

## Maxime M. Grand, Ph.D.

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### RESEARCH INTERESTS

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- Biogeochemical cycling of trace metals and implications for marine productivity and phytoplankton species composition in coastal and open-ocean systems.
- Development and validation of *in situ* microfluidic chemical analyzers (nutrients, trace metals) for ocean observatories.

### EDUCATION

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<b>Ph.D. Oceanography</b> University of Hawai'i at Mānoa, United States.	<b>2014</b>
<b>M.S Applied Marine Science</b> University of Plymouth, United Kingdom.	<b>2006</b>
<b>Postgraduate Diploma of Science in Environmental Science</b> University of Auckland, New Zealand	<b>2005</b>
<b>B.S Global Environmental Science</b> University of Hawai'i at Mānoa, United States.	<b>2003</b>

### PROFESSIONAL APPOINTMENTS

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<b>Assistant Professor</b> , Moss Landing Marine Labs, San Jose State University	2018-present
<b>Adjunct Instructor</b> , Bridgewater State University	2018
<b>Postdoctoral Researcher</b> , University of Hawai'i at Mānoa	2017
<b>Postdoctoral Research Fellow</b> , University of Southampton, UK	2015-2017
<b>Postdoctoral Researcher</b> , University of Hawai'i at Mānoa	2014
<b>Graduate Research Assistant</b> , University of Hawai'i at Mānoa	2007-2014
<b>Research Assistant</b> , University of Hawai'i at Mānoa	2003-2004

## PEER REVIEWED PUBLICATIONS

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Barrett, P.M., J. A. Resing, **Grand, M.M.**, Measures, C.I., and W. M. Landing (InPress). Trace element composition of suspended particulate matter along three meridional sections in the Indian and Southern Oceans: Impact of scavenging on Al distributions. *Chemical Geology*, doi: [10.1016/j.chemgeo.2018.06.015](https://doi.org/10.1016/j.chemgeo.2018.06.015)

Clinton-Bailey, G.T, **M.M. Grand**, A.G. Beaton, A. Nightingale, G. Slavik, M. Mowlem and D.P. Connelly (2017). A lab-on-chip analyzer for in situ measurement of soluble reactive phosphate: improved phosphate blue assay and application to fluvial monitoring. *Environmental Science and Technology*, doi: [10.1021/acs.est.7b01581](https://doi.org/10.1021/acs.est.7b01581)

**Grand, M.M.**, G.T. Clinton-Bailey, A.D. Beaton, A.M. Schaap, T.H. Johengen, M. Tamburri, D.P. Connelly, M.C. Mowlem and E.A. Achterberg (2017). A Lab-On-Chip Phosphate Analyzer for Long-Term in Situ Monitoring at Fixed Observatories: Optimization and Performance Evaluation in Estuarine and Oligotrophic Coastal Waters. *Frontiers in Marine Science*, doi: [10.3389/fmars.2017.00255](https://doi.org/10.3389/fmars.2017.00255)

Hatta, M., C.I. Measures, P.J. Lam, D.C. Ohnemus, M.E. Auro, **M.M. Grand** and K.E. Selph (2017). The relative roles of Modified Circumpolar Deep Water and benthic sources in supplying Fe to the recurrent phytoplankton blooms above Pennell and Mawson Banks, Ross Sea, Antarctica. *Journal of Marine Systems*, 166: 61-72. doi:[10.1016/j.jmarsys.2016.07.009](https://doi.org/10.1016/j.jmarsys.2016.07.009)

**Grand, M.M.**, P. Chocholous, J. Ruzicka, P. Solich and C.I. Measures (2016). Determination of trace Zn in seawater by coupling solid phase extraction and fluorescence detection in the Lab-On-Valve format. *Analytica Chimica Acta*, 923: 45-54. doi: [10.1016/j.aca.2016.03.056](https://doi.org/10.1016/j.aca.2016.03.056)

