

## **PUBLICATIONS:**

Cullison, S.E., DeGrandpre, M.D., Langdon, C., and J.E. Corredor **(2011)**. Short-term and seasonal pH,  $p\text{CO}_2$  and saturation state variability in a coral-reef ecosystem, submitted to *Global Biogeochemical Cycles*.

Hamme, R.C., N. Cassar, V.P. Lance, R.D. Vaillancourt, M.L. Bender, P.G. Strutton, T.S. Moore, M.D. DeGrandpre, C.L. Sabine, D.T. Ho, and B.R. Hargreaves **(2011)**. Dissolved  $\text{O}_2/\text{Ar}$  and other methods reveal rapid changes in productivity during a Lagrangian experiment in the Southern Ocean, submitted to *Journal of Geophysical Research – Oceans*.

DeGrandpre, M.D., Martz, T.R., Hart, R.D., Elison, D.M., Zhang, A. and A. Bahnson **(2011)**. Universal tracer monitored titrations, *Anal. Chem.*, doi:10.1021/ac2025656.

Cullison, S.E., DeGrandpre, M.D., Moore, T.M., Martz, T.R., Friederich, G.E., and K.S. Johnson **(2011)**. Applications of in situ pH measurements for inorganic carbon calculations, *Mar. Chem.*, 125, 82–90.

Moore, T.S., DeGrandpre, M.D., Sabine, C.L., Zappa, C.J., McGillis, W.R., Feely, R.A., Hamme, R.C. and W.M. Drennan **(2011)**. Sea surface  $p\text{CO}_2$  and  $\text{O}_2$  in the Southern Ocean during the austral fall, 2008, *J. Geophys. Res.- Oceans*, 116, C00F11, doi:10.1029/2010JC006560.

Emerson, S., Sabine, C.L., Cronin, M., Cullison, S.E., and M.D. DeGrandpre **(2011)**. Production rates of  $\text{CaCO}_3$  and organic carbon in ocean surface waters from in situ measurements of  $p\text{CO}_2$  and pH, *Global Biogeochem. Cycles*, 25, GB3008, doi:10.1029/2010GB003924.

Strutton, P.G., Martz, T.M., DeGrandpre, M.D., McGillis, W.R., Drennan, W. and E. Boss. **(2011)**. Bio-optical observations of the 2004 Labrador Sea phytoplankton bloom, *J. Geophys. Res. – Oceans*, 116, C11037, doi:10.1029/2010JC006872.

Nazan, A., McKinley, G.A., Bennington, V., Baehr, M., Urban, N., DeGrandpre, M., Desai, A.R., and C. Wu. **(2011)**. Observed variability of Lake Superior  $p\text{CO}_2$ , *Limnol. Oceanogr.*, 56, 775-786.

Turk, D. Malacic, V., DeGrandpre, M.D. and W. R. McGillis. **(2010)**. Carbon dioxide variability and air-sea fluxes in the northern Adriatic Sea, *J. Geophys. Res.*, 115, C10043, doi:10.1029/2009JC006034.

Hamme, R.C., Webley, P.W., Crawford, W.R., Whitney, F.A., DeGrandpre, M.D., Emerson, S.R., Eriksen, C.C., Giesbrecht, K.E., Gower, J.F.R., Kavanaugh, M.T., Peña, M.A., Sabine, C.L., Batten, S.D., Coogan, L.A., Grundle, D.S., and D. Lockwood **(2010)**. Volcanic ash fuels anomalous plankton bloom in subarctic Northeast Pacific, *Geophys. Res. Lett.*, 37, L19604, doi:10.1029/2010GL044629.

Lynch, J.K., Beatty, C.M., Seidel, M.P., Jungst, L.J. and M.D. DeGrandpre. **(2010)**. Controls of riverine  $\text{CO}_2$  over an annual cycle determined using direct, high temporal resolution  $p\text{CO}_2$  measurements, *J. Geophys. Res.- Biogeosciences*, 115, G03016, doi:10.1029/2009JG001132.

