

OCEANOGRAPHY @CAL MARITIME



CAL MARITIME
OCEAN INITIATIVE



CAL MARITIME OCEANOGRAPHY



ALEX PARKER, PhD



KAYLAN RANDOLPH, PhD
ALEJANDRO CIFUENTES-
LORENZEN, PhD



JENNIFER MURPHY, PhD

BIOLOGICAL OCEANOGRAPHY

Research Interests:

- Phytoplankton / bacterial production, harmful algal blooms, estuarine nutrient management

Current Projects

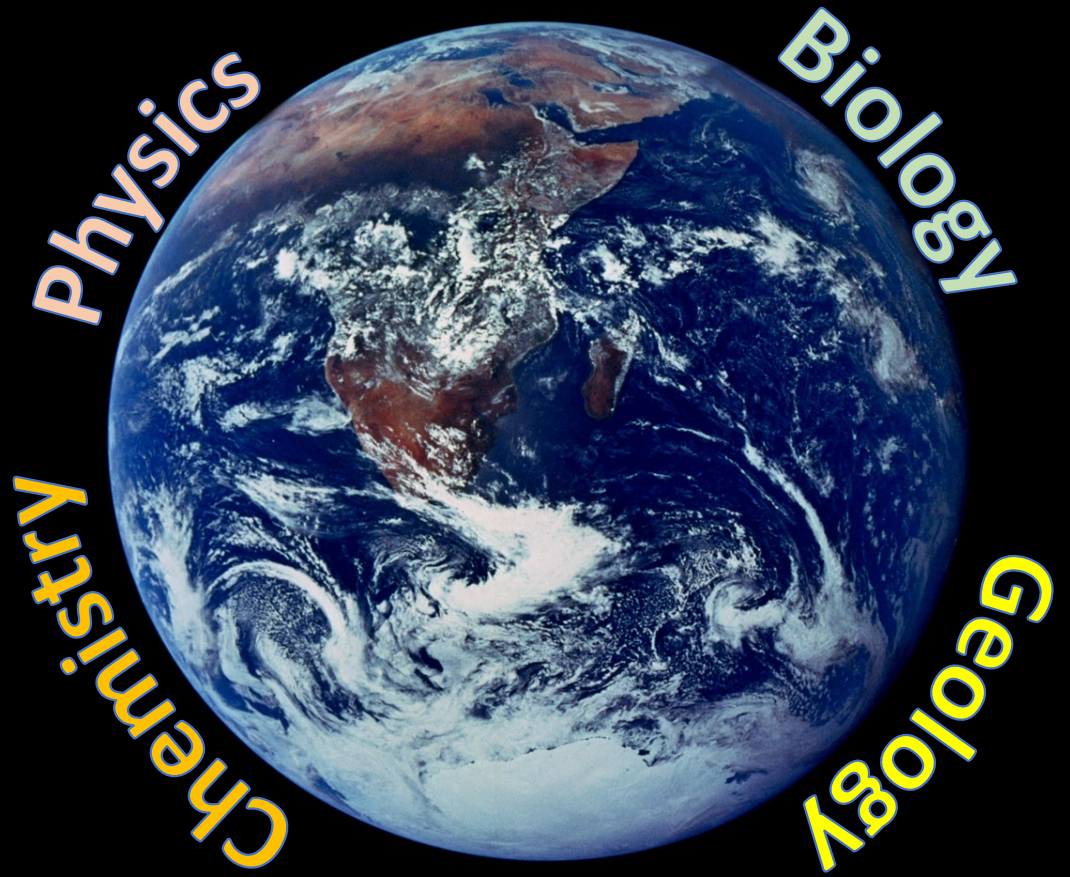
- Phytoplankton species in Florida Bay
- Microbial dynamics in the Delaware River Estuary.
- Phytoplankton response to nutrient management in San Francisco Bay.



Dr. Alex Parker
aparker@csum.edu

WHAT IS OCEANOGRAPHY?

