

Curriculum Vitae

MICHAEL DAVID DeGRANDPRE

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EDUCATION

- B.S. Chemical Engineering, June 1985, Montana State University.
- Ph.D. Analytical Chemistry, June 1990, University of Washington, Advisor: L. Burgess.
- Postdoctoral Scholar, Woods Hole Oceanographic Institution, Oct. 1990-April 1993, Advisor: F. Sayles.

PROFESSIONAL EXPERIENCE

- Professor of Chemistry, University of Montana, Missoula, MT, 2006-present.
- Associate Professor of Chemistry, University of Montana, Missoula, MT, 2000-2006.
- Assistant Professor of Chemistry, University of Montana, Missoula, MT, 1996-2000.
- Research Associate, Woods Hole Oceanographic Institution, 1993-1996.

PROFESSIONAL HONORS AND AWARDS

Provost's Distinguished Lecturer (2016), Ocean Health XPRIZE Awards for Affordable and Accurate Autonomous pH Sensors (2015); MEL Distinguished Visiting Fellowship 2014 (Xiamen, China); Fulbright Foreign Scholar Award 2010-2011 (Center for Oceanographic Research in the Eastern South Pacific, University of Concepcion, Chile); Visiting Fellow Scholarship, University of Kiel, Institute of Marine Sciences, 2002; University Merit Awards (1999, 2001, 2003, 2005, 2007, 2009, 2010, 2012, 2014, 2015, 2017, 2019, 2021).

PROFESSIONAL AFFILIATIONS: American Chemical Society, 1986-present; American Geophysical Union, 1992-present; Associated Sciences of Limnology and Oceanography, 1996-present.

RESEARCH INTERESTS: Development and application of chemical sensors for studying natural waters; carbon cycling in freshwater and marine ecosystems; Arctic Ocean biogeochemistry.

GRADUATE and POST-DOCTORAL ADVISEES (12 M.S., 9 Ph.D., 8 post-docs): Qipei Shangguan (Ph.D. in progress), Fischer Young (Ph.D. 2022), Alec Johnson (M.S. 2021), Brittany Peterson (M.S. 2019), Reba Van Beusekom (M.S. 2018), Reuben Darlington (M.S. 2017), Fakhru Islam (M.S. 2015), Katherine Harris (Ph.D. 2013), Sarah Cullison-Gray (Ph.D. 2010), Janet Lynch (M.S. 2007), Eric Paprocki (M.S. 2007), Matt Seidel (Ph.D. 2006), Shigui Yuan (Ph.D. 2006), Todd Martz (Ph.D. 2005), Steve Parker (Ph.D. 2005), Jason Reynolds (M.S. 2001), Jeff Carr (M.S. 2000), Matt Baehr (Ph.D. 2000), Craig French (M.S. 1999), Jay Seiter (M.S. 1997). **Post docs:** Chun-Ze Lai (2015-2019), Tommy Moore (2009-2011), Brian Keller (2004-2007), Todd Martz (2006), Reggie Spaulding (2005-2008), Stacy Smith (2005-2006), Shigui Yuan (2006-2008), Gerald Olbu (1997-2002).

OTHER ACTIVITIES

- Associate Editor, *Limnology and Oceanography: Methods*, 2008-present.
- Research paper and proposal reviews: ~30 from 2020 - present.

- Surface Ocean CO₂ Atlas (SOCAT) – Arctic Ocean CO₂ Data Quality Control lead
- Invited workshops, panels and committees: Advisory Committee for the Office of Polar Programs (2017 - 2021), NSF Office of Polar Programs Arctic Natural Sciences review panel (virtual) (November 2019).
- University committees: Graduate Council (2019-2022), Faculty Evaluation Committee (2019-2021), Department Graduate Education Committee Chair (2013-2022), Student Advisor for Environmental Chemistry Option (2006-present).
- Technology transfer: co-owner of Sunburst Sensors, a company to develop and commercialize autonomous chemical sensors for aquatic chemistry research (1999-present).

