Stanford

# Leif Thomas

Professor of Earth System Science and, by courtesy, of Oceans

## Bio

### ACADEMIC APPOINTMENTS

- Professor, Earth System Science
- Professor (By courtesy), Oceans
- Affiliate, Stanford Woods Institute for the Environment

### ADMINISTRATIVE APPOINTMENTS

- Undergraduate Research Assistant, Center for Nonlinear Science, Department of Physics, University of California at Santa Barbara, (1995-1997)
- Research Assistant, School of Oceanography, University of Washington, (1997-2003)
- Postdoctoral Research Associate School of Oceanography and Applied Physics Laboratory, University of Washington, (2004-2005)
- Assistant Scientist, Department of Physical Oceanography, Woods Hole Oceanographic Institution, (2005-2008)
- Assistant Professor of Environmental Earth System Science, Stanford University, (2008- present)

### HONORS AND AWARDS

- H. Burr Steinbach Visiting Scholar, Physical Oceanography, Woods Hole Oceanographic Institution (2018)
- Editors' Citation for Excellence in Refereeing for Journal of Geophysical Research- Oceans, American Geophysical Union (2013)
- Nicholas P. Fofonoff Award, American Meteorological Society (2013)
- Editors' Citation for Excellence in Refereeing for Journal of Geophysical Research- Oceans, American Geophysical Union (2012)
- Editor's Award Journal of Physical Oceanography, American Meteorological Society (2011)
- Terman Fellow, Stanford University (2008 - Present)
- Invited participant, Physical Oceanography Dissertation Symposium (2003)
- Arnold T. Nordsieck Memorial Prize for outstanding undergraduate research, Department of Physics, University of California at Santa Barbara (1997)
- Highest Honors, University California Santa Barbara (1997)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Local organizing committee, 67th Annual Meeting of the APS Division of Fluid Dynamics (2014 - 2014)
- Co-organizer EESS Seminar Series (Spring), Stanford (2014 - 2014)
- Co-organizer Fluid Mechanics Seminar Series (Spring), Stanford (2014 - 2014)
- Invited Speaker, Ocean Seminar Series, University of Washington (2014 - 2014)
- Invited Speaker, EESS Dept Seminar, Stanford (2014 - 2014)
- Invited Speaker, 33rd CNLS Annual Conference, Ocean Turbulence, Santa Fe (2013 - 2013)

