

# Diane M. Thompson

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## Professional

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### Appointments:

2018 – present	<b>Director of Marine Research</b> , Biosphere 2, University of Arizona
2018 – present	<b>Assistant Professor</b> , Department of Geosciences, University of Arizona
2016 – 2018	<b>Assistant Professor</b> , Department of Earth & Environment, Boston University
2014 – 2015	<b>Advanced Study Program Postdoctoral Fellow</b> , National Center for Atmospheric Research ( <i>Boulder, CO, USA</i> )

### Education:

2008 – 2013	<b>Doctor of Philosophy in Geoscience</b> , Global Change minor (12/2013). University of Arizona ( <i>Tucson, AZ, USA</i> ) <i>Advisor:</i> Julia Cole. <i>Dissertation:</i> Variability and trends in the tropical Pacific and the El Niño-Southern Oscillation inferred from coral and lake archives
2006 – 2008	<b>Master of Science in Marine Biology</b> . Florida Institute of Technology ( <i>Melbourne, FL, USA</i> ) <i>Advisor:</i> Robert van Woesik. <i>Thesis:</i> Return periods of anomalous sea-surface temperature events inferred from a meta-analysis of thermal proxy records in corals: implications for bleaching
2002 – 2006	<b>Bachelor of Science in Marine Biology</b> , <i>summa cum laude</i> (GPA: 4.0). Florida Institute of Technology ( <i>Melbourne, FL, USA</i> )

### Fellowships, grants, and foundation support:

2020	NSF-OCE, “CAREER: Climate-change vulnerability in the Marshall Islands: learning from the past & inspiring a new future,” PI Thompson (UA: <u>\$891,119</u> )
2020	NSF-AGS-P2C2, “Unravelling the Signals in Tropical Pacific Lake Archives: Towards Improved Holocene Hydroclimate Reconstructions”, Co-PI Thompson (UA: <u>\$547,191</u> )
2020	Private donation to Biosphere 2 Ocean project (\$20,600)
2020	Private donation to Biosphere 2 Ocean project (\$20,000)
2019	Biosphere 2 Board, Funding Drive for Biosphere 2 Ocean ( <u>\$17,500</u> )
2018	Private donation to Biosphere 2 Ocean project ( <u>\$22,000</u> )
2018	Donor sponsored, “Biosphere 2 Ocean Independent and Modular Experimental Reef Systems” ( <u>\$23,594</u> )

2018-2019 PI, Assessment Mini Grant, Office of the Provost, Boston University, "Assessing AGREED, a program to cultivate allies and facilitate diversity and inclusion in STEM" (\$3500)

2018-2019 co-PI, Assessment Mini Grant, Office of the Provost, Boston University, "Evaluation of best practices for in-class electronic assessments in introductory Earth and Environment course(s)" (\$4162)

2017-2019 PI, NSF-OCE-P2C2 (1702130), "Reconstructing Pacific Trade Wind Variability: Extending and Replicating a Promising New Coral Proxy." 7/15/2017-6/30/2019, (\$342.7k)

2017-2018 PI, NCAR ASP Faculty Fellowship Program, "The impact of changing temperature and circulation on coral connectivity in the Coral Triangle" (\$5k)

2015-2016 PI, NSF RAPID (1561121): "RAPID: Capturing the Signature of a Strong El Nino Event in Galapagos Lake Sediment Records: the 2015/16 El Nino Opportunity." 11/15/2015-10/31/2016, (\$68.8k)

2010 - 2013 Co-PI, NOAA Climate Change Data and Detection (CCDD) grant (NA10OAR4310115): "Maximizing the potential of tropical climate proxies through integrated climate-proxy forward modeling." 8/1/2010-7/31/2013, (410.8k; 23.5k to University of Arizona)

2012 PEO Scholar Award (\$15k)

2012 co-author, NSF RAPID grant (1256970), "RAPID: Securing the climate, limnological and sediment data needed to understand and calibrate multi-millennial records of ENSO in the Eastern Pacific," funded to J. Overpeck 10/1/2012-9/30/2013, (\$35.3k)

2011 Susan G. Earl Galileo Circle Endowed Scholar (\$1000)

2009 co-author on NOAA grant "Unraveling the ENSO signal in Ecuadorian lake sediments - the 09/10 El Nino Opportunity", funded to J. Overpeck (\$12k)

2006 Marine Resource Management Fellowship, NOAA-NMFS

#### **Awards and honors**

2020 **Outstanding Faculty Award**, Department of Geosciences

2013 Department of Geosciences Research Award

2013 **Runner-up Best Oral Presentation in the EarthWeek Plenary Session**

2011 GPSC Travel Grant

2011 Paul S. Martin Scholarship

2011 GC-GIDP Dissertation Improvement Grant

2010 & 2011 Institute of the Environment Travel Grant

2011 Susan G. Earl Galileo Circle Endowed Scholar

2010 Wilson Thompson Scholarship

2010 **Runner-up Best Overall GeoDaze Talk**

2008 – present Sigma Gamma Epsilon (SGE) National Honors Society for Earth Sciences

2008 Institute for the Study of Planet Earth (ISPE) Scholarship

2006 **Faculty's Honor Award**

2006 **FIT's Outstanding Senior of the year**

2006 American Association of University Women Award for Academic Excellence

2005 & 2006 Distinguished Student Scholar

2006	Outstanding Senior in Marine Biology
2005	Outstanding Junior in Marine Biology
2004 – 2006	Beta Beta Beta Biological Honors Society
2004 – 2006	Phi Eta Sigma National Honors Society
2003 & 2004	Florida Tech Panthers Scholar Athlete Award
2003 & 2004	National Fastpitch Coaches' Association (NFCA) All-American Scholar Athlete
2002 – 2004	Softball scholarship
2002 – 2006	FL Tech Trustee scholarship

