Cascade Climate

Site Selection Criteria - Coordinated Research Network (CRN)

DOCUMENT A

Cascade Climate is currently seeking expressions of interest from institutions who have identified one or more potential Enhanced Rock Weathering (ERW) Coordinated Research Network (CRN) field sites. Strong candidates will generally have:

- Long-term, secure access to suitable agricultural research sites in areas with high weathering potential
- Institutional capacity to manage a multi-year field trial (see Figures 1 and 2 for example site and measurement design, and the Operations + Science Capacity table, below)
- Relevant expertise in soil science, biogeochemistry, hydrology, agronomy, or other fields closely related to Enhanced Rock Weathering (ERW) science (see Principal Investigator and Site Manager specifications below)
- Willingness to collaborate in a multi-stakeholder global research network, following standardized site design and standardized protocols, and contributing to a global network-wide synthesis

We are specifically interested in host institutions and ERW trial sites that:

- Include, where available, associated site-specific personnel and scientific collaborators
- Are in countries and contexts where the following is demonstrated: a) weathering potential (geochemistry and hydroclimate conducive to alkalinity export), b) potential benefits for farmers, and c) existing ERW activity which signals viability and relevance. This includes tropical and sub-tropical climates with demonstrated need for soil pH amendments (e.g. Brazil, India, Kenya, Southeast Asian countries, etc.)

However, we are open to hearing from host institutions in any country with sites where research partners would be equipped to securely run a 1 hectare randomized block field trial for 5+ years with the specifications in the tables below. Sites that meet most (even if not all) of the site characteristics below are strongly encouraged to apply.

We are targeting 1-2 sites for a 2026 deployment for which we have secured philanthropic funding to support over a five year period. We anticipate the program may grow to 12-15 sites over the coming 5+ years and we are excited to start engaging with potential partners and sites that we can engage as the network expands.

Minimum eligibility requirements are flagged as "Required" in the tables below, and other *site selection preferences that are not strict requirements are indicated in italics* for reference.

Please reach out to grants@cascadeclimate.org if you have questions about eligibility not answered clearly by this guidance or the **FAQ**.

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Site Selection: Required and Preferred Criteria *(desired but not required)*

Weathering potential and ERW signal resolvability
1. Required: Sub-humid or wetter climates (Aridity Index = >0.5) *(Ideally humid or wetter climates i.e., Aridity Index > 0.65 A global map of aridity index can be found in Figure 2 here if not known for your site.)*
2. Required: Warm, Mean Annual Temperature (MAT) > 12°C *(Ideally MAT > 15°C)*
3. Required: Soil Texture = not a clay or clay loam (may not be > 30% clay) *(Ideally sandy loams or similar soil textures with clay less than 20% of the soil composition)*
4. Required: Average slope < 6° *(Ideally minimal surficial soil transport, slope < 3°, and consistent slope across site)*
5. Preferred, but not required: • 5a) Soil pH (1:1 in H2O): between 5 and 6.5; lower pH may be possible to accommodate particularly if there is demonstrated low soil buffer capacity • 5b) Cation Exchange Capacity (CEC): prefer CEC < 15 cmol/kg and base saturation > 80% (lower base saturation acceptable at lower CEC) • 5c) Depth to water table: prefer > 1 m even in wet seasons, so water table does not reach site instrumentation

Farming Context
6. Required: Tillage (including conservation or other shallow tillage practice) would be acceptable as part of running this experimental protocol on the site. (*Ideally some soil disturbance is aligned with local common practices, and tillage, disking, or scarification depth is < 10 cm*)
7. Required: Crops grown on the site can be cereals, corn, and/or legumes (can be crop rotation) *Note that paddy rice, sugarcane, and perennials are unlikely to be chosen for initial site selection (deployment 2026-2027) will be considered for future sites.*
8. Preferred, but not required: • 8a) >3 years since last limed, or evidence of minimal carbonates in soils • 8b) Soil organic carbon (SOC) <5% • 8c) Low total inorganic carbon (TIC) • 8d) Limited soil surficial runoff, demonstrated by some combination of direct observations, site slope, water infiltration rate, and frequency of precipitation events

