- AchutaRao, K.M., et al., 2006: Variability of ocean heat uptake: Reconciling observations and models. J. Geophysical Research, 111, doi:10.1029/2005JC003136.
- AchutaRao, K.M., and K.R. Sperber, 2006: ENSO simulation in coupled ocean-atmosphere models: Are the current models better? *Climate Dynamics*, doi:10.1007/s00382-006-0119-7.
- AchutaRao, K., and K.R. Sperber, 2002: Simulation of the El Niño Southern Oscillation: Results from the Coupled Model Intercomparison Project. *Climate Dynamics*, **19**, 191–209.
- Ackerman, A.S., et al., 2004: The impact of humidity above stratiform clouds on indirect aerosol climate forcing. *Nature*, 432, 1014–1017.
- Ackerman, T. P., and G.M. Stokes, 2003: The Atmospheric Radiation Measurement Program. *Physics Today*, 56(1), 38–44.
- Adams, R.M., B.A. McCarl, and O. Mearns, 2003: The effects of spatial scale climate scenarios on economic assessments: An example from U.S. agriculture. *Climate Change*, 60, 131–148.
- Albrecht, B.A., 1989: Aerosols, cloud microphysics, and fractional cloudiness. *Science*, 245, 1227–1230.
- Alexander, M., et al., 2006: Extratropical atmosphere-ocean variability in CCSM3. J. Climate, 19, 2496–2525.
- Alley, R.B., et al., 2005: Ice-sheet and sea-level changes. *Science*, **310**, 456–460.
- Ammann, C.M., et al., 2003: A monthly and latitudinally varying volcanic forcing dataset in simulations of 20th Century climate. *Geophysical Research Letters*, **30**(12), 1657.
- Anderson, B.T., et al., 2001: Model dynamics of summertime low-level jets over northwestern Mexico. J. *Geophysical Research*, **106**(D4), 3401–3413.
- Anderson, C.J., R.W. Arritt, and J.S. Kain, 2007: An alternative mass flux profile in the Kain-Fritsch convective parameterization and its effects in seasonal precipitation. J. *Hydrometeorology*, 8(5), 1128–1140, doi:10.1175/JHM624.1.
- Anderson, C.J., et al., 2003: Hydrologic processes in regional climate model simulations of the central United States flood of June–July 1993. J. Hydrometeorology, 4, 584–598.

- Anderson, T.L., et al., 2003: Climate forcing by aerosols—a hazy picture. *Science*, **300**, 1103–1104.
- Andersson, L., et al., 2006: Impact of climate change and development scenarios on flow patterns in the Okavango River. J. Hydrology, 331, 43–57.
- Annamalai, H., K. Hamilton, and K.R. Sperber, 2007: South Asian summer monsoon and its relationship with ENSO in the IPCC AR4 simulations. J. Climate, 20(6), 1071–1092.
- Annan, J.D., and J.C. Hargreaves, 2006: Using multiple observationally based constraints to estimate climate sensitivity. *Geophysical Research Letters*, 33(6), doi:10.1029/2005GL025259.
- Annan, J.D., et al., 2005: Efficiently constraining climate sensitivity with paleoclimate simulations. SOLA, 1, 181–184.
- Antic, S., et al., 2006: Testing the downscaling ability of a one-way nested regional climate model in regions of complex topography. *Climate Dynamics*, 26, 305–325.
- Antic, S., et al., 2004: Testing the downscaling ability of a one-way nested regional climate model in regions of complex topography. *Climate Dynamics*, 23(5), 473–493.
- Antonov, J.I., S. Levitus, and T.P. Boyer, 2005: Thermosteric sea level rise, 1955–2003. *Geophysical Research Letters*, 32, L12602.
- Arakawa, A., and W.H. Schubert, 1974: Interaction of a cumulus cloud ensemble with the large-scale environment. Part I. J. Atmospheric Sciences, 31, 674–701.
- Arblaster, J.M., and G.A. Meehl, 2006: Contribution of various external forcings to trends in the Southern Annular Mode. J. *Climate*, **19**, 2896–2905.
- Arendt, A.A., et al., 2002: Rapid wastage of Alaska glaciers and their contribution to rising sea level. *Science*, 297, 382–386.
- Arora, V.K., and G.J. Boer, 2003: A representation of variable root distribution in dynamic vegetation models. *Earth Interactions*, 7, 1–19.
- Arzel, O., T. Fichefet, and H. Goosse, 2006: Sea ice evolution over the 20th and 21st centuries as simulated by current AOGCMs. *Ocean Modelling*, **12**, 401–415.
- Aurela, M., T. Laurila, and J.P. Tuovinen, 2004: The timing of snow melt controls the annual CO₂ balance in a subarctic fen. *Geophysical Research Letters*, **31**, L16119.

- Avissar, R., and R.A. Pielke, 1989: A parameterization of heterogeneous land-surface for atmospheric numerical models and its impact on regional meteorology. *Monthly Weather Review*, **117**, 2113–2136.
- Baldocchi, D., and P. Harley, 1995: Scaling carbon dioxide and water vapour exchange from leaf to canopy in a deciduous forest. I. Leaf model parameterization. *Plant, Cell, Environment*, 18, 1146–1156.
- Bard, E., B. Hamelin, and R.G. Fairbanks, 1990: U-Th ages obtained by mass spectrometry in corals from Barbados: Sea level during the past 130,000 years. *Nature*, 346, 456–458.
- Barnett, T.P., et al., 2005: Penetration of human-induced warming into the world's oceans. *Science*, **309**, 284.
- Barnett, T., et al., 2004: The effects of climate change on water resources in the West: Introduction and overview. *Climatic Change*, 62, 1–11.
- Beckman, A., and R. Doscher, 1997: A method for improved representation of dense water spreading over topography in geopotential-coordinate models. *J. Physical Oceanography*, 27, 581–591.
- Bell, J.L., L.C. Sloan, and M.A. Snyder, 2004: Regional changes in extreme climatic events: A future climate scenario. *J. Climate*, 17(1), 81–87.
- Bellouin, N., et al., 2005: Global estimate of aerosol direct radiative forcing from satellite measurements. *Nature*, 438, 1138–1141.
- Bengtsson, L., K.I. Hodges, and M. Esch, 2007: Tropical cyclones in a T159 resolution global climate model: Comparison with observations and re-analyses. *Tellus A*, 59(4), 396–416, doi:10.1111/j.1600-0870.2007.00236.x.
- Beringer, J., et al., 2001: The representation of arctic soils in the land surface model: The importance of mosses. J. Climate, 14, 3324– 3335.
- Betts, A.K., and J.H. Ball, 1997: Albedo over the boreal forest. J. Geophysical Research–Atmosphere, 102, 28901–28909.
- Biasutti, M., and A. Giannini, 2006: Robust Sahel drying in response to late 20th Century forcings. *Geophysical Research Letters*, 33, L11706.
- Bierbaum, R.M., et al., 2003: Estimating Climate Sensitivity: Report of a Workshop. National Academy of Sciences, Washington, D.C. (books.nap.edu/catalog/10787.html).
- Bishop, J.K.B., R.E. Davis, and J.T. Sherman, 2002: Robotic observations of dust storm enhancement of carbon biomass in the North Pacific. *Science*, 298, 817–821.

- Bitz, C.M., and W.H. Lipscomb, 1999: An energy-conserving thermodynamic model of sea ice. *J. Geophysical Research*, **104**, 15669– 12677.
- Bjerknes, J., 1969: Atmospheric teleconnections from the equatorial Pacific. *Monthly Weather Review*, 97, 163–172.
- **Bleck**, R., 2002: An oceanic general circulation model framed in hybrid isopycnic-Cartesian coordinates. *Ocean Modelling*, **4**, 55–88.
- Bleck, R., et al., 1992: Salinity-driven thermocline transients in a windand thermohaline-forced isopycnic coordinate model of the North Atlantic. J. Physical Oceanography, 22(12), 1485–1505.
- Boer, G., J. Stowasser, and K. Hamilton, 2007: Inferring climate sensitivity from volcanic events. *Climate Dynamics*, 28(5), 481–502.
- Boisserie, M., et al., 2006: Evaluation of soil moisture in the Florida State University climate model: National Center for Atmospheric Research community land model (FSU-CLM) using two reanalyses (R2 and ERA40) and in situ observations. *J. Geophysical Research*, 111(D8), Art. No. D08103.
- Bonan, G. B., and S. Levis, 2006: Evaluating aspects of the community land and atmosphere models (CLM3 and CAM3) using a dynamic global vegetation model. J. *Climate*, **19**, 2290–2301.
- Bonan, G.B., 1995: Sensitivity of a GCM simulation to inclusion of inland water surfaces. *J. Climate*, **8**, 2691–2704.
- Bonan, G.B., D. Pollard, and S.L. Thompson, 1992: Effects of boreal forest vegetation on global climate. *Nature*, 359, 716–718.
- Bony, S., et al., 2006: How well do we understand and evaluate climate change feedback processes? *J. Climate*, **19**(15), 3445–3482.
- Bony, S., and J.-L. Dufresne, 2005: Marine boundary layer clouds at the heart of tropical cloud feedback uncertainties in climate models. *Geophysical Research Letters*, **32**, L20806.
- Bony, S., et al., 2004: On dynamic and thermodynamic components of cloud changes. *Climate Dynamics*, 22, 71–86.
- Bony, S., and K.A. Emanuel, 2001: A parameterization of the cloudiness associated with cumulus convection: Evaluation using TOGA COARE data. *J. Atmospheric Sciences*, **58**, 3158–3183.
- Boone, A., et al., 2000: The influence of the inclusion of soil freezing on simulations by a soil-vegetation-atmosphere transfer scheme. J. Applied Meteorology, 39, 1544–1569.
- **Boyle**, J.S., et al., 2008: Climate model forecast experiments for TOGA-COARE. *Monthly Weather Review*, in press.

- Boyle, J.S., 1993: Sensitivity of dynamical quantities to horizontal resolution for a climate simulation using the ECMWF (cycle 33) model. *J. Climate*, 6, 796–815.
- **Bougeault**, P., et al., 2001: The MAP special observing period. *Bulletin American Meteorological Society*, **82**(3), 433–462.
- Braconnot, P., et al., 2007a: Results of PMIP2 coupled simulations of the mid-Holocene and Last Glacial Maximum. Part 1: Experiments and large-scale features. *Climate Past*, 3(2), 261–277.
- Braconnot, P., et al., 2007b: Results of PMIP2 coupled simulations of the Mid-Holocene and Last Glacial Maximum. Part 2: Feedbacks with emphasis on the location of the ITCZ and mid- and high-latitudes heat budget. *Climate Past* 3(2), 279–296.
- Braithwaite, R.J., and S.C.B. Raper, 2002: Glaciers and their contribution to sea level change. *Physics Chemistry Earth*, 27, 1445–1454.
- Brankovic, T., and D. Gregory, 2001: Impact of horizontal resolution on seasonal integrations. *Climate Dynamics*, 18, 123–143.
- Breugen, W.-P., W. Hazeleger, and R.J. Haarsma, 2006: Multi-model study of tropical Atlantic variability and change. *Geophysical Re*search Letters, 33, L23706.
- Briegleb, B.P., et al., 2002: Description of the Community Climate System Model Version 2 Sea Ice Model, 60 pp. (www.ccsm.ucar.edu/models/ccsm2.0/csim/).
- Brinkop, S., and E. Roeckner, 1995: Sensitivity of a general circulation model to parameterizations of cloud-turbulence interactions in the atmospheric boundary layer. *Tellus*, **47A**, 197–220.
- Brown, T.J., B.L. Hall, and A.L. Westerling, 2004: The impact of Twenty-First Century climate change on wildland fire danger in the western United States: An applications perspective. *Climatic Change*, 62, 365–388.
- Bryan, F.O., et al., 2006: Changes in ocean ventilation during the 21st Century in the CCSM3. Ocean Modelling, 15, 141–156.
- Bryan, K., 1969a: A numerical method for the study of the circulation of the world ocean. *J. Computational Physics*, **4**, 347–376.
- Bryan, K., 1969b: Climate and the ocean circulation. III: The ocean model. *Monthly Weather Review*, 97, 806–824.
- Bryan, K., and M.D. Cox, 1967: A numerical investigation of the oceanic general circulation. *Tellus*, **19**, 54–80.

- Bryden, H.L., and S. Imawaki, 2001: Ocean heat transport, 455–474 in Siedler, G., J. Church, and J. Gould, eds. *Ocean Circulation and Climate: Observing and Modelling the Global Ocean*, Academic Press, San Diego, p.109.
- Burke, E.J., S.J. Brown, and N. Christidis, 2006: Modeling the recent evolution of global drought and projections for the 21st Century with the Hadley Centre climate model. *J. Hydrometeorology*, 7, 1113–1125.
- Byerle, L.A., and J. Paegle, 2003: Modulation of the Great Plains lowlevel jet and moisture transports by orography and large-scale circulations. *J. Geophysical Research*, **108**(D16), Art. No. 8611.
- Cai, W.J., P. Whetton, and D.J. Karoly, 2003: The response of the Antarctic Oscillation to increasing and stabilized atmospheric CO₂. J. Climate, 16, 1525–1538.
- California Energy Commission (CEC), 2006: Our Changing Climate: Assessing the Risks to California, A Summary Report from the California Climate Change Center, 16 pp. (www.climatechange.ca.gov/ biennial_reports/2006report/index.html).
- Callaghan, T.V., et al., 2004: Responses to projected changes in climate and UV-B at the species level. *Ambio*, 33, 418–435.
- Cameron, D., 2006: An application of the UKCIP02 climate change scenarios to flood estimation by continuous simulation for a gauged catchment in the northeast of Scotland, U.K. (with uncertainty). J. Hydrology, 328, 212–226.
- Camp, C.D., and K.K. Tung, 2007: Surface warming by the solar cycle as revealed by the composite mean difference projection. *Geophysical Research Letters*, 34, L14703, doi:10.1029/2007GL030207.
- Cane, M.A., et al., 1997: Twentieth Century sea surface temperature trends. *Science*, 275, 957–960.
- Capotondi, A., A. Wittenberg, and S. Masina, 2006: Spatial and temporal structure of ENSO in 20th Century coupled simulations. *Ocean Modelling*, 15, 274–298.
- Carril, A.F., C.G. Menéndez, and A. Navarra, 2005: Climate response associated with the Southern Annular Mode in the surroundings of Antarctic Peninsula: A multimodel ensemble analysis. *Geophysical Research Letters*, 32, L16713.
- Cassano, J.J., et al., 2007: Predicted changes in synoptic forcing of net precipitation in large Arctic river basins during the 21st Century. J. Geophysical Research, **112**, G04S49, doi:10.1029/2006JG000332.
- Cassano, J.J., P. Uotilla, and A.H. Lynch, 2006: Changes in synoptic weather patterns in the polar regions in the 20th and 21st centuries. Part 1: Arctic. *International J. Climatology*, **26**(9), 1181–1199.

- Cayan, D., et al., 2006: *Climate Scenarios from California: A Report from California Climate Change Center*, White Paper, 52 pp. (www.energy.ca.gov/2005publications/CEC-500-2005-203/CEC-500-2005-203.SEPDF).
- Cazenave, A., and R.S. Nerem, 2004: Present-day sea level change: Observations and causes. *Reviews Geophysics*, 42(3), RG3001.
- CCSP, 2007: The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle, ed. A.W. King, et al. Synthesis and Assessment Product 2.2, U.S. Climate Change Science Program and Subcommittee on Global Change Research, Washington, D.C. (www.climatescience.gov/Library/sap/sap2-2/final-report/default.htm).
- CCSP, 2006: Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences, ed. T.R. Karl et al. Synthesis and Assessment Product 1.1, U.S. Climate Change Science Program and Subcommittee on Global Change Research, Washington, D.C. (www.climatescience.gov/Library/sap/sap1-1/finalreport/default.htm).
- Cess, R.D., et al., 1990: Intercomparison and interpretation of climate feedback processes in 19 atmospheric general circulation models. J. Geophysical Research, 95(D10), 16601–16615.
- Cess, R.D., and G.L. Potter, 1988: Exploratory studies of cloud radiative forcing with a general circulation model. *Tellus*, **39A**, 460–473.
- Charney, J.G., 1979: Carbon Dioxide and Climate: A Scientific Assessment. National Academy of Sciences, Washington, D.C., 22 pp.
- Chen, F., and J. Dudhia, 2001: Coupling an advanced land surface–hydrology model with the Penn State–NCAR MM5 modeling system. Part I: Model implementation and sensitivity. *Monthly Weather Review*, **129**, 569–585.
- Cheng, A., and K.-M. Xu, 2006: Simulation of shallow cumuli and their transition to deep convective clouds by cloud-resolving models with different third-order turbulence closures. *Quarterly J. Royal Mete*orological Society, **132**, 359–382.
- Cheng, Y., V.M. Canuto, and A.M. Howard, 2002: An improved model for the turbulent BBL. J. Atmospheric Sciences, 59, 1550–1565.
- Chiacchio, M., J. Francis, and P. Stackhouse, Jr., 2002: Evaluation of methods to estimate the surface downwelling longwave flux during Arctic winter. J. Applied Meteorology, 41, 306–318.
- Choi, H.I., P. Kumar, and X.-Z. Liang, 2007: Three-dimensional averaged soil-moisture transport model with a scalable parameterization of subgrid topographic variability. *Water Resources Research*, 43, WO4414.