### Professional Experience

August 2018	<b>Advanced Expert Witness Training Academy (EWTA)</b> , William Mitchell College (funded by the Paleoclimate Program at the National Science Foundation)
2017	<b>US Science Support Program (USSSP) sponsored School of Rock-</b> "Diversifying the Next Generation Geoscience Mentor Community Through Training Aboard the JOIDES Resolution." Transit between Subic Bay and Townsville on the <i>JOIDES Resolution</i> (10-27 July, 2017).
August 2014	<b>Expert Witness Training Academy (EWTA)</b> , William Mitchell College (funded by the Paleoclimate Program at the National Science Foundation)
2008 – 2013	<b>Graduate Research Assistant</b>
Summer 2011	<b>Lab manager</b> , Coral and Cave Paleoclimatology Laboratory, University of Arizona. Duties included: maintaining, troubleshooting, and running samples on a Micromass Optima mass spectrometer and an inductively coupled atomic emission spectrometer (ICP-AES); ordering supplies; and coordinating duties of students, employees, and visiting scientists in the lab.
2009, 2010 & 2012	<b>Field leader and coordinator</b> , monitoring and sediment sample collection at 3 remote crater lakes in the Galapagos Archipelago
2010	<b>Field assistant</b> , sampling modern and fossil corals from Wolf Island, Galapagos
Spring - Summer 2007	<b>Field Assistant</b> , World Bank-Global Environment Facility, Puerto Morelos, Mexico
Winter 2006	<b>Marine Resources Population Dynamics Workshop</b> , NOAA-NMFS
2005	<b>Undergraduate Research</b> , advisor Dr. Robert van Woerik: "Modeling the influence of sea-surface temperature and solar insolation on coral bleaching and spawning"
Summer 2005	<b>Field courses</b> in Reef Ecology of Australia and Australian Ecosystems
Summer 2004	<b>Field course</b> in Field Biology and Ecology- Coral Reefs: Abaco, Bahamas

### Teaching

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Spring 2020	Ocean Sciences (GS412A, GS412B)
Fall 2019	Trace Elements in Biogenic Carbonates (GS596C)
Spring 2018	Modes of Climate Variability (ES520)
Fall 2017	Climate & Earth System Science (ES107) Guest lectures in: Rock Deformation and Structure (ES305) Teaching and Learning Seminar (ES699)
Spring 2017	Climate & Earth System Science (ES107) Guest lectures in: Paleoclimatology (ES351) Teaching and Learning Seminar (ES699)

Spring 2016	Developed new course on “Modes of Climate Variability” (ES520)
Spring 2015	Guest lecture for “Climate Variations” (GEOG5426), University of Minnesota
July 2015	Workshop participant, “Early Career Geoscience Faculty Workshop: Teaching, Research and Managing your Career”
June 2015	Workshop participant, Earth Educators' Rendezvous
Fall 2014	Introduction to Evidence-Based Undergraduate STEM Teaching course
Spring 2010 – 2013	Teaching Assistant, Ocean Sciences Lectures in Ocean Sciences on El Niño, Fisheries, Coral Reefs, and Benthos & Invertebrates
Fall 2012	Teaching Assistant Global Change (grad/undergrad)
Fall 2008	Teaching Assistant, Introductory Oceanography
2006 – 2008	Teaching Assistant, General Ecology; Modeling for Ecology and Biology (grad/undergrad); Biometry; Marine Biology. (Taught the lab portion of each course) Lectures in: Coral Reef Ecology; Modeling for Ecology and Biology; Paleoclimatology

## Publications

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\*student publication

**Thompson, D.M.**, M. McCulloch, J.E. Cole, E.V. Reed, J. D'Olivo, K. Dyez, M. Lofverstrom, J. Lough, N. Cantin, A.W. Tudhope, A.H. Cheung, L. Vetter, R.L. Edwards (in review). Marginal reefs under stress: physiological limits render Galápagos corals susceptible to warming and acidification. *Nature Communications*.

\*Reed, E.V., **D.M. Thompson**, J. E. Cole, J. M. Lough, N. E. Cantin, A. Cheung, A. Tudhope, L. Vetter, G. Jimenez, R.L. Edwards (in review) Impacts of Coral Growth on Geochemistry: Lessons from the Galapagos Islands. *Paleoceanography and Paleoclimatology*

Gerald A. Meehl, Jadwiga H. Richter, Haiyan Teng, Antonietta Capotondi, Kim Cobb, Francisco Doblas-Reyes, Markus G. Donat, Matthew H. England, John C. Fyfe, Weiqing Han, Hyemi Kim, Ben P. Kirtman, Yochanan Kushnir, Nicole S. Lovenduski, Michael E. Mann, William J. Merryfield, Veronica Nieves, Kathy Pegion, Sara Sanchez, Adam Scaife, Doug Smith, Aneesh C. Subramanian, Lantao Sun, **D.M. Thompson**, Caroline Ummenhofer, Shang-Ping Xie (submitted), Initialized Earth system prediction from subseasonal to decadal timescales. *Nature Reviews Earth and Environment*

Sayani, H.R., **D.M. Thompson**, J.E. Carilli, T.M. Marchitto, , A. Chapman, K.M. Cobb (accepted with minor revisions). Reproducibility of coral Mn/Ca-based wind reconstructions at Kiritimati Island and Butaritari Atoll. *Geochemistry, Geophysics, Geosystems*.

\*Loope, G., **D.M. Thompson**, J.E. Cole, J. Overpeck (2020), Is there a low-frequency bias in multiproxy reconstructions of Pacific SST variability? *Quaternary Science Reviews*

\*Loope, G., **D.M. Thompson**, J. Overpeck (in revision). South Asian monsoon precipitation over the last 2600 years recorded in Pale Daha sediment, western Nepal, *Palaeogeography, Palaeoclimatology, Palaeoecology*

\*Hlohowskyj, S. R., **D.M. Thompson**, A. Chappaz (in revision) A promising new El Niño proxy: molybdenum sedimentary record in Genovesa Lake, Galápagos, *Geophysics, Geochemistry, Geosystems*

Konecky, B.L. et al. (2020). The Iso2k Database: A global compilation of paleo- $\delta$  18O and  $\delta$  2H records to aid understanding of Common Era climate. *Earth Syst. Sci. Data Discuss*.

