

Cooperative Research & Development Agreement

Article 1. INTRODUCTION

This Cooperative Research and Development Agreement (CRADA) between the Oceanic and Atmospheric Research / Ocean Acidification Program, a Unit of the National Oceanic and Atmospheric Administration (or "NOAA") and Windward Fund on behalf of its Carbon to Sea Initiative project ("the Collaborator") will be effective when signed by all Parties. The research and development project(s) which will be undertaken by each of the Parties in the course of this CRADA is detailed in the Technical Statement of Work (SoW) which is attached as part of Appendix A. Any exceptions or changes to the CRADA are set forth in Appendix B.

Article 2. DEFINITIONS

As used in this CRADA, the following terms shall have the indicated meanings:

- 2.1 **"Background Invention"** means any invention of either Party that is neither conceived nor first actually reduced to practice under the CRADA.
- 2.2 **"Cooperative Research and Development Agreement" or "CRADA"** means this Agreement, entered into by NOAA pursuant to 15 U.S.C. 3710a.
- 2.3 **"Invention"** means any invention or discovery which is or may be patentable or otherwise protected under Title 35 (35 U.S.C.) or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).
- 2.4 **"Principal Investigator" or "PI"** means the person designated respectively by each Party to this CRADA who will be responsible for the scientific and technical conduct of the research.
- 2.5 **"Project Team"** means all personnel assigned by the Collaborator to conduct the research designated in this CRADA.
- 2.6 **"Proprietary Information"** means confidential scientific, business, or financial information, including data created under this CRADA solely by the Collaborator at the Collaborator's research facilities, which may embody trade secrets provided by the Collaborator to NOAA in the course of this CRADA, and developed exclusively at private expense, except if such information:
 - 2.6.1 was in NOAA's possession before receipt from the Collaborator; or
 - 2.6.2 is or becomes a matter of public knowledge through no fault of NOAA; or
 - 2.6.3 is received by NOAA from a third party without a duty of confidentiality; or
 - 2.6.4 is disclosed by the Collaborator to a third party without a duty of confidentiality on the third party; or
 - 2.6.5 is independently disclosed by NOAA with the Collaborator's prior written approval; or
 - 2.6.6 is independently developed by NOAA without reference to information disclosed hereunder.
- 2.7 **"Research Products"** means all tangible materials, other than CRADA Data, first produced in the performance of this CRADA.

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- 2.8 "CRADA Data" means all recorded information first produced in the performance of this CRADA, excluding Proprietary Information
- 2.9 "CRADA Invention" means any invention conceived or first actually reduced to practice under this CRADA.

Article 3. **COOPERATIVE RESEARCH**

- 3.1 **Research Plan and Changes.** The Research Plan/Statement of Work (SoW) of this CRADA, its duration, and its objectives are detailed in Appendix A. The research under this CRADA shall be performed on a reasonable efforts basis. Collaborator certifies the correctness of the information contained in Appendix A.
- 3.2 **Reviews and Reports.** Periodic conferences shall be held by NOAA and the Collaborator to review work progress. Parties shall exchange formal written interim progress reports and final reports on a schedule as set forth in Appendix A.
- 3.3 **Principal Investigators.** NOAA shall be the supervising Federal agency, both administratively and scientifically, for this CRADA. The NOAA PI is responsible for the scientific and technical conduct of this project on behalf of NOAA. The designated Collaborator PI is responsible for the scientific and technical conduct of this project on behalf of the Collaborator. The Collaborator shall designate the Project Team in Appendix A of this CRADA.
- 3.4 **Project Team.** While at NOAA, the Project Team shall pursue its activities according to the work schedule and under the Government security and conduct regulations that apply to NOAA employees. The project team shall conform to the *Standards of Ethical Conduct for Employees of the Executive Branch* (Executive Order 12674 and 5 CFR Part 2635), hereby made part of this CRADA, to the extent that these standards prohibit private business activities or interests incompatible with the best interest of the Department of Commerce. Individuals selected to work at the other Party's laboratory will be subject to the acceptance by that Party. Such acceptance shall not be unreasonably withheld.
- 3.5 **Change in Collaborator Status.** Collaborator agrees to notify NOAA within thirty days should it become subject to the control of a foreign company or government at any time during this CRADA, or if any other change occurs relevant to Appendix A.

Article 4. **FINANCIAL OBLIGATIONS**

- 4.1 **NOAA and Collaborator Contributions.** Each Party's contribution to the CRADA is listed in Appendix A. Payment schedules, if applicable, are also indicated in Appendix A. The Collaborator shall provide directly for travel and related expenditures for its Project Team. NOAA may not contribute funds to a non-Federal collaborator.

Article 5. **TITLE TO EQUIPMENT**

- 5.1 **Equipment.** Equipment purchased by NOAA with funds provided under this CRADA by the Collaborator shall be the property of NOAA. All equipment loaned under this CRADA by a Party remains the property of that Party unless the Parties agree in writing on some other disposition. Each Party's equipment will be returned to the lending Party at the lending Party's expense and risk as soon as practical after termination of the CRADA.