Develop models to describe and explain underlying patterns and process that shape ocean function.



WHY STUDY OCEANOGRAPHY?

The ocean is understudied.

<10% of the ocean has been explored.



WHY STUDY OCEANOGRAPHY?

Ocean resources are critical to the economy.



70% of Californian's live in coastal counties.

CA's "Ocean Economy" is \$40B annually.

In the US, Ocean Enterprise includes 400+ firms with \$3B in annual sales.

WHY STUDY OCEANOGRAPHY?

The Ocean and Climate Shape Our Lives.

Global weather and climate are directly shaped by the ocean.

Climate anomalies such as El Nino manifest in the ocean.

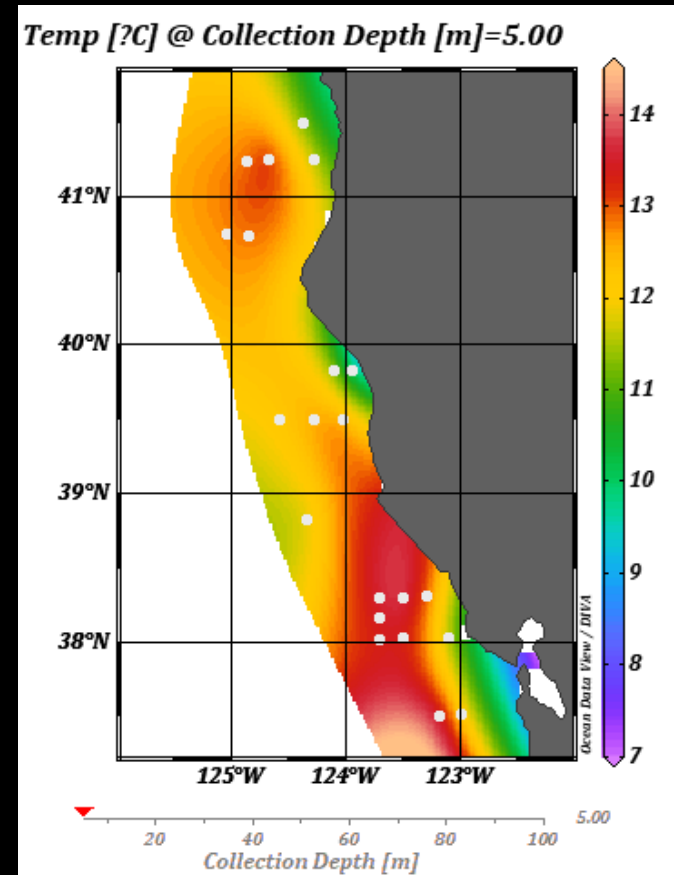
The ocean plays a critical role in moderating climate change impacts



WHAT DO OCEANOGRAPHERS DO?

- Shipboard science
- Technology development
- Modeling

Coastal upwelling
and productivity
studies



WHERE DO OCEANOGRAPHERS WORK?

- Academia
- Government Agencies
- NGOs
- Technology Firms



Kevin Reinhardt, MET'14
RV Sikuliaq (U. Alaska)

WHERE DO OCEANOGRAPHERS WORK?