- \*Loope, G., **D.M. Thompson**, J. Overpeck (2020), The spectrum of Asian Monsoon variability: a proxy system model approach to the hydroclimate scaling mismatch, *Quaternary Science Reviews*
- \*McManus, L.C., V.V. Vasconcelos, S.A. Levin, **D.M. Thompson**, J.A. Kleypas, F.S. Castruccio, E.N. Curchitser and J.R. Watson (2019). Extreme temperature events will drive coral decline in the Coral Triangle, *Global Change Biology*, 00, 1-14, doi: 10.1111/gcb.14972
- Grothe, P.R., K.M. Cobb, G. Liguori, E. Di Lorenzo, A. Capotondi, Y. Lu, H. Cheng, R.L. Edwards, J.R. Southon, G.M. Santos, D.M. Deocampo, J. Lynch-Stieglitz, T. Chen, H.R. Sayani, K. Townsend, M. Hagos, G. O'Connor, **D.M. Thompson**, L.T. Toth, A.L. Moore (2019) Enhanced El Niño-Southern Oscillation variability in recent decades. *Geophysical Research Letters*, doi: 10.1029/2019GL083906
- \*Reed, E.V., J.E. Cole, J.M. Lough, **D.M. Thompson** and N.E. Cantin (2019) Linking Climate Variability and Growth in Coral Skeletal Records from the Great Barrier Reef, *Coral Reefs*, 1-15, doi: 10.1007/s00338-018-01755-8
- Thompson, D.M.**, J. Kleypas, F. Castruccio, E. Curchitser, M. Pinsky, B. Jönsson and J. Watson (2018) Variability in oceanographic barriers to coral larval dispersal: Do currents shape biodiversity?, *Progress in Oceanography*, 165, 110-122, doi: 10.1016/j.pocean.2018.05.007
- Jimenez, G., J.E. Cole, **D.M. Thompson**, and A.W. Tudhope (2018) Northern Galápagos corals reveal twentieth century warming in the Eastern Pacific. *Geophysical Research Letters*. doi: 10.1002/2017GL075323
- Thompson D.M.**, J.L. Conroy, A. Collins, S. Hlohowskyj, J.T. Overpeck, M. Riedinger-Whitmore, J.E. Cole, M.B. Bush, H. Whitney, T.L. Corley, and M. Steinitz Kannan (2017) Tropical Pacific climate variability over the last 6000 years as recorded in Bainbridge Crater Lake, Galápagos. *Paleoceanography*, doi: 10.1002/2017PA003089
- Conroy, J.L., **D.M. Thompson**, K.M. Cobb, D. Noone, S. Rea, A.N. LeGrande (2017) Spatiotemporal variability in the  $\delta^{18}\text{O}$ -salinity relationship of seawater across the tropical Pacific Ocean. *Paleoceanography*, doi: 10.1002/2016PA003073
- \*Ng, J.Y., B. Williams, D.M. Thompson, C. Mayne, J. Halfar, E. Edinger, and K. Johnson (2016) Assessing multi-site  $\delta^{18}\text{O}$ -climate calibrations of the coralline alga *Clathromorphum* across the high-latitude Northern Hemisphere, *Geochimica et Cosmochimica Acta*, 194, 279-290, doi: 10.1016/j.gca.2016.08.023.
- Kleypas, J. A., **Thompson, D. M.**, Castruccio, F. S., Curchitser, E. N., Pinsky, M. and Watson, J. R. (2016), Larval connectivity across temperature gradients and its potential effect on heat tolerance in coral populations. *Glob Change Biol*, 22: 3539–3549. doi:10.1111/gcb.13347
- Dee, S., Emile-Geay, J., Evans, M. N., Allam, A., Steig, E. J., & **Thompson, D. M.** (2015). PRYSM: An open-source framework for proxy system modeling, with applications to oxygen-isotope systems. *Journal of Advances in Modeling Earth Systems*, doi: 10.1002/2015MS000447
- Thompson, D.M.**, J.E. Cole, G. Shen, A. Tudhope, and G. Meehl (2015) Early twentieth-century warming linked to tropical Pacific wind strength. *Nature Geoscience*, doi:10.1038/ngeo2321
- Conroy, J.L., **D.M. Thompson**, A. Collins J.T. Overpeck, M.B. Bush, and J.E. Cole (2014) Climate influences on water and sediment properties of Genovesa Crater Lake, Galápagos. *Journal of Paleolimnology* 52(4), 331-347, doi: 10.1007/s10933-014-9797-z.
- Schmidt, G. A., Annan, J. D., Bartlein, P. J., Cook, B. I., Guilyardi, E., Hargreaves, J. C., Harrison, S. P., Kageyama, M., LeGrande, A. N., Konecky, B., Lovejoy, S., Mann, M. E., Masson-Delmotte, V., Risi, C., **Thompson, D.**, Timmermann, A., Tremblay, L.-B., and Yiou, P. (2013) Using paleo-climate comparisons to constrain future projections in CMIP5, *Clim. Past*, 9, 775-835, doi:10.5194/cpd-9-775-2013.

- Comboul, M., J. Emile-Geay, M.N. Evans, N. Mirnateghi, K.M. Cobb, and **D.M. Thompson** (2013) A probabilistic model of chronological errors in layer-counted climate proxies: applications to annually-banded coral archives, *Clim. Past*, 9, 6077-6123, doi:10.5194/cpd-9-6077-2013.
- Evans, M. N., S.E. Tolwinski-Ward, **D.M. Thompson**, and K.J. Anchukaitis (2013). Applications of proxy system modeling in high resolution paleoclimatology. *Quaternary Science Reviews*, 76, 16-28, doi:10.1016/j.quascirev.2013.05.024
- Thompson, D.M.**, T.R. Ault, M.N. Evans, J.E. Cole, and J. Emile-Geay, (2011). Comparison of observed and simulated tropical climate trends using a forward model of coral  $\delta^{18}\text{O}$ . *Geophys. Res. Lett.*, 38, L14706, doi:10.1029/2011GL048224.
- Thompson, D.M.** and R. van Woesik (2009). Corals escape bleaching in regions that recently and historically experienced frequent thermal stress. *Proc. R. Soc. B*, 276(1669), 2893-2901, doi: 10.1098/rspb.2009.0591.

