References

Abarbanel, H. D. I., & Young, W. R. (Eds.) (1987). *General Circulation of the Ocean*. New York: Springer-Verlag, 291 pages.

Abbott, P. L., (2004). *Natural Disasters* (4th ed.). Boston: McGraw-Hill, 460 pages.

Abramowitz, M., & Stegun, I. A. (Eds.) (1972). *Handbook of Mathematical Functions*. New York: Dover, 1046 pages.

Adcroft, A., Campin, J.-M., Hill, C., & Marshall, J. (2004). Implementation of an atmosphere-ocean general circulation model on the expanded spherical cube. *Monthly Weather Review*, *132*, 2845–2863.

Adcroft, A., Hill, C., & Marshall, J. (1997). Representation of topography by shaved cells in a height coordinate ocean model. *Monthly Weather Review*, *125*, 2293–2315.

Akerblom, F. (1908). Recherches sur les courants les plus bas de l'atmosphère au-dessus de Paris. *Nova Acta Regiae Societatis Scientiarum*, Uppsala, Ser. 4, *2*, 1–45.

Alvarez, A., Orfila, A., & Tintore, J. (2001). DARWIN: An evolutionary program for nonlinear modeling of chaotic time series. *Computer Physics Communications*, *136*, 334–349.

Anthes, R. A. (1982). *Tropical Cyclones: Their Evolution, Structure and Effects*, Meteorological Monographs, 19(41), Boston: American Meteorological Society, 208 pages.

Arakawa, A., & Lamb, V. R. (1977). Computational design of the basic dynamical processes of the UCLA general circulation model. *Methods in Computational Physics*, *17*, 173–265.

Arneborg, L., & Liljebladh, B. (2001). The internal seiches in Gullmar Fjord. Part I: Dynamics. *Journal of Physical Oceanography*, *31*, 2549–2566.

Asselin, R. (1972). Frequency filter for time integrations. *Monthly Weather Review*, *100*, 487–490.

Backhaus, J. O. (1983). A semi-implicit scheme for the shallow water equations for application to shelf sea modelling. *Continental Shelf Research*, *2*, 243–254.

Barcilon, V. (1964). Role of Ekman layers in the stability of the symmetric regime in a rotating annulus. *Journal of the Atmospheric Sciences*, *21*, 291–299.

Barth, A., Alvera-Azcárate, A., Beckers, J.-M., Rixen, M., & Vandenbulcke, L. (2007). Multigrid state vector for data assimilation in a two-way nested model of the Ligurian Sea. *Journal of Marine Systems*, *65*, 41–59.

Barth, A., Alvera-Azcárate, A., Rixen, M., & Beckers, J.-M. (2005). Two-way nested model of mesoscale circulation features in the Ligurian Sea. *Progress in Oceanography*, *66*, 171–189.

Batchelor, G. K. (1967). *An Introduction to Fluid Dynamics*. London and New York: Cambridge University Press, 615 pages.

Beardsley, R. C., Mills, C. A., Vermersch, J. A., Jr., Brown, W. S., Pettigrew, N., Irish, J., Ramp, S., Schlitz, R., & Butman, B. (1983). *Nantucket Shoals Flux Experiment (NSFE'79). Part 2: Moored array data report*. Woods Hole Oceanographic Institution Tech. Rep. No. WHOI-83-13, 140 pages.

Beckers, J.-M. (1991). Application of a 3D model to the Western Mediterranean. *Journal of Marine Systems*, *1*, 315–332.

Beckers, J.-M. (1999). On some stability properties of the discretization of the damped propagation of shallow-water inertia-gravity waves on the Arakawa B-grid. *Ocean Modelling*, *1*, 53–69.

Beckers, J.-M. (1999b). Application of Miller's theorem to the stability analysis of numerical schemes; some useful tools for rapid inspection of discretisations in ocean modelling. *Ocean Modelling*, *1*, 29–37.

Beckers, J.-M. (2002). Selection of a staggered grid for inertia-gravity waves in shallow water. *International Journal of Numerical Methods in Fluids*, *38*, 729–746.

Beckers, J.-M., Burchard, H., Campin, J.-M., Deleersnijder, E., & Mathieu, P.-P. (1998). Another reason why simple discretisations of rotated diffusion operators cause problems in ocean models. Comments on "Isoneutral diffusion in a *z*-coordinate ocean model". *Journal of Physical Oceanography*, *28*, 1552–1559.

Beckers, J.-M., Burchard, H., Deleersnijder, E., & Mathieu, P.-P. (2000). Numerical discretisation of rotated diffusion operators in ocean models. *Monthly Weather Review*, *128*, 2711–2733.

Beckers, J.-M., & Deleersnijder, E. (1993). Stability of a FBTCS scheme applied to the propagation of shallow-water inertia-gravity waves on various space grids. *Journal of Computational Physics*, *108*, 95–104.

Beckmann, A., & Döscher, R. (1997). A method for improved representation of dense water spreading over topography in geopotential-coordinate models. *Journal of Physical Oceanography*, *27*, 581–591.

Beckmann, A., Haidvogel, D. B. (1993). Numerical simulation of flow around a tall isolated seamount. Part I: Problem formulation and model accuracy. *Journal of Physical Oceanography*, *23*, 1736–1753.

Bender, C. M., & Orszag, S. A. (1978). *Advanced Mathematical Methods for Scientists and Engineers*, International Series in Pure and Applied Mathematics, McGraw-Hill, 593 pages.

Bengtsson L., Ghil, N., & Kallen, E. (1981). *Dynamic Meteorology: Data Assimilation Methods*, Applied Mathematical Sciences, New York: Springer Verlag, 36, 330 pages.

Bennett, A. (1992). *Inverse Methods in Physical Oceanography*, Cambridge Monographs on Mechanics and Applied Mathematics, New York: Cambridge University Press, 346 pages.

Betts, A. K. (1986). A new convective adjustment scheme. Part I: Observational and theoretical basis. *Quarterly Journal of the Royal Meteorological Society*, *112*, 677–691.

Bjerknes, V. (1904). Das Problem von der Wettervorhersage, betrachtet vom Standpunkte der Mechanik und der Physik (The problem of weather prediction considered from the point of view of Mechanics and Physics). *Meteorologische Zeitschrift*, *21*, 1–7. (English translation by Yale Mintz, 1954, reprinted in *The Life Cycles of Extratropical Cyclones*, M. A. Shapiro and S. Grønås, eds., American Meteorological Society, 1999, pages 1–4.)

Blayo, E., & Debreu, L. (2005). Revisiting open boundary conditions from the point of view of characteristic variables. *Ocean Modelling*, *9*, 231–252.

Bleck, R. (2002). An oceanic general circulation model framed in hybrid isopycnic-cartesian coordinates. *Ocean Modelling*, *4*, 55–88.

Bleck, R., Rooth, C., Hu, D., & Smith, L. T. (1992). Ventilation patterns and mode water formation in a wind- and thermodynamically driven isopycnic coordinate model of the North Atlantic. *Journal of Physical Oceanography*, *22*, 1486–1505.

Blumen, W. (1972). Geostrophic adjustment. *Reviews of Geophysics and Space Physics*, *10*, 485–528.

Booker, J. R., & Bretherton, F. P. (1967). The critical layer for internal gravity waves in a shear flow. *Journal of Fluid Mechanics*, *27*, 513–539.

Boris, J., & Book, D. (1973). Flux-corrected transport. I. SHASTA, a fluid transport algorithm that works. *Journal of Computational Physics*, *11*, 38–69.

Bower, A. S., & Rossby, T. (1989). Evidence of cross-frontal exchange processes in the Gulf Stream based on isopycnal RAFOS float data. *Journal of Physical Oceanography*, *19*, 1177–1190.

Brasseur, P. (2006). Ocean data assimilation using sequential methods based on the Kalman Filter. In J. Verron, & E. Chassignet (Eds.), *Ocean Weather Forecasting: An Integrated View of Oceanography* (pp. 271–316). Dordrecht: Springer, (Part 4).

Brasseur, P., Blayo, E., & Verron, J. (1996). Predictability experiments in the North Atlantic Ocean: Outcome of a quasigeostrophic model with assimilation of TOPEX/POSEIDON altimeter data. *Journal of Geophysical Research*, *101*, 14161–14174.

Brier, G. W. (1950). Verification of forecasts expressed in terms of probability. *Monthly Weather Review*, *78*, 1–3.

Brink, K. H. (1983). The near-surface dynamics of coastal upwelling. *Progress in Oceanography*, *12*, 223–257.

Bromwich, D. H., Rogers, A. N., Kållberg, P., Cullather, R. I., White, J. W. C., & Kreutz, K. J. (2000). ECMWF analyses and reanalyses depiction of ENSO signal in Antarctic precipitation. *Journal of Climate*, *13*, 1406–1420.

Brunt, D. (1934). *Physical and Dynamical Meteorology*. Upper Saddle River, NJ: Prentice Hall, 411 pages. (Reedited in 1952)

Bryan, K. (1969). A numerical method for the study of the circulation of the World Ocean. *Journal of Computational Physics*, *4*, 347–376.

Bryan, K., & Cox, M. D. (1972). The circulation of the world ocean: A numerical study. Part I, A homogeneous model. *Journal of Physical Oceanography*, *2*, 319–335.

Buchanan, G. (1995). *Schaum's Outline of Finite Element Analysis*. New York: Mc Graw-Hill, 264 pages.