- Host, Stanford's Summer Research Program for Teachers, Stanford University (2013 - 2013)
- Invited Speaker, Gordon Research Conference on Coastal Ocean Circulation (2013 - 2013)
- Earth Systems Oceans Track Revision Committee, Stanford University (2013 - 2013)
- Invited Speaker, Physical Oceanography Seminar Series, Oregon State University (2013 - 2013)
- Invited Speaker, Fluid Mechanics Seminar, Stanford University (2013 - 2013)
- Invited Speaker, Climate Seminar, Harvard University (2013 - 2013)
- Invited Speaker, Geology & Geophysics Department Colloquium, Yale University (2013 - 2013)
- Program Chair, 19th Conference on Atmospheric and Oceanic Fluid Dynamics, Providence, American Meteorological Society (2013 - 2013)
- LatMix meeting organizer, Stanford University (2013 - 2013)
- Invited Speaker, AGU Fall Meeting, Session on The Fluid Dynamics of Planets and Stars, American Geophysical Union (2012 - 2012)
- Convener, AGU Fall Meeting Session on Physics and Biogeochemistry of Submesoscale Processes, American Geophysical Union (2012 - 2012)
- Earth Systems Executive Committee, Stanford University (2012 - present)
- Organizer, Fluid Mechanics Seminar Series, Stanford (Spring Quarter), Stanford University (2012 - 2012)
- Invited participant, Workshop on Inertial Oscillation Physics and Lagrangian Methods, RSMAS, Miami (2012 - 2012)
- Invited presenter, US CLIVAR Summit, U.S. Climate Variability and Predictability Research Program (2012 - 2012)
- Participant, CLIMODE workshop, WHOI, Woods Hole Oceanographic Institute (2012 - 2012)
- Participant, LATMIX research cruise (Feb 22-Mar 17), Scalable Lateral Mixing and Coherent Turbulence (LATMIX) (2012 - 2012)
- Invited Speaker, Climate, Atmospheric Science and Physical Oceanography Seminar Series, Scripps Institution of Oceanography (2012 - 2012)
- Invited Speaker, Climate and Global Dynamics Seminar Series, NCAR, National Center for Atmospheric Research (2011 - 2011)
- Workshop Participant, Balance, Boundaries and Mixing in the Climate Problem, Montreal, Centre de Recherches Mathematiques (2011 - 2011)
- Committee Member, Atmospheric and Oceanic Fluid Dynamics, American Meteorological Society Scientific and Technological Activities Commission (2011 - present)
- Invited Speaker, Fluid Mechanics Seminar, Stanford University (2011 - 2011)
- Participant, ONR Lateral Mixing DRI Planning Meeting, UCLA, ONR (2011 - 2011)
- Lab demo presentation to Summer Research Program for Teachers, Stanford University (2011 - 2011)
- EESS Graduate Admissions Committee, Stanford University (2010 - present)
- Guest Editor, Special Issue on Subtropical Mode Water in the North Atlantic Ocean, Deep Sea Research II (2010 - 2012)
- Invited Speaker, Below the Rossby Radius: Workshop on Small-Scale Variability in the General Circulation of the Atmosphere and Oceans, University of Hamburg (2010 - 2010)
- Invited Speaker, Conference on "The next big climate challenge: influence of meso- and submesoscale ocean dynamics on the global carbon cycle and marine ecosystems", France, International Conference (2010 - 2010)
- Co-convener AGU Ocean Sciences Meeting Session on Biological-Physical Interactions at Submesoscales, American Geophysical Union (2010 - 2010)
- Co-chair AGU Ocean Sciences Meeting Session on "Submesoscales: From Space to the Ocean Interior", American Geophysical Union (2010 - 2010)
- Invited Speaker, Geophysics Dept Seminar, Stanford University (2010 - 2010)
- Earth Systems Program Committee of the Whole, Stanford University (2009 - present)
- Invited Speaker, Tenth Annual CAOS Workshop on "Oceanography at the observational and modeling frontier: Submesoscale Dynamics", NYU, Center for Atmosphere Ocean Science (2009 - 2009)
- Invited Speaker, Ocean Sciences Dept., University of California, Santa Cruz (2009 - 2009)
- Invited Speaker, School of Earth Sciences Advisory Board, Stanford University (2009 - 2009)
- Participant, ONR Symposium, Chicago, ONR (2009 - 2009)

- Co-lecturer, School of Engineering EDay:PlanIt Green, Stanford University (2009 - 2009)
- Invited Speaker, EESS Dept Seminar, Stanford University (2009 - 2009)
- Participant, ONR Lateral Mixing DRI Planning Meeting, Seattle, ONR (2009 - 2009)
- EESS Departmental Seminar Organizer, Stanford University (2008 - 2009)
- SES Faculty Search Committee for Marine Chemist/Geochemist, Stanford University (2008 - 2009)
- Participant, workshop on "Teaching Weather and Climate Using Laboratory Experiments", University of Chicago (2008 - 2008)
- Participant, CLIMODE workshop, WHOI, Woods Hole Oceanographic Institute (2008 - 2008)
- Participant, ONR Lateral Mixing DRI Planning Meeting, Monterey, ONR (2008 - 2008)
- CLIMODE workshop organizer, Stanford University (2008 - 2008)
- Invited Speaker, AGU Fall Meeting, 2008, Session on "Formation, Evolution, and Impact of Mode Waters", American Geophysical Union (2008 - 2008)

### PROFESSIONAL EDUCATION

- Ph.D., University of Washington , Physical Oceanography (2003)
- B.S., College of Creative Studies, University of California at Santa Barbara , Physics (1997)

### LINKS

- Ocean circulation and dynamics: http://pangea.stanford.edu/~leift/

## Research & Scholarship

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research

My research interests center on the physics of the ocean circulation. Specifically, I seek to understand the dynamics of highly energetic, time-variable flows such as ocean fronts, vortices, and eddies. Such flows efficiently exchange heat, salt, nutrients, and dissolved gases between the surface of the ocean and the ocean interior and hence play an important role in the Earth's climate and the oceanic sequestration of carbon. I use theory, computer modeling, and field observations to characterize the fundamental physics of the ocean circulation with the goal of improving the oceanic component of computer models used to predict future climate change.

