

S2 BIO/POC Topic Session **Decadal changes in carbon biogeochemistry in the North Pacific**

Co-Convenors: James Christian (Canada) and Toshiro Saino (Japan)

This session will be the first effort by the PICES Section on *Carbon and Climate* to synthesize the current understanding on inter-relationship between the carbon cycle and climate in the Pacific. Emphasis will be placed on decadal change in carbon cycling, *e.g.*, anthropogenic carbon, air-sea exchange of CO₂, the biological pump, impacts of increasing levels of carbon dioxide on carbonate chemistry and marine biota, and possible feedbacks to atmospheric greenhouse gases. We expect that the session will enable us to update our understanding of the relationships between the carbon cycle, marine biota, and climate in the Pacific, and to identify gaps in our knowledge for future research in areas of importance for the PICES Section on *Carbon and Climate*.

Tuesday, October 30, 2007 09:00 – 18:10

- 09:00 *Introduction by convenors*
- 09:10 **Taro Takahashi, Stewart C. Sutherland, Rik Wanninkhof, Colm Sweeney, Richard A. Feely, Burke Hales, Gernot Friederich, Francisco Chavez, Andrew Watson, Dorothee C.E. Bakker, Ute Schuster, Nicolas Metzl, Hisayuki Yoshikawa-Inoue, Masao Ishii, Takashi Midorikawa, Christopher Sabine, Mario Hopemma, Jon Olafsson, Thorarinn S. Arnarson, Bronte Tilbrook, Truls Johannessen, Are Olsen, Richard Bellerby, Hein J.W. de Baar, Yukihiro Nojiri, C.S. Wong, Bruno Delille and N.R. Bates (Invited)**
Climatological mean and decadal change in surface ocean $p\text{CO}_2$, and net sea-air CO₂ flux over the global oceans (S2-4468)
- 09:50 **C.S. Wong, Shau-King Emmy Wong, Sophia Johannessen, Liusen Xie and John Page**
Time-series of $p\text{CO}_2$ (partial pressure of CO₂) at Station P / Line P in the sub-arctic Northeast Pacific Ocean (S2-4166)
- 10:10 **Hiromichi Tsumori and Yukihiro Nojiri**
Trend analysis of ocean $p\text{CO}_2$ and the air-sea CO₂ flux in the North Pacific (S2-4354)
- 10:30 *Coffee / tea break*
- 10:50 **Christopher L. Sabine, Richard A. Feely, Frank Millero, Andrew Dickson, Chris Langdon, Sabine Mecking, Jim Swift and Dana Greeley**
Decadal changes in Pacific Ocean inorganic carbon (S2-4224)
- 11:10 **Masao Ishii, Takayuki Tokieda, Shu Saito, Daisuke Sasano, Toshiya Nakano, Takashi Midorikawa, Akira Nakadate and Hitomi Kamiya**
Trend of DIC increase in the post-WOCE era in the western North Pacific subtropical gyre (S2-4262)
- 11:30 **Nobuo Tsurushima, Koh Harada and Yutaka W. Watanabe**
Spatial distribution and temporal change of dissolved inorganic carbon in the western North Pacific (S2-4356)
- 11:50 **Masahide Wakita, Shuichi Watanabe, Akihiko Murata, Nobuo Tsurushima, Makio Honda, Yuichiro Kumamoto, Hajime Kawakami and Kazuhiko Matsumoto**
Temporal variability of dissolved inorganic carbon at the K2 and KNOT time-series stations in the western North Pacific (S2-4431)