### Manuscripts in preparation

- Chapman, A.U., D.M. Thompson, S.R. Hlohowskyj, J.E. Carilli, H.R. Sayani, and K.M. Cobb (in prep.) A Terrestrial Investigation of the Coral Mn/Ca-based Trade-wind Proxy Mechanism. *Geochimica et Cosmochimica Acta*.
- Cheung, A.H., J.E. Cole, **D.M. Thompson**, L. Vetter, G. Jimenez, A.W. Tudhope (in prep.) Elemental proxies for sea surface temperature from Galápagos corals. *Paleoceanography and Paleoclimatology*
- Collins, A.F., M.B. Bush, J.L. Conroy, **D.M. Thompson**, J.T. Overpeck (in prep.) Droughts, finches, and the Galápagos Islands: a paleoecological perspective. *PNAS*
- \*Hitt, N.T., H.R. Sayani, K.M. Cobb, P.R. Grothe, A.R. Atwood, S. Ellis, **D.M. Thompson**, J.L. Conroy, E. Wiggins, Y. Lu, M. Pythoud, P. Xhang, H. Cheng, R.L. Edwards (in prep.). Evaluating 20<sup>th</sup> century central tropical Pacific SST trends using young fossil corals
- Jimenez, G., J.E. Cole, K. Anchukaitis, L. Vetter, **D.M. Thompson**, A.W. Tudhope (in prep.) Insights on Pacific Climate Variability from a Preindustrial to Present Coral SST Reconstruction from Darwin Island, Galapagos. *Paleoceanography and Paleoclimatology*
- Konecky, B., and P. I. P. Members (In Prep.), Global synthesis of common era hydroclimate using water isotope proxies from multiple archives, *Nature Geoscience*.
- \*McManus, L.C., V.V. Vasconcelos, F.P. Santos, S.A. Levin, **D.M. Thompson**, J.A. Kleypas, F.S. Castruccio, E.N. Curchitser and J.R. Watson (in prep). Larval dispersal facilitates coral adaptive response on a spatially realistic network, *PLoS Computation Biology*
- \*Reed, E.V., **D.M. Thompson** (in prep.) Reconstructing the Pacific Intertropical Convergence Zone during the 20th Century, *Geophysical Research Letters*
- Roach T.N.F., E. Santoro, K. Morgan, F. Lane, K. Lachapelle, R. Peixoto, D.M. Thompson (in prep.) Multi-scale microbial dynamics across time and space in the Biosphere 2 Ocean. *Ecological Engineering*
- Thompson, D., J. Conroy, N. McKay, B. Konecky, and P. I. P. Members (In Prep.), Salinity reconstruction from hydro-sensitive coral  $\delta^{18}\text{O}$  records, *Nature Geoscience*.
- Thompson, D.M.**, J.E. Cole, and A.W. Tudhope (in prep.) Enhanced E-W temperature gradient across the date line inferred from central Pacific coral records. *Paleoceanography*
- Thompson, D.M.**, J.E. Cole, and K.L. DeLong (in prep.) Impact of calibration methodology on temperature and  $\delta^{18}\text{O}_{\text{sw}}$  trends inferred from coral Sr/Ca and  $\delta^{18}\text{O}$ : towards a unified calibration. *Paleoceanography*

Trzybinski, J., **D.M. Thompson**, K. Morgan, D. Dettman, L. Crocker, T. Roach, F. Lane, E. Santoro (in prep.) Trophic Dynamics on Degraded Coral Reefs: Analyses of Nutrients and Isotope Fractionation in the Biosphere 2 Ocean. *Ecological Engineering*.

## Other publications

- Thompson, D.M.**, Cole, J.E., and K. Morgan (2020). Building Resilient Reefs: Biosphere 2 & Beyond. *Reef Encounter*, pp 66-68. [http://coralreefs.org/wpcontent/uploads/2020/02/REEF\\_ENCOUNTER\\_Dec\\_2019\\_hi-res\\_3.pdf](http://coralreefs.org/wpcontent/uploads/2020/02/REEF_ENCOUNTER_Dec_2019_hi-res_3.pdf)
- DAPS workshop participants (2019). Toward community resources for paleoclimate data assimilation, reanalysis, and proxy system modeling. *Past Global Changes Magazine*, 27(2), 88
- Konecky, B., L. Comas-Bru, E. Dassié, K. DeLong, J. Partin, and **Iso2k Project Members** (2018). "Iso2k is investigating Common Era hydroclimate with a new water isotope compilation." *Eos, Transactions, American Geophysical Union*.
- Dassié, E., K. DeLong, H. Kilbourne, B. Williams, N. Abram, L. Brenner, C. Brahmi, K. Cobb, T. Corrège, D. Dissard, J. Emile-Geay, H. Evangelista, M. Evans, J. Farmer, T. Felis, M. Gagan, D. Gillikin, N. Goodkin, M. Khodri, A.C. Lavagnino, M. LaVigne, C. Lazareth, B. Linsley, J. Lough, H. McGregor, I. Nurhati, G. Ouellette, L. Perrin, M. Raymo, B. Rosenheim, M. Sanstrom, B. Schöne, A. Sifeddine, S. Stevenson, **D. Thompson**, A. Waite, A. Wanamaker, H. Wu (2017) Save our Marine Annually-Resolved Proxy Archives (MARPA)! *Eos, Transactions, American Geophysical Union*
- McGregor, H.V., B. Martrat, M.N. Evans, **D. Thompson**, D. Reynolds, J. Addison and Workshop Participants (2016) Data, age uncertainties and ocean  $\delta^{18}O$  under the spotlight for Ocean2k Phase 2. *Past Global Changes Magazine*, 24(1), 44, 10.22498/pages.24.1.44
- Thompson, D.M.**, F. Castruccio, J. Kleypas, E. Curchitser, M. Pinsky, and J. Watson (2014) Variability in reef connectivity in the Coral Triangle. *Reef Encounter*, 29(2), 46-51
- Thompson, D. M.**, T. R. Ault, M. N. Evans, J. E. Cole, J. Emile-Geay, and A. N. LeGrande (2013), Coral-CGCM comparison highlights role of salinity in long-term trends. P. Braconnot, C. Brierley, S.P. Harrison, L. von Gunten (eds) El Niño Southern Oscillation: observation and modeling, *PAGES news*, 21(2), 60-61.
- Thompson, D.M.**, (2011). Are More Frequent or Intense La Niñas in Our Future? Southwest Climate Blog, Climate Assessment for the Southwest (CLIMAS). <http://www.southwestclimatechange.org/blog/12601>

