

Review Articles and Monographs

- Barnes, R. T. H., R. Hide, A. A. White, and C. A. Wilson, Atmospheric angular momentum fluctuations, length-of-day changes and polar motion, *Proc. R. Soc. Lond.*, Ser. A, **387**, 31–73, 1983.
- Dickey, J. O., Atmospheric excitation of the Earth's rotation: Progress and prospects via space geodesy, in *Contributions of Space Geodesy to Geodynamics: Earth Dynamics*, edited by D. E. Smith, and D. L. Turcotte, pp. 55–70, American Geophysical Union Geodynamics Series, Washington, D.C., 1993.
- Dickey, J. O., Earth rotation variations from hours to centuries, in *Highlights of Astronomy: Volume 10*, edited by I. Appenzeller, pp. 17–44, Kluwer Academic Publishers, Norwell, Mass., 1995.
- Eubanks, T. M., Variations in the orientation of the Earth, in *Contributions of Space Geodesy to Geodynamics: Earth Dynamics*, edited by D. E. Smith, and D. L. Turcotte, pp. 1–54, American Geophysical Union Geodynamics Series, Washington, D.C., 1993.
- Hide, R., and J. O. Dickey, Earth's variable rotation, *Science*, **253**, 629–637, 1991.
- Lambeck, K., *The Earth's Variable Rotation: Geophysical Causes and Consequences*, 449 pp., Cambridge University Press, New York, 1980.
- Lambeck, K., *Geophysical Geodesy: The Slow Deformations of the Earth*, 718 pp., Oxford University Press, Oxford, 1988.
- Munk, W. H., and G. J. F. MacDonald, *The Rotation of the Earth: A Geophysical Discussion*, 323 pp., Cambridge University Press, New York, 1960.
- Rosen, R. D., The axial momentum balance of Earth and its fluid envelope, *Surveys Geophys.*, **14**, 1–29, 1993.
- Wahr, J. M., Geophysical aspects of polar motion, variations in the length of day, and the lunar solar nutations, in *Space Geodesy and Geodynamics*, edited by A. J. Anderson and A. Cazenave, pp. 281–313, Academic Press, Orlando, Florida, 1986.

Boussinesq Ocean Models and Mass Conservation

- de Szoeké, R. A., and R. M. Samelson, The duality between the Boussinesq and non-Boussinesq hydrostatic equations of motion, *J. Phys. Oceanogr.*, **32**, 2194–2203, 2002.
- Dukowicz, J., Steric sea level in the Los Alamos POP code—Non-Boussinesq effects, in *Numerical Methods in Atmospheric and Oceanic Modelling: The Andre Robert Memorial Volume*, edited by C. A. Lin, R. Laprise, and H. Ritchie, pp. 533–546, Can. Meteorol. Oceanogr. Soc. Ottawa, Ont., 1997.
- Greatbatch, R. J., A note on the representation of steric sea level in models that conserve volume rather than mass, *J. Geophys. Res.*, **99**, 12767–12771, 1994.
- Greatbatch, R. J., Y. Lu, and Y. Cai, Relaxing the Boussinesq approximation in ocean circulation models, *J. Atmos. Oceanic Technol.*, **18**, 1911–1923, 2001.
- Huang, R. X., and X. Jin, Sea surface elevation and bottom pressure anomalies due to thermohaline forcing. Part I: Isolated perturbations, *J. Phys. Oceanogr.*, **32**, 2131–2150, 2002.
- Huang, R. X., X. Jin, and X. H. Zhang, An oceanic general circulation model in pressure coordinates, *Adv. Atmos. Sci.*, **18**, 1–22, 2001.

- Losch, M., A. Adcroft, and J.-M. Campin, How sensitive are coarse general circulation models to fundamental approximations in the equations of motion?, *J. Phys. Oceanogr.*, **34**, 306–319, 2004.
- Lu, Y., Including non-Boussinesq effects in Boussinesq ocean circulation models, *J. Phys. Oceanogr.*, **31**, 1616–1622, 2001.
- McDougall, T. J., R. J. Greatbatch, and Y. Lu, On conservation equations in oceanography: How accurate are Boussinesq ocean models?, *J. Phys. Oceanogr.*, **32**, 1574–1584, 2002.
- Mellor, G. L., and T. Ezer, Sea level variations induced by heating and cooling: An evaluation of the Boussinesq approximation in ocean models, *J. Geophys. Res.*, **100**, 20565–20577, 1995.

Global Mass Balance

- Chen, J., Global mass balance and the length-of-day variation, *J. Geophys. Res.*, **110**, B08404, doi:10.1029/2004JB003474, 2005.
- Clarke, P. J., D. A. Lavallée, G. Blewitt, T. M. van Dam, and J. M. Wahr, Effect of gravitational consistency and mass conservation on seasonal surface mass loading models, *Geophys. Res. Lett.*, **32**, L08306, doi:10.1029/2005GL022441, 2005.

Oceanic Angular Momentum

- Bryan, F. O., The axial angular momentum balance of a global ocean general circulation model, *Dyn. Atmos. Oceans*, **25**, 191–216, 1997.
- Gille, S. T., The Southern Ocean momentum balance: Evidence for topographic effects from numerical model output and altimeter data, *J. Phys. Oceanogr.*, **27**, 2219–2232, 1997.
- Gonella, J. A., Ocean-atmosphere coupling and short term fluctuations in Earth rotation, in *Earth Rotation: Solved and Unsolved Problems*, edited by A. Cazenave, pp. 193–201, D. Reidel, Dordrecht, Holland, 1986.
- Gonella, J. A., Ocean-atmosphere coupling and short term fluctuations in Earth rotation, *Oceanol. Acta*, **10**, 123–127, 1987.
- Holloway, G., and P. Rhines, Angular momenta of modeled ocean gyres, *J. Geophys. Res.*, **96**, 843–846, 1991.
- Morrow, R., J. Church, R. Coleman, D. Chelton, and N. White, Eddy momentum flux and its contribution to the Southern Ocean momentum balance, *Nature*, **357**, 482–484, 1992.
- Ponte, R. M., Barotropic motions and the exchange of angular momentum between the oceans and solid Earth, *J. Geophys. Res.*, **95**, 11369–11374, 1990.
- Ponte, R. M., and D. S. Gutzler, The Madden-Julian oscillation and the angular momentum balance in a barotropic ocean model, *J. Geophys. Res.*, **96**, 835–842, 1991.
- Ponte, R. M., and R. D. Rosen, Oceanic angular momentum and torques in a general circulation model, *J. Phys. Oceanogr.*, **24**, 1966–1977, 1994.
- Ponte, R. M., J. Rajamony, and J. M. Gregory, Ocean angular momentum signals in a climate model and implications for Earth rotation, *Clim. Dyn.*, **19**, 181–190, 2002.
- Stevens, D. P., and V. O. Ivchenko, The zonal momentum balance in an eddy-resolving general-circulation model of the Southern Ocean, *Q. J. R. Meteorol. Soc.*, **123**, 929–951, 1997.

Straub, D. N., On the transport and angular momentum balance of channel models of the Antarctic Circumpolar Current, *J. Phys. Oceanogr.*, **23**, 776–782, 1993.

Oceanic Angular Momentum and Length-of-Day

Abarca del Rio, R. J., B. Dewitte, Y. duPenhoat, and D. Gambis, Tropical Pacific Ocean long waves contribution to length of day during ENSO in 1980–1997, in *IERS Technical Note 26: The Impact of El Nino and Other Low-Frequency Signals on Earth Rotation and Global Earth System Parameters*, edited by D. A. Salstein, B. Kolaczek, and D. Gambis, pp. 45–49, Observatoire de Paris, Paris, France, 1999.

Brosche, P., The oceans and the Earth's rotation, in *The Earth's Rotation and Reference Frames for Geodesy and Geodynamics*, edited by A. K. Babcock and G. A. Wilkins, pp. 349–352, Kluwer, Dordrecht, Holland, 1988.

Brosche, P., and J. Sündermann, The Antarctic Circumpolar Current and its influence on the Earth's rotation, *Deutsche Hydrographische Zeitschrift*, **38**, 1–6, 1985.

Brosche, P., J. Wunsch, A. Frische, J. Sündermann, E. Maier-Reimer, and U. Mikolajewicz, The seasonal variation of the angular momentum of the oceans, *Naturwissenschaften*, **77**, 185–186, 1990.

Brosche, P., J. Wunsch, E. Maier-Reimer, J. Segsneider, and J. Sündermann, The axial angular momentum of the general circulation of the oceans, *Astron. Nachr*, **318**, 193–199, 1997.

Chambers, D. P., J. L. Chen, and B. D. Tapley, Identification of El Nino signals with satellite altimetry, in *IERS Technical Note 26: The Impact of El Nino and Other Low-Frequency Signals on Earth Rotation and Global Earth System Parameters*, edited by D. A. Salstein, B. Kolaczek, and D. Gambis, pp. 5–12, Observatoire de Paris, Paris, France, 1999.

Chen, J. L., Geodynamical interconnections between the atmosphere, ocean, hydrosphere, cryosphere, and solid Earth, Ph.D. thesis, Univ. of Texas, Austin, December 1998.

Chen, J., Global mass balance and the length-of-day variation, *J. Geophys. Res.*, **110**, B08404, doi:10.1029/2004JB003474, 2005.

Chen, J. L., C. R. Wilson, B. F. Chao, C. K. Shum, and B. D. Tapley, Hydrological and oceanic excitations to polar motion and length-of-day variation, *Geophys. J. Int.*, **141**, 149–156, 2000.

Christou, N. T., On the space-time ocean current variability and its effects on the length-of-day, Ph.D. thesis, 333 pp., University of New Brunswick, 1990.

