



BAIKAL INSTITUTE OF NATURE MANAGEMENT
SIBERIAN BRANCH OF THE RUSSIAN
ACADEMY OF SCIENCES



V.B. SOCHAVA INSTITUTE OF GEOGRAPHY,
SIBERIAN BRANCH OF THE RUSSIAN
ACADEMY OF SCIENCES



LOMONOSOV MOSCOW STATE UNIVERSITY



RICE UNIVERSITY, USA



UNIVERSITY OF ILLINOIS, USA

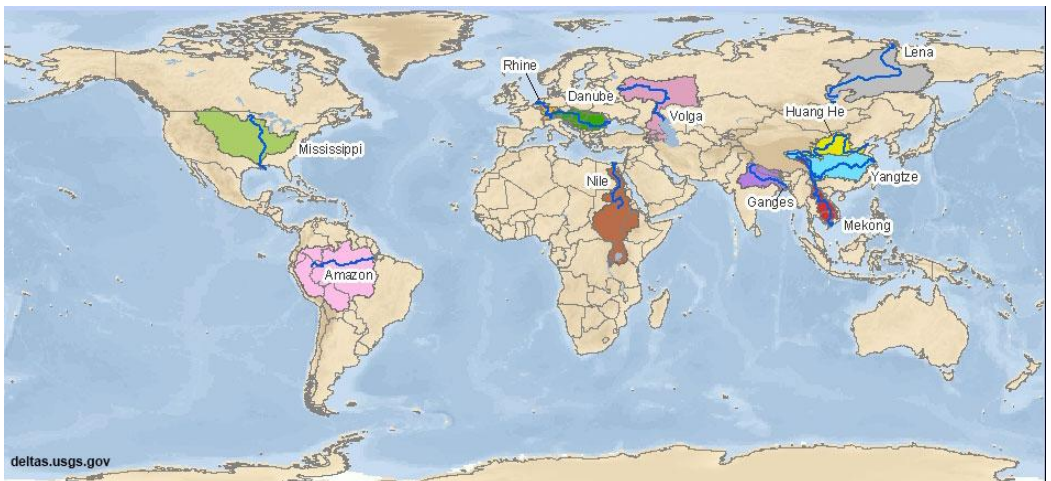
DELTA: GENESIS, DYNAMICS, MODELLING AND SUSTAINABLE DEVELOPMENT

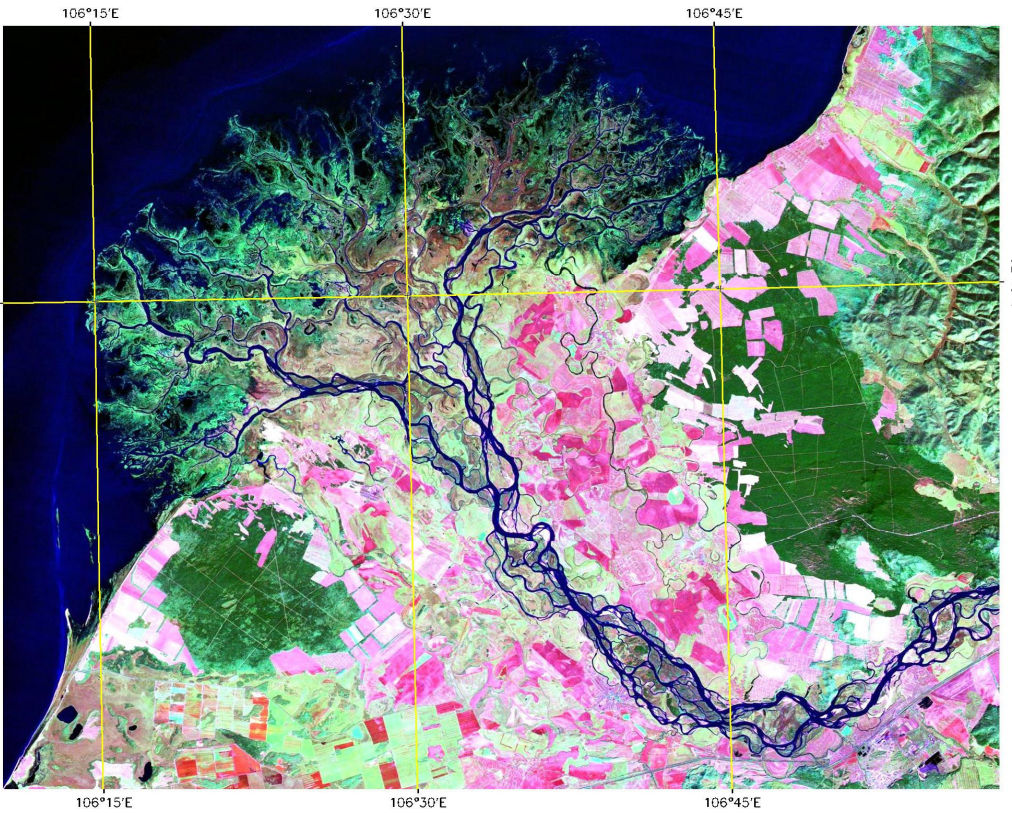
International conference

July 21-25, 2014

Istomino

Republic of Buryatia, Russian Federation





Selenga River Delta, Landsat Imagery 7:4:2

Organizing Committee

Chairs:

Arnold K. Tulokhonov – Corr.-Member of RAS, Member of the board for science, education, culture and information politics of the Council of Federation, Federal Assembly of the Russian Federation

Nikolai S. Kasimov – Academician of RAS, First Vice-President of the Russian Geographic Society, Dean of the Department of Geography, Moscow State University

Jeffrey Nittrouer – Assistant Prof. of Geology, Rice University, Department of Earth Science

Co-Chairs:

Endon Zh. Garmaev – Dr. (Geog.), executing director of Baikal Institute of Nature Management, SB RAS

Leonid M. Korytny – Dr. (Geog.), deputy director of Sochava Institute of Geography SB RAS

Nikolai I. Alexeevsky – Dr. (Geog.), Prof., Head of the chair of hydrology, Moscow State University

Gary Parker – Dept. of Civil & Environmental Engineering and Dept. of Geology, University of Illinois Urbana-Champaign

Day 1: Monday, 21 July 2014

Welcome speeches (08:30-09:00):

Arnold Tulokhonov, Corr.-Member of RAS, Member of the Federal Council of the Federal Assembly of the Russian Federation

Jeffrey Nittrouer, Assistant Prof. of Geology, Rice University

Nikolay Alekseevsky, Prof., Head of Department of Land Hydrology, Moscow State University, Faculty of Geography

Endon Garmaev, D.Sc., Acting Director of Baikal Institute of Nature Management SB RAS

