

# GEORGIOS MATHEOU

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## EDUCATION

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**CALIFORNIA INSTITUTE OF TECHNOLOGY**, Pasadena, California 2008  
**Ph.D. in Aeronautics**

**NATIONAL TECHNICAL UNIVERSITY OF ATHENS**, Athens, Greece 2002  
**Diploma in Mechanical Engineering**

## PROFESSIONAL EXPERIENCE

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**UNIVERSITY OF CONNECTICUT** August 2017–present  
Assistant Professor in Mechanical Engineering

**JET PROPULSION LABORATORY/CALIFORNIA INSTITUTE OF TECHNOLOGY** 2010–2017  
Research Scientist

**CALIFORNIA INSTITUTE OF TECHNOLOGY** 2008 – 2010  
Postdoctoral Scholar in Aeronautics and Applied Physics

## AWARDS

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**NASA EARLY CAREER PUBLIC ACHIEVEMENT MEDAL** 2016

**GALLERY OF FLUID MOTION AWARD** 2016  
American Physical Society, Division of Fluid Dynamics  
Matheou, G., D. Chung and J. Teixeira: Large-eddy simulation of a stratocumulus cloud

**MILTON VAN DYKE AWARD** 2011  
Gallery of Fluid Motion, American Physical Society, Division of Fluid Dynamics  
Matheou, G. and D. Chung, Direct Numerical Simulation of Stratified Turbulence

**DANIEL AND FLORENCE GUGGENHEIM FELLOWSHIP** 2002  
California Institute of Technology

## PUBLICATIONS IN REFEREED JOURNALS

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29. Matheou, G., and A. B. Davis, and J. Teixeira, 2020: The spiderweb structure of stratocumulus clouds, *Atmosphere*, 11, 730.
28. Couvreur, F., E. Bazile, Q. Rodier, B. Maronga, G. Matheou, M. J. Chinita, J. Edwards, B. J. H. Van Stratum, C. C. Van Heerwaarden, J. Huang, A. F. Moene, A. Cheng, V. Fuka, S. Basu, E. Bou-Zeid, G. Canut, and E. Vignon, 2020: Intercomparison of large-eddy simulations of the antarctic boundary layer challenged by very stable stratification, *Boundary Layer Meteorology*, 176, 369–400.

27. Jongaramrungruang, S., C. Frankenberg, G. Matheou, A. Thorpe, D. R. Thompson, L. Kuai, and R. Duren, 2019: Towards accurate methane point-source quantification from high-resolution 2D plume imagery, *Atmospheric Measurement Techniques*, 12, 6667–6681.
26. Sharan, N., G. Matheou and P. E. Dimotakis, 2019: Turbulent shear-layer mixing: initial conditions, and direct-numerical and large-eddy simulations, *Journal of Fluid Mechanics*, 877, 35–81.
25. Matheou, G. and J. Teixeira, 2019: Sensitivity to physical and numerical aspects of large-eddy simulation of stratocumulus, *Monthly Weather Review*, 147, 2621–2639.
24. Matheou, G., 2018: Turbulence structure in a stratocumulus cloud, *Atmosphere*, 9, 392; doi:10.3390/atmos9100392
23. Sharan, N., G. Matheou and P. E. Dimotakis, 2018: Mixing, scalar boundedness, and numerical dissipation in large-eddy simulations, *Journal of Computational Physics*, 369, 148–172.
22. Chinita, M. J., G. Matheou and J. Teixeira, 2018: A joint probability density-based decomposition of turbulence in the atmospheric boundary layer, *Monthly Weather Review*, 146, 503–523.
21. Matheou, G., D. Chung and J. Teixeira, 2017: Large-eddy simulation of a stratocumulus cloud, *Physical Review Fluids*, 2, 090509.
20. Gat, I., G. Matheou, D. Chung and P. E. Dimotakis, 2017: Incompressible variable-density turbulence in an external acceleration field, *Journal of Fluid Mechanics*, 827, 506–535. doi:10.1017/jfm.2017.490
19. Kahn, B. H., G. Matheou, Q. Yue, T. Fauchez, E. J. Fetzer, M. Lebsock, J. Martins, M. M. Schreier, K. Suzuki and J. Teixeira, 2017: An A-train and MERRA view of cloud, thermodynamic, and dynamic variability within the subtropical marine boundary layer, *Atmospheric Chemistry and Physics*, 17, 9451–9468. <https://doi.org/10.5194/acp-17-9451-2017>
18. Matheou, G., 2016: Numerical discretization and subgrid scale model effects on large-eddy simulations of a stable boundary layer, *Quarterly Journal of the Royal Meteorological Society*, 42(701), 3050-3062.
17. Matheou, G. and P. E. Dimotakis, 2016: Scalar excursions in large-eddy simulations, *Journal of Computational Physics*, 327, 97–120.
16. Matheou, G. and K. W. Bowman, 2016: A recycling method for the large-eddy simulation of plumes in the atmospheric boundary layer, *Environmental Fluid Mechanics*, 16, 69–85.
15. Matheou, G. and D. Chung, 2014: Large-eddy simulation of stratified turbulence. Part II: Application of the stretched-vortex model to the atmospheric boundary layer, *Journal of the Atmospheric Sciences*, 71, 4439–4460.
14. Chung, D. and G. Matheou, 2014: Large-eddy simulation of stratified turbulence. Part I: A vortex-based subgrid-scale model, *Journal of the Atmospheric Sciences*, 71, 1863–1879.
13. Inoue, M., G. Matheou and J. Teixeira, 2014: LES of a spatially developing atmospheric boundary layer: Application of a fringe method for the stratocumulus to shallow cumulus cloud transition, *Monthly Weather Review*, 142, 3418–3424.
12. Matheou, G., 2014: Turbulence, climate and supercomputers, *The STEAM Journal*: Vol. 1: Iss. 2, Article 32. DOI: 10.5642/steam.20140102.32 Available at: <http://scholarship.claremont.edu/steam/vol1/iss2/32>
11. Matheou, G., and D. Chung, 2012: Direct numerical simulation of stratified turbulence, *Physics of Fluids*, 24, 091106.
10. Chung, D., G. Matheou and J. Teixeira, 2012: Steady-state large-eddy simulations to study the stratocumulus to shallow-cumulus cloud transition, *Journal of the Atmospheric Sciences*, 69, 3264–3276.