- 12:10 **Hernan E. Garcia, Tim P. Boyer, Sydney Levitus, John I. Antonov and Ricardo A. Locarnini**
Seasonal to decadal variability in phosphate in the upper ocean (S2-4361)
- 12:30 **Lunch**
- 14:00 **Tsuneo Ono and Akihiro Shiomoto**
Decadal trend of summer nutrient content in the North Pacific HNLC region (S2-4170)
- 14:20 **Yutaka W. Watanabe**
Decadal change in N/P/Si ratio over the North Pacific subpolar region (S2-4102)
- 14:40 **Akira Nakadate, Hitomi Kamiya, Takashi Midorikawa, Masao Ishii and Toshiya Nakano**
Interannual variability of winter oceanic CO₂ along 137°E in the western North Pacific (S2-4352)
- 15:00 **Anand Gnanadesikan and Keith B. Rodgers**
Ventilation variability in the North Pacific as simulated by a coupled climate model (S2-4226)
- 15:20 **Kimio Hanawa and Shusaku Sugimoto**
Reemergence of winter SST anomalies and spring chlorophyll-*a* concentration in the central North Pacific (S2-4137)
- 15:40 **Coffee / tea break**
- 16:00 **James R. Christian, Kenneth L. Denman and Konstantin Zahariev**
The North Pacific Ocean in the enhanced greenhouse (S2-4124)
- 16:20 **Shinichi S. Tanaka and Yutaka W. Watanabe (MOVED from POSTER)**
The effect of bubble injection on concentrations of N₂ and Ar in the western North Pacific (S2-4316)
- 16:40 **Debby Ianson, Richard A. Feely, Chris L. Sabine and J. Martin Hernandez-Ayon**
Annual carbon fluxes in the coastal Northwest Pacific (S2-4466)
- 17:00 **Kitack Lee and Guen-Ha Park**
No recent uptake of anthropogenic CO₂ by the East/Japan Sea (S2-4511)
- 17:20 **Fei Chai, Guimei Liu, Huijie Xue, Lei Shi and Yi Chao**
Variability of the carbon cycle and productivity in the China Seas during 1960-2006: A three-dimensional physical-biogeochemical modeling study (S2-4272)
- 17:40 **Xiuren Ning, Chenggang Liu, Qiang Hao, Fei Chai, Huijie Xue, Yuming Cai, Jun Sun, Fengfeng Le, Wuchang Zhang and Junxian Shi**
Physico-biological oceanography coupling of planktonic production and the influence on carbon cycle in the South China Sea (S2-4114)
- 18:00 **Summary and wrap up**

S2 Posters

- S2-4087 **Takeshi Yoshimura, Jun Nishioka, Koji Suzuki, Hiroshi Hattori, Hiroshi Kiyosawa, Daisuke Tsumune, Kazuhiro Misumi and Takeshi Nakatsuka**
Responses of phytoplankton assemblage and organic carbon dynamics to CO₂ increase
- S2-4158 **Hongbo Li, Tian Xiao, Wuchang Zhang, Sanjun Zhao and Ruihua Lv**
Spatial and temporal variation of bacterioplankton population in the southern Yellow Sea, China
- S2-4235 **Galina Yu. Pavlova and Pavel Ya. Tishchenko (CANCELLED)**
Calcium and alkalinity in the Okhotsk Sea and adjacent basins
- S2-4255 **Masahiko Fujii, Yasuhiro Yamanaka, Yukihiro Nojiri, Michio J. Kishi and Fei Chai**
Comparison of seasonal characteristics in carbon biogeochemistry among the subarctic North Pacific stations described with a NEMURO-based marine ecosystem model
- S2-4305 **Takayuki Tokieda, Masao Ishii, Shu Saito, Daisuke Sasano, Takashi Midorikawa and Akira Nakadate**
Evaluation of changes in ocean circulation and anthropogenic CO₂ storage based on CFCs age in the western North Pacific
- S2-4306 **Chun-Ok Jo and Kyung-Ryul Kim**
Decadal changes of phytoplankton activity during spring in the southern East/Japan Sea
- S2-4316 **Shinichi S. Tanaka and Yutaka W. Watanabe (MOVED to Oral)**
The effect of bubble injection on concentrations of N₂ and Ar in the western North Pacific
- S2-4318 **Ruixiang Li, Yan Li and Mingyuan Zhu**
Long term variation of phytoplankton in the Yellow Sea in spring
- S2-4358 **Yukihiro Nojiri, Hitoshi Mukai, Hiromichi Tsumori, Takeshi Egashira, Katsumoto Kinoshita and Hideshi Kimoto**
Development of pCO₂ measuring buoy in the surface ocean
- S2-4364 **Akihiko Murata, Yuichiro Kumamoto, Ken'ichi Sasaki, Shuichi Watanabe and Masao Fukasawa**
Decadal increases of anthropogenic CO₂ in the subtropical and tropical oceans along the WOCE P10 line
- S2-4517 **Pete Davison, David M. Checkley, Jr. and Tony Koslow**
Is diel vertical migration important to oceanic carbon export flux?