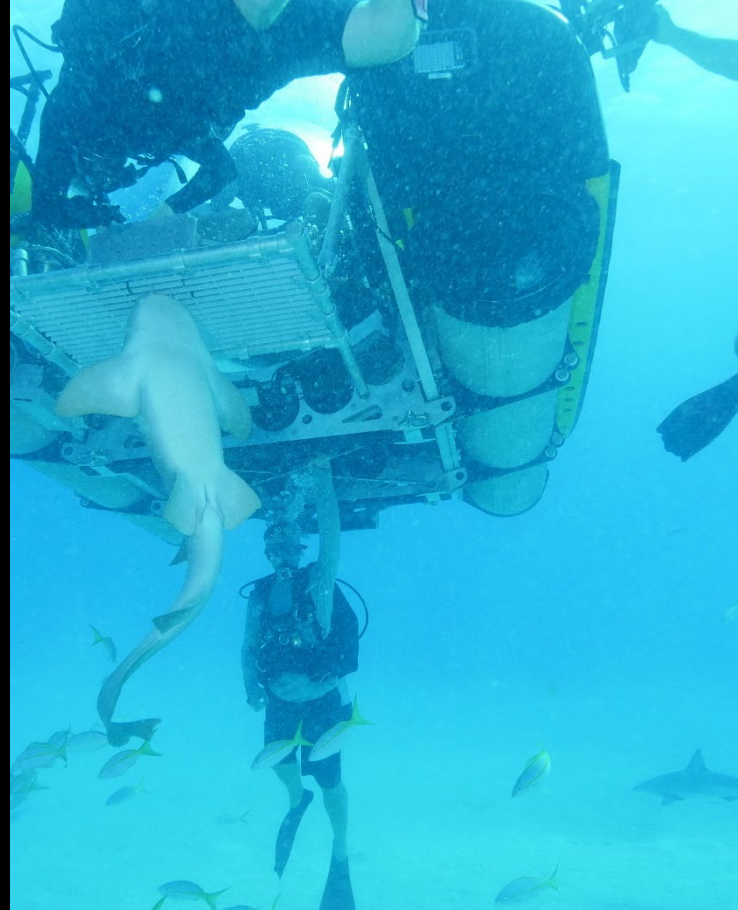
- Academia
- Government Agencies
- NGOs
- Technology Firms



Emily Shimada MET'18
Research Technician, RV
Atlantis, WHOI

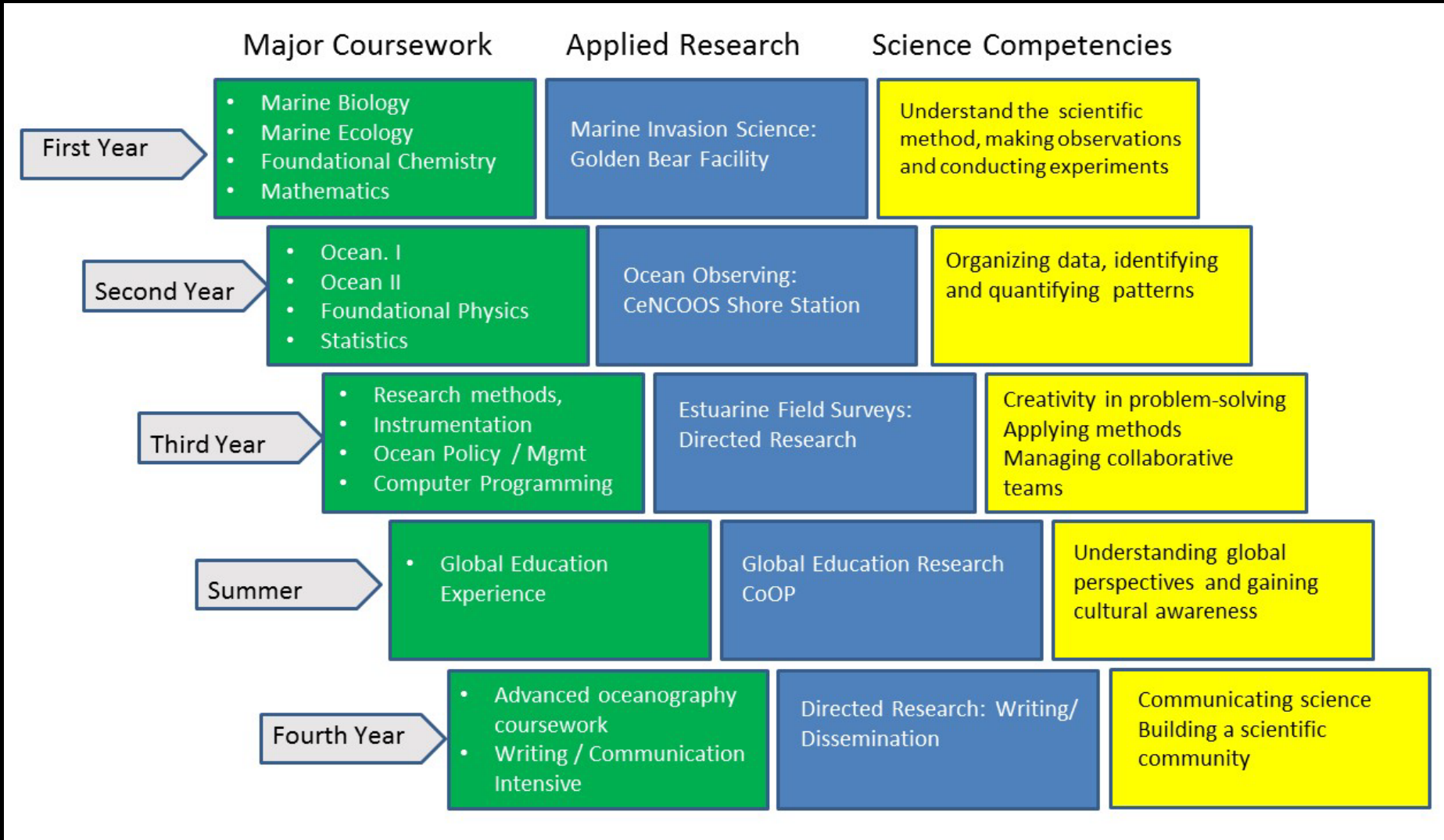
WHERE DO OCEANOGRAPHERS WORK?

