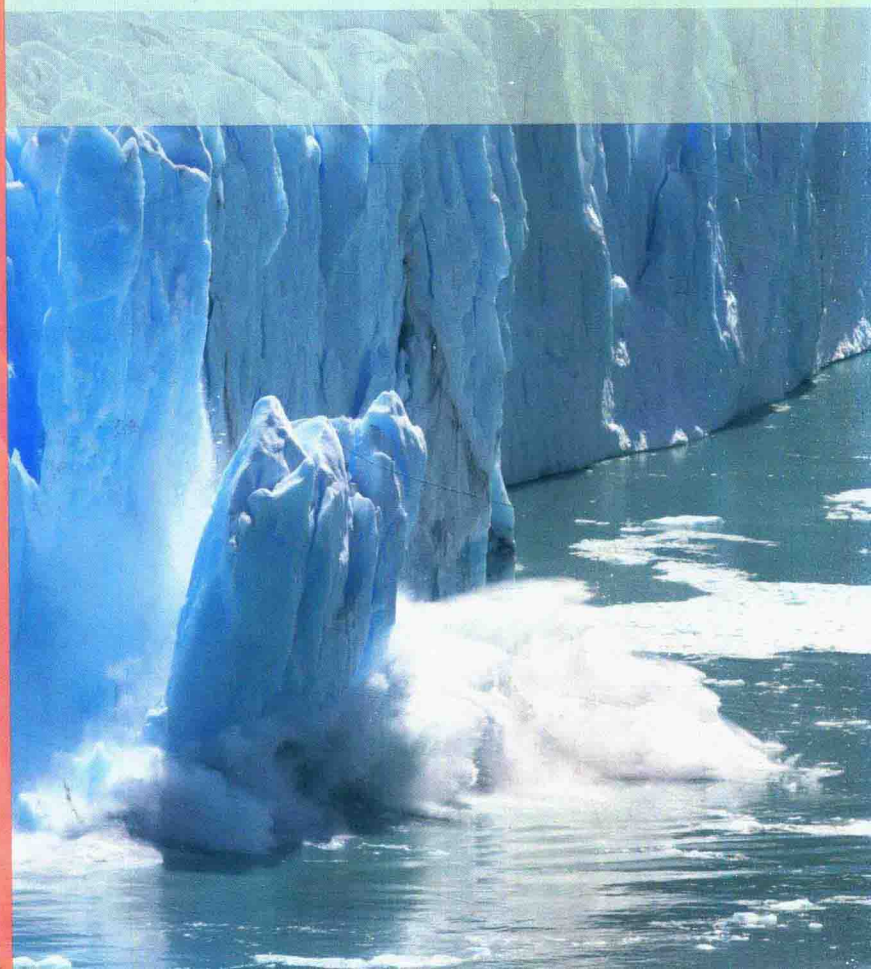


Climate Change Impacts on Ocean and Coastal Law

U.S. AND INTERNATIONAL PERSPECTIVES

Edited by
Randall S. Abate

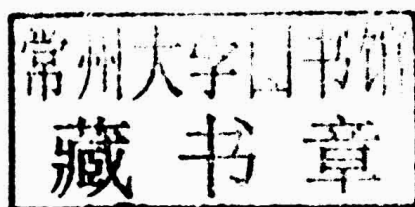


OXFORD

Climate Change Impacts on Ocean and Coastal Law

U.S. AND INTERNATIONAL PERSPECTIVES

Edited by Randall S. Abate



OXFORD
UNIVERSITY PRESS

888

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide.

Oxford New York

Auckland Cape Town Dar es Salaam Hong Kong Karachi Kuala Lumpur Madrid
Melbourne Mexico City Nairobi New Delhi Shanghai Taipei Toronto

With offices in

Argentina Austria Brazil Chile Czech Republic France Greece Guatemala Hungary
Italy Japan Poland Portugal Singapore South Korea Switzerland Thailand
Turkey Ukraine Vietnam

Oxford is a registered trademark of Oxford University Press in the UK and certain other countries.

Published in the United States of America by
Oxford University Press
198 Madison Avenue, New York, NY 10016

© Oxford University Press 2015

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior permission in writing of Oxford University Press, or as expressly permitted by law, by license, or under terms agreed with the appropriate reproduction rights organization. Inquiries concerning reproduction outside the scope of the above should be sent to the Rights Department, Oxford University Press, at the address above.

You must not circulate this work in any other form
and you must impose this same condition on any acquirer.

Library of Congress Cataloging-in-Publication Data

Climate change impacts on ocean and coastal law : U.S. and international perspectives / edited by
Randall S. Abate.

pages cm

Includes bibliographical references and index.

