# Anand Gnanadesikan

List of Publications by Year
in descending order



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|---|---|---|---|
| 118 papers | 13,075 citations | 57758 44 h-index | 24258 110 g-index |
| 139 all docs | 139 docs citations | 139 times ranked | 12016 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. Nature, 2005, 437, 681-686. | 27.8 | 3,772 |
| 2 | GFDL's CM2 Global Coupled Climate Models. Part I: Formulation and Simulation Characteristics. Journal of Climate, 2006, 19, 643-674. | 3.2 | 1,431 |
| 3 | A synthesis of global particle export from the surface ocean and cycling through the ocean interior and on the seafloor. Global Biogeochemical Cycles, 2007, 21, . | 4.9 | 464 |
| 4 | A Simple Predictive Model for the Structure of the Oceanic Pycnocline. Science, 1999, 283, 2077-2079. | 12.6 | 460 |
| 5 | 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. Journal of Physical Oceanography, 2006, 36, 2232-2252. | 1.7 | 402 |
| 6 | Empirical and mechanistic models for the particle export ratio. Global Biogeochemical Cycles, 2005, 19, n/a-n/a. | 4.9 | 353 |
| 7 | Formulation of an ocean model for global climate simulations. Ocean Science, 2005, 1, 45-79. | 3.4 | 343 |
| 8 | The GFDL CM3 Coupled Climate Model: Characteristics of the Ocean and Sea Ice Simulations. Journal of Climate, 2011, 24, 3520-3544. | 3.2 | 288 |
| 9 | GFDL's CM2 Global Coupled Climate Models. Part II: The Baseline Ocean Simulation. Journal of Climate, 2006, 19, 675-697. | 3.2 | 269 |
| 10 | The Southern Ocean biogeochemical divide. Nature, 2006, 441, 964-967. | 27.8 | 268 |
| 11 | The Southern Hemisphere Westerlies in a Warming World: Propping Open the Door to the Deep Ocean. Journal of Climate, 2006, 19, 6382-6390. | 3.2 | 255 |
| 12 | Isoneutral Diffusion in az-Coordinate Ocean Model. Journal of Physical Oceanography, 1998, 28, 805-830. | 1.7 | 216 |
| 13 | Evaluating global ocean carbon models: The importance of realistic physics. Global Biogeochemical Cycles, 2004, 18, n/a-n/a. | 4.9 | 210 |
| 14 | A new estimate of the CaCO3to organic carbon export ratio. Global Biogeochemical Cycles, 2002, 16, 54-1-54-12. | 4.9 | 175 |
| 15 | Evaluation of ocean carbon cycle models with data-based metrics. Geophysical Research Letters, 2004, 31, n/a-n/a. | 4.0 | 168 |
| 16 | Transient Response in aZ-Level Ocean Model That Resolves Topography with Partial Cells. Monthly Weather Review, 1998, 126, 3248-3270. | 1.4 | 157 |
| 17 | Impacts of Shortwave Penetration Depth on Large-Scale Ocean Circulation and Heat Transport. Journal of Physical Oceanography, 2005, 35, 1103-1119. | 1.7 | 154 |
| 18 | Regional impacts of iron-light colimitation in a global biogeochemical model. Biogeosciences, 2010, 7, 1043-1064. | 3.3 | 152 |

| # | Article | IF | Citations |
|---|---|---|---|
| 19 | Simulation of Density-Driven Frictional Downslope Flow inZ-Coordinate Ocean Models. Journal of Physical Oceanography, 1998, 28, 2163-2174. | 1.7 | 127 |
| 20 | Impact of oceanic circulation on biological carbon storage in the ocean and atmospheric pCO<sub>2</sub>. Global Biogeochemical Cycles, 2008, 22, . | 4.9 | 118 |
| 21 | Structure and variability of Langmuir circulation during the Surface Waves Processes Program. Journal of Geophysical Research, 1996, 101, 3525-3543. | 3.3 | 116 |
| 22 | Multidecadal increase in North Atlantic coccolithophores and the potential role of rising CO <sub>2</sub>. Science, 2015, 350, 1533-1537. | 12.6 | 112 |
| 23 | On the Relationship of the Circumpolar Current to Southern Hemisphere Winds in Coarse-Resolution Ocean Models. Journal of Physical Oceanography, 2000, 30, 2013-2034. | 1.7 | 111 |
| 24 | Oceanic ventilation and biogeochemical cycling: Understanding the physical mechanisms that produce realistic distributions of tracers and productivity. Global Biogeochemical Cycles, 2004, 18, n/a-n/a. | 4.9 | 108 |
