whole, consists only in the correct application of the available knowledge to solve practical problems.

In this connection when preparing the draft UNESCO Programme and Budget for 2010-2011, the NC proposed in February 2008 to include into the IHP Programme an additional cycle of studies on fundamental and methodological problems of modern hydrology as a scientific basis for the entire activities in the framework of IHP and international activities in the fields of hydrology and water-related sciences.

This cycle of studies can be titled as “Scientific and Methodological Grounds of Hydrology and Water Sciences: Modern Status and Directions of Development”.

Under this title wide fundamental studies can be accomplished, as well as the analysis and summarization of the obtained results, and the most promising methods for knowledge development in the following directions can be agreed:

- river runoff formation, methods for hydrological calculations and forecasts, mathematical modeling;
- theoretical and methodological grounds of experimental hydrology;
- scientific and methodological estimates of water resources and their management;
- modern theory of channel process and sedimentation;
- hydrological grounds for the formation of composition and quality of surface and ground waters;

scientific and methodological grounds for nature conservation and ecological aspects of stable use of river systems under the conditions of common environment and water ecosystem degradation, climate change effects on natural water cycle, hydrological regime of water bodies, and water balance components.

In many countries, studies on these hydrological problems are expected to develop with the results reflected to this or that extent in publications and periodical IHP-VII reports.

In the course of preparation of IHP-VII many CIS countries, in particular, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, and Uzbekistan, expressed their wish to participate in IHP. Other countries are believed to join them due to the fact that within IHP-VII, there are the problems whose development can be of undoubted scientific and practical interest for all CIS countries. These are, for instance, the effects of climate change and economic activities on hydrological cycle and water resources (including arid and semi-arid regions), water resources management, extreme hydrological phenomena and water-related disasters, trans-boundary water and pollution transport, ground water management under the conditions of global changes, modernizing hydrological observation systems, etc.

In this connection the National Committee of RF for IHP proposed to organize in October 2008 on the basis of the State Hydrological Institute the meeting of executive representatives of NC for IHP of CIS countries. This proposal was supported by the Commission for UNESCO Affairs. At this meeting, the problems of first priority and the hydrological problems the countries are presently facing will be discussed, the participation in IHP-VII taking into account interests and specificity of CIS countries co-coordinated, and a united strategy and the programme of international cooperation in the framework of UNESCO-IHP and other international organizations developed. The preparation for this meeting started in early 2008. The meeting is

supposed to be held under the auspices of the Department of Natural Sciences of the UNESCO Bureau in Moscow.

PRO FORMA TABLE A: CHECK LIST FOR NATIONAL COMMITTEE CONFIRM PROJECT PROPOSAL CONFORMITY, ACTIVITY AND CONTACT

PART A1

Name of the IHP National Committee	Country Priorities 2008-2009	Country Participation in Theme and Focal area 2008-2013	Events organized in the Country	Activity lead/ coordinated by the Country	List and CV of national experts designated as focal points for Themes and/or Focal areas*	CV of national experts*

IHP VII Themes and Focal areas						
Theme 1:						
Focal area 1.1	Y	Y	No	Lead act.	Anisimov O.A.	Anisimov O.A.
Focal area 1.2	Y	Y	No	Lead act. Contrib. Contrib.	1.I.Shiklomanov, J.Balonishnikova 2.Vuglinsky V.S. 3.N.Frolova	I.Shiklomanov J.Balonishnikova Vuglinsky V.S. N.Frolova
Focal area 1.3	Y	Y	No No	Contrib. Contrib.	1.V.Buzin, Z.Kopaliani , S.Borshch 2.Grechushnikoa A.Alabyan, E.Povalishnikova	V.Buzin Z.Kopaliani S.Borshch M. GrechushnikovaM. Ershova, A. Alabyan, E. Povalishnikova
Focal area 1.4	Y	Y	No	Contrib.	Bartsev O. B.	Bartsev O.B.
Focal area 1.5						
Theme 2:						
Focal area 2.1	Y	Y	No	Contrib.	Vuglinsky V.S.	Vuglinsky V.S.
Focal area 2.2						
Focal area 2.3						
Focal area 2.4	Y	Y	Yes No	Contrib. Contrib.	1.I.Shiklomanov J.Balonishnikova 2.V. Georgievskiy A.Shalygin M. Georgievskiy	I.Shiklomanov J.Balonishnikova V. Georgievskiy A.Shalygin M. Georgievskiy
Focal area 2.5						
Theme 3:						
Focal area 3.1						
Focal area 3.2 -						
Focal area 3.3 -						
Focal area 3.4 -						

Theme 4:						
Focal area 4.1 -						
Focal area 4.2 -						
Focal area 4.3 -	Y	Y	No	Contrib.	T.Gronskaya N.Lemeshko	
Focal area 4.4 -						
Theme 5:						
Focal area 5.4	Y	Y	No	Contrib.	M. Grechushnikova	M. Grechushnikova

* **NOTE** The national Committee is requested to provide the IHP Secretariat with the names, contacts & CV's of persons that will cooperate and contribute to Theme and Focal areas and the related activities to be undertaken-