ISBN 978-0-19-936874-7 ((hardback) : alk. paper)

1. Climatic changes—Law and legislation. 2. Environmental law, International. 3. Coastal zone management—Law and legislation. 4. Marine resources conservation—Law and legislation. 5. Coastal zone management—Law and legislation—United States. I. Abate, Randall, editor.

K3585.5.C554 2015

341.4'5—dc23

2014022834

9 8 7 6 5 4 3 2 1

Printed in the United States of America on acid-free paper

Note to Readers

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is based upon sources believed to be accurate and reliable and is intended to be current as of the time it was written. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional services. If legal advice or other expert assistance is required, the services of a competent professional person should be sought. Also, to confirm that the information has not been affected or changed by recent developments, traditional legal research techniques should be used, including checking primary sources where appropriate.

*(Based on the Declaration of Principles jointly adopted by a Committee of the
American Bar Association and a Committee of Publishers and Associations.)*

**You may order this or any other Oxford University Press publication
by visiting the Oxford University Press website at www.oup.com**

CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW

*For Nigara, the “Princess of Tides,”
whose passion for the majesty and serenity of the ocean and coastal environment
helped inspire my commitment to undertake this book project.*

Editor and Contributor Biographies

EDITOR

Randall S. Abate is a Professor of Law, Director of the Center for International Law and Justice, and Project Director of the Environment, Development & Justice Program at Florida A&M University College of Law in Orlando, Florida. At Florida A&M, Professor Abate teaches Environmental Law, International Environmental Law, Environmental Justice, Human Rights and the Environment Seminar, Advanced Topics in Environmental Law Seminar, Ocean and Coastal Law Seminar, Public International Law, Animal Law, Climate Change Law and Indigenous Peoples Seminar, and Constitutional Law I and II. Professor Abate joined the Florida A&M College of Law faculty in 2009 with fifteen years of full-time law teaching experience at five law schools. He has taught international and comparative environmental law courses in summer study abroad programs in Nairobi, Vancouver, Buenos Aires, and Northern India, and taught International Ocean Law in Stetson University College of Law's Winter Intersession program in the Cayman Islands in 2008. Prior to joining the Florida A&M College of Law faculty, he taught Ocean and Coastal Law courses at Rutgers School of Law-Camden and Florida Coastal School of Law. Professor Abate supervises a group of NOAA fellows at Florida A&M College of Law who conduct research on ocean and coastal law and policy issues in the Gulf of Mexico as part of a multi-year NOAA grant to a consortium of universities.

Professor Abate has published and presented widely on environmental law topics, with a recent emphasis on climate change law and justice, and ocean law and policy. His

articles on climate change law and justice have appeared in several law journals, including the *Stanford Environmental Law Journal*, *Cornell Journal of Law and Public Policy*, *Connecticut Law Review*, *Duke Environmental Law and Policy Forum*, *Washington Law Review*, *William & Mary Environmental Law and Policy Review*, *Ottawa Law Review*, and *Fordham Environmental Law Review*. His articles on ocean law and policy have appeared in the *Journal of International Wildlife Law and Policy*, the *Oregon Law Review*, and the *Pace Environmental Law Review*. He also contributed a chapter on ocean iron fertilization in *CLIMATE CHANGE GEOENGINEERING: PHILOSOPHICAL PERSPECTIVES, LEGAL ISSUES, AND GOVERNANCE FRAMEWORKS* (Wil Burns & Andrew Strauss eds. Cambridge University Press, 2013). Professor Abate is the co-editor (with Professor Elizabeth Kronk Warner of the University of Kansas School of Law) of *CLIMATE CHANGE AND INDIGENOUS PEOPLES: THE SEARCH FOR LEGAL REMEDIES* (Edward Elgar 2013). He delivered a climate change law and justice lecture series in three cities in Brazil in 2010, and also delivered climate change law and justice lectures in Nairobi and Buenos Aires in 2012. Professor Abate taught a *Climate Change Law and Justice* course at the National Law Academy in Odessa, Ukraine, in 2013 on a Fulbright Specialists grant, and taught *Climate Change Adaptation Law and Justice* in the inaugural Summer Environmental Law Program at China University of Political Science and Law in Beijing in 2014. Early in his career, Professor Abate handled environmental law matters at two law firms in Manhattan. He holds a BA from the University of Rochester and a JD and MSEL (Environmental Law and Policy) from Vermont Law School.