Leonid Korytny, D.Sc., Vice Director of the V.B. Sochava Institute of Geography SB RAS

TECTONIC, BASE LEVEL AND CLIMATE CONTROLS ON DELTA MORPHOLOGY AND STRATIGRAPHY

- 09:00-09:20 **Arnold Tulokhonov** (Baikal Institute of Nature Management SB RAS). Deltas as a unique source of information about the geological and ecological state of «land-sea» systems
- 09:20-09:40 **John B. Anderson** (Rice University). Delta evolution in the northern Gulf of Mexico basin during the last eustatic cycle (~120 ka to present): application to stratigraphic modeling
- 09:40-10:00 **Vittorio Maselli** (Institute of Marine Sciences, Bologna, Italy). Rapid infill of a late Quaternary incised valley: the role of sea level and climate in governing multiple delta progradations
- 10:00-10:20 **Tao Sun** (Chevron Energy Tech. Company). Upstream and downstream controls on sediment routing and deposition in a complete «source to sink» system from a simple computer model
- 10:20-10:40 **Kyle Straub** (Tulane University). Signals of relative sea level perturbations: defining the divide between autogenic signal shredding vs. preservation in the stratigraphic record
- 10:40-11:00 **Tetsuji Muto** (Nagasaki University). A spatial peculiarity of graded alluvial channels in deltaic settings
- 11:00-11:20 *Coffee and Tea Break*
- 11:40-12:00 **Larisa Radnaeva***, **A.K. Tulokhonov***, **L.M. Sorokovikova****, **V.N. Sinyukovich****, **I.V. Tomberg****, **S.D. Urbazaeva***, **I.A. Pavlov***, **E.Ts. Pintaeva***, **E.Zh. Garmaev*** (*Baikal Institute of Nature Management SB RAS, **Limnological Institute SB RAS). Comprehensive hydrological and

hydrochemical investigations of Selenga River delta in frames of Russian and international projects and programs

12:00-12:20 **Brian Willis** (Chevron Energy Tech. Company). Deltaic hydrocarbon reservoirs

