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14. ABSTRACT
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# RPPR Final Report

## as of 05-Jul-2022

Agency Code: 21XD

Proposal Number: 77055CHII

Agreement Number: W911NF-20-1-0101

### INVESTIGATOR(S):

**Name:** Adina Paytan  
**Email:** apaytan@ucsc.edu  
**Phone Number:** 8314591437  
**Principal:** Y

Organization: **University of California - Santa Cruz**

Address: 1156 High Street, Santa Cruz, CA 950641077

Country: USA

DUNS Number: 125084723

EIN: 941438563

**Report Date:** 31-Dec-2021

Date Received: 28-Jun-2022

**Final Report** for Period Beginning 01-Jul-2020 and Ending 30-Sep-2021

**Title:** Subsurface Biogeochemical Processes in Coastal Wetlands - Impacts on Water Quality

**Begin Performance Period:** 01-Jul-2020

**End Performance Period:** 30-Sep-2021

**Report Term:** 0-Other

Submitted By: Adina Paytan

Email: apaytan@ucsc.edu

Phone: (831) 459-1437

**Distribution Statement:** 1-Approved for public release; distribution is unlimited.

**STEM Degrees:** 0

**STEM Participants:** 4

**Major Goals:** This award supported the acquisition of eddy covariance towers and carbonate chemistry sensors to continuously monitor greenhouse gas emissions and lateral carbon fluxes at Elkhorn Slough – a National Estuarine Reserve site and the largest coastal tidal wetland in California outside the San Francisco Bay-Delta. The eddy covariance method is the preferred technique today for estimating gas fluxes which permits calculation of seasonal and annual emissions and inventories. Data obtained will be deposited in the AmeriFlux database and will contribute to better constrain the carbon budget in these systems and allow for extrapolation to other coastal wetlands. The outcomes will also enable coupling of Earth System Models with realistic predictions emissions from coastal/tidal wetlands based on reliable emission data.

**Accomplishments:** Two eddy covariance towers have been constructed and tested and water monitoring sensors deployed. The towers have started to collect data but have not yet been listed with AmeriFlux since calibration and fine tuning is still needed.

The water sensors need to be tested and some anti fouling solutions devised.

**Training Opportunities:** The project provided summer internship opportunities for local under-represented students to work at the site using authentic data directly relevant to them and hence expanding their climate and data literacy. In addition, we will develop and offer a course on data literacy in which students will use authentic data from the towers (and other sites) to hone their data and modeling skills.

**Results Dissemination:** This project will provide quantitative information that will enable local communities and policy managers to understand the cost-benefits of restoring wetlands to sequester carbon and enhance other ecosystem services. It will improve our understanding on the processes that control greenhouse gas emissions from coastal wetlands, information that will help decision-making and the financing and methodological guidance for introducing coastal wetland management projects into carbon markets.

Data will be disseminated via AmeriFlux

## RPPR Final Report as of 05-Jul-2022

**Honors and Awards:** Lead PI Adina Paytan received the Vernadsky Medal from the European Geophysical Union for Exceptional Contributions to Biogeosciences.

See details on the website:

<https://www.egu.eu/awards-medals/vladimir-ivanovich-vernadsky/2022/adina-paytan/>

### Protocol Activity Status:

**Technology Transfer:** This is one of the only eddy covariance systems in coastal tidal wetlands outside the San Francisco Bay Delta and the operation procedures at the site will be useful for monitoring at other similar settings.

### PARTICIPANTS:

**Participant Type:** PD/PI

**Participant:** Adina Paytan

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

**Participant Type:** Postdoctoral (scholar, fellow or other postdoctoral position)

**Participant:** Ariane Arias Ortiz

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

**Participant Type:** Technician

**Participant:** Joseph Verfaillie

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

**Participant Type:** Technician

**Participant:** Daphne Szutu

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

**Participant Type:** Graduate Student (research assistant)

**Participant:** Gracie Pearsall

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

**Participant Type:** Non-Student Research Assistant

**Participant:** Susan Pit

**Person Months Worked:** 12.00

Project Contribution:

National Academy Member: N

**Funding Support:**

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**Participant Type:** Undergraduate Student  
**Participant:** Luna Osleger  
**Person Months Worked:** 2.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Undergraduate Student  
**Participant:** Natalie Hermosillo  
**Person Months Worked:** 2.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Undergraduate Student  
**Participant:** Isabella Roberge  
**Person Months Worked:** 2.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Undergraduate Student  
**Participant:** Madison Reed  
**Person Months Worked:** 2.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Undergraduate Student  
**Participant:** Valeria Galindo-Eguiarte  
**Person Months Worked:** 2.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

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as of 05-Jul-2022

**Partners**

Dennis Baldocchi  
Berkeley, CA USA

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Dennis has many years of experience in eddy covariance towers and was a to go person for any questions

I certify that the information in the report is complete and accurate:

Signature: Adina Paytan

Signature Date: 6/28/22 1:24PM

Below are photos of the Eddy Covariance installation process in the field



Hester Tower



Yampah Tower

Below are photos depicting the two sites when installation was completed



Below is a photo depicting a visit by local high school students for education and outreach