Burchard, H. (2002). *Applied Turbulence Modelling in Marine Waters*. Berlin: Springer, 229 pages.

Burchard, H., & Beckers, J.-M. (2004). Non-uniform adaptive vertical grids in one-dimensional numerical ocean models. *Ocean Modelling*, *6*, 51–81.

Burchard, H., & Bolding, K. (2001). Comparative analysis of four second-moment turbulence closure models for the oceanic mixed layer. *Journal of Physical Oceanography*, *31*, 1943–1968.

Burchard, H., Deleersnijder, E., & Meister, A. (2003). A high-order conservative Patankar-type discretisation for stiff systems of production-destruction equations. *Applied Numerical Mathematics*, *47*, 1–30.

Burchard, H., Deleersnijder, E., & Meister, A. (2005). Application of modified Patankar schemes to stiff biogeochemical models for the water column. *Ocean Dynamics*, *10*, 115–136.

Burger, A. P. (1958). Scale consideration of planetary motions of the atmosphere. *Tellus*, *10*, 195–205.

Cane, M. A., Zebiak, S. E., & Dolan, S. C. (1986). Experimental forecasts of El Niño. *Nature*, *321*, 827–832.

Canuto, V. M., Howard, A., Cheng, Y., & Dubovikov, M. S. (2001). Ocean turbulence. Part I: One-point closure model. Momentum and heat vertical diffusivities. *Journal of Physical Oceanography*, *31*, 1413–1426.

Canuto, C., Hussaini, M. Y., Quarteroni, A., & Zang, T. A. (1988). *Spectral Methods in Fluid Dynamics*. Springer-Verlag, 558 pages.

Case, B., & Mayfield, M. (1990). Atlantic Hurricane Season of 1989. *Monthly Weather Review*, *118*, 1165–1177.

Cessi, P. (1996). Grid-scale instability of convective adjustment schemes. *Journal of Marine Research*, *54*, 407–420.

Chandrasekhar, S. (1961). *Hydrodynamic and Hydromagnetic Stability*. London and New York: Oxford University Press, 652 pages.

Charney, J. G. (1947). The dynamics of long waves in a baroclinic westerly current. *Journal of Meteorology*, *4*, 135–163.

Charney, J. G. (1948). On the scale of atmospheric motions. *Geofysiske Publikasjoner Oslo*, *17*(2), 1–17.

Charney, J. G., & DeVore, J. G. (1979). Multiple-flow equilibria in the atmosphere and blocking. *Journal of the Atmospheric Sciences*, *36*, 1205–1216.

Charney, J. G., Fjörtoft, R., & von Neumann, J. (1950). Numerical integration of the barotropic vorticity equation. *Tellus*, *2*, 237–254.

Charney, J. G., & Flierl, G. R. (1981). Oceanic analogues of large-scale atmospheric motions. In B. A. Warren, & C. Wunsch (Eds.), *Evolution of Physical Oceanography* (pp. 504–548). Cambridge, Massachusetts: The MIT Press.

Charney, J. G., & Stern, M. E. (1962). On the stability of internal baroclinic jets in a rotating atmosphere. *Journal of the Atmospheric Sciences*, *19*, 159–172.

Chen, D., Cane, M. A., Kaplan, A., Zebiak, S. E., & Huang, D. (2004). Predictability of El Niño over the past 148 years. *Nature*, *428*, 733–736.

Chung, T. J. (2002). *Computational Fluid Dynamics*. New York: Cambridge University Press, 1012 pages.

Colella, P. (1990). Multidimensional upwind methods for hyperbolic conservation laws. *Journal of Computational Physics*, *87*, 171–200.

Colin, C., Henin, C., Hisard, P., & Oudot, C. (1971). Le Courant de Cromwell dans le Pacifique central en février. *Cahiers ORSTOM, Serie Oceanographie*, *9*, 167–186.

Conway, E. D., & the Maryland Space Grant Consortium (1997). *An Introduction to Satellite Image Interpretation*. Baltimore: The Johns Hopkins University Press, 264 pages.

Cooley, J., & Tukey, J. (1965). An algorithm for the machine calculation of complex Fourier series. *Mathematics of Computation*, *9*, 297–301.

Cooper, M., & Haines, K. (1996). Altimetric assimilation with water property conservation. *Journal of Geophysical Research*, *101*, 1059–1078.

Courant, R., Friedrichs, K. P., & Lewy, H. (1928). Über die partiellen Differenzengleichungen der mathematischen Physik. *Mathematische Annalen*, *100*, 32–74.

Courant, R., & Hilbert, D. (1924). *Methoden der mathematischen Physik I*. Berlin: Springer Verlag, 470 pages.

Courtier, P., Thepaut, J. N., & Hollingsworth, A. (1994). A strategy for operational implementation of 4D-Var, using an incremental approach. *Quarterly Journal of the Royal Meteorological Society*, *120*, 1367–1387.

Cox, M. (1984). A primitive three-dimensional model of the ocean. Rep. 1, Ocean Group, GFDL, Princeton University.

Crank, J. (1987). *Free and Moving Boundary Problems*. New York: The Clarendon Press, Oxford University Press, 424 pages.

Crépon, M., & Richez, C. (1982). Transient upwelling generated by two-dimensional atmospheric forcing and variability in the coastline. *Journal of Physical Oceanography*, *12*, 1437–1457.

Cressman, G. P. (1948). On the forecasting of long waves in the upper westerlies. *Journal of Meteorology*, *5*, 44–57.

Csanady, G. T. (1977). Intermittent 'full' upwelling in Lake Ontario. *Journal of Geophysical Research*, *82*, 397–419.

Curry, J. A., & Webster, P. J. (1999). *Thermodynamics of Atmospheres and Oceans*. London: Academic Press, 467 pages.

Cushman-Roisin, B. (1986). Frontal geostrophic dynamics. *Journal of Physical Oceanography*, *16*, 132–143.

Cushman-Roisin, B. (1987a). On the role of heat flux in the Gulf Stream–Sargasso Sea–Subtropical Gyre system. *Journal of Physical Oceanography*, *17*, 2189–2202.

Cushman-Roisin, B. (1987b). Subduction. In P. Müller, & D. Henderson (Eds.), *Dynamics of the Oceanic Surface Mixed Layer*, Proc. Hawaiian Winter Workshop *'Aha Huliko'a* (pp. 181–196). Hawaii Institute of Geophysics Special Publication.

Cushman-Roisin, B., Chassignet, E. P., & Tang, B. (1990). Westward motion of mesoscale eddies. *Journal of Physical Oceanography*, *20*, 758–768.

Cushman-Roisin, B., Esenkov, O. E., & Mathias, B. J. (2000). A particle-in-cell method for the solution of two-layer shallow-water equations. *International Journal for Numerical Methods in Fluids*, *32*, 515–543.

Cushman-Roisin, B., Gačić, M., Poulain, P.-M., & Artegiani, A. (2001). *Physical Oceanography of the Adriatic Sea: Past, Present, and Future*. Dordrecht: Kluwer Academic Publishers, 230 pages.

Cushman-Roisin, B., & Malačič, V. (1997). Bottom Ekman pumping with stress-dependent eddy viscosity. *Journal of Physical Oceanography*, *27*, 1967–1975.

Cushman-Roisin, B., Sutyrin, G. G., & Tang, B. (1992). Two-layer geostrophic dynamics. Part I: Governing equations. *Journal of Physical Oceanography*, *22*, 117–127.

Dahlquist, G., & Björck, A. (1974). *Numerical Methods*. Englewood Cliffs: Prentice-Hall, 573 pages.

D'Aleo, J. S. (2002). *The Oryx Guide to El Niño and La Niña*. Westport, CT: Oryx Press, 230 pages.

D'Asaro, E. A., & Lien, R.-C. (2000). Lagrangian measurements of waves and turbulence in stratified flows. *Journal of Physical Oceanography*, *30*, 641–655.

Davies, A. (1987). Spectral models in continental shelf sea oceanography. In N. Heaps (Ed.), *Three-Dimensional Coastal Ocean Models* (pp. 71–106). Washington, DC: American Geophysical Union.

Deleersnijder, E., & Beckers, J.-M. (1992). On the use of the σ-coordinate system in regions of large bathymetric variations. *Journal of Marine Systems*, *3*, 381–390.

Deleersnijder, E., Hanert, E., Burchard, H., & Dijkstra, H. A. (2008). On the mathematical stability of stratified flow models with local turbulence closure schemes. *Ocean Dynamics, 58*, 237–246.

Dewar, W. K. (2001). Density coordinate mixed layer models. *Monthly Weather Review, 129*, 237–253.

Diaz, H. F., & Markgraf, V. (Eds.) (2000). *El Niño and the Southern Oscillation. Multiscale Variability and Global and Regional Impacts* (p. 512). Cambridge, UK: Cambridge University Press.

Dietrich, D. E. (1998). Application of a modified Arakawa 'A' grid ocean model having reduced numerical dispersion to the Gulf of Mexico circulation. *Dynamics of Atmospheres and Oceans*, *27*, 201–217.

Dongarra, J. J., Duffy, I. A., Sorensen, D. C., & van der Vorst, H. A. (1998). *Numerical linear algebra on high-performance computers*. Society for Industrial and Applied Mathematics, 342 pages.

Doodson, A. T. (1921). The harmonic development of the tide-generating potential. *Proceedings of the Royal Society A*, *100*, 304–329.