PROFORMA TABLE B: Definition of activities to be undertaken by National Committee

PART B1

Name of the IHP National Committee	Activities suggested by the IHP National Committees and their method of implementation*
IHP VII Themes and Focal areas	
Theme 1:	
Focal area 1.1	<p>Study of processes of warming, deeper seasonal thawing and disappearance of near-surface permafrost which lead to increased coastal erosion, landslides, and geomorphological changes in the river channels, ultimately leading to changes in the fluvial regime and water quality of the northern rivers.</p> <p>Changes in permafrost may be predicted using mathematical models and scenarios of climate change. Such models may be used to evaluate the probability of destructive processes, i.e. erosion, sedimentation, landslides, under current and projected for the future climatic conditions. Results of these calculations will have important implications in land use planning and environmental risk mitigation.</p>
Focal area 1.2	<p>1. Assessment of current and expected changes of water resources and their use. Estimation of climate changes consequences on hydrological regime and water availability</p> <p>2.</p> <ul style="list-style-type: none"> - Participation at the Arctic-HYDRA project realization. Methods of implementation: network at regional level, seminars, conferences, publications, participation at the international experts working group, case study at national level, best practices at regional level - Development of methods to assess the impacts of climate change to ice regime characteristics of northern rivers and lakes. Methods of implementation: network at international and regional levels, seminars, conferences, publications, participation at the international experts working group, case study at national level, national programmes results, best practices at regional level <p>3. Assessment of changes in renewable water resources based on the climate</p>

	models for the European Part of Russia (EPR).
Focal area 1.3	<p>1.</p> <ul style="list-style-type: none"> - Ice jam floods in the territory of Russia. Risk of occurrence and geographical distribution. Mechanism and the dynamics of ice jams. Methodology of ice jams forecasting. Hydraulic modeling of ice jams and ice jam floods. Methods of ice jams control and prevention. Climate change and ice jam floods. - Case-studies, development of concrete forecasts and recommendations on ice jam floods mitigation. - Flash floods forecasting. <p>2. Studying mechanisms and distribution of hazardous hydrological processes in the territory of Russia .</p> <p>Participation in the project-related working group. Participation in international meetings. Preparation of data, information, documents and case-studies for publication.</p>
Focal area 1.4	Analysis of the negative consequences of technogenic underflooding of the regional ecosystems of ground waters of Russia south and ways of their rehabilitation (2010-2013). The investigations of technogenic underflooding in the territory of Rostov region are carried out
Focal area 1.5	
Theme 2:	
Focal area 2.1	<p>Develop better understanding, tools and best practices for integrated water resources management (Lena river basin as a case study)</p> <p>Methods of implementation: networks at regional levels, seminars, publications, case study at national level, national programmes results, best practices at regional level</p>
Focal area 2.2	
Focal area 2.3	
Focal area 2.4	<p>1.</p> <ul style="list-style-type: none"> - Generalization of international experience of water resources use. - Elaboration of methodological basis and recommendations for water resources use in the international river basins. - As a case study to develop detailed assessment of current and future changes in water resources and water use under different anthropogenic and social factors for Russia and related states. Preparation of effective measures on solution of future water availability problems for countries of former USSR and proposals on elimination of possible consequences. <p>2. Methods and means for sustainable operation of water economy complex and mitigation of risk of negative water impact in river basins with high load on water resources and flood probability. Case-study of the Kuban River basin. The planned intensive socio-economic development of the Kuban River basin, where even now load on water resources is critically high, requires wide range of measures on optimization of water resources management, especially in low water periods.</p> <p>The Kuban River basin is highly prone to floods, therefore urgent problem arises of prevention of adverse water impact and, first of all, of effective population protection and possible reduction of damage from floods.</p> <p>Proposed activity</p> <p>Participation in the project-related working group. Participation in international meetings. Preparation of data, information, documents and case-studies for publication. Preparation of collected works on managing water resources in the Kuban River basin.</p>

Focal area 2.5	
Theme 3:	
Focal area 3.1	
Focal area 3.2	
Focal area 3.3	
Focal area 3.4	
Theme 4:	
Focal area 4.1	
Focal area 4.2	
Focal area 4.3	Develop methods and assessment the ecological status of water systems under stress of large urban cities (St,Petersburg as a case study) Methods of implementation: networks at regional levels, seminars, publications, case study at national level, national programmes results, best practices at regional level
Focal area 4.4	
Theme 5:	
Focal area 5.1	
Focal area 5.2	
Focal area 5.3	
Focal area 5.4	Training specialists in hydrometeorology and popularization of scientific knowledge in the field of hydrology. Organization of educational and training courses for students of the department, active participation in studying process, in particular, drawing up new material for the courses «Continental hydrology» and «Hydroecological computations», implementation of new methodology for students' practices –computerization of studies.

