Navid C. Constantinou

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Interests

Geophysical fluid dynamics, atmospheric dynamics, physical oceanography, climate dynamics, fluid mechanics.

Education

Oct. 2010 – Feb. 2015 **Ph.D. in Physics**
National & Kapodistrian University of Athens
SUPERVISOR : Petros J. Ioannou
THESIS : Formation of large-scale structures by turbulence in rotating planets [arXiv]

Sep. 2008 – Jun. 2010 **M.Sc. in Physics** (summa cum laude)
Astrophysics, Astronomy and Mechanics
National & Kapodistrian University of Athens

Sep. 2003 – Jun. 2008 **B.Sc. in Physics** (summa cum laude, 9.16/10)
National & Kapodistrian University of Athens
Exchange through Socrates-Erasmus program during spring semester 2006 at the *Rheinische Friedrich-Wilhelms Universität*, Bonn, Germany

Jul. 2001 – Aug. 2003 **Cyprus National Guard**
Military service as Second Lieutenant in Armored Forces, Cyprus

Experience

May. 2018 – **Research Fellow**, part of the ARC Centre of Excellence for Climate Extremes project
Research School of Earth Sciences, Australian National University (with Andy Hogg)

Sep. 2015 – Apr. 2018 **Postdoctoral Researcher (NOAA Climate & Global Change Postdoctoral Fellow)**
Scripps Institution of Oceanography, University of California San Diego (with William R. Young)

Jun. 2015 – Aug. 2015 **Visiting Researcher**
Cyprus Oceanography Center, University of Cyprus

Grants & Awards

2015-2017 *NOAA Climate & Global Change Postdoctoral Fellowship*

2009-2014 *Alexander S. Onassis Foundation*
Scholarship for the 2nd year of M.Sc. and for 4 years of Ph.D. studies

2009-2012 *A. G. Leventis Foundation*
Scholarship for the 2nd year of M.Sc. and the first 2 years of Ph.D. studies

2005-2006 *Department of Physics, National & Kapodistrian University of Athens*
Honorary Scholarship for the academic year 2005-06

2003-2005 *Department of Physics, National & Kapodistrian University of Athens*
1st student for the academic years 2003-04 and 2004-05

2001 *International Physics Olympiad, June 2001*
Participation with the National team of Cyprus

Publications

Constantinou, N. C. (2018). A barotropic model of eddy saturation. *J. Phys. Oceanogr.* **48(2)**, 397-411.

Bakas, N. A., N. C. Constantinou and P. J. Ioannou (2017). Statistical state dynamics of weak jets in barotropic beta-plane turbulence. *J. Atmos. Sci.* (submitted). [arXiv]

Constantinou, N. C. and W. R. Young (2017). Beta-plane turbulence above monoscale topography. *J. Fluid Mech.*, **827**, 415-447.

Farrell, B. F., P. J. Ioannou, J. Jiménez, N. C. Constantinou, A. Lozáno-Duran and M.-A. Nikolaidis (2016). A statistical state dynamics-based study of the structure and mechanism of large-scale motions in plane Poiseuille flow. *J. Fluid Mech.*, **809**, 290-315.

Constantinou, N. C., B. F. Farrell and P. J. Ioannou (2016). Statistical state dynamics of jet–wave coexistense in barotropic beta-plane turbulence. *J. Atmos. Sci.*, **73 (5)**, 2229-2253.

Bakas, N. A., N. C. Constantinou and P. J. Ioannou (2015). S3T stability of the homogeneous state of barotropic beta-plane turbulence. *J. Atmos. Sci.*, **72 (5)**, 1689-1712.

Constantinou, N. C., A. Lozáno-Duran, M.-A. Nikolaidis, B. F. Farrell, P. J. Ioannou and J. Jiménez (2014). Turbulence in the highly restricted dynamics of a closure at second order: comparison with DNS. *J. Phys.: Conf. Ser.*, **506**, 012004.

Constantinou, N. C., B. F. Farrell and P. J. Ioannou (2014). Emergence and equilibration of jets in beta-plane turbulence: applications of Stochastic Structural Stability Theory. *J. Atmos. Sci.*, **71 (5)**, 1818-1842.

Constantinou, N. C. and P. J. Ioannou (2011). Optimal excitation of two dimensional Holmboe instabilities. *Phys. Fluids*, **23**, 074102.