Dickey, J. O., Marcus, S. L., Johns, C. M., Hide, R., and S. R. Thompson, The oceanic contribution to the Earth's seasonal angular momentum budget, *Geophys. Res. Lett.*, **20**, 2953–2956, 1993.

Dickman, S. R., Determination of oceanic dynamic barometer corrections to atmospheric excitation of Earth rotation, *J. Geophys. Res.*, **103**, 15127–15143, 1998.

Eubanks, T. M., Interactions between the atmosphere, oceans and crust: Possible oceanic signals in Earth rotation, in *Observations of Earth from Space*, edited by R. P. Singh, M. Feissel, B. D. Tapley, and C. K. Shum, *Adv. Space Res.*, **13**, (11)291–(11)300, Pergamon, Oxford, 1993.

Eubanks, T. M., J. A. Steppe, J. O. Dickey, and P. S. Callahan, A spectral analysis of the Earth's angular momentum budget, *J. Geophys. Res.*, **90**, 5385–5404, 1985.

- Frische, A., and J. Sündermann, The seasonal angular momentum of the thermohaline ocean circulation, in *Earth's Rotation From Eons to Days*, edited by P. Brosche and J. Sündermann, pp. 108–126, Springer-Verlag, New York, 1990.
- Gross, R. S., Gravity, oceanic angular momentum, and the Earth's rotation, in *Gravity, Geoid, and Geodynamics 2000*, edited by M. G. Sideris, pp. 153–158, IAG Symposia vol. 123, Springer-Verlag, New York, 2001.
- Gross, R. S., Angular momentum in the Earth system, in *V Hotine-Marussi Symposium on Mathematical Geodesy*, edited by F. Sanso, pp. 274–284, IAG Symposia vol. 127, Springer-Verlag, New York, 2004.
- Gross, R. S., I. Fukumori, D. Menemenlis, and P. Gegout, Atmospheric and oceanic excitation of length-of-day variations during 1980–2000, *J. Geophys. Res.*, in press, 2003.
- Höpfner, J., Atmospheric, oceanic, and hydrological contributions to seasonal variations in length of day, *J. Geodesy*, **75**, 137–150, 2001.
- Johnson, T. J., The role of the ocean in the planetary angular momentum budget, Ph.D. thesis, 134 pp., Univ. of Texas, Austin, 1998.
- Johnson, T. J., C. R. Wilson, and B. F. Chao, Oceanic angular momentum variability estimated from the Parallel Ocean Climate Model, 1988–1998, *J. Geophys. Res.*, **104**, 25183–25195, 1999.
- Johnson, T. J., B. J. Luzum, and J. R. Ray, Improved near-term Earth rotation predictions using atmospheric angular momentum analysis and forecasts, *J. Geodyn.*, **39**, 209–221, 2005.
- Kakuta, C., T. Tsubokawa, and K. Iwadate, Coupling of long oceanic waves in the Pacific Ocean and the rotating elastic Earth during the 1986–1987 El Niño, *J. Geophys. Res.*, **105**, 3089–3094, 2000.
- Kouba, J., and J. Vondrák, Comparison of length of day with oceanic and atmospheric angular momentum series, *J. Geodesy*, **79**, 256–268, 2005.
- Marcus, S. L., Y. Chao, J. O. Dickey, and P. Gegout, Detection and modeling of nontidal oceanic effects on Earth's rotation rate, *Science*, **281**, 1656–1659, 1998.
- Merriam, J. B., Atmospheric excitation of the Earth's rotation rate, in *Variations in Earth Rotation*, edited by D. D. McCarthy and W. E. Carter, pp. 119–126, American Geophysical Union Geophysical Monograph Series, Washington, DC, 1990.
- Mörner, N.-A., The Earth's differential rotation: Hydrospheric changes, in *Variations in Earth Rotation*, edited by D. D. McCarthy and W. E. Carter, pp. 27–32, American Geophysical Union Geophysical Monograph Series, Washington, DC, 1990.
- Munk, W. H., and R. L. Miller, Variation in the Earth's angular velocity resulting from fluctuations in atmospheric and oceanic circulation, *Tellus*, **2**, 93–101, 1950.
- Naito, I., and N. Kikuchi, A seasonal budget of the Earth's axial angular momentum, *Geophys. Res. Lett.*, **17**, 631–634, 1990.
- Ponte, R. M., Oceanic excitation of daily to seasonal signals in Earth rotation: Results from a constant-density numerical model, *Geophys. J. Int.*, **130**, 469–474, 1997.
- Ponte, R. M., and D. Stammer, Global and regional axial ocean angular momentum signals and length-of-day variations (1985–1996), *J. Geophys. Res.*, **105**, 17161–17171, 2000.
- Ponte, R. M., and A. H. Ali, Rapid ocean signals in polar motion and length of day, *Geophys. Res. Lett.*, **29**(15), 10.1029/2002GL015312, 2002.
- Ponte, R. M., D. Stammer, and C. Wunsch, Improving ocean angular momentum estimates using a model constrained by data, *Geophys. Res. Lett.*, **28**, 1775–1778, 2001.

- Ponte, R. M., J. Rajamony, and J. M. Gregory, Ocean angular momentum signals in a climate model and implications for Earth rotation, *Clim. Dyn.*, **19**, 181–190, 2002.
- Segschneider, J., and J. Sündermann, Response of a global circulation model to real-time forcing and implications to Earth's rotation, *J. Phys. Oceanogr.*, **27**, 2370–2380, 1997.
- Thomas, M., and J. Sündermann, Zur simultanen Modellierung von allgemeiner Zirkulation und Gezeiten im Ozean und Auswirkungen auf bestimmte Erdrotationsparameter, in *Progress in Geodetic Science*, edited by W. Freedon, pp. 144–151, Aachen, 1998.
- Thomas, M., and J. Sündermann, Numerical simulations of ocean induced variations of Earth's rotation, in *Proc. Journées 1999 & IX Lohrmann-Kolloquium*, edited by M. Soffel and N. Capitaine, pp. 167–169, Obs. de Paris, Paris, 2000.
- Wahr, J. M., The effects of the atmosphere and oceans on the Earth's wobble and on the seasonal variations in the length of day—II. Results, *Geophys. J. Roy. astr. Soc.*, **74**, 451–487, 1983.
- Wünsch, J., Oceanic influence on the annual polar motion, *J. Geodyn.*, **30**, 389–399, 2000.
- Yan, X.-H., Y. Zhou, J. Pan, D. Zheng, M. Fang, X. Liao, M.-X. He, W. T. Liu, and X. Ding, Pacific warm pool excitation, earth rotation, and El Niño southern oscillations, *Geophys. Res. Lett.*, **29**(21), 2031, doi:10.1029/2002GL015685, 2002.
- Yan, H., M. Zhong, Y. Zhu, L. Liu, and X. Cao, Nontidal oceanic contribution to length-of-day changes estimated from two ocean models during 1992–2001, *J. Geophys. Res.*, **111**, B02410, doi:10.1029/2004JB003538, 2006.
- Zhong, M., I. Naito, and A. Kitoh, Atmospheric, hydrological, and ocean current contributions to Earth's annual wobble and length-of-day signals based on output from a climate model, *J. Geophys. Res.*, **108**(B1), 2057, doi:10.1029/2001JB000457, 2003.

Oceanic Angular Momentum and Polar Motion

- Brzezinski, A., and J. Nastula, Oceanic excitation of the Chandler wobble, *Adv. Space Res.*, **30**, 195–200, 2002.
- Brzezinski, A., J. Nastula, and R. M. Ponte, Oceanic excitation of the Chandler wobble using a 50-year time series of ocean angular momentum, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 434–439, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Celaya, M. A., J. M. Wahr, and F. O. Bryan, Climate-driven polar motion, *J. Geophys. Res.*, **104**, 12813–12829, 1999.
- Chen, J. L., and C. R. Wilson, Hydrological excitations of polar motion, 1993–2002, *Geophys. J. Int.*, **160**, 833–839, 2005.
- Chen, J. L., C. R. Wilson, B. F. Chao, C. K. Shum, and B. D. Tapley, Hydrological and oceanic excitations to polar motion and length-of-day variation, *Geophys. J. Int.*, **141**, 149–156, 2000.
- Chen, J. L., C. R. Wilson, X.-G. Hu, Y.-H. Zhou, and B. D. Tapley, Oceanic effects on polar motion determined from an ocean model and satellite altimetry: 1993–2001, *J. Geophys. Res.*, **109**, B02411, doi:10.1029/2003JB002664, 2004.
- Condi, F., and C. Wunsch, Measuring gravity field variability, the geoid, ocean bottom pressure fluctuations, and their dynamical implications, *J. Geophys. Res.*, **109**, C02013, doi:10.1029/2002JC001727, 2004.