## Presentations

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\*student presentation

### Professional presentations

55. **Thompson, D.M.**, J.E. Cole, M.T. McCulloch, J.P. D'Olivo, G. Jimenez, E.V. Reed, N.E. Cantin, J. Lough (2019), Changing coral pH regulation & calcification in marginal environments: new insights from the Galapagos Islands, **Oral Presentation**, *American Geophysical Union Fall Meeting*
54. Snyder, M., **D.M. Thompson**, E.V. Reed, L. Vetter, D.L. Dettman, D. McGee, H. Sayani (2019), Western Pacific Fossil Coral Records Reveal Change in Tropical Climate During the Past Millennium, **Poster Presentation**, *American Geophysical Union Fall Meeting*
53. Trzybinski, J.B., **D.M. Thompson**, K. Morgan, D.L. Dettman, L. Crocker, T.N.F. Roach, F. Lane, and E. Santoro (2019), Trophic Dynamics on Degraded Coral Reefs: Analyses of Nutrients and Isotope

Fractionation in the Biosphere 2 Ocean, **Poster Presentation**, *American Geophysical Union Fall Meeting*

52. Chapman, A., **D.M. Thompson**, S. Hlohowskyj, J. Carilli, T.M. Marchitto, H. Sayani, K.M. Cobb (2019), From Wind to Coral: Assessing the Mechanism Behind the Coral Mn/Ca-based Trade-wind Proxy, **Poster Presentation**, *American Geophysical Union Fall Meeting*
51. Reed, E.V., **D.M. Thompson**, J.E. Cole, L. Vetter, D.L. Dettman, D. McGee, M. Snyder, H. Sayani, A.W. Tudhope (2019), ENSO's Impact on the Pacific Intertropical Convergence Zone: New Insights from a Network of Pacific Coral Records, **Poster Presentation**, *American Geophysical Union Fall Meeting*
50. Falster, G., B.L. Konecky, N. McKay, A.R. Atwood, J.L. Conroy, M. Fischer, M. Jones, L. Jonkers, S. Stevenson, **D.M. Thompson**, J.J. Tyler, and Pages Iso2K Project Members (2019), New insights into spatial and temporal dynamics of the global water cycle from the Iso2k database, **Oral Presentation**, *American Geophysical Union Fall Meeting*
49. **D.M. Thompson**, Sediment archives of ENSO variability: New insights and novel proxies, **Keynote Presentation**, PaleoENSO workshop
48. **D.M. Thompson**, et al. Comparison among Proxy System Models ("PSM-MIPs"), **Solicited Oral Presentation**, *European Geophysical Union*
47. **D.M. Thompson**, et al. The "calm before the spawn": the ultimate cue of coral spawning across the Coral Triangle?, **Oral Presentation**, *Ocean Sciences Meeting*
46. Sayani, H.R., **D.M. Thompson**, et al. Constraining 20<sup>th</sup> Century Pacific Trade-Wind Variability Using Coral Mn/Ca, **Oral Presentation**, *American Geophysical Union Fall Meeting*
45. Reed, E.V., **D.M. Thompson**, J.E. Cole, J. Lough, L. Vetter, M. Snyder, G. Jimenez, A.W. Tudhope, R.L. Edwards, N.E. Cantin (2018) Paired Density and Geochemistry Records Demonstrate the Combined Impact of Skeletal Density and Architecture on the Geochemistry of Modern and Sub-Fossil Corals from the Galápagos Islands, **Poster Presentation**, *American Geophysical Union Fall Meeting*
44. Thompson, D.M., J. Conroy, B. Konecky, N. McKay, S. Stevenson, Iso2k Project Members (2018) Indo-Pacific hydroclimate change over the past 200 years: new insights from the Iso2k synthesis, **Oral Presentation**, *Goldschmidt*
43. Reed, E.V., **D.M. Thompson**, J.E. Cole, J. Lough, L. Vetter, M. Snyder, G. Jimenez, N.E. Cantin (2018) Paired Geochemistry and Density Records from Fossil Corals: A Case Study from the Galápagos Islands, **Oral Presentation**, *Goldschmidt*
42. Cheung, A.H., J.E. Cole, L. Vetter, G. Jimenez, **D.M. Thompson**, A.W. Tudhope (2018) Multi-proxy reconstructions of the Eastern Equatorial Pacific: measuring Sr/Ca, Ba/Ca, and Li/Mg in modern corals using ICP-OES, **Oral Presentation**, *Goldschmidt*
41. **Thompson, D.M.**, Jessica L. Conroy, A. Wyman, and D. Read (2017). Spatial  $\delta^{18}\text{O}_{\text{sw}}$ -SSS relationship across the western tropical Pacific Ocean, **Poster Presentation**, *American Geophysical Union Fall Meeting*
40. Conroy, J.L., **D.M. Thompson**, et al. (2017) Salinity information in coral  $\delta^{18}\text{O}$  records, **Poster Presentation**, *American Geophysical Union Fall Meeting*
39. Konecky, B.L., et al. Global Synthesis of Common Era Hydroclimate using Water Isotope Proxies from Multiple Archives: First Results from the PAGES Iso2k Project, **Oral Presentation**, *American Geophysical Union Fall Meeting*
38. Jimenez, G., J.E. Cole, L. Vetter, **D.M. Thompson**, A. Tudhope (2017) A preindustrial to present record of ENSO from Darwin Island, Galápagos: constraining Eastern Pacific decadal variability, **Oral Presentation**, *American Geophysical Union Fall Meeting*
37. \*Cheung, A., J. Cole, L. Vetter, G. Jimenez, **D.M. Thompson**, A. Tudhope (2017). Multi-proxy Reconstructions of the Eastern Equatorial Pacific: Measuring Sr/Ca, Ba/Ca, and Li/Mg in Modern Corals Using ICP-OES, **Poster Presentation**, *American Geophysical Union Fall Meeting*