PUBLICATIONS

Shangguan, Q., R. A. Payn, R. O. Hall, F. L. Young, H. M. Valett, and M. D. DeGrandpre **(2024)**. Divergent metabolism estimates from dissolved oxygen and inorganic carbon: implications for river carbon cycling. Under review in *Limnol. Oceanogr.*

DeGrandpre, M.D. **(2023)**. Tools of the Trade: Remote Autonomous Titration, *Nature Reviews Chemistry*, <https://doi.org/10.1038/s41570-023-00547-1>.

Richaud, B., Fennel, K., Oliver, E. C. J., DeGrandpre, M.D., Bourgeois, T., Hu, X., and Y. Lu **(2023)**. Underestimation of oceanic carbon uptake in the Arctic Ocean: Ice melt as predictor of the sea ice carbon pump, *The Cryosphere*, 17, 2665–2680, <https://doi.org/10.5194/tc-17-2665-2023>.

Pezner A.K, Courtney, T.A., Barkley, H.C., Chou, W-C., Chu, H-C., Clements, S., Cyronak, T., DeGrandpre, M.D., Kekuewa, S.A.H., Kline, D.I., Liang, Y-B., Martz, T., Mitarai, S., Page, H.N., Rintoul, M.S., Smith, J.E., Soong, K., Takeshita, Y., Tresguerres, M., Wei, Y., Yates, K.K., and A.J. Andersson. **(2023)**. Increasing hypoxia on global coral reefs under ocean warming. *Nature Climate Change*, <https://doi.org/10.1038/s41558-023-01619-2>. The paper made the cover of the April 2023 issue: <https://tinyurl.com/38mpd8zw>.

Pardis, W., Grabb, K.C., DeGrandpre, M.D., Spaulding, R., Beck, J., Pfeifer, J.A. and D.M. Long **(2022)**. Measuring protons with photons: A hand-held, spectrophotometric pH analyzer for ocean acidification research, community science and education, *Sensors*, 22, 7924. <https://doi.org/10.3390/s22207924>.

Lee, C.M., M. DeGrandpre, J. Guthrie, V. Hill, R. Kwok, J. Morison, C.J. Cox, H. Singh, T.P. Stanton and J. Wilkinson **(2022)**. Emerging technologies and approaches for in situ, autonomous observing in the Arctic. *Oceanography*, <https://doi.org/10.5670/oceanog.2022.127>.

Young, F.L., Shangguan, Q., Beatty, C. M., Gilsdorf, M. D., and M.D. DeGrandpre **(2022)**, Comparison of spectrophotometric and electrochemical pH measurements for calculating freshwater *p*CO₂, *Limnology and Oceanography: Methods*, <https://doi.org/10.1002/lom3.10501>.

Shangguan, Q., Prody, A., Wirth, T. S., Briggs, E. M., Martz, T. R., and M. D. DeGrandpre **(2022)**. An inter-comparison of autonomous *in situ* instruments for ocean CO₂ measurements under laboratory-controlled conditions, *Mar. Chem.*, 240, 104085, <https://doi.org/10.1016/j.marchem.2022.104085>.

Fennel, K., Cyronak, T., DeGrandpre, M., Ho, D., Laruelle, G., Maher, D., and J. Moriarty **(2022)**. Carbon, coast, and the climate. In *Oxford Research Encyclopedia of Climate Science*. Oxford University Press. doi: <https://doi.org/10.1093/acrefore/9780190228620.013.824>.