- Christensen, J.H., et al., 2007: Regional Climate Projections in Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental panel on Climate Change, ed. S. Solomon et al. Cambridge University Press, Cambridge, U.K., and New York, N.Y.
- Christensen, J.H., T. Carter, and F. Giorgi, 2002: PRUDENCE employs new methods to assess European climate change. *Eos*, **83**, 147.
- Christensen, N.S., et al., 2004: The effects of climate change on the hydrology and water resources of the Colorado River basin. *Climatic Change*, **62**, 337–363.
- Christensen, O.B., 1999: Relaxation of soil variables in a regional climate model. *Tellus*, **51A**, 674–685.
- Christidis, N., et al., 2005: Detection of changes in temperature extremes during the second half of the 20th Century. *Geophysical Research Letters*, **32**, L20716.
- Christy, J.R., et al., 2007: Tropospheric temperature change since 1979 from tropical radiosonde and satellite measurements. J. Geophysical Research, 112, D06102, doi:10.1029/2005JD006881.
- Christy, J. R., and R. W. Spencer, 2005: Correcting temperature data sets. *Science*, **310**, 972.
- Chung, C.E., et al., 2005: Global anthropogenic aerosol direct forcing derived from satellite and ground-based observations. *J. Geophysical Research*, **110**, D24207.
- Church, J.A., and N.J. White, 2006: A 20th Century acceleration in global sea-level rise. *Geophysical Research Letters*, **33**, L01602.
- Church, J.A., N.J. White, and M. Arblaster, 2005: Significant decadalscale impact of volcanic eruptions on sea level and ocean heat content. *Nature*, 438(7064), 74–77, doi:10.1038/nature04237.
- **Claussen**, M., et al., 2002: Earth system models of intermediate complexity: Closing the gap in the spectrum of climate system models. *Climate Dynamics*, **18**, 579–586.
- Clement, A.C., and B. Soden, 2005: The sensitivity of the tropical-mean radiation budget. *J. Climate*, **18**, 3189–3203.
- Clement, A.C., et al., 1996: An ocean dynamical thermostat. J. Climate, 9, 2190–2196.
- Clough, S.A., M.J. Iacono, and J.-L. Moncet, 1992: Line-by-line calculations of atmospheric fluxes and cooling rates: Application to water vapor. J. Geophysical Research, 97, 15761–15785.

- **Collins**, M., et al., 2006: Towards quantifying uncertainty in transient climate change. *Climate Dynamics*, **27**(2–3), 127–147.
- Collins, W.D., et al., 2006(a): The Community Climate System Model Version 3: CCSM3. *J. Climate*, **19**(11), 2122–2143.
- Collins, W.D., et al., 2006(b): Radiative forcing by well-mixed greenhouse gases: Estimates from climate models in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4). J. Geophysical Research, 111, D14317.
- Collins, W.D., et al., 2004: Description of the NCAR Community Atmospheric Model (CAM3). NCAR Technical Note, National Center for Atmospheric Research, NCAR/TN-464+STR, 226 pp.
- Colman, R., 2003: A comparison: Climate feedbacks in general circulation models. *Climate Dynamics*, 20, 865–873.
- Cook, K.H., and E.K. Vizy, 2006: Coupled model simulations of the West African monsoon system: 20th Century simulations and 21st Century predictions. *J. Climate*, **19**, 3681–3703.
- **Coppola**, E., and F. Giorgi, 2005: Climate change in tropical regions from high-resolution time-slice AGCM experiments. *Quarterly J. Royal Meteorological Society*, **131**, 3123–3145.
- Cotton, W.R., 2003: Cloud modeling from days of EML to the present— Have we made progress? 95–106 in AMS Meteorological Monographs—Symposium on Cloud Systems, Hurricanes, and TRMM.
- **Covey**, C., et al., 2003: An overview of results from the Coupled Model Intercomparison Project, *Global Planetary Change*, **37**(1–2), 103– 133.
- Covey, C., et al., 2000: The seasonal cycle in coupled ocean-atmosphere general circulation models. *Climate Dynamics*, 16, 775–787.
- Covey, C., L.C. Sloan, and M.I. Hoffert, 1996: Paleoclimate data constraints on climate sensitivity: The paleocalibration method. *Climatic Change*, **32**, 165–184.
- Cox, P.M., et al., 2000: Acceleration of global warming due to carboncycle feedbacks in a coupled model. *Nature*, 408, 184–187.
- Cramer, W., et al., 2001: Global response of terrestrial ecosystem and function to CO₂ and climate change: Results from six dynamic global vegetation models. *Global Change Biology*, 7, 357–373.
- Crane, R.G., and B.C. Hewitson, 1998: Doubled CO₂ precipitation changes for the Susquehanna basin: Down-scaling from the GENE-SIS general circulation model. *International J. Climatology*, 18, 65– 76.

- Crucifix, M., 2006: Does the last glacial maximum constrain climate sensitivity? *Geophysical Research Letters*, 33, L18701, doi:10.1029/2006GL027137.
- Crucifix, M., et al., 2006: Second phase of Paleoclimate Modelling Intercomparison Project. EOS, *Transactions American Geophysical* Union, 86(28), 264.
- Cubasch, U., et al., 2001: Projections of future climate change, 525–582 in *Climate Change 2001: The Scientific Basis*, ed. J.T. Houghton, et al. Cambridge University Press, Cambridge, U.K.
- Cunningham, S.A., et al., 2003: Transport and variability of the Antarctic Circumpolar Current in Drake Passage. J. Geophysical Research, 108, doi:10.1029/2001JC001147.
- Curry, J.A., and A.H. Lynch, 2002: Comparing Arctic regional climate models. *Eos*, 83, 87.
- Curry, J.A., et al., 1996: Overview of Arctic cloud and radiation characteristics. J. Climate, 9, 1731–1764.
- Curry, J.A., J. Schramm, and E.E. Ebert, 1995: Sea ice-albedo climate feedback mechanism. J. Climate, 8, 240–247.
- Cusack, S., J.M. Edwards, and R. Kershaw, 1999: Estimating subgrid variance of saturation and its parameterization for use in a GCM cloud scheme. *Quarterly J. Royal Meteorological Society*, **125**, 3057–3076.
- Dai, A., 2006: Precipitation characteristics in eighteen coupled climate models. J. Climate, 19, 4605–4630.
- Dai, A., et al., 2004: The ACPI climate change simulations. *Climatic Change*, 62, 29–43.
- Danabasoglu, G., et al., 2006: Diurnal coupling in the tropical oceans of CCSM3. J. Climate, 19, 2347–2365, doi:10.1175/JCLI3739.1.
- Davies, H.C., and R.E. Turner, 1977: Updating prediction models by dynamical relaxation: An examination of the technique. *International J. Climatology*, **103**, 225–245.
- Davies, H.C., 1976: Lateral boundary formulation for multilevel prediction models. *Quarterly J. Royal Meteorological Society*, 102, 405– 418.
- DeCaria, A.J., et al., 2005: Lightning-generated NOx and its impact on tropospheric ozone production: A three-dimensional modeling study of a stratosphere–troposphere experiment: Radiation, aerosols, and ozone (STERAO-A) thunderstorm. J. Geophysical Research, 110, D14303, doi:10.1029/2004JD00556.

- Del Genio, A.D., et al., 2005: Cumulus microphysics and climate sensitivity. J. Climate, 18, 2376–2387, doi:10.1175/JCLI3413.1.
- Del Genio, A.D., A. Wolf, and M.-S. Yao, 2005: Evaluation of regional cloud feedbacks using single-column models. *J. Geophysical Research*, **110**, D15S13, doi:10.1029/2004JD005011.
- **Del Genio**, A.D., et al., 1996: A prognostic cloud water parameterization for global climate models. *J. Climate*, **9**, 270–304.
- Del Genio, A.D., and M.-S. Yao, 1993: Efficient cumulus parameterization for long-term climate studies: The GISS scheme. *The Representation of Cumulus Convection in Numeric Models*. *Meteorological Monograph*, No. 46, American Meteorological Society, 181–184.
- Delworth, T.L., et al., 2006: GFDL's CM2 global coupled climate models. Part 1: Formulation and simulation characteristics. *J. Climate*, 19, 643–674.
- Denis, B., R. Laprise, and D. Caya, 2003: Sensitivity of a regional climate model to the resolution of the lateral boundary conditions. *Climate Dynamics*, 20, 107–126.
- Denis, B., et al., 2002: Downscaling ability of one-way, nested regional climate models: The big-brother experiments. *Climate Dynamics*, 18, 627–646.
- Déqué, M., et al., 2005: Global high resolution versus Limited Area Model climate change projections over Europe: Quantifying confidence level from PRUDENCE results. *Climate Dynamics*, 25, 653– 670.
- Déqué, M., and J.P. Piedelievre, 1995: High-resolution climate simulation over Europe. *Climate Dynamics*, 11, 321–339.
- **Dethloff**, K., et al., 2006: A dynamical link between the Arctic and the global climate system. *Geophysical Research Letters*, **33**, L03703, doi:10.1029/2005GL025245.
- Dettinger, M.D., et al., 2004: Simulated hydrologic responses to climate variations and change in the Merced, Carson, and American River basins, Sierra Nevada, California, 1900–2099. *Climatic Change*, 62, 283–317.
- **Dibike**, Y.B., and P. Coulibaly, 2005: Hydrologic impact of climate change in the Saguenay watershed: Comparison of downscaling methods and hydrologic models. *J. Hydrology*, **307**, 145–163.

- Dickinson, R.E., A. Henderson-Sellers, and P.J. Kennedy, 1993: Biosphere-Atmosphere Transfer Scheme (BATS) version 1e as coupled to the NCAR Community Climate Model. *NCAR Technical Note*, NCAR/TN-387+STR, National Center for Atmospheric Research, Boulder, Colo., 72 pp. [Available from NCAR; P.O. Box 3000; Boulder, CO 80305]
- Diffenbaugh, N.S., M.A. Snyder, and L.C. Sloan, 2004: Could CO₂-induced land-cover feedbacks alter near-shore upwelling regimes? *Proceedings National Academy Sciences*, **101**, 27–32.
- **Dimitrijevic**, M., and R. Laprise, 2005: Validation of the nesting technique in a regional climate model and sensitivity tests to the resolution of the lateral boundary conditions during summer. *Climate Dynamics*, **25**, 555–580.
- Dimotakis, P.E., 2005: Turbulent mixing. Annual Review Fluid Mechanics, **37**, 329–356.
- Doney, S.C., et al., 2004: Ocean Carbon and Climate Change (OCCC): An Implementation Strategy for U.S. Ocean Carbon Cycle Science. University Corporation for Atmospheric Research, Boulder, Colo., 108 pp.
- Douglass, D.H., and R.S. Knox, 2005: Climate forcing by the volcanic eruption of Mount Pinatubo. *Geophysical Research Letters*, 32, L05710, doi:10.1029/2004GL022119.
- **Ducharne**, A., et al., 2003: Development of a high resolution runoff routing model, calibration, and application to assess runoff from the LMD GCM. *J. Hydrology*, **280**, 207–228.
- **Duffy**, P.B., et al., 2003: High-resolution simulations of global climate. Part 1: Present climate. *Climate Dynamics*, **21**, 371–390.
- Dutay, J.-C., et al., 2002: Evaluation of ocean model ventilation with CFC-11: Comparison of 13 global ocean models. *Ocean Modelling*, 4, 89–120.
- **Duynkerke**, P.G., and S.R. de Roode, 2001: Surface energy balance and turbulence characteristics observed at the SHEBA ice camp during FIRE III. *J. Geophysical Research*, **106**, 15313–15322.
- Easterling, D.R., 2002: Recent changes in frost days and the frost-free season in the United States. *Bulletin American Meteorological Society*, **83**, 1327–1332.
- Ebert, E.E., J.L. Schramm, and J.A. Curry, 1995: Disposition of solar radiation in sea ice and the upper ocean. *J. Geophysical Research*, 100, 15965–15975.
- Ebert, E.E., and J.A. Curry, 1993: An intermediate one-dimensional thermodynamic sea ice model for investigating ice-atmosphere interactions. J. Geophysical Research, 98, 10085–10109.

- Ellingson, R., and Y. Fouquart, 1991: The intercomparison of radiation codes in climate models: An overview. J. Geophysical Research, 96(D5), 8925–8927.
- Emanuel, K.A., 1994: Atmospheric Convection. Oxford University Press, Oxford, U.K., 580 pp.
- Emanuel, K.A., 1991: A scheme for representing cumulus convection in large-scale models. J. Atmospheric Sciences, 48, 2313–2335.
- Emori, S., and S.J. Brown, 2005: Dynamic and thermodynamic changes in mean and extreme precipitation under changed climate. *Geophysical Research Letters*, **32**, L17706.
- Emori, S., et al., 2005: Validation, parameterization dependence, and future projection of daily precipitation simulated with a high-resolution atmospheric GCM. *Geophysical Research Letters*, **32**(6), L06708.
- Enfield, D.B., A.M. Mestas-Nuñez, and P.J. Trimble, 2001: The Atlantic Multidecadal Oscillation and its relationship to rainfall and river flows in the continental U.S., *Geophysical Research Letters*, 28, 2077–2080.
- Essery, R., and J. Pomeroy, 2004: Implications of spatial distributions of snow mass and melt rate for snow-cover depletion: Theoretical considerations. *Annals Glaciology*, 38, 261–265.
- Fedorov, A., and S.G. Philander, 2000: Is El Niño changing? *Science*, 288, 1997–2002.
- Field, C., R. Jackson, and H. Mooney, 1995: Stomatal responses to increased CO₂: Implications from the plant to the global scale. *Plant, Cell, Environment*, 18, 1214–1225.
- Forest, C.E., P.H. Stone, and A.P. Sokolov, 2006: Estimated PDFs of climate system properties including natural and anthropogenic forcings. *Geophysical Research Letters*, 33, L01705, doi:10.1029/2005GL023977.
- Forster, P., et al., 2007: Changes in Atmospheric Constituents and in Radiative Forcing. In *Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment of the Intergovernmental Panel on Climate Change*, ed. S. Solomon et al. Cambridge University Press, Cambridge, U.K., and New York, N.Y.
- Foukal, P., et al., 2006: Variations in solar luminosity and their effect on the Earth's climate. *Nature*, **443**, 161–166.
- Fox-Rabinovitz, M.S., et al., 2006: Variable resolution general circulation models: Stretched-grid model intercomparison project (SGMIP). J. Geophysical Research, 111(D16), Art. No. D16104.

- Fox-Rabinovitz, M.S., L.L. Takacs, and R.C. Govindaraju, 2002: A variable-resolution stretched-grid general circulation model and data assimilation system with multiple areas of interest: Studying the anomalous regional climate events of 1998. J. Geophysical Research, 107(D24), Art. No. 4768.
- Fox-Rabinovitz, M.S., et al., 2001: A variable-resolution stretched-grid general circulation model: Regional climate simulation. *Monthly Weather Review*, **129**, 453–469.
- Fox-Rabinovitz, M.S., and R.S. Lindzen, 1993: Numerical experiments on consistent horizontal and vertical resolution for atmospheric models and observing systems. *Monthly Weather Review*, **121**, 264–271.
- Frame, D.J., et al., 2005: Constraining climate forecasts: The role of prior assumptions. *Geophysical Research Letters*, **32**, L09702, doi:10.1029/2004GL022241.
- Frei, C., et al., 2006: Future change of precipitation extremes in Europe: An intercomparison of scenarios from regional climate models. J. Geophysical Research, 111(D6), Art. No. D06105.
- Frich, P., et al., 2002: Observed coherent changes in climatic extremes during the second half of the Twentieth Century. *Climate Research*, 19, 193–212.
- Fridlind, A.M., et al., 2004: Evidence for the predominance of mid-tropospheric aerosols as subtropical anvil cloud nuclei. *Science*, 304(5671), 718–722.
- Friedlingstein, P., et al., 2006: Climate-carbon cycle feedback analysis: Results from the C4MIP model intercomparison. J. Climate, 19, 3337–3353.
- Friedlingstein, P., et al., 2001: Positive feedback between future climate change and the carbon cycle. *Geophysical Research Letters*, 28(8), 1543–1546.
- Fröhlich, C., 2006: Solar irradiance variability since 1978. Space Science Reviews, 125, 53–65, doi:10.1007/s11214-006-9046-5.
- Fu, C.B., et al., 2005: Regional climate model intercomparison project for Asia. *Bulletin American Meteorological Society*, 86, 257–266.
- Fyfe, J.C., G.J. Boer, and G.M. Flato, 1999: The Arctic and Antarctic oscillations and their projected changes under global warming. *Geophysical Research Letters*, **11**, 1601–1604.
- Ganachaud, A., and C. Wunsch, 2000: Improved estimates of global ocean circulation, heat transport and mixing from hydrographic data. *Nature*, 408, 453–457.