3. Activities on the national and international levels in the framework of IHP.

3.1. Activities on the national level in the framework of IHP.

The National Committee of RF for IHP takes part in preparation and holding in Russia a number of international scientific symposia on different hydrological issues. The most significant events the Committee actively participated in 2006 were:

- International forum “Great Rivers”, Nizhniy Novgorod (May 2006).
- International conference on the problems of hydrometeorological safety (prediction and adaptation of the society to extreme climatic changes)” (September 2006).
- International scientific conference “Extreme hydrological events in the Aral-Caspian region”, with the support of International association of hydrological sciences, Moscow, October, 2006.
- International conference “Ecological and hydrometeorological problems of big cities and industrial zones”, 25-27 October 2006, Saint-Petersburg, Russian State Hydrometeorological University (RSHMU).

Many representatives of the Committee presented their reports at these meetings.

In 2007 the Committee took part in the preparation of several conferences:

- X International symposium on river sediments “The influence of river sediments and channel processes on social, economic and ecological safety” (August 2007, The Lomonosov Moscow State University, Moscow).
- International scientific-practical conference “Conservation of bio-diversity of water-bog areas and stable use of bio-resources in steppe zones” (May 2007, Rostov-on-Don). The Committee participated in the organization of this event together with the Russian committee according to the UNESCO Programme “Man and Biosphere”.
- International symposium “Floods. Risk of arising and strategy of management in the extreme situations” (October 2007, Saint-Petersburg).

In 2006-2007 representatives of the Committee took part in two events that were held by the RF Commission for UNESCO Affairs and the UNESCO Bureau in Moscow:

- Meeting of working group of experts on eco-hydrology problems (Astrakhan, April 2006).
- Congress of UNESCO faculties (Moscow, March 2007).

Representatives of college and academic structures from different regions of Russia took part in work of the Congress of UNESCO faculties. The participants of the Congress reported about the specifics of work of UNESCO faculties in different regions of Russia, the methods of organizing work under the conditions of restricted funds available for their functioning.

3.2 Activities on international level.

27 November – 1 December 2006 in Havana (Republic of Cuba), the 5th international UNESCO conference was held on the FRIEND Programme (Runoff regimes on the basis of international experimental and network data): “Variability of water resources: processes, analyses and effects.” The main themes of the conference were:

- Climate change effects on hydrological processes;
- Hydrological monitoring;
- Using the monitoring data when making decisions.

Mr. S.E. Bednaruk took part in work of the conference. Mr. S.E. Bednaruk is a member of the Committee, Director of the Federal State Unitarian Enterprise (FGUP) “Centre for the Russian Register of Hydrotechnical Structures and the State Water Cadastre” of the Federal Agency for Water Resources IHP RF.

It is necessary to emphasize that because of lack of funds for activities in the framework of IHP, Russia’s representation at this and other similar conferences held under the auspices of international organizations seems to be not enough weighty taking into account its large water resources, economic and intellectual potential.

The Committee submitted proposals to the RF Commission for UNESCO affairs on rendering a financial support for some events in the framework of UNESCO-IHP, however in practice, the activities of the Committee are being carried out at the expense of the organizations in which its members work. The problem of

financing the activities of National Committees on UNESCO programmes requires, as we think, a special additional consideration.

In 2006 Roshydromet and administration of the Nizhniy Novgorod Region with participation of members of NC RF for IHP accepted the regional purpose Programme “Provision of Hydrometeorological Safety and Monitoring of the Environmental Pollution in the Nizhniy Novgorod Region in 2007-2009”. The Programme was developed by the Upper-Volga Administration for Hydrometeorological Services together with the Committee for Nature Conservation and Monitoring of Natural Resources Use in the Nizhniy Novgorod Region. The Programme makes an allowance for realization of the adaptation measures to environmental effects of climate change.

The main goal of the seminar was to discuss the pressing issues of the adaptation policy realization in Russia and EU countries, including the sectoral and regional approach for the Nizhniy Novgorod mentioned as an instance, as well as the prospects of Russian-European cooperation on developing the adaptation policy and measures, technology transfer and research.

The seminar was attended by the representatives of the European Commission for Environmental Issues, Roshydromet, the Apparatus of the plenipotentiary representative of RF President in the Volga Federal District, the Government and Legislative Assembly of the Nizhniy Novgorod Region, the Government of Chuvash Republic, the Upper-Volga Administration for Hydrometeorological Services, the Upper-Volga Basin Water Administration (BVU), representatives of forest, fuel-energy and agro-industrial complexes, the Committee for Nature Conservation and Administration for the use of natural resources of the Nizhniy Novgorod region, the Committee for Protection of the Environment and Monitoring and Use of Natural Resources of the city of Novgorod, heads of republican and regional centres for hydrometeorology and monitoring of the environment, scientists and specialists for climate change research and many others.

At the seminar, two reports were presented on the problems of adaptation strategy in water management under the conditions of climate change and economic activities.

The international seminar of Russia-European Union “Questions of Adaptation to Climate Change” was held in Nizhniy Novgorod on 20 September 2007. In the framework of Russia-EU cooperation on Dialogue on the Environment, in 2006 a working subgroup on climate was created whose co-chairmen were the Federal Services for Hydrometeorology and Monitoring of the Environment (Roshydromet) and Directorate-General of the European Commission for the Environment. In April 2007 in Brussels, the working group submitted the summary report on climate change effects on the environment, assessing its vulnerability and adaptation to the current climatic changes.