**Grand, M.M.**, C.I. Measures, M. Hatta, P.L. Morton, P.M. Barrett, A. Milne, J.A. Resing and W.M. Landing (2015). The impact of circulation and dust deposition in controlling the distributions of dissolved Fe and Al in the South Indian subtropical gyre. *Marine Chemistry*, 176: 110-125 doi: [10.1016/j.marchem.2015.08.002](https://doi.org/10.1016/j.marchem.2015.08.002)

**Grand, M.M.**, C. I. Measures, M. Hatta, W.T. Hiscock, C.S. Buck and W. M. Landing (2015). Dust deposition in the eastern Indian Ocean: the ocean perspective from Antarctica to the Bay of Bengal. *Global Biogeochemical Cycles*, 29, doi:[10.1002/2014GB004898](https://doi.org/10.1002/2014GB004898)

**Grand, M.M.**, C.I. Measures, M.Hatta, W.T. Hiscock, W.M. Landing, P.L. Morton, C.S. Buck, P.M. Barret and J.A. Resing (2015). Dissolved Fe and Al in the upper 1000m of the eastern Indian Ocean: high-resolution data from the Antarctic margin to the Bay of Bengal. *Global Biogeochemical Cycles*, 29, doi:[10.1002/2014GB004920](https://doi.org/10.1002/2014GB004920)

Oliveira, H.M., **M.M. Grand**, J.Ruzicka and C.I. Measures (2015). Towards chemiluminescence detection in micro-sequential injection lab-on-valve format: A proof of concept based on the reaction between Fe(II) and luminol in seawater. *Talanta*, 133: 107-111. doi: [10.1016/j.talanta.2014.06.076](https://doi.org/10.1016/j.talanta.2014.06.076)

Guannel, M.L., B. Bruno, **M.M. Grand**, N.Lee and E.A. Day-Miller (2014). In Hawaii, a pilot course in professional development fulfills an unmet need in graduate education. *Limnology and Oceanography Bulletin*, 23(3) 56-59. [doi:10.1002/lob.201423356](https://doi.org/10.1002/lob.201423356)

**Grand, M.M.**, C. Buck, W. Landing, C. Measures, M. Hatta, W. Hiscock, M. Brown, and J. Resing (2014), Quantifying the Impact of Atmospheric Deposition on the Biogeochemistry of Fe and Al in the Upper Ocean: A Decade of Collaboration with the US CLIVAR-CO<sub>2</sub> Repeat Hydrography Program, *Oceanography*, 27(1), 62–65. [doi: 10.5670/oceanog.2014.08](https://doi.org/10.5670/oceanog.2014.08)

Measures, C.I., M. Hatta, and **M.M Grand** (2012). Bioactive trace metal distributions and biogeochemical controls in the Southern Ocean. *Oceanography*, 25: 122–133. [doi: 10.5670/oceanog.2012.85](https://doi.org/10.5670/oceanog.2012.85)

**Grand, M.M.**, H.M. Oliveira, J. Ruzicka and C.I. Measures (2011). Determination of dissolved zinc in seawater using micro-Sequential Injection lab-on-valve with fluorescence detection. *Analyst*, 136: 2747-2755. [doi: 10.1039/c1an15033b](https://doi.org/10.1039/c1an15033b)

**Grand, M.M** and E.J Gaidos (2010). Methane emission from a tropical wetland in Ka'au Crater, Oahu, Hawai'i. *Pacific Science*, 64: 57-72. [doi: 10.2984/64.1.057](https://doi.org/10.2984/64.1.057)

## OTHER PUBLICATIONS

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COCA Working Group (2014). The Collaborative on Oceanography and Chemical Analysis (COCA) and suggestions for future instrumental analysis methods in Oceanography. Report from the Collaborative on Oceanography and Chemical Analysis (COCA) meeting held at the Department of Oceanography University of Hawaii, March 26-29, 2013. Published as a [Virtual Special Issue](#) in *Marine Chemistry*.

## AWARDS & SCHOLARSHIPS

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- 2017** Nutrient Sensor Challenge. “Honorable Mention for Innovation and Potential”.
- 2013** J. Watumull Merit Scholarship (University of Hawai'i, Dept. of Oceanography).
- 2011** Antarctic Service Medal (National Science Foundation).
- 2003** NOAA Hawai'i Sea Grant Fellowship.
- 2002** NOAA Hawai'i Sea Grant Fellowship for senior thesis research.
- 2001** Milred Towle Scholarship for International Students (University of Hawai'i).