Parker, S.R, Gammons, C.H., Poulson, S.R., DeGrandpre, M.D., Weyer, C.L., Smith, M.G., Babcock, J.N., and Y. Oba. **(2010)**. Diel behavior of stable isotopes of dissolved oxygen and dissolved inorganic carbon in rivers over a range of trophic conditions, and in a mesocosm experiment, *Chem. Geol.*, 269, 22–32.

Byrne, R., DeGrandpre, M., Short, R., Martz, T., Merlivat, L., McNeil, C., Sayles, F., Bell, R. and Fietzek, P., **(2010)**. Sensors and Systems for In Situ Observations of Marine Carbon Dioxide System Variables, in

*Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Vol. 2)*, Venice, Italy, 21-25 September 2009, Hall, J., Harrison, D.E. & Stammer, D., Eds., ESA Publication WPP-306, doi:10.5270/OceanObs09.cwp.13.

Martz, T.M., DeGrandpre, M.D., Strutton, P.G., McGillis, W.R. and W. Drennan. **(2009)**. Sea surface  $p\text{CO}_2$  and carbon export during the Labrador Sea spring-summer bloom: an in situ mass balance approach, *J. Geophys. Res. - Oceans*, 114, C09008, doi:10.1029/2008JC005060.

Brooks, I.M. et al. (M.D. DeGrandpre 12th of 54 authors in alphabetical order). **(2009)**. Physical exchanges at the air-sea interface: UK-SOLAS field measurements, *Bull. Amer. Meteorol. Soc.*, 90, 629-644. doi: 10.1175/2008BAMS2578.1

Keller, B.K. Shulga, O., Palmer, C.P. and M.D. DeGrandpre. **(2008)**. Development of a fiber-optic capillary evanescent wave surface plasmon resonance bio-sensor, *Sens. Transducers J.* 88, 21-30.

Körtzinger, A., Send, U., Wallace, D.W.R., Karstensen, J. and M.D. DeGrandpre. **(2008)**. The seasonal cycle of  $\text{O}_2$  and  $p\text{CO}_2$  in the central Labrador Sea: Atmospheric, biological and physical implications, *Global Biogeochem. Cycles*, 22, GB1014, doi:10.1029/2007GB003029.

Jickells, T.D. Liss, P.S., Broadgate, W., Turner, S., Kettle, A.J., Read, J., Baker, J., Cardenas, L. M. , Carse, F., Hamren-Larssen, M., Spokes, L., Steinke, M., Thompson, A., Watson, A., Archer, S.D., Bellerby, R.G.J., Law, C.S., Nightingale, P.D., Liddicoat, M.I., Widdicombe, C.E., Bowie, A., Gilpin, L.C., Moncoiffé, G., Savidge, G., Preston, T., Hadziabdic, P., Frost, T., Upstill-Goddard, R., Pedrós-Alió, C., Simó, R., Jackson, A., Allen, A., and M.D. DeGrandpre. **(2008)**. A Lagrangian biogeochemical study of an eddy in the north east Atlantic, *Prog. Oceanogr.*, 76, 366–398.

Seidel, M.P., DeGrandpre, M.D. and A.G. Dickson. **(2008)**. A sensor for *in situ* indicator-based measurements of seawater pH, *Mar. Chem.*, 109, 18–28.

Körtzinger, A., Send, U., Lampitt, R.S., Hartman, S., Wallace, D.W.R., Karstensen, J., Villagarcia, M.G., Llinás, O. and M.D. DeGrandpre. **(2008)**. The seasonal  $p\text{CO}_2$  cycle at  $49^\circ\text{N}/16.5^\circ\text{W}$  in the northeast Atlantic Ocean and what it tells us about biological productivity, *J. Geophys. Res. - Oceans*, 113, C04020, doi:10.1029/2007JC004347.

Yuan, S. and M.D. DeGrandpre. **(2008)**. Evaluation of indicator-based pH measurements for freshwater over a wide range of buffer intensities, *Environ. Sci. Technol.*, 42, 6092-6099.

Paprocki, E.D., Keller, B.K., Palmer, C.P., Laws, W.R. and M.D. DeGrandpre. **(2008)**. Characterization of long pathlength capillary waveguides for evanescent fluorescence sensing applications, *Sensors and Actuators B: Chemical*, 135, 145-151.

