

## **Brian Von Herzen, Ph.D.**

Climate Foundation  
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### **Statement**

As Executive Director, Dr. Von Herzen leads Climate Foundations' large-scale seaweed mariculture programs which produce food, feed and fertiliser, provide ecosystem life support, and sustain blue carbon sinks. With Marine Permaculture, we can regenerate life in seas and soils and restore a healthy climate while building a billion-dollar seaweed export market in Australia over the next decade.

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### **Education**

<u>Year</u>	<u>College/University</u>	<u>Degree</u>
2019-Pres.	Permaculture Education Institute, Crystal Waters, QLD, Australia	Permaculture Educators Program, Online, QLD Australia Combined Teaching and Design Certificates - International Accreditation
2014-2019	Marine Biological Laboratory	Physiology Program, Microbial Diversity (MBL)
2013- 2020	Woods Hole Oceanographic Institution & MBL	Seven 10-week intensive courses in physical oceanography, geophysical fluid dynamics & marine biology
1989-2012	UIUC, Urbana, Champaign, IL	Private Pilot Multi-Engine Land, Single-Engine Sea, IFR, 3000 hours, 12 trans-Atlantic crossings on expedition
1989	Caltech	Ph.D., Computer Science, Electrical Engineering and Planetary Science. Ametek Leadership Institute, Hertz Foundation Fellowship, Hughes Doctoral Fellowship, Atmospheric Chemistry Climatology and Radiative Transfer, Mesoscale, Atmosphere/Ocean Dynamics
1984	Caltech	M.S Computer and Planetary Science Hertz Foundation Fellowship
1980	Princeton University	AB, Physics, Magna Cum Laude //Dissertation :The Response of Global Climate Models to Orbital Variations analyzed Earth System global climate responses.

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## Professional Summary, continued

### Professional Summary

The Climate Foundation // Location: Woods Hole, MA

Executive Director and Founder

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- 2020-pres. **Founder** - Marine Permaculture Alliance

The Marine Permaculture Alliance is a global alliance to develop the Marine Permaculture industry throughout the world. The Alliance is dedicated to the healthy development of the industry to provide global food security, ecosystem regeneration and measurement of carbon export. This Alliance may provide key assistance in Australia's ambitions to develop a billion-dollar seaweed industry by the next decade.

- 2017-pres. **Chairman and Founder** - C-Combinator

C-Combinator is organized to raise the capital needed for regenerative solutions in seas and soils. These initiatives have been converting waste seaweed to valuable products and developing the technology to ensure productive seaweed mariculture the world over. Agricultural impacts are profound and contribute strongly to food security.

- 2019-pres. **Board Member** - Prime Coalition

Prime Coalition is a public charity that partners with mission-aligned investors to support extraordinary companies that combat climate change, have a high likelihood of achieving commercial success, and would otherwise have a difficult time raising adequate financial support to scale. Catalytic capital holds a critical key to unlocking commercial products and services that can help avoid catastrophic climate change. Since Prime's founding in 2014, Prime has facilitated charitable investments with over 150 philanthropies, most of whom had never used recoverable grants or PRIs before and some of whom had never designed an intervention for climate change mitigation. Prime's goal is to encourage as many mission-aligned individuals and organizations as possible to join the tribe – 1% of annual grant making from U.S. private foundations or from donor advised funds alone would eclipse traditional venture capital for climate-relevant companies globally.

- 2016-pres. **Advisory Board Member** - UCSF Center for Excellence in Bio-Engineering

The National Science Foundation has awarded US\$24 million over five years for a new 'blue-sky' bioengineering center based at UC San Francisco. Known as the Center for Cellular Construction, the new initiative aims to transform the field of cell biology into a quantitative discipline and to adapt tools from engineering, the physical sciences, and computer science to design automated machines out of living cells.

- 2013-pres. **Guest Lecturer** - Stanford University, Marine Biological Laboratory

Led Stanford Cleantech programs focused on home and utility-scale energy storage systems, solar thermal cooling systems, cleantech entrepreneurship, Marine Permaculture, and restoring depleted soils using Terra Preta microbial permaculture growth.

- 2010-pres. **Board Member** - CTO, Co-Founder, Bright Energy Storage Technologies, LLP

Bright Energy Storage is dedicated to providing grid-scale energy storage for the deep adoption of renewable energy technologies at costs substantially less than traditional battery storage. As co-founder, D von Herzen helped to raise US\$10 million in angel funding for Bright Energy Storage and associated applications. Bright Energy Storage developed pump thermal energy storage and seafloor compressed-air energy storage technologies for use in time-shifting renewable power and electrical peak load leveling. The company reached final-stage selection for the ARPA-E Grid-Scale Energy Storage, and won Iberdrola Perseo Award for the world's best energy storage technology. .

- 2007-pres. **Executive Director** - Climate Foundation <https://www.climatefoundation.org/>

At the Climate Foundation, Dr. von Herzen has been leading global programmes to regenerate life in seas and soils. Dr. von Herzen has created and patented new technologies to save ecosystems, ensure global

## Professional Summary, continued

food security and carbon balance. In pursuit of these goals, Dr. von Herzen has raised over \$10 million in grants and awards, created world wide alliances, and generated global social licence for seaweed mariculture. He has educated a generation of climate leaders to develop key initiatives that decarbonize our civilization, draw down carbon from the atmosphere, and ensure ecosystem life support while balancing the carbon budget. Dr. von Herzen has also reversed coral bleaching on the reefs in American Samoa starting in 2009 using Marine Permaculture as an upwelling and seawater cooling strategy. Brian has presented SeaWater Air Conditioning (SWAC) technology and its relationship to coral reef preservation in 2011 in Guam, and 2012 in Samoa to the US Coral Reef Task Force and Guam Naval Facilities Command (NAVFAC), publishing SWAC with Marine Permaculture in Oman and the Middle East 2015-2018.

