


# Navid C. Constantinou

Scripps Institution of Oceanography  
University of California San Diego, U.S.A.



✉ [navid@ucsd.edu](mailto:navid@ucsd.edu)  
w [www.navidconstantinou.com](http://www.navidconstantinou.com)  
🐙 [navidcy](#)  [navidcy](#)  
📞 0000-0002-8149-4094  
📄 [arXiv/a/constantinou\\_n\\_1](#)

Birthdate : 23 February 1984  
Nationality : Cypriot (CY)

## Interests

Atmospheric dynamics, physical oceanography, climate dynamics, planetary science, geophysical fluid dynamics, nonlinear dynamical systems, fluid dynamics, turbulence.

## 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*  
SUPERVISOR : Petros J. Ioannou  
THESIS : Transient energy growth in Holmboe instabilities 
- 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  
*Rheinische Friedrich-Wilhelms Universität, Bonn, Germany*
- Jul. 2001 – Aug. 2003 **Cyprus National Guard**  
Military service as Second Lieutenant in Armored Forces, Cyprus

## Experience

- Sep. 2015 – present **Postdoctoral Researcher (NOAA Climate & Global Change Postdoctoral Fellow)**  
*Scripps Institution of Oceanography, University of California San Diego*  
SUPERVISOR : William R. Young  
PROJECT : Statistical state dynamics of the Antarctic Circumpolar Current
- Jun. 2015 – Aug. 2015 **Visiting Researcher**  
*Cyprus Oceanography Center, University of Cyprus*

## Publications

### Peer-reviewed journals

- 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). 
- Constantinou, N. C. (2017). A barotropic model of eddy saturation. *J. Phys. Oceanogr.* (submitted) [\[arXiv\]](#) 
- Constantinou, N. C. and W. R. Young (2017). Beta-plane turbulence above monoscale topography. *J. Fluid Mech.* (to appear) [\[arXiv\]](#) 

- Farrell, B. F., P. J. Ioannou, J. Jiménez, N. C. Constantinou, A. Lozano-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. [doi](#) [download](#)
- Constantinou, N. C., B. F. Farrell and P. J. Ioannou (2016). Statistical state dynamics of jet-wave coexistence in barotropic beta-plane turbulence. *J. Atmos. Sci.*, **73** (5), 2229-2253. [doi](#) [download](#)
- 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. [doi](#) [download](#)
- Constantinou, N. C., A. Lozano-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. [doi](#) [download](#)
- 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. [doi](#) [download](#)
- Constantinou, N. C. and P. J. Ioannou (2011). Optimal excitation of two dimensional Holmboe instabilities. *Phys. Fluids*, **23**, 074102. [doi](#) [download](#)

## Conference Proceedings

- Constantinou, N. C., P. J. Ioannou and N.A. Bakas (2016). Structure and stability of low amplitude jet equilibria in barotropic turbulence. In Karacostas, T., Bais, A. and Nastos, T. P. (eds.) *Perspectives on Atmospheric Sciences*, 369-375, Springer International Publishing. [doi](#) [download](#)
- Constantinou, N. C., P. J. Ioannou and N.A. Bakas (2016). On the dynamics underlying the emergence of coherent structures in barotropic turbulence. In Karacostas, T., Bais, A. and Nastos, T. P. (eds.) *Perspectives on Atmospheric Sciences*, 361-367, Springer International Publishing. [doi](#) [download](#)
- Ioannou, P. J., M.-A. Nikolaidis and N. C. Constantinou: Simplified turbulence in wall-bounded flows. *9th Panhellenic Meeting "Fluid Flow Phenomena" (ROH 2014)*, Athens, 12-13 Dec., 2014 (in greek). [download](#)
- Bakas, N. A., P. J. Ioannou and N. C. Constantinou: Emergence of non-zonal coherent structures in barotropic turbulence. In Kanakidou, M., Mihalopoulos, N. and Nastos, P. (eds.) *Proceedings of the 12th International Conference on Meteorology, Climatology & Atmospheric Physics (COMECAP)*, Heraklion, Crete, 28-31 May, Vol. 1, 107-111, ISBN: 978-960-524-430-9. [download](#)
- Constantinou, N. C. and P. J. Ioannou: Emergence and equilibration of zonal winds in turbulent planetary atmospheres. In Kanakidou, M., Mihalopoulos, N. and Nastos, P. (eds.) *Proceedings of the 12th International Conference on Meteorology, Climatology & Atmospheric Physics (COMECAP)*, Heraklion, Crete, 28-31 May, Vol. 1, 210-214, ISBN: 978-960-524-430-9. [download](#)