Dowling, T. E., & Ingersoll, A. P. (1988). Potential vorticity and layer thickness variations in the flow around Jupiter's Great Red Spot and White Oval BC. *Journal of the Atmospheric Sciences*, *45*, 1380–1396.

Dritschel, D. G. (1988). Contour Surgery: A topological reconnection scheme for extended integrations using contour dynamics. *Journal of Computational Physics*, *77*, 240–266.

Dritschel, D. G. (1989). On the stabilization of a two-dimensional vortex strip by adverse shear. *Journal of Fluid Mechanics*, *206*, 193–221.

Ducet, N., Le Traon, P.-Y., & Reverdin, G. (2000). Global high resolution mapping of ocean circulation from Topex/Poseidon and ERS-1 and -2. *Journal of Geophysical Research*, *105*, 19477–19498.

Dukowicz, J. (1995). Mesh effects for Rossby waves. *Journal of Computational Physics*, *119*, 188–194.

Durran, D. (1999). *Numerical Methods for Wave Equations in Geophysical Fluid Dynamics*. New York: Springer, 465 pages.

Eady, E. T. (1949). Long waves and cyclone waves. *Tellus*, *1*(3), 33–52.

Ekman, V. W. (1904). On dead water. *Scientific Results Norwegian North Polar Expedition 1893–96*, *5*(15), 152 pages.

Ekman, V. W. (1905). On the influence of the earth's rotation on ocean currents. *Archives of Mathematics, Astronomy and Physics*, *2*(11), 1–53.

Ekman, V. W. (1906). Beiträge zur Theorie der Meeresströmungen. *Annalen der Hydrographie und maritimen Meteorologie*, 9: 423–430; 10: 472–484; 11: 527–540; 12: 566–583.

Eliassen, A. (1962). On the vertical circulation in frontal zones. *Geofysicke Publicasjoner*, *24*, 147–160.

Emmanuel, K. (1991). The theory of hurricanes. *Annual Review of Fluid Mechanics*, *23*, 179–196.

Esenkov, O. E., & Cushman-Roisin, B. (1999). Modeling of two-layer eddies and coastal flows with a particle method. *Journal of Geophysical Research*, *104*, 10959–10980.

Evensen, G. (1994). Sequential data assimilation with a nonlinear quasi-geostrophic model using Monte Carlo methods to forecast error statistics. *Journal of Geophysical Research*, *99*, 10143–10162.

Evensen, G. (2004). Sampling strategies and square root analysis schemes for the EnKF. *Ocean Dynamics*, *54*, 539–560.

Fernando, H. J. S. (1991). Turbulent mixing in stratified fluids. *Annual Review of Fluid Mechanics*, *23*, 455–493.

Ferziger, J. M., & Perić, M. (1999). *Computational Methods for Fluid Dynamics*. Berlin: Springer Verlag, 390 pages.

Flament, P., Armi, L., & Washburn, L. (1985). The evolving structure of an upwelling filament. *Journal of Geophysical Research*, *90*, 11765–11778.

Flierl, G. R. (1987). Isolated eddy models in geophysics. *Annual Review of Fluid Mechanics*, *19*, 493–530.

Flierl, G. R., Larichev, V. D., McWilliams, J. C., & Reznik, G. M. (1980). The dynamics of baroclinic and barotropic solitary eddies. *Dynamics of Atmospheres and Oceans*, *5*, 1–41.

Flierl, G. R., Malanotte-Rizzoli, P., & Zabusky, N. J. (1987). Nonlinear waves and coherent vortex structures in barotropic beta-plane jets. *Journal of Physical Oceanography*, *17*, 1408–1438.

Fornberg, B. (1998). *A Practical Guide to Pseudospectral Methods*. Cambridge: Cambridge University Press, 242 pages.

Fox, R. W., & McDonald, A. T. (1992). *Introduction to Fluid Mechanics* (4th ed.). New York: John Wiley & Sons, 829 pages.

Fukumori, I., & Malanotte-Rizzoli, P. (1995). An approximate Kalman filter for ocean data assimilation; an example with an idealized Gulf Stream model. *Journal of Geophysical Research*, *100*, 6777–6793.

Galperin, B., Kantha, L. H., Hassid, S., & Rosati, A. (1988). A quasi-equilibrium turbulent energy model for geophysical flows. *Journal of the Atmospheric Sciences*, *45*, 55–62.

Galperin, B., Kantha, L. H., Mellor, G. L., & Rosati, A. (1989). Modeling rotating stratified turbulent flows with applications to oceanic mixed layers. *Journal of Physical Oceanography*, *19*, 901–916.

Galperin, B., Nakano, H., Huang, H.-P., & Sukoriansky, S. (2004). The ubiquitous zonal jets in the atmospheres of giant planets and Earth's oceans. *Geophysical Research Letters*, *31*, L13303.

Gardiner, C. W. (1997). *Handbook of Stochastic Methods*. Springer Series in Synergetics (Vol. 13, 2nd ed.), Berlin: Springer, 442 pages.

Garratt, J. R. (1992). *The Atmospheric Boundary Layer*. Cambridge: Cambridge University Press, 316 pages.

Garrett, C., & Munk, W. (1979). Internal waves in the ocean. *Annual Review of Fluid Mechanics*, *11*, 339–369.

Gauss, C. F. (1866). Theoria interpolationis methodo nova tractata. *Werke Band*, Nachlass *3*, 265–327 (Königliche Gesellschaft der Wissenschaften, Göttingen 1866).

Gawarkiewicz, G., & Chapman, D. C. (1992). The role of stratification in the formation and maintenance of shelf-break fronts. *Journal of Physical Oceanography*, *22*, 753–772.

Gent, P. R., & McWilliams, J. C. (1990). Isopycnal mixing in ocean circulation models. *Journal of Physical Oceanography*, *20*, 150–155.

Gent, P. R., Willebrand, J., McDougall, T. J., & McWilliams, J. C. (1995). Parameterizing eddy-induced tracer transports in ocean circulation models. *Journal of Physical Oceanography*, *25*, 463–474.

Gerdes, R. (1993). A primitive equation model using a general vertical coordinate transformation. Part 1: Description and testing of the model. *Journal of Geophysical Research*, *98*, 14683–14701.

Ghil, M. (1989). Meteorological data assimilation for oceanographers. I- Description and theoretical framework. *Dynamics of Atmospheres and Oceans*, *13*, 171–218.

Ghil, M., & Childress, S. (1987). *Topics in Geophysical Fluid Dynamics: Atmospheric Dynamics, Dynamo Theory and Climate Dynamics*. New York: Springer-Verlag, 504 pages.

Ghil, M., & Malanotte-Rizzoli, P. (1991). Data assimilation in meteorology and oceanography. *Advances in Geophysics, Academic Press*, *33*, 141–266.

Gibson, M. M., & Launder, B. E. (1978). Ground effects on pressure fluctuations in the atmospheric boundary layer. *Journal of Fluid Mechanics*, *86*, 491–511.

Gill, A. E. (1980). Some simple solutions for heat-induced tropical circulation. *Quarterly Journal of Royal Metereological Society*, *106*, 447–462.

Gill, A. E. (1982). *Atmosphere-Ocean Dynamics*. New York: Academic Press, 662 pages.

Gill, A. E., Green, J. S. A., & Simmons, A. J. (1974). Energy partition in the large-scale ocean circulation and the production of mid-ocean eddies. *Deep-Sea Research*, *21*, 499–528.

Glantz, M. H. (2001). *Currents of Change: Impacts of El Niño and La Niña on Climate and Society* (2nd ed.). Cambridge University Press, 252 pages.

Godunov, S. K. (1959). A difference scheme for numerical solution of discontinuous solution of hydrodynamic equations. *Mathematics Sbornik*, *47*, 271–306. (Translation: US Joint Publ. Res. Service, JPRS 7226, 1969).

Goldstein, S. (1931). On the stability of superposed streams of fluids of different densities. *Proceedings of the Royal Society London A*, *132*, 524–548.

Golub, G. H., & Van Loan, C. F. (1990). *Matrix Computations*. Baltimore: The Johns Hopkins University Press, 728 pages.

Gottlieb, D., & Orszag, S. A. (1977). *Numerical Analysis of Spectral Methods: Theory and Applications*. Philadelphia, PA: Society for Industrial and Applied Mathematics, 170 pages.

Grant, H. L., Stewart, R. W., & Moilliet, A. (1962). Turbulence spectra from a tidal channel. *Journal of Fluid Mechanics*, *12*, 241–268.

Griffies, S. M. (1998). The Gent-McWilliams skew flux. *Journal of Physical Oceanography*, *28*, 831–841.

Griffies, S. M., Böning, C., Bryan, F. O., Chassignet, E. P., Gerdes, R., Hasumi, H., Hirst, A., Treguier, A.-M., & Webb, D. (2000). Developments in ocean climate modelling. *Ocean Modelling*, *2*, 123–192.

Griffiths, R. W., Killworth, P. D., & Stern, M. E. (1982). Ageostrophic instability of ocean currents. *Journal of Fluid Mechanics*, *117*, 343–377.

Griffiths, R. W., & Linden, P. F. (1981). The stability of vortices in a rotating, stratified fluid. *Journal of Fluid Mechanics*, *105*, 283–316.