- Academia
- Government Agencies
- NGOs
- Technology Firms



Shaun Teter MT'19
OceanX Nassau, Bahamas

WHAT COURSES WILL I TAKE?



WHAT COURSES WILL I TAKE?

CSU General Education Pattern

Lower
Division

Marine Biology / Marine Ecology

Intro. to Oceanography

Math – Calculus, Statistics

Chemistry I/II

Physics I/II

International Experience



WHAT COURSES WILL I TAKE?

Upper Division

Marine Policy
Oceans and Climate
Computer programming
Estuarine Surveys
Research / CO-OP Experience
Advanced Technical Writing
Specialized oceanography courses



Questions?

GEOCHEMICAL OCEANOGRAPHY

Research Interests:

- Chemical and Nutrient Cycling in the San Francisco Estuary

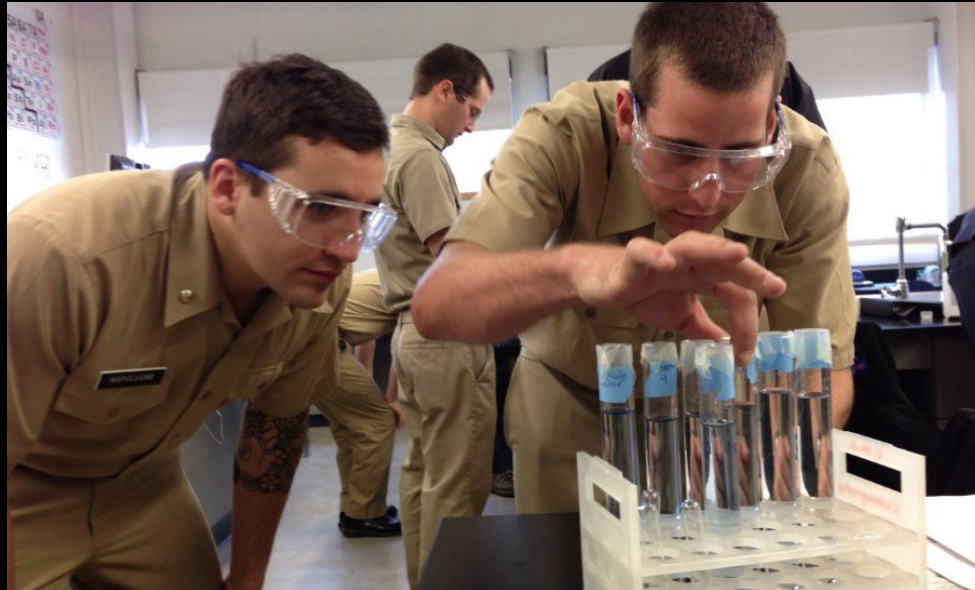
Current Projects:

- Method development for measuring ammonium in the SF Estuary
- Ramping up geochemistry measurements in the new Oceanography Lab

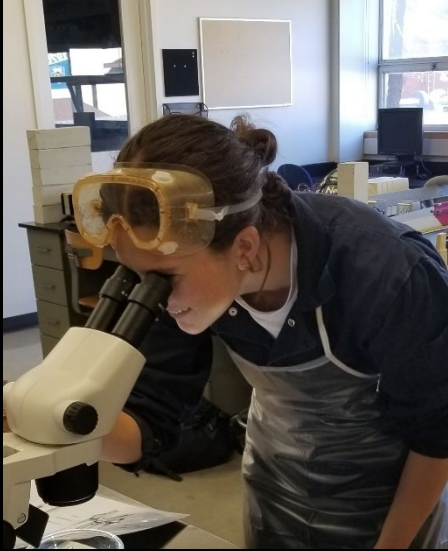


Dr. Jennifer Murphy
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APPLYING THEORY AND PRACTICE TO SOLVE PROBLEMS



HANDS ON SCIENCE



WORKING CLOSELY WITH FACULTY



Questions?

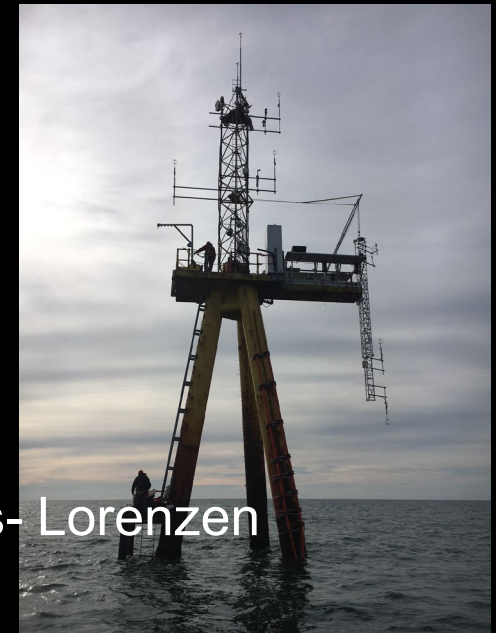
PHYSICAL OCEANOGRAPHY

Research Interests:

Upper ocean physics
(turbulence) and Air-Sea
Interaction

Current Projects

1. Measuring TKE across the interface (NSF, Multi-institution collaborative effort)
2. Wave-induced modulations on humidity and temperature profiles close to the air-sea interface (Navy, Spectral Sciences collaboration)



Dr. Alejandro Cifuentes-Lorenzen
acifuentes@csum.edu

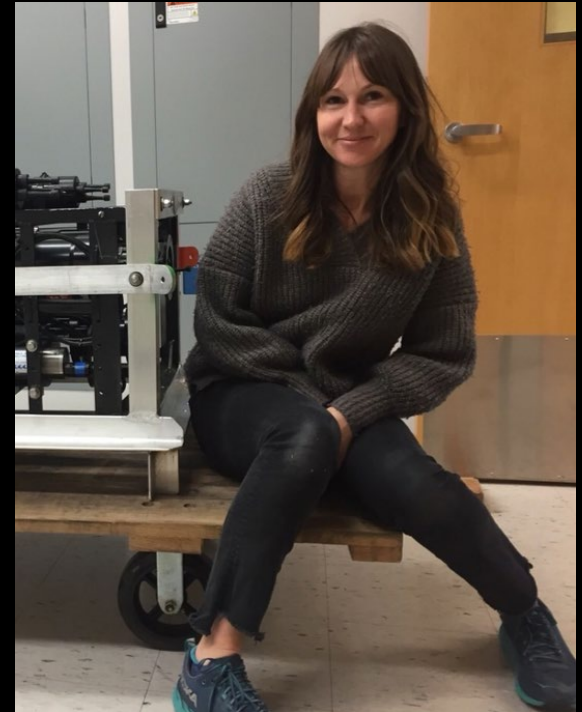
PHYSICAL OCEANOGRAPHY

Research Interests:

Upper ocean physics and particle dynamics, ocean color remote sensing

Current Projects:

Breaking waves, bubbles and energy dissipation from hyperspectral measurements of ocean color



Dr. Kaylan Randolph
krandolph@csum.edu

INTERDISCIPLINARY SCIENCE AND LEARNING

OCEAN OBSERVING



BALLAST WATER



INTERDISCIPLINARY SCIENCE AND LEARNING



INTERDISCIPLINARY SCIENCE AND LEARNING

ESTUARINE SURVEYS WITH MARINE TRANSPORTATION

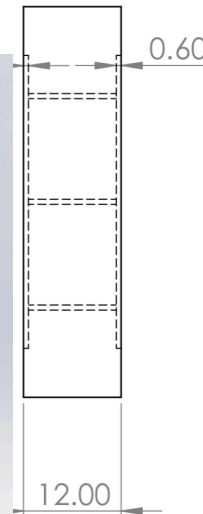
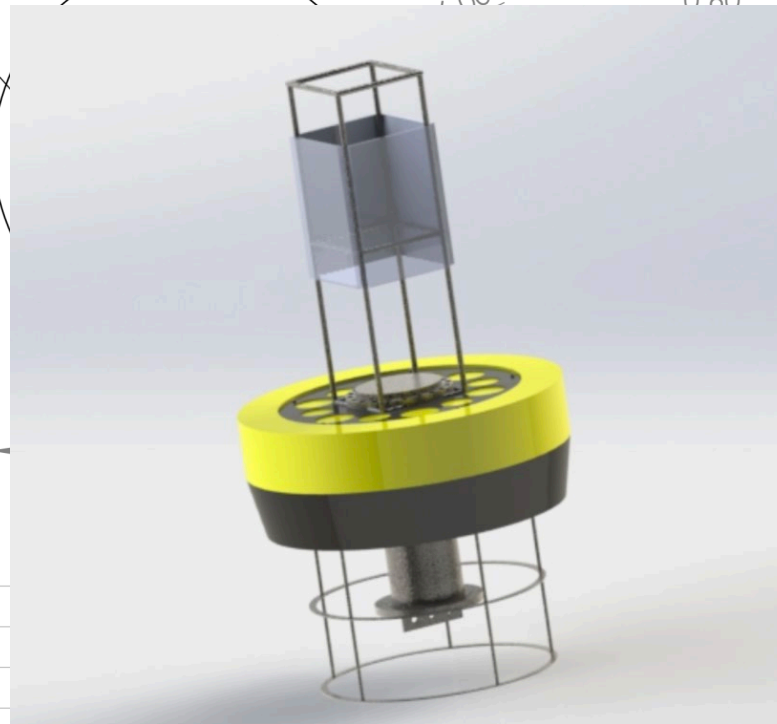


OCEANOGRAPHY LAB



Oceanography Buoy Project 2020/ 2021

6 x 5/8" \varnothing Thru
30" \varnothing Bolt Circle



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Buoy rendering [SolidWorks] by Tom Oppenheim.
Design by Kate Randolph and A. Cifuentes-
Lorenzen.