Article 6. **TREATMENT OF PROPRIETARY INFORMATION**

- 6.1 **Protection.** Each Party agrees to limit its disclosure of Proprietary Information to the other to the amount necessary to carry out the SoW of this CRADA. The Collaborator shall place a Proprietary Information notice on all information it delivers to NOAA under this CRADA, which the Collaborator asserts is proprietary. NOAA agrees that Proprietary Information shall be used only for the purposes described in the attached SoW. Except where NOAA is legally obligated to release information pursuant to the Freedom of Information Act (5 U.S.C. 552), or other requirement of law, Proprietary Information shall not be disclosed or otherwise made available in any form to any other person, firm, corporation, partnership, association or other entity without the written consent of the Collaborator. NOAA agrees to use its best efforts to maintain the confidentiality of Proprietary Information. NOAA will promptly notify the Collaborator of requests for Collaborator's Proprietary Information. The Collaborator

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agrees that NOAA is not liable for the disclosure of information designated as Proprietary which, after notice to and consultation with the Collaborator, NOAA determines may not lawfully be withheld or which a court of competent jurisdiction requires disclosed.

These restrictions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by Executive Order No. 12958; section 7211 of title 5, United States Code (governing disclosures to Congress); section 1034 of title 10, United States Code, as amended by the Military Whistleblower Protection Act (governing disclosure to Congress by members of the military); section 2302(b)(8) of title 5, United States Code, as amended by the Whistleblower Protection Act (governing disclosures of illegality, waste, fraud, abuse or public health or safety threats); the Intelligence Identities Protection Act of 1982 (50 U.S.C. 421 et seq.) (governing disclosures that could expose confidential Government agents); and the statutes which protect against disclosure that may compromise the national security, including sections 641, 793, 794, 798, and 952 of title 18, United States Code, and section 4(b) of the Subversive Activities Act of 1950 (50 U.S.C. 783(b)). The definitions, requirements, obligations, rights, sanctions, and liabilities created by said Executive order and listed statutes are incorporated into this CRADA and are controlling.

Article 7. INTELLECTUAL PROPERTY

- 7.1 **Preference for U.S. Manufacturing.** The Parties agree that an important purpose of the CRADA is to improve U.S. competitiveness so as to provide substantial benefit to the U.S. economy. Thus, any product embodying CRADA inventions, or produced through the use of such inventions, for sale or use in the United States by the Collaborator or any affiliate, or licensee, shall be manufactured substantially in the United States.
- 7.2 **Rights to Background Inventions.** No rights to Background Inventions are conveyed by this CRADA.
- 7.3 **Reporting Inventions and Other Responsibilities.** Each Party shall promptly report in writing to the other Party, and to the NOAA Technology Partnerships Office, each CRADA Invention disclosed to it. Such reports shall be maintained as Proprietary by the receiving Party until such time as a patent or other intellectual property application claiming that CRADA Invention has been filed. The Collaborator shall ensure that all Project Team members (a) promptly report any CRADA Inventions they make to the Collaborator, and (b) sign any documents necessary or desirable for the filing and prosecution of patent applications. If any Project Team member is not the Collaborator's employee, the Collaborator shall require the member to agree in writing to assist the Collaborator in fulfilling all of its patent responsibilities under this CRADA.
- 7.4 **Treatment of CRADA Data.**
- 7.4.1 **Ownership of Original Copies of CRADA Data.** NOAA and the Collaborator agree to exchange all CRADA Data. Subject to these sharing requirements, the creating Party will retain the original copy of all CRADA Data created solely by it. NOAA shall retain the original copy of all jointly created CRADA Data; NOAA shall supply Collaborator with a copy of the original copy of jointly created CRADA Data, and Collaborator shall have access to the original copy. NOAA and Collaborator shall each have the right to use all CRADA Data for their own purposes, consistent with their obligations under this CRADA.
- 7.4.2 **Ownership of Copyrights of CRADA Data.** Collaborator may copyright its works, or those identifiable portions of a joint work created solely by a Project Team member. When Collaborator claims copyright, Collaborator shall affix the applicable copyright notice of 17 U.S.C. §§ 401, 402, and 403, and an acknowledgment of the scientific and technical contributions of NOAA. The Collaborator grants to the U.S. Government, a paid-up, non-exclusive, irrevocable world-wide license to reproduce or have reproduced, prepare or have prepared in derivative form, and distribute or have distributed copies of CRADA Data for government purposes. CRADA Data created by NOAA employees are not subject to copyright in the United States pursuant to section 105 of title 17 of the United States Code. NOAA may, however, claim copyright in such works outside of the United States.
- 7.5 **Ownership of Research Products.** NOAA and the Collaborator agree to exchange samples of all Research Products. Research Products will be shared equally by the Parties. Subject to these sharing requirements, the Research Products created under this CRADA are the jointly owned property of the Parties. The Parties agree to

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make mutually acceptable arrangements for the disposition of unique or hard-to-replace Research Products.

- 7.6 **Publication and Disclaimer.** Except as provided in Sections 7.3 and 7.7, the Parties are encouraged to make publicly available the results of their research. Before either Party submits a paper or abstract for publication or otherwise intends to publicly disclose information about a CRADA Invention, CRADA Data, or Research Products, the other Party shall be provided thirty (30) days to review the proposed publication or disclosure. NOAA reports and publications developed under this CRADA shall carry the following disclaimer:

"This work was performed under a Cooperative Research and Development Agreement (CRADA) between NOAA and Collaborator. However, the views expressed herein are not necessarily those of NOAA, the Department of Commerce or the U.S. Government."