Gustafson, T., & Kullenberg, B. (1936). Untersuchungen von Trägheitsströmungen in der Ostsee. *Svenska Hydrogr. Biol. Komm. Skrifter, Hydrogr.*, No. 13, 28 pages.

Hack, J. J. (1992). Climate system simulation: Basic numerical & computational concepts. In K. E. Trenberth (Ed.), *Climate System Modeling* (pp. 283–318). Cambridge: Cambridge University Press.

Hackbusch, W. (Ed.), (1985). *Multi-Grid Methods and Applications*. Springer Series in computational mathematics, 4, 377 pages.

Hadley, G. (1735). Concerning the cause of the general trade-winds. *Philosophical Transactions of the Royal Society London*, *39*, 58–62.

Hageman, L. A., & Young, D. M. (2004). *Applied Iterative Methods*. New York: Dover Publications, 386 pages.

Haidvogel, D. B., & Beckmann, A. (1999). *Numerical Ocean Circulation Modeling*. Series on Environmental Science and Management, World Scientific Publishing Co., 318 pages.

Haidvogel, D. B., Wilkin, J. L., & Young, R. (1991). A semi-spectral primitive equation ocean circulation model using vertical sigma and orthogonal curvilinear horizontal coordinates. *Journal of Computational Physics*, *94*, 151–185.

Häkkinen, S. (1990). Models and their applications to polar oceanography. In W. O. Smith, Jr. (Ed.), *Polar Oceanography, Part A: Physical Science* (pp. 335–384). Orlando: Academic Press, Chapter 7.

Hallberg, R. W. (1995). *Some Aspects of the Circulation in Ocean Basins with Isopycnals Intersecting the Sloping Boundaries*, Ph.D. Thesis, Seattle: University of Washington, 244 pages.

Hanert, E., Legat, V., & Deleersnijder, E. (2003). A comparison of three finite elements to solve the linear shallow water equations. *Ocean Modelling*, *5*, 17–35.

Haney, R. L. (1991). On the pressure gradient force over steep topography in sigma coordinate ocean models. *Journal of Physical Oceanography*, *21*, 610–619.

Harten, A., Engquist, B., Osher, S., & Chakravarthy, S. R. (1987). Uniformly high order accurate essentially non-oscillatory schemes. *Journal of Computational Physics*, *71*, 231–303.

Heaps, N. S. (Ed.) (1987). *Three-dimensional Coastal Ocean Models* . Coastal and Estuarine Series Volume 4, Washington, DC: American Geophys. U., 208 pages.

Helmholtz, H. von. (1888). Über atmosphärische Bewegungen I. *Sitzungsberichte Akademie Wissenschaften Berlin*, *3*, 647–663.

Hendershott, M. C. (1972). The effects of solid earth deformation on global ocean tides. *Geophysical Journal of the Royal Astronomical Society*, *29*, 389–402.

Hermann, A. J., Rhines, P. B., & Johnson, E. R. (1989). Nonlinear Rossby adjustment in a channel: beyond Kelvin waves. *Journal of Fluid Mechanics*, *205*, 469–502.

Hirsch, C. (1990). *Numerical Computation of Internal and External Flows. Vol. 2: Computational Methods for Inviscid and Viscous Flows*. Chichester: John Wiley, 714 pages.

Hodnett, P. F. (1978). On the advective model of the thermocline circulation. *Journal of Marine Research*, *36*, 185–198.

Holton, J. R. (1992). *An Introduction to Dynamic Meteorology* (3rd ed.). San Diego: Academic Press, 511 pages.

Hoskins, B., & Bretherton, F. (1972). Atmospheric frontogenesis models: Mathematical formulation and solution. *Journal of the Atmospheric Sciences*, *29*, 11–37.

Hoskins, B. J., McIntyre, M. E., & Robertson, A. W. (1985). On the use and significance of isentropic potential vorticity maps. *Quarterly Journal of Royal Meteorological Society*, *111*, 877–946.

Houtekamer, P. L., & Mitchell, H. L. (1998). Data assimilation using an ensemble Kalman filter technique. *Monthly Weather Review*, *126*, 796–811.

Howard, L. N. (1961). Note on a paper of John W. Miles. *Journal of Fluid Mechanics*, *10*, 509–512.

Hsueh, Y., & Cushman-Roisin, B. (1983). On the formation of surface to bottom fronts over steep topography. *Journal of Geophysical Research*, *88*, 743–750.

Huang, R. X. (1989). On the three-dimensional structure of the wind-driven circulation in the North Atlantic. *Dynamics of Atmospheres and Oceans*, *15*, 117–159.

Hurlburt, H. E., & Thompson, J. D. (1980). A numerical study of loop current intrusions and eddy-shedding. *Journal of Physical Oceanography*, *10*, 1611–1651.

Hunkins, K. (1966). Ekman drift currents in the Arctic Ocean. *Deep-Sea Research*, *13*, 607–620.

Ide, K., Courtier, P., Ghil, M., & Lorenc, A. C. (1997). Unified notation for data assimilation: Operational, sequential and variational. *Practice*, *75*, 181–189.

Ingersoll, A. P., Beebe, R. F., Collins, S. A., Hunt, G. E., Mitchell, J. L., Muller, P., Smith, B. A., & Terrile, R. J. (1979). Zonal velocity and texture in the Jovian atmosphere inferred from Voyager images. *Nature*, *280*, 773–775.

Intergovernmental Panel on Climate Change (IPCC). (2001). *Climate Change 2001: The Scientific Basis*, Contribution of working group I to the third report assessment of the intergovernmental panel on climate change. J. T. Houghton, Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, X. Dai, K. Maskell and C. A. Johnson, eds. Cambridge University Press, 892 pages.

Iselin, C. O'D. (1938). The influence of vertical and lateral turbulence on the characteristics of the waters at mid-depths. *Transactions, American Geophysical Union*, *20*, 414–417.

Ito, S. (1992). *Diffusion equations*, Translations of mathematical monographs, 114, American Mathematical Society, 225 pages.

Jin, F. F. (1997a). An equatorial recharge paradigm for ENSO. I. Conceptual model. *Journal of the Atmospheric Sciences*, *54*, 811–829.

Jin, F. F. (1997b) An equatorial recharge paradigm for ENSO. II. A stripped-down coupled model. *Journal of the Atmospheric Sciences*, *54*, 830–847.

Jolliffe, I. T., & Stephenson, D. B. (2003). *Forecast Verification: A Practitioner's Guide in Atmospheric Science*. Chichester: John Wiley and Sons, 240 pages.

Jones, W. L. (1967). Propagation of internal gravity waves in fluids with shear flow and rotation. *Journal of Fluid Mechanics*, *30*, 439–448.

Kalnay, E. (2003). *Atmospheric Modeling, Data Assimilation and Predictability*. Cambridge: Cambridge University Press, 341 pages.

Kalnay, E., Lord, S. J., & McPherson, R. D. (1998). Maturity of operational numerical weather prediction: Medium range. *Bulletin of the American Meteorological Society*, *79*, 2753–2769.

Kantha, L. H., & Clayson, C. A. (1994). An improved mixed layer model for geophysical applications. *Journal of Geophysical Research*, *99*, 25235–25266.

Kessler, W. S. (2002). Is ENSO a cycle or a series of events? *Geophysical Research Letters*, *29*, 2125.

Killworth, P. D., Paldor, N., & Stern, M. E. (1984). Wave propagation and growth on a surface front in a two-layer geostrophic current. *Journal of Marine Research*, *42*, 761–785.

Killworth, P. D., Stainforth, D., Webb, D. J., & Paterson, S. M. (1991). The development of a free-surface Bryan-Cox-Semtner ocean model. *Journal of Physical Oceanography*, *21*, 1333–1348.

Kolmogorov, A. N. (1941). Dissipation of energy in locally isotropic turbulence. *Doklady Akademii Nauk SSSR*, *32*, 19–21 (in Russian).

Kraus, E. B. (Ed.), (1977). *Modelling and Prediction of the Upper Layers of the Ocean*. Oxford: Pergamon, 325 pages.

Kreiss, H.-O. (1962). Über die Stabilitätsdefinition für Differenzengleichungen die partielle Differentialgleichungen approximieren. *Nordisk Tidskrift Informationsbehandling (BIT)*, *2*, 153–181.

Kuhlbrodt, T., Griesel, A., Montoya, M., Levermann, A., Hofmann, M., & Rahmstorf, S. (2007). On the driving processes of the Atlantic meridional overturning circulation. *Reviews of Geophysics*, *45*, RG2001.

Kundu, P. K. (1990). *Fluid Mechanics*. New York: Academic Press, 638 pages.

Kuo, H. L. (1949). Dynamic instability of two-dimensional nondivergent flow in a barotropic atmosphere. *Journal of Meteorology*, *6*, 105–122.

Kuo, H. L. (1974). Further studies of the parameterization of the influence of cumulus convection on large-scale flow. *Journal of the Atmospheric Sciences*, *31*, 1232–1240.

Lawrence, G. A., Browand, F. K., & Redekopp, L. G. (1991). The stability of a sheared density interface. *Physics of Fluids A, Fluid Dynamics*, *3*, 2360–2370.

Lax, P. D., & Richtmyer, R. D. (1956). Survey of the stability of linear finite difference equations. *Communications on Pure Applied Mathematics*, *9*, 267–293.

LeBlond, P. H., & Mysak, L. A. (1978). *Waves in the Ocean*. Elsevier Oceanography Series, 20, Amsterdam: Elsevier, 602 pages.

