

CURRICULUM VITAE

SERGEI MARCHENKO

EDUCATION:

- 2000 Ph.D. in Physical Geography. Specialty: Geocryology and Glaciology. Moscow State University.
1991 M.S. in Physical Geography. Emphasis in Mathematical Methods in Geocryology. Moscow State University, Geological Department.
1985 B.S. in Mechanical Engineering. Emphasis in theoretical mechanics. Department of Mechanics, Agricultural Institute.

PROFESSIONAL EXPERIENCE:

Research Associate, Geophysical Institute, University of Alaska Fairbanks, July 2006 – present.
Visiting Research Scholar, Geophysical Institute, University of Alaska Fairbanks, June 2003 – June 2006.
Senior Scientist, Yakutsk Permafrost Institute, Siberian Branch of Russian Academy of Sciences, Kazakstan Alpine Permafrost Laboratory 1993 – 2003.
Engineer, Yakutsk Permafrost Institute, Siberian Branch of Russian Academy of Sciences, 1989 – 1993.
Engineer, Research Institute of Mechanics, Almaty, Kazakhstan, 1985 – 1989.

CURRENT RESEARCH INTERESTS:

Mapping and modeling of permafrost distribution, active layer and ground ice conditions in Arctic and Sub-Arctic. Interaction between recent glaciers recession, permafrost warming and changes in runoff. GIS development as a transient numerical simulator of spatial permafrost dynamics.

SELECTED PUBLICATIONS:

Books:

Marchenko, S. 2003. *Permafrost of the Northern Tien Shan: past, present and future*. Siberian Branch of Russian Academy of Sciences: Yakutsk. 206 p. (In Russian)

Papers:

- Marchenko**, S., Gorbunov, A. and V. Romanovsky. 2007. Permafrost Warming in the Tien Shan Mountains, Central Asia. *Global and Planetary Change*, 56, 311 – 327.
- Romanovsky, V.E., Gruber, S., Instanes, A., Jin, H., **Marchenko**, S.S., Smith, S.L., Trombotto, D., & Walter, K.M., 2007a. Frozen Ground, Chapter 7, In: *Global Outlook for Ice and Snow*, Earthprint, UNEP/GRID, Arendal, Norway, pp. 181-200.
- Shiklomanov, N. I., O. A. Anisimov, T. Zhang, S. **Marchenko**, F. E. Nelson, and C. Oelke (2007), Comparison of model-produced active layer fields: Results for northern Alaska, *J. Geophys. Res.*, 112, F02S10, doi:10.1029/2006JF000571.
- Romanovsky, V., Smith, S., Brown, J., Humlum, O. and S. **Marchenko**. 2006. The Thermal State of Permafrost: A Contribution to the International Polar Year. *Geophysical Research Abstracts*, Vol. 8, 05319, 2006. SRef-ID: 1607-7962/gra/EGU06-A-05319.
- Marchenko, S., Drozdov, D., and Ødegård, R. 2006. Standing Committee and Working Group Reports. Mapping and Modeling of Mountain Permafrost. *Frozen Ground*. November, 30: 13-14.
- Marchenko, S., Gorbunov, A. and V. Romanovsky. 2006. Changes in Climate and Permafrost and Impact on Frozen Tombs in the Mountains of Central Asia. “*The Frozen Tombs of the Altai Mountains: Strategies and Perspectives*”. UNESCO Workshop, Gorno-Altai, 28-31 March 2006. 283-299.
- Marchenko, S., and V. Romanovsky. 2006. Climate Change and Spatially-temporal Dynamics of Altitudinal Permafrost in Central Asia During the Last Millennia (Modeling Approach). *International Conference on Scythian Archaeology and the Archaeology of the Altai Mountains*. Ghent, Belgium, December 4-6, 2006. 8-9.
- Marchenko, S., and V. Romanovsky. 2006. Temporal and Spatial Changes of Permafrost Distribution in the Tien Shan Mountains During the Last Millennia. *Asian Conference on Permafrost*. Lanzhou, China, August 7-9, 2006, 140.
- Romanovsky, V. E., Marchenko, S. S. and G. S. Tipenko. 2005. Permafrost in Alaska: Multi-Millennium History and Possible Future Changes, *Second European Permafrost Conference*, June 13-16, Potsdam, Germany.
- Marchenko, S., Romanovsky V. and Gorbunov, A. 2005. The permafrost monitoring network in Central Asia as a part of the Global Climate Observing System. *Report of the GCOS Regional Workshop for Central Asia on Improving*