- de Viron, O., J.-P. Boy, and H. Goosse, Geodetic effects of the ocean response to atmospheric forcing in an ocean general circulation model, *J. Geophys. Res.*, **109**, B03411, doi:10.1029/2003JB002837, 2004.
- Dickman, S. R., Determination of oceanic dynamic barometer corrections to atmospheric excitation of Earth rotation, *J. Geophys. Res.*, **103**, 15127–15143, 1998.
- Eubanks, T. M., Interactions between the atmosphere, oceans and crust: Possible oceanic signals in Earth rotation, in *Observations of Earth from Space*, edited by R. P. Singh, M. Feissel, B. D. Tapley, and C. K. Shum, *Adv. Space Res.*, **13**, (11)291–(11)300, Pergamon, Oxford, 1993.
- Furuya, M., and Y. Hamano, Effect of the Pacific Ocean on the Earth's seasonal wobble inferred from National Center for Environmental Prediction ocean analysis data, *J. Geophys. Res.*, **103**, 10131–10140, 1998.
- Gross, R. S., The excitation of the Chandler wobble, *Geophys. Res. Lett.*, **27**, 2329–2332, 2000.
- Gross, R. S., Gravity, oceanic angular momentum, and the Earth's rotation, in *Gravity, Geoid, and Geodynamics 2000*, edited by M. G. Sideris, pp. 153–158, IAG Symposia vol. 123, Springer-Verlag, New York, 2001.
- Gross, R. S., Angular momentum in the Earth system, in *V Hotine-Marussi Symposium on Mathematical Geodesy*, edited by F. Sanso, pp. 274–284, IAG Symposia vol. 127, Springer-Verlag, New York, 2004.
- Gross, R. S., I. Fukumori, and D. Menemenlis, Atmospheric and oceanic excitation of the Earth's wobbles during 1980–2000, *J. Geophys. Res.*, **108**(B8), 2370, doi:10.1029/2002JB002143, 2003.
- Johnson, T. J., The role of the ocean in the planetary angular momentum budget, Ph.D. thesis, 134 pp., Univ. of Texas, Austin, 1998.
- Johnson, T. J., C. R. Wilson, and B. F. Chao, Oceanic angular momentum variability estimated from the Parallel Ocean Climate Model, 1988–1998, *J. Geophys. Res.*, **104**, 25183–25195, 1999.
- Kouba, J., Comparison of polar motion with oceanic and atmospheric angular momentum time series for 2-day to Chandler periods, *J. Geodesy*, **79**, 33–42, 2005.
- Kouba, J., G. Beutler, and M. Rothacher, IGS combined and contributed Earth rotation parameter solutions, in *Polar Motion: Historical and Scientific Problems, IAU Colloq. 178*, edited by S. Dick, D. McCarthy, and B. Luzum, Astron. Soc. Pacific Conf. Ser. Vol. 208, pp. 277–302, Astron. Soc. Pacific, San Francisco, 2000.
- Lambert, S. B., C. Bizouard, and V. Dehant, Rapid variations in polar motion during 2005–2006 winter season, *Geophys. Res. Lett.*, **33**, L13303, doi:10.1029/2006GL026422, 2006.
- Leuliette, E. W., and J. M. Wahr, Climate excitation of polar motion, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 428–433, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Liao, D., X. Liao, and Y. Zhou, Oceanic and atmospheric excitation of the Chandler wobble, *Geophys. J. Int.*, **152**, 215–227, 2003.
- Munk, W., and G. Groves, The effect of winds and ocean currents on the annual variation in latitude, *J. Meteor.*, **9**, 385–396, 1952.
- Nastula, J., and R. M. Ponte, Further evidence for oceanic excitation of polar motion, *Geophys. J. Int.*, **139**, 123–130, 1999.
- Nastula, J., R. M. Ponte, and D. A. Salstein, Regional signals in atmospheric and oceanic excitation of polar motion, in *Polar Motion: Historical and Scientific Problems, IAU*

- Colloq. 178*, edited by S. Dick, D. McCarthy, and B. Luzum, Astron. Soc. Pacific Conf. Ser. Vol. 208, pp. 463–472, Astron. Soc. Pacific, San Francisco, 2000.
- Nastula, J., D. A. Salstein, and R. M. Ponte, Empirical patterns of variability in atmospheric and oceanic excitation of polar motion, *J. Geodyn.*, **36**, 383–396, 2003.
- Nastula, J., R. M. Ponte, and D. A. Salstein, Regional high-frequency signals in atmospheric and oceanic excitation of polar motion, *Adv. Space Res.*, **30**, 369–374, 2002.
- Ponte, R. M., Oceanic excitation of daily to seasonal signals in Earth rotation: Results from a constant-density numerical model, *Geophys. J. Int.*, **130**, 469–474, 1997.
- Ponte, R. M., and A. H. Ali, Rapid ocean signals in polar motion and length of day, *Geophys. Res. Lett.*, **29**(15), 10.1029/2002GL015312, 2002.
- Ponte, R. M., and D. Stammer, Role of ocean currents and bottom pressure variability on seasonal polar motion, *J. Geophys. Res.*, **104**, 23393–23409, 1999.
- Ponte, R. M., D. Stammer, and J. Marshall, Oceanic signals in observed motions of the Earth's pole of rotation, *Nature*, **391**, 476–479, 1998.
- Ponte, R. M., D. Stammer, and C. Wunsch, Improving ocean angular momentum estimates using a model constrained by data, *Geophys. Res. Lett.*, **28**, 1775–1778, 2001.
- Ponte, R. M., J. Rajamony, and J. M. Gregory, Ocean angular momentum signals in a climate model and implications for Earth rotation, *Clim. Dyn.*, **19**, 181–190, 2002.
- Salstein, D. A., Atmospheric excitation of polar motion, in *Polar Motion: Historical and Scientific Problems, IAU Colloq. 178*, edited by S. Dick, D. McCarthy, and B. Luzum, Astron. Soc. Pacific Conf. Ser. Vol. 208, pp. 437–446, Astron. Soc. Pacific, San Francisco, 2000.
- Seitz, F., and M. Schmidt, Atmospheric and oceanic contributions to Chandler wobble excitation determined by wavelet filtering, *J. Geophys. Res.*, **110**, B11406, doi:10.1029/2005JB003826, 2005.
- Seitz, F., J. Stuck, and M. Thomas, Consistent atmospheric and oceanic excitation of the Earth's free polar motion, *Geophys. J. Int.*, **157**, 25–35, 2004.
- Thomas, M., and J. Sündermann, Zur simultanen Modellierung von allgemeiner Zirkulation und Gezeiten im Ozean und Auswirkungen auf bestimmte Erdrotationsparameter, in *Progress in Geodetic Science*, edited by W. Freedon, pp. 144–151, Aachen, 1998.
- Thomas, M., and J. Sündermann, Numerical simulations of ocean induced variations of Earth's rotation, in *Proc. Journées 1999 & IX Lohrmann-Kolloquium*, edited by M. Soffel and N. Capitaine, pp. 167–169, Obs. de Paris, Paris, 2000.
- Thomas, M., J. Sündermann, and E. Maier-Reimer, Consideration of ocean tides in an OGCM and impacts on subseasonal to decadal polar motion excitation, *Geophys. Res. Lett.*, **28**, 2457–2460, 2001.
- Wahr, J. M., The effects of the atmosphere and oceans on the Earth's wobble and on the seasonal variations in the length of day—II. Results, *Geophys. J. Roy. astr. Soc.*, **74**, 451–487, 1983.
- Wilson, C. R., Excitation of polar motion, in *Polar Motion: Historical and Scientific Problems, IAU Colloq. 178*, edited by S. Dick, D. McCarthy, and B. Luzum, Astron. Soc. Pacific Conf. Ser. Vol. 208, pp. 411–419, Astron. Soc. Pacific, San Francisco, 2000.
- Wünsch, J., Oceanic influence on the annual polar motion, *J. Geodyn.*, **30**, 389–399, 2000.
- Wünsch, J., Oceanic and soil moisture contributions to seasonal polar motion, *J. Geodyn.*, **33**, 269–280, 2002.

- Wünsch, J., Erratum to “Oceanic and soil moisture contributions to seasonal polar motion”, *J. Geodyn.*, **34**, 709–710, 2002.
- Zhong, M., I. Naito, and A. Kitoh, Atmospheric, hydrological, and ocean current contributions to Earth’s annual wobble and length-of-day signals based on output from a climate model, *J. Geophys. Res.*, **108**(B1), 2057, doi:10.1029/2001JB000457, 2003.
- Zhou, Y. H., X. H. Yan, X. L. Ding, X. H. Liao, D. W. Zheng, W. T. Liu, J. Y. Pan, M. Q. Fang, and M. X. He, Excitation of non-atmospheric polar motion by the migration of the Pacific Warm Pool, *J. Geodesy*, **78**, 109–113, 2004.
- Zhou, Y. H., J. L. Chen, X. H. Liao, and C. R. Wilson, Oceanic excitations on polar motion: A cross comparison among models, *Geophys. J. Int.*, **162**, 390–398, 2005.

Oceanic Angular Momentum and Nutation

- Brzezinski, A., R. M. Ponte, and A. H. Ali, Nontidal oceanic excitation of nutation and diurnal/semidiurnal polar motion revisited, *J. Geophys. Res.*, **109**, B11407, doi:10.1029/2004JB003054, 2004.
- Dehant, V., M. Feissel-Vernier, O. de Viron, C. Ma, M. Yseboodt, and C. Bizouard, Remaining error sources in the nutation at the submilliarc second level, *J. Geophys. Res.*, **108**(B8), 2275, doi:10.1029/2002JB001763, 2003.
- de Viron, O., J.-P. Boy, and H. Goosse, Geodetic effects of the ocean response to atmospheric forcing in an ocean general circulation model, *J. Geophys. Res.*, **109**, B03411, doi:10.1029/2003JB002837, 2004.
- Petrov, S. D., A. Brzezinski, and J. Nastula, First estimation of the non-tidal oceanic effect on nutation, in *Proceedings Journées Systemes de Références Spatio-temporels 1998*, edited by N. Capitaine, pp. 136–143, Paris, 1998.

Oceanic Torques

- Bryan, F. O., The axial angular momentum balance of a global ocean general circulation model, *Dyn. Atmos. Oceans*, **25**, 191–216, 1997.
- de Viron, O., V. Dehant, and H. Goosse, The “hidden torque”: The art, for a torque, to dominate everywhere and appear in no equation, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 423–427, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Fujita, M., B. F. Chao, B. V. Sanchez, and T. J. Johnson, Oceanic torques on solid Earth and their effects on Earth rotation, *J. Geophys. Res.*, **107**, 10.1029/2001JB000339, 2002.
- Hughes, C. W., Torques exerted by a shallow fluid on a non-spherical, rotating planet, *Tellus*, **54A**, 56–62, 2002.
- Hughes, C. W., Nonlinear vorticity balance of the Antarctic Circumpolar Current, *J. Geophys. Res.*, **110**, C11008, doi:10.1029/2004JC002753, 2005.
- Hughes, C. W., and B. A. de Cuevas, Why western boundary currents in realistic oceans are inviscid: A link between form stress and bottom pressure torques, *J. Phys. Oceanogr.*, **31**, 2871–2885, 2001.