Legrand, S., Legat, V., & Deleersnijder, E. (2000). Delaunay mesh generation for an unstructured-grid ocean general circulation model. *Ocean Modelling*, *2*, 17–28.

Lermusiaux, P. F. J. (2007). Adaptive modeling, adaptive data assimilation and adaptive sampling. *Physica D*, *230*, 172–196.

Lermusiaux, P. F. J., Chiu, C.-S., Gawarkiewicz, G. G., Abbot, P., Robinson, A. R., Miller, R. N., Haley, P. J., Leslie, W. G., Majumdar, S. J., Pang, A., & Lekien, F. (2006). Quantifying uncertainties in ocean predictions. *Oceanography*, *19*, 92–105.

Lermusiaux, P. F. J., & Robinson, A. R. (1999). Data assimilation via error subspace statistical estimation. Part I: Theory and schemes. *Monthly Weather Review*, *127*, 1385–1407.

Lindzen, R. S. (1988). Instability of plane parallel shear flow. (Toward a mechanistic picture of how it works.) *Pure and Applied Geophysics*, *126*, 103–121.

Liseikin, V. (1999). *Grid Generation Methods*. Berlin-Heidelberg: Springer, 362 pages.

Liu, C.-T., Pinkel, R., Hsu, M.-K., Klymak, J. M., Chen, H.-W., & Villanoy, C. (2006). Nonlinear internal waves from the Luzon Strait. *Eos, Transactions of the American Geophysical Union*, *87*, 449–451.

Long, R. R. (1997). Homogeneous isotropic turbulence and its collapse in stratified and rotating fluids. *Dynamics of Atmospheres and Oceans*, *27*, 471–483.

Long, R. R. (2003). Do tidal-channel turbulence measurements support $k^{-5/3}$? *Environmental Fluid Mechanics*, *3*, 109–127.

Lorenc, A. C. (1986). Analysis methods for numerical weather prediction. *Quarterly Journal of Royal Meteorological Society*, *112*, 1177–1194.

Lorenz, E. N. (1955). Available potential energy and the maintenance of the general circulation. *Tellus*, *7*, 157–167.

Lorenz, E. N. (1963). Deterministic nonperiodic flow. *Journal of the Atmospheric Sciences*, *20*, 130–141.

Love, A. E. H. (1893). On the stability of certain vortex motions. *Proceedings of the London Mathematical Society Series 1*, *25*, 18–42.

Lueck, R. G., Wolk, F., & Yamazaki, H. (2002). Oceanic velocity microstructure measurements in the 20th century. *Journal of Oceanography*, *58*, 153–174.

Lutgens, F. K., & Tarbuck, E. J. (1986). *The Atmosphere. An Introduction to Meteorology* (3rd ed.). Upper Saddle River, NJ: Prentice-Hall, 492 pages.

Luyten, J. R., Pedlosky, J., & Stommel, H. (1983). The ventilated thermocline. *Journal of Physical Oceanography*, *13*, 292–309.

Lvov, Y. V., & Tabak, E. G. (2001). Hamiltonian formalism and the Garrett-Munk spectrum of internal waves in the ocean. *Physical Review Letters*, *87*, 168501.

Madec G., Delecluse, P., Imbard, M., & Lévy, C. (1998). *OPA 8.1 Ocean general circulation model reference manual. Note du Pôle de Modélisation* (No. 11). Institut Pierre-Simon Laplace, 91 pages.

Madsen, O. S. (1977). A realistic model of the wind-induced Ekman boundary layer. *Journal of Physical Oceanography*, *7*, 248–255.

Malanotte-Rizzoli, P. (1996). *Modern Approaches to Data Assimilation in Ocean Modeling*. New York: Elsevier, 468 pages.

Margules, M. (1903). Über die Energie der Stürme. *Jahrb. Zentralanst. Meteorol. Wien*, *40*, 1–26. (English translation in Abbe, 1910, *The Mechanics of the Earth's Atmosphere. A Collection of Translations.* Misc. Collect. No. 51, Smithsonian Institution, Washington, D.C.)

Margules, M. (1906). Über Temperaturschichtung in stationär bewegter und ruhender Luft. *Meteorologische Zeitschrift*, *23*, 243–254.

Marotzke, J. (1991). Influence of convective adjustment on the stability of the thermohaline circulation. *Journal of Physical Oceanography*, *21*, 903–907.

Marshall, J., Jones, H., & Hill, C. (1998). Efficient ocean modeling using non-hydrostatic algorithms. *Journal of Marine Systems*, *18*, 115–134.

Marshall, J., & Plumb, R. A. (2008). *Atmosphere, Ocean, and Climate Dynamics: An Introductory Text*. New York: Academic Press, 319 pages.

Marshall, J., & Schott, F. (1999). Open-ocean convection: observations, theory and models. *Reviews of Geophysics*, *37*, 1–64.

Marzano, F. S., & Visconti, G. (Eds.), (2002). *Remote Sensing of Atmosphere and Ocean from Space: Models, Instruments and Techniques*. Dordrecht: Kluwer Academic Publishers, 246 pages.

Masuda, A. (1982). An interpretation of the bimodal character of the stable Kuroshio path. *Deep-Sea Research*, *29*, 471–484.

Mathieu, P.-P., Deleersnijder, E., Cushman-Roisin, B., Beckers, J.-M., & Bolding, K. (2002). The role of topography in small well-mixed bays, with application to the lagoon of Mururoa. *Continental Shelf Research*, *22*, 1379–1395.

McCalpin, J. D. (1994). A comparison of second-order and fourth-order pressure gradient algorithms in σ-coordinate ocean model. *International Journal for Numerical Methods in Fluids*, *128*, 361–383.

McDonald, A. (1986). A semi-Lagrangian and semi-implicit two time-level integration scheme. *Monthly Weather Review*, *114*, 824–830.

McPhaden, M. J. & Ripa, P. (1990). Wave-mean flow interactions in the equatorial ocean. *Annual Review of Fluid Mechanics*, *22*, 167–205.

McWilliams, J. C. (1977). A note on a consistent quasi-geostrophic model in a multiply connected domain. *Dynamics of Atmospheres and Oceans*, *1*, 427–441.

McWilliams, J. C. (1984). The emergence of isolated coherent vortices in turbulent flow. *Journal of Fluid Mechanics*, *146*, 21–43.

McWilliams, J. C. (1989). Statistical properties of decaying geostrophic turbulence. *Journal of Fluid Mechanics*, *198*, 199–230.

Mechoso, C. R., Robertson, A. W., Barth, N., Davey, M. K., Delecluse, P., Gent, P. R., Ineson, S., Kirtman, B., Latif, M., Letreut, H., Nagai, T., Neelin, J. D., Philander, S. G. H., Polcher, J., Schopf, P. S., Stockdale, T., Suarez, M. J., Terray, L., Thual, O., & Tribbia, J. J. (1995). The seasonal cycle over the tropical pacific in coupled ocean-atmosphere general-circulation models. *Monthly Weather Review*, *123*, 2825–2838.

Meinen, C. S., & McPhaden, M. J. (2000). Observations of warm water volume changes in the equatorial Pacific and their relationship to El Niño and La Niña. *Journal of Climate*, *13*, 3551–3559.

Mellor, G., Oey, L.-Y., & Ezer, T. (1998). Sigma coordinate pressure gradient errors and the seamount problem. *Atmospheric and Oceanic Technology*, *15*, 1112–1131.

Mellor, G. L., & Yamada, T. (1982). Development of a turbulence closure model for geophysical fluid problems. *Reviews of Geophysics and Space Physics*, *20*, 851–875.

Mesinger, F., & Arakawa, A. (1976). Numerical methods used in the atmospheric models. *GARP Publications Series*, No. 17, International Council of Scientific Unions, World Meteorological Organization, 64 pages.

Miles, J. W. (1961). On the stability of heterogeneous shear flows. *Journal of Fluid Mechanics*, *10*, 496–508.

Mofjeld, H. O., & Lavelle, J. W. (1984). Setting the length scale in a second-order closure model of the unstratified bottom boundary layer. *Journal of Physical Oceanography*, *14*, 833–839.

Mohebalhojeh, A. R., & Dritschel, D. G. (2004). Contour-advective semi-Lagrangian algorithms for many layer primitive equation models. *Quarterly Journal of Royal Meteorological Society*, *130*, 347–364.

Montgomery, R. B. (1937). A suggested method for representing gradient flow in isentropic surfaces. *Bulletin of the American Meteorological Society*, *18*, 210–212.

Moore, D. W. (1963). Rossby waves in ocean circulation. *Deep-Sea Research*, *10*, 735–748.

Munk, W. H. (1981). Internal waves and small-scale processes. In B. A. Warren, & C. Wunsch (Eds.), *Evolution of Physical Oceanography* (pp. 264–291). Cambridge, Massachusetts: The MIT Press, Chapter 9.

Navon, I. M. (2009). Data assimilation for numerical weather prediction: A review. In S. K. Park, & L. Xu (Eds.), *Data Assimilation for Atmospheric, Oceanic, and Hydrologic Applications* (pp. 21–65). Berlin, Heidelberg: Springer.

Nebeker, F. (1995). *Calculating the Weather: Meteorology in the 20th Century*. San Diego: Academic Press, 251 pages.