- Gao, S., L. Ran, and X. Li, 2006: Impacts of ice microphysics on rainfall and thermodynamic processes in the tropical deep convective regime: A 2D cloud-resolving modeling study. *Monthly Weather Review*, **134**(10), 3015–3024.
- GARP, 1975: The Physical Basis of Climate Modeling, Global Atmospheric Research Program (GARP), Publication Series #16, April 1975.
- Gates, W.L., et al., 1999: An Overview of the Atmospheric Model Intercomparison Project (AMIP). *Bulletin American Meteorological Society*, **80**(1), 29–55, doi:10.1175/1520-0477(1999)080<0029: AOOTRO.2.0.CO;2.
- Gates, W.L., 1992: AMIP: The Atmospheric Model Intercomparison Project. Bulletin American Meteorological Society, 73, 1962–1970.
- Gent, P.R., et al., 2006: Ocean chlorofluorocarbon and heat uptake during the 20th Century in the CCSM3. *J. Climate*, **19**, 2366–2381.
- Gent, P., and J.C. McWilliams, 1990: Isopycnal mixing in ocean circulation models. J. Physical Oceanography, 20, 150–155.
- GFDL Global Atmospheric Model Development Team (GAMDT), 2004: The new GFDL global atmosphere and land model AM2/LM2: Evaluation with prescribed SST conditions. J. Climate, 17(24), 4641–4673.
- Ghan, S. J., et al., 2000: An intercomparison of single column model simulations of summertime midlatitude continental convection. J. Geophysical Research, 105, 2091–2124.
- Gillett, N.P., and D.W.J. Thompson, 2003: Simulation of recent Southern Hemisphere climate change. *Science*, **302**, 273–275, doi:10.1126/science.1087440.
- Giorgi, F., and L.O. Mearns, 2003: Probability of regional climate change based on the reliability ensemble averaging (REA) method. *Geophysical Research Letters*, **30**, Art. No. 1629.
- Giorgi, F., et al., 2001: Regional climate change information—Evaluation and projections. Chapter 10, 583–638, in *Climate Change 2001: The Scientific Basis*, ed. J.T. Houghton, et al. Cambridge University Press, Cambridge, U.K.
- Giorgi, F., and X. Bi, 2000: A study of internal variability of a regional climate model. J. Geophysical Research, 105, 29503–29521.
- Giorgi, F., and L.O. Mearns, 1999: Introduction to special section: Regional climate modeling revisited. *J. Geophysical Research*, 104(D6), 6335–6352.

- **Giorgi**, F, et al., 1996: A regional model study of the importance of local versus remote controls of the 1988 drought and the 1993 flood over the central United States. *J. Climate*, **9**, 1150–1162.
- Giorgi, F., M.R. Marinucci, and G.T. Bates, 1993: Development of a second-generation regional climate model (RegCM2). Part II: Convective processes and assimilation of lateral boundary conditions. *Monthly Weather Review*, **121**, 2814–2832.
- Giorgi, F., and L.O. Mearns, 1991: Approaches to the simulation of regional climate change—A review. *Reviews Geophysics*, 29, 191– 216.
- Gleckler, P.J., K.E. Taylor, and C. Doutriaux, 2008: Performance metrics for climate models, *J. Geophysical Research*, **113**, D06104, doi:10.1029/2007JD008972.
- Gleckler, P.J., K.R. Sperber, and K. AchutaRao, 2006: Annual cycle of global ocean heat content: Observed and simulated. J. Geophysical Research, 111, C06008.
- Gnanadesikan, A., et al., 2006: GFDL's CM2 global coupled climate models. Part II: The baseline ocean simulation. J. Climate, 19, 675– 697.
- Gorham, E., 1991: Northern peatlands: Role in the carbon cycle and probable responses to climatic warming. *Ecological Applications*, 1, 182–195.
- **Govindasamy**, B., et al., 2005: Increase of carbon cycle feedback with climate sensitivity: Results from a coupled climate and carbon cycle model. *Tellus*, **57B**, 153–163.
- **Grabowski**, W.W., 2003: MJO-like coherent structures: Sensitivity simulations using the cloud-resolving convection parameterization (CRCP). *J. Atmospheric Sciences*, **60**, 847–864.
- Grabowski, W.W., and M.W. Moncrieff, 2001: Large-scale organization of tropical convection in two-dimensional explicit numerical simulations. *International J. Climatology*, **127**, 445–468.
- Gregory, J.M., J.A. Lowe, and S.F.B. Tett, 2006: Simulated global-mean sea level changes over the last half-millennium. *J. Climate*, **19**, 4576–4592.
- **Gregory**, J.M., et al., 2004: Simulated and observed decadal variability in ocean heat content. *Geophysical Research Letters*, **31**(15), L15312.
- Gregory, J.M., 1999: Representation of the radiative effect of convective anvils. *Hadley Centre Technical Note* 7, Hadley Centre for Climate Prediction and Research, Met Office, Fitzroy Road, Exeter, EX1 3BP, U.K.

- Gregory, J.M., and J.F.B. Mitchell, 1997: The climate response to CO₂ of the Hadley Centre coupled AOGCM with and without flux adjustment. *Geophysical Research Letters*, 24, 1943–1946.
- Gregory, D., and S. Allen, 1991: The Effect of Convective Scale Downdrafts upon NWP and Climate Simulations, 122-123 in *Ninth Conference on Numerical Weather Prediction*. American Meteorological Society, Denver, Colo.
- Gregory, D., and P.R. Rowntree, 1990: A mass flux convection scheme with representation of cloud ensemble characteristics and stability dependent closure. *Monthly Weather Review*, **118**, 1483–1506.
- Grell, G.A., et al., 2000a: Application of a multiscale, coupled MM5/chemistry model to the complex terrain of the VOTALP valley campaign. *Atmospheric Environment*, 34, 1435–1453.
- Grell, G.A., et al., 2000b: Nonhydrostatic climate simulations of precipitation over complex terrain. J. Geophysical Research–Atmospheres, 105 (D24), 29595–29608.
- Grell, G.A., H. Dudhia, and D. S. Stanfler, 1994: A description of the fifth generation Penn State–NCAR Mesoscale Model (MM5). *NCAR Technical Note*. NCAR/TN-3981STR, National Center for Atmospheric Research, Boulder, Colo., 122 pp. [Available from NCAR; PO. Box 3000; Boulder, CO 80305]
- Grell, G.A., 1993: Prognostic evaluation of assumptions used by cumulus parameterizations. *Monthly Weather Review*, 121, 764–787.
- Griffies, S.M., et al., 2005: Formulation of an ocean model for global climate simulations. *Ocean Science*, 1, 45–79.
- Griffies, S.M., et al., 2001: Tracer conservation with an explicit free surface method for z-coordinate ocean models. *Monthly Weather Review*, **129**, 1081–1098.
- Griffies, S.M., 1998: The Gent-McWilliams skew-flux. J. Physical Oceanography, 28, 831–841.
- Gritsun, A., and G. Branstator, 2007: Climate response using a threedimensional operator based on the fluctuation–dissipation theorem. *J. Atmospheric Sciences*, 64(7), 2558–2575
- Gu, L., et al., 1999: Micrometeorology, biophysical exchanges, and NEE decomposition in a two-storey boreal forest—Development and test of an integrated model. *Agricultural Forest Meteorology*, 94, 123– 148.
- Guilyardi, E., 2006: El Niño-mean state-seasonal cycle interactions in a multi-model ensemble. *Climate Dynamics*, 26, 329–348.

- Guo, Z., D.H. Bromwich, and J.J. Cassano, 2003: Evaluation of polar MM5 simulations of Antarctic atmospheric circulation. *Monthly Weather Review*, **131**, 384–411.
- Gutowski, W.J., et al., 2007a: A possible constraint on regional precipitation intensity changes under global warming. J. Hydrometeorology, 8, 1382–1396, doi: 10.1175/2007JHM817.1.
- Gutowski, W.J., et al., 2007b: Influence of Arctic wetlands on Arctic atmospheric circulation. J. Climate, 20, 4243–4254, doi:10.1175/ JCL14243.1.
- Gutowski, W.J., et al., 2003: Temporal-spatial scales of observed and simulated precipitation in central U.S. climate. J. Climate, 16, 3841–3847.
- Gutowski, W.J., et al., 2002: A Coupled Land–Atmosphere Simulation Program (CLASP). J. Geophysical Research, 107(D16), 4283, doi:1029/2001JD000392.
- Gutowski, W.J., Z. Ötles, and Y. Chen, 1998: Effect of ocean-surface heterogeneity on climate simulation. *Monthly Weather Review*, **126**, 1419–1429.
- Hack, J.J., 1994: Parameterization of moist convection in the National Center for Atmospheric Research Community Climate Model (CCM2). J. Geophysical Research, 99, 5551–5568.
- Hagemann, S., and L. Dümenil, 1998: A parameterization of the lateral water flow for the global scale. *Climate Dynamics*, 14, 17–31.
- Hall, A., 2004: The role of surface albedo feedback in climate. J. Climate, 17, 1550–1568.
- Hallberg, R., and A. Gnanadesikan, 2006: The role of eddies in determining the structure and response of the wind-driven Southern Hemisphere overturning: Results from the Modeling Eddies in the Southern Ocean (MESO) project. J. Physical Oceanography, 36, 2232–2252.
- Haltiner, G.J., and R.T. Williams, 1980: Numerical Prediction and Dynamic Meteorology, Second Edition, John Wiley & Sons, New York, 477 pp.
- Han, J., and J.O. Roads, 2004: U.S. climate sensitivity simulated with the NCEP regional spectral model. *Climate Change*, 62, 115–154.
- Hansen, J., et al., 2007: Climate simulations for 1880–2003 with GISS modelE. *Climate Dynamics*, 29(7-8), 661–696 (arxiv.org/ abs/physics/0610109).
- Hansen, J., et al., 2006: Global temperature change. *Proceedings National Academy Sciences*, 103, 14288–14293, doi:10.1073/pnas.0606291103.

- Hansen, J., et al., 2005a: Earth's energy imbalance: Confirmation and implications. *Science*, **308**, 1431–1435.
- Hansen, J., et al., 2005b: Efficacy climate forcings. J. Geophysical Research, 110, D18104, doi:10.1029/2005JD005776.
- Hansen, J., et al., 1996: Global surface air temperature in 1995: Return to pre-Pinatubo level. *Geophysical Research Letters*, 23, 1665–1668, doi:10.1029/96GL01040.
- Hansen, J., et al., 1993: How sensitive is the world's climate? National Geographic Research Exploration, 9, 42–158.
- Hansen, J., et al., 1985: Climate response times: Dependence on climate sensitivity and ocean mixing. *Science*, 229, 857–859.
- Hansen, J., et al., 1984: Climate Sensitivity: Analysis of Feedback Mechanisms, 130–163 in *Climate Processes and Climate Sensitivity*. Maurice Ewing Series, 5, ed. J.E. Hansen and T. Takahashi. American Geophysical Union, Washington, D.C.
- Hansen, J., et al., 1981: Climate impact of increasing atmospheric carbon dioxide. *Science*, 213, 957–966.
- Harries, J.E., et al., 2001: Increases in greenhouse forcing inferred from the outgoing longwave radiation spectra of the Earth in 1970 and 1997. *Nature*, **410**, 355–357.
- Hartmann, D.L., and K. Larson, 2002: An important constraint on tropical cloud–climate feedback. *Geophysical Research Letters*, 29, 1951, doi:10.1029/2002GL015835.
- Hartmann, D.L., and M.L. Michelsen, 2002: No evidence for iris. Bulletin American Meteorological Society, 83(2), 249–254.
- Hay, L.E., et al., 2006: One-way coupling of an atmospheric and a hydrologic model in Colorado. J. Hydrometeorology, 7, 569–589.
- Hayhoe, K., et al., 2004: Emissions pathways, climate change, and impacts on California. *Proceedings National Academy Sciences* 101(34), 12422–12427.
- Haylock, M.R., et al., 2006: Downscaling heavy precipitation over the U.K.: A comparison of dynamical and statistical methods and their future scenarios. *International J. Climatology*, 26, 1397–1415.
- Hegerl, G., et al. 2007: Understanding and attributing climate change. In Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, U.K., and New York, N.Y.

- Hegerl, G.C., et al., 2006: Climate sensitivity constrained by temperature reconstructions over the past seven centuries. *Nature*, **440**, 1029–1032.
- Hegerl, G.C., et al., 2004: Detectability of anthropogenic changes in annual temperature and precipitation extremes. *J. Climate*, **17**(19), 3683–3700.
- Held, I.M., and B.J. Soden, 2006: Robust responses of the hydrological cycle to global warming. J. Climate, 19, 5686–5699.
- Held, I.M., et al., 2005: Simulation of Sahel drought in the 20th and 21st centuries. *Proceedings National Academy Sciences*, 102, 17891–17896.
- Held, I.M., and B.J. Soden, 2000: Water vapor feedback and global warming. *Annual Review of Energy Environment*, 25, 441–475.
- Held, I., and M.J. Suarez, 1994: A proposal for the intercomparison of the dynamical cores of atmospheric general circulation models. *Bulletin American Meteorological Society*, **75**(10), 1825–1830.
- Held, I.M., R.S. Hemler, and V. Ramaswamy, 1993: Radiative-convective equilibrium with explicit two-dimensional moist convection. J. Atmospheric Sciences, 50, 3909–3927.
- Held, I.M., S.W. Lyons, and S. Nigam, 1989: Transients and the extratropical response to El Niño. *J. Atmospheric Sciences*, **46**(1), 163–174.
- Helfand, H.M., and J.C. Labraga, 1988: Design of a non-singular level 2.5 second order closure model for the prediction of atmospheric turbulence. J. Atmospheric Sciences, 45, 113–132.
- Hellstrom, C., et al., 2001: Comparison climate change scenarios for Sweden based on statistical and dynamical downscaling of monthly precipitation. *Climate Research*, **19**, 45–55.
- Henderson-Sellers, A., 2006: Improving land-surface parameterization schemes using stable water isotopes: Introducing the "iPILPS" initiative. *Global Planetary Change*, **51**, 3–24.
- Henderson-Sellers, A., et al., 2003: Predicting land-surface climates— Better skill or moving targets? *Geophysical Research Letters*, **30**, 1777.
- Henderson-Sellers, A., et al., 1995: The Project for Intercomparison of Land-Surface Parameterization Schemes (PILPS) —Phase 2 and Phase 3. Bulletin American Meteorological Society, 76, 489–503.
- Hewitson, B.C., and R.G. Crane, 1996: Climate downscaling: Techniques and application. *Climate Research*, **7**, 85–95.
- Hewitt, C.D., and D.J. Griggs, 2004: Ensembles-based predictions: Climate changes and their impacts. *Eos*, 85, 566.