- Johnson, T. J., The role of the ocean in the planetary angular momentum budget, Ph.D. thesis, 134 pp., Univ. of Texas, Austin, 1998.
- Munk, W. H., and E. Palmén, Note on the dynamics of the Antarctic Circumpolar Current, *Tellus*, **3**, 53–55, 1951.
- Ponte, R. M., Barotropic motions and the exchange of angular momentum between the oceans and solid Earth, *J. Geophys. Res.*, **95**, 11369–11374, 1990.
- Ponte, R. M., and D. S. Gutzler, The Madden-Julian oscillation and the angular momentum balance in a barotropic ocean model, *J. Geophys. Res.*, **96**, 835–842, 1991.
- Ponte, R. M., and R. D. Rosen, Determining torques over the ocean and their role in the planetary momentum budget, *J. Geophys. Res.*, **98**, 7317–7325, 1993.
- Ponte, R. M., and R. D. Rosen, Oceanic angular momentum and torques in a general circulation model, *J. Phys. Oceanogr.*, **24**, 1966–1977, 1994.

Oceanic Torques and Length-of-Day

- Gutzler, D. S., and R. M. Ponte, Exchange of momentum among atmosphere, ocean, and solid Earth associated with the Madden-Julian oscillation, *J. Geophys. Res.*, **95**, 18679–18686, 1990.
- Segschneider, J., and J. Sündermann, Response of a global circulation model to real-time forcing and implications to Earth's rotation, *J. Phys. Oceanogr.*, **27**, 2370–2380, 1997.

Oceanic Torques and Polar Motion

- Fujita, M., B. F. Chao, B. V. Sanchez, and T. J. Johnson, Oceanic torques on solid Earth and their effects on Earth rotation, *J. Geophys. Res.*, **107**, 10.1029/2001JB000339, 2002.
- Wahr, J. M., The effects of the atmosphere and oceans on the Earth's wobble—I. Theory, *Geophys. J. Roy. astr. Soc.*, **70**, 349–372, 1982.

Oceanic Torques and Nutation

- de Viron, O., R. M. Ponte, and V. Dehant, Indirect effect of the atmosphere through the oceans on the Earth nutation using the torque approach, *J. Geophys. Res.*, **106**(B5), 8841–8851, 2001.

Rotation of Coupled Ocean-Solid Earth System

- Dahlen, F. A., The passive influence of the oceans upon the rotation of the Earth, *Geophys. J. Roy. astr. Soc.*, **46**, 363–406, 1976.
- Dickman, S. R., The rotation of the ocean-solid Earth system, *J. Geophys. Res.*, **88**, 6373–6394, 1983.
- Dickman, S. R., Comments on "Normal modes of the coupled Earth and ocean system" by John M. Wahr, *J. Geophys. Res.*, **90**, 11553–11556, 1985.

- Wahr, J. M., Normal modes of the coupled Earth and ocean system, *J. Geophys. Res.*, **89**, 7621–7630, 1984.
- Wahr, J. M., Reply, *J. Geophys. Res.*, **90**, 11557, 1985.

Period and Q of Chandler Wobble

- Jochmann, H., Period variations of the Chandler wobble, *J. Geodesy*, **77**, 454–458, 2003.
- Smith, M. L., and F. A. Dahlen, The period and Q of the Chandler wobble, *Geophys. J. Roy. astr. Soc.*, **64**, 223–281, 1981.

Inverted Barometer Approximation—Tide Gauge Data

- Cartwright, D. E., A unified analysis of tides and surges round north and east Britain, *Phil. Trans. Roy. Soc. London, Ser. A*, **263**, 1–55, 1968.
- Chelton, D. B., and R. E. Davis, Monthly mean sea-level variability along the west coast of North America, *J. Phys. Oceanogr.*, **12**, 757–784, 1982.
- Chelton, D. B., and D. B. Enfield, Ocean signals in tide gauge records, *J. Geophys. Res.*, **91**, 9081–9098, 1986.
- Gissler, N., Anledning at finna Hafvets affall för vissa ar, in *Kungliga Svenska Vetenskapsakademiens Handlingar*, pp. 142–149, Stockholm, 1747.
- Groves, G. W., Day to day variation of sea level, *Meteor. Monogr.*, **2**(10), 32–45, 1957.
- Groves, G. W., and E. J. Hannan, Time series regression of sea level on weather, *Rev. Geophys.*, **6**, 129–174, 1968.
- Hamon, B. V., Continental shelf waves and the effects of atmospheric pressure and wind stress on sea level, *J. Geophys. Res.*, **71**, 2883–2893, 1966.
- Hamon, B. V., and E. J. Hannan, Estimating relations between time series, *J. Geophys. Res.*, **68**, 6033–6041, 1963.
- Lisitzin, E., and J. G. Pattullo, The principal factors influencing the seasonal oscillation of sea level, *J. Geophys. Res.*, **66**, 845–852, 1961.
- Luther, D. S., Evidence of a 4–6 day barotropic, planetary oscillation of the Pacific Ocean, *J. Phys. Oceanogr.*, **12**, 644–657, 1982.
- Mathers, E. L., Sea level response to atmospheric pressure and wind forcing in the global deep ocean, Ph.D. thesis, Univ. of Liverpool, Liverpool, England, 2000.
- Mathers, E. L., Inverse barometer coefficients obtained at short time-scales from ERS tandem mission altimeter data, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 523–528, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Mathers, E. L., and P. L. Woodworth, Departures from the local inverse barometer model observed in altimeter and tide gauge data and in a global barotropic numerical model, *J. Geophys. Res.*, **106**, 6957–6972, 2001.
- Munk, W. H., and E. C. Bullard, Patching the long-wave spectrum across the tides, *J. Geophys. Res.*, **68**, 3627–3634, 1963.
- Pattullo, J., W. Munk, R. Revelle, and E. Strong, The seasonal oscillation in sea level, *J. Marine Res.*, **14**, 88–155, 1955.

- Ponte, R. M., Nonequilibrium response of the global ocean to the 5-day Rossby-Haurwitz wave in atmospheric surface pressure, *J. Phys. Oceanogr.*, **27**, 2158–2168, 1997.
- Ponte, R. M., and J. Dorandeu, Uncertainties in ECMWF surface pressure fields over the ocean in relation to sea level analysis and modeling, *J. Atmos. Oceanic Technol.*, **20**, 301–307, 2003.
- Ponte, R. M., and F. Lyard, Effects of unresolved high-frequency signals in altimeter records inferred from tide gauge data, *J. Atmos. Oceanic Technol.*, **19**, 534–539, 2002.
- Roden, G. I., On the nonseasonal variations in sea level along the west coast of North America, *J. Geophys. Res.*, **65**, 2809–2826, 1960.
- Roden, G. I., Low-frequency sea level oscillations along the Pacific coast of North America, *J. Geophys. Res.*, **71**, 4755–4776, 1966.
- Roden, G. I., and H. T. Rossby, Early Swedish contribution to oceanography: Nils Gissler (1715–71) and the inverted barometer effect, *Bull. Amer. Met. Soc.*, **80**, 675–682, 1999.
- Ross, J. C., On the effect of the pressure of the atmosphere on the mean level of the ocean, *Phil. Trans. Roy. Soc. London*, **144**, 285–296, 1854.
- Saur, J. F. T., The variability of monthly mean sea level at six stations in the eastern North Pacific Ocean, *J. Geophys. Res.*, **67**, 2781–2790, 1962.
- Smith, N. P., Meteorological forcing of coastal waters by the inverse barometer effect, *Est. Coast. Mar. Sci.*, **8**, 149–156, 1979.
- Trupin, A., and J. Wahr, Spectroscopic analysis of global tide gauge sea level data, *Geophys. J. Int.*, **100**, 441–453, 1990.
- Trupin, A., and J. Wahr, Orthogonal stack of global tide gauge sea level data, in *Variations in Earth Rotation*, edited by D. D. McCarthy and W. E. Carter, pp. 111–118, American Geophysical Union Geophysical Monograph Series, Washington, DC, 1990.
- Tucker, M. J., Oceanography: Long waves in the sea. *Sci. Prog.*, **51**, 413–424, 1963.
- Woodworth, P. L., S. A. Windle, and J. M. Vassie, Departures from the local inverse barometer model at periods of 5 days in the central South Atlantic, *J. Geophys. Res.*, **100**, 18281–18290, 1995.
- Woodworth, P. L., D. T. Pugh, M. P. Meredith, and D. L. Blackman, Sea level changes at Port Stanley, Falkland Islands, *J. Geophys. Res.*, **110**, C06013, doi:10.1029/2004JC002648, 2005.
- Wunsch, C., Bermuda sea level in relation to tides, weather, and baroclinic fluctuation, *Rev. Geophys. Space Phys.*, **10**, 1–49, 1972.
- Wunsch, C., D. V. Hansen, and B. D. Zetler, Fluctuations of the Florida Current inferred from sea level records, *Deep-Sea Res.*, **16** (suppl.), 447–470, 1969.