3.3 Research/applied projects supported or sponsored by the NC

During the recent years a number of national scientific and technical projects in hydrology and water resources are being developed in Russia, which are supported by the NC of Russia and fully agree with purposes and objectives of the IHP-VI. Among these projects, the following should be noted which are implemented by

different agencies and organizations and covering the whole territory of the country or its vast physiographic and economic regions:

- Implementation of the national subprogramme “Water Resources and Water Bodies 2002-2010”; Responsible Agency – Russian Agency for Water Resources. For example, within the framework of this Subprogramme there are projects on a development of schemes for a multipurpose use and conservation of water resources of Russia, aimed at an optimization of planning water projects and higher efficiency of the investments (contribution to Theme 1, IHP-VI). Such schemes are currently being developed for individual large basins of the Volga, Kuban, Don and Amur rivers (contribution to Theme 1, IHP-VI).

- Multipurpose projects implemented by the organizations within the RosVodResursy on a development of outlook, principles and practice for a more effective management of water resources and water ecosystems in transboundary river basins. There are 70 large and mid-sized transboundary rivers in Russia (Theme 2.2, IHP-VI). During 2006-2008 much work has been done in the field of cooperation of Russia and Estonia (Pskovsko-Chudskoye Lake) and Russia-Belarus-Latvia on joint use and conservation of water bodies.

- The project “Strategic prediction for the period of up to 2020-2025 of climate change expected in Russia and its impact on the sectors of Russian national economy”. In this project climate change tendencies for different regions of Russia were presented and recommendations were formulated on the priority measures on adaptation of social and economic spheres to these changes. Major results and conclusions were published by ROSHYDROMET (Themes 1 and 2.1 of IHP-VI).

- Preparation of the monograph “Water Resources of Russia and Their Use”. The Project was developed by the scientists from the SHI and other organizations of ROSHYDROMET and RosVodResursy. It is planned to publish the monograph by the end of 2008. (Theme 1. IHP-VI).

- Project on the study of the current dynamics of glaciation, maximum snow storage and principles of glacier runoff formation; it is being implemented by the IG of RAS within the framework of Theme 1. IHP-VI for the mountain glaciers in the Urals, Caucasus, Pamir and Tien Shan.

- Publication of 7 volumes of the Proceedings of the VI All-Russia Hydrological Congress. Selected reports of the Congress were translated into English and collected in a separate volume.

3.4 Collaboration with other national and international organizations and/or programmes

First of all, practically all the NC members contribute to the WMO activities on the “Hydrology and Water Resources” Programme, as well as to IAHS projects. For example, Prof. I.A. Shiklomanov, Director of the SHI, is the Chairman of the Working Group on Hydrology for Asia (RA-II) and participates in the WMO Executive Committee every year.

Dr. J.A. Balonishnikova, Scientific Secretary of the SHI, was a member of the IAHS/UNESCO research group on the preparation of monograph “Hydrology 2020” which was published at the end of 2006.

Prof. V.S. Vuglinsky, Deputy Director of the SHI, is a WG member on Hydrology of Europe (RA-VI) and WG member on “BALTEX” Project; he attends the meetings of these WGs.

Since 1989 the Hydrochemical Institute (GHI) participates in implementation of the international project GEMS/Water. Within the framework of this project, GHI provides scientific guidance for the national subsystem of the Global Environmental Monitoring System (GEMS/Water) ensuring guarantees and control of hydrochemical data quality. GHI is a national coordination centre of this international program on behalf of Russia. Scientific guidance and coordination for the project GEMS/Water is performed by the director of GHI academician A.M. Nikanorov. In the project framework GHI annually collects, analyses and corrects data on water discharge gathered at 19 sites of the national GEMS/Water subsystem. Data on water composition and characteristics are gathered at 26 sites. The processed results of analysis (more than 500 water samples) are submitted by GHI to the GEMS/Water Headquarters (Canada) where they are later used in global water resources assessment. Every year GHI makes an assessment of results of external and laboratory water quality control performed at the water observation laboratories of ROSHYDROMET involved in the project.

Prof. of the department of hydrology of the Moscow State University (MSU) R.S. Chalov is a member of the Presidium of UNESCO World Association for Sedimentation and Erosion Research (WASER).

Prof. R.S. Chalov and N.N. Alexeevsky (MSU) contributes to the work of International Research and Training Centre on Erosion and Sedimentation (IRTCES) (PRC, Peking).

Prof. A.E. Asarin, a NC member, contributes to the work of the Technical Committee “Floods and Dams”/COLD (International Commission on Large Dams).

The members of the NC for the IHP greatly contribute to the editorial boards of international scientific journals:

- Prof. A.A. Tskhai is a co-editor of “Hydrological Environment” Journal (ISSN, 1738-8449);
- Prof. R.S. Chalov is a member of the editorial board of “International Journal of Sediment Research”
- Prof. I.A. Shiklomanov is a member of the editorial board of the international journal “Integrated Assessment”.

