

Marine Chemistry, 72(2-4), December 2000

**Second international symposium on carbon dioxide in the oceans**

Tsunogai Shizuo and C. S. Wong

More than 200 scientists from 16 countries were present to hear Dr. Taro Takahashi while he was giving the first talk at the Second International Symposium on Carbon Dioxide in the Oceans held from 18–22 January 1999 at the Tsukuba Center for Institutes, Tsukuba, Japan. The title was "Net sea-air CO<sub>2</sub> flux over the global oceans: An improved estimate based on sea-air pCO<sub>2</sub> differences". During the 5 days, 73 papers were given orally, 27 papers were presented at the poster sessions and a further five papers joined "submitting only" papers. The number of papers presented a substantial increase compared to that at the first meeting (66) on this topic held in January 1996 in Mayaguez, Puerto Rico. The number of participants also increased from 65 to 256. This seems to be due to the rapid development of activities in this young research field.

There was a pronounced increase in the number of papers on synthesis and modeling, which grew from 12 in 1996 to 27 in 1999. This trend will continue in the next meeting because many data sets have been accumulating and we need to understand oceanic CO<sub>2</sub> on a global scale. A new session on the CO<sub>2</sub> sequestration was added and the biological aspect was somewhat strengthened at this symposium. The marine CO<sub>2</sub> issue will be broadened and more complicated in the future.

The results of the symposium have been documented in a proceeding book (Nojiri, 1999) and in the US JGOFS Newsletter (Murphy and Nojiri, 1999).

Tsunogai Shizuo and C. S. Wong -- Second international symposium on carbon dioxide in the oceans, Tsukuba, Japan (January 1999) -- 79-81

Brewer Peter G., Edward T. Peltzer, Gernot Friederich, Izuo Aya and Kenji Yamane -- Experiments on the ocean sequestration of fossil fuel CO<sub>2</sub>: pH measurements and hydrate formation -- 83-93

Tamburri Mario N., Edward T. Peltzer, Gernot E. Friederich, Izuo Aya, Kenji Yamane and Peter G. Brewer -- A field study of the effects of CO<sub>2</sub> ocean disposal on mobile deep-sea animals -- 95-101

Louanchi Ferial and Mario Hoppema -- Interannual variations of the Antarctic Ocean CO<sub>2</sub> uptake from 1986 to 1994 -- 103-114

Nakayama Noriko, Shuichi Watanabe and Shizuo Tsunogai -- Difference in O<sub>2</sub> and CO<sub>2</sub> gas transfer velocities in Funka Bay -- 115-129

Hofmann Matthias, Dieter A. Wolf-Gladrow, Taro Takahashi, Steward C. Sutherland, Katharina D. Six and Ernst Maier-Reimer -- Stable carbon isotope distribution of particulate organic matter in the ocean: a model study -- 131-150

Broström Göran -- The role of the annual cycles for the air–sea exchange of CO<sub>2</sub> -- 151-169

Körtzinger Arne, Ludger Mintrop, Douglas W. R. Wallace, Kenneth M. Johnson, Craig Neill, Bronte Tilbrook, Philip Towler, Hisayuki Y. Inoue, Masao Ishii, Gary Shaffer et al. -- The international at-sea intercomparison of fCO<sub>2</sub> systems during the R/V Meteor Cruise 36/1 in the North Atlantic Ocean -- 171-192

Tapp Melissa, Keith Hunter, Kim Currie and Burns Mackaskill -- Apparatus for continuous-flow underway spectrophotometric measurement of surface water pH -- 193-202

Hoppema Mario, Michel H. C. Stoll and Hein J. W. de Baar -- CO<sub>2</sub> in the Weddell Gyre and Antarctic Circumpolar Current: austral autumn and early winter -- 203-220

Xu Yongfu, Yutaka W. Watanabe, Shigeaki Aoki and Koh Harada -- Simulations of storage of anthropogenic carbon dioxide in the North Pacific using an ocean general circulation model -- 221-238

Bates Nicholas R., Liliane Merlivat, Laurence Beaumont and A. Christine Pequignot -- Intercomparison of shipboard and moored CARIOCA buoy seawater fCO<sub>2</sub> measurements in the Sargasso Sea -- 239-255

Kawahata H., A. Suzuki, T. Ayukai and K. Goto -- Distribution of the fugacity of carbon dioxide in the surface seawater of the Great Barrier Reef -- 257-272

Higuchi K., Y. -H. Chan, C. W. Yuen and C. S. Wong -- Doubled CO<sub>2</sub> impact on subarctic marine carbon cycle: a case study at Ocean Station P -- 273-295

Watanabe Yutaka W., Tsuneo Ono and Akifumi Shimamoto -- Increase in the uptake rate of oceanic anthropogenic carbon in the North Pacific determined by CFC ages -- 297-315

Ono Tsuneo, Yutaka W. Watanabe and Shuichi Watanabe -- Recent increase of DIC in the western North Pacific -- 317-328

Otosaka Shigeyoshi and Shinichiro Noriki -- REEs and Mn/Al ratio of settling particles: horizontal transport of particulate material in the northern Japan Trench -- 329-342

Ikeda M. and Y. Sasai -- Reconstruction of subsurface DIC and alkalinity fields in the North Pacific using assimilation of upper ocean data -- 343-358