

ALLISON W. JACOBEL



Middlebury

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Contact Information Assistant Professor
Department of Earth and Climate Sciences
Middlebury College
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Summary Paleoclimatologist with expertise in micropaleontology, geochemistry, sedimentology, and paleoceanography. Advanced experience with climate reconstructions on orbital and millennial timescales using stable and radiogenic isotope systematics, organic biomarkers, and paleontological techniques.

Education Ph.D. Columbia University, Earth and Environmental Sciences 2017
M.A. Columbia University, Earth and Environmental Sciences 2013
B.A. Macalester College, Geology (Honors), Minor: Env. Studies, *Magna Cum Laude* 2011

Appointments Assistant Professor, Middlebury College 2021-Present
Visiting Scientist, Brown University 2020-Present
Visiting Assistant Professor, Middlebury College 2020-2021
Voss Postdoctoral Research Scientist, Brown University 2018-2020
Chief Sedimentologist, RRS Discovery (DY081) Summer 2017
Postdoctoral Research Assistant, Lamont-Doherty Earth Observatory 2017-2018
Micropaleontologist, RRS James Cook (JC094) Fall 2013
Scientific Party, RV Marcus G. Langseth (ML1208) Summer 2012
Graduate Research Assistant, Columbia University 2011-2017

Teaching Experience Middlebury College
Department of Earth and Climate Sciences Senior Seminar Fall '22
Sedimentary Processes and Environments (1 lab section) Spring '22
Elements of Oceanography (2 lab sections) Fall '20, Fall '21, Fall '22
How to Build a Habitable Planet Spring '21, Fall '21
Earth's Climate History (1 discussion section) Spring '21
Brown University
Project EDDIE Module Development Workshop, Carleton College (SERC) 2019
Guest Lecturer (GL): Paleoceanography 2019
GL: Earth: Evolution of a Habitable Planet 2019
Instructor: Environmental Science in a Changing World 2018
Columbia University
GL: The Climate System 2014 - '17
Certificate in Collaborative Learning 2015
Certificate in Innovative Teaching 2015
Teaching Assistant (TA): Paleoclimatology 2014
TA: The Climate System 2011, '12
TA: Paleoclimatic and Tectonic Studies of Barbados 2012
Macalester College
TA: History and Evolution of the Earth 2011
TA: Field Excursion: The Mojave Desert 2011
TA: Geomorphology 2010
Writing Assistant: Water Science and Policy 2009