## TEACHING EXPERIENCE

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**Lead Instructor, Oceanography (GEOL-210).** Bridgewater State University, Spring 2018 (3 credits). Prepared and taught 25 introductory oceanography lectures to 21 students, highlighting the primary geological, chemical, physical and biological processes that operate in the ocean and how they collectively interact to influence marine ecosystems and the planet's climate. Held regular office hours, created and graded quizzes, homework assignments and a cumulative final exam.

**Mauka to Makai Oceanography.** University of Hawai'i, USA  
Developed a six-weeks summer course in oceanography for Native Hawaiian community college students. Led the development of a hands-on curriculum combining fundamental oceanography concepts with field activities (cruises, watershed water quality surveys), laboratory tutorials and service learning activities with community partners.

**Biogeochemical Methods in Oceanography.** University of Hawai'i, USA  
Gave 45min guest lectures (4-5 graduate students) on Sequential Injection Analysis methodology and its application to chemical oceanography. Ran lab and graded reports in Fall 2009 and Fall 2013.

## INVITED SEMINAR PRESENTATIONS

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**2018. WHOI MC&G Seminar.** *Woods Hole Oceanographic Institution*  
High-resolution sampling in chemical oceanography. From ship-based trace metal surveys in the Indian Ocean to microfluidic sensing.

**2016. Ocean Seminar.** *University of Hawaii, Department of Oceanography*  
Biogeochemical sensors in a networked ocean and microfluidic Lab-On-a-Chip sensors for high-sensitivity nutrient measurements.

**2015. BIOS Seminar.** *Bermuda Institute of Ocean Sciences*  
Seeking higher resolution in space and time: from shipboard studies to chemical micro sensors.

**2014. DISCO XXIV.** *Dissertation Symposium in Chemical Oceanography (NSF)*  
Dissolved Fe and Al cycling in the Indian Ocean: from high-resolution sections to the prospect of miniaturized autonomous determinations.

## SELECTED CONFERENCE PRESENTATIONS

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**Grand, M.M.,** V. Sindorf, M.A. McManus and M. Guidry (2018). Mauka to Makai Oceanography: Bridging Native Hawaiian Cultural Heritage With State-of-The-Art Geoscientific Practice to Foster Native Hawaiian Student Interest in Geoscience Degrees. *2018 Ocean Sciences Meeting* (Talk).

**Grand, M.M.**, G.T. Turner, A. Beaton, E. Achterberg, and M.C. Mowlem, (2016). In situ determinations of phosphate in estuarine and coastal waters using a high-sensitivity Lab-On-Chip sensor. *Challenger Society 2016 Conference*, Liverpool, UK (Talk).

**Grand, M.M.**, G.T. Turner, M.C. Mowlem, E. Achterberg, A.D. Beaton, D. Owsianka, G. Slavik, A. Nightingale and D.P Connelly (2016). Development of a high-sensitivity Lab-On-Chip sensor for *in situ* determinations of phosphate in coastal and open ocean environments. *2016 Ocean Sciences Meeting*, New Orleans, USA (Talk).

**Grand, M.M.**, C.I. Measures, M. Hatta, W.M. Landing, P.L. Morton and W.T. Hiscock. (2014). Biogeochemistry of dissolved Fe and Al in the eastern Indian Ocean: Insights from the Antarctic margin to the Bay of Bengal along 95°E. *2014 Ocean Sciences Meeting*, Honolulu, Hawaii, USA. (Talk).

**Grand, M.M.**, C.I. Measures, M. Hatta, W.M. Landing, P.L. Morton and W.T. Hiscock (2013). Dissolved Fe and Al from Antarctica to the Bay of Bengal: Insights from the CLIVARI8S and I9N Repeat Hydrography Cruises. *2013 Gordon Research Conference, Chemical Geography of the Sea*, University of New England, Biddeford, ME. (Poster).