The members of the Russian NC collaborate with many other international organizations, such as:

- International Association for Hydraulic Research (IAHR)
- International Geographic Union
- Association of Academies of Sciences of Asia
- Wetlands International
- NATO Research Programme
- International Commission of Geophysics Union on Water Sustainability.

3.5 Other initiatives

The International Conference on the Problems of Hydrometeorological Security (prediction and adaptation of the society to extreme climate change) took place in Moscow in the hotel “Cosmos” on 26-29 September 2006.

The Conference was held as a part of events in the framework of Russian Presidency in the “Group of Eight” and was organized by the Federal Service for Hydrometeorology and Environmental Monitoring

(ROSHYDROMET) with participation of interested Federal Bodies of the Executive Authorities of the Russian Federation.

The Organizing Committee was chaired by Dr. A.I. Bedritsky, the Head of ROSHYDROMET. The Board of the Organizing Committee included the representatives of the ROSHYDROMET, Russian Academy of Sciences, Ministry of Economic Development and Trade of the Russian Federation, Ministry of Industry and Energy of the Russian Federation, Ministry of Regional Development of the Russian Federation, Emergency and Civil Defense State Committee, Ministry of Education and Science of the Russian Federation, and Moscow Government.

The Program of the Conference scheduled four full workdays and included the ceremony of Official Conference Opening, plenary and round tables meetings, poster sessions, discussions, adaptation of the resolution, and the Conference Official Closure.

More than 590 persons participated in the Conference: representatives of national hydrometeorological services, hydrometeorological centres, research institutes and organizations, and institutions of higher education from 31 countries.

The main topics of the Conference were as follows:

1. Monitoring of climate changes and related extreme hydrometeorological phenomena. Extreme climate changes.
2. Prediction of extreme hydrometeorological events for early warning systems.
3. Measures for reducing vulnerability and adaptation of the society to extreme manifestations of climate variability, and sustainable development of economy. Economic and social consequences of extreme hydrometeorological events.

In total, 30 plenary papers were presented, including 19 Russian papers and 2 papers in co-authorship with foreign colleagues, and 147 poster papers, including 112 Russian papers, two of which were in co-authorship with foreign colleagues.

In 2007 the Springer Press published the Proceedings of the NATO Advanced Research Workshop (ARW) on Extreme Hydrological Events: New Concepts for Security, which was held in Novosibirsk, Russia, from July 11-15, 2005. The workshop fell within the NATO priority research topic on Environmental Security, Disaster Forecast and Prevention.

At the present time, the necessity of considerable deepening of our understanding about the nature of extreme and catastrophic natural and man-induced events, in particular hydrologic ones, becomes very topical, as well as the development of advanced methods for their prediction, including estimating probability of their occurrence and a risk related to them. Another aspect of this hydrological problem is reducing of vulnerability of social, economic, and engineering systems to the extreme hydrological events and decreasing of a degree of their effect on such systems.

Along with the critical assessment of present-day knowledge on the problems mentioned above the ARW is aimed at to identify directions for future research and to promote close working relationships between scientists from different countries and with different professional experience.

The following topics are considered in this book:

1. Basin case studies on extreme hydrological events
2. Probabilistic estimation in flood studies
3. Ice-induced floods
4. River low flows and climatic conditions and environmental issues
5. Risk assessment and management for floods, low water events, damages vulnerability issues

The book also includes the general conclusions and recommendations, as formulated by the participants of the workshop.

The book contains 30 scientific contributions, of which 8 are from Russia and the Former Soviet Union states, and 22 are from Europe and America.

Land Water Resources in the Light of Climate Change”, St Petersburg, 2007, 246pp

The session of Research Council of the RAS “Land Water Resources” took place in Pskov, Russia, on 25-27 June, 2007. The Proceedings of the session “Land water resources in the light of climate change” were published in 2007 under the support of the Federal Agency for Water Resources.

The book includes 17 papers of the representatives of the RAS Institute for Water Problems, SHI, RAS Institute of Geography, RAS Institute of Atmospheric Physics, Institute of Limnology RAS, Institute for Water and Environmental Problems of the Far-Eastern Branch of RAS, Institute for Water and Environmental problems SB RAS, and Murmansk Service for Hydrometeorology and Environmental Monitoring.

The papers are focused on the problems of changes in river discharge, climate impact on lake regime, methods of physical and mathematical modeling of heat-mass land-discharge exchange in the light of climate change, state of the ecosystems of Russian water bodies and others.

Hydrological Impact of Climate Change, Proceedings of British-Russian Conference, Novosibirsk, 2007, 256pp

The International British-Russian Conference and Seminar-School was held in Novosibirsk Academgorodok on 13-15 June, 2007. The Conference was held by the Institute for Water and Environmental Problems SB RAS (IWEP SB RAS) under the initiative of the British Council as a part of events in the framework of the 50th Anniversary of SB RAS.

The Conference was financially supported by the British Council, Federal Agency for Water Resources of the Ministry of Natural Resources of the Russian Federation, Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET), and Russian Foundation for Basic Research.