Edson, J.B., DeGrandpre, M.D., Frew, N., and W.R. McGillis. **(2008)**. Investigations of air-sea gas exchange in the CoOP coastal air-sea chemical flux program, *Oceanography*, 21, 34-45.

Parker, S. R., Gammons, C. H., Poulson, S. R., and M.D. DeGrandpre. **(2007)**. Diel variations in stream chemistry and isotopic composition of dissolved inorganic carbon, upper Clark Fork River, Montana, USA., *Appl. Geochem.*, 22, 1329–1343.

Keller, B.K., DeGrandpre, M.D. and C.P. Palmer. **(2007)**. Waveguiding properties of fiber optic capillaries for chemical sensing applications. *Sens. Actuators B: Chem.*, 125, 360–371.

Gammons, C.H., Grant, T.M., Nimick, D.A., Parker, S.R., and M.D. DeGrandpre. **(2007)**. Diel changes in water chemistry in an arsenic-rich stream and treatment-pond system, *Sci.Total Environ.*, 384, 433-451.

Martz, T. R., Dickson, A.G., and M.D. DeGrandpre. **(2006)**. Tracer monitored titrations – analysis of total alkalinity. *Anal. Chem.*, 78, 1817-1826.

Yuan, S. and M.D. DeGrandpre. **(2006)**. A comparison between two detection systems for fiber optic chemical sensor applications. *Appl. Spectrosc.*, 60, 465-470.

McNeil, C.L., Ward, B., McGillis, W.R., DeGrandpre, M.D. and L. Marcinowski. **(2006)**. Fluxes of N<sub>2</sub>, O<sub>2</sub> and CO<sub>2</sub> in Nearshore Waters off Martha's Vineyard. *Cont. Shelf Res.*, 26, 1281-1294.

Kuss, J., Roeder, W., Wlost, K., and M. DeGrandpre. **(2006)**. Time-series of surface water CO<sub>2</sub> and oxygen measurements on a platform in the central Arkona Sea (Baltic Sea): Seasonality of uptake and release. *Mar. Chem.*, 101, 220-232.

DeGrandpre, M.D., Körtzinger, A., Send, U., Wallace, D.W.R. and R.G.J. Bellerby. **(2006)**. Uptake and sequestration of atmospheric CO<sub>2</sub> in the Labrador Sea deep convection region. *Geophys. Res. Lett.*, 33, doi:10.1029/2006GL026881.

Parker, S.R., Poulson, S.R., Gammons, C.H. and M.D. DeGrandpre. **(2005)**. Biogeochemical controls on diel cycling of stable isotopes of dissolved O<sub>2</sub> and dissolved inorganic carbon in the Big Hole River, Montana. *Environ. Sci. Technol.*, 39, 7134-7140.

Baehr, M.M. and M.D. DeGrandpre. **(2004)**. In situ pCO<sub>2</sub> and O<sub>2</sub> measurements in a freshwater lake during turnover and stratification: observations and a model. *Limnol. Oceanog.*, 49, 330-340.

Ward, B., Wanninkhof, R., McGillis, W.R., Jessup, A.T., DeGrandpre, M.D., Hare, J.E., and J.B. Edson. **(2004)**. Biases in the air-sea flux of CO<sub>2</sub> resulting from ocean surface temperature gradients during GasEx-2001. *J. Geophys. Res. - Oceans*, 109, doi10.1029/2003JC001800.

DeGrandpre, M.D., Wanninkhof, R., McGillis, W.R. and P. Strutton. **(2004)**. A Lagrangian study of pCO<sub>2</sub> dynamics in the eastern equatorial Pacific Ocean. *J. Geophys. Res. - Oceans*, 109, doi10.1029/2003JC002089.

McGillis, W.R., Edson, J.B., Zappa, C.J., Ware, J.D., McKenna, S.P., Terray, E.A., Hare, J.E., Fairall, C.W., Drennan, W., Donelan, M., DeGrandpre, M.D., Wanninkhof, R. and R.A. Feely. **(2004)**. Air-sea CO<sub>2</sub> exchange in the Equatorial Pacific. *J. Geophys. Res.- Oceans*, 109, doi10.1029/2003JC002256.