Conferences

Eddy saturation in a barotropic model. *21st Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland, 25-30 Jun. 2017. (talk)

A statistical state dynamics based theory for jet–wave coexistence in beta-plane turbulence. *21st Conference on Atmospheric and Oceanic Fluid Dynamics*, Portland, 25-30 Jun. 2017. (poster)

Understanding self-organization in turbulent flows by studying the statistical state dynamics, *Conference on "Recurrence, self-organization, and the dynamics of tubulence"*, KITP, UC, Santa Barbara, 9-13 Jan. 2017. (invited talk)

Topographic beta-plane turbulence and form stress. *AGU Fall Meeting 2016*, San Francisco, 12-16 Dec. 2016. (poster)

Structure and mechanism of turbulence under dynamical restriction in plane Poiseuille flow. *69th APS Division of Fluid Dynamics Meeting*, Portland, 20-22 Nov. 2016. (talk)

Statistical state dynamics of jet/wave coexistense in beta-plane turbulence. *APS March Meeting 2016*, Baltimore, 14-18 Mar., 2016. (talk)

Emergence and equilibration of zonal winds in turbulent planetary atmospheres. 12th International Conference on Meteorology, Climatology and Atmospheric Physics, COMECAP 2014 [HTML], Heraklion, Crete, 28-31 May 2014. (poster)

Emergence and equilibration of jets in planetary turbulence. EGU 2013 General Assembly [HTML], Vienna, 8-12 Apr. 2013. (talk)

Emergence and equilibration of jets in planetary turbulence. 8th Panhellenic Meeting "Fluid Flow Phenomena" (ROI 2012) [HTML], Volos, 16-17 November 2012. (talk)

Seminars

Eddy saturation in a barotropic model. LDEO OCP Seminar [HTML], Lamont-Doherty Earth Observatory, Columbia University, Palisades, 27 Oct. 2017.

Eddy saturation in a barotropic model. CEAFM Seminar [HTML], Department of Earth & Planetary Sciences, The Johns Hopkins University, Baltimore, 13 Oct. 2017.

Topographic beta-plane turbulence and form stress. Geophysical Fluid Dynamics Summer Program, WHOI [HTML], Woods Hole, 19 Jul. 2016.

Topographic beta-plane turbulence and form stress. Mathematics of Turbulence Reunion Conference, IPAM, UCLA [HTML], Lake Arrowhead, 7 Jun. 2016.

Statistical state dynamics of planetary turbulence. CEAFM Seminar [HTML], Whiting School of Engineering, The Johns Hopkins University, Baltimore, 18 Mar. 2016.

A theory for large-scale structure formation in atmospheric/oceanic turbulence: Is jet formation a phase transition phenomenon? CASPO Seminar, Scripps Institution of Oceanography, UC San Diego [HTML], La Jolla, 10 Feb. 2016.

Formation of large-scale structures by turbulence in planetary atmospheres. Physics Department, University of Cyprus [HTML], Nicosia, 5 May 2015.

Emergence of large-scale structure in planetary turbulence as an instability of the of the homogeneous turbulent state. IPAM, UCLA [HTML], Los Angeles, 21 Oct. 2014.

Emergence and equilibration of zonal winds in turbulent planetary atmospheres. Cyprus Oceanography Center, University of Cyprus [HTML], Nicosia, 7 Jan. 2014.

Verification of the predictions of SSST in nonlinear simulations. 2nd Meeting of "Zonal Jets and Eddies" team, International Space Science Institute (ISSI) [HTML], Bern 2-5 Apr. 2013.

Workshops

2017 **Vorticity in the Universe: From superfluids to weather and climate, to the universe**
Aspen Center for Physics
August 27 - September 17 2017, Aspen, CO, USA [HTML]

2017 **Les Houches Summer School on Fundamental Aspects of Turbulent Flows in Climate Dynamics**
Les Houches Physics School
July 31 - August 25 2017, Les Houches, France [HTML]

2014 **Mathematics of Turbulence**
Institute of Pure & Applied Mathematics, UCLA
September 8 - December 12 2014, Los Angeles, USA [HTML]

2013 **Geoturb: Numerical modeling and theoretical challenges in atmosphere and ocean turbulence**
Ecole normale supérieure de Lyon
2-4 October 2013, Lyon, France. [HTML]

2013 **First Multiflow Summer Workshop**
Universidad Politécnica de Madrid
10 June - 12 July 2013, Madrid, Spain. [HTML]

2011 **International Graduate School on**
Stability, Transition to Turbulence and Flow Control
organized by Advanced Instability Methods (AIM) Network
22-27 August 2011, Cambridge, UK. [HTML]

2009 **Climate Variability & Climate Change:**
Estimating and reducing uncertainties
8-17 June 2009, Visegrád, Hungary. [HTML]

Programming skills

julia, Python, Matlab, git, markdown

Software

Core developer for "FourierFlows.jl": Julia package for solving PDEs on doubly-periodic domains using Fourier-based pseudospectral methods; doi:10.5281/zenodo.1161725

Teaching experience

2016 Teaching assistant for **Applied Mathematics III** (Graduate)
Scripps Institution of Oceanography, University of California San Diego

2010-2014 Teaching assistant for **Nonlinear dynamical systems** (3rd year Undergraduate)
Physics Department, National & Kapodistrian University of Athens

Other scientific activities

Reviewer : Journal of Fluid Mechanics, Journal of Physical Oceanography, Physics of Plasmas, Physics Letters A, Scientific Reports.

Member : American Geophysical Union, American Meteorological Society, American Physical Society (also member of Topical Group on the Physics of Climate).

References

Petros J. Ioannou (Ph.D. advisor)
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William R. Young (postdoc supervisor)
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