- Observing System for Climate*. Almaty, Kazakhstan, May 24-26, 2004, p.83-88. GCOS-94 (WMO/TD-No.1248). February 2005. Also available at <http://www.wmo.int/pages/prog/gcos/Publications/gcos-94eng.pdf>
- Marchenko, S., Medeu, A. and Gorbunov, A. 2004. Permafrost Warming and Ground Ice as a Potential Freshwater Source in the Arid Regions of Central Asia. GCOS. *GCOS Action Plan for Central Asia*. Geneva, November 2004, 53-59. Also available at http://www.wmo.ch/pages/prog/gcos/documents/GCOS_CA_RAPeng.pdf
- Marchenko, S., Gorbunov, A. and Romanovsky, V. 2005. Permafrost Warming and Ground Ice in the Tien Shan, Central Asia. *First CliC International Science Conference. 11-15 April 2005*, Beijing, China. Cryosphere the “frozen” frontier of climate science: Theory, Observations, and Practical Applications. 180.
- Drozhdov, D., **Marchenko**, S., and Ødegård, R. 2005. Working Group and Standing Committee Reports. Mapping and Modeling of Mountain Permafrost. *Frozen Ground*. 29: 14.
- Marchenko, S., Gorbunov, A., Gravis, G. and Sharkhuu, N. 2005. Permafrost Mapping in Central Asia. *First CliC International Science Conference. 11-15 April 2005*, Beijing, China. Cryosphere the “frozen” frontier of climate science: Theory, Observations, and Practical Applications. 190.
- Marchenko, S., Medeu, A. and Gorbunov, A. 2004. Permafrost Warming and Ground Ice as a Potential Freshwater Source in the Arid Regions of Central Asia. GCOS. *GCOS Action Plan for Central Asia*. Geneva, November 2005, 53-59.
- Gorbunov, A., **Marchenko**, S. and Seversky, E. 2004. The Thermal Environment of Blocky Materials in the Mountains of Central Asia. *Permafrost and Periglacial Processes* 15: 95–98.
- Marchenko, S. S. and Udartsev, S. V. 2004. The Geoinformatic Model of High-mountain Permafrost in the Northern Tien Shan. *ArcReview. Modern Geoinformatic Technologies*. Moscow, Data Plus, No 1, p. 15-16.
- Drozhdov, D., **Marchenko**, S., and Ødegård, R. 2004. Mapping and Modeling of Mountain Permafrost. *Frozen Ground*. 28: 17-18.
- Marchenko, S. 2003. Borehole and active-layer monitoring in the northern Tien Shan (Kazakhstan). *Proceedings of the Eighth International Conference on Permafrost, Permafrost. Extended abstracts*. (Haeberli, W. and Brandova, D. eds), 21-25 July 2003, Zurich, Switzerland, 101-102.
- Gravis, G. F., Melnikov, E. S., Guo, D., Li, Sh., Li Shude, Tong, B., Zhao, L., Nan, Z., Sharkhuu, N., Gorbunov, A. P., **Marchenko**, S. S. and Seversky, E. V. 2003. Principles of classification and mapping of permafrost in Central Asia. *Proceedings of the Eighth International Conference on Permafrost, Permafrost, 21-25 July 2003*, Zurich, Switzerland, 1: 297-302.
- Marchenko, S. 2002. Results of monitoring of active layer in the Northern Tien Shan Mountains. *J. Earth Cryosphere*. 4(3): 25-34. (in Russian).
- Gorbunov, A. P., **Marchenko**, S. S. and Seversky, E. V. 2002. Cryoecology of Tien Shan. *Proceedings of annual Session of scientific council of Russian Academy of Sciences*. V. 4. Moscow, GEOS, p. 433-438. (in Russian).
- Gorbunov, A. P., **Marchenko**, S. S. and Seversky, E. V. 2002. Permafrost-related Engineering Problems in the Central Asian Mountains. *Permafrost Engineering. Fifth International Symposium Proceedings*. Yakutsk, Russia, 2-4 September 2002. 1: 214-218.
- Marchenko, S. 2001. A model of permafrost formation and occurrences in the intracontinental mountains. *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*. 55: 230-234. Oslo. ISSN 0029-1951.
- Marchenko, S., Sharkhuu, N. and Udartsev, S. V. 2001. Distribution modeling of alpine permafrost in the arid mountains (a GIS approach). *Proceedings of International Symposium on Mountain and Arid Land Permafrost, 2-7 September 2001*, Ulaanbaatar, Mongolia, p. 43-47.
- Marchenko, S. and Udartsev, S. V. 2001. Geoinformatic modeling of the mountain permafrost thermal state. *Proceedings of the 2nd Conference of the geocryologists of Russia. Moscow, Moscow State University, 6-8 June 2001*, 3: 178-184
- Marchenko, S. S. and Udartsev, S. V. 2001. Geocryological Information System of the Central Northern Tien Shan. *Proceedings of International Conference “Geoecology and Geocological Problems of Mountains and Intramountains Systems”*, Tashkent, 26-28 March, 2001, p. 79-82.
- Marchenko, S. 1999. Permafrost-Climatic Conditions in the Northern Tien Shan: Recent and Expected for 21st Century Changes. *J. Earth Cryosphere*, Novosibirsk, 3(2): 13-21. (in Russian).
- Marchenko, S. S. and Gorbunov, A. P. 1997. Permafrost Changes in the Northern Tien Shan During the Holocene. *J. Permafrost and Periglacial Processes*, Vol. 8, p. 427- 435.
- Marchenko, S. S. 1996. The heat state of permafrost in the Tien Shan Mountains during the Holocene and contemporary tendencies of its change. *Proceedings of International Conf. “Mountain Research - Challenges and Directions for the 21st Century”*, 14-18 October, 1996, Bishkek, p. 115-116.