7.7 **Patenting and Ownership of CRADA Inventions.**

7.7.1 **Government's Minimum Rights.**

7.7.1.1 **NOAA Sole Inventions and Joint Inventions.** Pursuant to the Federal Technology Transfer Act of 1986 as amended (15 U.S.C. 3710a(b)), NOAA, on behalf of the United States Government, shall retain a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced NOAA Sole CRADA Inventions and Joint CRADA Inventions throughout the world by or on behalf of the Government.

7.7.1.2 **Collaborator Sole Inventions.** Pursuant to the Federal Technology Transfer Act of 1986 as amended (15 U.S.C. 3710a(b)), NOAA, on behalf of the United States Government, shall be granted a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced Collaborator Sole CRADA Inventions throughout the world by or on behalf of the Government for research or other Government purposes.

7.7.2 **Joint CRADA Inventions.** Joint CRADA Inventions shall be jointly owned. Collaborator shall be responsible for filing U.S. Patent Applications for joint CRADA Inventions in a timely manner. If Collaborator does not file a U.S. Patent Application on a joint CRADA Invention within six (6) months after disclosure, NOAA may file a U.S. Patent Application on such joint CRADA Invention. The non-filing Party shall reasonably cooperate and assist the filing Party in perfecting the patent application, and the Filing Party shall have the right to control the prosecution of the U.S. Patent Application.

7.7.3 **Sole CRADA Inventions.** Except for Joint CRADA Inventions, each Party shall retain title to any CRADA Invention of its employees or Project Team members. The Party retaining title to a CRADA Invention may file a U.S. Patent Application after consultation with the other Party. The owner of a CRADA Invention has no duty to file a U.S. or foreign patent application.

7.7.4 **Patent Expenses and Prosecution.** All of the expenses attendant to the filing of patent applications shall be borne by the Party filing such application. Each Party shall promptly provide the other Party with copies of Provisional Patent Applications filed, Non-Provisional Patent Applications filed and Office Actions relating to any CRADA Invention. Any post filing and post-patent fees shall also be borne by the same Party.

7.7.5 **Foreign Filings of CRADA Inventions.** The Parties will consult with each other as to the advisability of filing for patent protection outside the U.S.

Article 8. LICENSING

- 8.1 **Option for a Commercialization License.** NOAA, on behalf of the Government, hereby agrees to grant to the Collaborator an option to choose an exclusive or nonexclusive commercialization license to patents or patent applications on NOAA CRADA Inventions and an exclusive commercialization license to NOAA's interest in patents or patent applications on joint CRADA Inventions. The exclusive or nonexclusive license shall be limited to fields of use defined by the subject matter of the SoW found in Appendix A. The license will specify the licensed

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fields of use, geographic territory, markets, term and royalties, and will, pursuant to Article 7.1 of this CRADA, contain a requirement that products manufactured for sale or use in the United States under the license will be manufactured substantially in the United States. Additional terms and conditions shall be added to all licenses consistent with applicable statutes and regulations. The royalty rates will be based on product sales and the rates conventionally granted in the field identified in the SoW for inventions with reasonably similar commercial potential. The royalty rates will also reflect the relative contributions of the Parties to the invention. Licenses granted under this Article are subject to the reservation of patent licenses in favor of the United States Government required in Section 7.7.1 above.

- 8.2 **Exercise of License Option to NOAA Sole CRADA Inventions.** The option of Section 8.1 must be exercised by written notice mailed within one (1) month after Collaborator's receipt from NOAA of the First Ex parte Action on the Merits by the PTO. The "First Ex parte Action on the Merits" is defined as: The First Ex parte Action on the Merits that clearly establishes the issues which exist between the examiner and the patent owner insofar as the patent is concerned. An action that contains only a restriction requirement does not constitute a "First Ex parte Action on the Merits." Exercise of this option by the Collaborator initiates a negotiation period that expires six (6) months after Collaborator's receipt from NOAA of the First Ex parte Action on the Merits by the PTO. If the last proposal by the Collaborator has not been responded to in writing by NOAA within this six (6) month period, the negotiation period shall be extended to expire one (1) month after NOAA responds. If no CRADA is concluded in this period or if Collaborator exercises its option for a nonexclusive license, NOAA shall be free to license such CRADA Inventions to others.
- 8.3 **Exercise of License Option to Joint CRADA Inventions.** The option to NOAA's interest in patents or patent applications on Joint CRADA Inventions of Section 8.1 must be exercised by written notice mailed within one (1) month after the Collaborator is notified by the Patent and Trademark Office that a patent will be allowed on the joint CRADA Invention. Exercise of this option by the Collaborator initiates a negotiation period that expires in six (6) months. If the last proposal by the Collaborator has not been responded to in writing by NOAA within this six (6) month period, the negotiation period shall be extended to expire one (1) month after NOAA responds. If no agreement is concluded in this period or if Collaborator exercises its option for a nonexclusive license, NOAA shall be free to license such CRADA Inventions to others.