12:20-12:40 **Bair Tsydyrov, E.Zh. Garmaev, A.A. Ayurzhanayev** (Baikal Institute of Nature Management SB RAS). Morphometric relief analysis of the Selenga River delta on the basis of DEM SRTM

12:40-13:00 **Leonid Korytny, E.A. Ilicheva** (Institute of Geography SB RAS). Results of comprehensive studies of the Selenga River delta formation (2003-2014)

13:00-14:00 *Lunch Break*

CONTROLS OF VEGETATION, AND SEDIMENT SUPPLY AND GRAINSIZE, ON DELTA DYNAMICS

14:00-14:20 **Elena Ilicheva, L.M. Korytny** (Institute of Geography SB RAS). Current state of the coast and depression Proval Bay

14:20-14:40 **Maksim Pavlov, E.A. Ilicheva** (Institute of Geography SB RAS). Natural indicators of seismotectonic processes in Selenga delta

14:40-15:00 **Tian Dong** (Rice University). Morphology and sediment transport dynamics of the Selenga River delta, Lake Baikal, Russia

15:00-15:20 **Olga Gagarinova, E.A. Ilicheva, M.V. Pavlov** (Institute of Geography SB RAS). Selenga River delta: landscape, hydrological and geomorphological analysis

- 15:20-15:40 **Andrey Beshentsev** (Baikal Institute of Nature Management SB RAS). Creating map service for modelling deltaic areas of coast of Lake Baikal
- 15:40-16:10 *Coffee and Tea Break*
- 16:10-16:30 **Olga Samokhvalova** (State Institute of Hydrology). Selective methodology of bedload discharge calculations in rivers
- 16:30-16:50 **Denis Aibulatov, N.I. Alekseevsky, D.V. Magritsky** (Moscow State University). Sediment load and its change in estuaries
- 16:50-17:10 **Jeremy G. Venditti** (Simon Fraser University). Vegetation controls on delta tide-flat stability
- 17:10-17:30 **Charles A. Nittrouer** (University of Washington). Recent discoveries about three different deltaic systems: Amazon, Mekong, and Elwha
- 17:45-18:30 *Breakout group discussion*
- 18:30-19:00 *Group consensus and discussion*

Day 2: Tuesday, 22 July 2014

CHANNEL MIGRATION RATES AND AVULSIONS

- 08:40-09:00 **Sergio Fagherazzi** (Boston University). Building land: modeling the dynamics of river mouth deposits
- 09:00-09:20 **David Mohrig** (University of Texas). Connecting bathymetry, the flow field, and bathymetric evolution on the Wax Lake delta, coastal Louisiana, USA, I
- 09:20-09:40 **John Shaw** (University of Arkansas). Connecting bathymetry, the flow field, and bathymetric evolution on the Wax Lake delta, coastal Louisiana, USA, II
- 09:40-10:00 **Nikolay Alexeevsky, D.N. Aibulatov, D.V. Magritsky, S.R. Chalov** (Moscow State University).

The structure of deltas channel network and features of its formalization

- 10:00-10:20 **Wonsuck Kim** (University of Texas). Basin depth control on the fluvial autogenic processes of deltaic systems
- 10:20-10:40 **Matt Czapiga** (University of Illinois). Axially symmetric fan delta progradation with an implicit channel network defining a depositional web
- 10:40-11:00 *Coffee and Tea Break*
- 11:00-11:20 **Xudong Fu** (Tsinghua University). Effect of delta extension on base level rising of the lower Yellow River
- 11:20-11:40 **Yosef Akhtman***, **D. Constantin***, **M. Rehak***, **V. Nouchi***, **M. Tarasov****, **S. Chalov****, **U. Lemmin*** (*École Polytechnique Fédérale de Lausanne, **Moscow State University). Airborne remote sensing of water bodies using an ultralight plane
- 11:40-12:00 **Gary Parker** (University of Illinois). Sedimentation in lakes versus the ocean: Is salinity a necessary condition for the subaqueous formation of continental shelves?
- 12:00-13:30 *Lunch Break*

FRESH VERSUS SALT-WATER DELTAS

- 13:30-13:50 **Antonina Batmanova** (Tomsk State University). Studying of dynamics of the Selenga River delta by means of geoinformation technologies
- 13:50-14:10 **Andrew Ashton** (Woods Hole Oceanographic Institution). The effect of waves on the shape of deltas