CONTRIBUTING AUTHORS

Sara C. Aminzadeh is the Executive Director of California Coastkeeper Alliance (CCKA), a fifteen-year old network of Waterkeeper organizations fighting for clean water for California's diverse communities and ecosystems. Ms. Aminzadeh directs CCKA initiatives to protect and defend California's ocean, bays, and rivers, including CCKA's climate change adaptation program to help California communities prepare for sea-level rise and ocean acidification. In 2010, she helped launch the California King Tides Initiative to allow people to visualize sea-level rise impacts to communities and ecosystems by creating an archive of photographs depicting ultra-high tides. Her student note, "A Moral Imperative: The Human Rights Impacts of Climate Change," was one of the first publications to explore human rights impacts of climate change. Ms. Aminzadeh has been researching and writing about the subjects of climate change, human rights, and sea-level rise for more than ten years, including work at the Center for International Environmental Law and the International Criminal Tribunal for the former Yugoslavia. She received her J.D. from the University of California, Hastings College of the Law, where she served as Co-Editor-in-Chief of the *Hastings International and Comparative Law Review*, and was a member of Hastings' inaugural Stetson International Environmental Law Moot Court team. She also holds a BA in Environmental Studies and Political Science from the University of California, Santa Barbara.

Dr. Lowell Bautista is a Lecturer at the School of Law and a Staff Member at the Australian National Centre for Ocean Resources and Security (ANCORS), Faculty of Law, Humanities and the Arts, University of Wollongong. He is a lawyer with more than a decade of experience in legal and policy research, litigation, and consultancy. He holds a Bachelor of Arts in Political Science, *cum laude*, and a Bachelor of Laws (LL.B) degrees from the University of the Philippines, a Master of Laws (Marine and Environmental Law) degree from Dalhousie University in Canada, and a Doctor of Philosophy (PhD) in law from the University of Wollongong. His areas of research include territorial and maritime boundary issues in the Asia-Pacific, the South China Sea, Philippine maritime and territorial issues, maritime piracy and terrorism, international humanitarian law, underwater cultural heritage, and international environmental law, topics on which he has also published. Dr. Bautista has participated in numerous research and consultancies, as well as in the preparation of submissions, opinions, and reports for government department and agencies in Australia and in the Philippines, as well as for regional and international organizations. On numerous occasions, Dr. Bautista has provided confidential advice and opinions on matters pertaining to offshore oil and gas resources, the law of the sea, the South China Sea, maritime boundary delimitation, and public international law to the Philippine government, and to private companies in the Philippines and Australia.

Bettina Boschen is a PhD Research Associate at the Netherlands Institute for the Law of the Sea (NILOS) at Utrecht University. She received her LL.M. in Public International Law from Reading University in the United Kingdom before specializing in the law of the sea, and is an alumna of the Rhodes Academy of Ocean Law and Policy. A member of the Law of the Sea Interest Group of the European Society of International Law, her research interests cover the theme of ocean governance and sustainable development in the age of globalization. This broad research interest is driven by her PhD research, which focuses on the content of the legal principles of the “freedom of the high seas” and the “common heritage of mankind,” and their influence on the elaboration of the regime governing areas beyond national jurisdiction since the adoption of the UN Convention on the Law of the Sea. Ms. Boschen has attended numerous expert meetings and academic symposia on high seas governance and closely follows the developments at the United Nations concerning the development of a potential new implementation agreement on areas beyond national jurisdiction.

Elizabeth Burleson received her LL.M. in International Law from the London School of Economics. As an energy law consultant (BurlesonInstitute), law professor, and Fulbright Senior Specialist, Burleson has taught Energy Law, Human Rights and Environment, International Environmental Law, Public International Law, UN Law, International Law and China, Land Use, Property Law, International Economic Law, Trade, and the Environment, Water Law, and Environmental Law. Focusing on emerging international law, she has been an advisor to UNICEF's Senior Advisor for the Environment and to the New York Director of UNEP. She has also written reports

for UNESCO and UNDP. She has presented on treaty making for the UN Office of Legal Affairs and UNITAR, having participated in the drafting process for the United Nations Framework Convention on Climate Change (UNFCCC), Agenda 21, and the Rio Declaration. She is an expert contributor to the Intergovernmental Panel on Climate Change (IPCC). Professor Burleson was a member of the UNICEF delegation to the Bali Climate Conference; the NWF and UNEP delegations to the Copenhagen Climate Conference; and the IUCN and ASIL delegations to the Cancun, Durban and Doha Climate Conferences. She is on the International Law Association's Committees on Sea-Level Rise and on the Principles Relating to Climate Change, IUCN's Climate Change Core Group, and the National Wildlife Federation President's Advisory Council. She has also conducted legal research for Amnesty International's London-based International Secretariat and New York-based research division and has provided climate-energy expertise to the Japanese, Uruguayan, and French governments. She has also provided legal advice to small island states and least developed countries through the Legal Response Initiative.

