

Keshav J Raja, Ph.D.

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🔗 <https://scholar.google.com/citations?user=xtYmDtQAAAAJ>

🌐 <https://keshavraja.org/>

Academic appointments




- 2022 – date  **Assistant Research Scientist,**
Center for Ocean-Atmospheric Prediction Studies (COAPS),
Florida State University, FL.
- 2018 – 2022  **Postdoctoral Research Associate,**
School of Ocean Science and Engineering,
University of Southern Mississippi, Stennis Space Center, MS.
Postdoc advisor: Dr. Maarten Buijsman

Education

- 2014 – 2018  **Université Grenoble Alpes, France**
Ph.D. in Earth and Environmental Sciences
Dissertation: Internal waves and mean flow in the presence of topography.
Advisors: Dr. Joel Sommeria and Prof. Chantal Staquet
- 2013 – 2014  **École Polytechnique, France**
Master of Science in Fluid Mechanics: Fundamentals and Applications
- 2009 – 2013  **Indian Institute of Technology, Madras, India**
B.Tech in Aerospace Engineering

Research publications

Peer-reviewed journal articles

- 1 Buijsman, M. C., Waterhouse, A. F., Zaron, E. D., Yadidya, B., Xu, C., Whitley, V., Wenegrat, J. O., Wang, J., Wallcraft, A. J., Varma, D., Tchonang, B. C., Siyanbola, O., Shriver, J. F., Sheremet, V. A., Send, U., **Raja, K. J.**, Polzin, K., Ngodock, H. E., Moulin, A. J., ... Abdulfatai, M. (2025). A multi-agency experiment on internal wave energy, mixing, and interactions and their representation in global ocean models and operational forecasts. *Bulletin of the American Meteorological Society*, under review.
- 2 Hiron, L., Schönau, M. C., **Raja, K. J.**, Chassignet, E. P., Buijsman, M. C., Arbic, B. K., Bozec, A., Coelho, E. F., & Solano, M. S. (2025). The influence of vertical resolution on internal tide energetics and subsequent effects on underwater acoustic propagation. *Journal of Advances in Modeling Earth Systems*, 17(1).
 <https://doi.org/10.1029/2024MS004389>
- 3 Schönau, M. C., Hiron, L., Ragland, J., **Raja, K. J.**, Skitka, J., Solano, M. S., Xu, X., Arbic, B. K., Buijsman, M. C., Chassignet, E. P., et al. (2025). How do tides affect underwater acoustic propagation? a collaborative approach to improve internal wave modeling at basin to global scales. *Oceanography*, 38(2), 24–35.
 <https://www.jstor.org/stable/27389418>
- 4 **Raja, K. J.**, Buijsman, M. C., Bozec, A., Helber, R. W., Shriver, J. F., Wallcraft, A., Chassignet, E. P., & Arbic, B. K. (2024). Spurious internal wave generation during data assimilation in eddy resolving ocean model simulations. *Ocean Modelling*, 188, 102340.
 <https://doi.org/10.1016/j.ocemod.2024.102340>

- 5 **Raja, K. J.**, Buijsman, M. C., Shriver, J. F., Arbic, B. K., & Siyanbola, O. (2022). Near-inertial wave energetics modulated by background flows in a global model simulation. *Journal of Physical Oceanography*, 52(5), 823–840.
<https://doi.org/https://doi.org/10.1175/JPO-D-21-0130.1>
- 6 Leclair, M., **Raja, K. J.**, & Staquet, C. (2020). Nonlinear reflection of a two-dimensional finite-width internal gravity wave on a slope. *Journal of Fluid Mechanics*, 887.
<https://doi.org/https://doi.org/10.1017/jfm.2019.1077>
- 7 Beckebanze, F., **Raja, K. J.**, & Maas, L. R. M. (2019). Mean flow generation by three-dimensional nonlinear internal wave beams. *Journal of Fluid Mechanics*, 864, 303–326.
<https://doi.org/https://doi.org/10.1017/jfm.2019.22>