## 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)
- Topographic beta-plane turbulence and form stress. *AGU Fall Meeting 2016*, San Francisco, 12-16 Dec. 2016. (poster) [download](#)
- 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) [download](#)
- Statistical state dynamics of jet/wave coexistence in beta-plane turbulence. *APS March Meeting 2016*, Baltimore, 14-18 Mar., 2016. (talk) [download](#)
- 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) [download](#)

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) [↓](#)

## Invited talks

Understanding self-organization in turbulent flows by studying the statistical state dynamics, KITP, Santa Barbara, 9-13 Jan. 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. CEA FM 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 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. [↓](#)

## Grants & Awards

2015-2017	<i>NOAA Climate &amp; Global Change Postdoctoral Fellowship</i>
2009-2014	<i>Alexander S. Onassis Foundation</i> Scholarship for the 2 <sup>nd</sup> year of M.Sc. and for 4 years of Ph.D. studies
2009-2012	<i>A. G. Leventis Foundation</i> Scholarship for the 2 <sup>nd</sup> year of M.Sc. and the first 2 years of Ph.D. studies
2005-2006	<i>Department of Physics, National &amp; Kapodistrian University of Athens</i> Honorary Scholarship for the academic year 2005-06
2003-2005	<i>Department of Physics, National &amp; Kapodistrian University of Athens</i> 1 <sup>st</sup> student for the academic years 2003-04 and 2004-05
2001	<i>International Physics Olympiad, June 2001</i> Participation with the National team of Cyprus

## Workshops

2017	<b>Vorticity in the Universe: From superfluids to weather and climate, to the universe</b> Aspen Center for Physics August 27 - September 17 2017, Aspen, CO, USA <a href="#">[HTML]</a>
2017	<b>Les Houches Summer School on Fundamental Aspects of Turbulent Flows in Climate Dynamics</b> 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. [\[HTML\]](#)

## Other scientific activities

Reviewer : Journal of Fluid Mechanics, Journal of Physical Oceanography, Physics of Plasmas,  
Physics Letters A.  
Member : American Geophysical Union, American Physical Society (also member of Topical  
Group on the Physics of Climate).

## References

**Petros J. Ioannou** (Ph.D. advisor)  
Department of Physics  
National & Kapodistrian University of Athens  
Zografos, 157 84, Greece  
☎ +30 210 7276910  
✉ [pjioannou@phys.uoa.gr](mailto:pjioannou@phys.uoa.gr)  
w <http://users.uoa.gr/~pjioannou>

**Brian F. Farrell**  
Department of Earth and Planetary Sciences  
Harvard University  
Cambridge, MA 02138, USA  
☎ +1 (617) 495-2998  
✉ [farrell@seas.harvard.edu](mailto:farrell@seas.harvard.edu)  
w <http://brian-f-farrell.fas.harvard.edu>

**William R. Young** (postdoc supervisor)  
Scripps Institution of Oceanography  
University of California San Diego  
La Jolla, CA 92037-0213, USA  
☎ +1 (858) 534-1380  
✉ [wryoung@ucsd.edu](mailto:wryoung@ucsd.edu)  
w <http://pordlabs.ucsd.edu/wryoung/>

**Javier Jiménez**  
School of Aeronautics  
Universidad Politécnica de Madrid  
Madrid, 28040, Spain  
☎ +34 913366361  
✉ [jimenez@torroja.dmt.upm.es](mailto:jimenez@torroja.dmt.upm.es)