Jason Busch is Executive Director of Oregon Wave Energy Trust (OWET), a nonprofit public-private partnership funded by the Oregon Innovation Council to support the responsible development of ocean energy in Oregon and the jobs this new industry will create. Mr. Busch has been closely involved in the Oregon Territorial Sea Planning (TSP) process and the development of a grid-connected test site in Oregon. He serves as a liaison among the state, stakeholders, and ocean energy developers to ensure the TSP is balanced between current and future ocean users. Prior to joining Oregon Wave Energy Trust, Mr. Busch was Principal at Sustainable Legal Solutions LLC, where he provided legal services specializing in renewable energy company start-ups and project development. Previously, he was an attorney for Ater Wynne and Stoel Rives in Portland, Oregon. Mr. Busch holds a BA in Political Science from Texas A&M University, an MA in Philosophy from the University of Southern Mississippi, and a JD from the University of Oregon School of Law, graduating with honors and admitted to the Order of the Coif. In 2012, Mr. Busch received the Portland Daily Journal of Commerce (DJC) Up & Coming Lawyer Award.

Robin Kundis Craig is the William H. Leary Professor of Law at the University of Utah S.J. Quinney College of Law in Salt Lake City, Utah, where she is also affiliated with the Wallace Stegner Center for Land, Resources, and the Environment. Professor Craig specializes in all things water, including the relationships between climate change and water, water and energy, the Clean Water Act, the intersection of water issues and land issues, marine biodiversity and marine protected areas, water law, and the relationships between environmental law and public health. She is the author or coauthor of five books: *THE CLEAN WATER ACT AND THE CONSTITUTION* (ELI 2d ed. 2009), *ENVIRONMENTAL LAW IN CONTEXT* (Thomson/West 3d ed. 2012), *TOXIC AND ENVIRONMENTAL TORTS* (Thomson/West 2010), *COMPARATIVE OCEAN GOVERNANCE: PLACE-BASED*

PROTECTIONS IN AN ERA OF CLIMATE CHANGE (Edward Elgar 2012), and MODERN WATER LAW (Foundation Press 2013). She has also written more than fifty law review articles and book chapters. She has been appointed to the 2014 National Research Council Committee to Review the Edwards Aquifer Habitat Conservation Program; has served on three successive National Research Council committees on the Clean Water Act and the Mississippi River; has consulted on water quality issues with the government of Victoria, Australia, and the Council on Environmental Cooperation in Montreal, Quebec, Canada; and was one of twelve marine educators chosen to participate in a 2010 program in the Papahānāmokuākea Marine National Monument, spending a week on Midway Atoll. Professor Craig serves as Co-Chair of the ABA Section on Environment, Energy, and Resources' (ABA SEER's) Water Resources Committee and as a consultant to the Environmental Defense Fund; she will also serve as the Chair of the 2015 ABA SEER Water Law Conference. At the University of Utah, she teaches Environmental Law, Water Law, Ocean and Coastal Law, Toxic Torts, and Property.

Melissa Trosclair Daigle is a Research Associate for the Louisiana Sea Grant Law and Policy Program, where she has been employed since 2008. Mrs. Daigle is heavily involved in research and outreach activities with local coastal communities in the areas of resiliency, hazard mitigation, sea-level rise, and climate change. She works with local governments to keep them informed of recent legal developments in those areas, and also provides legal information on a range of topics related to coastal law to constituents across the Louisiana coast. She currently oversees six legal interns employed by the program. Mrs. Daigle received her BA in English from Nicholls State University in 2003, her MA in English from Louisiana State University in 2005, and her JD and BCL from the Paul M. Hebert Law School at Louisiana State University in 2008.

Jordan Diamond is a Staff Attorney and Co-Director of the Ocean Program at the Environmental Law Institute (ELI). Since joining ELI in 2008, she has focused on identifying ways to improve domestic and international ocean and coastal law and policy, with an emphasis on integrated and comprehensive approaches to marine management. Recent initiatives have focused on the Arctic and the Gulf of Mexico, including efforts to strengthen Alaska Native engagement in marine resource management processes in the U.S. Arctic and supporting community engagement in Gulf of Mexico restoration and recovery following the *Deepwater Horizon* oil disaster. In addition to her work at ELI, Ms. Diamond is also the Academic Coordinator for the Law of the Sea Institute at the University of California, Berkeley School of Law (Berkeley Law). She holds a JD with a Certificate of Specialization in Environmental Law from Berkeley Law and a BA in Earth and Environmental Sciences with a Certificate in Environmental Studies from Wesleyan University.

Dr. Meinhard Doelle is a Professor of Law, and Associate Dean of Research, at Dalhousie University, Schulich School of Law, where he also serves as the Director of the Marine & Environmental Law Institute. From 1996 to 2001, he was the Executive Director of Clean Nova Scotia. He has been involved in the practice of environmental law in Nova Scotia

since 1990, and in that capacity drafted the Nova Scotia Environment Act in 1992. He is environmental counsel to the Atlantic Canada law firm of Stewart McKelvey. From 2000 to 2006, Professor Doelle was a nongovernmental member of the Canadian delegation to the UN climate change negotiations. From January to May 2008, he was a visiting scholar at the Environmental Law Center of the IUCN in Bonn, Germany. Dr. Doelle has written on a variety of environmental law topics, including climate change, energy, invasive species, environmental assessments, and public participation in environmental decision-making. He holds a B.Sc., LL.B., and JSD from Dalhousie University and an LL.M. from Osgoode Hall Law School, York University.