TITLE:

Surlyn Foam

SIZE
A

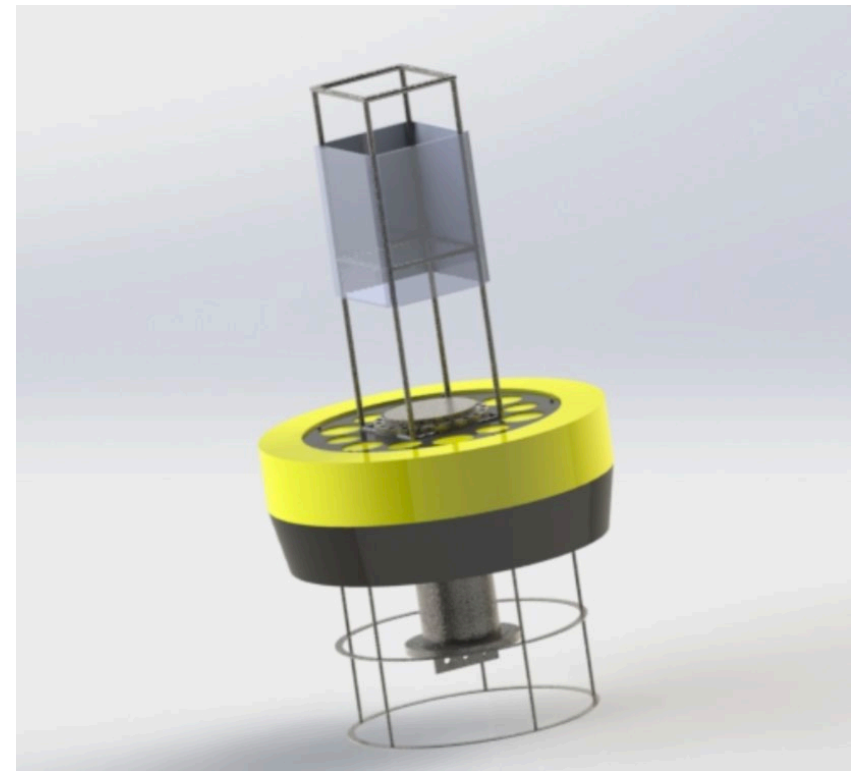
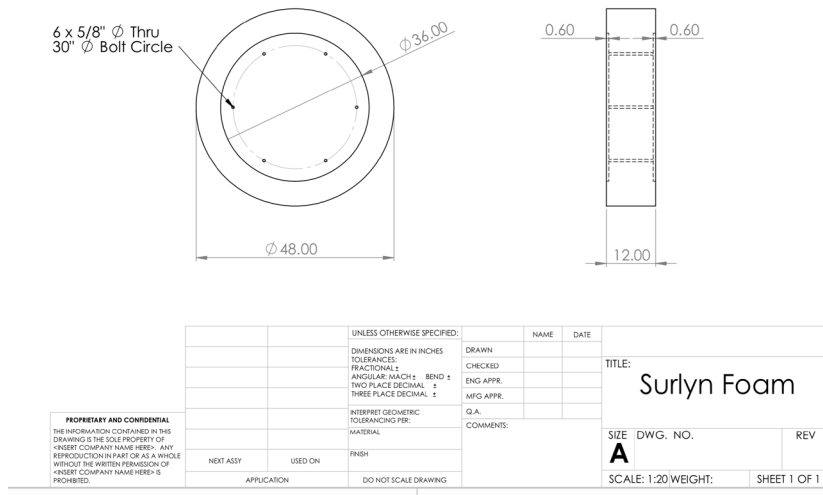
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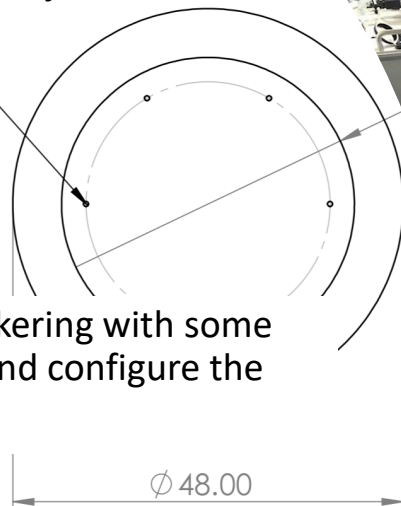
Oceanography Buoy Project 2020/ 2021



Buoy rendering [SolidWorks] by Tom Oppenheim.
Design by Kate Randolph and A. Cifuentes-Lorenzen.