Article 9. TERMINATION

- 9.1 **Notices.** The Collaborator and NOAA shall each have the right to terminate this CRADA upon 30 day notice in writing to the other Party.
- 9.2 **Termination After Change of Control.** NOAA may terminate this CRADA immediately if direct or indirect control of the Collaborator is transferred to a foreign company or government; or, if Collaborator is already controlled by a foreign company or government, if that control is transferred to another foreign company or government.
- 9.3 **Interim Extension.** Upon written or electronic notice from the Collaborator and NOAA PI that it is the intent that the CRADA be amended, as provided in Section 12.5, to extend the term of the CRADA, the term of this CRADA shall be extended for ninety (90) days. Such interim extension shall be available only once prior to the effective date of a written amendment pursuant to Article 12.5 extending the CRADA.

Article 10. DISPUTES

- 10.1 **Settlement.** Any dispute arising under this CRADA, which is not disposed of by agreement of the Parties, shall be submitted jointly to the signatories of this CRADA. A joint decision of the signatories or their designees shall be the disposition of such dispute. If the Parties cannot reach a joint decision, either Party may terminate this CRADA immediately.
- 10.2 **Continuation of Work.** Pending the resolution of any dispute or claim pursuant to this Article, the Parties agree that performance of all obligations shall be pursued diligently in accordance with the direction of the NOAA signatory.

Article 11. **LIABILITY**

- 11.1 **Property.** The U.S. Government shall not be responsible for damage to any property of the Collaborator provided to NOAA or acquired by NOAA pursuant to this CRADA.
- 11.2 **Indemnification.**
- 11.2.1 **Conduct of Employees.** Collaborator's Project Team assigned to this SoW are not employees of NOAA. The Collaborator shall indemnify and hold harmless the U.S. Government for any loss, claim, damage, or liability of any kind to the Collaborator's Project Team arising in connection with this CRADA, except to the extent that such loss, claim damage or liability arises from the negligence of NOAA or its employees. NOAA's responsibility for payment of tort claims in connection with the performance of work under this CRADA is governed by the Federal Tort Claims Act.
- 11.2.2 **Collaborator's Use of NOAA Research.** The Collaborator shall indemnify and hold harmless the U.S. Government for any loss, claim, damage, or liability of any kind arising out of the use by the Collaborator, or any Party acting on its behalf or under its authorization, of NOAA's research and technical developments or out of any use, sale or other disposition by the Collaborator or others acting on its behalf or with its authorization, of products made by the use of NOAA's technical developments.
- 11.3 **Force Majeure.** Neither Party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such Party, which causes such Party to be unable to perform its obligations under this CRADA (and which it has been unable to overcome by the exercise of due diligence), including, but not limited to, flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civic disturbance or disobedience, strikes, labor dispute, or failure, threat of failure, or sabotage of the NOAA facilities, or any order or injunction made by a court or public agency. In the event of the occurrence of such a force majeure event, the Party unable to perform shall promptly notify the other Party. It shall further use its best efforts to resume performance as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the force majeure event.
- 11.4 **NO WARRANTY.** THE PARTIES MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO ANY MATTER WHATSOEVER, INCLUDING THE CONDITIONS OF THE RESEARCH OR ANY INVENTION OR PRODUCT, WHETHER TANGIBLE OR INTANGIBLE, MADE OR DEVELOPED UNDER THIS CRADA, OR THE OWNERSHIP, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR ANY INVENTION OR PRODUCT.

Article 12. **MISCELLANEOUS**

- 12.1 **No Benefits.** No member of, or delegate to the United States Congress, or resident commissioner, shall be admitted to any share or part of this CRADA, nor to any benefit that may arise therefrom; but this provision shall not be construed to extend to this CRADA if made with a corporation for its general benefit.
- 12.2 **Governing Law.** The construction validity, performance and effect of this CRADA for all purposes shall be governed by the laws of the United States.
- 12.3 **Entire Agreement.** This CRADA constitutes the entire agreement between the Parties concerning the subject matter hereof and supersedes any prior understanding or written or oral agreement relative to said matter.
- 12.4 **Headings.** Titles and headings of the Sections and Subsections of this CRADA are for the convenience of references only and do not form a part of this CRADA and shall in no way affect the interpretation thereof.
- 12.5 **Amendments.** If either Party desires a modification in this CRADA, the Parties shall, upon reasonable notice of the proposed modification by the Party desiring the change, confer in good faith to determine the desirability of such modification. Such modification shall not be effective until a written amendment is signed by all the Parties

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hereto by their representatives duly authorized to execute such amendment.