- Heyen, H., H. Fock, and W. Greve, 1998: Detecting relationships between the interannual variability in ecological time series and climate using a multivariate statistical approach—A case study on Helgoland Roads zooplankton. *Climate Research*, **10**, 179–191.
- Hibler, W.D., 1979: A dynamic thermodynamic sea ice model. J. Physical Oceanography, 9, 815–846.
- Hines, K.M., et al., 1999: Surface energy balance of the NCEP MRF and NCEP-NCAR reanalysis in Antarctic latitudes during FROST. *Weather Forecasting*, 14, 851–866.
- Hirano, A., R. Welch, and H. Lang, 2003: Mapping from ASTER stereo image data: DEM validation and accuracy assessment. ISPRS J. Photogrammetry Remote Sensing, 57, 356–370.
- **Hoerling**, M., et al., 2006: Detection and attribution of 20th Century northern and southern African rainfall change. *J. Climate*, **19**, 3989–4008.
- Hoffert, M.I., and C. Covey, 1992: Deriving global climate sensitivity from paleoclimate reconstructions. *Nature*, 360, 573–576.
- Holland, M.M., and M.N. Raphael, 2006: Twentieth Century simulation of the Southern Hemisphere climate in coupled models. Part II: Sea ice conditions and variability. *Climate Dynamics*, 26, 229–245.
- Holland, M.M., and C.M. Bitz, 2003: Polar amplification: Climate change in coupled models. *Climate Dynamics*, 21, 221–232.
- Holtslag, A.A.M., and B.A. Boville, 1993: Local versus nonlocal boundary-layer diffusion in a global climate model. J. Climate, 6, 1825– 1842.
- Hong, S.-Y., and H.-M.H. Juang, 1998: Orography blending in the lateral boundary of a regional model. *Monthly Weather Review*, **126**, 1714– 1718.
- Hood, R.R., et al., 2006: Pelagic functional group modeling: Progress, challenges and prospects. *Deep-Sea Research II*, 53, 459–512.
- Hoogenboom, G., J.W. Jones, and K.J. Boote, 1992: Modeling growth, development, and yield of grain legumes using SOYGRO, PNUT-GRO, and BEANGRO—A review. *Transactions ASAE*, 35, 2043– 2056.
- Hope, P.K., N. Nicholls, and J.L. McGregor, 2004: The rainfall response to permanent inland water in Australia. *Australian Meteorological Magazine*, 53, 251–262.
- Horel, J.D., and J.M. Wallace, 1981: Planetary-scale atmospheric phenomena associated with the Southern Oscillation. *Monthly Weather Review*, 109, 813–829.

- Hori, M.E., and H. Ueda, 2006: Impact of global warming on the East Asian winter monsoon as revealed by nine coupled atmosphere– ocean GCMs. *Geophysical Research Letters*, 33, doi:10.1029/2005GL024961.
- Horowitz, L.W., et al., 2003: A global simulation of tropospheric ozone and related tracers: Description and evaluation of MOZART, version 2. J. Geophysical Research–Atmospheres, 108(D24), 4784.
- Houghton, R., 2003: Revised estimates of the annual net flux of carbon to the atmosphere from changes in land use and land management 1850–2000. *Tellus*, **55B**, 378–390.
- Huang, B., P.H. Stone, and C. Hill, 2003: Sensitivities of deep-ocean heat uptake and heat content to surface fluxes and subgridscale parameters in an ocean general circulation model with idealized geometry. *J. Geophysical Research*, **108**(C1), 3015, doi:10.1029/ 2001JC001218.
- Hungate, B.A., et al., 2003: Nitrogen and climate change. *Science*, **302**, 1512–1513.
- Hunke, E.C., and Y. Zhang, 1999: A comparison of sea ice dynamics models at high resolution. *Monthly Weather Review*, **127**, 396–408.
- Hunke, E.C., and J.K. Dukowicz, 1997: An elastic-viscous-plastic model for sea ice dynamics. J. Physical Oceanography, 27, 1849–1867.
- Hurrell, J.W., 1995: Decadal trends in the North Atlantic Oscillation and relationships to regional temperature and precipitation. *Science*, 269, 676–679.
- Iorio, J.P., et al., 2004: Effects of model resolution and subgrid-scale physics on the simulation of precipitation in the continental United States. *Climate Dynamics*, 23, 243–258.
- IPCC, 2007a: Couplings Between Changes in the Climate System and Biogeochemistry. In Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, ed. S. Solomon et al. Cambridge University Press, Cambridge, U.K., and New York (www.ipcc.ch).
- IPCC, 2007b: Summary for Policymakers. In Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, ed. S. Solomon et al. Cambridge University Press, Cambridge, U.K., and New York (www.ipcc.ch).
- IPCC, 2001: Climate Change 2001: The Scientific Basis: Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change, ed. J.T. Houghton et al. Cambridge University Press, Cambridge, U.K., and New York.

- **IPCC**, 1990: *Climate Change: The IPCC Scientific Assessment*, ed. J.T. Houghton, G.J. Jenkins, and J.J. Ephraums. Cambridge University Press, Cambridge, U.K.
- Irannejad, P., A. Henderson-Sellers, and S. Sharmeen, 2003: Importance of land-surface parameterization for latent heat simulation. *Geophysical Research Letters*, **30**, 1904.
- Jakob, C., and G. Tselioudis, 2003: Objective identification of cloud regimes in the tropical western Pacific. *Geophysical Research Letters*, 30, 2082.
- Janowiak, J.E., 1988: An investigation of interannual rainfall variability in Africa. J. Climate, 1, 240–255.
- Jickells, T.D., et al., 2005: Global iron connections between desert dust, ocean biogeochemistry, and climate. *Science*, **308**, 67–71.
- Jones, C.A., and J.R. Kiniry, 1986: CERES-Maize: A Simulation Model of Maize Growth and Development. Texas A&M University Press, College Station, Tex.
- Jones, P.D., et al., 2006: Global and hemispheric temperature anomalies—land and marine instrumental records. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. DOE (cdiac.esd.ornl.gov/trends/temp/jonescru/jones.html).
- Jones, P.D., et al., 1999: Surface air temperature and its changes over the past 150 years. *Reviews Geophysics*, **37**, 173–199.
- Jones, P.D., T. Jónsson, and D. Wheeler, 1997: Extension to the North Atlantic Oscillation using early instrumental pressure observations from Gibraltar and south-west Iceland. *International J. Climatology*, 17, 1433–1450.
- Jones, R.G., J.M. Murphy, and M. Noguer, 1995: Simulation of climate change over Europe using a nested regional climate model. Part I: Assessment of control climate, including sensitivity to location of lateral boundaries. *International J. Climatology*, **121**, 1413–1449.
- Joseph, R., and S. Nigam, 2006: ENSO evolution and teleconnections in IPCC's 20th Century climate simulations: Realistic representation? *J. Climate* 19(17), 4360–4377.
- Kain, J.S., and J.M. Fritsch, 1993: Convective Parameterization in Mesoscale Models: The Kain-Fritsch Scheme. In *The Representation of Cumulus Convection in Numerical Models, Meteorological Monographs.* American Meteorological Society 46, 165–170.

- Kalkstein, L.S., and J.S. Greene, 1997: An evaluation of climate and mortality relationships in larger U.S. cities and the possible impacts of a climate change. *Environmental Health Perspectives*, **105**, 84–93.
- Kalnay, E., et al., 1996: The NCEP/NCAR 40-year reanalysis project. Bulletin American Meteorological Society, **77**(3), 437–471.
- Kanamitsu, M., et al., 2002: NCEP-DEOAMIP-II reanalysis (R-2). Bulletin American Meteorological Society, 83, 1631–1643.
- Kattenberg, A., et al., 1996: Climate Models Projections of Future Climate. Chapter 6, Climate Models–Projections of Future Climate, 285–358, in *Climate Change 1995–The Science. Climate Change*, ed. J.T. Houghton, et al. Cambridge University Press, Cambridge, U.K.
- Kattsov, V., and E. Källén, 2005: Future Changes of Climate: Modelling and Scenarios for the Arctic Region in Arctic Climate Impact Assessment (ACIA). Cambridge University Press, Cambridge, U.K., 1042 pp.
- Kattsov, V.M., et al., 2000: Atmospheric Climate Models: Simulation of the Arctic Ocean Fresh Water Budget Components, 209–247 in *The Freshwater Budget of the Arctic Ocean*, ed. E.L. Lewis. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Khain, A., and A. Pokrovsky, 2004: Simulation of effects of atmospheric aerosols on deep turbulent convective clouds using a spectral microphysics mixed-phase cumulus cloud model. Part II: Sensitivity study. J. Atmospheric Sciences, 61, 2963–2982.
- Khairoutdinov, M., D. Randall, and C. DeMott: 2005: Simulations of the Atmospheric General Circulation Using a Cloud-Resolving Model as a Superparameterization of Physical Processes, *J. Atmospheric Sciences*, 62(7), 2136–2154, doi:10.1175/JAS3453.1.
- Kidson, J.W., and C.S. Thompson, 1998: Comparison of statistical and model-based downscaling techniques for estimating local climate variations. J. Climate, 11, 735–753.
- Kiehl, J.T., 2007: Twentieth Century climate model response and climate sensitivity. *Geophysical Research Letters*, 34, L22710, doi:10.1029/2007GL031383.
- Kiehl, J.T., et al., 2006: The climate sensitivity of the Community Climate System Model: CCSM3. J. Climate, 19, 2584–2596.
- Kiehl, J.T., et al., 1996: Description of the NCAR Community Climate Model (CCM3). NCAR Technical Note. NCAR/TN-420+STR, National Center for Atmospheric Research, Boulder, Colo., 152 pp. [Available from NCAR; P.O. Box 3000; Boulder, CO 80305]
- **Kiktev**, D., et al., 2003: Comparison of modeled and observed trends in indices of daily climate extremes. *J. Climate*, **16**, 3560–3571.

- Kim, J., et al., 2005: The effects of the Gulf of California SSTs on warmseason rainfall in the southwestern United States and northwestern Mexico: A regional model study. J. Climate, 18, 4970–4992.
- Kim, J., and J.E. Lee, 2003: A multiyear regional climate hindcast for the western United States using the mesoscale atmospheric simulation model. *J. Hydrometeorology*, **4**(5), 878–890.
- Kimoto, M., 2005: Simulated change of the East Asian circulation under global warming scenario. *Geophysical Research Letters*, 32, L16701.
- King, J.C., and J. Turner, 1997: Antarctic Meteorology and Climatology. Cambridge University Press, Cambridge, U.K., 256 pp.
- Kirschbaum, M.U.F., 2000: Will changes in soil organic carbon act as a positive or negative feedback on global warming? *Biogeochemistry*, 48, 21–51.
- Kitoh, A., and T. Uchiyama, 2006: Changes in onset and withdrawal of the East Asian summer rainy season by multi-model global warming experiments. J. Meteorological Society Japan, 84, 247–258.
- Kleidon, A., 2004: Global datasets of rooting zone depth inferred from inverse methods. J. Climate, 17, 2714–2722.
- Klein, S.A., and C. Jakob, 1999: Validation and sensitivities of frontal clouds simulated by the ECMWF model. *Monthly Weather Review*, 127, 2514–2531.
- Klemp, J.B., and R. Wilhelmson, 1978: The simulation of three-dimensional convective storm dynamics. J. Atmospheric Sciences, 35, 1070–1096.
- Knowles, N., and D.R. Cayan, 2004: Elevational dependence of projected hydrologic changes in the San Francisco estuary and watershed. *Climatic Change*, **62**, 319–336.
- Knutson, T.R., et al., 2007: Simulation of recent multidecadal increase of Atlantic hurricane activity using an 18-km regional model. *Bulletin American Meteorological Society*, 88, 1549–1565.
- Knutson, T.R., et al., 2006: Assessment of Twentieth Century regional surface temperature trends using the GFDL CM2 coupled models. J. Climate, 19(9), 1624–1651.
- Knutson, T.R., and S. Manabe, 1998: Model assessment of decadal variability and trends in the tropical Pacific Ocean. J. Climate, 11, 2273– 2296.
- Knutti, R., et al., 2006: Constraining climate sensitivity from the seasonal cycle in surface temperature. J. Climate, 19(17), 4224–4233.

- Koren, V., et al., 1999: A parameterization of snowpack and frozen ground intended for NCEP weather and climate models. J. Geophysical Research, 104(D16), 19569–19585.
- Kraus, E.B., and J.S. Turner, 1967: A one-dimensional model of the seasonal thermocline. II: The general theory and its consequences. *Tellus*, **19**, 98–105.
- **Kravtsov**, S.V., and C. Spannagle, 2007: Multi-decadal climate variability in observed and modeled surface temperatures. *J. Climate*, submitted.
- Krinner, G., 2003: Impact of lakes and wetlands on boreal climate. J. Geophysical Research, 108(D16), 4520.
- Krinner, E., 1991: Northern peatlands: Role in the carbon cycle and probable responses to climatic warming. *Ecological Applications*, 1, 182–195.
- Kripalani, R.H., J.H. Oh, and H.S. Chaudhari, 2007: Response of the East Asian summer monsoon to doubled atmospheric CO₂: Coupled climate models simulations and projections under IPCC AR4. *Theoretical Applied Climatology*, 87, 1–28.
- Kripalani, R.H., et al., 2007: South Asian summer monsoon precipitation variability: Coupled climate simulations and projections under IPCC AR4. *Theoretical Applied Climatology*, doi:10.1007/s00704-006-0282-0.
- Krueger, S.K., 1988: Numerical simulation of tropical cumulus clouds and their interaction with the subcloud layer. J. Atmospheric Sciences, 45, 2221–2250.
- Kuang, Z., and D.L. Hartmann, 2007: Testing the fixed anvil temperature (FAT) hypothesis in a cloud-resolving model. *J. Climate*, 20, 2051– 2057.
- Kunkel, K.E., et al., 2006: Can CGCMs simulate the Twentieth Century "warming hole" in the central United States? J. Climate, 19, 4137– 4153.
- Kunkel, K.E., et al., 2004: Temporal variations in frost-free season in the United States: 1895–2000. *Geophysical Research Letters*, 31, L03201.
- Kunkel, K.E., et al., 2002: Observations and regional climate model simulations of heavy precipitation events and seasonal anomalies: A comparison. J. Hydrometeorology, 3, 322–334.
- Kunkel, K.E., et al., 1996: The July 1995 heat wave in the Midwest: A climatic perspective and critical weather factors. *Bulletin American Meteorological Society*, 77, 1507–1518.

- Kuo, H.L., 1974: Further studies of the parameterization of the influence of cumulus convection on large-scale flow. *J. Atmospheric Sciences*, 31, 1232–1240.
- Laprise, R., 2003: Resolved scales and nonlinear interactions in limitedarea models. J. Atmospheric Sciences, 60, 768–779.
- Large, W., J.C. McWilliams, and S.C. Doney, 1994: Oceanic vertical mixing: A review and a model with a nonlocal boundary mixing parameterization. *Reviews Geophysics*, **32**, 363–403.
- Latif, M., et al., 2001: ENSIP: The El Niño simulation intercomparison project. *Climate Dynamics*, 18, 255–272.
- Lau, K.-M., et al., 2006: A multi-model study of the 20th Century simulations of Sahel drought from the 1970s to 1990s. *J. Geophysical Research*, **111**(D0711).
- Lawrence, D.M., and A.G. Slater, 2005: A projection of severe near-surface permafrost degradation during the 21st Century. *Geophysical Research Letters*, 32, L24401.
- Le Treut, H., Z.X. Li, and M. Forichon, 1994: Sensitivity of the LMD general circulation model to greenhouse forcing associated with two different cloud water parameterizations. *J. Climate*, **7**, 1827–1841.
- Le Treut, H., and Z.X. Li, 1991: Sensitivity of an atmospheric general circulation model to prescribed SST changes: Feedback effects associated with the simulation of cloud optical properties. *Climate Dynamics*, 5, 175–187.
- Leaman, K., R. Molinari, and P. Vertes, 1987: Structure and variability of the Florida current at 27N: April 1982–July 1984. J. Physical Oceanography, 17, 565–583.
- Lean, J., J. Beer, and R. Bradley, 1995: Reconstruction of solar irradiance since 1610: Implications for climate change. *Geophysical Research Letters*, 22, 3195–3198.
- Lee, H.-C., A. Rosati, and M.J. Spelman, 2006: Barotropic tidal mixing effects in a coupled climate model: Ocean conditions in the northern Atlantic. *Ocean Modelling*, **11**, 464–477.
- Leith, C., 1975: Climate response and fluctuation dissipation. J. Atmospheric Sciences, 32, 2022–2026.
- Leung, L.R., et al., 2004: Mid-century ensemble regional climate change scenarios for the western United States. *Climate Change*, **62**, 75– 113.
- Leung, L.R., and Y. Qian, 2003: The sensitivity of precipitation and snowpack simulations to model resolution via nesting in regions of complex terrain. J. Hydrometeorology, 4, 1025–1043.

