

## JORGE LOUIS SARMIENTO

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### (a) Professional Preparation

Swarthmore College, Chemistry, B.A., 1968  
Columbia University, Geology, M.A., 1974  
Columbia University, Geology, M.Ph., 1976  
Columbia University, Geology, Ph.D., 1978

### (b) Appointments

1996-present Associated Faculty in Princeton Environmental Institute, Princeton University  
1995-present Associated Faculty in Dept. of Civil and Environmental Engr., Princeton University  
1991-present Professor in Department of Geosciences and Atmospheric and Oceanic Sciences Program, Princeton University  
1986-1991 Associate Professor in Department of Geosciences and Atmospheric and Oceanic Sciences Program, Princeton University  
1980-1986 Assistant Professor in Department of Geosciences and Atmospheric and Oceanic Sciences Program, Princeton University  
1978-1980 Research Associate in Atmospheric and Oceanic Sciences Program, Princeton University  
1973-1978 Graduate Research Assistant, Columbia University

### (c) Publications

#### Five publications most closely related to the proposed project

- Sarmiento, J. L., N. Gruber, M. A. Brzezinski, and J. P. Dunne, 2004. High latitude controls of the global nutricline and low latitude biological productivity. *Nature*, 427: 56-60.  
<http://dx.doi.org/10.1038/nature02127>.
- Mignone, B. K., A. Gnanadesikan, J. L. Sarmiento, R. D. Slater, 2006. Central role of southern hemisphere winds and eddies in modulating the oceanic uptake of anthropogenic carbon. *Geophys. Res. Lett.*, 33, L01604, <http://dx.doi.org/10.1029/2005GL024464>.
- Downes, S. M., A. S. Budnick, J. L. Sarmiento, and R. Farneti, 2011. Impacts of wind stress on the Antarctic Circumpolar Current fronts and associated subduction, *Geophys. Res. Lett.*, 38, L11605, doi:10.1029/2011GL047668.
- Rodgers, K. B., S. E. Mikaloff-Fletcher, D. Bianchi, C. Beaulieu, E. D. Galbraith, A. Gnanadesikan, A. G. Hogg, D. Iudicone, B. R. Lintner, T. Naegler, P. J. Reimer, J. L. Sarmiento, and R. D. Slater, 2011. Interhemispheric gradient of atmospheric radiocarbon reveals natural variability of Southern Ocean winds. *Clim. Past*, 7 (4): 1123-1138, <http://dx.doi.org/10.5194/cp-7-1123-2011>.
- Downes, S. M., A. Gnanadesikan, S. M. Griffies, and J. L. Sarmiento, 2011. Water Mass Exchange in the Southern Ocean in Coupled Climate Models. *J. Phys. Oceanogr.*, 41: 1756-1771, <http://dx.doi.org/10.1175/2011JPO4586.1>

#### Five other significant publications

- Sarmiento, J. L., T. M. C. Hughes, R. J. Stouffer, S. Manabe, 1998. Simulated response of the ocean carbon cycle to anthropogenic climate warming. *Nature*, 393: 245-249, <http://dx.doi.org/10.1038/30455>.
- Sarmiento, J. L., R. Slater, R. Barber, L. Bopp, S. C. Doney, A. C. Hirst, J. Kleypas, R. Matear, U. Mikolajewicz, P. Monfray, V. Soldatov, S. A. Spall, and R. Stouffer, 2004. Response of ocean ecosystems to climate warming. *Global Biogeochem. Cycles*, 18, GB3003, <http://dx.doi.org/1029/2003GB002134>.
- Cheung, W. W. L., V. W. Y. Lam, J. L. Sarmiento, K. Kearney, R. Watson, D. Zeller, and D. Pauly, 2010. Large-scale redistribution of maximum fisheries catch potential in the global ocean under climate change. *Global Change Biology*, 16: 24-35, <http://dx.doi.org/10.1111/j.1365-2486.2009.01995.x>.
- Henson, S. A., J. L. Sarmiento, J. P. Dunne, L. Bopp, I. Lima, S. C. Doney, J. John, and C. Beaulieu,

2010. Detection of anthropogenic climate change in satellite records of ocean chlorophyll and productivity: *Biogeosciences*, 7: 621-640, <http://dx.doi.org/10.5194/bg-7-621-2010>.  
Sarmiento, J. L., M. Gloor, N. Gruber, C. Beaulieu, A. R. Jacobson, S. E. Mikaloff Fletcher, S. Pacala, and K. Rodgers, 2010. Trends and regional distributions of land and ocean carbon sinks: *Biogeosciences* 7: 2351-2367, <http://dx.doi.org/10.5194/bg-7-2351-2010>.

#### **(d) Synergistic Activities**

--First author of 2006 undergraduate textbook entitled "Ocean Biogeochemical Dynamics."  
--Led U. S. Joint Global Ocean Flux Study planning effort for synthesis and modeling and was co-lead of synthesis and modeling project, 1995-2004.  
--Led U. S. Carbon Cycle science planning effort ("A U. S. Carbon Cycle Science Plan") and served on the scientific steering committee implementing the recommendations of the report, 2000-2007.  
--Co-organizer of Southern Ocean Scoping Workshop held at Princeton University in June 2009, and co-author of the report: "A U. S. Southern Ocean Carbon, Ecosystems, and Biogeochemistry Science Plan."  
--Has served as a member of numerous advisory committees, including for the National Research Council -most recently the ad hoc committee on requirements for sustained ocean color research and operations.