The Conference was aimed at to promote mutual knowledge of the current state of research on climate change impact on hydrological processes in rivers, lakes and reservoirs. The applied methodic and the results of assessment of possible changes in hydrological regime of water objects and river runoff were considered. The

scientific agenda included the following topics: the advanced methods for assessment of climate change impact on hydrological processes in rivers, lakes and reservoirs; application experience and the results of assessment of possible hydrological consequences of climate change for hydrological objects of various types and sizes; climate change impact on water resources; the role of climate change in initiation of extreme hydrological events (floods, low water periods, etc). Great consideration was given to consideration of these issues with regard to water objects and hydrological processes in the natural conditions of Siberia and the North of Russia.

Co-chairmen of the Conference: O.F. Vasiliev, Academician, (Institute for Water and Environmental Problems SB RAS), Russia, and Prof Nigel Arnell, University of Southampton, (Great Britain).

65 leading scientists from the institutes of RAS, SB RAS and Karelian Research Centre RAS, organizations of ROSHYDROMET and Federal Agency for Water Resources of the Ministry of Natural Resources of the Russian Federation, University of Southampton and research organizations located in Wallingford (Centre for Ecology and Hydrology and the international hydraulics research and consultancy organization HR Wallingford, Great Britain) participated in the conference.

23 plenary papers and 6 posters were presented. The book includes major part of the papers submitted by courtesy of the authors.

3.6 Educational and training courses

3.6.1 Contribution to IHP courses

At its meeting in 2005, the NC of Russia for the IHP discussed a problem of renewal UNESCO Higher International Courses in Russia, which were organized in Moscow at the Moscow State University during many years. There is a proposal of the Russian State Hydrometeorological University to organize similar courses in St Petersburg, where it is possible to collaborate with the scientists from the SHI and St Petersburg State University.

In 2006-2007 at the department of hydrology of the Russian State Hydrometeorological University a work was carried out on implementation of the results of the latest sessions of UNESCO IHP Intergovernmental Council.

At present, the RSHU has all the technical means and amenities and high level of education. However, the Government of the Russian Federation still has not introduced any annexes to the regulation in which the Moscow State University is entitled the only organizer of the UNESCO Higher International Courses.

To confirm that the Russian State Hydrometeorological University possesses enough resources for organization of the courses, detailed syllabi have been developed and a possible staff of lecturers has been designated by the scientists of the hydrological department. These syllabi refer to three sessions connected with the major concepts of IHP Themes: sedimentation, transboundary water objects, extreme hydrological events (disasters). A research is being carried out on all these topics at the RSHU department of hydrology and corresponding chapters are included in lecture courses.

3.6.2 Organization of specific courses

Every year, according to the agreement with ROSHYDROMET, the State Hydrological Institute organizes advanced courses for the specialists in hydrology and water management on different hydrological problems; these courses are attended by hydrologists working in research institutes and at hydrological network of ROSHYDROMET and other agencies, as well as by specialists from universities, design institutions, ministries and companies.

For example, the following courses were arranged during period September 2004 – June 2006:

- Advanced courses for hydrologists “New system of hydrological computations for construction”. Set of Rules – SP 33-101-2003 “Determination of basic design hydrological characteristics” 2006, 2007, St Petersburg, SHI.
- Advanced courses for hydrologists “New system of hydrological computations for construction”. Preparation of “Territorial Construction Standards (TCS)” 26.06-07.07.2006, St Petersburg, SHI.

Besides, at the end of 2004, in Barnaul, an international educational workshop “Water Resources Management in Russia and in EC” was held at the Altai State Technical University; professors from Belgium, France and Russia and more than 100 students, post-graduate students and lectures attended the workshop.

3.6.3 Participation in IHP courses

During June 2006 –May 2008, UNESCO Higher International Courses were not organized at the MSU due to lack of financing.

4. Publications

Monographs, sets of papers, text books and educational supplies

Monographs

E.N. Bakaeva, A.M. Nikanorov Hydrocoles in water quality assessment. - Moscow, Nauka, 2006 (in Russian)

M.V. Bolgov, G.F. Krasnozhon, A.A. Liubushin Caspian Sea: extreme hydrological events. – Moscow, Nauka, 2006 (in Russian)

V.S. Savenko Geochemistry of phosphorus in global hydrological cycle. 2007 (in Russian)

V.S. Savenko Chemical composition of suspended sediments of the world rivers. 2006 (in Russian)

V.V. Kovalenko Partially infinite mechanism of natural and social processes turbulization.- St.Petersburg, RSHMU Press, 2006, 166 pp (in Russian)

Multi-author monograph Geocological status of the Arctic coast of Russia and nature management safety. Ed. By N.I. Alexeevsky, 2007 (in Russian)

P.M. Lurie, V.D. Panov, Yu.G. Ilyichev, A.D. Salpagarov Snow cover and glaciers within the Kuban river basin., 2006 (in Russian)

A.M. Nikanorov, V.A. Bryzgalo Freshwater ecosystems in impact regions of Russia. - Rostov-on-Don, NOK Press, 2006 (in Russian)