36. Konecky, B., **D.M. Thompson**, *et al.* Iso2k: A global synthesis of Common Era hydroclimate using water isotope proxies from multiple archives, **Poster Presentation**, Paleoclimate Modeling Intercomparison Project (PMIP) meeting, Stockholm, Sweden.
35. **Thompson, D.M.**, H. Goosse, M. Evans, S. Khatiwala (2017). Proxy System modelling and data assimilation in paleoclimatology, **Oral Presentation**, Paleoclimate Modeling Intercomparison Project (PMIP) meeting, Stockholm, Sweden.
34. **Thompson, D.M.**, H. Goosse, M. Evans, S. Khatiwala (2017). Proxy System modelling and data assimilation in paleoclimatology, **Invited Presentation**, Speleothem Isotopes Synthesis & Analysis (SISAL) meeting, Stockholm, Sweden.
33. **Thompson, D.M.** (2017) Towards improved coral proxy system models (PSMs), **Oral Presentation**, *Proxy System modelling and data assimilation in paleosciences*, Louvain-la-Neuve, Belgium.
32. Williams, B., **D.M. Thompson**, M. Crowley, M. Moulton, J. Ng, J. Halfar (2016) A Simple Proxy System Model of High-Latitude Encrusting Algal Oxygen Isotope Composition ( $\delta^{18}O$ ), **Poster Presentation**, *American Geophysical Union Fall Meeting*
31. E. Curchitser, Kleypas, J.A., F.S. Castruccio, E. Drenkard, **D.M. Thompson**, and M.L. Pinsky Climate, bleaching and connectivity in the Coral Triangle (2016), **Invited Presentation**, *American Geophysical Union Fall Meeting*
30. Sayani, H.R., *et al.* (2016) Coral Ensemble Estimates of Central Pacific Mean Climate During the Little Ice Age, **Poster Presentation**, *American Geophysical Union Fall Meeting*
29. Grothe, P.R., *et al.* (2016) Robust evidence for forced changes in ENSO: from the mid-Holocene to the 21st century, **Oral Presentation**, *American Geophysical Union Fall Meeting*
28. Hitt, N.T., *et al.* (2016) An ensemble approach to reconstructing 20th century climate trends in data-sparse regions of the tropical Pacific using young fossil corals, **Oral Presentation**, *American Geophysical Union Fall Meeting*
27. **Thompson, D.M.**, J. Kleypas, F. Castruccio, J. Watson, E. Curchitser and M. Pinsky (2016) Variability in reef connectivity in the Coral Triangle. **Oral Presentation**, *International Coral Reef Symposium*
26. Kleypas, J., D.M. Thompson, F.S. Castruccio, E. Curchitser, M. Pinsky, and J. Watson (2016) Potential Role of Larval Connectivity in Coral Temperature Thresholds. **Oral Presentation**, *International Coral Reef Symposium*
25. **Thompson, D.M.**, J. Kleypas, F. Castruccio, J. Watson, and E. Curchitser (2015) Variability in reef connectivity in the Coral Triangle. **Oral Presentation**, *AGU Fall Meeting*
24. Conroy, J., **D. Thompson**, N. Martin, K. Cobb, D. Noone (2015) Spatiotemporal Variability in the Salinity-Oxygen Isotope Relationship of Seawater Across the Tropical Pacific Ocean, **Oral Presentation**, *AGU Fall Meeting*
23. Jimenez, G., J. Cole and **D. Thompson** (2015) Changing Trends and Variance in Eastern Equatorial Pacific Sea Surface Temperatures over the Twentieth Century, **Poster Presentation**, *AGU Fall Meeting*
22. \*Horlick, K., **D. Thompson**, and D. Anderson (2015) Assessing the contribution of sea surface temperature and salinity to coral  $\delta^{18}O$  using a weighted forward model, **Poster Presentation**, *AGU Fall Meeting*
21. **Thompson, D.M.** and Leduc G. Iso2k project summary (2015) **Invited presentation (on behalf of Iso2k)** *Ocean 2k workshop, Barcelona, Spain*
20. **Thompson, D.M.**, J. Kleypas, F. Castruccio, J. Watson, and E. Curchitser (2015) Variability in reef connectivity in the Coral Triangle. **Poster Presentation**, *Annual CESM Workshop*
19. **Thompson, D.M.** (2015) Coral & coralline algae Proxy system modeling. **Invited talk**, *Workshop on Proxy System Modeling*

18. \*Ng, J., B. Williams, **D.M. Thompson**, and J. Halfa, Developing a forward climate model of encrusting coralline algae” (2015), **Poster Presentation**, *American Physical Society Conference for Undergraduate Women in Physics*
17. **Thompson, D.M.**, J.E. Cole, S. Shen, A. Tudhope, and G. Meehl (2014) Variability in Pacific trade winds inferred from coral Mn/Ca: Implications for the rate of global warming. **Oral presentation**, *American Geophysical Union (AGU) Fall conference*.
16. \*Ng, J., B. Williams, D.M. Thompson, and J. Halfa (2014) Developing a Forward Model of Encrusting Coralline Algae, **Poster Presentation**, *American Geophysical Union (AGU) Fall conference*.
15. **Thompson, D.M.**, J.E. Cole, S. Shen, A. Tudhope, and G. Meehl (2014) Early 20th century global warming linked to tropical Pacific wind strength. **Oral presentation**, 19<sup>th</sup> Annual CESM Workshop.
14. **Thompson, D.M.**, F. Castruccio, J. Kleypas, E. Curchitser, M. Pinsky, and J. Watson (2014) Variability in reef connectivity in the Coral Triangle. **Poster presentation**, 19<sup>th</sup> Annual CESM Workshop.
13. **Thompson, D.M.**, J. Cole, and A. Tudhope (2013) The heat is on: the thermal and hydrological fingerprint of warming in the Tropical Pacific. **Oral presentation**, EarthWeek Plenary Session.
12. **Thompson, D.M.**, J. Cole, S. Tudhope (2013), Reconciling coral-based reconstructions of tropical Pacific SST and salinity. **Oral presentation**, *U.S. CLIVAR ENSO Diversity Workshop*.
11. **Thompson, D.M.**, J. Cole, S. Tudhope (2012), Reconciling coral-based reconstructions of tropical Pacific SST and salinity. **Oral presentation**, *American Geophysical Union (AGU) Fall conference*.
10. **Thompson, D.M.**, T.R. Ault<sup>2,1</sup>, M.N. Evans<sup>3,1</sup>, J.E. Cole<sup>1</sup>, and J. Emile-Geay<sup>4</sup> (2012) Tropical climate trends inferred from coral pseudoproxy modeling. **Poster presentation**, *The Second International Workshop on Climate Informatics*.
9. **Thompson, D.M.**, T.R. Ault, M.N. Evans, J.E. Cole, and J. Emile-Geay, (2012). Tropical climate trends inferred from coral  $\delta^{18}\text{O}$ : a comparison of CMIP-5 forward-model results with paleoclimatic observations. **Oral presentation**, *GeoDaze*.
8. **Thompson, D.M.**, M.N. Evans, J.E. Cole, T.R. Ault, and J. Emile-Geay, (2011). Tropical climate trends inferred from coral  $\delta^{18}\text{O}$ : a comparison of CMIP-5 forward-model results with paleoclimatic observations. **Oral presentation**, *American Geophysical Union (AGU) Fall conference*.
7. **Thompson, D.M.**, T.R. Ault, M.N. Evans, J.E. Cole, and J. Emile-Geay, (2011). Intercomparison of 20<sup>th</sup>-century tropical climate model hindcasts and coral  $\delta^{18}\text{O}$  data using a forward proxy system model. **Invited talk**, *Bayesian Paleoclimate Workshop, National Center for Atmospheric Research*.
6. **Thompson, D.M.**, J. Conroy, H. Barnett, J. Cole, J. Overpeck, S. Tudhope, and M. Bush, (2011). Reconstructing climate of the eastern tropical Pacific: modern calibration and challenges from the Galapagos Islands. **Poster presentation**, *GeoDaze*.
5. **Thompson, D.M.**, T. Ault, J. Cole, M.N. Evans, and J. Emile-Geay, (2010). Intercomparison of 20th century tropical climate model hindcasts and coral  $\delta^{18}\text{O}$  data using a forward proxy model. **Oral presentation**, *American Geophysical Union (AGU) Fall conference*.
4. **Thompson, D.M.**, T. Ault, J. Cole, M.N. Evans, and J. Emile-Geay, (2010). Intercomparison of 20th century tropical climate model hindcasts and coral  $\delta^{18}\text{O}$  data using a forward proxy model. **Oral presentation**, *GeoDaze*.
3. **Thompson, D.M.**, T. Ault, J. Cole, H. Barnett, and G. Shen, (2009). Coral Mn/Ca evidence for a strengthening of the tropical Pacific zonal winds. **Oral presentation**, *GeoDaze*.
2. **Thompson, D.M.** and R. van Woesik, (2008). Past frequencies of thermal anomalies determine extent of coral bleaching. **Oral presentation**, *11<sup>th</sup> International Coral Reef Symposium*.
1. **Thompson, D.M.** and R. van Woesik, (2007). Return periods of anomalous sea-surface temperature events inferred from wavelet analysis of thermal proxy records in modern corals: Implications for coral bleaching. **Poster presentation**, *American Geophysical Union (AGU) Fall conference*.