- 12.6 **Assignment.** Neither this CRADA nor any rights or obligations of any Party hereunder shall be assigned or otherwise transferred by either Party without the prior written consent of the other Party except that the Collaborator may assign this CRADA to the successors or assignees of a substantial portion of the Collaborator's business interest to which this CRADA directly pertains.
- 12.7 **Notices.** All notices pertaining to or required by this CRADA shall be in writing and shall be directed to the signatories.
- 12.8 **Independent Contractors.** The relationship of the Parties to this CRADA is that of independent contractors and not as agents of each other or as joint venturers or partners. Each Party shall maintain sole and exclusive control over its personnel and operations.
- 12.9 **The Use of Name or Endorsements.** Collaborator shall not use the name of NOAA or the Department of Commerce on any advertisement, product or service which is directly or indirectly related to either this CRADA or any patent license or assignment agreement which implements this CRADA. By entering into this CRADA, NOAA does not directly or indirectly endorse any product or service provided, or to be provided, by the Collaborator its successors, assignees, or licensees. The Collaborator shall not in any way imply that this CRADA is an endorsement of any such product or service.
- 12.10 **Duration of the CRADA.** It is mutually recognized that the duration of this project cannot be rigidly defined in advance and that the contemplated time periods for various phases of the SoW are only good faith guidelines subject to adjustment by mutual agreement to fit circumstances as the SoW proceeds. In no case will the term of this CRADA extend beyond the term specified in Appendix A § 9 unless it is revised in accordance with Section 12.5.
- 12.11 **Full Execution.** The Collaborator acknowledges that this CRADA is not an offer to enter into a contract and cannot unilaterally be made binding. No contract exists until this CRADA is fully executed and signed by all parties.
- 12.12 **Survivability.** The provisions of Articles 6, 7, 8, 11, and 12.9 shall survive the termination of this CRADA.
- 12.13 **EXPORT OF TECHNICAL DATA.** THE COLLABORATOR AGREES TO COMPLY WITH UNITED STATES EXPORT LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (22 CFR PART 121 ET SEQ.) AND THE DEPARTMENT OF COMMERCE EXPORT REGULATIONS (15 CFR PART 770 ET SEQ.). THE COLLABORATOR AGREES THAT DURING THE PERFORMANCE OF WORK UNDER THIS CRADA, NO TECHNICAL DATA CREATED UNDER THIS CRADA WHICH IS CONTROLLED BY U.S. EXPORT LAWS AND REGULATIONS SHALL BE DISCLOSED TO ANY FOREIGN NATIONAL, FIRM, OR COUNTRY, INCLUDING FOREIGN NATIONALS EMPLOYED BY THE COLLABORATOR, WITHOUT THE COLLABORATOR FIRST OBTAINING THE APPROPRIATE LICENSES OR APPROVALS, IF NECESSARY.
- 12.14 **GOVERNMENT DISCLOSURE** Nothing in this CRADA bars disclosures to Congress or to an authorized official of an executive agency or the Department of Justice that are essential to reporting a substantial violation of law.

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IN WITNESS WHEREOF, the Parties have caused this CRADA to be executed by their duly authorized representatives as follows:

Signatory for the Collaborator:

Lynn McNair
President, Windward Fund

Date

Mailing Address for Notices:

Windward Fund
Carbon to Sea Initiative
1828 L St. NW
St. 300-A
Washington DC, 20036

Signatories for NOAA:

Sarah Cooley, Ph.D.
Director
Ocean Acidification Program

Date

Approved by:

Steven M. Thur, Ph.D.
Assistant Administrator
Oceanic and Atmospheric Research

Date

Mailing Address for Notices and Informational Copies:

Attention:

NOAA, Technology Partnerships Office
1305 East West Highway
SSMC 3, Room 12107
Silver Spring, MD 20910
301-628-1010
noaa.t2@noaa.gov

Appendix A
The Research Plan/Statement of Work

NOAA requires the information listed below. NOAA considers items 7, 10, 11, 14, and 15 proprietary business information.

1. Collaboration Project Title. Data Management Frameworks for Marine Carbon Dioxide Removal
2. Contracts, Grants and Other Pre-Existing Relationships.

NOTE: The U.S. Government may not transfer any funds to a Collaborator directly under a CRADA. Therefore, and in accordance with 15 C.F.R. 17.3, the technical subject matter of any existing funding agreement must be sufficiently distinct from that of the CRADA, and a Collaborator may not transfer funds to a Laboratory under a CRADA using funds awarded under a contract by that Laboratory.

Please check the appropriate box

- Laboratory/Program does not have an existing contractual or similar legal relationship with the prospective partner(s); or
- Laboratory/Program does have an existing contractual or similar legal relationship with the prospective partner(s), but the Laboratory Director has determined, in accordance with the factors listed at 15 CFR 17.3(c), that the technical subject matter of the funding agreement is sufficiently distinct from that of this CRADA;

Please reference any existing contracts or other agreements below:

<u>Type of Relationship</u>	<u>Tracking Number</u>	<u>Start Date</u>	<u>End Date</u>
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3. National Environmental Policy Act (NEPA) Compliance. The NOAA PI and Laboratory/Program signatory are responsible for ensuring compliance with all NEPA regulations for activities under this CRADA.
4. Collaborator Eligibility. In order to assure compliance with section 2 of the Federal Technology Transfer Act of 1986 (15 U.S.C. 3710a), the Collaborator must provide the following information to NOAA:

Please check the appropriate box

- Collaborator certifies that it is not subject to the control of any foreign company or government, and agrees to notify NOAA within thirty days should it become subject to the control of a foreign company or government at any time during this CRADA; or
- Collaborator acknowledges that it is subject to the control of the following foreign company or government (if a company, please specify nationality):

Company Name, Country/Government

Collaborator certifies to NOAA that it is incorporated under the laws of one of the states or territories of the United States; and that it has a manufacturing presence in the United States; and that the foreign government listed above permits United States agencies, organizations, or other persons to enter into cooperative agreements and licensing agreements.