Martz, T.R., Carr, J.J., French, C.R. and M.D. DeGrandpre. **(2003)**. A submersible autonomous sensor for spectrophotometric pH measurements of natural waters. *Anal. Chem.*, 75,1844-1850.

French, C.R., Carr, J.J., Dougherty, E.M., Eidson, L.A.K., Reynolds, J.C. and M.D. DeGrandpre. **(2002)**. Spectrophotometric measurements of freshwater pH. *Anal. Chim. Acta*, 453, 13-20.

Baehr, M.M. and M.D. DeGrandpre. **(2002)**. Under-ice CO<sub>2</sub> and O<sub>2</sub> variability in a freshwater lake. *Biogeochemistry*, 61, 95-113.

DeGrandpre, M.D., Olbu, G.J., Beatty, C.M. and T.R. Hammar. **(2002)**. Air-sea CO<sub>2</sub> fluxes on the U.S. Middle Atlantic Bight. *Deep-Sea Res. II*, 49, 4355-4367.

Seiter, J.C. and M.D. DeGrandpre. **(2001)**. Redundant chemical sensors for calibration-impossible applications. *Talanta*, 54, 99-106.

DeGrandpre, M.D., Baehr, M.M. and T.R. Hammar. **(1999)**. Calibration-free optical chemical sensors. *Anal. Chem.*, 71, 1152-1159.

DeGrandpre, M.D., Hammar, T.R. and C.D. Wirick. **(1998)**. Short term pCO<sub>2</sub> and O<sub>2</sub> dynamics in California coastal waters. *Deep-Sea Res. Part II*, 45, 1557-1575.

DeGrandpre, M.D., Hammar, T.R., Wallace, D.W.R., and C.D. Wirick. **(1997)**. Simultaneous mooring-based measurements of seawater CO<sub>2</sub> and O<sub>2</sub> off Cape Hatteras, North Carolina. *Limnol. Oceanog.*, 42, 21-28.

Vodacek, A., Blough, N.V., DeGrandpre, M.D., Peltzer, E.T., and R.K. Nelson. **(1997)**. Seasonal variation of CDOM and DOC in the Middle Atlantic Bight: Terrestrial inputs and photooxidation. *Limnol. Oceanog.*, 42, 674-686.

DeGrandpre, M.D., Vodacek, A., Nelson, R.K., Bruce, E.J. and N.V. Blough. **(1996)**. Seasonal seawater optical properties of the U.S. Middle Atlantic Bight. *J. Geophys. Res. - Oceans*, 101, 22,727-22,736.

DeGrandpre, M.D., McGillis, W.R., Frew, N.M. and E.J. Bock. **(1995)**. Laboratory measurements of seawater CO<sub>2</sub> gas fluxes. selected paper for *Proceedings of the Third International Symposium on Air-Water Gas Transfer*, B. Jähne and E.C. Monahan eds., AEON publ., pp. 375-383.

DeGrandpre, M.D., Hammar, T.R., Smith, S.P., and F.L. Sayles. **(1995)**. In situ measurements of seawater pCO<sub>2</sub>. *Limnol. Oceanog.*, 40, 969-975.

DeGrandpre, M.D. **(1993)**. Measurement of seawater pCO<sub>2</sub> using a renewable-reagent fiber optic sensor with colorimetric detection. *Anal. Chem.*, 65, 331-337.

DeGrandpre, M.D., Burgess, L.W., White, P.L. and D.S. Goldman. **(1990)**. Thin film planar waveguide sensor for liquid phase absorbance measurements. *Anal. Chem.*, 62, 2012-2017.

DeGrandpre, M.D. and L.W. Burgess. **(1990)**. A Fiber-optic FT-NIR evanescent field absorbance sensor. *Appl. Spectrosc.*, 44, 273-279.

Carey, W.P., DeGrandpre, M.D. and B.J. Jorgenson. **(1989)**. A polymer coated fiber-optic waveguide sensor for high acid concentrations. *Anal. Chem.*, 61, 1674-1678.