- Jurleys, P. V., Saldías, G.S., Allen, S.E., Torres, R. Vergara, M., Sobarzo, M., DeGrandpre, M.D. and J.L. Iriarte. **(2022)**. Understanding the implications of hydrographic processes on the dynamics of the carbonate system in a sub-Antarctic marine-terminating glacier-fjord (53°S), *Frontiers in Marine Science*, 9, 643811, [doi: 10.3389/fmars.2022.643811](https://doi.org/10.3389/fmars.2022.643811).
- D'Andrilli, J., Peipoch, M., Payn, R.A., D. DeGrandpre, M. and H. M. Valett **(2021)**, Collaborative Achievements and Challenges for Our 10-YR River Research Effort. *Limnology and Oceanography Bulletin*, 30, 127-128, <https://doi.org/10.1002/lob.10465>.
- DeGrandpre, E. L., DeGrandpre, M. D., Colman, B. P. and H. M. Valett **(2021)**. Observations of river solute concentrations during ice formation, *Env. Sci. Technol. Water*, 1, 1695–1701, <https://doi.org/10.1021/acsestwater.1c00064>.
- Takehita, Y., Warren, J.K., Xuewu, L., Spaulding, R.S., Byrne, R.H., Carter, B.R., DeGrandpre, M.D., Murata, A., and S. Watanabe **(2021)**. Consistency and stability of purified meta-cresol purple for spectrophotometric pH measurements in seawater, *Mar. Chem.*, 236, 104018, <https://doi.org/10.1016/j.marchem.2021.104018>.
- Pezner, A. K., Courtney T. A., Page H.N., Beatty C.M., Giddings S.N., DeGrandpre M.D. and A. J. Andersson **(2021)**. Lateral, vertical, and temporal variability of seawater carbonate chemistry at Hog Reef, Bermuda, *Frontiers in Marine Science*, 8, 562267, <https://doi.org/10.3389/fmars.2021.562267>.
- Shangguan, Q., Lai, C., Beatty, C.M., Young, F.L., Spaulding, R.S., and M.D. DeGrandpre **(2021)**. Autonomous in situ measurements of freshwater alkalinity, *Limnol. Oceanog. Methods*, 19, 51-66, <https://doi.org/10.1002/lom3.10404>.
- Bakker, D. C. E. et al **(2020)**. Surface Ocean CO₂ Atlas Database Version 2020 (SOCATv2020) (NCEI Accession 0210711), NOAA National Centers for Environmental Information, <https://doi.org/10.25921/4xkx-ss49>.
- DeGrandpre, M., Evans, W., Timmermans, M.-L., Krishfield, R., Williams, B., and M. Steele **(2020)**. Changes in the Arctic Ocean carbon cycle with diminishing ice cover. *Geophys. Res. Letters*, 47, <http://dx.doi.org/10.1029/2020GL088051>.
- Ouyang, Z., Qi, D., Chen L., Zhong, W., Takahashi, T., DeGrandpre, M.D., Chen, B., Gao, Z., Nishino, S., Murata, A., Sun, H., Robbins, L.L., Jin, M., and W.-J. Cai **(2020)**. Sea-ice loss amplifies summer-time decadal CO₂ increase in the western Arctic Ocean, *Nature Climate Change*, 10, 678–684, <https://doi.org/10.1038/s41558-020-0784-2>.
- Vergara Jara, M. J., DeGrandpre, M. D., Torres, R., Beatty, C. M., Cuevas, L. A., Alarcón, E. and J. L. Iriarte **(2019)**. Seasonal changes in carbonate saturation state and air-sea CO₂ fluxes during an annual cycle in a stratified-temperate fjord (Reloncaví Fjord, Chilean Patagonia), *J. Geophys. Res. – Biogeosciences*, 124, <https://doi.org/10.1029/2019JG005028>.
- DeGrandpre, M. D., Lai, C.-Z., Timmermans, M.-L., Krishfield, R. A., Proshutinsky, A., and Torres, D. **(2019)**. Inorganic carbon and pCO₂ variability during ice formation in the Beaufort Gyre of the Canada Basin. *J. Geophys. Res. – Oceans*, 124, 4017–4028, <https://doi.org/10.1029/2019JC015109>.

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