- Publications** [17] Zhou, Y., McManus, J., **Jacobel, A.W.**, Costa, K., Wang, S., and *Alvarez Caraveo, B. Enhanced iceberg discharge in the western North Atlantic during all Heinrich events of the last glaciation. *Earth and Planetary Science Letters*, 564 (2021).
- [16] Hayes *et al.*, Global Ocean Sediment Composition and Burial Flux in the Deep Sea. *Global Biogeochemical Cycles*, 35, e2020GB006769 (2021).
- [15] **Jacobel, A.W.**, Anderson, R.F., Jaccard, S., McManus, J.F., Pavia, F., and Winckler, G. Deep Pacific Storage of Respired Carbon during the Last Ice Age: Perspectives from bottom water oxygen reconstructions. *Quaternary Science Reviews* 230, 106065 (2020).
- [14] Costa, K. *et al.*, ²³⁰Th Normalization: New insights on an essential tool for quantifying sedimentary fluxes in the modern and Quaternary ocean. *Paleoceanography and Paleoclimatology* 35, e2019PA003820 (2020).
- [13] **Jacobel, A.W.**, Anderson, R.F., Hoogakker, B.A., Jaccard, S. Ice Age Storage of Respired Carbon in the Pacific Ocean. *Past Global Changes Magazine* 27(2), 52-53 (2019).
- [12] **Jacobel, A.W.**, Anderson, R.F., Winckler, G., Costa, K.M., Gottschalk, J., Middleton, J.L., Pavia, F.J., Shoenfelt, E.M. and Zhou, Y. No evidence for equatorial Pacific dust fertilization. *Nature Geoscience* 12, 154-155 (2019).
- [11] Reimi, M.A., Marcantonio, F., Lynch-Stieglitz, J., **Jacobel, A.W.**, McManus, J.F. and Winckler, G. The Penultimate Glacial Termination and variability of the Pacific Intertropical Convergence Zone. *Geophysical Research Letters* 46, 4826-4835 (2019).
- [10] Hendry, K., Huvenne, V., Robinson, L., Annett, A., Badger, M., **Jacobel, A.**, *et al.* The biogeochemical impact of glacial meltwater from Southwest Greenland. *Progress in Oceanography* 177 (2019).
- [9] Ng, H.C., Robinson, L.F., McManus, J.F., Mohamed, K.J., **Jacobel, A.W.**, Ivanovic, R., Gregorie, L., and Chen, T. Coherent deglacial changes in western Atlantic Ocean circulation. *Nature Communications* 9, 2947 (2018).
- [8] **Jacobel, A.W.**, McManus, J.F., Anderson R.F. and Winckler, G. Repeated storage of respired carbon in the equatorial Pacific Ocean over the last three glacial cycles. *Nature Communications* 8, 1727 (2017).
- [7] **Jacobel, A.W.**, McManus, J.F., Anderson R.F. and Winckler, G. Climate-related response of dust flux to the central equatorial Pacific over the past 150 kyr. *Earth and Planetary Science Letters* 457C, 160-172 (2017).
- [6] Costa, K.M., **Jacobel, A.W.**, McManus, J.F., Anderson, R.F., Winckler G. and Thiagarajan, N. Deglacial patterns of surface productivity in the Equatorial Pacific. *Global Biogeochemical Cycles* 31, 850-865 (2017).
- [5] Hillaire-Marcel, C., Maccali, J., de Vernal, A., Cuny, K., **Jacobel, A.**, LeDuc, C., Ghaleb, B., McManus, J., Stein, R., Polyak, L. Revised chronology of late Quaternary sequences from the central Arctic Ocean based on “extinction ages” of their excesses in ²³¹Pa and ²³⁰Th. *Geochemistry, Geophysics, Geosystems* 18, 4573-4585 (2017).
- [4] Capron, E., Vazquez, R., He, F., **Jacobel, A.W.** and Zhang, X. Spatial pattern and temporal evolution of glacial terminations over the last 800 ka. *Past Global Changes Magazine* vol. 25(2), 118 (2017).
- [3] **Jacobel, A.W.**, McManus, J.F., Anderson R.F. and Winckler, G. Large Deglacial Shifts of the Pacific Intertropical Convergence Zone. *Nature Communications* 7, 10449 (2016).
- [2] Lyle, M., Pockalny, R., Polissar, P., Lynch-Stieglitz, J., Bova, S., Ford, H., Hertzberg, J., Hovan, S., **Jacobel, A.W.**, *et al.* Dynamic carbonate sedimentation on the Northern Line Islands Ridge, Palmyra Basin. *Marine Geology* 379, 194-207 (2016).
- [1] Lynch-Stieglitz, J., Polissar, P.J., **Jacobel, A.W.**, *et al.*, Glacial-Interglacial Changes in Central Tropical Pacific Surface Seawater Property Gradients. *Paleoceanography* 30, 423-438 (2015).