Neelin, J. D., Latif, M., Allaart, M. A. F., Cane, M. A., Cubasch, U., Gates, W. L., Gent, P. R., Ghil, M., Gordon, C., Lau, N. C., Mechoso, C. R., Meehl, G. A., Oberhuber, J.-M., Philander, S. G. H., Schopf, P. S., Sperber, K. R., Sterl, A., Tokioka, T., Tribbia, J. J., & Zebiak, S. E. (1992). Tropical air-sea interaction in general-circulation models. *Climate dynamics*, *7*, 73–104.

Nezu, I., & Nakagawa, H. (1993). *Turbulence in Open-channel Flows*. International Association for Hydraulic Research Monograph Series, Rotterdam: Balkema, 281 pages.

Nihoul, J. C. J. (Ed.) (1975). *Modelling of Marine Systems*, Elsevier Oceanography Series (Vol. 10), Amsterdam: Elsevier, 272 pages.

Nof, D. (1983). The translation of isolated cold eddies on a sloping bottom. *Deep-Sea Research*, *39*, 171–182.

O'Brien, J. J. (1978). El Niño – An example of ocean/atmosphere interactions. *Oceanus*, *21*(4), 40–46.

Okubo, A. (1971). Oceanic diffusion diagrams. *Deep-Sea Research*, *18*, 789–802.

Okubo, A., & Levin, S. A. (2002). *Diffusion and Ecological Problems* (2nd ed.). New York: Springer, 488 pages.

Olson, D. B. (1991). Rings in the ocean. *Annual Review of Earth and Planetary Sciences*, *19*, 283–311.

Orcrette, J. J. (1991). Radiation and cloud radiative properties in the ECMWF operational weather forecast model. *Journal of Geophysical Research*, *96*, 9121–9132.

Orlanski, I. (1968). Instability of frontal waves. *Journal of the Atmospheric Sciences*, *25*, 178–200.

Orlanski, I. (1969). The influence of bottom topography on the stability of jets in a baroclinic fluid. *Journal of the Atmospheric Sciences*, *26*, 1216–1232.

Orlanski, I., & Cox, M. D. (1973). Baroclinic instability in ocean currents. *Geophysical Fluid Dynamics*, *4*, 297–332.

Orszag, S. A. (1970). Transform method for calculation of vector-coupled sums: Application to the spectral form of the vorticity equation. *Journal of the Atmospheric Sciences*, *27*, 890–895.

Osborn, T. R. (1974). Vertical profiling of velocity microstructure, *Journal of Physical Oceanography*, *4*, 109–115.

Ou, H. W. (1984). Geostrophic adjustment: A mechanism for frontogenesis. *Journal of Physical Oceanography*, *14*, 994–1000.

Ou, H. W. (1986). On the energy conversion during geostrophic adjustment. *Journal of Physical Oceanography*, *16*, 2203–2204.

Patankar, S. V. (1980). *Numerical Heat Transfer and Fluid Flow*. New York: McGraw-Hill, 198 pages.

Pavia, E. G., & Cushman-Roisin, B. (1988). Modeling of oceanic fronts using a particle method. *Journal of Geophysical Research*, *93*, 3554–3562.

Pedlosky, J. (1963). Baroclinic instability in two-layer systems. *Tellus*, *15*, 20–25.

Pedlosky, J. (1964). The stability of currents in the atmosphere and oceans. Part I. *Journal of the Atmospheric Sciences*, *27*, 201–219.

Pedlosky, J. (1987). *Geophysical Fluid Dynamics* (2nd ed.). New York: Springer Verlag, 710 pages.

Pedlosky, J. (1996). *Ocean Circulation Theory*. Berlin: Springer, 453 pages.

Pedlosky, J. (2003). *Waves in the Ocean and Atmosphere: Introduction to Wave Dynamics*. Springer, 260 pages.

Pedlosky, J., & Thomson, J. (2003). Baroclinic instability of time-dependent currents. *Journal of Fluid Mechanics*, *490*, 189–215.

Pham D. T., Verron, J., & Roubaud, M. C. (1998). Singular evolutive extended Kalman filter with EOF initialization for data assimilation in oceanography. *Journal of Marine Systems*, *16*, 323–340.

Philander, S. G. (1990). *El Niño, La Niña, and the Southern Oscillation*. Orlando, Florida: Academic Press, 289 pages.

Phillips, N. A. (1954). Energy transformations and meridional circulations associated with simple baroclinic waves in a two-level, quasi-geostrophic model. *Tellus*, *6*, 273–286.

Phillips, N. A. (1956). The general circulation of the atmosphere: A numerical experiment. *Quarterly Journal of Royal Meteorological Society*, *82*, 123–164.

Phillips N. A. (1957). A coordinate system having some special advantages for numerical forecasting. *Journal of Meteorology*, *14*, 184–1851.

Phillips, N. A. (1963). Geostrophic motion. *Reviews of Geophysics*, *1*, 123–176.

Pickard, G. L., & Emery, W. J. (1990). *Descriptive Physical Oceanography: An Introduction* (5th ed.). New York: Pergamon Press, 320 pages.

Pietrzak, J. (1998). The use of TVD limiters for forward-in-time upstream-biased advection schemes in ocean modeling. *Monthly Weather Review*, *126*, 812–830.

Pietrzak, J., Deleersnijder, E., & Schroeter, J. (Eds.). (2005). The second international workshop on unstructured mesh numerical modelling of coastal, shelf and ocean flows (Delft, The Netherlands, September 23–25, 2003). *Ocean Modelling*, *10*, 1–252.

Pietrzak, J., Jakobson, J., Burchard, H., Vested, H.-J., & Petersen, O. (2002). A three-dimensional hydrostatic model for coastal and ocean modelling using a generalised topography following co-ordinate system. *Ocean Modelling*, *4*, 173–205.

Pinardi, N., Allen, I., De Mey, P., Korres, G., Lascaratos, A., Le Traon, P.-Y., Maillard, C., Manzella, G., & Tziavos, C. (2003). The Mediterranean Ocean Forecasting System: first phase of implementation (1998–2001). *Annals of Geophysics*, *21*, 3–20.

Pollard, R. T., Rhines, P. B., & Thompson, R. O. R. Y. (1973). The deepening of the wind-mixed layer. *Geophysical Fluid Dynamics*, *4*, 381–404.

Pope, S. B. (2000). *Turbulent Flows*. Cambridge: Cambridge University Press, 771 pages.

Price, J. F., & Sundermeyer, M. A. (1999). Stratified Ekman layers. *Journal of Geophysical Research*, *104*, 20467–20494.

Proehl, J. A. (1996). Linear stability of equatorial zonal flows. *Journal of Physical Oceanography*, *26*, 601–621.

Proudman, J. (1953). *Dynamical Oceanography*. London: Methuen, and New York: John Wiley, 409 pages.

Rabier, F., & Courtier, P. (1992). Four-dimensional assimilation in the presence of baroclinic instability. *Quarterly Journal of Royal Meteorological Society*, *118*, 649–672.

Randall, D. (Ed.), (2000). *General Circulation Model Development. Past, Present, and Future*. International Geophysics Series (Vol. 70), Academic Press, 807 pages.

Randall, D., Khairoutdinov, M., Arakawa, A., & Grabowski, W. (2003). Breaking the cloud parameterization deadlock. *Bulletin of the American Meteorological Society*, *84*, 1547–1564.

Rao, P. K., Holmes, S. J., Anderson, R. K., Winston, J. S., & Lehr, P. E. (1990). *Weather Satellites: Systems, Data, and Environmental Applications*. Boston: American Meteorological Society, 503 pages.

Rasmusson, E. M., & Carpenter, T. H. (1982). Variations in tropical sea surface temperature and surface wind fields associated with the Southern Oscillation/El Niño. *Monthly Weather Review*, *110*, 354–384.

Rayleigh, Lord (John William Strutt) (1880). On the stability, or instability, of certain fluid motions. *Proceedings of the London Mathematical Society*, *9*, 57–70. (Reprinted in *Scientific Papers by Lord Rayleigh*, Vol. 3, 594–596).

Rayleigh, Lord (John William Strutt) (1916). On convection currents in a horizontal layer of fluid, when the higher temperature is on the under side. *Philosophical Magazine*, *32*, 529–546 (Reprinted in *Scientific Papers by Lord Rayleigh*, Vol. 6, 432–446).

Redi, M. H. (1982). Oceanic isopycnal mixing by coordinate rotation. *Journal of Physical Oceanography*, *12*, 1154–1158.

Reynolds, O. (1894). On the dynamical theory of incompressible viscous flows and the determination of the criterion. *Philosophical Transactions of the Royal Society London A*, *186*, 123–161.

Rhines, P. B. (1975). Waves and turbulence on the beta-plane. *Journal of Fluid Mechanics*, *69*, 417–443.

Rhines, P. B. (1977). The dynamics of unsteady currents. In E. D. Goldberg et al. (Eds.), *The Sea* (Vol. 6, pp. 189–318). New York: Wiley.

Rhines, P. B., & Young, W. R. (1982). A theory of the wind-driven circulation. I. Mid-ocean gyres. *Journal of Marine Research*, *40*(suppl.), 559–596.

Richards, F. A. (Ed.), (1981). *Coastal Upwelling*. Coastal and Estuarine Sciences (Vol. 1). Washington, DC: American Geophysical Union, 529 pages.

Richardson, L. F. (1922). *Weather Prediction by Numerical Process*. Cambridge University Press. (Reprinted by Dover Publications, 1965, 236 pp.).