Oceanography Buoy Project 2020/ 2021

6 x 5/8" ϕ Thru
30" ϕ Bolt Circle



Sophie Scopazzi tinkering with some cables to connect and configure the sonic anemometer.



Bench testing April 2021

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NEXT ASSY

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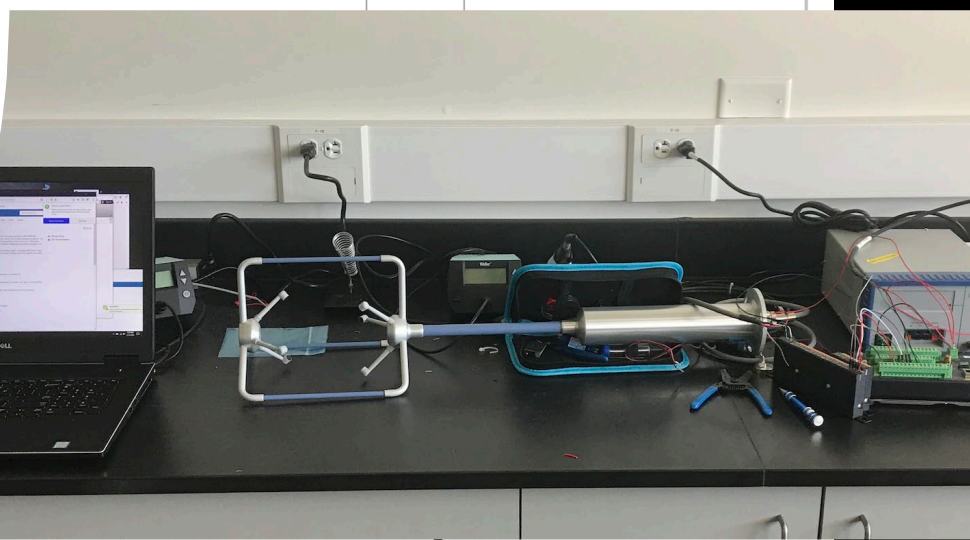
APPLICATION

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL \pm
ANGULAR: MAXIMUM
TWO PLACE DECIMALS
THREE PLACE DECIMALS

INTERPRETATION OF TOLERANCES
MATERIAL SPECIFICATIONS
FINISHES

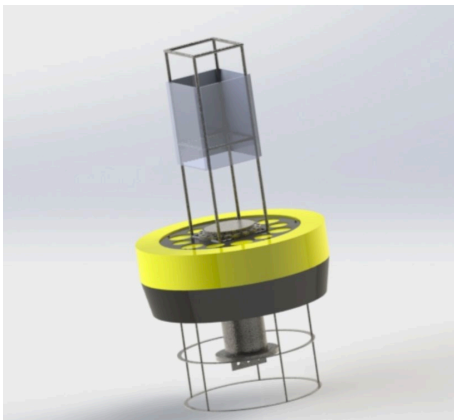
FINISH



Oceanography Buoy Project 2020/ 2021

6 x 5/8" ϕ Thru
30" ϕ Bolt Circle

Jacques Descoust cuts the
steel plates at the machine
shop



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NEXT ASSY

USED ON

APPLICATION

DO NOT SCALE DRAWING

TOLERANCES:
FRACTIONAL \pm
ANGULAR: MACH \pm BEND \pm
TWO PLACE DECIMAL \pm
THREE PLACE DECIMAL \pm

INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL

FINISH

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

TITLE:

Surlyn Foam

SIZE DWG. NO.

REV

SCALE: 1:20 WEIGHT:

SHEET 1 OF 1



COME JOIN US!



CONTACT *Alexander Parker*
aparker@csu.edu