Inverted Barometer Approximation—Satellite Altimetry

- Dorandeu, J., and P. Y. Le Traon, Effects of global mean atmospheric pressure variations on mean sea level changes from TOPEX/Poseidon, *J. Atmos. Oceanic Technol.*, **16**, 1279–1283, 1999.
- Fu, L.-L., and G. Pihos, Determining the response of sea level to atmospheric pressure forcing using TOPEX/POSEIDON data, *J. Geophys. Res.*, **99**, 24633–24642, 1994.
- Gaspar, P., and R. M. Ponte, Relation between sea level and barometric pressure determined from altimeter data and model simulations, *J. Geophys. Res.*, **102**, 961–971, 1997.

- Gaspar, P., and R. M. Ponte, Correction to “Relation between sea level and barometric pressure determined from altimeter data and model simulations”, *J. Geophys. Res.*, **103**, 18809–18809, 1998.
- Hirose, N., I. Fukumori, and R. M. Ponte, A non-isostatic global sea level response to barometric pressure near 5 days, *Geophys. Res. Lett.*, **28**, 2441–2444, 2001.
- Hoar, T. J., and C. R. Wilson, Geosat observations of sea level response to barometric pressure forcing, *Geophys. Res. Lett.*, **21**, 2515–2518, 1994.
- Mathers, E. L., Sea level response to atmospheric pressure and wind forcing in the global deep ocean, Ph.D. thesis, Univ. of Liverpool, Liverpool, England, 2000.
- Mathers, E. L., Inverse barometer coefficients obtained at short time-scales from ERS tandem mission altimeter data, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 523–528, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Mathers, E. L., and P. L. Woodworth, Departures from the local inverse barometer model observed in altimeter and tide gauge data and in a global barotropic numerical model, *J. Geophys. Res.*, **106**, 6957–6972, 2001.
- Ponte, R. M., and J. Dorandeu, Uncertainties in ECMWF surface pressure fields over the ocean in relation to sea level analysis and modeling, *J. Atmos. Oceanic Technol.*, **20**, 301–307, 2003.
- Ponte, R. M., and P. Gaspar, Regional analysis of the inverted barometer effect over the global ocean using TOPEX/POSEIDON data and model results, *J. Geophys. Res.*, **104**, 15587–15601, 1999.
- van Dam, T. M., and J. Wahr, The atmospheric load response of the ocean determined using Geosat altimeter data, *Geophys. J. Int.*, **113**, 1–16, 1993.
- van Dam, T. M., J. Wahr, Y. Chao, and E. Leuliette, Predictions of crustal deformation and of geoid and sea-level variability caused by oceanic and atmospheric loading, *Geophys. J. Int.*, **129**, 507–517, 1997.
- Woodworth, P. L., S. A. Windle, and J. M. Vassie, Departures from the local inverse barometer model at periods of 5 days in the central South Atlantic, *J. Geophys. Res.*, **100**, 18281–18290, 1995.
- Wunsch, C., Large-scale response of the ocean to atmospheric forcing at low frequencies, *J. Geophys. Res.*, **96**, 15083–15092, 1991.

Inverted Barometer Approximation—Models

- Carrere, L., and F. Lyard, Modeling the barotropic response of the global ocean to atmospheric wind and pressure forcing – comparisons with observations, *Geophys. Res. Lett.*, **30**(6), 1275, doi:10.1029/2002GL016473, 2003.
- de Viron, O., J.-P. Boy, and H. Goosse, Geodetic effects of the ocean response to atmospheric forcing in an ocean general circulation model, *J. Geophys. Res.*, **109**, B03411, doi:10.1029/2003JB002837, 2004.
- Dickman, S. R., Theoretical investigation of the oceanic inverted barometer response, *J. Geophys. Res.*, **93**, 14941–14946, 1988.
- Gaspar, P., and R. M. Ponte, Relation between sea level and barometric pressure determined from altimeter data and model simulations, *J. Geophys. Res.*, **102**, 961–971, 1997.

- Gaspar, P., and R. M. Ponte, Correction to “Relation between sea level and barometric pressure determined from altimeter data and model simulations”, *J. Geophys. Res.*, **103**, 18809–18809, 1998.
- Hirose, N., I. Fukumori, and R. M. Ponte, A non-isostatic global sea level response to barometric pressure near 5 days, *Geophys. Res. Lett.*, **28**, 2441–2444, 2001.
- Mathers, E. L., Sea level response to atmospheric pressure and wind forcing in the global deep ocean, Ph.D. thesis, Univ. of Liverpool, Liverpool, England, 2000.
- Mathers, E. L., Inverse barometer coefficients obtained at short time-scales from ERS tandem mission altimeter data, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 523–528, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Mathers, E. L., and P. L. Woodworth, Departures from the local inverse barometer model observed in altimeter and tide gauge data and in a global barotropic numerical model, *J. Geophys. Res.*, **106**, 6957–6972, 2001.
- Ponte, R. M., Variability in a homogenous global ocean forced by barometric pressure, *Dyn. Atmos. Oceans*, **18**, 209–234, 1993.
- Ponte, R. M., Understanding the relation between wind- and pressure-driven sea level variability, *J. Geophys. Res.*, **99**, 8033–8039, 1994.
- Ponte, R. M., Nonequilibrium response of the global ocean to the 5-day Rossby-Haurwitz wave in atmospheric surface pressure, *J. Phys. Oceanogr.*, **27**, 2158–2168, 1997.
- Ponte, R. M., and P. Gaspar, Regional analysis of the inverted barometer effect over the global ocean using TOPEX/POSEIDON data and model results, *J. Geophys. Res.*, **104**, 15587–15601, 1999.
- Ponte, R. M., D. A. Salstein, and R. D. Rosen, Sea level response to pressure forcing in a barotropic numerical model, *J. Phys. Oceanogr.*, **21**, 1043–1057, 1991.
- van Dam, T. M., and J. Wahr, The atmospheric load response of the ocean determined using Geosat altimeter data, *Geophys. J. Int.*, **113**, 1–16, 1993.

Inverted Barometer Approximation—Theory

- Brink, K. H., A laboratory study of open ocean barometric response, *Dyn. Atmos. Oceans*, **2**, 153–183, 1978.
- Dorandeu, J., and P. Y. Le Traon, Effects of global mean atmospheric pressure variations on mean sea level changes from TOPEX/Poseidon, *J. Atmos. Oceanic Technol.*, **16**, 1279–1283, 1999.
- Gill, A. E., and P. P. Niiler, The theory of the seasonal variability in the ocean, *Deep-Sea Res.*, **20**, 141–177, 1973.
- Merriam, J. B., Meteorological excitation of the annual polar motion, *Geophys. J. Roy. astr. Soc.*, **70**, 41–56, 1982.
- Ponte, R. M., The sea level response of a stratified ocean to barometric pressure forcing, *J. Phys. Oceanogr.*, **22**, 109–113, 1992.
- Ponte, R. M., Nonequilibrium response of the global ocean to the 5-day Rossby-Haurwitz wave in atmospheric surface pressure, *J. Phys. Oceanogr.*, **27**, 2158–2168, 1997.
- Robinson, A. R., Continental shelf waves and the response of sea level to weather systems, *J. Geophys. Res.*, **69**, 367–368, 1964.

- Tai, C.-K., On the quasigeostrophic oceanic response to atmospheric pressure forcing: The inverted barometer pumping, *NOAA Tech. Memo. NOS OES 005*, 19 pp., Nat. Oceanic and Atmos. Admin. Nat. Ocean Serv., Rockville, Md., 1993.
- Wahr, J. M., The effects of the atmosphere and oceans on the Earth's wobble—I. Theory, *Geophys. J. Roy. astr. Soc.*, **70**, 349–372, 1982.
- Wunsch, C., Bermuda sea level in relation to tides, weather, and baroclinic fluctuation, *Rev. Geophys. Space Phys.*, **10**, 1–49, 1972.
- Wunsch, C., Large-scale response of the ocean to atmospheric forcing at low frequencies, *J. Geophys. Res.*, **96**, 15083–15092, 1991.
- Wunsch, C., and D. Stammer, Atmospheric loading and the oceanic "inverted barometer" effect, *Rev. Geophys.*, **35**, 79–107, 1997.

Ocean-Bottom Pressure—Measurements

- Beardsley, R. C., H. Mofjeld, M. Wimbush, C. N. Flagg, and J. A. Vermersch, Jr., Ocean tides and weather-induced bottom pressure fluctuations in the Middle-Atlantic Bight, *J. Geophys. Res.*, **82**, 3175–3182, 1977.
- Cartwright, D. E., R. Spencer, and J. M. Vassie, Pressure variations on the Atlantic equator, *J. Geophys. Res.*, **92**, 725–741, 1987.
- Filloux, J. H., Pressure fluctuations on the open ocean floor over a broad frequency range: New program and early results, *J. Phys. Oceanogr.*, **10**, 1959–1971, 1980.
- Fox, C. G., Evidence of active ground deformation on the Mid-Ocean Ridge: Axial Seamount, Juan de Fuca Ridge, April–June 1988, *J. Geophys. Res.*, **95**, 12813–12822, 1990.
- Fujimoto, H., M. Mochizuki, K. Mitsuzawa, T. Tamaki, and T. Sato, Ocean bottom pressure variations in the southeastern Pacific following the 1997–98 El Niño event, *Geophys. Res. Lett.*, **30**(9), 1456, doi:10.1029/2002GL016677, 2003.
- Gille, S. T., and C. W. Hughes, Aliasing of high-frequency variability by altimetry: Evaluation from bottom pressure recorders, *Geophys. Res. Lett.*, **28**, 1755–1758, 2001.
- Hughes, C. W., P. L. Woodworth, M. P. Meredith, V. Stepanov, T. Whitworth, and A. R. Pyne, Coherence of Antarctic sea levels, Southern Hemisphere Annual Mode, and flow through the Drake Passage, *Geophys. Res. Lett.*, **30**(9), 1464, doi:10.1029/2003GL017240, 2003.
- Matthews, A. J., and M. P. Meredith, Variability of Antarctic circumpolar transport and the Southern Annular Mode associated with the Madden-Julian Oscillation, *Geophys. Res. Lett.*, **31**, L24312, doi:10.1029/2004GL021666, 2004.
- Meredith, M. P., and C. W. Hughes, On the wind-forcing of bottom pressure variability at Amsterdam and Kerguelen Islands, southern Indian Ocean, *J. Geophys. Res.*, **109**, C03012, doi:10.1029/2003JC002060, 2004.
- Meredith, M. P., J. M. Vassie, K. J. Heywood, and R. Spencer, On the temporal variability of the transport through Drake Passage, *J. Geophys. Res.*, **101**, 22485–22494, 1996.
- Meredith, M. P., P. L. Woodworth, C. W. Hughes, and V. Stepanov, Changes in the ocean transport through Drake Passage during the 1980s and 1990s, forced by changes in the Southern Annular Mode, *Geophys. Res. Lett.*, **31**, L21305, doi:10.1029/2004GL021169, 2004.
- Morison, J., Seasonal variations in the West Spitsbergen Current estimated from bottom pressure measurements, *J. Geophys. Res.*, **96**, 18381–18395, 1991.