Susan E. Farady is an Assistant Professor of Ocean Studies and Marine Affairs at the University of New England in Biddeford, Maine. She teaches courses in interdisciplinary marine law and policy, oversees curriculum offerings, and researches ocean governance and marine spatial planning issues. Previously, she was the Director of the Marine Affairs Institute and the Rhode Island Sea Grant Legal Program, and adjunct faculty at the Roger Williams University School of Law. In that capacity, she was responsible for the education, outreach, and research programs of the Institute, including the joint degree program with the University of Rhode Island Department of Marine Affairs, activities with Rhode Island Sea Grant, and marine affairs curriculum and outreach activities at the School of Law. Professor Farady has published and presented on marine protected areas, the National Marine Sanctuary Act, and marine governance reform; regularly presents on marine policy and law topics; and is coauthor of a textbook, *MARINE AND COASTAL LAW* (2d ed. 2010). Prior to joining Roger Williams University, she opened and directed the New England office of The Ocean Conservancy, where she worked on marine ecosystem conservation initiatives and ocean governance reform. Her other experience includes five years as a practicing attorney, positions in marine biology research, and four years as professional crew aboard sail training vessels and yachts. Professor Farady serves as an advisor to several government, nonprofit, and academic bodies engaged in marine and environmental issues. She holds a bachelor's degree in biology from the University of Colorado, participated in the SEA (Sea Education Association) program, and received her JD from Vermont Law School.

Ivy Newman Fredrickson is a Staff Attorney for Conservation Programs at Ocean Conservancy. She has a background in advocacy campaigns focused on fisheries management, climate change, forest conservation, and hardrock mining. Ms. Fredrickson first became involved in marine policy issues during the successful efforts to reauthorize the Magnuson-Stevens Fishery Conservation and Management Act. As a Field Manager for the National Environmental Trust, and later, the Pew Environment Group, she supervised and directed a team of organizers and consultants in various states, and engaged in lobbying efforts on Capitol Hill. She also worked as a law clerk in the General Counsel's office at the Bonneville Power Administration, and with the International Environmental Law Project on topics such as legal tools for the protection of coral

reefs, and catch limits for bluefin tuna. She coauthored a chapter on the National Environmental Policy Act in *OCEAN AND COASTAL LAW AND POLICY*. She holds a BS in Environmental Studies from the University of Oregon, and a JD and a Certificate in Environmental and Natural Resources Law from Lewis & Clark Law School.

Megan M. Herzog is the Emmett/Frankel Fellow in Environmental Law and Policy at UCLA School of Law, where she teaches Ocean and Coastal Law and Policy and conducts research on environmental issues for the Emmett Institute on Climate Change and the Environment. She also works closely with UCLA's Wells Environmental Law Clinic. Prior to joining the UCLA Law faculty, she was a Fellow and member of the Ocean Program at the Environmental Law Institute in Washington, DC. She worked with the Institute's Ocean Program on restoration, litigation, and penalties following the BP *Deepwater Horizon* oil spill; ocean ecosystem-based management; and other domestic and international environmental law issues. She has worked as a law clerk domestically at the Center for Biological Diversity, California Coastal Commission, and Center for Ocean Solutions, as well as internationally at the Water & Energy Users' Federation of Nepal and the Centre for Law and Society in South Africa. She has published on a range of environmental law topics, including coastal climate change adaptation and takings, plastic marine debris control, and greenhouse gas regulation. She received her JD from Stanford Law School, where she served as Co-Editor-in-Chief of the *Stanford Journal of Law, Science & Policy* and Team Leader of the Bhutan Law and Policy Project. She also holds an MS in Environment & Resources from Stanford University, and a BA, *magna cum laude*, from Mount Holyoke College.

Megan E. Higgins is a Senior Environmental Scientist with the international consulting company, Tetra Tech, Inc. As a project manager, Ms. Higgins's focus is on the development of project permitting strategies and environmental evaluation associated with energy projects, specifically offshore renewable energy ones. She provides her clients with expertise in bridging legal permitting requirements with science-based technical information. Prior to her current position, Ms. Higgins held positions as Senior Environmental Scientist at Ecology and Environment, Inc.; Research Counsel at Roger Williams University School of Law's Marine Affairs Institute and the Rhode Island Sea Grant Legal Program; and Coastal Policy Analyst at the Rhode Island Coastal Resources Management Council, where she researched and drafted policy for the Rhode Island Coastal Resources Management Program. As an Adjunct Professor, Ms. Higgins has taught at RWU School of Law and Lewis & Clark Law School, offering courses on climate change, energy policy, and the legal development of siting and permitting offshore renewable energy projects. She has published on a range of coastal zone management issues, primarily those involving climate change, offshore energy, and integrated approaches to ocean governance. Ms. Higgins holds a BS from the University of Vermont, a JD from Roger Williams University School of Law, and a Master of Marine Affairs from the University of Rhode Island.