DeGrandpre, M. D. and L.W. Burgess. **(1988)**. Evanescent-field fiber-optic probe for process analysis. *Advanc. Instr.*, 43, 821-30.

DeGrandpre, M.D. and L.W. Burgess. **(1988)**. A long path fiber-optic sensor for evanescent field absorbance measurements. *Anal. Chem.*, 60, 2582-2586.

#### **NON-REFEREED PUBLICATIONS and PATENTS:**

Turk, D., Malacic, V., DeGrandpre, M.D., and W.R. McGillis. **(2009)**. Carbon dioxide variability in the Gulf of Trieste: A new coastal carbon time-series station and EU/US Collaboration, *OCB Newsletter*, 2, 7-9.

Schofield, O., Codispoti, L., Kelly, V., DeGrandpre, M., Gruber, N., Siegel, D., McGillis, W., and C. Sabine. **(2008)**. Observation and Synthesis of Carbon Cycling on the Continental Margins, in *North American Continental Margins: A Synthesis and Planning Workshop*, Hales, B. Cai, W-J., Mitchell, G., Sabine, C., and O. Schofield [eds.], U.S. Carbon Cycle Science Program, Washington, DC.

DeGrandpre, M.D., Martz, T.R. and A.G. Dickson. **(2006)**. Tracer monitored titrations, U.S. Provisional Patent Application, Serial No. 60/763,170, filed January 26, 2006.

Keller, B.K., DeGrandpre, M.D. and C. P. Palmer. Characterization of long pathlength capillary waveguides for evanescent chemical sensing applications. **(2005)**. *SPIE Proceedings: Chemical and Biological Point Sensors for Homeland Defense II*, 5585, 143-151.

DeGrandpre, M.D. **(2001)**. Calibration-free optical chemical sensors, U.S. Patent No. 7026165, issued on April 11, 2006.

DeGrandpre, M.D., Baehr, M.M. and T.R. Hammar. **(2000)**. Development of an optical chemical sensor for oceanographic applications: The Submersible Autonomous Moored Instrument for Seawater CO<sub>2</sub>. *Chemical Sensors in Oceanography*, M. Varney ed., Gordon and Breach publ., Amsterdam, pp. 123-141.

McGillis, W.R. and M.D. DeGrandpre. **(2000)**. Dissolved carbon dioxide in coastal waters. *Coastal Research Center Newsletter*, 4, 3-4.

DeGrandpre, M.D., Hammar, T.R., and C.D. Wirick. **(1998)**. Studies of coastal CO<sub>2</sub> and O<sub>2</sub> dynamics using moored autonomous sensors. *Proceedings of the Marine Technology Society Ocean Community Conference*, Baltimore, MD, 797-801.

Johnson, K., Reimers, C. and M. DeGrandpre **(1998)**. Chemical Analysis Report for Future of Chemical Oceanography in the U.S. (FOCUS) meeting. Charleston, SC.

DeGrandpre, M.D. and R.G.J. Bellerby. **(1995)**. Chemical sensors in marine chemistry. *Oceanus*, 38, 30-32.

DeGrandpre, M.D. **(1994)**. Multi-wavelength detection for drift compensation in fiber optic chemical sensors. *SPIE Proceedings: Chemical, Biochemical and Environmental Fiber Sensors V*, 2068, 216-223.

DeGrandpre, M.D. **(1991)**. A renewable reagent fiber optic sensor for ocean pCO<sub>2</sub>. *SPIE Proceedings: Chemical, Biochemical and Environmental Applications of Fibers III*, 1587, 60-66.

DeGrandpre, M.D. and L.W. Burgess. **(1989)**. A fiber-optic evanescent field probe for process analysis. *ISA Trans.*, 28, 71-77.

DeGrandpre, M.D. and L.W. Burgess. **(1988)**. All-fiber spectroscopic probe based on an evanescent wave sensing mechanism. *SPIE Proceedings: Chemical, Biochemical and Environmental Applications of Fibers*, 990, 170-175.