

# Contents

## **I. Availability of surface and groundwater resources and the role of rising abstractions, climate and land use change**

### **Large-scale modelling of water resources in the Selenga River Basin**

Marcus Malsy, Martina Flörke ..... 17–26

### **Review of Long-term Satellite Data Series on Mongolia for the Study of Land Cover and Land Use**

Martin Kappas, Tsolmon Renchin, Selenge Munkhbayar, Oyudari Vova, Jan Degener ...27-35

### **Drivers of Land degradation in Umnugobi Province**

Tsolmon Renchin, Martin Kappas, Selenge Munkhbayar, Oyudari Vova, Jan Degener ...37-53

### **Evaluation of groundwater resources in the upper Tuul River basin, Mongolia**

Enkhbayar Dandar, Jesús Carrera, Buyankhishig Nemer.....55-69

## **II. Environmental pollution impacts of anthropogenic activities**

### **Influence of urban settlement and mining activities on surface water quality in northern Mongolia**

Gunsmaa Batbayar, Daniel Karthe, Martin Pfeiffer, Wolf von Tümpling, Martin Kappas ..73-86

### **Heavy Metal Fluxes in the Rivers of the Selenga Basin**

Galina L. Shinkareva, Nikolay S. Kasimov, Mikhail Yu. Lychagin .....87-100

### **Linking Catchments to Rivers: Flood-driven Sediment and Contaminant Loads in the Selenga River**

Chalov Sergey R., Romanchenko Anna O.....101-118

## **Hotspot Pollution Assessment: Cities of the Selenga River Basin**

Kosheleva N., Kasimov N., Gunin P., Bazha S., Enkh-Amgalan S., Sorokina O.,  
Timofeev I., Alekseenko A., Kisselyova T. ....119-136

## **Geochemical Transformation of Soils Caused by Non-Ferric Ore Mining in the Selenga River Basin (Case Study of Zakamensk)**

Ivan V. Timofeev .....137-151

## **Environmental-Geochemical Map of Ulaanbaatar City: Methodology of Compiling and Perspectives of Applying**

Olga Sorokina.....153-164

### **III. Fluvial transport dynamics and morphology**

#### **Source to Sink: Water and Sediment Transport in the Selenga-Baikal Catchment**

Ekaterina Promakhova, Nikolay Alexeevsky .....167-178

#### **Morphological analysis of the upper reaches of the Kukuy Canyon derived from shallow bathymetry**

Nicolas Le Dantec, Nathalie Babonneau, Marcaurélio Franzetti,  
Christophe Delacourt, Yosef Akhtman, Alexander Ayurzhanayev, Pascal Le Roy .....179-190

### **IV. State of aquatic and terrestrial ecosystems**

#### **Geo-ecological Issues in the Selenge River Basin Catchment**

Enkh-Amgalan. S., Dorjgotov D., Oyungerel J., Enkh-Taivan D., Batkhishig, O.....193-205

#### **The natural risks caused by interactions between ecosystems of Selenga River Basin and the Central Asia**

Petr D. Gunin, E.V. Danzhalova and Sergey N. Bazha.....207-218

#### **Is the Endemic Fauna of Lake Baikal Affected by Global Change?**

Till Luckenbach, Daria Bedulina, Maxim Timofeyev.....219-235

**The influence of BPPC on Baikal plankton – comparative study of phytoplankton in the point of influence of BPPC purified waste waters and in the reference clean point in 2005-2006 years**

Svetlana V. Shimaraeva, Lyubov R. Izmestyeva, Lyudmila S. Krashchuk,  
Helene V. Pislegina, Eugene A. Silow.....237-251

**V. Water management**

**Floods in the Selenga River basin: research experience**

Garmayev Endon, Borisova Tatiana, Ayurzhanayev Alexander, Tsydypov Bair.....255-264

**Challenges for Science-Based IWRM Implementation in Mongolia: Experiences from the Kharaa River Basin**

Daniel Karthe, Sonja Heldt.....265-280

**The EU-WFD as an Implementation Tool for IWRM in non-European countries – Case Study: Mongolia**

Sonja Heldt, Daniel Karthe, Christian Feld.....281-299

**Potential and feasibility of willow vegetation filters in Mongolia**

Katja Westphal, Chris Sullivan, Peder Gregersen, Daniel Karthe.....301-320

**VI. Innovative monitoring techniques**

**Leman-Baikal: Remote Sensing of Lakes Using an Ultralight Plane**

Y. Akhtman, D. Constantin, M. Rehak, V. Nouchi, M. Tarasov, G. Shinkareva,  
S. Chalov, B and U. Lemmin .....323-333

**Advantages of Biosensor Water Quality Monitoring**

Konrad Siegfried, Andreas Koelsch, Eva Osterwalder, Sonja Hahn-Tomer .....335-346

**The Multi-Species Freshwater Biomonitor: Applications in ecotoxicology and water quality biomonitoring**

Almut Gerhardt.....347-354