SYNERGISTIC ACTIVITIES:

- Co-chair of the international Working Group on Mapping and Modeling of Mountain Permafrost, International Permafrost Association (IPA).
- Expert on mountain permafrost in Central Asia for the Global Climate Observing System (GCOS)
- Consultant on high mountain periglacial environments for the Institute of Geography, Ministry of Education and Science of the Kazakhstan Republic.

PROFESSIONAL MEMBERSHIP:

American Geophysical Union (AGU)
American Permafrost Association (USPA)

THE FIELDWORKS AND EXPEDITIONS:

- 1989-1993 Inner Tien Shan (Kirgizstan)
- 1989-2004 Northern Tien Shan (Kazakhstan)
- 1997-1999 Altai, Saur, Djungar Alatau and Northern Tien Shan - as an expert on permafrost, join French, Italian, Belgium, Russian and Kazakh archeologic expeditions
- 2001 Mongolian Altai
- 2002 North-east part of Qinghai-Tibet Plateau
- 2002 Join Germany-Russian-Kazakh expedition in the Northern Tien Shan
- 2003 North slope Alaska, Seward Peninsula.
- 2004 North slope Alaska, Seward Peninsula. Northern Tien Shan, Central Asia.
- 2005 North slope Alaska, Seward Peninsula. Northern Tien Shan, Central Asia.
- 2006 Altai Mountains, join Belgium, Russian expedition. Northern Tien Shan Central Asia, Expedition of Geography Institute of Kazakhstan.
- 2006 Qinghai-Tibet Plateau. Survey of the GTNet-P and CALM monitoring sites and permafrost, ground ice, and active layer conditions within Plateau, China.
- 2007 The Alaskan North Slope; Altai Mountains, South Siberia; Tien Shan Mountains, Central Asia, Kazakhstan.

PARTICIPATION IN THE PROJECTS:

Current

- International Arctic Research Center Cooperative Agreement Renewal Proposal, NSF, 2004-2007.
- Permafrost Models Comparison, NSF, 2004-2007.
- Northern Eurasia Region and Related Impacts on Surface and Sub-Surface Hydrology, NASA, 2006-2009.
- Thermal State of Permafrost (TSP): The US Contribution to the International Network of Permafrost Observatories (INPO), NSF, 2006-2009.

Past

- NATO Science Programme 1999, Long-term environmental changes in Central Asia (Tien Shan).
- Climate, permafrost and ground ice change in the Tien Shan 2000-2002, National Geographic Society grant #6686-00.
- 2000-2002 INTAS project “Almaty City/Tuyuksu Glacier: An Interdisciplinary Study of Environmental System That Goes Catastrophically Wrong”, (KAZAKHSTAN INTAS-1835) 2003-2005.
- Effect of Changes in Climate, Snow Pack, Glaciers, and Permafrost on River Runoff in Tien Shan, Central Asia, NSF, ES# 0233583