Publications In-Progress	Costa, K., Nielsen, S.G., Wang, Y., Lu, W., Hines, S., Jacobel, A.W. , and Oppo, D.W. Can uranium be a quantitative proxy for bottom water oxygen concentrations in pelagic sediments? In review at <i>Geochimica et Cosmochimica Acta</i> .		
	**Pucker, I.R., McCauley, M., Fox, K., and Jacobel, A. Residents of Hawai'i's Decisions to Remain or Migrate. In press at <i>Ecopsychology</i> .		
	Costa, K., Jacobel A.W. , and Thirumalai, K. Sea surface temperature gradients indicate enhanced upwelling in the eastern tropical Atlantic during the Last Glacial Maximum. In prep for <i>Paleoceanography and Paleoclimatology</i> .		
Research Funding (~ \$1.2 M)	(PI) RII Track-4: NSF: Glacial-Interglacial Changes in Bottom Water Oxygen and Biomarker Preservation: Proxy development for improved paleoceanographic reconstructions	\$180k	(Submitted)
	(Lead PI) Collaborative Research: Glacial deep Pacific carbon storage and effects on calcium carbonate (CaCO ₃) preservation	\$860k	2021
	MiddData Micro Grant	\$800	2021
	Brown University Voss Postdoctoral Fellowship	\$177k	2018
	NSF Atmospheric and Geospace Sciences grant (with J.F. McManus)	\$106k	2017
	Rolex Explorer's Club Grant	\$10k	2017
	Earth Institute Research Assistant Funding (to support G. Sahwell)	\$1.8k	2016
	LDEO Climate Center Grant (to support S. McGrath)	\$10k	2015
	GSA Graduate Student Research Grant	\$4.4k	2015
	LDEO Climate Center Grant	\$10k	2014
Awards & Honors	LDEO Goodfriend Prize for Best Student Paleoclimate Paper		2015
	AGU Outstanding Student Paper Award		2015
	GSA Charles A. and June R.P. Ross Research Award		2015
	Kenneth and Linda Ciriacks Graduate Fellowship		2015
	Columbia University Faculty Fellow		2011
	Hugh S. Alexander Endowed Prize in Geology		2011
	Barry M. Goldwater Scholarship		2010
Travel Funding	QUIGS Glacial Terminations Workshop Travel Grant		2016
	NSF AMS Summer Policy Colloquium Fellowship		2016
	NSF Effectively Communicating Science Travel Grant		2016
	NSF Stable Isotope Course Fellowship		2014
	NSF Urbino Paleoclimate Summer School Fellowship		2013
	American Geophysical Union Travel Grant		2008
Invited Seminars	Hamilton College, Department of Geosciences. Clinton, NY. September 2022.		
	Woods Hole Oceanographic Institution, Department of Geology and Geophysics. Woods Hole, MA. April 2020.		
	Macalester College, Department of Environmental Studies. Saint Paul, MN. March 2020.		
	Brandeis University, Environmental Studies Program. Waltham, MA. March 2020.		
	Colby College, Department of Geology. Waterville, ME. February 2020.		
	University of Massachusetts Dartmouth, School of Marine Science and Technology. New Bedford, MA. February 2020.		
	Brown University, Institute at Brown for Environment and Society. Providence, RI. April 2019.		
	Amherst College, Department of Geology. Amherst, MA. November 2018.		
	Brown University, Department of Earth, Environmental and Planetary Sciences. Providence, RI. October 2018.		
Explorer's Club of New York, Annual Meeting. New York, NY. March 2018.			

**Invited
Conference
Talks**

Jacobel, A.W., Anderson, R.F., Jaccard, S., McManus, J.F., Pavia, F., and Winckler, G. From Antarctica to the Abyss: Integrating Reconstructions of Deep Ocean Carbon and Oxygen with Ice Core Data. Abstract C41B-01 (invited talk). 2021 Fall Meeting AGU, New Orleans.

Jacobel, A.W., Anderson, R.F., Jaccard, S., McManus, J.F., Pavia, F., and Winckler, G. Ice Age Storage of Respired Carbon in the Pacific Ocean. Comer Changelings Climate Conference. Soldiers Grove, WI. September 2019.

Jacobel, A.W., McManus, J.F., Anderson, R.F. and Winckler, G. Glacial Carbon Storage: Evidence from the Equatorial Pacific. Comer Climate Conference. Soldiers Grove, WI. September 2017.

Jacobel, A.W., McManus, J.F., Anderson, R.F. and Winckler, G. Quantitative Comparison of Deglacial ITCZ Shifts. PAGES Working Group on Quaternary Interglacials (QUIGS). Montreal, Canada. October 2016.

**Selected
Conference
Presentations**

Jacobel, A.W., **Najarian, R., and **Applebaum, A. Variations in the Central Equatorial Pacific Thermocline. 2022 Fall Meeting AGU, Chicago (submitted).