| 25 | Oceanic vertical exchange and new production: a comparison between models and observations. Deep-Sea Research Part II: Topical Studies in Oceanography, 2001, 49, 363-401. | 1.4 | 107 |
| 26 | An Exploration of the Role of Transient Eddies in Determining the Transport of a Zonally Reentrant Current. Journal of Physical Oceanography, 2001, 31, 3312-3330. | 1.7 | 96 |
| 27 | Climate Variability and Radiocarbon in the CM2Mc Earth System Model. Journal of Climate, 2011, 24, 4230-4254. | 3.2 | 88 |
| 28 | Effects of patchy ocean fertilization on atmospheric carbon dioxide and biological production. Global Biogeochemical Cycles, 2003, 17, n/a-n/a. | 4.9 | 86 |
| 29 | Deep ocean biogeochemistry of silicic acid and nitrate. Global Biogeochemical Cycles, 2007, 21, . | 4.9 | 85 |
| 30 | The Energetics of Ocean Heat Transport. Journal of Climate, 2005, 18, 2604-2616. | 3.2 | 80 |
| 31 | A global model of silicon cycling: Sensitivity to eddy parameterization and dissolution. Global Biogeochemical Cycles, 1999, 13, 199-220. | 4.9 | 78 |
| 32 | Ocean Water Clarity and the Ocean General Circulation in a Coupled Climate Model. Journal of Physical Oceanography, 2009, 39, 314-332. | 1.7 | 71 |
| 33 | Isopycnal mixing by mesoscale eddies significantly impacts oceanic anthropogenic carbon uptake. Geophysical Research Letters, 2015, 42, 4249-4255. | 4.0 | 71 |
| 34 | How does ocean biology affect atmospheric pCO<sub>2</sub>? Theory and models. Journal of Geophysical Research, 2008, 113, . | 3.3 | 70 |
| 35 | Fueling export production: nutrient return pathways from the deep ocean and their dependence on the Meridional Overturning Circulation. Biogeosciences, 2010, 7, 3549-3568. | 3.3 | 68 |
| 36 | Efficiency of small scale carbon mitigation by patch iron fertilization. Biogeosciences, 2010, 7, 3593-3624. | 3.3 | 64 |

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| 37 | Low helium flux from the mantle inferred from simulations of oceanic helium isotope data. Earth and Planetary Science Letters, 2010, 297, 379-386. | 4.4 | 64 |
| 38 | How ice shelf morphology controls basal melting. Journal of Geophysical Research, 2009, 114, . | 3.3 | 63 |
| 39 | Understanding why the volume of suboxic waters does not increase over centuries of global warming in an Earth System Model. Biogeosciences, 2012, 9, 1159-1172. | 3.3 | 62 |
| 40 | How does ocean ventilation change under global warming?. Ocean Science, 2007, 3, 43-53. | 3.4 | 55 |
| 41 | Meridional Density Gradients Do Not Control the Atlantic Overturning Circulation. Journal of Physical Oceanography, 2010, 40, 368-380. | 1.7 | 54 |
| 42 | Impact of ocean color on the maintenance of the Pacific Cold Tongue. Geophysical Research Letters, 2007, 34, . | 4.0 | 53 |
| 43 | Critical role for mesoscale eddy diffusion in supplying oxygen to hypoxic ocean waters. Geophysical Research Letters, 2013, 40, 5194-5198. | 4.0 | 51 |
| 44 | Complex functionality with minimal computation: Promise and pitfalls of reducedâ€tracer ocean biogeochemistry models. Journal of Advances in Modeling Earth Systems, 2015, 7, 2012-2028. | 3.8 | 49 |
| 45 | The impacts of changing transport and precipitation on pollutant distributions in a future climate. Journal of Geophysical Research, 2011, 116, . | 3.3 | 47 |
| 46 | Diagnosing atmosphere-ocean general circulation model errors relevant to the terrestrial biosphere using the KÃ¶ppen climate classification. Geophysical Research Letters, 2006, 33, . | 4.0 | 46 |
| 47 | Water Mass Exchange in the Southern Ocean in Coupled Climate Models. Journal of Physical Oceanography, 2011, 41, 1756-1771. | 1.7 | 46 |
| 48 | Central role of Southern Hemisphere winds and eddies in modulating the oceanic uptake of anthropogenic carbon. Geophysical Research Letters, 2006, 33, n/a-n/a. | 4.0 | 45 |