5. Protection of Human Subjects. To assure compliance with 15 CFR Part 27 (the Common Rule for Protection of Human Subjects) and other relevant statutes, regulations and Presidential statements of Policy, the Collaborator must check the appropriate box:

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Please check the appropriate box

- The research to be conducted under this CRADA does not involve human subjects within the meaning of 15 CFR Part 27.
- The research to be conducted under this CRADA involves human subjects within the meaning of 15 CFR Part 27, and the Collaborator agrees to take all steps required by NOAA to assure compliance with 15 CFR Part 27. Collaborator certifies that research involving human subjects shall not begin until an appropriate exemption or IRB review is completed and approved by NOAA.
6. Protection of Animal Subjects. To assure compliance with the Animal Welfare Act as amended, and implementing regulations (7 U.S.C. 2131 et seq., 9 CFR Parts 1, 2, and 3), and other Federal statutes and regulations relating to animals, the Collaborator must check the appropriate box:

Please check the appropriate box

- The research to be conducted under this CRADA does not involve animal subjects within the meaning of 7 U.S.C. 2131 et seq. and 9 CFR Parts 1, 2, and 3.
- The research to be conducted under this CRADA involves animal subjects within the meaning of 7 USC 2131 et seq. and 9 CFR Parts 1, 2, and 3, and Collaborator agrees to take all steps required by NOAA to assure compliance with 9 CFR Parts 1, 2, and 3. Collaborator certifies that research involving animal subjects shall not begin until documentation of the appropriate reviews and certifications have been provided to and approved by NOAA.
7. Collaborator Name and Address (city, state, zip code):
- Carbon to Sea Initiative
Windward Fund
1828 L St. NW
St. 300-A
Washington DC, 20036
8. Licensing of Background Inventions belonging to NOAA. CRADA partners may apply for exclusive or nonexclusive licenses in Background Inventions belonging to NOAA. Collaborator hereby states that:

Please check the appropriate box

- Collaborator is not engaged in discussions with NOAA concerning a NOAA Background Invention that is related to the work done under this CRADA.
- Collaborator is engaged in discussions with NOAA concerning a NOAA Background Invention that is related to the work done under this CRADA.
9. NOAA's Principal Investigator (please provide name, email address, and telephone number):
(The NOAA P.I. may change at NOAA management's sole discretion.)
- Gabby Kitch
Marine Carbon Dioxide Removal Lead
gabby.kitch@noaa.gov
(301)960-8531

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10. Collaborator's Principal Investigator(s) (please provide name, email address, and telephone number):

Irene Polnyi
Director, Field Research
irene@carbontosea.org
(630)404-3322

11. Duration of the CRADA: 3 years

12. Collaborator Personnel, Services, Facilities, Intellectual Property, Equipment, and/or Funds Contributions are listed as follows:

All Collaborator Personnel, Services, Facilities, Intellectual Property, Equipment, and/or Funds Contributions are included in the Statement of Work (Item #15 below)

13. NOAA Personnel, Services, Facilities, Intellectual Property, and/or Equipment Contributions are listed as follows (NOAA management reserves the right to replace these staff members at its sole discretion):

All NOAA Personnel, Services, Facilities, Intellectual Property, Equipment, or other contributions are included in the Statement of Work (Item #15 below)

14. Collaborator's Project Team (please list):

<u>Name</u>	<u>Telephone</u>
<i>Full time staff:</i>	
Irene Polnyi	(630) 404 3322
Anna Madlener	+49 1 (520) 429 3855
Diane Hoskins	(301) 672-0894
Antonius Gagern	(202) 280-0621
David Keller	+49 (151) 421 05380
<i>Contracted personnel:</i>	
Liqing Jiang	(240) 766 6999
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15. The Technical Statement of Work (SoW):

Background: Marine Carbon Dioxide Removal Data Management Needs

Reducing carbon emissions is a potential long-term solution to global climate change and carbon dioxide removal will likely be necessary to keep future warming to 1.5-2°C, as outlined in the U.N. Climate Change Conference of the Parties (COP21) Paris Agreement. Marine Carbon Dioxide Removal (mCDR) refers to techniques aimed at enhancing the ocean or coastal environments' ability to draw down carbon dioxide from the atmosphere. As private and public funding is directed into mCDR research, it becomes increasingly urgent to safeguard mCDR data and ensure it is freely available for future scientific use and by invested communities. Effective data management is a crucial pillar of mCDR research, protecting research investments, connecting field observations with subsequent studies, and supporting decision-making by aiding in the assessment of environmental risks, co-benefits, effectiveness, scalability, and the Monitoring, Reporting, and Verification (MRV) efforts for carbon credit accounting. While some best practices are beginning to emerge around mCDR data management, there is little consensus or incentive to align around a single approach that would make field research intercomparable. This creates a risk for critical data and learnings to be lost, and time and investments to be ineffectively applied. Creating a usable, reliable, and mission-

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driven infrastructure is critical to making sure research dollars have maximum impact. To this end, investment and multi-sector partnership in data management is a critical component of mCDR research.