Teaching

I teach a graduate-level course in geophysical fluid dynamics and an introductory-level course on atmosphere, ocean, and climate dynamics, with emphasis on the large-scale circulation of the atmosphere and the ocean. I also co-teach a course on Earth System Dynamics. In the future, I plan to offer courses on upper-ocean processes and numerical modeling of the ocean circulation at regional and large-scales.

Professional Activities

Assistant Scientist, Woods Hole Oceanographic Institution (2005-08); invited speaker, Geophysical Fluid Dynamics Summer Program, Woods Hole Oceanographic Institution (2007); member of the American Geophysical Union and American Meteorological Society; session co-chair AGU Ocean Sciences Meeting, Eddies, Fronts and Sub-Mesoscale Processes In The Upper Ocean (2008); member of the NSF funded Climate Process Team on Eddy Mixed Layer Interactions; reviewer for NSF, NOAA and several scientific journals

# Teaching

## COURSES

**2025-26**

- Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation: CEE 161I, CEE 261I, EARTHSYS 146A, EARTHSYS 246A, ESS 246A (Aut)
- Geophysical Fluid Dynamics: CEE 363F, ESS 363F (Spr)

**2024-25**

- Atmosphere, Ocean, and Climate Dynamics: The Atmospheric Circulation: CEE 161I, CEE 261I, EARTHSYS 146A, ESS 246A (Aut)
- Geophysical Fluid Dynamics: CEE 363F, ESS 363F (Spr)

**2023-24**

- How to make a tornado (and other flows in the atmosphere and ocean): ESS 65N (Win)

**2022-23**

- Atmosphere, Ocean, and Climate Dynamics: the Ocean Circulation: CEE 162I, CEE 262I, EARTHSYS 146B, ESS 246B (Win)
- Geophysical Fluid Dynamics: CEE 363F, ESS 363F (Spr)
- How to make a tornado (and other flows in the atmosphere and ocean): ESS 65N (Win)

## STANFORD ADVISEES

**Doctoral Dissertation Reader (AC)**

Arun Balakrishna, Brooke Pauken

**Postdoctoral Faculty Sponsor**

Jamie Hilditch

**Doctoral (Program)**

Michael Dalsin, Connor Diaz, Amanda Vanegas Ledesma

**Postdoctoral Research Mentor**

Balint Kaszas

# Publications

## PUBLICATIONS

- **Near-inertial internal waves funneled into Taylor caps shape seamount tops, with implications for biodiversity in the deep ocean.** *Science advances*
  Xie, X., Qu, L., Li, M., Thomas, L., Chen, D., Zhou, L., Zhang, D., Wang, J., Pan, H., Shen, C., Ren, W.
  2026; 12 (23): eaeb7889
- **Symmetric instability drives exchange between surface and bottom waters in a coastal front.** *Science advances*
  Körner, M., Cusack, J. M., Nash, J., Shearman, R. K., Thomas, L. N., MacKinnon, J., Hsu, F. H., Taylor, J., Liu, J., Hilditch, J. P.
  2026; 12 (19): eaeb9841
- **Trapping of near-inertial waves and critical layer formation in baroclinic currents** *JOURNAL OF FLUID MECHANICS*
  Hilditch, J. P., Thomas, L. N.
  2026; 1031
- **Observations of Subduction, Downward Heat Flux and Dense Filament Collapse in the Northern Gulf of Mexico** *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*

Hilditch, J. P., Bergentz, K., Northcott, D., Luko, C., Cohanim, K., Schlichting, D., Sanchez-rios, A., Weiss, K., Hetland, R., MacKinnon, J., Nash, J., Shearman, R., Thomas, et al
2025; 130 (11)