- Leung, L.R., Y. Qian, and X. Bian, 2003: Hydroclimate of the western United States based on observations and regional climate simulation of 1981–2000. Part I: Seasonal statistics. *J. Climate*, 16(12), 1892– 1911.
- Leung, L.R., and M.S. Wigmosta, 1999: Potential climate change impacts on mountain watersheds in the Pacific Northwest. J. American Water Resources Association, 35, 1463–1471.
- Levitus, S., et al., 2001: Anthropogenic warming of Earth's climate system. Science, 292, 267–270.
- Li, K.Y., et al., 2006: Root-water-uptake based upon a new water stress reduction and an asymptotic root distribution function. *Earth Interactions*, 10, Art. No. 14.
- Li, W., R. Fu, and R.E. Dickinson, 2006: Rainfall and its seasonality over the Amazon in the 21st Century as assessed by the coupled models for the IPCC AR4. *J. Geophysical Research*, **11**, D02111.
- Li, X., and T. Koike, 2003: Frozen soil parameterization in SiB2 and its validation with GAME-Tibet observations. *Cold Regions Science Technology*, 36, 165–182.
- Li, X., et al., 2001: A comparison of two vertical-mixing schemes in a Pacific Ocean general circulation model. *J. Climate*, **14**, 1377–1398.
- Li, Z.X., 1999: Ensemble atmospheric GCM simulation climate interannual variability from 1979 to 1994. J. Climate, 12, 986–1001.
- Liang, X.-Z., et al., 2006: Regional climate model downscaling of the U.S. summer climate and future change. J. Geophysical Research, 111, D10108.
- Liang, X.-Z., et al., 2004: Regional climate model simulation of summer precipitation diurnal cycle over the United States. *Geophysical Research Letters*, **31**, L24208.
- Liang, X., Z. Xie, and M. Huang, 2003: A new parameterization for surface and groundwater interactions and its impact on water budgets with the variable infiltration capacity (VIC) land surface model. J. Geophysical Research, 108, 8613.
- Liang, X.-Z., K.E. Kunkel, and A.N. Samel, 2001: Development of a regional climate model for U.S. midwest applications. Part 1: Sensitivity to buffer zone treatment. *J. Climate*, 14, 4363–4378.
- Libes, S.M., 1992: An Introduction to Marine Biogeochemistry. New York, Wiley, 734 pp.
- Lin, J.L., et al., 2006: Tropical intraseasonal variability in 14 IPCC AR4 climate models. Part I: Convective signals. J. Climate, 19(12), 2665– 2690.

- Lin, J.L., et al., 2004: Stratiform precipitation, vertical heating profiles, and the Madden–Julian Oscillation. J. Atmospheric Sciences, 61, 296–309.
- Lin, S.J., and R.B. Rood, 1996: Multidimensional flux-form semi-lagrangian transport schemes. *Monthly Weather Review*, **124**, 2046– 2070.
- Lin, W.Y., and M.H. Zhang, 2004: Evaluation of clouds and their radiative effects simulated by the NCAR Community Atmospheric Model CAM2 against satellite observations. J. Climate, 17, 3302–3318.
- Lindzen, R.S., M.-D. Chou, and A. Y. Hou, 2001: Does Earth have an adaptive infrared iris? *Bulletin American Meteorological Society*, 82, 417–432.
- Lindzen, R.S., and C. Giannitsis, 1998: On the climatic implications of volcanic cooling. J. Geophysical Research, 103(D6), 5929–5941.
- Lindzen, R.S., 1994: Climate dynamics and global change. Annual Review Fluid Mechanics, 26, 353–378, doi:10.1146/annurev.fl. 26.010194.002033.
- Lindzen, R.S., and M.S. Fox-Rabinovitz, 1989: Consistent vertical and horizontal resolution. *Monthly Weather Review*, **117**, 2575–2583.
- Liston, G.E., 2004: Representing subgrid snow cover heterogeneities in regional and global models. J. Climate, 17, 1381–1397.
- Liu, Z., 1998: On the role of ocean in the transient response of tropical climatology to global warming. J. Climate, 11, 864–875.
- Lock, A.P., et al., 2000: A new boundary layer mixing scheme. Part I: Scheme description and single-column model tests. *Monthly Weather Review*, **128**, 3187–3199.
- Lock, A., 1998: The parameterization of entrainment in cloudy boundary layers. *Quarterly J. Royal Meteorological Society*, **124**, 2729– 2753.
- Lockwood, M., and C. Fröhlich, 2007: Recent oppositely directed trends in solar climate forcings and the global mean surface air temperature. *Proceedings Royal Society A*, 463, 2447–2460, doi:10.1098/rspa.2007.1880.
- Lofgren, B.M., 2004: A model for simulation of the climate and hydrology of the Great Lakes basin. J. Geophysical Research, 109(D18), Art. No. D18108.
- Lohmann, U., and E. Roeckner, 1996: Design and performance of a new cloud microphysics scheme developed for the ECHAM4 general circulation model. *Climate Dynamics*, **12**, 557–572.

- Lorenz, P., and D. Jacob, 2005: Influence of regional scale information on the global circulation: A two-way nesting climate simulation. *Geophysical Research Letters*, **32**, Art. No. L18706.
- Lucarini, V., et al., 2006: Intercomparison of the Northern Hemisphere winter mid-latitude atmospheric variability of the IPCC models. *Climate Dynamics*, 28(7–8), 829–848.
- Lumpkin, R., and K. Speer, 2003: Large-scale vertical and horizontal circulation in the North Atlantic Ocean. J. Physical Oceanography, 33, 1902–1920.
- Luo, L.F., et al., 2003: Effects of frozen soil on soil temperature, spring infiltration, and runoff: Results from the PILPS 2(d) experiment at Valdai, Russia. J. Hydrometeorology, 4, 334–351.
- Lynch, A.H., J.A. Maslanik, and W.L. Wu, 2001: Mechanisms in the development of anomalous sea ice extent in the western Arctic: A case study. J. Geophysical Research, 106(D22), 28097–28105.
- Lynch, A.H., et al., 1995: Development of a regional climate model of the western Arctic. J. Climate, 8, 1555–1570.
- Lynn, B.H., et al., 2005: Spectral (bin) microphysics coupled with a mesoscale model (MM5). Part II: Simulation of a CaPE rain event with a squall line. *Monthly Weather Review*, **133**, 59–71.
- Maak, K., and H. von Storch, 1997: Statistical downscaling of monthly mean temperature to the beginning of flowering of *Galanthus nivalis*L. in Northern Germany. *International J. Biometeorology*, 41(1), 5–12.
- Malevsky–Malevich, S.P., et al., 1999: The evaluation of climate change influence on the permafrost season soil thawing regime. *Contemporary Investigation Main Geophysical Observatory*, 1, 33–50 (in Russian).
- Maltrud, M.E., et al., 1998: Global eddy-resolving ocean simulations driven by 1985–1995 atmospheric winds. *J. Geophysical Research*, 103(C13), 30, 825–30, 853.
- Manabe, S., et al., 1991: Transient responses of a coupled ocean-atmosphere model to gradual changes of atmospheric CO₂. Part I: Annual mean response. *J. Climate*, 4, 785–818.
- Manabe, S., and A. Broccoli, 1985: A comparison of climate model sensitivity with data from the last glacial maximum. *J. Atmospheric Sciences*, 42, 2643–2651.
- Manabe, S., and R.T. Wetherald, 1975: The effects of doubling the CO₂ concentration on the climate of a general circulation model. *J. Atmospheric Sciences*, 32, 3–15.

- Manabe, S., 1969: Climate and the ocean circulation. 1: The atmospheric circulation and hydrology of the Earth's surface. *Monthly Weather Review*, 97, 739–774.
- Manabe, S., and R.T. Wetherald, 1967: Thermal equilibrium of the atmosphere with a given distribution of relative humidity. J. Atmospheric Sciences, 24(3), 241–259.
- Manabe, S., J. Smagorinsky, and R.F. Strickler, 1965: Simulated climatology of a general circulation model with a hydrological cycle. *Monthly Weather Review*, 93, 769–798.
- Martin, G.M., et al., 2000: A new boundary layer mixing scheme. Part II: Tests in climate and mesoscale models. *Monthly Weather Review*, 128, 3200–3217.
- Martin, J.H., et al., 1994: Testing the iron hypothesis in ecosystems of the equatorial Pacific Ocean. *Nature*, 371, 123–129.
- Martin, J.H., 1991: Iron as a limiting factor in oceanic productivity. In Primary Productivity and Biogeochemical Cycles in the Sea, ed. P.G. Falkowski and A.D. Woodhead, 123–137. Plenum Press, New York.
- Maurer, E. P., et al., 2002: A long-term hydrologically-based data set of land surface fluxes and states for the conterminous United States. J. Climate, 15, 3237–3251.
- Maxwell, R.M., and N.L. Miller, 2005: Development of a coupled land surface and groundwater model. *J. Hydrometeorology*, **6**, 233–247.
- May, W., and E. Roeckner, 2001: A time-slice experiment with the ECHAM4 AGCM at high resolution: The impact of horizontal resolution on annual mean climate change. *Climate Dynamics* 17(5– 6), 407–420.
- McCreary, J., and P. Lu, 1994: Interaction between the subtropical and equatorial ocean circulation—The subtropical cell. J. Physical Oceanography, 24, 466–497.
- McCulloch, M.T., and T. Ezat, 2000: The coral record of the last interglacial sea levels and sea surface temperatures. *Chemical Geology*, 169, 107–129.
- McFarlane, N.A., 1987: The effect of orographically excited gravity wave drag on the general circulation of the lower stratosphere and troposphere. *J. Atmospheric Sciences*, **44**, 1775–1800.
- McGregor, J.L., 1999: Regional Modelling at CAR: Recent Developments, 43–48 in *Parallel Computing in Meteorology and Oceanography*. BMRC Research Report No. 75, Bureau of Meteorology, Melbourne, Australia.

- McGregor, J.L., 1997: Regional climate modelling. *Meteorology Atmospheric Physics*, 63, 105–117.
- McPhaden, M.J., et al., 1998: The Tropical Ocean Global Atmosphere (TOGA) observing system: A decade of progress. *J. Geophysical Research*, **103**, 14169–14240.
- Mearns, L.O., 2003: Issues in the impacts of climate variability and change on agriculture—Applications to the southeastern United States. *Climate Change*, **60**, 1–6.
- Mearns, L.O., et al., 2003: Climate scenarios for the southeastern U.S. based on GCM and regional model simulations. *Climate Change*, **60**, 7–35.
- Mearns, L.O., et al., 1999: Comparison of climate change scenarios generated from regional climate model experiments and statistical downscaling. *J. Geophysical Research*, **104**, 6603–6621.
- Mechoso, C.R., et al., 1995: The seasonal cycle over the tropical Pacific in coupled ocean-atmosphere general circulation models. *Monthly Weather Review*, **123**, 2825–2838.
- Meehl, G.A., et al., 2006: Climate change projections for the Twenty-First Century and climate change commitment in the CCSM3. J. Climate, 19, 2597–2616.
- Meehl, G.A., et al., 2005: How much more will global warming and sea level rise? *Science*, **307**, 1769–1772.
- Meehl, G.A., and C. Tebaldi, 2004: More intense, more frequent, and longer lasting heat waves in the 21st Century. *Science*, **305**, 994–997.
- Meehl, G.A., C. Tebaldi, and D. Nychka, 2004: Changes in frost days in simulations of Twenty-First Century climate. *Climate Dynamics*, 23, 495–511.
- Mellor, G.L., and T. Yamada, 1982: Development of a turbulence closure model for geophysical fluid problems. *Reviews Geophysics Space Physics*, 20, 851–875.
- Mellor, G.L., and T. Yamada, 1974: A hierarchy of turbulent closure models for planetary boundary layers. J. Atmospheric Sciences, 31, 1791–1806.
- Menon, S., and A. Del Genio, 2007: Evaluating the Impacts of Carbonaceous Aerosols on Clouds and Climate, 34–48 in *Human-Induced Climate Change: An Interdisciplinary Assessment*, ed. M.E. Schlesinger et al. Cambridge University Press, Cambridge, U.K., and New York, N.Y.
- **Merryfield**, W.J., 2006: Changes to ENSO under CO₂ doubling in a multi-model ensemble. *J. Climate*, **19**, 4009–4027.

- Miguez-Macho, G., G.L. Stenchikov, and A. Robock, 2005: Regional climate simulations over North America: Interaction of local processes with improved large-scale flow. J. Climate, 18, 1227–1246.
- Miller, D.A., and R.A. White, 1998: A coterminous United States multilayer soil characteristics dataset for regional climate and hydrology modeling. *Earth Interactions*, 2, 1–26.
- Miller, R.L., G.A. Schmidt, and D.T. Shindell, 2006: Forced variations of annular modes in the 20th Century IPCC AR4 simulations. *J. Geophysical Research*, **111**, D18101, doi:10.1029/2005JD006323.
- Min, S.-K., and A. Hense, 2007: A Bayesian assessment of climate change using multi-model ensembles. Part II: Regional and seasonal mean surface temperature. *J. Climate*, 20(12), 1769–1790.
- Min, S.-K., and A. Hense, 2006: A Bayesian assessment of climate change using multi-model ensembles. Part I: Global mean surface temperature. J. Climate, 19, 3237–3256.
- Minschwaner, K., E.D. Essler, and P. Sawaengphokhai, 2006: Multimodel analysis of the water vapor feedback in the tropical upper troposphere. J. Climate, 19, 5455–5464.
- Minschwaner, K., and A.E. Dessler, 2004: Water vapor feedback in the tropical upper troposphere: Model results and observations. J. Climate, 17(6), 272–1282.
- Mirocha, J.D., B. Kosovic, and J.A. Curry, 2005: Vertical heat transfer in the lower atmosphere over the Arctic Ocean during clear-sky periods. *Boundary-Layer Meteorology*, 117, 37–71.
- Mitchell, J.F.B., et al., 1999: Towards the construction of climate change scenarios. *Climatic Change*, 41(3–4), 547–581.
- Mitchell, J.F.B., C.A. Senior, and W.J. Ingram, 1989: CO₂ and climate: A missing feedback? *Nature*, **341**, 132–134.
- Mitchell, T., 2003: Pattern scaling: An examination of the accuracy of the technique for describing future climates. *Climatic Change*, 60, 217– 242.
- Miura, H., et al., 2005: A climate sensitivity test using a global cloud resolving model under an aqua planet condition. *Geophysical Research Letters*, **32**, L19717.
- Mo, K.C., et al., 2005: Impact of model resolution on the prediction of summer precipitation over the United States and Mexico. *J. Climate*, 18, 3910–3927.
- Moorthi, S., and M.J. Suarez, 1992: Relaxed Arakawa-Schubert: A parameterization of moist convection for general circulation models. *Monthly Weather Review*, **120**, 978–1002.

- Morel, A., and D. Antoine, 1994: Heating rate within the upper ocean in relation to its bio-optical state. *J. Physical Oceanography*, 24, 1652– 1665.
- Morrison, H., and J.O. Pinto, 2005: Mesoscale modeling of springtime Arctic mixed-phase stratiform clouds using two-moment bulk microphysics scheme. J. Atmospheric Sciences, **62**, 3683–3704.
- **Murphy**, J.M., et al., 2004: Quantification of modelling uncertainties in a large ensemble of climate change simulations. *Nature*, **430**(7001), 768–772.
- Murray, R.J., 1996: Explicit generation of orthogonal grids for ocean models. J. Computational Physics, 126, 251–273.
- Nadelhoffer, K.J., et al., 1999: Nitrogen makes a minor contribution to carbon sequestration in temperate forests. *Nature*, **398**, 145–148.
- Najjar, R.G., et al., 2007: Impact of circulation on export production, dissolved organic matter, and dissolved oxygen in the ocean: Results from OCMIP-2. *Global Biogeochemistry Cycles*, **21**, GB3007, doi:10.1029/2006GB002857.
- NARCCAP (North American Regional Climate Change Assessment), cited as 2007: www.narccap.ucar.edu/.
- Neelin, J.D., et al., 1992: Tropical air-sea interaction in general circulation models. *Climate Dynamics*, 7, 73–104.
- Niu, G.Y., and Z.L. Yang, 2006: Effects of frozen soil on snowmelt runoff and soil water storage at a continental scale. *J. Hydrometeorology*, 7, 937–952.
- Nordeng, T.E., 1994: Extended Versions of the Convective Parameterization Scheme at ECMWF and Their Impact on the Mean and Transient Activity of the Model in the Tropics. *Technical Memorandum* 206, European Center for Medium Range Weather Forecasting (ECMWF), Reading, U.K.
- Norris, J., and C.P. Weaver, 2001: Improved techniques for evaluating GCM cloudiness applied to the NCAR CCM3. *J. Climate*, **14**, 2540–2550.
- **Nowak**, R.S., D.S. Ellsworth, and S.D. Smith, 2004: Tansley review: Functional responses of plants to elevated atmospheric CO₂—Do photosynthetic and productivity data from FACE experiments support early predictions? *New Phytologist*, **162**, 253–280.
- Oglesby, R.J., and B. Saltzman, 1992: Equilibrium climate statistics of a general circulation model as a function of atmospheric carbon dioxide. Part I: Geographic distributions of primary variables. *J. Climate*, 5(1), 66–92.