Dr. Kamrul Hossain is an Adjunct Professor of International Law at the University of Lapland. He is currently working as a senior researcher at the Northern Institute for Environmental and Minority Law (NIEM) of the Arctic Centre in the University of Lapland. He led the NIEM as the Director (*ad-interim*) for four months in 2011. He has been actively involved in almost all of the research projects that the Institute has undertaken since 2006. Dr. Hossain has played key roles in the preparation of a number of research projects and funding applications, and has coordinated a number of research projects, including the EU-funded project, "Understanding and Strengthening European Union-Canada Relations in Law of the Sea and Ocean Governance." Dr. Hossain has published several scholarly articles in high quality international journals. He served as the Special Editor for Volume 3 of the *YEARBOOK OF POLAR LAW* published in 2011. He regularly teaches at the University of Lapland, and periodically at other foreign universities. He completed visiting fellowships at a number of foreign universities, including the University of Toronto in Canada, Scott Polar Research Institute of the University of Cambridge in the United Kingdom, and Muroran Institute of Technology in Japan. He has received a number of prestigious awards, including the SYLFF Fellowship at the University of Helsinki. In 2012, Dr. Hossain was awarded a Faculty Research Fellowship by the Canadian Department of Foreign Affairs and International Trade (DFAIT).

Jennifer Huang is an International Fellow at the Center for Climate and Energy Solutions (C2ES). Ms. Huang tracks and researches international climate policy, focusing on key issues in the UN Framework Convention on Climate Change (UNFCCC) negotiations, and helps facilitate dialogue among international policymakers and stakeholders. Prior to joining C2ES, she worked as a Law Clerk at the White House Council on Environmental Quality and as a Legal Intern in the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) Implementation Strategy Unit at the UNFCCC secretariat in Bonn, Germany. Ms. Huang also has a background in international criminal law and international human rights, with a special interest in human rights and climate change. She has authored articles on renewable energy and the U.S. military as well as on Darfur genocide reparations before the International Criminal Court. She is also a member of the New York City Bar Association's International Environmental Law Committee. Ms. Huang is completing an LL.M degree in Environmental Law with a focus on climate change at Pace Law School. She holds a JD with Certificates in International and Environmental Law from Pace Law School and an interdisciplinary BA in War and Military Studies from New York University.

Eric V. Hull is an Associate Professor of Law at Florida Coastal School of Law. Professor Hull has published on environmental and maritime law topics, with an emphasis on the impact of pollution on ocean and coastal systems, human health, and the environment. Most recently, his scholarship has addressed legal issues arising from climate change, coastal development, ocean acidification, marine invasive species, and vessel emissions. His work has been published in the *NYU Environmental Law Journal*, *Georgetown*

International Environmental Law Review, *Duke Environmental Law and Policy Forum*, *UCLA Journal of Environmental Law and Policy*, *Temple Law Review*, *University of San Francisco Maritime Law Journal*, and others. His work on the management of marine resources in U.S. waters has been included in an international text on ocean and coastal governance. Professor Hull coordinates Florida Coastal's environmental law program and teaches courses in Administrative Law, Environmental Law, Environmental and Toxic Torts, Climate Change Law and Policy, Ocean and Coastal Law, Property Law, and Zoning and Land Use Law. He holds an LL.M. in Environmental and Land Use Law from the University of Florida, where he graduated first in his class and received the book award in Environmental Justice; a JD from Barry University, where he graduated with honors and served as the Editor-in-Chief of the *Barry Law Review*; an MS in Coastal Zone Management and an MS in Marine Biology from Nova Southeastern University's Oceanographic Center; and a BS in Biology from Providence College.

Janis Searles Jones is the Chief Operating Officer at Ocean Conservancy. She leads Ocean Conservancy's teams of scientists, attorneys, and advocates as they focus on key ecosystems from the Arctic to the Gulf of Mexico, and on systemic marine conservation issues, from climate change and ocean acidification to plastics and governance. A respected expert in the marine conservation field, Ms. Jones is a frequent speaker and lecturer on ocean and coastal law and the interface of science, law, and policy in advancing conservation. She also authored chapters on sustainable use of ocean resources in *OCEAN AND COASTAL LAW AND POLICY* and *ECOSYSTEM-BASED MANAGEMENT FOR THE OCEANS*. Prior to joining Ocean Conservancy, Ms. Jones was Senior Regional Counsel and Policy Adviser for Oceana, covering the Pacific region from Alaska to California. She also worked as a staff attorney for the Alaska office of Earthjustice where her docket was dominated by marine issues. Ms. Jones graduated from Reed College with a degree in history, and holds a JD and a Certificate in Environmental and Natural Resources Law from Lewis & Clark Law School, where she is a Distinguished Environmental Law Alumnus and an adjunct faculty member.