## Invited seminars

**2020** University of Arizona Geosciences, Tucson, USA  
**2019** Geoscience Advisory Board, Tucson, USA  
**2019** College of Science Advisory Board, Tucson, USA  
**2018, 2019** Biosphere 2 Advisory Board, Tucson, USA  
**2018** Vanderbilt University, TN, USA  
**2017** University of Illinois Urbana-Champaign, IL, USA  
**2017** Colby College, Maine, USA  
**2016** Australian Institute of Marine Science, Townsville, Australia  
**2016** Department of Meteorology, Stockholm University  
**2016** Baltic Seminar Series, Baltic Sea Centre, Stockholm University  
**2016** Jr. Faculty Colloquium, Boston University.  
**2015** NCAR day of networking & discovery, National Center for Atmospheric Research  
**2015** Institute of Arctic and Alpine Research (INSTAAR), University of Colorado Boulder  
**2011** School of Earth and Atmospheric Sciences, Georgia Institute of Technology

### **Public presentations (selected recent)**

Thompson, D.M. Coral Reef Resilience: Hope for the Oceans. College of Science Science Café. Nov 8, 2019.

Thompson, D.M. Tropical climate change and coral reefs. New England Aquarium Dive Club, Feb 21, 2018.

Thompson, D.M. Tropical climate change and coral reefs. Taste of Science, Boston, April 26, 2017.  
<https://tasteofscience.org/boston-events/climate-science>

Thompson, D.M. BU March for Science Rally, April 22, 2017.

Thompson, D.M. Tropical climate change and coral-reef ecosystems. Ocean First Divers, Boulder, Colorado, August 20, 2015

Thompson, D.M. The future of El Niño and coral reefs in a warming climate. *Desert Divers Dive Club*, Tucson, AZ, May 15, 2013.

Thompson, D.M. The future of El Niño and coral reefs in a warming climate. *Philanthropic Educational Organization Luncheon*, Tucson, AZ, November 3, 2012.

Thompson, D.M. Research on uninhabited Islands: Galápagos Archipelago, STEM Institute Global to Local Project Outpost, AZ K-12 Summer STEM Camp, Tucson, AZ, July 12, 2012.

### **Media relations (selected recent)**

Biosphere 2 Virtual EarthFest 2020  
Podcast guest: “*Plucky Ladies: Exploring female curiosity, perseverance, and feats of excellence*”  
“Winds of Change”, *BU Today*, <http://www.bu.edu/today/2017/winds-of-change/>  
“Pacific coral may predict next spike in global temperatures”, *Colorado Public Radio*,  
<http://www.cpr.org/news/story/pacific-coral-may-predict-next-spike-global-temperatures>  
“Last Year May Have Been the Warmest on Record, But Clues From a Coral Atoll Suggest We Ain't Seen Nothin' Yet”, *Discover – Online* & interview with Tom Yulsman on *How on Earth*, *KGNU Radio*  
<http://blogs.discovermagazine.com/imageo/2015/01/16/last-year-may-warmest-record-clues-coral-atoll-suggest-aint-seen-nothin-yet/#.VPD53uGtZ4M>

### **Professional skills**

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American Academy of Underwater Science (AAUS) Scientific Diver  
PADI Rescue Diver  
SSI First Aid, CPR, AED, Oxygen Administration  
IACUC Approved Principal Investigator  
Knowledgeable in UNIX/Linux, Mac OS X, and PC computing  
Proficient in Matlab programming  
Working knowledge of Python, NCL, shell, Fortran, Earth System Grid  
Language skills: English (native), Spanish (read, write, speak—basic competence), Swedish (read, write, speak—very basic competence)

## Community Service

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### Professional membership and leadership

*American Quaternary Association (AMQUA) Marine Geoprocesses Councilor, 2018-2022*  
*Earth & Environment Diversity & Inclusion Communications Committee, 2017-2018*  
*Dive Control Board, Boston University, 2017-2018*  
*American Academy of Underwater Science (AAUS), 2012-present*  
*American Geophysical Union, 2007-present*  
*International Society for Reef Studies, 2007-present*  
*President, Beta Beta Beta Biological Honors Society, 2005-2006*  
*Secretary, Sigma Gamma Epsilon (SGE) National Honors Society for Earth Sciences, 2009-2010*  
*Member of the College of Science Graduate Council*