- 14:10-14:30 **Brandon McElroy** (University of Wyoming).
Backwater zone fluctuations in freshwater reservoir
deltas
- 14:30-14:50 **Antonius J. Hoitink** (Wageningen University).
Hydraulic geometry of tidally influenced river deltas
- 14:50-15:10 **Christopher Esposito** (Tulane University).
Observing morphology becoming stratigraphy: the
statistical imprint of coastal processes in deltaic
stratigraphy
- 15:10-16:00 *Coffee and Tea Break*
- 16:00-17:15 *Breakout group discussion*
- 17:30-18:45 *Group consensus and discussion*

Day 3: Wednesday, 23 July 2014

FIELD TRIP, SELENGA RIVER DELTA

Field excursion will include a trip by boat to the channels of the Selenga River delta. All the participants of the excursion will be divided into two groups. Please, do not forget to take your warm clothes.

09:00-13:00 **Field trip (group 1)**

12:00-14:30 *Lunch Break*

13:00-17:00 **Field trip (group 2)**

(optional) Excursion to Posolsky Orthodox monastery

Day 4: Thursday, 24 July 2014

ANTHROPOGENIC INTERACTIONS, ECOLOGY AND DELTA SUSTAINABILITY

- 08:40-09:00 **Samuel J. Bentley, Sr** (Louisiana State University). Building Land in a delta from river-sediment diversions: constraints, potential, and examples in the Mississippi River delta
- 09:00-09:20 **Robert R. Twilley** (Louisiana State University). The ecogeomorphology of coastal deltaic floodplains: ecosystem development and biogeochemistry
- 09:20-09:40 **Torbjorn Tornqvist** (Tulane University). Episodic overbank deposition as a dominant mechanism of Mississippi Delta aggradation – Implications for coastal restoration by river diversions
- 09:40-10:00 **Enrica Viparelli** (University of South Carolina). Modeling the morphodynamic response of the lowermost Mississippi River, Louisiana, USA, to engineered land-building diversions
- 10:00-10:20 **Paola Passalacqua** (University of Texas). Channel-island hydraulic connectivity in a river delta
- 10:20-10:50 *Coffee and Tea Break*
- 10:50-11:10 **Yuanjian Wang** (Tsinghua University). Analysis on the feedback of the estuary for the channel of the lower Yellow River
- 11:10-11:30 **Yosef Akhtman, J. Skaloud, M. Rehak** (École Polytechnique Fédérale de Lausanne) High-Precision Geomonitoring using Micro Aerial Vehicles
- 11:30-11:50 **Ayur Gyninova***, **A.N. Beshentsev****, **L.D. Balsanova***, **B.D. Gyninova*****, **N.B. Badmaev***
(*Institute of General and Experimental Biology SB RAS, **Baikal Institute of Nature Management SB

RAS, ***Moscow State University, Faculty of Soil Science). Geochemical situation and pedogenesis of the Selenga River delta region

- 11:50-12:10 **Irina Fedorova*** **, **A. Chetverova*** **, **O. Bobrova*** **, **A. Morgenstern***** (*Arctic and Antarctic Research Institute, **St. Petersburg State University, ***Alfred Wegener Institute for Polar and Marine Research). Hydrological and geochemical particularities of current development of the Lena River delta
- 12:10-12:30 **Yegor Obukhov***, **E.A. Ilicheva**** (*Irkutsk State University, **Institute of Geography SB RAS). The spatial and temporal distribution of sediment load in the Selenga River delta
- 12:30-12:50 **Endon Garmayev, B.Z. Tsydygov** (Baikal Institute of Nature Management SB RAS). Comparative characteristics of the Selenga and Huang He River deltas
- 12:50-13:10 **Evgenia Pintaeva, L.D. Radnaeva, I.A. Pavlov** (Baikal Institute of Nature Management SB RAS). Organic matter in surface sediments from the Selenga River delta lakes: a lipid approach
- 13:10-13:30 **Igor Pavlov, S.D. Urbazaeva, L.D. Radnaeva, A.K. Tulokhonov** (Baikal Institute of Nature Management SB RAS). Changes in the concentrations of heavy metals in water and sediments, depending on hydrological conditions
- 13:30-14:30 *Lunch Break*
- 14:30-15:30 *Breakout group discussion*
- 15:30-16:45 *Group consensus and discussion*
- 17:00-18:00 *Path forward, plans for a synthesis paper, and final comments*
- 18:30-till *Formal Meeting Dinner*