9. Chung, D. and G. Matheou, 2012: Direct numerical simulation of stationary homogeneous stratified sheared turbulence, *Journal of Fluid Mechanics*, 696, 434–467.
8. Suselj, K., J. Teixeira and G. Matheou, 2012: Eddy diffusivity/mass flux and shallow cumulus boundary layer: An updraft PDF multiple mass flux scheme, *Journal of the Atmospheric Sciences*, 69, 1513–1533.
7. Matheou, G., D. Chung, L. Nuijens, B. Stevens and J. Teixeira, 2011: On the fidelity of large-eddy simulation of shallow cumulus convection, *Monthly Weather Review*, 139, 2918–2939.
6. Witek, M., J. Teixeira and G. Matheou, 2011: An integrated TKE based eddy-diffusivity/mass flux boundary layer scheme for the dry convective boundary layer, *Journal of the Atmospheric Sciences*, 68, 2385–2394.
5. Witek, M., J. Teixeira and G. Matheou, 2011: An eddy-diffusivity/mass-flux approach to the vertical transport of turbulent kinetic energy in convective boundary layers, *Journal of the Atmospheric Sciences*, 68, 1526–1540.
4. Ferrante, A., G. Matheou and P. E. Dimotakis, 2011: LES of an inclined jet into a supersonic turbulent crossflow: Synthetic inflow conditions, *Journal of Turbulence*, Volume 12, Art. No. N 20.
3. Matheou, G., A. M. Bonanos, C. Pantano and P. E. Dimotakis, 2010: Large-eddy simulation of mixing in a recirculating shear flow, *Journal of Fluid Mechanics*, 646, 375–414.
2. Matheou, G., C. Pantano and P. E. Dimotakis, 2008: Verification of a fluid-dynamics solver using correlations with linear stability results, *Journal of Computational Physics*, 227(11), 5385–5396.
1. Pantano, C., D. I. Pullin, P. E. Dimotakis and G. Matheou, 2008: LES approach for high Reynolds number wall-bounded flows with application to turbulent channel flow, *Journal of Computational Physics*, 227(11), 9271–9291.

