

Gregory H. Sinnett

gsinnett@gmail.com | (207) 232-7067 | www.linkedin.com/in/gsinnett

Education

Ph.D.	Scripps Institution of Oceanography	Physical Oceanography	2018
M.S.	University of Maine	Physical Oceanography	2012
B.S.	University of Maine	Engineering Physics	2004

Research Experience

2022-2023	Research Director	Walter Munk Foundation for the Oceans
2021-2022	Ocean Scientist	Scot Science
2019-2021	Post-Doctoral Researcher Supervisor: Kristen Davis, Ph.D	University of California, Irvine
2018-2019	Post-Doctoral Researcher Supervisor: Falk Feddersen, Ph.D	Scripps Institution of Oceanography
2012-2018	Graduate Research Assistant Supervisor: Falk Feddersen, Ph.D	Scripps Institution of Oceanography
2010-2012	Graduate Research Assistant Supervisor: Neal Pettigrew, Ph.D	University of Maine
2004-2010	Technology Development Engineer	Fairchild Semiconductor

Publications

Journal Publications

Sinnett, G., Ramp, S. R., Yang, Y. J., Chang, M., Jan, S., & Davis, K. A. (2022). Large Amplitude Internal Wave Transformation Into Shallow Water, *Journal of Physical Oceanography* <https://doi.org/10.1175/JPO-D-21-0273.1>.

Ramp, S. R., Yang, Y.-J., Jan, S., Chang, M.-H., Davis, K. A., **Sinnett, G.**, et al. (2022). Solitary waves impinging on an isolated tropical reef: Arrival patterns and wave transformation under shoaling. *Journal of Geophysical Research: Oceans*, 127, e2021JC017781. <https://doi.org/10.1029/2021JC017781>

Sinnett, G., K. A. Davis, A. J. Lucas, S. N. Giddings, E. Reid, M. E. Harvey, and I. Stokes, (2020). Distributed Temperature Sensing for Oceanographic Applications. *J. Atmos. Oceanic Technol.*, **37**, 1987–1997, <https://doi.org/10.1175/JTECH-D-20-0066.1>.

Sinnett, G., & Feddersen, F. (2019). “The Nearshore Heat Budget: Effects of Stratification and Surfzone Dynamics.” *Journal of Geophysical Research: Oceans*, **124**, 8219-8240. <https://doi.org/10.1029/2019JC015494>

Updated: March, 2023

Sinnett, G., & Feddersen, F. (2018). “The competing effects of breaking waves on surfzone heat fluxes: Albedo versus wave heating.” *Journal of Geophysical Research: Oceans*, **123**, 7172–7184. <https://doi.org/10.1029/2018JC014284>

Sinnett, G., F. Feddersen, A. J. Lucas, G. Pawlak, and E. Terrill, (2018) “Observations of Nonlinear Internal Wave Run-Up to the Surfzone.” *J. Phys. Oceanogr.*, **48**, 531–554, <https://doi.org/10.1175/JPO-D-17-0210.1>.

Sinnett, G., and Feddersen, F. (2016), “Observations and Parameterizations of Surfzone Albedo.” *Methods in Oceanography*, **17**, 319-334. <https://doi.org/10.1016/j.mio.2016.07.001>

Sinnett, G., and Feddersen, F. (2014) “The surf zone heat budget: The effect of wave heating.” *Geophys. Res. Lett.*, **41**, doi:101002/2014GL061398

Unrefereed

Sinnett, G., 2018. “The nearshore heat budget.” Ph.D. diss., University of California, San Diego, <https://search.proquest.com/docview/2081882968?accountid=14509>

Sinnett, G., F. Feddersen, D. Lucas, G. Pawlak, E. Terrill, “Non-Linear Internal Waves Pulse Cold Water Into the Shallow Inner-Shelf and Surfzone.” (2016) VIIIth International Symposium on Stratified Flows. <https://joss.ucar.edu/sites/default/files/meetings/2016/issf/papers/sinnett-gregory-article.pdf>

Sinnett, G., 2012. “Circulation and Transport in Casco Bay, Maine” Masters Thesis, University of Maine. Orono Maine.

Presentations

“Distributed Temperature Sensing for Oceanographic Applications” Oceanology International, San Diego, CA, February 2023

“Global Ocean Warming” (invited) American Geographical Society, November 2020.

“Distributed Temperature Sensing (DTS) Application to Oceanography” Ocean Science Meeting, San Diego, CA, February 2020.

“Distributed Temperature Sensing (DTS) Application for Nearshore Internal Wave and Heat Budget Observations” (invited) Scripps Institution of Oceanography, November 2019.

“A Detailed Nearshore Heat Budget.” Eastern Pacific Ocean Conference, Timberline Lodge, Oregon, September 2018.

“A Detailed Nearshore Heat Budget” Abstract [CD12A] Ocean Sciences Meeting, Portland, OR, 12-16 Feb, 2018.

“Observations of Nonlinear Internal Wave Runup into the Surfzone.” Gordon Research Conference on Coastal Ocean Dynamics, Maine, 2017.

“Observations of Non-Linear Internal Wave run-up into the Surfzone.” AGU Fall Meeting, San Francisco, CA, December 2016.

“Observations of Non-Linear Internal Waves Pulsing Cold Water to the Surfzone.” Eastern Pacific Ocean Conference, Timberline Lodge, Oregon, September 2016.

“Non-linear internal waves pulse cold water into the shallow inner-shelf and surfzone.” VIIIth International Symposium on Stratified Flows, San Diego, California, August 2016.

“Surging Non-Linear Internal Waves Deliver Cold Inner-Shelf Water to the Surfzone” Ocean Sciences Meeting, New Orleans Louisiana, February 2016.