| 49 | Effects in a climate model of slope tapering in neutral physics schemes. Ocean Modelling, 2007, 16, 1-16. | 2.4 | 44 |
| 50 | Regional Atmospheric Circulation and Rainfall Variability in South Equatorial Africa. Journal of Climate, 2015, 28, 809-818. | 3.2 | 44 |
| 51 | Representation of the carbon cycle in box models and GCMs, 2, Organic pump. Global Biogeochemical Cycles, 2003, 17, . | 4.9 | 43 |
| 52 | Southern Hemisphere extratropical circulation: Recent trends and natural variability. Geophysical Research Letters, 2015, 42, 5508-5515. | 4.0 | 42 |
| 53 | Representation of the carbon cycle in box models and GCMs: 1. Solubility pump. Global Biogeochemical Cycles, 2003, 17, . | 4.9 | 41 |
| 54 | Structure and Instability of the Ekman Spiral in the Presence of Surface Gravity Waves. Journal of Physical Oceanography, 1995, 25, 3148-3171. | 1.7 | 39 |

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| 55 | Regional impacts of ocean color on tropical Pacific variability. Ocean Science, 2009, 5, 313-327. | 3.4 | 37 |
| 56 | Interhemispheric gradient of atmospheric radiocarbon reveals natural variability of Southern Ocean winds. Climate of the Past, 2011, 7, 1123-1138. | 3.4 | 37 |
| 57 | Global Atmospheric Teleconnections and Multidecadal Climate Oscillations Driven by Southern Ocean Convection. Journal of Climate, 2017, 30, 8107-8126. | 3.2 | 37 |
| 58 | Constraints placed by silicon cycling on vertical exchange in general circulation models. Geophysical Research Letters, 1999, 26, 1865-1868. | 4.0 | 36 |
| 59 | How ocean color can steer Pacific tropical cyclones. Geophysical Research Letters, 2010, 37, . | 4.0 | 35 |
| 60 | How does the Redi parameter for mesoscale mixing impact global climate in an Earth System Model?. Journal of Advances in Modeling Earth Systems, 2014, 6, 586-601. | 3.8 | 35 |
| 61 | Investigation of land iceâ€ocean interaction with a fully coupled iceâ€ocean model: 1. Model description and behavior. Journal of Geophysical Research, 2012, 117, . | 3.3 | 33 |
| 62 | Export is not enough: nutrient cycling and carbon sequestration. Marine Ecology - Progress Series, 2008, 364, 289-294. | 1.9 | 32 |
| 63 | The Deep Ocean Buoyancy Budget and Its Temporal Variability. Journal of Climate, 2014, 27, 551-573. | 3.2 | 29 |
| 64 | Modeling the diurnal cycle of carbon monoxide: Sensitivity to physics, chemistry, biology, and optics. Journal of Geophysical Research, 1996, 101, 12177-12191. | 3.3 | 27 |
| 65 | The Transient Response of the Southern Ocean to Stratospheric Ozone Depletion. Journal of Climate, 2016, 29, 7383-7396. | 3.2 | 25 |
| 66 | Sensitivity of water mass transformation and heat transport to subgridscale mixing in coarse-resolution ocean models. Geophysical Research Letters, 2003, 30, . | 4.0 | 24 |
| 67 | What ocean biogeochemical models can tell us about bottom-up control of ecosystem variability. ICES Journal of Marine Science, 2011, 68, 1030-1044. | 2.5 | 24 |
| 68 | Variations in Ocean Deoxygenation Across Earth System Models: Isolating the Role of Parameterized Lateral Mixing. Global Biogeochemical Cycles, 2019, 33, 703-724. | 4.9 | 24 |
| 69 | Tracking storm-generated waves in the northeast Pacific Ocean with ERS-1 synthetic aperture radar imagery and buoys. Journal of Geophysical Research, 1998, 103, 7917-7929. | 3.3 | 22 |
| 70 | Large-Scale Oceanographic Constraints on the Distribution of Melting and Freezing under Ice Shelves. Journal of Physical Oceanography, 2008, 38, 2242-2255. | 1.7 | 22 |
| 71 | Investigation of land iceâ€ocean interaction with a fully coupled iceâ€ocean model: 2. Sensitivity to external forcings. Journal of Geophysical Research, 2012, 117, . | 3.3 | 22 |
