

ILTS International Symposium "Frontier of Low Temperature Science"

November 9-10, 2009

Auditorium, Institute of Low Temperature Science, Hokkaido University

(See <http://www.lowtem.hokudai.ac.jp/english/eaccess.html>.)

Program

<Monday, 9 November 2009>

Plenary Session, 10:00-11:20

Chair: Naoto Ebuchi

- 10:00-10:10 Welcome Address
 Prof. Takeo Hondo, Vice President of Hokkaido University
- 10:10-10:40 Keynote Speech
 Prof. Akira Kouchi, Director of ILTS, Hokkaido University
 Towards a new era in low temperature science
- 10:40-11:20 Keynote Speech
 Prof. Frank Wilhelms (Alfred Wegener Institute)
 How can ice science satisfy the public attention in a warmer world?

Lunch Break, 11:20-13:30

Session 1. Environmental Biology, 13:30-16:30

Chair: Ayumi Tanaka

- 1-1** 13:30-14:10
 Rudolf Amann, Bernhard Fuchs, Paola Gomez, Martha Schattenhofer, Marga Schüler
 (Max Planck Institute for Marine Microbiology)
 Analyzing the microbial catalysis of biogeochemical cycles by combining quantitative
 single cell studies with environmental genomics
- 1-2** 14:10-14:35
 Swingley, W. D., Takizawa, K., Iwai, M., Kato, N., and Minagawa, J. (ILTS, Hokkaido
 University)
 Photoacclimation of a marine picophytoplankton *Ostreococcus tauri*
- 1-3** 14:35-15:00
 Satoshi D. Ohdachi (ILTS, Hokkaido University)
 Biogeographic characteristics of terrestrial mammals in Hokkaido

- 1-4** 15:00-15:25
Hisaya Kojima (ILTS, Hokkaido University)
Deposited snow as a habitat of bacteria: a case of snow coloration associated with iron accumulation
- 1-5** 15:25-16:05
Hiroyo Otaki, R. Craig. Everroad (Tokyo Metropolitan University), Satoshi Hanada (Tokyo Metropolitan University/Institute for Biological Resources and Functions), Shin Haruta, and Katsumi Matsuura (Tokyo Metropolitan University)
Electron cycling in ecosystems: An analysis in microbial community
- 1-6** 16:05-16:30
Toshihiko Hara (ILTS, Hokkaido University)
Molecular and ecological studies on boreal forests in the cryosphere

Session 2. Poster Session (with coffee and tea), 16:30-18:00 Chair: Ayumi Tanaka

- 2-1** Hisashi Ito and Ayumi Tanaka (ILTS, Hokkaido University)
Photosystem development of marine cyanobacterium *Prochlorococcus*
- 2-2** Yasuhito Sakuraba, Ryouichi Tanaka, and Ayumi Tanaka (ILTS, Hokkaido University)
Delayed leaf senescence by enhanced chlorophyll *b* biosynthesis
- 2-3** Edgard A. Bontempo e Silva, Toshihiko Hara, Akihiro Sumida, Kyomi Ono, Yuji Kodama, Taro Nakai (ILTS, Hokkaido University), and Shigeru Uemura (Field Science Center for Northern Biosphere, Hokkaido University)
Ecophysiological responses of *Abies sachalinensis* seedlings to two contrasting environments in a sub-boreal forest of Hokkaido, Japan
- 2-4** Azusa Tabata, Kiyomi Ono, Akihiro Sumida, and Toshihiko Hara (ILTS, Hokkaido University)
Effects of soil water conditions on the morphology, phenology and photosynthesis of *Betula ermanii* in the boreal forest
- 2-5** Masanori Ochiai (ILTS, Hokkaido University), Kiyohiro Takahasi, and Fuyuhiko Inagaki (Graduate School of Pharmaceutical Sciences, Hokkaido University)
Insect immunity: Solution structure of the silkworm β GRP N-terminal domain reveals the mechanism for β -1,3-glucan-specific recognition
- 2-6** Ryutaro Tokutsu and Jun Minagawa (ILTS, Hokkaido University)
Molecular characterization of photosynthetic protein complexes of marine diatoms

