

IGU programme for the Hazard and Risk
joint with Japanese geographical society

2009 International symposium

**Hazard and Benefit of a Northern River
The Amur River and the Impacts of Land Use Changes**

28 March 2009

Organizer Shigeko Haruyama

Report on IGU hazard and risk conference (joint with Japanese geographical society) held at Teikyo University (Tokyo, Japan) on March 28, 2009

The conference was held in one session in the afternoon of March 28, 2009. It was organized on the premises of Teikyo University in Tokyo, Japan, and was combined with the Meeting of Japanese geographical society.

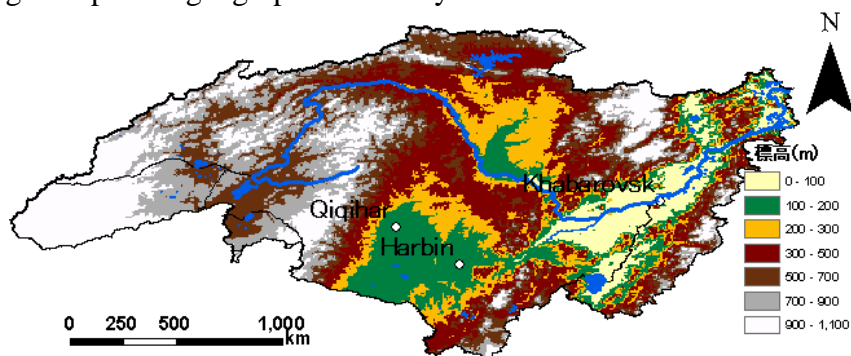


Fig.1 The Amur River Basin

Totally, there were 10 presentations made at the IGU conference. Most of them were devoted to the joint Japanese-Russian-Chinese project “Amur-Okhotsk” and to the studies of Amur river basin and adjacent territories.



Fig.2 Flood of the Amur river basin

An introduction to the problem of hazardous flooding in the Amur river basin has been presented by Prof. Shigeko Haruyama from Mie University and the University of Tokyo. In particular, changes of land use in the Amur basin, notably in the Chinese part of the basin, have

influenced the flood threat in the basin. Certain cases of floods in the Amur basin were analyzed in the report.

Prof. Takayuki Shiraiwa (RIHN, Japan) have made an overview of the problem of primary biological production in the Sea of Okhotsk and Oyashio oceanic region. It is one of the most productive regions of the world ocean, and to a large extent this productivity is influenced by dissolved iron transport from Amur basin. Thus, studies of the dissolved iron transformation in the basin is very important. Land cover and land use in Amur basin are of large importance for the dissolved iron cycle.

Prof. Yan Baixing from the Northeast Institute of Geography and Agroecology (Changchun, China) has presented an analysis of land use changes in the Sanjiang plain within Amur basin. It has been shown that agricultural development in the basin has lead to decrease of the iron transport to Amur, although increase of rice paddies area seems to increase it again.

Dr. Takeo Onishi (RIHN, Japan) has demonstrated results of numerical modeling of the dissolved iron productivity in Amur basin under different scenarios of land use in the basin. In particular, forest fires and conversion of wetlands to arable lands were studied. Both types of land use changes have a potential to decrease the dissolved iron productivity in Amur basin.

Prof. Sergey Ganzey (Pacific Institute of Geography, Vladivostok, Russia) has presented results on surveys of the land use changes in Amur basin obtained from Russian, Chinese and Mongolian sources. Both historical sources from 1920s-1930s and contemporary satellite data were used for the study. Detailed quantitative information on the changes of land use based on GIS technology has been presented.

Dr. Akihiko Kondoh from Chiba University (Japan) has demonstrated results of a group of scientists with analysis of the remote sensing of land use from satellites. NDVI index, mostly reflecting the greenness of vegetation, was used for the study. Changes in forest areas, agricultural areas and, particularly, rice paddies area are of special interest as they might change the dissolved iron productivity in the Amur basin.

Dr. Hiroaki Kakizawa (Hokkaido University, Japan) has presented an analysis of causes of the natural resources degradation in Amur basin. Notably, forest degradation in Russia and agricultural development in China are studied, especially at the level of certain regions. Particular features of the land use changes (such as maturity of forests, types of agriculture lands) are studied.

Dr. Yoshihiro Tachibana (Mie University, Japan) has studied natural reasons of interannual variations of Amur river discharge and its connection to the large-scale atmospheric circulation patterns. Variations of the Arctic Oscillation and sea surface temperature in the Sea of Okhotsk are discussed as possible reasons for the precipitation variations, and hence, Amur discharge changes.

Dr. Andrey Shmakin (Institute of Geography, Moscow, Russia) has presented results of statistical study of weather situations suitable for spring floods in Northern Eurasia, and changes of frequency of such situations under contemporary climate change. In general, there is no increase of frequency of flood-threatening weather situations over Northern Eurasia, except for few areas in Pechora basin near Ural mountains and in some other areas in Western and Eastern Siberia. In Amur basin, no significant changes are observed.

Yukio Himiyama (Hokkaido University of Education, Japan) has made a summary of Amur-Okhotsk international project and its development during the last years. The Amur-Okhotsk project is sited as a good example of international collaboration aimed at better understanding of the ecological situation and processes in large region of Eurasia.