- Park, Y.-H., and B. Saint-Guily, Sea level variability in the Crozet-Kerguelen-Amsterdam area from bottom pressure and Geosat altimetry, in *Sea Level Changes: Determination and Effects, Geophys. Monogr. Ser.*, Vol. 69, edited by P. L. Woodworth, D. T. Pugh, J. G. De Ronde, R. G. Warrick, and J. Hannah, pp. 117–131, AGU, Washington, DC, 1992.
- Spencer, R., and J. M. Vassie, Comparison of sea-level measurements obtained from deep pressure sensors, in *Advances in Underwater Technology and Offshore Engineering, Vol. 4: Comparison and Calibration of Oceanographic Instruments*, pp. 183–207, Graham and Trotman, London, 1985.
- Spencer, R., and J. M. Vassie, The evolution of deep ocean pressure measurements in the UK, *Prog. Oceanog.*, **40**, 423–435, 1997.
- Vassie, J., Tides and low frequency variations in the equatorial Atlantic, *Oceanologica Acta*, **5**, 3–6, 1982.
- Vassie, J. M., A. J. Harrison, P. L. Woodworth, S. A. Harangozo, and M. J. Smithson, On the temporal variability of the transport between Amsterdam and Kerguelen islands, *J. Geophys. Res.*, **99**, 937–949, 1994.
- Woodworth, P. L., J. M. Vassie, C. W. Hughes, and M. P. Meredith, A test of the ability of TOPEX/POSEIDON to monitor flows through the Drake Passage, *J. Geophys. Res.*, **101**, 11935–11947, 1996.
- Wunsch, C., and M. Wimbush, Simultaneous pressure, velocity, and temperature measurements in the Florida Straits, *J. Mar. Res.*, **35**, 75–104, 1977.

Ocean-Bottom Pressure—Measurements (ACCLAIM)

- Hughes, C. W., and M. J. Smithson, Bottom pressure correlations in the south Atlantic, *Geophys. Res. Lett.*, **23**, 2243–2246, 1996.
- Spencer, R., P. R. Foden, C. McGarry, A. J. Harrison, J. M. Vassie, T. F. Baker, M. J. Smithson, S. A. Harangozo, and P. L. Woodworth, The ACCLAIM Programme in the South Atlantic and Southern Oceans, *Int. Hydrogr. Review*, **70**, 7–21, 1993.

Ocean-Bottom Pressure—Measurements (BEMPEX)

- Luther, D. S., A. D. Chave, and J. H. Filloux, BEMPEX: A study of barotropic ocean currents and lithospheric electrical conductivity, *EOS, Trans. Amer. Geophys. Union*, **68**, 618–619, 628–629, 1987.
- Luther, D. S., A. D. Chave, and J. H. Filloux, BEMPEX: A study of barotropic ocean currents and lithospheric electrical conductivity using seafloor pressure and electromagnetic instruments, *Tech. Memo. 38140*, 36 pp., AT&T Bell Labs., Murray Hill, NJ, 1987.
- Luther, D. S., A. D. Chave, J. H. Filloux, and P. F. Spain, Evidence for local and nonlocal barotropic responses to atmospheric forcing during BEMPEX, *Geophys. Res. Lett.*, **17**, 949–952, 1990.

Ocean-Bottom Pressure—Measurements (Bermuda)

Müller, P., and C. Frankignoul, Direct atmospheric forcing of geostrophic eddies, *J. Phys. Oceanogr.*, **11**, 287–308, 1981.

Ocean-Bottom Pressure—Measurements (ISOS)

Fu, L.-L., and D. B. Chelton, Observing large-scale temporal variability of ocean currents by satellite altimetry: With application to the Antarctic Circumpolar Current, *J. Geophys. Res.*, **90**, 4721–4739, 1985.

Meredith, M. P., J. M. Vassie, K. J. Heywood, and R. Spencer, On the temporal variability of the transport through Drake Passage, *J. Geophys. Res.*, **101**, 22485–22494, 1996.

Peterson, R. G., Comparisons of sea level and bottom pressure measurements at Drake Passage, *J. Geophys. Res.*, **93**, 12439–12448, 1988.

Peterson, R. G., On the transport of the Antarctic Circumpolar Current through Drake Passage and its relation to wind, *J. Geophys. Res.*, **93**, 13993–14004, 1988.

Wearn, R. B., Jr., and D. J. Baker, Jr., Bottom pressure measurements across the Antarctic Circumpolar Current and their relation to wind, *Deep Sea Res., Part A*, **27**, 875–888, 1980.

Ocean-Bottom Pressure—Measurements (MODE)

Brown, W., W. Munk, F. Snodgrass, H. Mofjeld, and B. Zetler, MODE bottom experiment, *J. Phys. Oceanogr.*, **5**, 75–85, 1975.

Müller, P., and C. Frankignoul, Direct atmospheric forcing of geostrophic eddies, *J. Phys. Oceanogr.*, **11**, 287–308, 1981.

Snodgrass, F., W. Brown, and W. Munk, MODE: IGPP measurements of bottom pressure and temperature, *J. Phys. Oceanogr.*, **5**, 63–74, 1975.

Willebrand, J., S. G. H. Philander, and R. C. Pacanowski, The oceanic response to large-scale atmospheric disturbances, *J. Phys. Oceanogr.*, **10**, 411–429, 1980.

Ocean-Bottom Pressure—Measurements (MOVE)

Kanzow, T., F. Flechtner, A. Chave, R. Schmidt, P. Schwintzer, and U. Send, Seasonal variation of ocean bottom pressure derived from Gravity Recovery and Climate Experiment (GRACE): Local validation and global pressure, *J. Geophys. Res.*, **110**, C09001, doi:10.1029/2004JC002772, 2005.

Kanzow, T., U. Send, W. Zenk, A. D. Chave, and M. Rhein, Monitoring the integrated deep meridional flow in the tropical North Atlantic: Long-term performance of a geostrophic array, *Deep Sea Res. I*, **53**, 528–546, 2006.

Ocean-Bottom Pressure—Measurements (Ocean Storms)

Niiler, P. P., J. Filloux, W. T. Liu, R. M. Samelson, J. D. Paduan, and C. A. Paulson, Wind-forced variability of the deep eastern North Pacific: Observations of seafloor pressure and abyssal currents, *J. Geophys. Res.*, **98**(C12), 22589–22602, 1993.

Ocean-Bottom Pressure—Models

Condi, F., and C. Wunsch, Gravity field variability, the geoid, and ocean dynamics, in *V Hotine-Marussi Symposium on Mathematical Geodesy*, edited by F. Sanso, pp. 285–292, IAG Symposia vol. 127, Springer-Verlag, New York, 2004.

Condi, F., and C. Wunsch, Measuring gravity field variability, the geoid, ocean bottom pressure fluctuations, and their dynamical implications, *J. Geophys. Res.*, **109**, C02013, doi:10.1029/2002JC001727, 2004.

de Viron, O., J.-P. Boy, and H. Goosse, Geodetic effects of the ocean response to atmospheric forcing in an ocean general circulation model, *J. Geophys. Res.*, **109**, B03411, doi:10.1029/2003JB002837, 2004.

Dickey, J. O., S. L. Marcus, O. de Viron, and I. Fukumori, Recent Earth oblateness variations: Unraveling climate and postglacial rebound effects, *Science*, **298**, 1975–1977, 2002.

Ganachaud, A., and H. Mercier, Ocean response to meridional Ekman transport in the Atlantic and implication for gravity missions, *Geophys. Res. Lett.*, **29**(23), 2145, doi:10.1029/2002GL015291, 2002.

Hughes, C. W., and M. J. Smithson, Bottom pressure correlations in the south Atlantic, *Geophys. Res. Lett.*, **23**, 2243–2246, 1996.

Hughes, C. W., and V. N. Stepanov, Ocean dynamics associated with rapid J_2 fluctuations: Importance of circumpolar modes and identification of a coherent Arctic mode, *J. Geophys. Res.*, **109**, C06002, doi:10.1029/2003JC002176, 2004.

Kanzow, T., F. Flechtner, A. Chave, R. Schmidt, P. Schwintzer, and U. Send, Seasonal variation of ocean bottom pressure derived from Gravity Recovery and Climate Experiment (GRACE): Local validation and global pressure, *J. Geophys. Res.*, **110**, C09001, doi:10.1029/2004JC002772, 2005.

Ponte, R. M., A preliminary model study of the large-scale seasonal cycle in bottom pressure over the global ocean, *J. Geophys. Res.*, **104**, 1289–1300, 1999.

