

**Santiago José BENAVIDES**

[s-benavides.github.io](https://s-benavides.github.io)

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Cambridge, MA 02139, USA

Dated: November 18, 2021

**EDUCATION**

**Massachusetts Institute of Technology (MIT)**

PhD candidate, Department of Earth, Atmospheric and Planetary Sciences (EAPS)

Focus: Nonlinear Dynamics in Geosciences

Advisors: Glenn R. Flierl & J. Taylor Perron

**2016-Dec. 2021**

Current GPA: 4.9/5

**École Normale Supérieure (ENS) rue d'Ulm, Paris, France**

Masters ENS-ICFP in Macroscopic Physics and Complexity

Advisor: Alexandros Alexakis

**2015-2016**

mention *Très Bien*

**The University of Texas at Austin**

Bachelor of Science in Physics (Option: Honors Physics)

Bachelor of Science in Mathematics (Option: Honors Mathematics)

Dean's Scholars Honors Program

Graduation Distinction: Dean's Honored Graduate (Top 1%) and Highest Honors (Top 4%)

**2010-2015**

GPA: 3.9628/4

**PUBLICATIONS**

**Benavides, S. J.,** & Perron, J. T., "Intermittency properties of a novel lattice model of bed load sediment transport," (In Preparation).

**Benavides, S. J.,** Burns, K. J., Gallet, B., & Flierl, G. R., "Effective drag in rotating, poorly conducting plasma turbulence," (*Submitted to the Astrophysical Journal*).

[https://s-benavides.github.io/docs/Benavides\\_et\\_al\\_EffectiveDrag\\_Draft.pdf](https://s-benavides.github.io/docs/Benavides_et_al_EffectiveDrag_Draft.pdf)

**Benavides, S. J.,** Deal, E., Venditti, J. G., Zhang, Q., Kamrin, K., & Perron, J. T., "How fast or how many? Sources of sediment transport intermittency," (*Submitted to Geology*).

[https://s-benavides.github.io/docs/Benavides\\_et\\_al-Origin\\_Intermittency\\_Draft.pdf](https://s-benavides.github.io/docs/Benavides_et_al-Origin_Intermittency_Draft.pdf)

**Benavides, S. J.,** Burns, K. J., Gallet, B., Cho, J. Y-K. & Flierl, G. R., "Inverse cascade suppression and shear layer formation in MHD turbulence subject to a guide field and misaligned rotation," (*Accepted at the Journal of Fluid Mechanics*).

<https://arxiv.org/pdf/2104.12746>

**Benavides, S. J.,** Deal, E., Rushlow, M., Venditti, J. G., Zhang, Q., Kamrin, K., & Perron, J. T., "The impact of intermittency on bed load sediment transport," (*Submitted to Geophysical Research Letters*).

<https://doi.org/10.31223/X5PW3Q>

Alexakis, A., Pétrélis, F., **Benavides, S. J.,** & Seshasayanan, K., "Symmetry breaking in a turbulent environment," *Phys. Rev. Fluids* **6**, 024605 (2021).

<https://doi.org/10.1103/PhysRevFluids.6.024605>

**Benavides, S. J., & Flierl, G. R.,** “Two-dimensional partially ionized magnetohydrodynamic turbulence,” *Journal of Fluid Mechanics*. Volume 900, A28, (2020).

<https://doi.org/10.1017/jfm.2020.500>

**Benavides, S. J., & Alexakis, A.,** “Critical transitions in thin layer turbulence,” *Journal of Fluid Mechanics*, Volume 822, pg. 364-385 (2017).

<https://doi.org/10.1017/jfm.2017.293>

Mentioned in feature article: Ecke, R. E. "From 2D to 3D in Fluid Turbulence: Unexpected Critical Transitions." *Journal of Fluid Mechanics*, Volume 828, pg. 1-4 (2017).

<https://doi.org/10.1017/jfm.2017.507>

Seshasayanan, K., **Benavides, S. J., & Alexakis, A.,** "On the edge of an inverse cascade," *Phys. Rev. E*. Volume 90, 051003(R) (2014).

<http://dx.doi.org/10.1103/PhysRevE.90.051003>

### **SCIENTIFIC EXPERIENCE**

**Participant in summer school at the Center for Computational Astrophysics**

**The Flatiron Institute (Simons Foundation), New York, New York**

Theme: “Multiscale Modeling of Astrophysical and Space Plasmas”

**Summer 2019**

**Participant and speaker at workshop of Les Houches School of Physics, France**

Theme: “New Challenges in Turbulence Research V”

**April 2019**

**Guest Student at Geophysical Fluid Dynamics Summer School**

**WHOI, Woods Hole, Massachusetts**

Theme: Atmosphere, Ocean, and Climate Fluid Dynamics

**Summer 2014**

### **HONORS AND AWARDS**

Future Investigators in NASA Earth

**2020-2021**

and Space Science and Technology (FINESST) fellowship (\$45,000)

**MIT**

Jule Charney Prize (\$12,000)

**2016-2019**

Robert R Shrock Graduate Fellowship (\$78,350)

**2016**

**ENS**

ENS-ICFP Scholarship (\$10,000)

**2015-2016**

### **TEACHING EXPERIENCE**

**Teaching Assistant at Massachusetts Institute of Technology**

12.810: “Dynamics of the Atmosphere” (Graduate)

**Spring 2021**

Overall rating in subject evaluation: 6.6/7

**Mentor for MIT’s Undergraduate Research Opportunities Program**

Directly mentoring two undergraduates on original research projects

**Summer 2020**

<b>Teaching Assistant at Massachusetts Institute of Technology</b> 12.820: “Turbulence in the Atmosphere and Ocean” (Graduate Course)	<b>Spring 2020</b>
<b>Teaching Assistant at Massachusetts Institute of Technology</b> 12.800: “Fluid Dynamics of the Atmosphere and Ocean” (Graduate) Overall rating in subject evaluation: 6.7/7	<b>Fall 2019</b>
<b>Undergraduate Teaching Assistant at the University of Texas at Austin</b> P S 303: “Introductory Physical Science I: Mechanics and Heat.”	<b>Fall 2013</b>
<b><u>SERVICES AND OUTREACH</u></b>	
<b>Participant in the Application Mentorship Program (EAPS, MIT)</b> Mentoring future applicants, e.g. with personal statements. <a href="https://sites.google.com/view/eaps-student-advisory-council/application-assistance">https://sites.google.com/view/eaps-student-advisory-council/application-assistance</a>	<b>Fall 2020-Present</b>
<b>Member of Graduate Student Advisory Committee (GSAG) to the faculty search committee</b>	<b>Spring 2020</b>
<b>Member of the Diversity Council (EAPS, MIT)</b> Department-wide committee, including faculty and staff	<b>Fall 2019-Present</b>
<b>Creator and runner of Student Seminar (EAPS, MIT)</b> Department wide, weekly seminar for students	<b>Fall 2018-Spring 2020</b>
<b>Seminars given:</b> How can we study extreme events efficiently? Epidemic processes in complex networks Atmospheric Predictability Knots and their surprising connections to fluids and turbulence Collective and critical phenomena in living systems	<b>Fall 2020</b> <b>Spring 2020</b> <b>Fall 2019</b> <b>Spring 2019</b> <b>Fall 2018</b>

### **ADDITIONAL SKILLS**

Programming: Python, Fortran, git. Languages: Spanish (fluent), French (fluent, but limited), Russian (limited)