Easton, H., **Jacobel, A.W., and Costa, K. Using Neural Networks to Model Sea Surface Temperatures. 2022 Fall Meeting GSA, Denver (submitted).

Pallone, C, **Jacobel, A.W.**, and McManus, J.F. Synthesizing Late Pleistocene Paleo-Productivity Records from ODP Site 1240 with New Insights from U-Th-Pa Measurements. 2022 International Conference on Paleoceanography, Bergen, Norway.

Costa, K.M., Thirumalai, K., and **Jacobel, A.W.** Sea Surface Temperature Gradients Indicate Enhanced Upwelling in the Eastern Tropical Atlantic during the Last Glacial Maximum. (Abstract accepted, talk withdrawn due to COVID-19). 2021 Fall Meeting AGU, New Orleans.

Jacobel, A.W., Anderson, R.F., Jaccard, S., McManus, J.F., Pavia, F., Winckler, G., and Herbert, T. Ice Age Storage of Carbon and Oxygen in the Abyssal Pacific Ocean. Abstract PP33E-1738 (poster). 2019 Fall Meeting AGU, San Francisco.

Jacobel, A.W., Anderson, R.F., Jaccard, S., McManus, J.F., Pavia, F., Winckler, G., and Herbert, T. Biogeochemical Proxies for Sedimentary Redox State. Abstract M/Tu 28 (poster) Gordon Conference on Chemical Oceanography. 2019 Holderness, NH.

Jacobel, A.W., Anderson, R.F., McManus, J.F. and Winckler, G. and Herbert, T., Pacific Ocean Respired Carbon Storage: Reconciling proxies and interpretations. Abstract EGU2019-6217 (poster). 2019 EGU Annual Assembly, Vienna, Austria.

Hillaire-Marcel, C., de Vernal, A., Polyak, L., Stein, R., Maccali, J. and **Jacobel, A.** Orbital control of productivity and of sea-ice production/drift in the central Arctic Ocean during the late Quaternary. Abstract EGU2019-1743 (talk). 2019 EGU Annual Assembly, Vienna, Austria.

Jacobel, A.W., McManus, J.F., Anderson, R.F. and Winckler, G. Biogeochemical Limitations On the Reconstruction of Bottom Water Oxygen Concentrations Using the $\Delta\delta^{13}\text{C}$ Proxy. Abstract PP43A-07 (talk). 2018 Fall Meeting AGU, Washington, DC.

Jacobel, A.W., McManus, J.F., Anderson, R.F. and Winckler, G. Repeated storage of respired carbon in the equatorial Pacific Ocean over the last three glacial cycles. Abstract PP23D-01 (talk). 2017 Fall Meeting AGU, New Orleans, LA.

Costa, K., McManus, J., **Jacobel, A.**, Anderson, R. and Winckler, G. The missing sink for ^{231}Pa in the glacial North Pacific. Abstract 01928 (poster). 2017 PAGES OSM, Zaragoza, Spain.

Ng, H.C., Robinson, L., McManus, J.F., Falcon, K.M., **Jacobel, A.W.**, Henry, L.G. and Chen, T. Controls of

$^{231}\text{Pa}/^{230}\text{Th}$ in the Atlantic Ocean both today and in the past. Abstract 02259 (poster). 2017 PAGES OSM, Zaragoza, Spain.

Hillaire-Marcel, C., de Vernal, A., Polyak, L., Stein, R., Maccali, J. and **Jacobel, A.** Towards the development of a consensual chronostratigraphy for Arctic Ocean sedimentary records. Abstract EGU2017-4127 (talk). 2017 EGU Annual Assembly, Vienna, Austria.

Passow, M.J., Takahashi, T., Fiore, A.M., Clifton, O.E., Nitsche, F., McManus, J.F., Winckler, G., **Jacobel, A.W.**, Leland, C. and Rao, M. Sharing Cutting-Edge Climate and Paleoclimate Research with Teachers and Students through Earth2Class, Abstract 174 (poster). 2017 AMS Annual Meeting, Seattle, WA.