- **Observations of Upper-Ocean Kinetic Energy Transfers between Near-Inertial Internal Waves and Low-Frequency Dynamics** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Savage, A. C., Waterhouse, A. F., MacKinnon, J. A., Yu, X., Garabato, A., Evans, D., Frajka-Williams, E., Thomas, L. N.
  2025; 55 (10): 1625-1643
- **Refraction of near-inertial waves by submesoscale vorticity filaments** *JOURNAL OF FLUID MECHANICS*
  Hilditch, J. P., Taylor, J. R., Thomas, L. N.
  2025; 1020
- **WHY NEAR-INERTIAL WAVES ARE LESS AFFECTED BY VORTICITY IN THE NORTHEAST PACIFIC THAN IN THE NORTH ATLANTIC** *OCEANOGRAPHY*
  Thomas, L. N., Kelly, S. M., Klenz, T., Young, W. R., Rainville, L., Simmons, H. L., Hormann, V., Stokes, I.
  2024; 37 (4): 10-21
- **THE NEAR-INERTIAL SHEAR AND KINETIC ENERGY IN THE NORTH ATLANTIC EXPERIMENT** *OCEANOGRAPHY*
  Simmons, H. L., St Laurent, L., Rainville, L., Thomas, L.
  2024; 37 (4): 6-9
- **INTERACTION OF TYPHOON-DRIVEN NEAR-INERTIAL WAVES WITH AN ANTICYCLONE IN THE PHILIPPINE SEA** *OCEANOGRAPHY*
  Lazaneo, C., Thomas, L., Szuts, Z. B., Cusack, J. M., Chang, K., Shearman, R.
  2024; 37 (4): 68-81
- **Transport Pathways for Iron Supply to the Australian Antarctic Ridge Phytoplankton Bloom** *GEOPHYSICAL RESEARCH LETTERS*
  Ledesma, A., Thomas, L. N.
  2024; 51 (14)
- **Blocked Drainpipes and Smoking Chimneys: Discovery of New Near-Inertial Wave Phenomena in Anticyclones** *Oceanography*
  Thomas, L. N., Moum, J. N., Qu, L., Hilditch, J. P., Kunze, E., Rainville, L., Lee, C. M.
  2024
- **Damping of Inertial Motions through the Radiation of Near-Inertial Waves in a Dipole Vortex in the Iceland Basin** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Thomas, L. N., Skyllingstad, E. D., Rainville, L., Hormann, V., Centurioni, L., Moum, J. N., Asselin, O., Lee, C. M.
  2023; 53 (8): 1821-1833
- **Parametric subharmonic instability of inertial shear at ocean fronts** *JOURNAL OF FLUID MECHANICS*
  Hilditch, J. P., Thomas, L. N.
  2023; 966
- **Turbulence Generated through Critical Reflection of Internal Waves off the Seafloor due to Nontraditional Effects** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Delorme, B., Thomas, L.
  2023; 53 (3): 699-718
- **Mixing Driven by Critical Reflection of Near-Inertial Waves over the Texas-Louisiana Shelf** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Qu, L., Thomas, L. N., Hetland, R. D., Kobashi, D.
  2022; 52 (11): 2891-2906
- **Rapid vertical exchange at fronts in the Northern Gulf of Mexico.** *Nature communications*
  Qu, L., Thomas, L. N., Wienkers, A. F., Hetland, R. D., Kobashi, D., Taylor, J. R., Hsu, F. H., MacKinnon, J. A., Shearman, R. K., Nash, J. D.
  2022; 13 (1): 5624
- **The lifecycle of surface-generated near-inertial waves** *Ocean Mixing: Drivers, Mechanisms and Impacts*
  Thomas, L. N., Zhai, X.
  Elsevier.2022: 95-115