Patrick W. Krechowski is a Florida attorney with sixteen years of practice experience in governmental, environmental, land use, and title insurance law, and six years of law school teaching experience. Mr. Krechowski has previously served as an Assistant Attorney General with Florida's Office of the Attorney General and as an Assistant General Counsel with both the Florida Department of Environmental Protection and the St. Johns River Water Management District. During his time with FDEP, he served as the program attorney for the Office of Beaches and Coastal Systems dealing with permitting, rulemaking, enforcement, and administrative litigation in matters situated exclusively on the "sandy beaches" of the state of Florida. He also practiced as an associate at an environmental and administrative law firm, and operated his own small practice dealing almost exclusively with coastal matters. For over five years, he served as a senior in-house counsel at a Fortune 500 company headquartered in Jacksonville,

Florida. Currently, he is Of Counsel with GrayRobinson, a full-service Florida law firm, and serves as City Attorney for Neptune Beach, Florida. Since 2008, Mr. Krechowski has taught courses in Ocean and Coastal Law and Environmental Law as an adjunct professor at Florida Coastal School of Law, including environmental and marine-based courses as part of the law school's Logistics and Transportation Law LL.M. and certification program. He regularly speaks on environmental and coastal issues at both the Florida Chambers Environmental Permitting Summer School and as a member of the Florida Bar's Environmental and Land Use Law Section. He holds a BS in criminal justice from Florida State University and a JD from Nova Southeastern University.

Dr. Sarah Krejci received her PhD in Oceanography from Florida Institute of Technology. She also holds an MS in Marine Biology from Florida Institute of Technology and a BS in Marine Biology from Roger Williams University. She is currently a postdoctoral researcher and adjunct professor at Bethune-Cookman University. Her research focuses on seagrass ecosystems and how anthropogenic impacts on coastal systems impact seahorse and pipefish populations. She also has extensive experience in marine ornamental aquaculture as a tool for fisheries conservation. She has taught a variety of marine-related courses, including Mitigation and Restoration of Coastal Ecosystems. Currently, she is constructing a website, IRLSCIENCE.ORG, which will outline events and volunteer opportunities for the public to become more involved in conservation of the Indian River Lagoon, a coastal estuary on Florida's east coast. Additionally, it will summarize research occurring within the lagoon and conservation needs.

Adena Leibman is a Staff Attorney at Ocean Conservancy. She is a graduate of Lewis & Clark Law School where she received a Certificate in Environmental and Natural Resources Law. During law school, she clerked for the Bonneville Power Administration and U.S. Department of Justice Environmental Enforcement Section. Prior to moving to the West Coast, she served as a NOAA Sea Grant Knauss Fellow with U.S. Senator Sheldon Whitehouse (RI). Ms. Leibman also holds a BS and MS in Marine Science from the University of South Carolina, with a focus on loggerhead sea turtle population genetics.

Jaclyn Lopez is a staff attorney with the Center for Biological Diversity. The Center is a national environmental nonprofit whose mission is to protect and conserve endangered species through science, media, and litigation. Ms. Lopez is admitted to practice in Florida and California and practices public interest environmental law at the Center. Her efforts focus on the conservation of imperiled species in the southeast and Caribbean. She was involved in litigation regarding the *Deepwater Horizon* oil spill and cleanup, as well as the subsequent efforts to reform the regulation of oil and gas development in the Outer Continental Shelf. She has litigated to protect imperiled sea turtles from shrimp fisheries and manages the Center's southeast advocacy work with respect to species protections against the threats of climate change, specifically ocean acidification and sea-level rise. She has published and presented on a variety of coastal and ocean threats, including the use of dispersants, oil and gas exploration and development

activities, and sea-level rise and fisheries impacts to imperiled species. Ms. Lopez earned her MS in urban planning from the University of Arizona, her JD from the University of Denver, and her LL.M. from the University of Florida. She is an adjunct professor at Stetson College of Law, co-teaching the environmental law section of the Interviewing and Counseling course and Topics in Biodiversity.