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Operations + Science Capacity
9. Required: Demonstrated secure land tenure or access arrangements confirming the trial site will be securely maintained for at least 5 years. *(Ideally hosted at a long-term agricultural research station, but this is not a requirement).*
10. Required: Ability to hire or contract with personnel nearby to the site that have the capacity to maintain timely and high-quality trial operations. Personnel should have agronomic field trial experience measuring soils, crop yields, biomass nutrient content, etc.
11. Strongly preferred: Access to an electrical power supply or ability to install a small photovoltaic array**.** *(Ideally sites with reliable electricity, cellular network, and can maintain a cold chain from the field site to the laboratory through use of coolers and/or other refrigeration. We are open to sites without reliable electricity where there is willingness and ability to set up photovoltaics sufficient to power soil moisture sensors + a meteorological station)*
12. Strongly preferred: Instrumentation and lab capacity**.** Preferred site host institutions will have skills, experience, and facilities or contractual relationships that provide them with the capacities needed to: ● Process soil samples for internal or external analysis ● Collect, filter and preserve aqueous samples for external analysis ● Perform pH measurements and alkalinity titrations on non-preservable samples *(Ideally, capacities also include total digestion and inorganic elemental analysis of soil samples, measurement of major ions in environmental waters, and analysis of soil hydraulic properties)*
13. Strongly preferred: Site can be accessed by external researchers, allowing visitors and additional researchers to access the land and potentially conduct complementary studies.

Personnel and Partners: Local Site Management and Global Coordination

Local Operating Teams

We expect sites will be overseen by a local Principal Investigator (e.g., affiliated with an academic group, a nonprofit organization, a government institution, etc.) and have on-the-ground leadership of a Site Manager, working with Field and Laboratory Technicians. See the **Conflict of Interest Policy (Document B)** for details on disclosing potential financial and non-financial conflicts of interest, and disqualifying conflicts of interest particularly for Principal Investigators and Site Managers.

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Local Operating Teams will collaborate with a **Working Group** and a global **Science Advisory Board** composed of additional scientists with complementary ranges of expertise relevant to enhanced rock weathering. Local operating teams are expected to lead manuscript preparation and publication of results from the sites they operate in collaboration with Working Group members. Data produced by this collaboration will be shared in pre-defined pathways to accelerate speed to learning, while respecting academic publishing rights and norms. **For more details on the anticipated governance structure of the CRN, and expectations for global scientific collaboration and data sharing, see the FAQ.**

Site operational and scientific capacity expectations are provided in the checklist above. Details on the capacities and experience preferred by the Local Operating Team are outlined for illustrative purposes below. We are open to discussing arrangements that cover these capacities and align with locally available staff and institutional arrangements, and would welcome feedback on potential adjustments to this model relevant to a given local/partner context. All titles are TBC, and salaries to be determined based on finalized role profiles and expected time/levels of effort (LOE).

- **Principal Investigator role:** (to discuss time allocation/LOE)
    - Expertise in at least one core area relevant to ERW (soil science, biogeochemistry, soil carbon dynamics, weathering kinetics, agronomy, etc.) For example, this could be a geochemist, pedologist, or agronomist (particularly one focused on mineral nutrition), an (agro)ecosystem ecologist, or similar
    - Will oversee one or more sites and their associated Site Manager(s) with availability to help Site Manager troubleshoot challenges
    - Will engage in publication of individual site results in collaboration with a working group and agree to coordinate with a global scientific advisory board for cross-site analysis. (Lead authorship to be determined at site launch)
    - Ideally has prearranged access to analytical facilities that house instruments needed (see Criteria #12 in table above), or has demonstrated experience preparing samples for external analysis (or internal analysis where available)
    - Has sufficient time to devote to these responsibilities
    - *Preferred characteristics (not required in full):*
        - Has managed research groups with a variety of scientists, technicians, postdocs, and graduate students
        - Experience coordinating across multiple sites (and/or institutions)
        - Has prior experience managing large research funds
        - Existing relationships with relevant experts (agronomists, hydrologists, soil scientists, etc.)
        - Demonstrated ability to lead or support efficient, high-quality publication of research results

        - Familiarity with local operating conditions (permitting, regulations, land access considerations, feedstock availability, etc.)
        - An interest and capacity to oversee these experiments operating for 5+ years, or the capacity to ensure continuity and strength of the collaboration and experiment execution over this extended period

- **Site Manager role** (title TBC): 100% LOE (i.e., full-time) position expected
    - Based near the site
    - Responsible for running day-to-day operations of the site, managing quality and timely operations that execute the scientific vision developed in collaboration with the Principal Investigator and Working Group
    - Demonstrates the capacity to plan, execute, and troubleshoot all site operations and logistics, including coordinating sampling and spreading
    - Manages field teams needed for rock spreading, farming, and sampling/data collection
    - Works closely with Principal Investigator on data analysis
    - Has reliable and consistent organizational and project management skills
    - Effective communicator with a commitment to site success and data quality
    - *Preferred characteristics (not required in full):*
        - Technical competence in field geochemistry, soil science, or a closely related field
        - Experience with soil sampling, deploying lysimeters and/or ion exchange resins, or other soil/water sensors or sampling devices
        - Experience with measurements of elemental composition of soils and aqueous samples, measurements of soil organic carbon, dissolved inorganic carbon, and alkalinity
        - Experience with running agronomic or natural system field trials
        - Experience with data management
        - Demonstrated ability to lead or support efficient, high-quality publication of research results

- **Field and Lab Technician roles** will be dependent on site setup needs to collect and prepare liquid and solid phase samples and run analyses according to the experimental design.