#### **(e) Collaborators and other affiliations**

**Collaborators and Co-Editors, last 4 years:** R. Ahrens (UBC); J. Alder (UBC); M. A. Alexander (ESRL); O. Aumont (LSCE); W. Buermann (UCLA); N. A. Bond (Washington); L. Bopp (LSCE); K. Brander (DTU Aqua); A. Budnick (Princeton); J. Buszowski (Bern); W.W.L. Cheung (E. Anglia); L.B. Christensen (UBC); V. Christensen (UBC); H. Cullen (Climate Central); E.N. Curchitser (Rutgers); C. de Boyer Montegut (IFREMER); T. L. Delworth (GFDL); T. DeVries (UCLA); S.C. Doney (WHOI); J. Dunne (GFDL); S. Dutkiewicz (MIT); R. Farneti (ICTP, Italy); M. Follows (MIT); R. Froese (IFM-GEOMAR); E. M. Gerber (Bern); D.M. Glover (WHOI); A. Gnanadesikan (JHU); S. Griffies (GFDL); N. Gruber (ETH-Zurich); B. Hales (Oregon State); M. A. Haltuch (NMFS-Seattle, WA); J. A. Hare (NMFS-RD); I. Held (GFDL); A.B. Hollowed (NMFS-Seattle, WA); A. Ishida (Frontier Res. Center); M. Ishii (MRI-Japan); J. John (GFDL); K. Johnson (MBARI); F. Joos (Bern); V. Karpouzi (UBC); K. Kastner (Albert-Ludwigs); S. Lai (UBC); W.Y. Lam (UBC); P. Lehodey (MEMMS); S.A. Levin (Princeton); I. Lima (WHOI); K. Lindsay (NCAR); J.S. Link (NMFS-WHOI); C. Lo Monaco (LOCEAN/IPSL); M. S. Lozier (Duke); E. Maier-Reimer (MPI); K. Matsumoto (Minnesota); D. Menemenlis (JPL); H. Merceir (IFREMER); N. Metz (LOCEAN) W.S. Moore (S. Carolina); A. Mouchet (Liege); S.A. Muller (Bern); R. Newton (Lamont-Columbia); M. Oppenheimer (Princeton); S. Pacala (Princeton); L.D. Palomares (UBC); D. Pauly (UBC); F. F. Perez (CSIC); A. Peters-Mason (Mar. Conv. Bio.-WA); C. Piroddi (UBC); Primeau (UC-Irvine); A. Rios (CSIC); A. Rose (Louisiana State); J. Russell (Arizona); P. Schlosser (Lamont-Columbia); O. Schofield (Rutgers); F. F. Schwing (NMFS-CA); D. Siegel (UCSB); J. Simeon (LCSE, France); R. Slater (Princeton); R.H. Socolow (Princeton); J. Steenbeek (UBC); C. Stock (GFDL); R. Stouffer (GFDL); R. Sumaila (UBC); C. Sweeney (UC-Boulder); T. Takahashi (Columbia); L. Talley (Scripps); P. Tans (ESRL/NOAA); J. R. Toggweiler (GFDL); G. A. Vecchi (GFDL); C.J. Walters (UBC); R. Wanninkhof (AOML/NOAA); J. Watson (E. Anglia); R. Watson (UBC); F. E. Werner (Rutgers); P. Wetzel (MPI-Germany); R. G. Williams (Liverpool); C.D. Winn (Hawaii Pacific); A. Wittenberg (GFDL); Y. Yamanaka (Hokkaido); D. Zeller (UBC).

**Graduate Advisors & Postdoctoral Sponsors:** W. Broecker (Columbia); Kirk Bryan (Princeton).

**Primary Thesis Advisor, total = 17: Currently 3 students:** Dr. F. Bryan (NCAR), Dr. M. Kawase (Washington), Dr. R. Najjar (Penn State), Dr. T. Tromp, Dr. L. Anderson (WHOI), Dr. P. Suntharalingam (E. Anglia), Dr. D. Baker (NCAR), Dr. C. Deutsch (UCLA), Dr. I. Marinov (U. Pennsylvania), Dr. B. Mignone (Brookings), P. Schultz (McKinsey & Co.), Y. Plancherel (Oxford), D. Bianchi (McGill), K. Kearney (current), J. Majkut (current), H. Zanowski (current).

**Postgraduate-Scholar Sponsor, total = 42, last 5 years:** R. M. Key (Princeton), M. Gloor (Leeds), A. Jacobson (ESRL/NOAA), C. Crevoisier (Ecole Polytechnique - Paliseau, France), M. Hiscock (EPA), K. Rodgers (Princeton), S. Mikaloff-Fletcher (NIWA, NZ), E. Galbraith (McGill), S. Henson (NOC, Southampton), E.-Y. Kwon (UCLA), J. Palter (McGill), C. Beaulieu (Princeton), S. Downes (ANU), A. Smith (Princeton), T. Frölicher (Princeton), B. Carter (Princeton), J. Watson (Princeton), R. Rykaczewski (Princeton).