Presentations

Conferences

- 1 Hiron, L., Schonau, M., **Raja, K. J.**, Chassignet, E., & Bozec, A. (2024). The influence of vertical resolution on internal tide energetics and its effects on acoustics propagation. In *Ocean sciences meeting 2024*. AGU.
- 2 Staquet, C., **Raja, K. J.**, & Sommeria, J. (2024). Mean flow forcing by the reflection of a three-dimensional internal wave beam on a slope. In *Ictam 2024*. ICTAM.
- 3 **Raja, K. J.**, Bozec, A., Chassignet, E., & Buijsman, M. C. (2024). Improving the representation of internal waves in data assimilative ocean model simulations. In *Ocean sciences meeting 2024*. AGU.
- 4 Zavala-Romero, O., Erlebacher, G., Miranda, Z., & **Raja, K. J.** (2024). Ncdashboard: Software for exploratory analysis and visualization of largemulti-dimensional ocean datasets. In *Ocean sciences meeting 2024*. AGU.
- 5 **Raja, K. J.**, Buijsman, M., & Shriver, J. (2022). The modulation of near inertial wave energy by background flows in global ocean simulations. In *Ocean sciences meeting 2022*. AGU.
- 6 **Raja, K. J.**, Buijsman, M., Siyanbola, O., Solano, M., Shriver, J., & Arbic, B. (2021). Near-inertial waves modulated by background flow in realistic global ocean simulations. In *Egu general assembly conference abstracts* (EGU21–14207). EGU.
- 7 Kelly, S. M., Buijsman, M. C., **Raja, K. J.**, & Simmons, H. L. (2020). Global estimates of near-inertial internal wave generation. In *Ocean sciences meeting 2020*. AGU.
- 8 **Raja, K. J.**, Buijsman, M. C., Kelly, S. M., Shriver, J. F., Arbic, B. K., & Richman, J. G. (2020). Near-inertial wave generation and dissipation in realistically forced hycom simulations. In *Ocean sciences meeting 2020*. AGU.
- 9 **Raja, K. J.**, Siyanbola, O., Solano, M., Buijsman, M. C., Shriver, J. F., & Arbic, B. K. (2020). Near-inertial wave transmission to ocean interior in realistic global ocean simulations. In *Agu fall meeting abstracts* (OS042–0019, Vol. 2020). AGU.
- 10 Ajayi, A., Sommeria, J., **Raja, K. J.**, Staquet, C., Viboud, S., & Voisin, B. (2017). A laboratory analogue of current-topography interaction in the southern ocean. In *Egu general assembly conference abstracts* (p. 12887). EGU.
- 11 Sommeria, J., Ajayi, A.-O., **Raja, K. J.**, Staquet, C., Viboud, S., & Voisin, B. (2016). Laboratory modelling of momentum transport by internal gravity waves and eddies in the antarctic circumpolar current. In *Viiiith international symposium on stratified flows (issf)*. ISSF.

- 12 **Raja, K. J.**, Sommeria, J., Staquet, C., Leclair, M., Grisouard, N., & Gostiaux, L. (2016). Nonlinear reflection of internal gravity wave onto a slope. In *Egu general assembly conference abstracts* (EPSC2016–13612). EGU.

Invited talks

- 1 *Spurious internal waves generated during data assimilation in ocean model simulations.* (2022/09). Department of Scientific Computation, Florida State University.
- 2 *Near-inertial wave energetics in global hycom simulations: Problems with data assimilation and modulation by background flows.* (2021/08). Naval Research Laboratory, Stennis space center, MS.
- 3 *Forcing of mean flows by the reflection of a 3d internal wave beam.* (2019/01). Naval Research Laboratory, Stennis space center, MS.
- 4 *Nonlinear interactions during the reflection of a 3d internal wave beam.* (2018/02). École Normale Supérieure, Paris, France.
- 5 *Reflection of a 3d internal wave beam and induced mean flows.* (2018/03a). Utrecht University, The Netherlands.
- 6 *Reflection of a 3d internal wave beam and induced mean flows.* (2018/03b). BTU Cottbus, Germany.

Current and pending grants

- (i) Improving the representation of internal wave processes in the Navy data assimilative forecasting system (*Current*; June 2025 - May 2028)

Source: Office of Naval Research

Role: co-PI with Eric P. Chassignet (PI), FSU

Total Award: \$ 1,099,457

- (ii) Collaborative Research: Impact of Internal Tides on the Global Eddy Field (*Pending*)

Source: National Science Foundation

Role: co-PI with Jeffrey Early (PI), North-West Research Associates

Synergistic activities

- **Academic service**

Reviewer for 10 prominent oceanography journals, having reviewed over 25 articles in 2022 - 2025. Reviewed one NSF grant proposal in 2024. Member of the honors selection committee for The Oceanography Society (TOS) since Jan 2024.

- **Teaching/supervision**

Supervised 2 graduate students on their class projects analyzing ocean model data in 2021. Co-supervised 1 high school student during a six-month remote research internship in 2023 - 2024.

- **Professional organizing**

Primary chair for the 2024 Ocean Sciences Meeting session PS005 – Internal Waves and Their Interactions with (Sub)Mesoscale Circulation and Seafloor Topography. Managed the review of 54 abstracts and organized 2 oral and 2 poster sessions.

- **Public outreach**

Member and volunteer/organizer at the Tallahassee Scientific Society. The society organizes regular public lectures, informal science salons, and field trips to promote scientific literacy and appreciation of science education in the Big Bend area of Florida.

- **Community service**

Registered mentor of Big Brothers and Big Sisters of the Big Bend, fostering educational success, avoidance of risky behaviors, improved confidence, and better social skills through one-to-one mentoring. Currently mentoring a high school student through the Big Futures program, providing guidance on college selection and preparation.