Richtmyer, R. D., & Morton, K. W. (1967). *Difference Methods for Initial-value Problems* (2nd ed.). New York: Interscience, John Wiley and Sons, 405 pages.

Riley, K. F., Hobson, M. P., & Bence, S. J. (1997). *Mathematical Methods for Physics and Engineering*. Cambridge University Press, 1008 pages.

Ripa, P. (1994). *La Increíble Historia de la Malentendida Fuerza de Coriolis*, La Ciencia/128 desde México, 101 pages.

Rixen, M., Beckers, J.-M., & Allen, J. T. (2001). Diagnosis of vertical velocities with the QG-omega equation: a relocation method to obtain pseudo-synoptic data sets. *Deep-Sea Research*, *48*, 1347–1373.

Rixen, M., & Ferreira-Coelho, E. (2007). Operational surface drift prediction using linear and non-linear hyper-ensemble statistics on atmospheric and ocean models. *Journal of Marine Systems*, *65*, 105–121.

Robinson, A. R., Tomasin, A., & Artegiani, A. (1973). Flooding of Venice: Phenomenology and prediction of the Adriatic storm surge. *Quarterly Journal of Royal Meteorological Society*, *99*, 688–692.

Robinson, A. R. (Ed.), (1983). *Eddies in Marine Science*. Berlin: Springer-Verlag, 609 pages.

Robinson, A. R. (1965). A three-dimensional model of inertial currents in a variable-density ocean. *Journal of Fluid Mechanics*, *21*, 211–223.

Robinson, A. R., & Lermusiaux, P. F. J. (2002). Data assimilation for modeling and predicting coupled physical-biological interactions in the sea. *The Sea*, *12*, 475–536.

Robinson A. R., Lermusiaux, P. F. J., & Sloan, N. Q., III, (1998). Data assimilation. *The Sea*, *10*, 541–594.

Robinson, A. R., & McWilliams, J. C. (1974). The baroclinic instability of the open ocean. *Journal of Physical Oceanography*, *4*, 281–294.

Robinson, A. R., Spall, M. A., & Pinardi, N. (1988). Gulf Stream simulations and the dynamics of ring and meander processes. *Journal of Physical Oceanography*, *18*, 1811–1853.

Robinson, A. R., & Taft, B. (1972). A numerical experiment for the path of the Kuroshio. *Journal of Marine Research*, *30*, 65–101.

Robinson, I. (2004). *Measuring the Oceans from Space: The Principles and Methods of Satellite Oceanography*. Chichester and Heidelberg: Springer-Praxis, 670 pages.

Rodi, W. (1980). *Turbulence Models and their Application in Hydraulics*. Delft, The Netherlands: International Association for Hydraulic Research.

Roll, H. U. (1965). *Physics of the Marine Atmosphere*. New York: Academic Press, 426 pages.

Rossby, C. G. (1937). On the mutual adjustment of pressure and velocity distributions in certain simple current systems. I. *Journal of Marine Research*, *1*, 15–28.

Rossby, C. G. (1938). On the mutual adjustment of pressure and velocity distributions in certain simple current systems. II. *Journal of Marine Research*, *2*, 239–263.

Roussenov, V., Williams, R. G., & Roether, W. (2001). Comparing the overflow of dense water in isopycnic and cartesian models with tracer observations in the eastern Mediterranean. *Deep-Sea Research*, *48*, 1255–1277.

Saddoughi, S. G., & Veeravalli, S. V. (1994). Local isotropy in turbulent boundary layers at high Reynolds number. *Journal of Fluid Mechanics*, *268*, 333–372.

Saffman, P. G. (1968). Lectures on homogeneous turbulence. In N. J. Zabusky (Ed.), *Topics in Nonlinear Physics* (pp. 485–614). Berlin: Springer Verlag.

Salmon, R. (1982). Geostrophic turbulence. In A. R. Osborne & P. Malanotte-Rizzoli (Eds.), *Topics in Ocean Physics*, Proc. Int. School of Phys. Enrico Fermi LXXX (pp. 30–78). North-Holland: Elsevier Sci. Publ.

Sawyer, J. (1956). The vertical circulation at meteorological fronts and its relation to frontogenesis. *Proceedings of the Royal Society London A*, *234*, 346–362.

Schmitz, W. J., Jr. (1980). Weakly depth-dependent segments of the North Atlantic circulation. *Journal of Marine Research*, *38*, 111–133.

Schott, F., & Stommel, H. (1978). Beta spirals and absolute velocities in different oceans. *Deep-Sea Research*, *25*, 961–1010.

Shapiro, L. J. (1992). Hurricane vortex motion and evolution in a three-layer model. *Journal of the Atmospheric Sciences*, *49*, 140–153.

Siedler, G., Church, J., & Gould, J. (Eds.), (2001). *Ocean Circulation and Climate: Modelling and Observing the Global Ocean* . San Diego: Academic Press, 715 pages.

Smagorinsky, J. (1963). General circulation experiments with the primitive equations. I. The basic experiment. *Monthly Weather Review*, *91*, 99–164.

Song, T. (1998). A general pressure gradient formulation for ocean models. Part I: Scheme design and diagnostic analysis. *Monthly Weather Review*, *126*, 3213–3230.

Sorbjan, Z. (1989). *Structure of the Atmospheric Boundary Layer*. Englewood Cliffs, New Jersey: Prentice Hall, 317 pages.

Spagnol S., Wolanski, E., Deleersnijder, E., Brinkman, R., McAllister, F., Cushman-Roisin, B., & Hanert, E. (2002). An error frequently made in the evaluation of advective transport in two-dimensional Lagrangian models of advection-diffusion in coral reef waters. *Marine Ecology Progress Series*, *235*, 299–302.

Spall, M. A., & Holland, W. R. (1991). A nested primitive equation model for oceanic applications. *Journal of Physical Oceanography*, *21*, 205–220.

Spiegel, E. A., & Veronis, G. (1960). On the Boussinesq approximation for a compressible fluid. *The Astrophysical Journal*, *131*, 442–447.

Spivakovskaya, D., Heemink, A. W., & Deleersnijder, E. (2007). The backward Ito method for the Lagrangian simulation of transport processes with large space variations of the diffusivity. *Ocean Science*, *3*, 525–535.

Stacey, M. W., Pond, S., & LeBlond, P. H. (1986). A wind-forced Ekman spiral as a good statistical fit to low-frequency currents in coastal strait. *Science*, *233*, 470–472.

Stern, A. C., Boubel, R. W., Turner, D. B., & Fox, D. L. (1984). *Fundamentals of Air Pollution*. Academic Press, 530 pages.

Stigebrandt, A. (1985). A model for the seasonal pycnocline in rotating systems with application to the Baltic Proper. *Journal of Physical Oceanography*, *15*, 1392–1404.

Stoer, J., & Bulirsh, R. (2002). *Introduction to Numerical Analysis*. Texts in Applied Mathematics (Vol. 12, 3rd ed.), New York: Springer-Verlag, 744 pages.

Stommel, H. (1948). The westward intensification of wind-driven ocean currents. *Transactions American Geophysical Union*, *29*, 202–206.

Stommel, H. (1958). The abyssal circulation. *Deep-Sea Research* (Letters), *5*, 80–82.

Stommel, H. (1979). Determination of water mass properties of water pumped down from the Ekman layer to the geostrophic flow below. *Proceedings of the National Academy of Sciences USA*, *76*, 3051–3055.

Stommel, H., & Arons, A. B. (1960a). On the abyssal circulation of the world ocean – I. Stationary planetary flow patterns on a sphere. *Deep-Sea Research*, *6*, 140–154.

Stommel, H., & Arons, A. B. (1960b). On the abyssal circulation of the world ocean – II. An idealized model of the circulation pattern and amplitude in oceanic basins. *Deep-Sea Research*, *6*, 217–233.

Stommel, H., Arons, A. B., & Faller, A. J. (1958). Some examples of stationary planetary flow patterns in bounded basins. *Tellus*, *10*, 179–187.

Stommel, H., & Moore, D. W. (1989). *An Introduction to the Coriolis Force*. Irvington, New York: Columbia University Press, 297 pages.

Stommel, H., & Schott, F. (1977). The beta spiral and the determination of the absolute velocity field from hydrographic station data. *Deep-Sea Research*, *24*, 325–329.

Stommel, H., & Veronis, G. (1980). Barotropic response to cooling. *Journal of Geophysical Research*, *85*, 6661–6666.

Strang, G. (1968). On the construction and comparison of difference schemes, *SIAM Journal on Numerical Analysis*, *5*, 506–517.

Strub, P. T., Kosro, P. M., & Huyer, A. (1991). The nature of cold filaments in the California Current system. *Journal of Geophysical Research*, *96*, 14743–14768.

Stull, R. B. (1988). *Boundary-Layer Meteorology*. Dordrecht, The Netherlands: Kluwer Academic Publishers, 666 pages.

Stull, R. B. (1991). Static stability – An update. *Bulletin of the American Meteorological Society*, *72*, 1521–1529 (Corrigendum: *Bull. Am. Met. Soc.*, **72**, 1883).

Stull, R. B. (1993). Review of nonlocal mixing in turbulent atmospheres: Transilient turbulence theory. *Boundary-Layer Meteorology*, *62*, 21–96.

Sturm, T. W. (2001). *Open Channel Hydraulics*. New York: McGraw-Hill, 493 pages.