“Observations of Surfzone Albedo.” AGU Fall Meeting, San Francisco, CA, December 2014.

“Characterizing Heat Content and Spatio-Temporal Variability of Temperature in the Surf Zone.” Ocean Sciences Meeting, Honolulu, Hawaii, February 2014.

“Ocean Currents for 9th Grade.” NSF GK-12 Meeting, La Jolla, California, May 2014.

Public Presentations

“Physical Oceanography Near the La Jolla Coast.” (invited) La Jolla, California Public Library, April 2016.

Selected Press

Nature News highlight (15 October 2014) “Surf zones warmed from within” <http://dx.doi:10.1038/nature.2014.16148>

Geophysical Research Letters highlight (16 January 2015) “Wave heating effects on the surf zone heat budget” <http://agupubs.onlinelibrary.wiley.com/hub/article/10.1002/2014GL061398/editor-highlight/>

EOS highlight (5 February 2015) Research Spotlight “Wave energy affects the surf zone heat budget” [doi:10.1029/2015EO023167](https://doi.org/10.1029/2015EO023167)

Awards and Funding

“Nearshore nonlinear internal waves: Propagation, transport, mixing and controls on larvae, phytoplankton, and nutrients” California Sea Grant R/HCME-26 \$135,178 from 2/1/16 - 1/31/18 (prepared with Falk Feddersen, PI)

“The coupled surfzone and inner-shelf heat budget: The effect of albedo, surface gravity, and internal waves” NSF-1558695 \$291,617 from 3/1/16 - 2/28/21 (prepared with Falk Feddersen, PI)

NSF GK-12 Graduate Fellowship \$30,000 from 6/1/13 - 5/31/14

“General Circulation and exchange between isolated regions in Casco Bay” \$115,124 from 2/1/12 - 1/31/14. Maine Sea Grant R-12-02 (prepared with Neal Pettigrew, PI)

Field Experience

- Alpine Lake Climate Observatory, Lake Altaussee, Austria 2023
Developed and funded a long-duration observatory at a remote and pristine Alpine lake to study climate effects on sensitive lake ecological systems. Coordinated research effort among three international institutions and lead PI, installing a research-grade weather station, mooring to monitor temperature and oxygen, and sensors to record lake level and outflow temperature. Experimental goals: quantify seasonal and climate scale inputs to stratification, lake temperature fluctuation and relation to fish populations. This project supports the Austrian Federal Ministry of Water Management climate monitoring goals.
- Dongsha Internal Waves, Dongsha, Taiwan 2019
Coordinated and executed a two-month multi-institutional field campaign in the remote Dongsha Atoll (South China Sea) to deploy and recover over 160 instruments including 8 moorings, a DTS cable system, two wire-walkers, bottom temperature sensors, and several ADCPs. Experimental goals: characterize the internal wave effects on the fringing fore-reef system, observe and quantify large amplitude internal wave shoaling and breaking mechanisms, and isolate factors contributing to lagoon circulation, exchange and occasional hypoxia.
- DTS Internal Wave Experiment, Scripps Beach, CA 2018
Characterized a Distributed Temperature Sensing (DTS) fiber optic cable system for novel use in nearshore physical oceanography applications. Deployed three ~2 km fiber optic cables in precise locations to both experimentally test the new sensing platform and observe the internal wave field onshore of the La Jolla canyon system.
- Inner-Shelf Dynamics Experiment, Point Sal CA 2017
Eight days aboard the R/V Sally Ann conducting nearshore drifter releases and survey transects. This coordinated experiment across many institutions was designed to develop and improve the predictive capability of a range of numerical models, simulate circulation, density, and the surface wave field across the inner shelf associated with a broad array of physical processes and complex bathymetry.
- CSIDE Experiment, Imperial Beach, CA 2015
Multiple surfzone dye releases tracked with a variety of underwater, surface and airborne instruments. Provided diving, underway CTD, jet ski operations and shore support.
- SIO14 Experiment, Scripps Beach, CA 2014 - 2015

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Designed, deployed and maintained an array of over 60 instruments in water 0 – 18 m for nine months to characterize new terms in the nearshore heat budget related to previously ignored surfzone dynamics.

SIO12 Experiment, Scripps Beach, CA 2012
Recovered and analyzed data from 8 temperature sensors in water 0 – 7 m as well as numerous meteorological equipment to study the nearshore heat budget and wave heating effect in the surfzone.

Research voyages

R/V Atoll 6 – CTD and microCTD casts, mooring deployment, DTS deployment/recovery, wirewalker deployment/recovery, dives

R/V Sally Ann – Towed ADCP, CTD, drifter deployment, dives, moored instrument deployment/recovery

R/V New Horizons – Mooring recovery/redeployment, CTD stations

R/V Ocean Starr – Mooring recover/redeployment, CTD stations

R/V Connecticut – Mooring recovery/redeployment

AAUS certified science and rescue diver with ~150 scientific dives

Research Related Service

Journal Peer Reviewer 2016 - present
Journal of Geophysical Research - Oceans
Oceanography
Methods in Oceanography
Journal of Oceanography

Proposal Reviewer
National Science Foundation Physical Oceanography

Teaching/Mentoring/Volunteering

Oceanography Advisor (Trofix) 2023 - present

Visiting Scientist (Spreckels Elementary, The Children’s School) 2020 - present

AGU Mentor (Mentoring365 program) 2019 - present

Alumni Mentor (University of Maine) 2018 - present

SCOPE (Scripps Community Outreach for Public Education) Volunteer Scientist 2013 - 2018

Visiting Scientist (High Tech High) 2017

NSF GK-12 Visiting Instructor - Kearny High School 2013 - 2014

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