Purpose

This agreement's goal is to establish and implement best practices for data management in mCDR research. This collaboration aims to create a community-led effort to standardize data practices, ensuring consistency and interoperability across research projects, maximizing learning, and enhancing the durability and value of research findings. Lessons learned from data management efforts in related fields over the past decade stress the importance of documenting data using consistent metadata, data standards as well as controlled vocabularies, and highlight the need for consensus building around and publishing at a central or interoperable location(s), in order to streamline future synthesis efforts. The Carbon to Sea Initiative and NOAA share common goals of advancing the understanding of the ocean's role in mitigating climate change and recognize that open, transparent processes and FAIR data principles are critical to successful research on the emerging topic. Together, the organizations will develop a robust set of mCDR data management practices to be applied across future research efforts funded and supported by programs within the NOAA and Carbon to Sea networks. We also hope this agreement will serve as a catalyst for the adoption of broader mCDR data management guidelines by researchers worldwide, thereby streamlining future mCDR research.

Benefits

Data management under FAIR data principles provides for data interoperability and compatibility, discovery and access, and data citation through long-term data preservation, compliance with uniform metadata and data standards, and controlled vocabularies. Importantly, this approach to data management responds to NOAA's FY22-26 Strategic Goal Objectives *1.4: Bolster Authoritative Data and Information Stewardship* and *3.1: Improve Ocean-Related Data and Data Access*, as well as the 2020-2029 OAP Research Plan Action *1.1.8: Ensure all data collected by observing systems comply with FAIR data principles*. Data management infrastructure will allow for robust synthesis activities and product development that can help bridge the gap between observations and the subsequent research and decision support, including quantifying carbon removed for robust carbon credit accounting. Increasing the ability for both NOAA and invested communities to access and use interoperable mCDR research data (2020-2026 OAR Strategy Goal 2.3) will likewise contribute to driving innovative and adaptable science (OAR Goal 4). Moreover, alignment between the organizations on data management and mCDR research more generally will support NOAA's Strategic goals of accelerating growth in an information-based blue economy.

Tasks & Deliverables

Non-NOAA Collaborator Will: Carbon to Sea Initiative, together with its team of ocean science data experts, **will lead the development of community-led data management best practices.**

Activities:

- Over a period of 6-8 months, Carbon to Sea Initiative will recruit a core project team and oversee a range of activities and deliverables.
- Conduct a literature review to understand existing metadata and data reporting standards.
- Collect user requirements from the global mCDR research community.
- Identify and recruit an interdisciplinary steering team including experts from related data management fields.
- Conduct an input-gathering workshop (opportunistically during a late-September 2024 external conference) in Halifax, Canada to shape initial wave of recommendations.
- Articulate a robust set of data management best practices that are applicable and interoperable across global data systems.
- Host an open comment period, recruit feedback, and reconcile input.
- Host a training and promotion workshop at the AGU conference (December 2024 in Washington, D.C.).

Deliverables:

- Summaries, write-ups, and implications from user research interviews and workshops within 60 days of the workshops (*anticipated September and December, 2024*).

- Community-consensus driven Data Management Practices (for Ocean Alkalinity Enhancement [OAE] field research, to start) drafted, with training and additional support to follow (*December 2024*). This will include:
 - common metadata templates, including open data license information,
 - data standards,
 - controlled vocabularies, and
 - a design vision for integrated data repositories.
- Funding agreements from Carbon to Sea will be accompanied by an additional set of data management requirements referencing the common metadata and data standards (*beginning in January 2025, or as soon as they are available*).
- Carbon to Sea will share the Data Management Practices with its network of current/existing grantees requesting their use going forward (*January 2025, or as soon as they are available*).

NOAA Will: NOAA will contribute relevant subject matter expertise, collaborate on best practice development led by Carbon to Sea, and **build infrastructure for (approach agnostic) mCDR data management**. Within the period of performance, NOAA will provide tools and submission systems for mCDR data.

Activities:

- Participate in Carbon to Sea workshops related to this topic, including recommending relevant subject matter experts to attend.
- Leverage NOAA networks to gather feedback from a community of research scientists, industry collaborators, and data management professionals in both the mCDR field and intersecting/comparable communities, such as ocean carbon and biological and eDNA data.
- Facilitate conversations with international data users and partners (e.g., the International Ocean Carbon Coordination Project [IOCCP]).
- Leverage robust data management infrastructure and expertise through existing systems, such as the Ocean Carbon and Acidification Data System (OCADS), to develop mCDR data management capabilities.
- Host mCDR-relevant metadata templates, data standards, and controlled vocabularies through OCADS, including infrastructure for all mCDR approaches.
- Advise on and review draft Data Management Practices, and participate in Steering Committee meetings.
- As applicable, leverage the lessons learned from the NOPP FY22-23 mCDR portfolio in regards to Data Management.

Deliverables:

- mCDR data management infrastructure, equipped with a long-term archive, version control capabilities, data citation with digital object identifiers (DOIs), and mCDR-compatible (*within 3 years*):
 - submission system,
 - metadata management system, and
 - data access portal.
- NCEI webpage hosting the developed mCDR-compatible (*within 3 years*):
 - metadata template,
 - data standards,
 - controlled vocabularies, and
 - design vision for integrated data repositories.
- Host any developed training and video tutorials on the use of the mCDR data management system on NOAA/NCEI or OAP web pages (*1-3 years*).