Suarez, M., & Schopf, P. (1988). A delayed action oscillator for ENSO. *Journal of the Atmospheric Sciences*, *45*, 3283–3287.

Sundqvist, H., Berge, E., & Kristjansson, J. E. (1989). Condensation and cloud parameterization studies with a mesoscale numerical weather prediction model. *Monthly Weather Review*, *117*, 1641–1657.

Sutyrin, G. G. (1989). The structure of a monopole baroclinic eddy. *Oceanology*, *29*, 139–144 (English translation).

Sverdrup, H. U. (1947). Wind-driven currents in a baroclinic ocean, with application to the equatorial currents of the eastern Pacific. *Proceedings of the National Academy of Sciences USA*, *33*, 318–326.

Sweby, P. K. (1984). High resolution schemes using flux-limiters for hyperbolic conservation laws. *SIAM Journal on Numerical Analysis*, *21*, 995–1011.

Taillandier, V., Griffa, A., Poulain, P.-M., & Béranger, K. (2006). Assimilation of Argo float positions in the north western Mediterranean Sea and impact ocean circulation simulations. *Geophysical Research Letters*, *33*, 11604.

Talagrand, O., & Courtier, P. (1987). Variational assimilation of meteorological observations with the adjoint vorticity equation. I: Theory. *Quarterly Journal of Royal Meteorological Society*, *113*, 1311–1328.

Talley, J. D., Pickard, G. L., Emery, W. J., & Swift, J. (2007). *Descriptive Physical Oceanography* (6th ed.). Academic Press, 500 pages.

Tangang, F. T., Tang, B., Monahan, A. H., & Hsieh, W. W. (1998). Forecasting ENSO events: a neural network—extended EOF approach. *Journal of Climate*, *11*, 29–41.

Taylor, G. I. (1921). Tidal oscillations in gulfs and rectangular basins. *Proceedings of Royal Society London A*, *20*, 148–181.

Taylor, G. I. (1923). Experiments on the motion of solid bodies in rotating fluids. *Proceedings of Royal Society London A*, *104*, 213–218.

Taylor, G. I. (1931). Effect of variation in density on the stability of superposed streams of fluid. *Proceedings of Royal Society London A*, *132*, 499–523.

Tennekes, H., & Lumley, L. J. (1972). *A First Course in Turbulence*. Cambridge, Massachusetts: The MIT Press, 300 pages.

Thompson, J. F., Warsi, Z. U. A., & Mastin, C. W. (1985). *Numerical Grid Generation: Foundations and Applications*. North Holland, 483 pages.

Thomson, W. (Lord Kelvin) (1879). On gravitational oscillations of rotating water. *Proceedings of Royal Society Edinburgh*, *10*, 92–100. (Reprinted in *Phil. Mag.*, **10**, 109–116, 1880; *Math. Phys. Pap.*, **4**, 141–148, 1910).

Thuburn, J. (1996). Multidimensional flux-limited advection schemes. *Journal of Computational Physics*, *123*, 74–83.

Tomczak, M., & Godfrey, J. S. (2003). *Regional Oceanography: An Introduction* (2nd ed.). Delhi: Daya Publishing House, 390 pages.

Troup, A. J. (1965). The Southern Oscillation. *Quarterly Journal of Royal Meteorological Society*, *91*, 490–506.

Turner, J. S. (1973). *Buoyancy Effects in Fluids*. Cambridge: Cambridge University Press, 367 pages.

Umlauf, L., & Burchard, H. (2003). A generic length-scale equation for geophysical turbulence models. *Journal of Marine Research*, *61*, 235–265.

Umlauf, L., & Burchard, H. (2005). Second-order turbulence closure models for geophysical boundary layers. A review of recent work. *Continental Shelf Research*, *25*, 795–827.

Vallis, G. K. (2006). *Atmospheric and Oceanic Fluid Dynamics: Fundamentals and Large-scale Circulation*. Cambridge: Cambridge University Press, 745 pages.

Van Dyke, M. (1975). *Perturbation Methods in Fluid Mechanics*. Stanford, CA: Parabolic Press, 271 pages.

van Heijst, G. J. F. (1985). A geostrophic adjustment model of a tidal mixing front. *Journal of Physical Oceanography*, *15*, 1182–1190.

Verkley, W. T. M. (1990). On the beta-plane approximation. *Journal of the Atmospheric Sciences*, *47*, 2453–2460.

Veronis, G. (1956). Partition of energy between geostrophic and non-geostrophic oceanic motions. *Deep-Sea Research*, *3*, 157–177.

Veronis, G. (1963). On the approximations involved in transforming the equations of motion from a spherical surface to the β-plane. I. Barotropic systems. *Journal of Marine Research*, *21*, 110–124.

Veronis, G. (1967). Analogous behavior of homogeneous, rotating fluids and stratified, non-rotating fluids. *Tellus*, *19*, 326–336.

Veronis, G. (1981). Dynamics of large-scale ocean circulation. In B. A. Warren, & C. Wunsch (Eds.), *Evolution of Physical Oceanography* (pp. 140–183). Cambridge, Massachusetts: The MIT Press.

Vosbeek, P. W. C., Clercx, H. J. H., & Mattheij, R. M. M. (2000). Acceleration of contour dynamics simulations with a hierarchical-element method. *Journal of Computational Physics*, *161*, 287–311.

Walker, G. T. (1924). Correlation in seasonal variations of weather, IX. A further study of world weather. *Memoirs of the India Meteorological Department*, *24*, 275–333.

Wallace, J. M., & Kousky, V. E. (1968). Observational evidence of Kelvin waves in the tropical stratosphere. *Journal of the Atmospheric Sciences*, *25*, 900–907.

Warren, B. A., & Wunsch, C. (1981). *Evolution of Physical Oceanography: Scientific Surveys in Honor of Henry Stommel*. Cambridge, Massachusetts: The MIT Press, 623 pages.

Weatherly, G. L., & Martin, P. J. (1978). On the structure and dynamics of the ocean bottom boundary layer. *Journal of Physical Oceanography*, *8*, 557–570.

Wei, T., & Willmarth, W. W. (1989). Reynolds number effects on the structure of a turbulent channel flow. *Journal of Fluids Mechanics*, *204*, 57–95.

Welander, P. (1975). Analytical modeling of the oceanic circulation. In *Numerical Models of Ocean Circulation: Proceedings of a Symposium Held at Durham, New Hampshire, October 17–20, 1972* (pp. 63–75). Washington: National Acad. Sci.

Wilks, D. S. (2005). *Statistical Methods in the Atmospheric Sciences* (2nd ed.). Academic Press, 468 pages.

Williams, G. P., & Wilson, R. J. (1988). The stability and genesis of Rossby vortices. *Journal of the Atmospheric Sciences*, *45*, 207–241.

Williams, R. G. (1991). The role of the mixed layer in setting the potential vorticity of the main thermocline. *Journal of Physical Oceanography*, *21*, 1803–1814.

Winston, J. S., Gruber, A., Gray, T. I., Jr., Varnadore, M. S., Earnest, C. L., & Mannello, L. P. (1979). *Earth-Atmosphere Radiation Budget Analyses from NOAA Satellite Data June 1974–February 1978* (Vol. 2). Washington, DC: National Environmental Satellite Service, NOAA, Dept. of Commerce.

WMO. (1999). *WMO Statement on the Status of the Global Climate in 1998*, WMO – No. 896. Geneva: World Meteorological Organization, 12 pages.

Woods, J. D. (1968). Wave-induced shear instability in the summer thermocline. *Journal of Fluid Mechanics*, *32*, 791–800 + 5 plates.

Wunsch, C. (1996). *The Ocean Circulation Inverse Problem*. Cambridge: Cambridge University Press, 437 pages.

Wyrtki, K. (1973). Teleconnections in the equatorial Pacific Ocean. *Science*, *180*, 66–68.

Yabe, T., Xiao, F., & Utsumi, T. (2001). The constrained interpolation profile method for multiphase analysis. *Journal of Computational Physics*, *169*, 556–593.

Yoshida, K. (1955). Coastal upwelling off the California coast. *Records of Oceanographic Works in Japan*, *2*(2), 1–13.

Yoshida, K. (1959). A theory of the Cromwell Current and of the equatorial upwelling – An intepretation in a similarity to a coastal circulation. *Journal of the Oceanographical Society of Japan*, *15*, 154–170.

Zabusky, N. J., Hughes, M. H., & Roberts, K. V. (1979). Contour dynamics for the Euler equations in two dimensions. *Journal of Computational Physics*, *30*, 96–106.

Zalesak, S. T. (1979). Fully multidimensional flux-corrected transport algorithms for fluids. *Journal of Computational Physics*, *31*, 335–362.

Zebiak, S. E., & Cane, C. A. (1987). A model El-Niño southern oscillation. *Monthly Weather Review*, *115*, 2262–2278.

Zienkiewicz, O. C., & Taylor, R. L. (2000). *Finite Element Method: Volume 1. The Basis* (5th ed.). Butterworth-Heinemann, 712 pages.

Zienkiewicz, O. C., Taylor, R. L., & Nithiarasu, P. (2005). *The Finite Element Method for Fluid Dynamics* (6th ed.). Butterworth-Heinemann, 400 pages.

Zilitinkevich, S. S. (1991). *Turbulent Penetrative Convection*. Aldershot: Avebury Technical, 179 pages.