**Grand, M.M.**, J. Ruzicka and C.I. Measures (2012). Pre-concentration strategies for the fluorometric determination of trace metals in seawater using Bead Injection  $\mu$ SI-LOV: Application to dissolved Zn. *Flow Analysis XII*, Thessaloniki, Greece. (Talk).

**Grand, M.M.**, J. Ruzicka, H.M. Oliveira and C.I. Measures (2012). An innovative method for the determination of trace zinc in seawater using micro-Sequential Injection and a novel fluorescent probe. *2012 Ocean Sciences Meeting*, Salt Lake City, USA. (Poster).

**Grand, M.M.**, J. Ruzicka, H.M. Oliveira and C.I. Measures (2011). Trace metal analysis using micro-Sequential Injection lab-on-valve with fluorometric detection: Fundamentals and application to chemical oceanography. Abstract O-4. *17<sup>th</sup> International Conference on Flow Injection Analysis*, Krakow, Poland. (Talk).

**Grand, M.M.**, H.M. Oliveira, J. Ruzicka and C.I. Measures (2010). A novel approach to trace analysis of zinc in sea water using micro sequential injection with fluorescence detection. Abstract OP19. *XIV International Symposium on Luminescence Spectroscopy*, Prague, Czech Republic. (Talk).

**Grand, M.M.**, C.I. Measures, M. Hatta, W.M. Landing and K. Gosnell (2010). Dissolved Iron and Aluminium along 32°S across the South Indian Ocean Subtropical Gyre: Results from the CLIVAR I5 Repeat Hydrography Expedition. Abstract CO25A-O6. *Ocean Sciences Meeting*, Portland, USA. (Poster).

**Grand, M.M.**, C.I. Measures, W.M. Landing, W.T. Hiscock, C.S. Buck, M. Hatta and K. Gosnell (2008). High resolution dissolved Fe and Al along 95E in the South Indian Ocean: Results from the CLIVAR I8S Repeat Hydrography Section. *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract OS23D-1281. *AGU Fall Meeting*, San Francisco, USA. (Poster).

## SYNERGISTIC ACTIVITIES

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<b>Ad Hoc Reviewer</b>	Analytica Chimica Acta, Analytical Methods, Journal of Oceanography, Frontiers in Marine Biogeochemistry ( <a href="#">Review Editor</a> ), Czech Science Foundation, US National Science Foundation Division of Ocean Sciences (OCE).
<b>Workshops</b>	Collaborative on Oceanographic Chemical Analysis, 2013. Workshop co-organizer (51 international participants).
<b>Service</b>	Search Committee Student Rep., UH Mānoa, 2013-2014. Geochemistry Student Representative, UH Mānoa, 2012-2013. President, Ocean Grad. Student Org., UH Mānoa, 2011-2012. Incoming Students Representative, UH Mānoa, 2007-2008.
<b>Outreach</b>	Life at Sea-CLIVAR Expeditions, SOEST Open House, 2011. Plate Tectonics, SOEST Open House, 2009.

## SEAGOING EXPERIENCE

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<b>2016</b>	SenseOCEAN	R/V Littorina, Baltic Sea	05 days
<b>2016</b>	SenseOCEAN	R/V Plymouth Quest, English Channel.	02 days
<b>2012</b>	PANDORA.	N/O L'Atalante, Solomon Sea.	37 days
<b>2011</b>	CLIVAR S04P.	R/V Palmer, Southern Ocean.	54 days
<b>2011</b>	SEAFARERS.	R/V Palmer, Ross Sea.	30 days
<b>2010</b>	CLIVAR P06.	R/V Melville, South Pacific.	42 days
<b>2009</b>	CLIVAR I05.	R/V Revelle, Indian Ocean.	57 days
<b>2008</b>	US GEOTRACES.	R/V Knorr, Atlantic Ocean.	20 days
<b>2008</b>	CLIVAR I06S.	R/V Revelle, Indian Ocean.	45 days
<b>2007</b>	CLIVAR I08S.	R/V Revelle, Indian Ocean.	45 days
<b>2003</b>	SOEST Student Cruise.	R/V Kilo Moana, Pacific Ocean.	02 days