- Ohlmann, J.C., 2003: Ocean radiant heating in climate models. J. Climate, 16, 1337–1351.
- Olesen, J.E., et al., 2007: Uncertainties in projected impacts of climate change on European agriculture and terrestrial ecosystems based on scenarios from regional climate models. *Climatic Change*, 81, 123– 143.
- Oleson, K.W., et al., 2004: Technical Description of the Community Land Model (CLM). NCAR Technical Note. NCAR/TN-461+STR, National Center for Atmospheric Research, Boulder, Colo., 173 pp. [Available from NCAR; P.O. Box 3000; Boulder, CO 80305]
- **Oouchi**, K., et al., 2006: Tropical cyclone climatology in a global-warming climate as simulated in a 20- km mesh global atmospheric model: Frequency and wind intensity analyses. *J. Meteorological Society Japan*, **84**, 259–276.
- Oren, R., et al., 2001: Soil fertility limits carbon sequestration by forest ecosystems in a CO₂–enriched atmosphere. *Nature*, **411**, 469–477.
- Ott, L.E., et al., 2007: The effects of lightning NOx production during the 21 July EULINOX storm studied with a 3-D cloud-scale chemical transport mode. *J. Geophysical Research*, **112**, D05307, doi:10.1029/2006JD007365.
- *Our Changing Planet: The FY 1992 U.S. Global Change Research Program.* 1991. A Report by the Committee on Earth and Environmental Sciences. A Supplement to the U.S. President's Fiscal Year 1992 Budget.
- **Overgaard**, J., D. Rosbjerg, and M.B. Butts, 2006: Land-surface modelling in hydrological perspective–A review. *Biogeoscience*, **3**, 229– 241.
- Pacanowski, R.C., and S.G.H. Philander, 1981: Parameterization of vertical mixing in numerical models of tropical oceans. J. Physical Oceanography, 11, 1443–1451.
- Paegle, J., K.C. Mo, and J. Nogués-Paegle, 1996: Dependence of simulated precipitation on surface evaporation during the 1993 United States summer floods. *Monthly Weather Review*, **124**, 345–361.
- Pan, Z., et al., 2004: Altered hydrologic feedback in a warming climate introduces a "warming hole." *Geophysical Research Letters*, 31, L17109, doi:10.1029/2004GL020528.
- Pan, Z., et al., 2001: Evaluation of uncertainties in regional climate change simulations. J. Geophysical Research, 106, 17735–17752.
- Parkinson, C.L., K.Y. Vinnikov, and D.J. Cavalieri, 2006a: Evaluation of the simulation of the annual cycle of Arctic and Antarctic. J. Geophysical Research, 111, C07012.

- Parkinson, C.L., K.Y. Vinnikov, and D.J. Cavalieri, 2006b: Correction to evaluation of the simulation of the annual cycle of Arctic and Antarctic sea ice coverages by 11 major global climate models. *J. Geophysical Research*, **111**, C12009, doi:10.1029/2006JC003949.
- Paulson, C.A., and J.J. Simpson, 1977: Irradiance measurements in the upper ocean. *J. Applied Oceanography*, **7**, 952–956.
- Pavolonis, M., J.R. Key, and J.J. Cassano, 2004: Study of the Antarctic surface energy budget using a polar regional atmospheric model forced with satellite-derived cloud properties. *Monthly Weather Review*, 132, 654–661.
- Pawson, S., et al., 2000: The GCM-Reality Intercomparison Project for SPARC GRIPS): Scientific issues and initial results. *Bulletin American Meteorological Society*, **81**, 781–796.
- Payne, A.J., et al., 2004: Recent dramatic thinning of largest West Antarctic ice stream triggered by oceans. *Geophysical Research Letters*, 31, L23401.
- Payne, J.T., et al., 2004: Mitigating the effects of climate change on the water resources of the Columbia River basin. *Climatic Change*, 62, 233–256.
- Peltier, W.R., 2004: Global glacial isostasy and the surface of the iceage earth: The ice-5G (VM2) model and GRACE. *Annual Review Earth Planetary Science*, **32**, 111–149.
- Philander, S.G.H., 1990: *El Niño, La Niña, and the Southern Oscillation.* Academic Press, San Diego, Calif., 293 pp.
- Philander, S.G.H., and R.C. Pacanowski, 1981: The oceanic response to cross-equatorial winds (with application to coastal upwelling in low latitudes). *Tellus*, **33**, 201–210.
- Philip, S.Y., and G. J. van Oldenborgh, 2006: Shifts in ENSO coupling processes under global warming. *Geophysical Research Letters*, 33, L11704.
- Phillips, T.J., et al., 2004: Evaluating parameterizations in general circulation models: Climate simulation meets weather prediction. *Bulletin American Meteorological Society*, doi:10.1175/ BAMS-85-12-1903.
- Piani, C., et al., 2005: Constraints on climate change from a multi-thousand member ensemble of simulations. *Geophysical Research Letters*, 32, L23825.
- Pierce, D.W., et al., 2006: Three-dimensional tropospheric water vapor in coupled climate models compared with observations from the AIRS satellite system. *Geophysical Research Letters*, 33, L21701.

- Pierce, D.W., 2004: Future change in biological activity in the north Pacific due to anthropogenic forcing of the physical environment. *Climatic Change*, **62**, 389–418.
- Pincus, R., H.W. Barker, and J.J. Morcrette, 2003: A fast, flexible, approximate technique for computing radiative transfer in inhomogeneous cloud fields. *J. Geophysical Research*, doi:10.1209/2002JD0033222003.
- Pinto, J.O., J.A. Curry, and J.M. Intrieri, 2001: Cloud-aerosol interactions during autumn over Beaufort Sea. J. Geophysical Research, 106, 15077–15097.
- Pitman, A.J., et al., 1999: Uncertainty in the simulation of runoff due to the parameterization of frozen soil moisture using the GSWP methodology. J. Geophysical Research, 104, 16879–16888.
- Pitsch, H., 2006: Large-eddy simulation of turbulent combustion. Annual *Review Fluid Dynamics*, 38, 453–482.
- Plummer, D.A., et al., 2006: Climate and climate change over North America as simulated by the Canadian Regional Climate Model. *J. Climate*, **19**, 3112–3132.
- Polvani, L.M., R.K. Scott, and S.J. Thomas: 2004: Numerically converged solutions of the global primitive equations for testing the dynamical core of atmospheric GCMs. *Monthly Weather Review*, 132, 2539–2552.
- Pope, V.D., et al., 2000: The impact of new physical parameterizations in the Hadley Centre Climate Model—HadAM3. *Climate Dynamics*, 16, 123–146.
- Prentice, I.C., et al., 2001: The Carbon Cycle and Atmospheric Carbon Dioxide. Chapter 3 in *Climate Change 2001: The Scientific Basis: Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, ed. J.T. Houghton et al. Cambridge University Press, Cambridge, U.K., and New York, N.Y.
- Privé, N.C., and R.A. Plumb, 2007: Monsoon dynamics with interactive forcing. Part I: Axisymmetric studies. J. Atmospheric Sciences, 64(5), 1417–1430.
- Qian, J.-H., W.-K. Tao, and K.-M. Lau, 2004: Mechanisms for torrential rain associated with the mei-yu development during SCSMEX 1998. *Monthly Weather Review*, **132**, 3–27.
- Qian, J.-H., F. Giorgi, and M.S. Fox–Rabinovitz, 1999: Regional stretched grid generation and its application to the NCAR RegCM. *J. Geophysical Research*, **104**(D6), 6501–6514.
- Qu, X., and A. Hall, 2006: Assessing snow albedo feedback in simulated climate change. J. Climate, 19(11), 2617–2630.

- Raisanen, J., 2002: CO₂-induced changes in interannual temperature and precipitation variability in 19 CMIP experiments. *J. Climate*, **15**, 2395–2411.
- Raisanen, J., and T.N. Palmer, 2001: A probability and decision-model analysis of a multimodel ensemble of climate change simulations. *J. Climate*, 14, 3212–3226.
- Rajagopalan, B., U. Lall, and M.A. Cane, 1997: Anomalous ENSO occurrences: An alternate view. J. Climate, 10(9), 2351–2357.
- Ramankutty, N., et al., 2002: The global distribution of cultivable lands: Current patterns and sensitivity to possible climate change. *Global Ecology Biogeography*, **11**, 377–392.
- Ramaswamy, V., et al., 2001: Radiative Forcing Climate Change, 349– 416, in *Climate Change 2001: The Scientific Basis*, ed. J.T. Houghton, et al. Cambridge University Press, Cambridge, U.K.
- Randall, D.A., et al., 2007: Climate Models and Their Evaluation, Chapter 8, in *Climate Change 2007. The Fourth Scientific Assessment*, ed.
 S. Solomon et al. Intergovernmental Panel on Climate Change (IPCC) (www.ipcc.ch).
- Randall, D.A., et al., 2003: Breaking the cloud parameterization deadlock. *Bulletin American Meteorological Society*, 84, 1547–1564, doi:10.1175/BAMS-84-11-1547.
- **Randall**, D.A., et al., 2000: Cloud Feedbacks in *Frontiers in Science: Climate Modeling*, ed. J.T. Kiehl and V. Ramanathan. Proceedings of a symposium in honor of Robert D. Cess.
- Raper, S.C.B., J.M. Gregory, and R.J. Stouffer, 2002: The role of climate sensitivity and ocean heat uptake on AOGCM transient temperature response. J. Climate, 15, 124–130.
- Raphael, M.N., and M.M. Holland, 2006: Twentieth Century simulation of the Southern Hemisphere climate in coupled models. Part 1: Large-scale circulation variability. *Climate Dynamics*, 26, 217–228.
- Rasch, P.J., and J.E. Kristjánsson, 1998: A comparison of the CCM3 model climate using diagnosed and predicted condensate parameterizations. *J. Climate*, 11, 1587–1614.
- Rasmussen, E.M., and J.M. Wallace, 1983: Meteorological aspects of the El Niño/Southern Oscillation. *Science*, 222, 1195–2002.
- Rawlins, M.A., et al., 2003: Simulating pan-Arctic runoff with a macroscale terrestrial water balance model. *Hydrology Proceedings*, 17, 2521–2539.

- Rayner, N.A., et al., 2003: Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late Nineteenth Century. J. Geophysical Research, 108(D14), 4407.
- Reichler, T., and J. Kim, 2008: How well do coupled models simulate today's climate? *Bulletin American Meteorological Society*, 89(3), doi:10.1175/BAMS-89-3-303, (www.met.utah.edu/reichler/publications/papers/Reichler_07_BAMS_CMIP.pdf).
- Rignot, E., and P. Kanagaratnam, 2006: Changes in the velocity structure of the Greenland ice sheet. *Science*, 311, 986–990.
- Ringer, M.A., and R.P. Allan, 2004: Evaluating climate model simulations of tropical clouds. *Tellus*, 56A, 308–327.
- Rinke, A., et al., 2006: Evaluation of an ensemble of Arctic regional climate models: Spatiotemporal fields during the SHEBA year. *Climate Dynamics*, doi:10.1007/s00382-005-0095-3.
- Roads, J., S.-C. Chen, and M. Kanamitsu, 2003: U.S. regional climate simulations and seasonal forecasts. J. Geophysical Research, 108(D16), Art. No. 8606.
- Roads, J.O., et al., 1999: Surface water characteristics in the NCEP Global Spectral Model and reanalysis. J. Geophysical Research, 4(D16), 19307–19327.
- Roberts, M.J., and R. Wood, 1997: Topographic sensitivity studies with a Bryan-Cox-type ocean model. *J. Physical Oceanography*, 27, 823– 836.
- Roe, G.H., and M.B. Baker, 2007: Why is climate sensitivity so unpredictable? *Science*, **318**(5850), 629–632, doi:10.1126/science.1144735.
- Roeckner, E., et al., 2006: Sensitivity of simulated climate to horizontal and vertical resolution in the ECHAM5 atmosphere model. *J. Climate*, **19**, 3771–3791.
- Roeckner, E., et al., 1996: The atmospheric general circulation model ECHAM-4: Model description and simulation of present-day climate. Report 128, Max-Planck-Institut f
 ür Meteorologie, Hamburg, Germany.
- Roeckner, E., et al., 1987: Cloud optical depth feedbacks and climate modelling. *Nature*, 329, 138–140.
- Root, T.L., and S.H. Schneider, 1993: Can large-scale climatic models be linked with multiscale ecological studies? *Conservation Biology*, 7(2), 256–270.
- Ropelewski, C.F., and M.S. Halpert, 1987: Global and regional scale precipitation patterns associated with the El Niño Southern Oscillation. *Monthly Weather Review*, **115**, 1606–1626.

- Rosenzweig, C., et al., 2002: Increased crop damage in the U.S. from excess precipitation under climate change. *Global Environmental Change*, **12**, 197–202.
- Rothstein, L.M., et al., 2006: Modeling ocean ecosystems: The PARA-DIGM program. *Oceanography*, **19**, 22–51.
- Rotstayn, L.D., and U. Lohmann, 2002: Tropical rainfall trends and the indirect aerosol effect. *J. Climate*, **15**, 2103–2116.
- Rotstayn, L.D., 1997: A physically based scheme for the treatment of stratiform clouds and precipitation in large-scale models. Part I: Description and evaluation of microphysical processes. *Quarterly J. Royal Meteorological Society*, **123**, 1227–1282.
- **Rowell**, D.P., et al., 1992: Modelling the influence of global sea surface temperatures on the variability and predictability of seasonal Sahel rainfall. *Geophysical Research Letters*, **19**, 905–908.
- Ruiz-Barradas, A., and S. Nigam, 2006: IPCC's Twentieth Century climate simulations: Varied representations of North American hydroclimate variability. J. Climate, 19, 4041–4058.
- Rummukainen, M., et al., 2004: The Swedish Regional Climate Modelling Programme, SWECLIM: A review. *Ambio*, **33**, 176–182.
- Ruosteenoja, K., H. Tuomenvirta, and K. Jylha, 2007: GCM-based regional temperature and precipitation change estimates for Europe under four SRES scenarios applying a super-ensemble pattern-scaling method. *Climatic Change*, **81**, Supplement 1, doi:10.1007/s10584-006-9222-3.
- Russell, G.L., et al., 2000: Comparison of model and observed regional temperature changes during the past 40 years. J. Geophysical Research, 105, 14891–14898.
- Russell, G.L., J.R. Miller, and D. Rind, 1995. A coupled atmosphereocean model for transient climate change studies. *Atmosphere-Ocean*, 33(4), 683–730.
- Russell, J.L., R. Stouffer, and K.W. Dixon, 2007: Corrigendum. J. Climate, 20, 4287.
- Russell, J.L., R.J. Stouffer, and K.W. Dixon, 2006: Intercomparison of the Southern Ocean circulations in IPCC coupled model control simulations. J. Climate, 19, 4560–4575.
- Ryan, B.F. et al., 2000: Simulations of a cold front by cloud-resolving, limited-area, and large-scale models, and a model evaluation using in situ and satellite observations. *Monthly Weather Review*, **128**, 3218–3235.

- Saji, N.H., S.-P. Xie, and T. Yamagata, 2005: Tropical Indian Ocean variability in the IPCC Twentieth Century climate simulations. J. Climate, 19(17), 4397.
- Saji, N.H., et al., 1999: A dipole mode in the tropical Indian Ocean. Nature, 401, 360–363.
- Santer, B.D., et al., 2007: Identification of human-induced changes in atmospheric moisture content. *Proceedings National Academy Sciences*, 104, 15248–15253.
- Santer, B.D., et al., 2005: Amplification of surface temperature trends and variability in the tropical atmosphere. *Science*, **309**, 1551–1556.
- Santer, B.D., et al., 2001: Accounting for the effects of volcanoes and ENSO in comparisons of modeled and observed temperature trends. *J. Geophysical Research*, **106**, 28033–28059.
- Santer, B.D., et al., 1990: Developing Climate Scenarios from Equilibrium GCM Results, Report No. 47, Max Planck Institute for Meteorology, Hamburg.
- Saraf, A.K., et al., 2005: Digital Elevation Model (DEM) generation from NOAA-AVHRR night-time data and its comparison with USGS-DEM. *International J. Remote Sensing*, 26, 3879–3887.
- Sardeshmukh, P.D., and B.J. Hoskins, 1988: The generation of global rotational flow by steady idealized tropical divergence. J. Atmospheric Sciences, 45, 1228–1251.
- Sato, M., et al., 1993: Stratospheric aerosol optical depth, 1850–1990. J. Geophysical Research, 98, 22987–22994.
- Sausen, R., S. Schubert, and L. Dumenil, 1994: A model of the river runoff for use in coupled atmosphere-ocean models. J. Hydrology, 155, 337–352.
- Schimel, D.S., 1998: The carbon equation. Nature, 393, 208–209.
- Schmidt, G.A., et al., 2006: Present day atmospheric simulations using GISS ModelE: Comparison to in-situ, satellite, and reanalysis data. *J. Climate*, **19**, 153–192, doi:10.1175/JCLI3612.1.
- Schmittner, A., M. Latif, and B. Schneider, 2005: Model projections of the North Atlantic thermohaline circulation for the 21st Century assessed by observations. *Geophysical Research Letters*, 32, doi:10.1029/2005GL024368.
- Schneider, S.H., and S.L. Thompson, 1981: Atmospheric CO₂ and climate: Importance of the transient response. *J. Geophysical Research*, 86, 3135–3147.