NOAA & Non-NOAA Collaborator will jointly: ensure that (a) all future mCDR data from within grantee networks will be documented with mutually agreed upon metadata, data standards, and controlled vocabularies and (b) data will be published in mutually agreed upon repositories for easy access by the future quality control and synthesis communities.

Activities:

- Draft approved talking points around the CRADA relationship, each party's role and stake in the work, and standard disclaimer language for use in any developed/public-facing materials.
- Align on higher level mCDR research goals to ensure our deliverables are durable and cohesive with adjacent efforts.

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- Produce communication and outreach products related to this effort, and in some cases broader, to promote consensus building within and across the mCDR community.
- Identify obstacles (infrastructural or philosophical) that exist to creating a cohesive data management framework.
- Identify the key invested communities for mCDR data management.
- Explore and provide (as funding allows) additional materials, methods, and/or training to make it easy and sustainable for the research community to accurately adopt the Data Management Practices.
- Facilitate discussions and provide a detailed analysis of possible data assembly centers. Identify and designate preferred data assembly centers for NOAA and Carbon to Sea networks, which will also be made available for use by all members of the international mCDR community.

Deliverables:

- Final approved talking points and disclaimer language in use by both parties, with agreement to receive prior written approval for any representation of the other party outside of the pre-approved language (*as soon as possible and within 60 days*).
- Joint statement and/or press release to announce initiative and engage community (*within 3 months*).
- Make recommendations for preferred data archive (*within 1 year*).
- Facilitate information sharing including a workshop for grantees and relevant federal agencies to catalyze adoption of best practices (*within 1 year*).
- Application of jointly developed Data Management Practices across Carbon to Sea and NOAA field research grants through joint learning opportunities (*1-3 years*).
- Ensure mCDR data collected by both NOAA and Carbon to Sea scientists follow Data Management Practices including documentation using mutually agreed upon metadata, data standards, and controlled vocabularies and publication in the same designed repositories (*1-3 years*).
- As funding allows, provide detailed guidance and tools to users to archive mCDR data (*within 3 years*).
- The parties will provide a final CRADA Report to the NOAA Technology Partnership Office, Technology Transfer Program, CRADA Specialist within four months of completion of this cooperative work outlining the results obtained and a list of all CRADA Inventions made (*end of performance period*).

Appendix B
Exceptions or Changes to the CRADA

The NOAA PI has requested the listed change to the CRADA template language for Article 7.6 which currently states:

Publication and Disclaimer. Except as provided in Sections 7.3 and 7.7, the Parties are encouraged to make publicly available the results of their research. Before either Party submits a paper or abstract for publication or otherwise intends to publicly disclose information about a CRADA Invention, CRADA Data, or Research Products, the other Party shall be provided thirty (30) days to review the proposed publication or disclosure. NOAA reports and publications developed under this CRADA shall carry the following disclaimer:

"This work was performed under a Cooperative Research and Development Agreement (CRADA) between NOAA and Collaborator. However, the views expressed herein are not necessarily those of NOAA, the Department of Commerce or the U.S. Government."

Approved by OGC to state:

7.6 **Publication and Disclaimer.** Except as provided in Sections 7.3 and 7.7, the Parties are encouraged to make publicly available the results of their research. Before either Party submits a paper or abstract for publication or otherwise intends to publicly disclose information about a CRADA Invention, CRADA Data, or Research Products, the other Party shall be provided seven (7) days to review the proposed publication or disclosure. NOAA reports and publications developed under this CRADA shall carry the following disclaimer:

"This work was performed under a Cooperative Research and Development Agreement (CRADA) between NOAA and Collaborator. However, the views expressed herein are not necessarily those of NOAA, the Department of Commerce or the U.S. Government."

Appendix C
NOAA Principal Investigator
Certification and Conflict of Interest Statement

As used in this Statement, the term "Collaborator" refers to the specific organization(s) that is/(are) proposed as a signator(s) of this Cooperative Research and Development Agreement.

With my signature, I certify the following are true:

- The Lab/Program will comply with all reporting requirements under the **National Environmental Policy Act (NEPA)** for the research and development conducted under this agreement.
- The Collaborator is not currently engaged in a contractual relationship with the Lab/Program which could be construed as payment by NOAA for the activities they are conducting under this CRADA.
- The work conducted under the CRADA is not being used in place of services that would normally be conducted through a contractual relationship.
- This agreement is not intended to provide unfair advantage to the Collaborator by developing requirements for a future contractual activity.

I understand that I, my spouse, and other relatives living with me may not engage in activities or relationships that present a real or potential conflict of interest. This includes:

- Financial interests that can be directly affected by the Collaborator of this CRADA.
- Employment with or promises of employment from the Collaborator.
- Nonofficial relationships with the Collaborator that have or may have a real or potential personal benefit.

There may be activities or relationships (past, present, or planned in the future) with the Collaborator other than those listed above that may raise a concern of real or apparent conflicts of interest. Such activities or relationships should be briefly described below. In the event that I become aware of any possible conflict of interest, I must notify my Laboratory Director as soon as possible.

Signature of NOAA Scientist: _____ Date: _____

Printed Name: Dr. Gabby Kitch Organization: OAR/OAP

RETURN FORM TO:
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1305 East West Highway
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Silver Spring, MD 20910
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