## BOOK CHAPTERS

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2. Stoica, A., V. Adumitroaie, M. Quadrelli, G. Matheou, M. Witek, M. Cipolato, M. Dolci, J. Roggeveen, K. Petersen, K. Andreyeva, H. Hall, B. Donitz and L. Kim, 2018: WindBots: A Concept for persistent in situ science explorers for gas giants. In: Badescu V., Zacny K. (eds) *Outer Solar System*. Springer, Cham. [https://doi.org/10.1007/978-3-319-73845-1\\_12](https://doi.org/10.1007/978-3-319-73845-1_12).
1. Teixeira, J., M. Taylor, A. Persson and G. Matheou, 2014: Atmospheric general circulation models, In *Encyclopedia of Remote Sensing*, 35–37, Springer New York. [http://dx.doi.org/10.1007/978-0-387-36699-9\\_8](http://dx.doi.org/10.1007/978-0-387-36699-9_8).

## ARCHIVAL CONFERENCE PAPERS

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4. Thorpe, A. K., C. Frankenberg, R. O. Green, D. R. Thompson, A. D. Aubrey, P. Mouroulis, M. L. Eastwood, G. Matheou, 2016: The Airborne Methane Plume Spectrometer (AMPS): Quantitative imaging of methane plumes in real time, *2016 IEEE Aerospace Conference*, Paper number: 2478 (6.0301).
3. Matheou, G. and P. E. Dimotakis, 2014: Scalar excursions in large-eddy simulations, *7th AIAA Theoretical Fluid Mechanics Conference*, AIAA-2014-3209.
2. Ferrante, A., G. Matheou, and P. E. Dimotakis, 2010: On the effects of the inflow conditions on the transition of an inclined jet into a supersonic cross-flow, *48th AIAA Aerospace Sciences Meeting*, AIAA-2010-1287.
1. Ferrante, A., C. Pantano, G. Matheou, and P. E. Dimotakis, 2009: On the effects of upstream conditions on the transition of an inclined jet into a supersonic cross-flow, *47th AIAA Aerospace Sciences Meeting*, AIAA-2009-1511.

## EXHIBITIONS & CURATIONAL ACTIVITY

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“Fluid Dynamics in Art and Nature”, William Benton Museum of Art, Storrs, CT, August 23 – October 13, 2019.

## TEACHING EXPERIENCE

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### Courses Taught:

- ME 3250: Fluid Dynamics I (Fall 2018, 2019, 2020)
- ME 5311: Computational Methods of Viscous Fluid Flow (Spring 2018, 2019, 2020)

Student Evaluation of Teaching survey (SET), scores in 0–5:

Semester	Class	Instructor		Department		School	
		Mean	Median	Mean	Median	Mean	Median
Spring 2018	ME 5311	4.4	4.0		4.3		4.3
Fall 2018	ME 3250	4.4	5.0	3.6	3.7	3.8	3.9
Spring 2019	ME 5311	4.4	5.0	3.5	3.9	3.9	4.2
Fall 2019	ME 3250	4.5	5.0	3.7	3.9	3.8	4.0
Spring 2020	ME 5311	4.8	5.0	4.1	4.3	4.1	4.3

### Postdocs:

- Ramon Venters (06/2020 – present)

### PhD Students, Major Advisor:

- Oumaima Lamaakel (09/2020 – present)
- Mingi Chen (08/2018 – present)
- Yonjgi Yu (expected 01/2021)

### Masters Students, Thesis advisor

- Matthew Chow (MENG Program 2020)
- Oumaima Lamaakel (MS Awarded August 2020)

## SYNERGISTIC ACTIVITIES

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- Guest Editor, *Atmosphere*, Special Issue “Turbulent Transport in Atmospheric Boundary Layers”, 2019–2020
- Member of the GABLS-4 (GEWEX Atmospheric Boundary Layer Study) atmospheric model inter-comparison study, 2018–2020
- Member of Krenicki Institute of Arts and Engineering Faculty Advisory Committee, 2020 – present.

## PROFESSIONAL ACTIVITIES

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Reviewer of manuscripts for

- Atmosphere
- Boundary Layer Meteorology
- European Journal of Mechanics - B/Fluids
- International Journal of Heat and Fluid Flow

- Journal of Advances in Modeling Earth Systems
- Journal of Fluids Engineering
- Journal of Fluid Mechanics
- Journal of the Atmospheric Sciences
- Journal of Wind Engineering & Industrial Aerodynamics
- Monthly Weather Review
- Ocean Modeling
- Physics of Fluids
- Punjab University Journal of Mathematics
- Remote Sensing
- Quarterly Journal of the Royal Meteorological Society

Professional affiliations:

- American Physical Society, member since 2004
- American Geophysical Union, member since 2009
- American Meteorological Society, member since 2012