- Schneider, S.H., and C. Mass, 1975: Volcanic dust, sunspots, and temperature trends. *Science*, 190, 741–746.
- Schopf, P., et al., 2003: Coupling Process and Model Studies of Ocean Mixing to Improve Climate Models—A Pilot Climate Process Modeling and Science Team (a U.S. CLIVAR paper, www.usclivar.org/CPT/Ocean_mixing_whitepaper.pdf).
- Schramm, J.L., et al., 1997: Modeling the thermodynamics of a sea ice thickness distribution. Part 1: Sensitivity to ice thickness resolution. *J. Geophysical Research*, **102**, 23079–23091.
- Schwartz, S.E., 2007: Heat capacity, time constant, and sensitivity of Earth's climate system. J. Geophysical Research, 112, D24S05, doi:10.1029/2007JD008746, 2007
- Schweitzer, L., 2006: Environmental justice and hazmat transport: A spatial analysis in southern California. *Transportation Research. Part D–Transportation Environment*, **11**, 408–421.
- Segal, M., et al., 1997: Small lake daytime breezes: Some observational and conceptual evaluations. *Bulletin American Meteorological Society*, 78, 1135–1147.
- Segal, M., and R.W. Arritt, 1992: Nonclassical mesoscale circulations caused by surface sensible heat-flux gradients. *Bulletin American Meteorological Society*, 73, 1593–1604.
- Sellers, P.J., et al., 1996: A revised land surface parameterization (SiB2) for atmospheric GCMs. Part 1: Model formulation. J. Climate, 9, 676–705.
- Sellers, P.J., et al., 1986: A simple biosphere model (SiB) for use within general-circulation models. J. Atmospheric Sciences, 43, 503–531.
- Semtner, A.J., 1976: A model for the thermodynamic growth of sea ice in numerical investigations of climate. J. Physical Oceanography, 6, 27–37.
- Seneviratne, S.I., et al., 2006: Land-atmosphere coupling and climate change in Europe. *Nature*, 443, 205–209.
- Senior, C.A., and J.F.B. Mitchell, 1996: Cloud Feedbacks in the Unified UKMO GCM, in *Climate Sensitivity to Radiative Perturbations*, Physical Mechanism and Their Validation, ed. H. Le Treut. Springer, 331 pp.
- Senior, C.A., and J.F.B. Mitchell, 1993: Carbon dioxide and climate: The impact of cloud parameterization. J. Climate, 6, 5–21.
- Seth, A., and F. Giorgi, 1998: The effects of domain choice on summer precipitation simulation and sensitivity in a regional climate model. *J. Climate*, 11, 2698–2712.

- Shepherd, A., and D. Wingham, 2007: Recent sea-level contributions of the Antarctica and Greenland ice sheets. *Science*, 315, 1529–1532.
- Shindell, D.T., et al., 2006: Solar and anthropogenic forcing of tropical hydrology. *Geophysical Research Letters*, 33, L24706, doi:10.1029/2006GL027468.
- Shindell, D.T., et al., 1999: Simulation of recent northern winter climate trends by greenhouse-gas forcing. *Nature*, 399, 452–455.
- Shukla, J., et al., 2006: Climate model fidelity and projections of climate change. *Geophysical Research Letters*, 33, L07702, doi:10.1029/2005GL025579.
- Siddall, M., et al., 2003: Sea-level fluctuations during the last glacial cycle. *Nature*, 423, 853–858.
- Skamarock, W.C., et al., 2005: A Description of the Advanced Research WRF Version 2. NCAR Technical Note. NCAR/TN-468+STR, National Center for Atmospheric Research, Boulder, Colo., 88 pp. [Available from NCAR; P.O. Box 3000; Boulder, CO 80305]
- Slater, A.G., et al., 2001: The representation of snow in land surface schemes: Results from PILPS 2(d). J. Hydrometeorology, 2, 7–25.
- Small, C., V. Gornitz, and J.E. Cohen, 2000. Coastal hazards and the global distribution of population. *Environmental Geoscience*, 7, 3– 12.
- Smethie, W.M., Jr., and R.A. Fine, 2001: Rates of North Atlantic deep water formation calculated from chlorofluorocarbon inventories. *Deep Sea Research, Part 1: Oceanographic Research Papers*, 48, 189–215.
- SMIC, 1971: Inadvertent Climate Modification: Report of the Study of Man's Impact on Climate, Massachusetts Institute of Technology Press, Cambridge, Mass., 308 pp.
- Smith, R.D., and P.R. Gent, 2004: Reference Manual for the Parallel Ocean Program (POP), Ocean Component of the Community Climate System Model (CCSM2.0 and 3.0). Technical Report LA-UR-02-2484, Los Alamos National Laboratory, Los Alamos, New Mexico (www.ccsm.ucar.edu/models/ccsm3.0/pop).
- Smith, R.N.B., 1990: A scheme for predicting layer clouds and their water content in a general circulation model. *Quarterly J. Royal Meteorological Society*, **116**, 435–460.
- Smith, S.J., et al., 2005: Climate change impacts for the conterminous USA, Part 1: Scenarios and context. *Climatic Change*, 69, 7–25.

- Soden, B.J., and I.M. Held, 2006: An assessment: Climate feedbacks in coupled ocean–atmosphere models. *J. Climate*, **19**, 3354–3360.
- Soden, B.J., et al., 2005: The radiative signature of upper tropospheric moistening. *Science*, **310**(5749), 841–844, doi:10.1126/science.1115602.
- Soden, B.J., A.J. Broccoli, and R.S. Hemler, 2004: On the use of cloud forcing to estimate cloud feedback. *J. Climate*, **17**, 3661–3665.
- Soden, B.J., et al., 2002: Global cooling after the eruption of Mount Pinatubo: A test of climate feedback by water vapor. *Science*, **296**, 727–730.
- Soden, B.J., 2000: The diurnal cycle of convection, clouds, and water vapor in the tropical upper troposphere. *Geophysical Research Letters*, 27, 2173–2176.
- Soden, B.J., and I.M. Held, 2000: An assessment of climate feedbacks in coupled ocean–atmosphere models. *J. Climate*, **19**, 3354–3360.
- Sokolov, A.P., and P.H. Stone, 1998: A flexible climate model for use in integrated assessments. *Climate Dynamics*, **14**, 291–303.
- Solman, S.A., M.N. Nunez, and P.R. Rowntree, 2003: On the evaluation of the representation of mid-latitude transients in the Southern Hemisphere by HadAM2B GCM and the impact of horizontal resolution. *Atmosfera*, 16, 245–272.
- Somerville, R.C.J., and L.A. Remer, 1984: Cloud optical thickness feedbacks in the CO₂ climate problem. *J. Geophysical Research*, 89, 9668–9672.
- Spencer, R.W., et al., 2007: Cloud and radiation budget changes associated with tropical intraseasonal oscillations. *Geophysical Research Letters*, 34, L15707, doi:10.1029/2007GL029698.
- Stainforth, D.A., et al., 2005: Uncertainty in predictions of the climate response to rising levels of greenhouse gases. *Nature*, 443, 403–406.
- Stephens, G.L., 2005: Cloud feedbacks in the climate system: A critical review. J. Climate, 18, 237–273.
- Stewart, I.T., D.R. Cayan, and M.D. Dettinger, 2004: Changes in snowmelt runoff timing in western North America under a "business as usual" climate change scenario. *Climatic Change*, 62, 217–232.
- Stott, P.A., and C.E. Forest, 2007: Ensemble climate predictions using climate models and observational constraints. *Philosophical Transactions Royal Society A: Mathematical, Physical, and Engineering Sciences*, 365(1857), 2029–2052, doi: 10.1098/rsta.2007.2075.
- Stott, P.A., et al., 2006: Observational constraints on past attributable warming and predictions of future global warming. *J. Climate*, 19(13), 3055–3069, doi:10.1175/JCLI3802.1.

- Stott, P.A., G.S. Jones, and J.F.B. Mitchell, 2003: Do models underestimate the solar contribution to recent climate change? *J. Climate*, 16, 4079–4093, doi:10.1175/1520-0442(2003)016!4079: DMUTSCO2.0.CO;2.
- Stouffer, R.J., et al., 2006: GFDL's CM2 global coupled climate models. Part IV: Idealized climate response. J. Climate, 19, 723–740.
- Stouffer, R.J., J. Russell, and M.J. Spelman, 2006: Importance of oceanic heat uptake in transient climate change. *Geophysical Research Letters*, 33(17), L17704, doi:10.1029/2006GL027242.
- Stouffer, R.J., G. Hegerl, and S. Tett, 2000: A comparison of surface air temperature variability in three 1000-yr coupled ocean-atmosphere model integrations. J. Climate, 13, 513–537.
- Strack, J.E., R.A. Pielke, and J. Adegoke, 2003: Sensitivity of modelgenerated daytime surface heat fluxes over snow to land-cover changes. J. Hydrometeorology, 4, 24–42.
- Stratton, R.A., 1999: A high resolution AMIP integration using the Hadley Centre model HadAM2b. *Climate Dynamics*, 15, 9–28.
- Sturm, M., et al., 2005: Changing snow and shrub conditions affect albedo with global implications. J. Geophysical Research–Biogeosciences, 110, Art. No. G01004.
- Sturm, M., et al., 2001: Snow-shrub interactions in Arctic tundra: A hypothesis with climatic implications. J. Climate, 14, 336–344.
- Sud, Y.C., and G.K. Walker, 1999: Microphysics of clouds with the Relaxed Arakawa–Schubert Scheme (McRAS). Part II: Implementation and performance in GEOS II GCM. J. Atmospheric Sciences, 56(18), 3221–3240.
- Sui, C.-H., X. Li, and K.-M. Lau, 1998: Radiative-convective processes in simulated diurnal variations of tropical oceanic convection. J. Atmospheric Sciences, 55, 2345–2359.
- Sun, S., and J. Hansen, 2003: Climate simulations for 1951–2050 with a coupled atmosphere-ocean model. *J. Climate*, 16, 2807–2826, doi:10.1175/1520–0442.
- Sun, S., and R. Bleck, 2001: Atlantic thermohaline circulation and its response to increasing CO₂ in a coupled atmosphere-ocean model. *Geophysical Research Letters*, 28, 4223–4226.
- Sun, Y., et al., 2006: How often does it rain? J. Climate, 19, 916–934.
- Svensmark, H., 2007: Cosmoclimatology: A new theory emerges. Astronomy *Geophysics*, 48, 118124, doi:10.1111/j.1468-4004.2007. 48118.x.

- Takle, E.S., et al., 1999: Project to Intercompare Regional Climate Simulations (PIRCS): Description and initial results. J. Geophysical Research, 104(D16), 19443–19461.
- Talley, L.D., J.L. Raid, and P.E. Robbins, 2003: Data-based meridional overturning stream functions for the global ocean. J. Climate, 16, 3213–3226.
- Tao, W.-K., 2007: Cloud-resolving modeling. J. Meteorological Society Japan. 125th Anniversary Special Issue, 85B, 305-330.
- Tao, W.-K., et al., 2004: Atmospheric energy budget and large-scale precipitation efficiency of convective systems during TOGA COARE, GATE, SCSMEX and ARM: Cloud-resolving model simulations. J. Atmospheric Sciences, 61, 2405–2423.
- Tao, W.-K., 2003: Goddard Cumulus Ensemble (GCE) model: Application for understanding precipitation processes. Cloud systems, hurricanes, and the Tropical Rainfall Measuring Mission (TRMM): A Tribute to Dr. Joanne Simpson, Meteorological Monograph. *Bulletin American Meteorological Society*, **51**, 107–138.
- Tao, W.-K., et al., 1999: On equilibrium states simulated by cloud-resolving models. J. Atmospheric Sciences, 56, 3128–3139.
- Tebaldi, C., et al., 2006: Going to the extremes: An intercomparison of model-simulated historical and future changes in extreme events. *Climate Change* 79(3–4), 185–211.
- Tebaldi, C., et al., 2005: Quantifying uncertainty in projections of regional climate change: A Bayesian approach to the analysis of multimodel ensembles. *J. Climate*, 18, 1524–1540.
- Tenhunen, J.D., et al., 1999: Ecosystem Studies, Land Use, and Resource Management, 1–19 in *Integrating Hydrology, Ecosystem Dynamics,* and Biochemistry in Complex Landscapes, ed. J.D. Tenhunen and P. Kabat. Wiley, Chichester.
- Thompson, D.W.J., and S. Solomon, 2002: Interpretation of recent Southern Hemisphere climate change. *Science*, **296**, 895–899, doi:10.1126/science.1069270.
- Thompson, D.W.J., and J.M. Wallace, 2000: Annual modes in the extratopical circulation. Part I: Month-to-month variability. J. Climate, 13, 1000–1016.
- Thompson, D.W.J., and J.M. Wallace, 1998: The Arctic Oscillation signature in the wintertime geopotential height and temperature fields. *Geophysical Research Letters*, 25, 1297–1300.
- Thompson, S., et al., 2004: Quantifying the effects of CO₂-fertilized vegetation on future global climate and carbon dynamics. *Geophysical Research Letters*, **31**(23), L23211.

- Thomson, A.M., et al., 2005: Climate change impacts for the conterminous USA, Part 3: Dryland production of grain and forage crops. *Climatic Change*, **69**, 43–65.
- Thorne, P.W., et al., 2007: Tropical vertical temperature trends: A real discrepancy? *Geophysical Research Letters*, 34, L16702, doi:10.1029/2007GL029875.
- Tiedtke, M., 1993: Representation of clouds in large-scale models. Monthly Weather Review, 121, 3040–3061.
- Tiedtke, M., 1989: A comprehensive mass flux scheme for cumulus parameterization in large scale models. *Monthly Weather Review*, 117, 1779–1800.
- Tjernström, M., et al., 2005: Modelling the Arctic boundary layer: An evaluation of six ARCMIP regional-scale models with data from the SHEBA project. *Boundary-Layer Meteorology*, **117**, 337–381.
- **Tjernström**, M., M. Zagar, and G. Svensson, 2004: Model simulations of the Arctic atmospheric boundary layer from the SHEBA year. *Ambio*, **33**, 221–227.
- Tjoelker, M.G., J. Oleksyn, and P.B. Reich, 2001: Modelling respiration of vegetation: Evidence for a general temperature-dependent Q10. *Global Change Biology*, 7(2), 223–230.
- **Tompkins**, A., 2002: A prognostic parameterization for the subgrid-scale variability of water vapor and clouds in large-scale models and its use to diagnose cloud cover. *J. Atmospheric Sciences*, 59, 1917–1942.
- Trenberth, K.E., J. Fasullo, and L. Smith, 2005: Trends and variability in column-integrated atmospheric water vapor. *Climate Dynamics*, 24 (7–8), 741–758, doi:10.1007/s00382-005-0017-4.
- Trenberth, K.E., et al., 1998: Progress during TOGA in understanding and modeling global teleconnections associated with tropical sea surface temperatures. J. Geophysical Research, 103 (special TOGA issue), 14291–14324.
- Trenberth, K.E., and T.J. Hoar, 1997: El Niño and climate change. *Geophysical Research Letters*, **24**, 3057–3060.
- Trenberth, K.E., and J. Hurrell, 1994: Decadal atmosphere-ocean variations in the Pacific. *Climate Dynamics*, **9**, 303–319.
- Trier, S. B., et al., 1996: Structure and evolution of the 22 February 1993 TOGA COARE squall line: Numerical simulations. J. Atmospheric Sciences, 53, 2861–2886.
- Tripoli, G.J., 1992: A nonhydrostatic mesoscale model designed to simulate scale interaction. *Monthly Weather Review*, **120**, 1342–1359.