Ponte, R. M., D. Stammer, and C. Wunsch, Improving ocean angular momentum estimates using a model constrained by data, *Geophys. Res. Lett.*, **28**, 1775–1778, 2001.

Song, Y. T., and V. Zlotnicki, Ocean bottom pressure waves predicted in the tropical Pacific, *Geophys. Res. Lett.*, **31**, L05306, doi:10.1029/2003GL018980, 2004.

Stepanov, V. N., and C. W. Hughes, Parameterization of ocean self-attraction and loading in numerical models of the ocean circulation, *J. Geophys. Res.*, **109**, C03037, doi:10.1029/2003JC002034, 2004.

Vassie, J. M., A. J. Harrison, P. L. Woodworth, S. A. Harangozo, and M. J. Smithson, On the temporal variability of the transport between Amsterdam and Kerguelen islands, *J. Geophys. Res.*, **99**, 937–949, 1994.

Webb, D. J., and B. A. de Cuevas, An ocean resonance in the Southeast Pacific, *Geophys. Res. Lett.*, **29**(8), doi:10.1029/2001GL014259, 2002.

- Webb, D. J., and B. A. de Cuevas, An ocean resonance in the Indian sector of the Southern Ocean, *Geophys. Res. Lett.*, **29**(14), doi:10.1029/2002GL015270, 2002.
- Webb, D. J., and B. A. de Cuevas, The region of large sea surface height variability in the Southeast Pacific Ocean, *J. Phys. Oceanogr.*, **33**, 1044–1056, 2003.
- Zerbini, S., F. Matonti, F. Raicich, B. Richter, and T. van Dam, Observing and assessing nontidal ocean loading using ocean, continuous GPS and gravity data in the Adriatic area, *Geophys. Res. Lett.*, **31**, L23609, doi:10.1029/2004GL021185, 2004.

Ocean-Bottom Pressure—Theory

- Gill, A. E., and P. P. Niiler, The theory of the seasonal variability in the ocean, *Deep-Sea Res.*, **20**, 141–177, 1973.
- Müller, P., and C. Frankignoul, Direct atmospheric forcing of geostrophic eddies, *J. Phys. Oceanogr.*, **11**, 287–308, 1981.

Ocean Loading

- Dong, D., P. Fang, Y. Bock, M. K. Cheng, and S. Miyazaki, Anatomy of apparent seasonal variations from GPS-derived site position time series, *J. Geophys. Res.*, **107**(B4), doi:10.1029/2001JB000573, 2002.
- Kakuta, C., T. Tsubokawa, and K. Iwadate, Coupling of long oceanic waves in the Pacific Ocean and the rotating elastic Earth during the 1986–1987 El Niño, *J. Geophys. Res.*, **105**, 3089–3094, 2000.
- Kakuta, C., T. Tsubokawa, and K. Iwadate, Effects of the 1986–1987 El Niño on variations of the vertical and tilt, *J. Geod. Soc. Japan*, **48**, 67–83, 2002.
- Mangiarotti, S., A. Cazenave, L. Soudarin, and J. F. Crétaux, Annual vertical crustal motions predicted from surface mass redistribution and observed by space geodesy, *J. Geophys. Res.*, **106**, 4277–4291, 2001.
- Munekane, H., and S. Matsuzaka, Nontidal ocean mass loading detected by GPS observations in the tropical Pacific region, *Geophys. Res. Lett.*, **31**, L08602, doi:10.1029/2004GL019773, 2004.
- Schuh, H., G. Estermann, J.-F. Crétaux, M. Bergé-Nguyen, and T. van Dam, Investigation of hydrological and atmospheric loading by space geodetic techniques, in *Satellite Altimetry for Geodesy, Geophysics, and Oceanography*, edited by C. Hwang, C. K. Shum, and J. Li, pp. 123–132, IAG Symposia vol. 126, Springer-Verlag, Berlin, 2004.
- van Dam, T. M., J. Wahr, Y. Chao, and E. Leuliette, Predictions of crustal deformation and of geoid and sea-level variability caused by oceanic and atmospheric loading, *Geophys. J. Int.*, **129**, 507–517, 1997.
- Zerbini, S., F. Matonti, F. Raicich, B. Richter, and T. van Dam, Observing and assessing nontidal ocean loading using ocean, continuous GPS and gravity data in the Adriatic area, *Geophys. Res. Lett.*, **31**, L23609, doi:10.1029/2004GL021185, 2004.

Ocean Mass (Non-Steric Global Mean Sea Level)

- Chambers, D. P., J. Wahr, and R. S. Nerem, Preliminary observations of global ocean mass variations with GRACE, *Geophys. Res. Lett.*, **31**, L13310, doi:10.1029/2004GL020461, 2004.
- Chen, J. L., C. R. Wilson, B. D. Tapley, J. S. Famiglietti, and M. Rodell, Seasonal global mean sea level change from satellite altimeter, GRACE, and geophysical models, *J. Geodesy*, **79**, 532–539, 2005.

Earth's Shape

- Blewitt, G., and P. Clarke, Inversion of Earth's changing shape to weigh sea level in static equilibrium with surface mass redistribution, *J. Geophys. Res.*, **108**(B6), 2311, doi:10.1029/2002JB002290, 2003.
- Wu, X., M. B. Heflin, E. R. Ivins, D. F. Argus, and F. H. Webb, Large-scale global surface mass variations inferred from GPS measurements of load-induced deformation, *Geophys. Res. Lett.*, **30**(14), 1742, doi:10.1029/2003GL017546, 2003.

Gravitational Field Changes

- Cazenave, A., P. Gegout, G. Ferhat, and R. Biancale, Temporal variations of the gravity field from Lageos 1 and Lageos 2 observations, in *Global Gravity Field and its Temporal Variations*, edited by R. H. Rapp, A. A. Cazenave, and R. S. Nerem, pp. 141–151, IAG Symposia vol. 116, Springer-Verlag, Berlin, 1996.
- Cazenave, A., F. Mercier, F. Bouille, and J. M. Lemoine, Global-scale interactions between the solid Earth and its fluid envelopes at the seasonal time scale, *Earth Planet. Science Lett.*, **171**, 549–559, 1999.
- Chao, B. F., A. Y. Au, J.-P. Boy, and C. M. Cox, Time-variable gravity signal of an anomalous redistribution of water mass in the extratropic Pacific during 1998–2002, *Geochem. Geophys. Geosyst.*, **4**(11), 1096, doi:10.1029/2003GC000589, 2003.
- Chen, J. L., and C. R. Wilson, Low degree gravitational changes from earth rotation and geophysical models, *Geophys. Res. Lett.*, **30**(24), 2257, doi:10.1029/2003GL018688, 2003.
- Chen, J. L., C. R. Wilson, R. J. Eanes, and B. D. Tapley, Geophysical contributions to satellite nodal residual variation, *J. Geophys. Res.*, **104**(B10), 23237–23244, 1999.
- Chen, J. L., C. R. Wilson, R. J. Eanes, and B. D. Tapley, A new assessment of long-wavelength gravitational variations, *J. Geophys. Res.*, **105**(B7), 16,271–16,277, 2000.
- Chen, J. L., C. R. Wilson, X. G. Hu, and B. D. Tapley, Large-scale mass redistribution in the oceans, 1993–2001, *Geophys. Res. Lett.*, **30**(20), 2024, doi:10.1029/2003GL018048, 2003.
- Chen, J. L., C. R. Wilson, B. D. Tapley, and J. C. Ries, Low degree gravitational changes from GRACE: Validation and interpretation, *Geophys. Res. Lett.*, **31**, L22607, doi:1029/2004GL021670, 2004.

- Chen, J. L., C. R. Wilson, and B. D. Tapley, Interannual variability of low-degree gravitational change, 1980–2002, *J. Geodesy*, **78**, 535–543, 2005.
- Chen, J. L., C. R. Wilson, and K.-W. Seo, Optimized smoothing of Gravity Recovery and Climate Experiment (GRACE) time-variable gravity observations, *J. Geophys. Res.*, **111**, B06408, doi:10.1029/2005JB004064, 2006.
- Cheng, M., and B. D. Tapley, Seasonal variations in low degree zonal harmonics of the Earth's gravity field from satellite laser ranging observations, *J. Geophys. Res.*, **104**, 2667–2681, 1999.
- Cheng, M., and B. D. Tapley, Variations in the Earth's oblateness during the past 28 years, *J. Geophys. Res.*, **109**, B09402, doi:10.1029/2004JB003028, 2004.
- Cheng, M., and B. D. Tapley, Correction to “Variations in the Earth's oblateness during the past 28 years”, *J. Geophys. Res.*, **110**, B03406, doi:10.1029/2005JB003700, 2005.
- Condi, F., and C. Wunsch, Gravity field variability, the geoid, and ocean dynamics, in *V Hotine-Marussi Symposium on Mathematical Geodesy*, edited by F. Sanso, pp. 285–292, IAG Symposia vol. 127, Springer-Verlag, New York, 2004.
- Condi, F., and C. Wunsch, Measuring gravity field variability, the geoid, ocean bottom pressure fluctuations, and their dynamical implications, *J. Geophys. Res.*, **109**, C02013, doi:10.1029/2002JC001727, 2004.
- de Viron, O., J.-P. Boy, and H. Goosse, Geodetic effects of the ocean response to atmospheric forcing in an ocean general circulation model, *J. Geophys. Res.*, **109**, B03411, doi:10.1029/2003JB002837, 2004.
- Dickey, J. O., S. L. Marcus, O. de Viron, and I. Fukumori, Recent Earth oblateness variations: Unraveling climate and postglacial rebound effects, *Science*, **298**, 1975–1977, 2002.
- Doi, K., Estimation of gravity change induced by variation of sea surface topography, in *Proceedings of the CRCM'93, Kobe*, edited by H. Ishii and S. Takemoto, pp. 359–362, 1993.
- Foldvary, L., and Y. Fukuda, Evaluation of temporal variations on the gravity field caused by geophysical fluids and their possible detection by GRACE, in *Gravity, Geoid, and Geodynamics 2000*, edited by M. G. Sideris, pp. 143–148, IAG Symposia vol. 123, Springer-Verlag, New York, 2001.
- Foldvary, L., and Y. Fukuda, IB and NIB hypotheses and their possible discrimination by GRACE, *Geophys. Res. Lett.*, **28**, 663–666, 2001.
- Foldvary, L., and Y. Fukuda, Effects of atmospheric variations on the marine geoid determined by forthcoming gravity satellite, in *Vistas for Geodesy in the New Millennium*, edited by J. Adám and K.-P. Schwarz, pp. 187–192, IAG Symposia vol. 125, Springer-Verlag, New York, 2002.
- Fukuda, Y., and T. Sato, Gravity effects of sea level variation at the superconducting gravimeter sites, estimated from ERS-1 and TOPEX/Poseidon altimeter data, in *Gravity, Geoid, and Marine Geodesy*, edited by J. Segawa, H. Fujimoto, and S. Okubo, pp. 107–114, IAG Symposia vol. 117, Springer-Verlag, New York, 1997.
- Gruber, Th., Ch. Reigber, and J. Wunsch, Estimation of ocean mass redistribution by means of altimetry and circulation models and its impact on the gravity field, in *Towards an Integrated Global Geodetic Observing System (IGGOS)*, edited by R. Rummel, H. Drewes, W. Bosch, and H. Hornik, pp. 218–221, IAG Symposia vol. 120, Springer-Verlag, New York, 2000.