- 1994-2013 **CEO** - Rapid Prototypes, Inc.

Rapid Prototypes provided turnkey electronic product system engineering, including commercial product specifications and fully functional engineering product prototypes frequently using programmable logic devices. Rapid Prototypes provided expertise in electronic engineering technologies to minimize time to market for new electronic products in networking, consumer electronics and other commercial products. They also developed the world's fastest commercial FPGA applications. Brian wrote the original X-Prize space tourism technical plan and business plan for the X-Prize winning spacecraft, leading to the \$25M investment by Paul Allen and the later \$250M investment by Richard Branson leading to the formation of the Virgin Galactic business in space tourism. Brian introduced Paul Allen to Burt Rutan and got the development funded and started.

- 1992-1994 **Engineering Analyst** - Synaptics, Inc.

Dr. von Herzen's primary focus was research in video compression. Dr. von Herzen's achievements include: developed digital neural networks using field-programmable gate arrays (FPGA's), commercial applications of digital signal processing and image processing; analyzed hardware to support real-time video motion compensation algorithms and integrated systems.

- 1989-1992 **Principal Investigator** - Caltech Submillimeter Observatory

Dr. von Herzen designed and developed the world's first VLSI integrated gigahertz cross-correlation spectrometer that could fit on a personal computer. This technology was later copied by NASA to deploy on their radio telescope interferometer and spectrometer arrays. Dr. von Herzen developed and was awarded a National Science Foundation (NSF) grant for VLSI correlator development. He produced a 250 MHz micro-pipelined cross-correlator in a 1.2 $\mu$ m CMOS integrated circuit, designed and developed a 2 GHz digital spectrometer using correlators, designed and developed a 2 GHz gallium arsenide GaAs analog-to-digital converter.

- 1986 **Research Analyst** - Pixar, Inc.

Dr. von Herzen developed scientific visualization solutions to enable real-time visualization of large datasets and enable transformative inferencing from such multidimensional analysis.

- 1985 **Research Analyst** - Schlumberger Palo Alto Research

Dr. von Herzen researched computer AI technology to facilitate multi-dimensional analysis of physical systems with an emphasis on feature recognition and synthetic scientific visualization of physical systems.

- 1982 **Research Analyst** - Dolby Laboratories

Brian developed state-of-the-art digital audio compression capability to increase fidelity with manageable bitrate recordings.

- 1977-1980 **Research Analyst** - Geology and Geophysics, Woods Hole Oceanographic Inst.

Brian analyzed data from the Navy nuclear submarine NR-1 to determine the physical oceanography of the near seafloor environment in the straits of Florida, abyssal Pacific Ocean, Arctic Ocean and other sites. He analyzed giant piston cores and benthic foraminifera and provided scientific visualization of key results and

## Professional Summary, continued

findings. Some of this work resulted in peer-reviewed publications summarizing the sedimentary geophysics of the abyssal ocean.

### Grants Awards Achievements

2019	SCHMIDT FUTURES / Protecting the Great Barrier Reef / US\$200,000
2017	Grantham Foundation for the Protection of the Environment Marine Permaculture Recoverable Grant US\$3,100,000
2016-2018	Australian Department of Foreign Affairs and Trade Blue Economy Challenge Marine Permaculture to restore overturning circulation and seaweed forests AU\$200,000
2016-2018	University of Chicago, Urban Labs Delhi Innovation Challenge Eliminating Rice Straw Burning in Haryana using biochar to restore soils.
2015	Winning Team, Alaska Water-Sewer Challenge, \$1.1M follow-on grant
2014	NAFTA Commission for Environmental Cooperation Grant, Biochar, \$85K
2013-2015	Bill and Melinda Gates Foundation Phase 2 Grant- Biochar Sanitation, \$3.0M
2012	NAFTA Commission for Environmental Cooperation Grant, Biochar, \$59K
2011-2013	Bill and Melinda Gates Foundation Phase 1 Grant- Biochar Sanitation, \$400K
2010-2012	US Fish and Wildlife Service, Reversing Coral Bleaching in two Acropora species on coral reefs in American Samoa, \$240K
2009	Reversing coral bleaching on the reefs in American Samoa \$110K
2002	Ross Freeman award for Sparse-Chevron Electromagnetic Penrose Tile Package Design
1989	National Science Foundation award
1984	Awarded Hughes Doctoral Fellowship
1982	Ametek Leadership Institute
1981-1986	Hertz Foundation Fellowship

- Showcased in award winning international feature film documentary, “[2040](#)”
- Lead on [Discovery Channel documentary “Project Earth: Hungry Oceans”](#) a 1-hour science [documentary televised nationwide](#) Sept 5, 2008 on oceanic carbon dioxide recycling
- Multiple podcasts on Marine Permaculture
- A dozen invited lectures at Salk Institute, Stanford University, Harvard and Woods Hole available on YouTube
- Thirty patents issued, a dozen additional patents pending, and eleven publications.