### Reviewer

*Coral Reefs; Quaternary International; Climate of the Past; Paleoceanography; Science; Nature; Nature Geoscience; Global Change Biology; Paleoceanography; Palaeogeography, Palaeoclimatology, Palaeoecology; Geophysical Research Letters; NSF/P2C2; Biogeoscience; Progress in Oceanography; Deutsche Forschungsgemeinschaft (German Funding Agency), Journal of Biogeography, Reef Encounter, GSA Today*

### Post-doctoral researchers mentored

Dr. Ty Roach, Biosphere 2, University of Arizona 2018-2019

### Graduate Students Mentored (\*Primary advisor, † Co-advisor, ‡ Committee member)

Emma Reed\*, PhD, Boston University / University of Arizona 2016-  
Alexey Shiklomanov‡, PhD, Boston University 2016-2018  
Garrison Loope\*, PhD, University of Arizona 2018-2019  
Alice Chapman\*, PhD, University of Arizona 2018-  
Tumaini Kamulali‡, MS, University of Arizona 2019-  
Pablo Martinez Sosa, PhD, University of Arizona 2019-  
David Edge, PhD, University of Arizona 2019-

### Undergraduate Students Mentored (\*Primary advisor, † Co-advisor)

Jessica Ng†, Claremont-McKenna 2014-2016

Madeline Moulton†, Claremont-McKenna	2015-2016
Michael Crowley†, Claremont-McKenna	2016
Juliette Bateman*, Boston University	2017-2018
Rachel Jiang*, Boston University	2017-2018
Maria Snyder*, University of Arizona	2018-
Briana Hoegler*, University of Arizona	2019-
Sophia Bautista*, University of Arizona	2019-
Zoe Benson*, University of Arizona	2019-

## Conference volunteer

2018	<i>Co-chair of session on Paleoclimatic history of ENSO</i>
2015	<i>Co-chair of session on Multiproxy Records for Climatic and Oceanic Reconstructions at the AGU Fall Meeting</i>
2010	<i>Co-chair of the Correspondence Committee, GeoDaze 2010</i>
2009	<i>Co-chair of the Refreshments Committee, GeoDaze 2009</i>
2008	<i>Local Organizing Committee volunteer, 11<sup>th</sup> International Coral Reef Symposium</i>

## Outreach/Community service

2017	Panelist for screening of “Chasing Coral”, Environmental Film Festival, Boston
2016 – Present	Lead Developer of a community of practice to promote diversity, equity and inclusion in STEM at Boston University: BU-AGREED (BU Allies for Gender/Sexuality, Racial & Ethnic Equity and Diversity)
2015 – Present	Voluntary contributor to the PAGES Ocean2k and Iso2k synthesis of paleoclimate data spanning the past two millennia ( <a href="http://www.pages-igbp.org/workinggroups/2knetwork/intro">http://www.pages-igbp.org/workinggroups/2knetwork/intro</a> ). Leader of the coral archive Iso2k synthesis team and project leader for phase 2 Ocean2k isotope synthesis and analysis efforts.
2015	Co-leader of UNEION (UCAR NCAR Equity and Inclusion), a group created to read, learn and talk about topics related to diversity, equity and inclusion
2011 – 2013	Volunteer with the College of Science outreach program
2012	American Indian Science and Engineering Society (AISES) Geoscience Outreach Project, <i>Mother Earth and Her Ecosystems: Geoscience Panel Discussion</i> ( <a href="http://www.youtube.com/watch?v=1g3mOKwwpsg&amp;feature=youtu.be">http://www.youtube.com/watch?v=1g3mOKwwpsg&amp;feature=youtu.be</a> )
2012	Presented at Arizona K-12 center’s STEM Institute 2.0
2010 & 2011	Earth Sciences Saturday Academy. 2011: Led activity on how we create climate records from tree-rings, cave deposits, corals, and marine and lake sediments. ( <a href="http://azmesa.arizona.edu/">http://azmesa.arizona.edu/</a> )
2011	Science Fair Judge, Saints Peter & Paul Catholic School
2006	Developed web-based case study on how to effectively implement and monitor a Marine Protected Area for use in college marine-resource management courses ( <a href="http://www.nmfs.vt.edu/case_studies/mpa/index.php">http://www.nmfs.vt.edu/case_studies/mpa/index.php</a> )
2004	Gave presentations to the public and assisted with education and outreach programs at Underwater Adventures Aquarium

## Collaborators

Kevin Anchukaitis (University of Arizona), James D. Annan (Yokohama Institute for Earth Sciences), Toby Ault (Cornell), Patrick J. Bartlein (University of Oregon), Mark Bush (Florida Institute of Technology), Frederic Castruccio (NCAR), Kim Cobb (Georgia Tech), Julia Cole (University of Michigan), Maud F. Comboul (University of Southern California), Ben I. Cook (NASA GISS), Enrique Curchitser (Rutgers), Julien Emile-Geay (University of Southern California), Michael Evans (University of Maryland), Eric Guilyardi (University of Reading), Julia C. Hargreaves (Yokohama Institute for Earth Sciences), Sandy P. Harrison (University of Reading), Masa Kageyama (Institut Pierre Simon Laplace), Joanie Kleypas (NCAR), Bronwen Konecky (Brown University), Allegra N. LeGrande (Columbia University), Shaun Lovejoy (McGill University), Michael E. Mann (Pennsylvania State University), Valerie Masson-Delmotte (Institut Pierre Simon Laplace), Gerald Meehl (NCAR), Jonathan Overpeck (University of Michigan), Malin Pinsky (Rutgers), T.M. Powell (UC Berkeley), Camille Risi (Institut Pierre Simon Laplace), Gavin Schmidt (NASA GISS), Axel Timmermann (University of Hawaii), Suz Tolwinski-Ward (Air Worldwide), L.-Bruno Tremblay (McGill University), Alexander Tudhope (University of Edinburgh), Robert van Woesik (Florida Institute of Technology), James Watson (Stockholm Resilience Centre), Branwen Williams (Claremont McKenna/Pitzer/Scripps), and Pascal Yiou (Institut Pierre Simon Laplace)