A.M. Nikanorov, V.A. Ivanov, V.A. Bryzgalo Russian Arctic rivers under present conditions of anthropogenic impact. - Rostov-on Don, NOK Press, 2007 (in Russian)

A.M. Nikanorov, A.G. Stradomskaya Oil pollution problems in freshwater ecosystems. - Rostov-on-Don, NOK Press (in print) (in Russian)

Glacierization of north Eurasia yesterday and in the near future. – Nauka, 2007 (in Russian)

Current gacierization of north and central Eurasia. – Moscow, Nauka, 2006, 484 pp (in Russian)

R.S. Chalov. Study of channels, 2007 (in Russian)

Heat and water exchange of East Siberia frozen grounds and its factors. Ed. by A.G. Georgiadi, A.N. Zolotokrylin, Moscow – Tver, Triada, 2007, 576 pp (in Russian)

V.N. Fedorov Landscape indication of runoff formation. – Irkutsk - Moscow- V.B. Sochava Institute of geography SB RAS Press, 2007, 175 pp (in Russian)

Yu.A. Fedorov, N.S. Tambiyeva, D.N. Garkusha Methane in water ecosystems. - 2nd edition revised and enlarged. – Rostov-on-Don – Moscow, Rostizdat, 2007 (in Russian)

I.A. Shiklomanov et.al Water resources of Russia and their use (in print) (in Russian)

Yu.S. Datsenko Eutrophication of reservoirs, 2007 (in Russian)

Forest Hydrology – results of research in Germany and Russia. Editors Part I: H. Puhlmann, R. Schwarze; Editors Part II: S.F. Federov, S.V. Marunich (dec.) – Koblenz, 2007

Sets of papers:

Water ecosystem of the Upper Don: long term changes of water quality. Editors: A.M. Nikanorov, L.I. Minina, T.A. Khoruzhaya. – St Petersburg, Gidrometeoizdat, 2006 (in Russian)

Hydrochemistry: achievements and outlook at the turn of the century. – Proceedings of the XXX Anniversary Meeting 19-21 September, 2005. Ed. by A.M. Nikanorov, Corresponding Member, RAS - Rostov-on-Don, NOK Press, 2007 (in Russian)

Current global changes in the environment (in 2 volumes). Ed. by R.K. Klige. – Moscow, “Nauchny Mir”, 2006 (in Russian)

Proceedings of the Russian State Hydrometeorological University, №5. – St Petersburg, 2007, 163 pp (article on hydrology 21) (in Russian)

Estuary-delta systems of Russia and China: hydromorphological processes, geomorphology and forecast of development. Ed. by V.N. Korotayev, V.N. Mikhailov, D.B. Babich, Li Tsun Syan, Lyu Shuguan. GEOS, 2007, 445 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Plenary reports. – Moscow, the Meteoagency of Roshydromet, 2006 (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 1. State and perspectives for the development of hydrological observational systems and information support. – Moscow, the Meteoagency of Roshydromet, 2006, 211 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 2. Floods and other hazardous hydrological events: assessment, forecasting and mitigation. – Moscow, the Meteoagency of Roshydromet, 2006, 295 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 3. Water balance, surface and ground water resources, hydrological consequences of economic activity and climate change, vulnerability and adaptation of socio-economic sphere. (in 2 parts) – Moscow, the Meteoagency of Roshydromet, 2006, 521 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 4. Ecological State of water bodies. Water quality and scientific basis for their protection. (in 2 parts). – Moscow, the Meteoagency of Roshydromet, 2006, 539 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 5. Hydrophysical phenomena and processes. Runoff formation and changeability, hydrological and water management design. (in 2 parts). – Moscow, the Meteoaency of Roshydromet, 2006, 524 pp (in Russian)

Proceedings of the VIth All-Russia Hydrological Congress. Section 6. Problems of channel processes, erosion and sediments. – Moscow, the Meteoaency of Roshydromet, 2006, 264 pp (in Russian)

Text books and educational supplies:

N.I. Alexeevsky Hydrophysics Text book for Higher Educational Institutions. – Moscow, “Academia” Publishing Centre. 2006 (in Russian)

N.B. Baryshnikov Dynamics of channel flows. – St Petersburg, RSHMU Press, 2006, 300 pp (in Russian)

N.B. Baryshnikov Channel Processes (in Russian)

Yu.B. Vinogradov, T.A. Vinogradova Introduction to Hydrology (Text Book). – St Petersburg, State University Press (in print) (in Russian)

V.M. Georgievsky, S.V. Shapochkin Hydrological forecasts (in Russian)

A.M. Doganovsky, V.G. Orlov Practical work on hydrology. – St Petersburg, RSHMU Press, 2006 (in Russian)

V.V. Kovalenko, N.V. Victorova, E.V. Gaidukova Modeling of hydrological Processes. – St Petersburg, RSHMU Press, 2006, 580 pp (in Russian)

N.V. Myakisheva The Earth climatic system (in Russian)

M.V. Naumenko Eutrophication of lakes and reservoirs (in Russian)

A.N. Pavlov Hydrophysics (Text book for hydrometeorologists). – St Petersburg, RSHMU Press, 2006, 378 pp (in Russian)