- 2-7** Masazumi Tsutsumi, Hisaya Kojima (ILTS, Hokkaido University), Tomoya Iwata (Department of Ecosocial System Engineering, University of Yamanashi), and Manabu Fukui (ILTS, Hokkaido University)
Community structure of methane-oxidizing bacteria in water column of a freshwater lake
- 2-8** Kato, Y., M. Iwasaki, M. Ochiai, K. Shimada, and C. Katagiri (ILTS, Hokkaido University)
Weta Lipophorin – Comparison with other insects –
- 2-9** Shigeru Aoki (ILTS, Hokkaido University), Mikio Naganobu (Fisheries Research Agency), Takashi Ishimaru (Tokyo University of Marine Science and Technology), Stephan R. Rintoul (CSIRO), Nathaniel L. Bindoff (University of Tasmania), and Keiichiro Ohshima (ILTS, Hokkaido University)
Stable oxygen isotope ratio of sea water and its spatial distribution at the continental margin of Antarctica
- 2-10** Takenobu Toyota (ILTS, Hokkaido University), Christian Haas (University of Alberta), and Takeshi Tamura (ILTS, Hokkaido University)
Size distribution of sea ice floes in the Antarctic marginal ice zones in late winter
- 2-11** Yamamoto, S. and Kawamura, K. (ILTS, Hokkaido University)
Stable hydrogen isotopic compositions of *n*-alkanes in atmospheric aerosols from Tokyo as a potential tracer to decipher the source region tracer of terrestrial plant waxes
- 2-12** Chusei Fujiwara, Kazuya Yamashita (Graduate School of Environmental Science, Hokkaido University), Yasushi Fujiyoshi (ILTS, Hokkaido University)
Detection of organized airflow structure in the atmospheric boundary layer using a 3D-scanning Doppler lidar
- 2-13** Takuya Nakanowatari and Kay I. Ohshima (ILTS, Hokkaido University)
Changes in the Sea of Okhotsk due to global warming – Weakening pump function to the North Pacific –
- 2-14** Yasushi Fukamachi, Kay I. Ohshima, Shigeru Aoki, Daisuke Simizu, Takeshi Tamura (ILTS, Hokkaido University), Yujiro Kitade, Daisuke Hirano (Faculty of Marine Science, Tokyo University of Marine Science and Technology), Shuki Ushio, and Gen Hashida (National Institute of Polar Research)
Direct observations of newly-found Antarctic Bottom Water and the associated sea-ice production - Cape Darnley Project -
- 2-15** Takeshi Tamura, Kay I. Ohshima, and Sohey Nihashi
Mapping of sea ice production in the Southern Ocean
- 2-16** Tomoyasu Kuno, Yuji Kodama, and Taro Nakai (ILTS, Hokkaido University)
Evaluation of snowfall interception of boreal forest

- 2-17** Sasakawa, M. (Center for Global Environmental Research, NIES), K. Shimoyama (ILTS, Hokkaido University), T. Machida (Center for Global Environmental Research, NIES), N. Tsuda (Global Environmental Forum), H. Suto (Japan Aerospace Exploration Agency), M. Arshinov, D. Davidov, A. Fofonov, O. Krasnov (Institute of Atmospheric Optics of SB RAS), T. Saeki, Y. Koyama, and S. Maksyutov (Center for Global Environmental Research, NIES)
Continuous measurement of carbon dioxide and methane concentration using 9-tower network over Siberia
- 2-18** Shoko Abe (Graduate School of Environmental Science /ILTS, Hokkaido University) and Tomohiro Nakamura (ILTS, Hokkaido University)
Energy transfer in a breaking internal wave
- 2-19** Hirotaka Sasaki (Graduate School of Environmental Science, Hokkaido University), Sumito Matoba (ILTS, Hokkaido University), and Takayuki Shiraiwa (Research Institute for Humanity and Nature)
Iron flux to the northern North Pacific estimated from the ice core of Mt. Wrangell, Alaska
- 2-20** Yoshinori Furukawa (ILTS, Hokkaido University), Etsuro Yokoyama (Gakushuin University), Izumi Yoshizaki, Shinichi Yoda, Tetsuo Tanaka (JAXA), Taro Shimaoka (JSF), Takehiko Sone (JAMSS), and Toshiyuki Tomobe (IHI Aerospace)
Pattern formation during ice crystal growth in pure D₂O water –ISS-KIBO Experiments–
- 2-21** Gen Sasaki (ILTS, Hokkaido University/JST-PRESTO), Salvador Zepeda, Shunichi Nakatsubo (ILTS, Hokkaido University), Etsuro Yokoyama (Gakushuin University), and Yoshinori Furukawa (ILTS, Hokkaido University)
Direct visualization of elementary steps and quasi-liquid layers at air-ice interfaces by advanced optical microscopy
- 2-22** Salvador Zepeda, Hiroyuki Nakaya (ILTS, Hokkaido University), Etsuro Yokoyama (Gakushuin University), and Yoshinori Furukawa (ILTS, Hokkaido University)
Antifreeze protein kinetics at the ice/solution interface
- 2-23** Hakime Seddik, Ralf Greve (ILTS, Hokkaido University), Thomas Zwinger (CSC–IT Center for Science Ltd.), and Olivier Gagliardini (Laboratory of Glaciology and Environmental Geophysics, CNRS)
Steady-state simulations of the Greenland ice sheet using a three-dimensional full-Stokes model
- 2-24** Thorben Dunse (Department of Geosciences, University of Oslo/ILTS, Hokkaido University), Thomas V. Schuler, Jon Ove Hagen (Department of Geosciences, University of Oslo), Ralf Greve (ILTS, Hokkaido University), Geir Moholdt, and Trond Eiken (Department of Geosciences, University of Oslo)
Modelling flow dynamics and geometry of the Austfonna ice cap, Svalbard