- Hughes, C. W., and V. N. Stepanov, Ocean dynamics associated with rapid J_2 fluctuations: Importance of circumpolar modes and identification of a coherent Arctic mode, *J. Geophys. Res.*, **109**, C06002, doi:10.1029/2003JC002176, 2004.
- Johnson, T. J., The role of the ocean in the planetary angular momentum budget, Ph.D. thesis, 134 pp., Univ. of Texas, Austin, 1998.
- Johnson, T. J., P. Kammeyer, and J. Ray, The effects of geophysical fluids on motions of the Global Positioning System satellites, *Geophys. Res. Lett.*, **28**, 3329–3332, 2001.
- Johnson, T. J., C. R. Wilson, and B. F. Chao, Nontidal oceanic contributions to gravitational field changes: Predictions of the Parallel Ocean Climate Model, *J. Geophys. Res.*, **106**, 11315–11334, 2001.
- Kanzow, T., F. Flechtner, A. Chave, R. Schmidt, P. Schwintzer, and U. Send, Seasonal variation of ocean bottom pressure derived from Gravity Recovery and Climate Experiment (GRACE): Local validation and global pressure, *J. Geophys. Res.*, **110**, C09001, doi:10.1029/2004JC002772, 2005.
- Kuhn, M., Geoid variations due to mean sea-level variations, in *Vertical Reference Systems*, edited by H. Drewes, A. H. Dodson, L. P. S. Fortes, L. Sánchez, and P. Sandoval, pp. 282–287, IAG Symposia vol. 124, Springer-Verlag, New York, 2002.
- Leuliette, E. W., R. S. Nerem, and G. L. Russell, Detecting time variations in gravity associated with climate change, *J. Geophys. Res.*, **107**(B6), doi:10.1029/2001JB000404, 2002.
- Ramillien, G., A. Cazenave, and O. Brunau, Global time variations of hydrological signals from GRACE satellite gravimetry, *Geophys. J. Int.*, **158**, 813–826, 2004.
- Reigber, Ch., H. Jochmann, J. Wunsch, K. H. Neumayer, and P. Schwintzer, First insight into temporal gravity variability from CHAMP, in *First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*, edited by Ch. Reigber, H. Lühr, and P. Schwintzer, pp. 128–133, Springer-Verlag, New York, 2003.
- Sato, T., Y. Fukuda, Y. Aoyama, H. McQueen, K. Shibuya, K. Asari, and M. Ooe, On the observed annual gravity variation and the effect of sea surface height variations, *Phys. Earth Planet. Inter.*, **123**, 45–63, 2001.
- Swenson, S., J. Wahr, and P. C. D. Milly, Estimated accuracies of regional water storage variations inferred from the Gravity Recovery and Climate Experiment (GRACE), *Water Resour. Res.*, **39**(8), 1223, doi:10.1029/2002WR001808, 2003.
- Thompson, P. F., S. V. Bettadpur, and B. D. Tapley, Impact of short period, non-tidal, temporal mass variability on GRACE gravity estimates, *Geophys. Res. Lett.*, **31**, L06619, doi:10.1029/2003GL019285, 2004.
- van Dam, T. M., J. Wahr, Y. Chao, and E. Leuliette, Predictions of crustal deformation and of geoid and sea-level variability caused by oceanic and atmospheric loading, *Geophys. J. Int.*, **129**, 507–517, 1997.
- Wahr, J., M. Molenaar, and F. Bryan, Time variability of the Earth's gravity field: Hydrological and oceanic effects and their possible detection using GRACE, *J. Geophys. Res.*, **103**, 30205–30229, 1998.
- Wahr, J., S. Swenson, V. Zlotnicki, and I. Velicogna, Time-variable gravity from GRACE: First results, *Geophys. Res. Lett.*, **31**, L11501, doi:10.1029/2004GL019779, 2004.
- Wunsch, J., M. Thomas, and T. Gruber, Simulation of oceanic bottom pressure for gravity space missions, *Geophys. J. Int.*, **147**, 428–434, 2002.

Zerbini, S., F. Matonti, F. Raicich, B. Richter, and T. van Dam, Observing and assessing nontidal ocean loading using ocean, continuous GPS and gravity data in the Adriatic area, *Geophys. Res. Lett.*, **31**, L23609, doi:10.1029/2004GL021185, 2004.

Geocenter

- Barkin, Yu. V., Secular effects in the motion of the Earth's center of masses, in *IERS Technical Note 25: IERS Analysis Campaign to Investigate Motions of the Geocenter*, edited by J. Ray, pp. 3–13, Obs. de Paris, Paris, 1999.
- Blewitt, G., and P. Clarke, Inversion of Earth's changing shape to weigh sea level in static equilibrium with surface mass redistribution, *J. Geophys. Res.*, **108**(B6), 2311, doi:10.1029/2002JB002290, 2003.
- Bosch, W., Geodetic application of satellite altimetry, in *Satellite Altimetry for Geodesy, Geophysics, and Oceanography*, edited by C. Hwang, C.K. Shum, and J. Li, pp. 3–21, IAG Symposia vol. 126, Springer-Verlag, New York, 2004.
- Bouille, F, A. Cazenave, J. F. Cretaux, and L. Soudarin, Geocenter variations derived from 5 years of data of the DORIS space system: Comparison with surface loading data, in *IERS Technical Note 25: IERS Analysis Campaign to Investigate Motions of the Geocenter*, edited by J. Ray, pp. 23–28, Obs. de Paris, Paris, 1999.
- Bouillé, F, A. Cazenave, J. M. Lemoine, and J. F. Crétaux, Geocentre motion from the DORIS space system and laser data to the Lageos satellites: Comparison with surface loading data, *Geophys. J. Int.*, **143**, 71–82, 2000.
- Cazenave, A., F. Mercier, F. Bouille, and J. M. Lemoine, Global-scale interactions between the solid Earth and its fluid envelopes at the seasonal time scale, *Earth Planet. Science Lett.*, **171**, 549–559, 1999.
- Chen, J. L., C. R. Wilson, R. J. Eanes, and R. S. Nerem, Geophysical interpretation of observed geocenter variations, *J. Geophys. Res.*, **104**, 2683–2690, 1999.
- Chen, J. L., C. R. Wilson, R. J. Eanes, and R. S. Nerem, Mass variations in the Earth system and geocenter motions, in *IERS Technical Note 25: IERS Analysis Campaign to Investigate Motions of the Geocenter*, edited by J. Ray, pp. 29–38, Obs. de Paris, Paris, 1999.
- Clarke, P. J., D. A. Lavallée, G. Blewitt, T. M. van Dam, and J. M. Wahr, Effect of gravitational consistency and mass conservation on seasonal surface mass loading models, *Geophys. Res. Lett.*, **32**, L08306, doi:10.1029/2005GL022441, 2005.
- Crétaux, J.-F., L. Soudarin, F. J. M. Davidson, M.-C. Gennero, M. Bergé-Nguyen, and A. Cazenave, Seasonal and interannual geocenter motion from SLR and DORIS measurements: Comparison with surface loading data, *J. Geophys. Res.*, **107**(B12), 2374, doi:10.1029/2002JB001820, 2002.
- Dong, D., J. O. Dickey, Y. Chao, and M. K. Cheng, Geocenter variations caused by atmosphere, ocean, and surface water, *Geophys. Res. Lett.*, **24**, 1867–1870, 1997.
- Dong, D., J. O. Dickey, Y. Chao, and M. K. Cheng, Geocenter variations caused by mass redistribution of surface geophysical processes, in *IERS Technical Note 25: IERS Analysis Campaign to Investigate Motions of the Geocenter*, edited by J. Ray, pp. 47–54, Obs. de Paris, Paris, 1999.
- Johnson, T. J., The role of the ocean in the planetary angular momentum budget, Ph.D. thesis, 134 pp., Univ. of Texas, Austin, 1998.

Johnson, T. J., C. R. Wilson, and B. F. Chao, Nontidal oceanic contributions to gravitational field changes: Predictions of the Parallel Ocean Climate Model, *J. Geophys. Res.*, **106**, 11315–11334, 2001.