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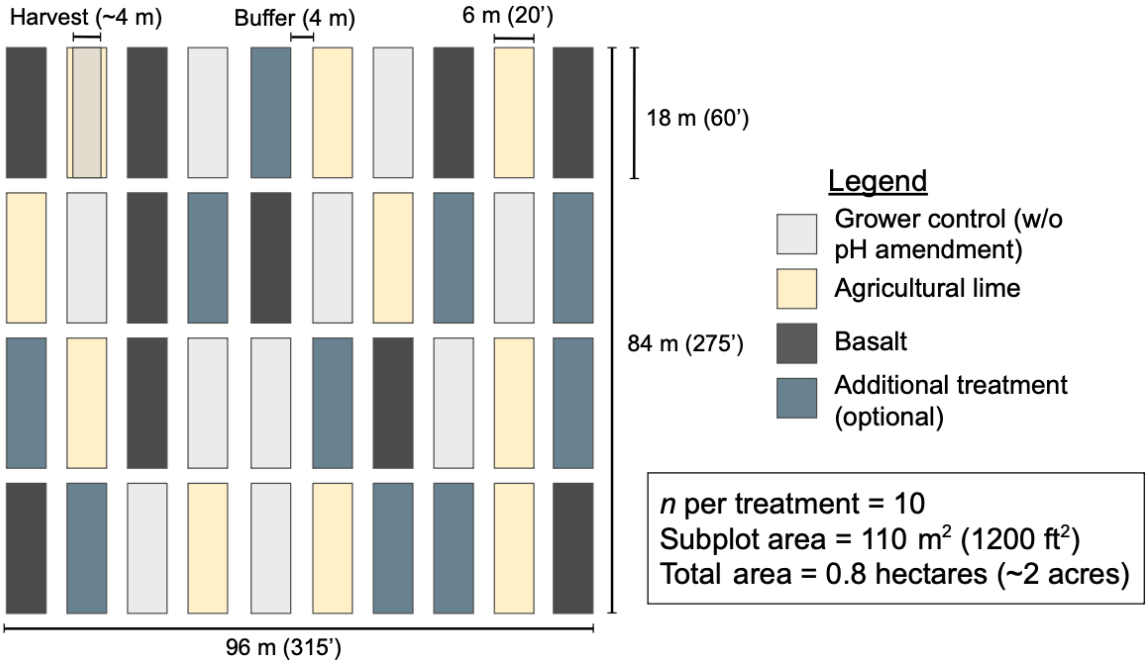

Figure 1. Example site design; completely randomized small plot design with three treatments and one control plot.

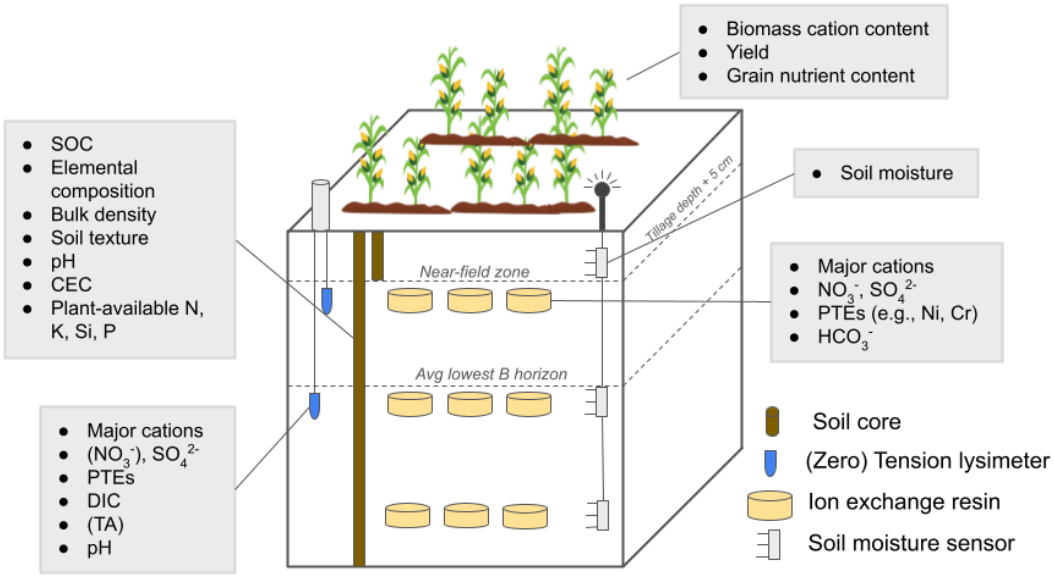

Figure 2. Example vertical profile of anticipated measurements (including lysimetry, soil core sampling, ion exchange resins, and soil moisture sensors).