Jacobel, A.W., McManus, J.F., Anderson R.F. and Winckler, G. Tropical Feedbacks on High Latitude Forcing: The perspective from dust. Abstract P-498 (poster). 2016 International Conference on Paleooceanography, Utrecht, NL.

Jacobel, A.W., Costa, K.M., McManus, J.F., Anderson R.F. and Winckler, G. 130 kyr of Dust Fluxes in the Equatorial Pacific: Implications for ITCZ movement and intensity. Abstract PP31A-2220 (poster). 2015 Fall Meeting, AGU, San Francisco, CA.

*McGrath, S., **Jacobel, A.** and McManus, J. Geochemical comparison of pink and white *Globigerinoides ruber*. Investigating habitat niches and their paleoclimatic significance. Abstract 41-5 (poster). 2015 Fall Meeting, GSA, Baltimore, MA.

Jacobel, A.W., McManus, J.F., Anderson R.F. and Winckler, G. Equatorial Pacific Dust Fluxes: Insights into the Intertropical Convergence Zone and the last four glacial terminations. Abstract B.III.1 (poster). 2015 Graduate Climate Conference, Woods Hole, MA.

Jacobel, A.W., McManus, J.F., Anderson R.F. and Winckler, G. Penultimate Deglacial Dust Fluxes in the Equatorial Pacific: Implications for ITCZ Movement and a Common Mechanism for Glacial Terminations. Abstract PP44A-03 (oral). 2014 Fall Meeting, AGU, San Francisco, CA.

Ng, H.C., Robinson, L., McManus, J.F., Falcon, K.M. and **Jacobel, A.W.** 2014. Deep Equatorial Atlantic Ocean Circulation over the Last 25,000 Years: Insights from $^{231}\text{Pa}/^{230}\text{Th}$, ^{14}C and Sortable Silt Grain Size. Abstract PP11B-1352 (poster). 2014 Fall Meeting, AGU, San Francisco, CA.

***Jacobel, A.W.**, Mokeddem, Z. and McManus, J.F. Heinrich-like events in the Southeast Pacific: abrupt climate change during the last interglacial. Abstract PP41B-1630 (poster). 2010 Fall Meeting, AGU, San Francisco, CA.

***Jacobel, A.W.**, Oppo, D.W., Eglinton, T.I., Gibbons, F.T., Montluçon, D.M., Rosenthal, Y., Linsley, B.K, 2009. The Indonesian Throughflow: Oceanographic Responses to Holocene Changes in the Mean Pacific State. Abstract PP13D-1436 (poster). 2009 Fall Meeting, AGU, San Francisco, CA.

***Jacobel, A.W.**, Quinn, T.M., Maupin, C.W. 2008. Evaluating the effect of coral topography on the climate signal in *Porites* spp. Abstract PP23C-1505 (poster). 2008 Fall Meeting, AGU, San Francisco, CA.

Professional Training	Earth Educators Rendezvous: <i>Teaching atmosphere, ocean, and planetary fluid dynamic fundamentals vividly with rotating tanks</i>	2022
	National Center for Faculty Development & Diversity Faculty Success Program	2022
	Early Career Geoscience Faculty Workshop	2020
	ENG1: International Seafarers Medical Certification	2017
	Esri Exploring Spatial Patterns in Your Data Using ArcGIS Certification	2016
	Esri Learning ArcGIS Desktop Certification	2016
	NSF Effectively Communicating Science - Expert Witness Training Academy	2016
	American Meteorological Society Summer Policy Colloquium	2016
	University of Utah Stable Isotope Course	2014
	University of Urbino Paleoclimate Summer School	2013
	US Coast Guard STCW 95: Sea Survival Techniques	2013