| 72 | Quantifying the biological impact of surface ocean light attenuation by colored detrital matter in an ESM using a new optical parameterization. Biogeosciences, 2015, 12, 5119-5132. | 3.3 | 22 |

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| 73 | The Southern Ocean Sea Surface Temperature Response to Ozone Depletion: A Multimodel Comparison. Journal of Climate, 2019, 32, 5107-5121. | 3.2 | 22 |
| 74 | Transient Response of the Southern Ocean to Changing Ozone: Regional Responses and Physical Mechanisms. Journal of Climate, 2017, 30, 2463-2480. | 3.2 | 19 |
| 75 | Are the Central Andes Mountains a Warming Hot Spot?. Journal of Climate, 2017, 30, 3589-3608. | 3.2 | 19 |
| 76 | Impact of Lateral Mixing in the Ocean on El Nino in a Suite of Fully Coupled Climate Models. Journal of Advances in Modeling Earth Systems, 2017, 9, 2493-2513. | 3.8 | 18 |
| 77 | Exploring the isopycnal mixing and heliumâ€“heat paradoxes in a suite of Earth system models. Ocean Science, 2015, 11, 591-605. | 3.4 | 17 |
| 78 | On the coupled response to ice-shelf basal melting. Journal of Glaciology, 2012, 58, 203-215. | 2.2 | 16 |
| 79 | Effects of Saturated and Dry Land Surfaces on the Tropical Circulation and Precipitation in a General Circulation Model. Journal of Climate, 1991, 4, 873-889. | 3.2 | 15 |
| 80 | A simple theory of the pycnocline and overturning revisited. Geophysical Monograph Series, 2007, , 19-32. | 0.1 | 14 |
| 81 | Using altimetry to help explain patchy changes in hydrographic carbon measurements. Journal of Geophysical Research, 2009, 114, . | 3.3 | 14 |
| 82 | Understanding Multidecadal Variability in ENSO Amplitude. Journal of Climate, 2014, 27, 4037-4051. | 3.2 | 14 |
| 83 | Increased Surface Ocean Heating by Colored Detrital Matter (CDM) Linked to Greater Northern Hemisphere Ice Formation in the GFDL CM2Mc ESM. Journal of Climate, 2016, 29, 9063-9076. | 3.2 | 14 |
| 84 | Upper Ocean Cooling in a Coupled Climate Model Due to Light Attenuation by Yellowing Materials. Geophysical Research Letters, 2018, 45, 6134-6140. | 4.0 | 14 |
| 85 | Estimating the contribution of strong daily export events to total pollutant export from the United States in summer. Journal of Geophysical Research, 2009, 114, . | 3.3 | 13 |
| 86 | Impact of Colored Dissolved Materials on the Annual Cycle of Sea Surface Temperature: Potential Implications for Extreme Ocean Temperatures. Geophysical Research Letters, 2019, 46, 861-869. | 4.0 | 13 |
| 87 | Numerical issues for coupling biological models with isopycnal mixing schemes. Ocean Modelling, 1999, 1, 1-15. | 2.4 | 12 |
| 88 | Connecting Atlantic temperature variability and biological cycling in two earth system models. Journal of Marine Systems, 2014, 133, 39-54. | 2.1 | 12 |
| 89 | Interdecadal Trichodesmium variability in cold North Atlantic waters. Global Biogeochemical Cycles, 2016, 30, 1620-1638. | 4.9 | 12 |
| 90 | Interannual SAM Modulation of Antarctic Sea Ice Extent Does Not Account for Its Longâ€Term Trends, Pointing to a Limited Role for Ozone Depletion. Geophysical Research Letters, 2021, 48, e2021GL094871. | 4.0 | 12 |

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| 91 | Mixing driven by vertically variable forcing: an application to the case of Langmuir circulation. Journal of Fluid Mechanics, 1996, 322, 81-107. | 3.4 | 11 |
| 92 | Impact of climate warming on upper layer of the Bering Sea. Climate Dynamics, 2013, 40, 327-340. | 3.8 | 11 |
| 93 | Turbulent heat exchange between water and ice at an evolving iceâ€“water interface. Journal of Fluid Mechanics, 2016, 798, 572-597. | 3.4 | 11 |
| 94 | Large Eddy Simulation of Heat Entrainment Under Arctic Sea Ice. Journal of Geophysical Research: Oceans, 2018, 123, 287-304. | 2.6 | 10 |
| 95 | Scaling Global Warming Impacts on Ocean Ecosystems: Lessons From a Suite of Earth System Models. Frontiers in Marine Science, 2020, 7, . | 2.5 | 10 |