- **The influence of front strength on the development and equilibration of symmetric instability. Part 1. Growth and saturation** *JOURNAL OF FLUID MECHANICS*
  Wienkers, A. F., Thomas, L. N., Taylor, J. R.
  2021; 926
- **The influence of front strength on the development and equilibration of symmetric instability. Part 2. Nonlinear evolution** *JOURNAL OF FLUID MECHANICS*
  Wienkers, A. F., Thomas, L. N., Taylor, J. R.
  2021; 926
- **Bottom Mixing Enhanced by Tropical Storm-Generated Near-Inertial Waves Entering Critical Layers in the Straits of Florida** *GEOPHYSICAL RESEARCH LETTERS*
  Qu, L., Thomas, L., Gula, J.
  2021; 48 (15)
- **A warm jet in a cold ocean.** *Nature communications*
  MacKinnon, J. A., Simmons, H. L., Hargrove, J., Thomson, J., Peacock, T., Alford, M. H., Barton, B. I., Boury, S., Brenner, S. D., Couto, N., Danielson, S. L., Fine, E. C., Graber, et al
  2021; 12 (1): 2418
- **Near-Inertial-Wave Critical Layers over Sloping Bathymetry** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Qu, L., Thomas, L., Hetland, R.
  2021; 51 (6): 1737--1756
- **Intra-Annual Rossby Waves Destabilization as a Potential Driver of Low-Latitude Zonal Jets: Barotropic Dynamics** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Delpech, A., Menesguen, C., Morel, Y., Thomas, L. N., Marin, F., Cravatte, S., Le Gentil, S.
  2021; 51 (2): 365-384
- **Enhanced Abyssal Mixing in the Equatorial Pacific Associated with Non-Traditional Effects** *Journal of Physical Oceanography*
  Delorme, B. L., Thomas, L. N., Marchesiello, P., Gula, J., Roullet, G., Molemaker, M.
  2021; 51 (6): 1895–1914
- **Refraction and Straining of Near-Inertial Waves by Barotropic Eddies** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Asselin, O., Thomas, L. N., Young, W. R., Rainville, L.
  2020; 50 (12): 3439–54
- **Direct Observations of Near-Inertial Wave zeta-Refraction in a Dipole Vortex** *GEOPHYSICAL RESEARCH LETTERS*
  Thomas, L. N., Rainville, L., Asselin, O., Young, W. R., Girton, J., Whalen, C. B., Centurioni, L., Hormann, V.
  2020; 47 (21)
- **Centrifugal and Symmetric Instability during Ekman Adjustment of the Bottom Boundary Layer** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Wenegrat, J. O., Thomas, L. N.
  2020; 50 (6): 1793–1812
- **Restratification at a California Current Upwelling Front. Part II: Dynamics** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Johnson, L., Lee, C. M., D'Asaro, E., Wenegrat, J. O., Thomas, L. N.
  2020; 50 (5): 1473–87
- **Restratification at a California Current Upwelling Front. Part I: Observations** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Johnson, L., Lee, C. M., D'Asaro, E., Thomas, L., Shcherbina, A.
  2020; 50 (5): 1455–72
- **Enhanced mixing across the gyre boundary at the Gulf Stream front.** *Proceedings of the National Academy of Sciences of the United States of America*
  Wenegrat, J. O., Thomas, L. N., Sundermeyer, M. A., Taylor, J. R., D'Asaro, E. A., Klymak, J. M., Shearman, R. K., Lee, C. M.
  2020
- **Enhanced Radiation of Near-Inertial Energy by Frontal Vertical Circulations** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Thomas, L. N.