Jan McDonald is New Star Professor of Environmental Law and Associate Dean (Research) at University of Tasmania's Faculty of Law, and a leading expert in the legal and policy dimensions of climate change adaptation. She was previously Director of the Climate Change Response Program and Professor of Environmental Law and Policy in the Griffith School of Environment, and in 2007, she established the National Climate Change Adaptation Research Facility, a Commonwealth-funded interdisciplinary effort to generate the information needed by decision-makers in government and in vulnerable sectors and communities to manage the risks of climate change impacts. Professor McDonald is a member of the Tasmanian Climate Action Council and consults with local and state governments in Australia about the legal implications of coastal climate risks, and has recently completed a major research project examining the planning law framework for adaptation in Australia. She is a Contributing Author to the "Australasia" chapter of the IPCC WGII's Fifth Assessment Report.

Chad J. McGuire is Associate Professor of Environmental Policy and Chair, Department of Public Policy at the University of Massachusetts—Dartmouth, where he directs the graduate programs in environmental policy for the Department of Public Policy. He is also an attorney licensed to practice law in California, Nevada, and Massachusetts. His background is in environmental law and environmental science. Professor McGuire teaches, writes, and practices in the fields of environmental law, policy, sustainability, and dispute resolution; he has published more than twenty scholarly articles and two academic texts on these topics over the last ten years. He has worked on policy issues related to climate change, coastal management, fisheries, and land use patterns. His expertise has been sought in both private and public forums, and he has served on committees for both nonprofit and government entities. He has more than fifteen years of experience in the environmental management field. Professor McGuire holds a B.Sc. and M.Sc. in Environmental Science from the University of Massachusetts, a JD from Thomas Jefferson School of Law, and an LL.M. from the University of San Diego School of Law with specialization in Environmental Law.

Dr. Richard J. McLaughlin is Endowed Chair for Marine Policy and Law at the Harte Research Institute for Gulf of Mexico Studies (HRI) at Texas A&M University—Corpus Christi. Prior to joining HRI, Dr. McLaughlin was Professor of Law and Ray and Louise Stewart Lecturer at the University of Mississippi School of Law where he regularly taught International Law, Property Law, Admiralty Law, Ocean and Coastal Law, International Environmental Law, and other courses. Dr. McLaughlin has research interests in a broad range of marine and coastal policy and legal issues, including the

international law of the sea, ocean energy policies, ocean and coastal governance, and marine ecosystem-based management. He has been actively involved in a variety of leadership positions in the marine law and policy field, is a former Fulbright Scholar to Japan, and has published more than eighty articles and monographs on marine and coastal policy issues. He currently serves on the Outer Continental Shelf Scientific Advisory Committee, a group that advises the Bureau of Ocean Energy Management (BOEM) regarding development of Outer Continental Shelf energy and mineral resources. Dr. McLaughlin holds a BA from Humboldt State University, a JD from Tulane Law School, an LL.M. in Marine Law and Policy from the University of Washington School of Law, and a JSD from Boalt Hall School of Law, University of California at Berkeley.

Dr. Kathryn Mengerink is a Senior Attorney and Co-Director of the Ocean Program at the Environmental Law Institute (ELI). Under her leadership, the Ocean Program has launched law and policy projects related to regional ocean management, fisheries management and enforcement, and ocean and coastal restoration. In Alaska, Dr. Mengerink's work focuses on supporting the role and rights of Alaska Natives in managing ocean resources. She regularly convenes and facilitates working groups, panels, and meetings. In addition to her role at ELI, she is a Lecturer and Academic Coordinator at Scripps Institution of Oceanography (SIO), where she teaches ocean law and policy and runs a graduate summer course on marine biodiversity, conservation, and global change. She holds a PhD in Marine Biology from SIO, University of California, San Diego; a JD with a Certificate of Specialization in Environmental Law from the University of California, Berkeley School of Law; and a BS in Zoology from Texas A&M University.

Timothy M. Mulvaney joined the faculty of Texas A&M University School of Law in 2009. His scholarship explores the many conflicts at the intersection of property, land use, and environmental law, with a particular focus on constitutional takings jurisprudence. Professor Mulvaney has published articles on these topics in the primary, secondary, or online law journals of Yale University, U.C. Berkeley, U.C. Davis, George Mason University, Baylor University, Tulane University, Florida State University, and the University of Richmond. Among other affiliations, he is the current Chair of the American Association of Law Schools Section on Property and a contributor to the Environmental Law Prof Blog. Professor Mulvaney earned his JD from the Villanova University School of Law and his BA in Economics from Haverford College.

Dr. Marcos A. Orellana is Director of the Center for International Environmental Law's (CIEL's) Human Rights and Environment Program and Adjunct Professor at the American University Washington College of Law. At CIEL, Dr. Orellana has worked with NGOs and local communities worldwide to strengthen tools to protect the vital functions of the planet and secure global environmental justice, including with respect to chemicals and waste, oceans and biodiversity, and trade and investment. Prior to joining CIEL, Dr. Orellana was a Fellow to the Lauterpacht Research Centre for International Law of the University of Cambridge, United Kingdom. He also was a Visiting Scholar