- Tripoli, G.J., and W.R. Cotton, 1989: Numerical study of an observed orogenic mesoscale convective system. Part 2: Analysis of governing dynamics. *Monthly Weather Review*, 117, 305–328.
- Troccoli, A., and T.N. Palmer, 2007: Ensemble decadal predictions from analysed initial conditions. *Philosophical Transactions Royal Soci*ety A, 365 (No. 1857).
- **Tselioudis**, G., and C. Jakob, 2002: Evaluation of midlatitude cloud properties in a weather and a climate model: Dependence on dynamic regime and spatial resolution. *J. Geophysical Research*, **107**, 4781.
- Tselioudis, G., Y.-C. Zhang, and W.R. Rossow, 2000: Cloud and radiation variations associated with northern midlatitude low and high sea level pressure regimes. *J. Climate*, **13**, 312–327, doi:10.1175/1520-0442(2000).
- Tsushima, Y., A. Abe-Ouchi, and S. Manabe, 2005: Radiative damping of annual variation in global mean surface temperature: Comparison between observed and simulated feedback. *Climate Dynamics*, 24, 591–597.
- Twomey, S., 1977: The influence of pollution on the short wave albedo of clouds. *J. Atmospheric Sciences*, **34**, 1149–1152.
- Ueda, H., et al., 2006: Impact of anthropogenic forcing on the Asian summer monsoon as simulated by eight GCMs. *Geophysical Research Letters*, 33, doi:10.1029/2005GL025336.
- Uotila, P., et al., 2007: Changes in Antarctic net precipitation in the 21st Century based on IPCC model scenarios. *J. Geophysical Research*, 112, D10107, doi:10.1029/2006JD007482.
- Uppala, S.M., et al., 2005: The ERA-40 reanalysis. *Quarterly J. Royal Meteorological Society*, 131(612), 2961–3012, doi:10.1256/ qj.04.176. Index is at www.ecmwf.int/research/era/ ERA-40_Atlas/ docs/index.html.
- van Oldenborgh, G.J., S.Y. Philip, and M. Collins, 2005: El Niño in a changing climate: A multi-model study. *Ocean Science*, 1, 81–95.
- van Ulden, A.P., and G.J. van Oldenborgh, 2006: Large-scale atmospheric circulation biases and changes in global climate model simulations and their importance for climate change in Central Europe. Atmospheric Chemistry Physics, 6(4), 863–881
- VanRheenen, N.T., et al., 2004: Potential implications of PCM climate change scenarios for Sacramento–San Joaquin River basin hydrology and water resources. *Climatic Change*, 62, 257–281.
- Vavrus, S., et al., 2006: The behavior of extreme cold air outbreaks under greenhouse warming. *International J. Climatology*, 26, 1133–1147.

- Velicogna, I., and J. Wahr, 2006: Acceleration of Greenland ice mass loss in spring 2004. *Nature*, 443(7109), 329–331.
- Vidale, P.L., et al., 2003: Predictability and uncertainty in a regional climate model. J. Geophysical Research, 108(D18), 4586.
- Vinnikov, K.Y., D.J. Cavalieri, and C.L. Parkinson, 2006: A model assessment of satellite observed trends in polar sea ice extents. *Geophysical Research Letters*, 33, L05704.
- Vitart, F., and J.L. Anderson, 2001: Sensitivity of Atlantic tropical storm frequency to ENSO and interdecadal variability of SSTs in an ensemble of AGCM integrations. *J. Climate*, 14(4), 533–545.
- Völker, C., D.W.R. Wallace, and D.A. Wolf-Gladrow, 2002: On the role of heat fluxes in the uptake of anthropogenic carbon in the North Atlantic. *Global Biogeochemical Cycles*, **16**(4), 1138, doi:10.1029/ 2002GB001897.
- Von Storch, H., E. Zorita, and U. Cubasch, 1993: Downscaling of global climate change estimates to regional scales: An application to Iberian rainfall in wintertime. J. Climate, 6, 1161–1171.
- Wang, B., 1995: Interdecadal changes in El Niño onset in the last four decades. J. Climate, 8, 267–284.
- Wang, C., 2005: A modeling study of the response of tropical deep convection to the increase of cloud condensation nuclei concentration: 1. Dynamics and microphysics. J. Geophysical Research, 110, D21211.
- Wang, H., and K.-M. Lau, 2006: Atmospheric hydrological cycle in the tropics in Twentieth Century coupled climate simulations. *J. Climate*, 26, 655–678.
- Wang, M., et al., 2007: Intrinsic versus forced variation in coupled climate model simulations over the Arctic during the Twentieth Century. *J. Climate*, **20**(6), 1093–1107.
- Wang, W., and M.E. Schlesinger, 1999: The dependence on convection parameterization of the tropical intraseasonal oscillation simulated by the UIUC 11-layer atmospheric GCM. *J. Climate*, **12**(5), 1423– 1457.
- Wang, Y., et al., 2004: Regional climate modeling: Progress, challenges, and prospects. J. Meteorological Society Japan, 82, 1599–1628.
- Warrach, K., H.T. Mengelkamp, and E. Raschke, 2001: Treatment of frozen soil and snow cover in the land surface model SEWAB. *Theoretical Applied Climatology*, **69**, 23–37.
- Webb, M.J., et al., 2006: On the contribution of local feedback mechanisms to the range of climate sensitivity in two GCM ensembles. *Climate Dynamics*, 27(1), 17–38, doi:10.1007/s00382-006-0111-2.

- Webb, M.J., et al., 2001: Combining ERBE and ISCCP data to assess clouds in the Hadley Centre, ECMWF and LMD atmospheric climate models. *Climate Dynamics*, 17, 905–922.
- Webster, P.J., et al., 1998: Monsoons: Processes, predictability, and the prospects for prediction. J. Geophysical Research, 103(C7), 14451– 14510, doi:10.1029/97JC02719.
- Wei, H., et al., 2002: Calibration and validation of a regional climate model for pan-Arctic hydrologic simulation. J. Climate, 15, 3222– 3236.
- Wentz, F.J., et al., 2007: How much more rain will global warming bring? Science, 317, 233–235.
- Wetherald, R.T., and S. Manabe, 1988: Cloud feedback processes in general circulation models. J. Atmospheric Sciences, 45, 1397–1415.
- Whitman, S., et al., 1997: Mortality in Chicago attributed to the July 1995 heat wave. American J. Public Health, 87, 1515–1518.
- Widman, M., C.S. Bretherton, and E.P. Salathe, Jr., 2003: Statistical precipitation downscaling over the Northwestern United States using numerically simulated precipitation as a predictor. *J. Climate*, 16, 799–816.
- Wigley, T.M.L., et al., 2005: Effect of climate sensitivity on the response to volcanic forcing. J. Geophysical Research, 110, D09107.1– D09107.8, doi:10.1029/2004JD005557.
- Wigley, T.M.L., and M.E. Schlesinger, 1985: Analytical solution for the effect of increasing CO₂ on global mean temperature. *Nature*, **315**, 649–652.
- Wilby, R.L., et al., 2004: Guidelines for Use of Climate Scenarios Developed from Statistical Downscaling Methods. IPCC Data Distribution Centre, University of East Anglia, U.K., 27 pp. (ipcc-ddc.cru.uea.ac.uk/guidelines).
- Wilby, R.L., R. Dawson, and E.M. Barrow, 2002: SDSM: A decision support tool for the assessment of regional climate change assessments. *Environmental Modelling Software*, **17**, 145–157.
- Wilby, R.L., et al., 2000: Hydrological responses to dynamically and statistically downscaled general circulation model output. *Geophysical Research Letters*, 27, 1199–1202.
- Wilby, R.L., et al., 1998: Statistical downscaling of general circulation model output: A comparison of methods. *Water Resources Research*, 34, 2995–3008.
- Wilby, R.L., and T.M.L. Wigley, 1997: Downscaling general circulation model output: A review of methods and limitations. *Progress Physical Geography*, 21, 530–548.

- Wilks, D.S., and R.L. Wilby, 1999: The weather generation game: A review of stochastic weather models. *Progress Physical Geography*, 23, 329–357.
- Williams, K.D., et al., 2006: Evaluation of a component of the cloud response to climate change in an intercomparison of climate models. *Climate Dynamics*, 145, 145–165.
- Williams, K.D., M.A. Ringer, and C.A. Senior, 2003: Evaluating the cloud response to climate change and current climate variability. *Climate Dynamics*, 20, 705–721.
- Willson, R.C., and A.V. Mordvinov, 2003: Secular total solar irradiance trend during solar cycles 21–23. *Geophysical Research Letters*, 30(5), 1199–1202, doi:10.1029/2002GL016038, 2003.
- Wilson, D.R., and S.P. Ballard, 1999: A microphysics-based precipitation scheme for the U.K. Meteorological Office numerical weather prediction model. *International J. Climatology*, **125**, 1607–1636.
- Wilson, M.F., et al., 1987: Sensitivity of the Biosphere Atmosphere Transfer Scheme (BATS) to the inclusion of variable soil characteristics. J. Climate Applied Meteorology, 26, 341–362.
- Wilson, T.B., et al., 2003: Evaluation of the importance of Lagrangian canopy turbulence formulations in a soil-plant-atmosphere model. *Agricultural Forest Meteorology*, **115**, 51–69.
- Winkler, J.A., et al., 2002: Possible impacts of projected temperature change on commercial fruit production in the Great Lakes Region. *J. Great Lakes Research*, 28, 608–625.
- Winton, M., 2000: A reformulated three-layer sea ice model. J. Atmospheric Oceanic Technology, 17, 525–531.
- Wittenberg, A.T., et al., 2006: GFDL's CM2 global coupled climate models. Part III: Tropical Pacific climate and ENSO. J. Climate, 19, 698–722.
- Wood, A.W., et al., 2004: Hydrological implications of dynamical and statistical approaches to downscaling climate model outputs. *Climate Change*, 62, 189–216.
- Woodward, F.I., and M.R. Lomas, 2004: Vegetation dynamics—simulating responses to climatic changes. *Biological Reviews* **79**, 643– 670.
- Wu, X., et al., 2007: Coupling of convective momentum transport with convective heating in global climate simulations. J. Atmospheric Sciences, 64(4), 1334–1349.

- Wu, X., and M.W. Moncrieff, 2001: Long-term behavior of cloud systems in TOGA COARE and their interactions with radiative and surface processes. Part III: Effects on the energy budget and SST. J. Atmospheric Sciences, 58, 1155–1168.
- Wyant, M.C., et al., 2006: A comparison of tropical cloud properties and responses in GCMs using mid-tropospheric vertical velocity. *Climate Dynamics*, 27, 261–279.
- Wyant, M.C., M. Khairoutdinov, and C.S. Bretherton, 2006: Climate sensitivity and cloud response of a GCM with a superparameterization. *Geophysical Research Letters*, 33, L06714.
- Wyrtki, K., 1975: El Niño—The dynamic response of the equatorial Pacific Ocean to atmospheric forcing. J. Physical Oceanography, 5, 572–584.
- Xie, P., and P.A. Arkin, 1997: Global precipitation: A 17-year monthly analysis based on gauge observations, satellite estimates, and numerical model outputs. *Bulletin American Meteorological Society* 78, 2539–2558.
- Xie, S., et al., 2005: Simulations of midlatitude frontal clouds by singlecolumn and cloud-resolving models during the Atmospheric Radiation Measurement March 2000 cloud intensive operational period. J. Geophysical Research, 110, D15S03.
- Xie, S., et al., 2004: Impact of a revised convective triggering mechanism on Community Atmosphere Model, Version 2, simulations: Results from short-range weather forecasts. *J. Geophysical Research*, 109, D14102, doi:10.1029/2004JD004692.
- Xu, K.-M., et al., 2005: Modeling springtime shallow frontal clouds with cloud-resolving and single-column models. *J. Geophysical Research*, 110, D15S04, doi:10.1029/2004JD005153.
- Xu, K.-M., and D.A. Randall, 1998: Influence of large-scale advective cooling and moistening effects on the quasi-equilibrium behavior of explicitly simulated cumulus ensembles. *J. Atmospheric Sciences*, 55, 896–909.
- Xue, Y., et al., 2001: The impact of land surface processes on simulations of the U.S. hydrological cycle: A case study of the 1993 flood using the SSiB land surface model in the NCEP ETA regional model. *Monthly Weather Review*, **129**(12), 2833–2860.
- Yamaguchi, K., A. Noda, and A. Kitoh, 2005: The changes in permafrost induced by greenhouse warming: A numerical study applying multiple-layer ground model. *J. Meteorological Society Japan*, 83, 799– 815.
- Yang, Z.W., and R. Arritt, 2002: Tests of a perturbed physics ensemble approach for regional climate modeling. J. Climate, 15, 2881–2896.

- Yao, M.-S., and A.D. Del Genio, 2002: Effects of cloud parameterization on the simulation climate changes in the GISS GCM. Part II: Sea surface temperature and cloud feedbacks. J. Climate, 15, 2491–2503.
- Yeh, P.J.-F., and E.A.B. Eltahir, 2005: Representation of water table dynamics in a land surface scheme. Part 1: Model development. J. Climate, 18, 1861–1880.
- Yokohata, T, et al., 2005: Climate response to volcanic forcing: Validation of climate sensitivity of a coupled atmosphere-ocean general circulation model. *Geophysical Research Letters*, 32(21), L21710.1– L21710.4.
- York, J.P., et al., 2002: Putting aquifers into atmospheric simulation models: An example from the Mill Creek Watershed, northeastern Kansas. Advances Water Resources, 25, 221–238.
- Yu, H., et al., 2006: A review of measurement-based assessment of aerosol direct radiative effect and forcing. *Atmospheric Chemistry Physics*, 6, 613–666.
- Yu, X., and M.J. McPhaden, 1999: Seasonal variability in the equatorial Pacific. J. Physical Oceanography, 29, 925–947.
- Zebiak, S.E., and M.A. Cane, 1987: A model El Niño-Southern Oscillation. *Monthly Weather Review*, 115, 2262–2278.
- Zhang, C., et al., 2006: Simulations of the Madden-Julian Oscillation in four pairs of coupled and uncoupled global models. *Climate Dynamics* 27(6), 573–592.
- Zhang, D., and M.J. McPhaden, 2006: Decadal variability of the shallow Pacific meridional overturning circulation: Relation to tropical sea surface temperatures in observations and climate change models. *Ocean Modelling*, 15, 250–273.
- Zhang, G.J., and N.A. McFarlane, 1995: Sensitivity climate simulations to the parameterization of cumulus convection in the Canadian Climate Centre general circulation model. *Atmosphere–Ocean*, 33, 407–446.
- Zhang, J., and D. Rothrock, 2000: Modeling Arctic sea ice with an efficient plastic solution, J. Geophysical Research, 105, 3325–3338.
- Zhang, M.H., et al., 2005: Comparing clouds and their seasonal variations in 10 atmospheric general circulation models with satellite measurements. J. Geophysical Research, 110, D15S02, doi:10.1029/ 2004JD005021.
- Zhang, M., 2004: Cloud-climate feedback: How much do we know? In Observation, Theory, and Modeling of Atmospheric Variability. World Scientific Series on Meteorology of East Asia, Vol. 3, ed. Zhu et al. World Scientific Publishing Co., Singapore, 632 pp.

- Zhang, M.H., et al., 2001: Objective analysis of the ARM IOP data: Method and sensitivity. *Monthly Weather Review*, **129**, 295–311.
- Zhang, M.H., et al., 1994: Diagnostic study of climate feedback processes in atmospheric general circulation models. *J. Geophysical Research*, 99, 5525–5537.
- Zhang, R., and T.L. Delworth, 2006: Impact of Atlantic multidecadal oscillations on India/Sahel rainfall and Atlantic hurricanes. *Geophysical Research Letters*, 33, L17712, doi:10.1029/2006GL026267.
- Zhang, X., and J.E. Walsh, 2006: Toward a seasonally ice-covered Arctic Ocean: Scenarios from the IPCC AR4 model simulations. J. Climate, 19, 1730–1747.
- Zhang, X.-C., 2005: Spatial downscaling of global climate model output for site-specific assessment of crop production and soil erosion. *Agricultural Forest Meteorology*, **135**, 215–229.
- Zhang, Y.C., A.N. Huang, and X.S. Zhu, 2006: Parameterization of the thermal impacts of sub-grid orography on numerical modeling of the surface energy budget over East Asia. *Theoretical Applied Climatology*, 86, 201–214.
- Zhu, J., and X.-Z. Liang, 2007: Regional climate model simulations of U.S. precipitation and surface air temperature during 1982–2002: Interannual variation. J. Climate, 20(2), 218–232.
- Zorita, E., and H. von Storch, 1999: The analog method as a simple statistical downscaling technique: Comparison with more complicated methods. J. Climate, 12, 2474–2489.