Service to Middlebury	Committee on Diversity, Equity and Inclusion	2022 - Present	
	Committee on Laboratory Safety	2021 – 2022	
Professional Service	Project EDDIE Module Evaluator	2022 - Present	
	AGU Dansgaard Award Committee	2022 - Present	
	NSF Graduate Research Fellowship Program (GRFP) proposal reviewer	2022	
	AGU Kaula Award Committee	2020 - Present	
	Comer Climate Fellow	2017 - Present	
	Session co-chair: Fall meeting of the AGU	2019	
	Member: Geological Society of America	2015-Present	
	Dept. of Earth and Env. Sci. Graduate Student Committee	2012 - '13	
	Member: New York Academy of Sciences	2011 - '18	
	Member: American Geophysical Union	2008 - Present	
	Manuscript reviewer for <i>Science</i> , <i>Nature Geoscience</i> , <i>Proceedings of the National Academy of Sciences</i> , <i>Nature Communications</i> , <i>Paleoceanography and Paleoclimatology</i> , <i>Geophysical Research Letters</i> , <i>Earth and Planetary Science Letters</i> , and <i>Geochemistry, Geophysics, Geosystems</i>		
	Proposal reviewer for the National Science Foundation, and Graduate Women in Science (GWIS)		
	Diversity, Equity, & Inclusivity Training	Middlebury Unlearning Racism in GEoscience (URGE) Pod Leader	Spring 2020
<u>Middlebury Inclusive Practitioners Program</u>		2020-Present	
Manifestations of Racism on Campus: Responding to microaggressions			
Framing Difficult Discussions: Acknowledging Impact, Using Trigger Warnings, and Fostering Engagement			
Setting the Tone: Establishing Expectations for Learning Environments			
Managing Power Dynamics			
Engaging with Call-Out Culture			
Workshop: “When, If, and How, to be an Active Bystander”		2020	
Workshop: “Giving and Receiving Useful Feedback”	2019		
Undergrad. Research	NSF REU, Lamont-Doherty Earth Observatory	2010	
	Summer Student Fellow, Woods Hole Oceanographic Institution	2009	
	NSF REU, Jackson School of Geosciences (UT-Austin)	2008	
Students Mentored	Kyra McClean (Middlebury) (Senior Honors Thesis)	2022-'23	
	Sam Messina (Middlebury) (Senior Honors Thesis)	2022-'23	
	Raffi Najarian (Middlebury) (Senior Honors Thesis)	2022-'23	
	Lily Applebaum (Middlebury) (Summer Research Assistant)	2022	
	Elle Thompson (Middlebury) (Research Assistant)	2022	
	Hugh Easton (Middlebury) (Research Assistant + Summer Research Assistant)	2022	
	Shane Lusk (Middlebury) (Senior Honors Thesis)	2021-'22	
	Bella Pucker (Middlebury) (Senior Honors Thesis – 2 nd reader)	2021-'22	
	Rachel Nahirny (Middlebury) (Senior Honors Thesis)	2020-'21	
	Eric Mischell (Brown) (Senior Honors Thesis)	2020	
	Julia Berkson (Brown)	2019	
	Kalila Morsink (Columbia)	2018	
	Grace Cushman (Barnard)	2017	
	Gemma Sahwell (Barnard) (Earth Institute)	2016	
	Sarah McGrath (College of Wooster) (NSF REU)	2015	
	Kelly Luis (Columbia)	2014	
	Logan Brenner (Columbia)	2012	
	Christina Hernandez (Columbia)	2012	
Brianna King (RPI)	2012		

Outreach	NGSS Module Developer – Middlebury Union High School	2021-Present
Organizations	Guest Lecturer - Middlebury Union High School	January 2022
And Talks	Guest Lecturer - Middlebury Elderly Services Inst.	January 2022
	Project EDDIE: Teaching Climate Change with Data in Your Introductory Course	September 2021
	GeoLatinas (supporting member)	2019-'21
	Scholars at Brown for Climate Action	'20
	AGU Outstanding Student Presentation Judge	2018, '19
	Skype a Scientist	2018 - '20
	500 Women Scientists	2018-Present
	American Museum of Natural History Activity Leader	2016, '17
	Guest Lecturer - Rutgers Preparatory	2016
	Earth2Class Teacher Training Co-Instructor	2016
	New York Science and Engineering Fair	2015, '16
	Columbia University Earth Institute Blogger	2012 - '15
	Women in Science at Columbia	2011 - '18
	Girl's Science Day	2011 - '17
	LDEO Open House	2011, '12