- 2-25** Shun Tsutaki, Daisuke Nishimura, Takeshi Yoshizawa (Graduate School of Environmental Science, Hokkaido University), and Shin Sugiyama (ILTS, Hokkaido University)
Impact of proglacial lake formation on the retreat of Rhonegletscher, Switzerland
- 2-26** Iizuka Yoshinori Iizuka, Akira Tsuchimoto, Toshimitsu Sakurai (ILTS, Hokkaido University), Motohiro Hirabayashi (National Institute of Polar Research), Toshitaka Suzuki (Faculty of Science, Yamagata University), Takayuki Miyake (National Institute of Polar Research), Ryu Uemura (LSCE, CEA-CNRS), Shuji Fujita, Hideaki Motoyama, Yoshiyuki Fujii (National Institute of Polar Research), and Takeo Hondoh (ILTS, Hokkaido University)
Constituent elements of soluble particles of the Dome Fuji surface snow and ice core
- 2-27** Hidaka, H., M. Watanabe, A. Kouchi, N. Watanabe (ILTS, Hokkaido University)
Formation of deuterated formaldehyde and methanol by quantum tunneling H-D substitution and H(D) addition reactions on low temperature surfaces
- 2-28** Manabu Fukui, Shin Sugiyama, Shigeru Aoki (ILTS, Hokkaido University), Masanobu Yamamoto (Faculty of Environmental Earth Science, Hokkaido University), Takenobu Toyota (ILTS, Hokkaido University), Takanobu Sawagaki, Genta Mizuta (Faculty of Environmental Earth Science, Hokkaido University), Keiichiro Ohshima, Yasushi Fukamachi, Sumito Matoba, Kou Shimoyama, Yoshinori Iizuka, and Tomoko Endo (ILTS, Hokkaido University)
Antarctic Science Curriculum of Hokkaido University – Contribution to the International Antarctic Institute –
- 2-29** Kunio Shinbori, Toru Takatsuka, Shunichi Nakatsubo, Takeshi Chigai, Kazuya Ono, Yukako Kato, Kenta Chubachi, Kazuyuki Fujita, Masao Ishikawa, Hiroki Fukushi, Masayuki Ikeda, and Naoto Ebuchi (ILTS, Hokkaido University)
Technical supports in ILTS

Reception, 18:00-19:30 (Room 215)

<Tuesday, 10 November 2009>

Session 3. Water and Material Cycles, 9:30-12:00

Chair: Yasushi Fujiyoshi

3-1 9:30-10:00

Ding Yihui, Wang Zunya, and Song Yafang (National Climate Center, China Meteorological Administration)

Cause of the unprecedented freezing disaster in January 2008 and its possible association with the global warming

3-2 10:00-10:30

Toshio Koike (The University of Tokyo)

Data integration and analysis system for water cycle

3-3 10:30-11:00

Yasunobu Iwasaka (Kanazawa University)

Kosa (Asian dust) particles and atmospheric constituents on particle surface

3-4 11:00-11:30

Naohiro Yoshida (Tokyo Institute of Technology)

Isotopomer studies to trace water and material cycles featuring some extreme environments

3-5 11:30-12:00

Yasushi Fujiyoshi (ILTS, Hokkaido University)

Why cloud science?

Lunch Break, 12:00-13:00

Session 4. Pan-Okhotsk Researches, 13:00-15:30

Chair: Jun Nishioka

4-1 13:00-13:50

Bo Qiu (School of Ocean & Earth Science & Technology, University of Hawaii at Manoa)
Decadal variability in the North Pacific Subpolar Gyre circulations

4-2 13:50-14:20

Sumito Matoba (ILTS, Hokkaido University)

50-year records of climate changes in ice-cores from Kamchatka and Alaska

4-3 14:20-14:50

Osamu Seki (ILTS, Hokkaido University)

Large changes in seasonal sea ice, sea surface temperature and productivity in the Sea of Okhotsk during the last deglaciation

4-4 14:50-15:20
Tomohiro Nakamura (ILTS, Hokkaido University)
Modeling the Pan-Okhotsk region

15:20-15:30 Discussion

Coffee Break, 15:30-16:00

Session 5. Frontier Ice and Snow Science, 16:00-18:30

Chair: Yoshinori Furukawa

5-1 16:00-16:50
John Wettlaufer (Yale University)
Letters from the Sky: Nakaya, Sapporo and the broad scientific reach of the physics of ice

5-2 16:50-17:25
Shuji Fujita (National Institute of Polar Research), Junichi Okuyama, Akira Hori, and Takeo Hondoh (ILTS, Hokkaido University)
Metamorphism of stratified firn at Dome Fuji, Antarctica: A mechanism for local insolation modulation of gas transport conditions during bubble close-off

5-3 17:25-17:45
Ralf Greve (ILTS, Hokkaido University)
Dynamic/thermodynamic modeling of ice sheets in changing climates

5-4 17:45-18:05
Naoki Watanabe (ILTS, Hokkaido University)
Ice surface reactions: its role in chemical evolution in space

5-5 18:05-18:25
Gen Sazaki (ILTS, Hokkaido University)
Direct visualization of elementary steps and quasi-liquid layers at air-ice interfaces by advanced optical microscopy

Closing Remarks

Prof. Manabu Fukui, Vice Director of ILTS, Hokkaido University