2019; 49 (9): 2407–21

- **Rapid mixing and exchange of deep-ocean waters in an abyssal boundary current.** *Proceedings of the National Academy of Sciences of the United States of America*
  Naveira Garabato, A. C., Frajka-Williams, E. E., Spingys, C. P., Legg, S., Polzin, K. L., Forryan, A., Abrahamsen, E. P., Buckingham, C. E., Griffies, S. M., McPhail, S. D., Nicholls, K. W., Thomas, L. N., Meredith, et al
  2019
- **Abyssal Mixing through Critical Reflection of Equatorially Trapped Waves off Smooth Topography** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Delorme, B. L., Thomas, L. N.
  2019; 49 (2): 519–42
- **Submesoscale Baroclinic Instability in the Bottom Boundary Layer** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Wenegrat, J. O., Callies, J., Thomas, L. N.
  2018; 48 (11): 2571–92
- **Effects of the Submesoscale on the Potential Vorticity Budget of Ocean Mode Waters** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Wenegrat, J. O., Thomas, L. N., Gula, J., McWilliams, J. C.
  2018; 48 (9): 2141–65
- **Aerial Observations of Symmetric Instability at the North Wall of the Gulf Stream** *GEOPHYSICAL RESEARCH LETTERS*
  Savelyev, I., Thomas, L. N., Smith, G. B., Wang, Q., Shearman, R. K., Haack, T., Christman, A. J., Blomquist, B., Sletten, M., Miller, W. D., Fernando, H. S.
  2018; 45 (1): 236–44
- **Interaction of Superinertial Waves with Submesoscale Cyclonic Filaments in the North Wall of the Gulf Stream** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Whitt, D. B., Thomas, L. N., Klymak, J. M., Lee, C. M., D'Asaro, E. A.
  2018; 48 (1): 81–99
- **On the modifications of near-inertial waves at fronts: implications for energy transfer across scales** *OCEAN DYNAMICS*
  Thomas, L. N.
  2017; 67 (10): 1335–50
- **Ekman Transport in Balanced Currents with Curvature** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Wenegrat, J. O., Thomas, L. N.
  2017; 47 (5): 1189-1203
- **Using local knowledge to project sea level rise impacts on wave resources in California** *OCEAN & COASTAL MANAGEMENT*
  Reineman, D. R., Thomas, L. N., Caldwell, M. R.
  2017; 138: 181-191
- **A New Mechanism for Mode Water Formation involving Cabbeling and Frontogenetic Strain at Thermohaline Fronts. Part II: Numerical simulations** *Journal of Physical Oceanography*
  Shakespeare, C. J., Thomas, L. N.
  2017
- **Downfront Winds over Buoyant Coastal Plumes** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Spall, M. A., Thomas, L. N.
  2016; 46 (10): 3139-3154
- **Recent amplification of the North American winter temperature dipole** *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES*
  Singh, D., Swain, D. L., Mankin, J. S., Horton, D. E., Thomas, L. N., Rajaratnam, B., Diffenbaugh, N. S.
  2016; 121 (17): 9911-9928
- **Modulation of Tropical Instability Wave Intensity by Equatorial Kelvin Waves** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Holmes, R. M., Thomas, L. N.
  2016; 46 (9): 2623-2643
- **Submesoscale streamers exchange water on the north wall of the Gulf Stream** *GEOPHYSICAL RESEARCH LETTERS*

Klymak, J. M., Shearman, R. K., Gula, J., Lee, C. M., D'Asaro, E. A., Thomas, L. N., Harcourt, R. R., Shcherbina, A. Y., Sundermeyer, M. A., Molemaker, J., McWilliams, J. C.
2016; 43 (3): 1226-1233