A.N. Pavlov Ecological culture origin. – St Petersburg, RSHMU Press, 2006 (in Russian)

A.V. Sikan Statistical technique for hydrometeorological information (in Russian)

N.L. Frolova River hydrology (anthropogenic runoff change) (Educational supply), 2006 (in Russian)

5. Participation in international scientific meetings

5.1 Meetings hosted by the country

- International conference on the problems of hydrometeorological safety (prediction and adaptation of the society to extreme climate changes). 26-29 September 2006, Moscow, ROSHYDROMET.
- International scientific conference “Extreme hydrological events in the Aral-Caspian Region”, to be supported by the International Association of Hydrological Sciences, Moscow, October 2006.
- IVth International conference “Ecological and hydrometeorological problems of large cities and industrial zones”, 25-27 October 2006, St Petersburg, RSHMU.
- Preparation for the Tenth International Symposium on River Sediments “Impact of river sediments and channel processes on social, economic and ecological safety”, 1-4 August 2007, Moscow, MSU.
- Advanced course for hydrologists “Expertise of hydrological computations for construction, including preparation of technical regulations on hydrometeorological safety of structures”, 2007, St Petersburg, SHI.
- International workshop on preparation of the UNEP/GEF project “Climate change accounting in management of water resources, water and ice regime of large Arctic rivers, including development of strategy for adaptation of water economy system”, 29 May 2006
- International congress “Great Rivers,2006”, 26-29 May 2006, Nizhny Novgorod
- International workshop conference “Preserving biodiversity of wetlands and sustainable use of biologic resources in steppe zones”
- XXI Plenary interuniversity coordination meeting on erosion, channel and estuary processes, 6-8 October 2006, Tcheboksary, Russia
- XXII International coastal conference “Problems of coastal management and sustainable development of coastal zone”, 16-20 May 2007, Gelendzhik, Russia
- All-Russia conference “Ice processes on water objects of Russia” 28-31 August 2007, Arkhangelsk, Russia
- XXI Plenary interuniversity coordination meeting on erosion, channel and estuary processes, 2-4 October 2007, Novotcherkassk, Russia

5.2 Participation in meetings abroad

The members of the Russian NC for the IHP participated in the following meetings abroad:

- ISPRS Commission VII Mid-Term Symposium “Remote Sensing: From pixels to processes”, 8-11 May 2006, The Netherlands, Enschede
- XXIII Conference on Danube Countries on the Hydrological Forecasting and Hydrological Bases of Water Management, 28 August-01 September 2006, Serbia, Belgrade
- Second Scientific and Technical Conference “Навколишнє природне середовище-2007: актуальні проблеми екології та гідрометеорології; інтеграція освіти науки”, dedicated to the 75th Anniversary

of the Odessa State Environmental University (the former OHMI), 26-28 September 2007, Odessa, the Ukraine

6. Other activities at regional level

In 2006-2008, 12 interdepartmental research workshops on “Global environmental changes” have been held (supervisor- R.K.Klige)

Completed and ongoing scientific projects (Russia and other countries).

6.1 Completed projects

- Geocological characteristics of water objects and their basins for pipeline transport safety evaluation in the north of the European part of Russia
- Characteristics of current channel forming processes in the Kuban river delta and development of recommendations on monitoring water object in its territory
- Assessment of energy and substance flow transformation in the Kuban and the Don river deltas
- Evaluation of the ecological state of the lake Senezh
- Development of scenarios of intergrated use and water resources conservation in the river Terek basin
- Geocological state of the Arctic coast of Russia and nature management safety

6.2 Ongoing projects

- Climatic changes of hazardous hydrological processes
- Assessment of possible river water consumption in various seasons on acquired river sites of small and medium rivers of the European part of Russia
- INCO Project “International water resources control: to sustainable future of the Aral Sea basin”; implemented at the support of the European Commission and participation of the Hannover University, 2006-2008.

7. Future activities

7.1 Activities planned until December 2008

The following activities are planned:

- Advanced course on hydrology “Hydrological computations” (Spatial-temporal generalization of hydrological characteristics), 23 June-5 July 2008, St Petersburg, SHI.
- International conference “Water resource systems management in extreme situations”, 4-5 June 2008, Moscow, Crocus Expo Exhibition Centre. Organizers: the Federal agency for water Resources of the Russian Federation and the Netherlands Water Partnership under the patronage of World Water Council (WWC), Russia
- Meeting of CIS countries NC IHP responsible representatives, October, 2008, St Petersburg

- Conference dedicated to the Centenary of V.A. Uryvaev, November, 2008, Valdai branch of the SHI, Valdai, Russia

7.2 Activities foreseen for 2009-2011

These activities will be considered at the meetings of the NC of Russia for the IHP in 2008, at the preparation of programmes on research in hydrology and water management in different agencies and organizations of Russia for 2009-2011.

It is assumed to organize the next VIIth All-Russia Hydrological Congress in 2010-2011.

- Events in the framework of the 175th Anniversary of the Russian Hydrometeorological Service, October, 2009.
- Events in the framework of the 90th Anniversary of the SHI, October, 2009.