| 96 | Abundant and persistent sulfurâ€oxidizing microbial populations are responsive to hypoxia in the Chesapeake Bay. Environmental Microbiology, 2022, 24, 2315-2332. | 3.8 | 10 |
| 97 | Relationship between Ocean Carbon and Heat Multidecadal Variability. Journal of Climate, 2018, 31, 1467-1482. | 3.2 | 9 |
| 98 | Simulated Dust Aerosol Impacts on Western Sahelian Rainfall: Importance of Ocean Coupling. Journal of Climate, 2018, 31, 9107-9124. | 3.2 | 9 |
| 99 | Changes in ocean circulation and carbon storage are decoupled from air-sea CO<sub>2</sub> fluxes. Biogeosciences, 2011, 8, 505-513. | 3.3 | 8 |
| 100 | Investigation of the Surface and Circulation Impacts of Cloud-Brightening Geoengineering. Journal of Climate, 2012, 25, 7527-7543. | 3.2 | 8 |
| 101 | The Impact of Parameterized Lateral Mixing on the Antarctic Circumpolar Current in a Coupled Climate Model. Journal of Physical Oceanography, 2020, 50, 965-982. | 1.7 | 8 |
| 102 | Challenges in modeling spatiotemporally varying phytoplankton blooms in the Northwestern Arabian Sea and Gulf of Oman. Biogeosciences, 2016, 13, 1049-1069. | 3.3 | 7 |
| 103 | Feedbacks Driving Interdecadal Variability in Southern Ocean Convection in Climate Models: A Coupled Oscillator Mechanism. Journal of Physical Oceanography, 2020, 50, 2227-2249. | 1.7 | 7 |
| 104 | Sensitivity of sequestration efficiency to mixing processes in the global ocean. Energy, 2004, 29, 1467-1478. | 8.8 | 6 |
| 105 | OESbathy version 1.0: a method for reconstructing ocean bathymetry with generalized continental shelf-slope-rise structures. Geoscientific Model Development, 2015, 8, 2735-2748. | 3.6 | 6 |
| 106 | Can machine learning extract the mechanisms controlling phytoplankton growth from large-scale observations? â€“ A proof-of-concept study. Biogeosciences, 2021, 18, 1941-1970. | 3.3 | 6 |
| 107 | Characterizing the Roles of Biogeochemical Cycling and Ocean Circulation in Regulating Marine Copper Distributions. Journal of Geophysical Research: Oceans, 2022, 127, . | 2.6 | 5 |
| 108 | Regional Responses to Black Carbon Aerosols: The Importance of Airâ€Sea Interaction. Journal of Geophysical Research D: Atmospheres, 2017, 122, 12,982. | 3.3 | 4 |

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| 109 | Strength of Linkages Between Dust and Circulation Over North Africa: Results From a Coupled Modeling System With Active Dust. Journal of Geophysical Research D: Atmospheres, 2020, 125, e2019JD030961. | 3.3 | 4 |
| 110 | Physical Oceanography, Thermal Structure and General Circulation. , 2003, , 189-210. | | 3 |
| 111 | Flux Correction and Overturning Stability: Insights from a Dynamical Box Model. Journal of Climate, 2018, 31, 9335-9350. | 3.2 | 3 |
| 112 | Realistic Paleobathymetry of the Cenomanianâ€“Turonian (94 Ma) Boundary Global Ocean. Geosciences (Switzerland), 2018, 8, 21. | 2.2 | 3 |
| 113 | Isopycnal mixing. , 2022, , 215-256. | | 3 |
| 114 | Scaling laws for perturbations in the oceanâ€“atmosphere system following large CO<sub>2</sub> emissions. Climate of the Past, 2015, 11, 991-1007. | 3.4 | 1 |
| 115 | Relationship between Age and Oxygen along Line W in the Northwest Atlantic Ocean. Ocean Science Journal, 2020, 55, 203-217. | 1.3 | 1 |
| 116 | [Report on Statistics and Physical Oceanography]: Comment. Statistical Science, 1994, 9, 208. | 2.8 | 0 |
| 117 | Correction to â€œUsing altimetry to help explain patchy changes in hydrographic carbon measurementsâ€• Journal of Geophysical Research, 2009, 114, . | 3.3 | 0 |
| 118 | Using neural network ensembles to separate ocean biogeochemical and physical drivers of phytoplankton biogeography in Earth system models. Geoscientific Model Development, 2022, 15, 1595-1617. | 3.6 | 0 |