- **Evidence for seafloor-intensified mixing by surface-generated equatorial waves** *GEOPHYSICAL RESEARCH LETTERS*
  Holmes, R. M., Moum, J. N., Thomas, L. N.
  2016; 43 (3): 1202-1210
- **Energy Exchanges between Density Fronts and Near-Inertial Waves Reflecting off the Ocean Surface** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Grisouard, N., Thomas, L. N.
  2016; 46 (2): 501-516
- **Symmetric Instability, Inertial Oscillations, and Turbulence at the Gulf Stream Front** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Thomas, L. N., Taylor, J. R., D'Asaro, E. A., Lee, C. M., Klymak, J. M., Shcherbina, A.
  2016; 46 (1): 197-217
- **Parameterization of Frontal Symmetric Instabilities. I: Theory for Resolved Fronts** *Ocean Modelling*
  Bachman, S. D., Fox-Kemper, B., Taylor, J. R., Thomas, L. N.
  2016; 109
- **A New Mechanism for Mode Water Formation involving Cabbeling and Frontogenetic Strain at Thermohaline Fronts** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Thomas, L. N., Shakespeare, C. J.
  2015; 45 (9): 2444-2456
- **The LatMix Summer Campaign: Submesoscale Stirring in the Upper Ocean** *BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY*
  Shcherbina, A. Y., Sundermeyer, M. A., Kunze, E., D'Asaro, E., Badin, G., Birch, D., Brunner-Suzuki, A. E., Callies, J., Cervantes, B. T., Claret, M., Concannon, B., Early, J., Ferrari, et al
  2015; 96 (8)
- **The Modulation of Equatorial Turbulence by Tropical Instability Waves in a Regional Ocean Model** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Holmes, R. M., Thomas, L. N.
  2015; 45 (4): 1155-1173
- **Critical and near-critical reflections of near-inertial waves off the sea surface at ocean fronts** *JOURNAL OF FLUID MECHANICS*
  Grisouard, N., Thomas, L. N.
  2015; 765
- **Resonant Generation and Energetics of Wind-Forced Near-Inertial Motions in a Geostrophic Flow** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Whitt, D. B., Thomas, L. N.
  2015; 45 (1): 181-208
- **Rapid Generation of Upwelling at a Shelf Break Caused by Buoyancy Shutdown** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Benthuysen, J., Thomas, L. N., Lentz, S. J.
  2015; 45 (1): 294-312
- **Role of shelfbreak upwelling in the formation of a massive under-ice bloom in the Chukchi Sea** *DEEP-SEA RESEARCH PART II-TOPICAL STUDIES IN OCEANOGRAPHY*
  Spall, M. A., Pickart, R. S., Brugler, E. T., Moore, G. W., Thomas, L., Arrigo, K. R.
  2014; 105: 17-29
- **Potential Vorticity Dynamics of Tropical Instability Vortices** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Holmes, R. M., Thomas, L. N., Thompson, L., Darr, D.
  2014; 44 (3): 995-1011
- **Damping of inertial motions by parametric subharmonic instability in baroclinic currents** *JOURNAL OF FLUID MECHANICS*
  Thomas, L. N., Taylor, J. R.
  2014; 743: 280-294

- **Symmetric instability in the Gulf Stream** *DEEP-SEA RESEARCH PART II-TOPICAL STUDIES IN OCEANOGRAPHY*
  Thomas, L. N., Taylor, J. R., Ferrari, R., Joyce, T. M.
  2013; 91: 96-110
- **Eighteen Degree Water formation within the Gulf Stream during CLIMODE** *DEEP-SEA RESEARCH PART II-TOPICAL STUDIES IN OCEANOGRAPHY*
  Joyce, T. M., Thomas, L. N., Dewar, W. K., Girton, J. B.
  2013; 91: 1-10
- **Nonlinear stratified spindown over a slope** *JOURNAL OF FLUID MECHANICS*
  Benthuysen, J. A., Thomas, L. N.
  2013; 726: 371-403
- **Near-Inertial Waves in Strongly Baroclinic Currents** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Whitt, D. B., Thomas, L. N.
  2013; 43 (4): 706-725
- **A near-inertial mode observed within a Gulf Stream warm-core ring** *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*
  Joyce, T. M., Toole, J. M., Klein, P., Thomas, L. N.
  2013; 118 (4): 1797-1806
- **On the effects of frontogenetic strain on symmetric instability and inertia-gravity waves** *JOURNAL OF FLUID MECHANICS*
  Thomas, L. N.
  2012; 711: 620-640
- **Climatic variations of the work done by the wind on the ocean's general circulation** *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*
  Lauderdale, J. M., Garabato, A. C., Oliver, K. I., Thomas, L. N.
  2012; 117
- **Friction and Diapycnal Mixing at a Slope: Boundary Control of Potential Vorticity** *JOURNAL OF PHYSICAL OCEANOGRAPHY*
  Benthuysen, J., Thomas, L. N.
  2012; 42 (9): 1509-1523
- **Asymmetries in vertical vorticity and vertical velocity arising during nonlinear homogeneous spindown** *PHYSICS OF FLUIDS*
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