

What do you see in this image?

Rocket Science 653



Basket Weaving 101



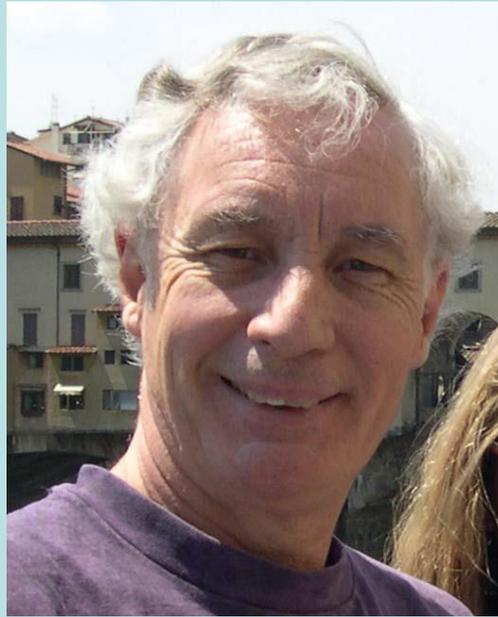


OCN 201: Science of the Sea

Instructors



Eric De Carlo
Geology, Course
Coordinator



Chris Measures
Chemistry and
Physics



Eric Goetze
Biology

Yes, we are a “bit older than these pictures ☺

Teaching Assistants

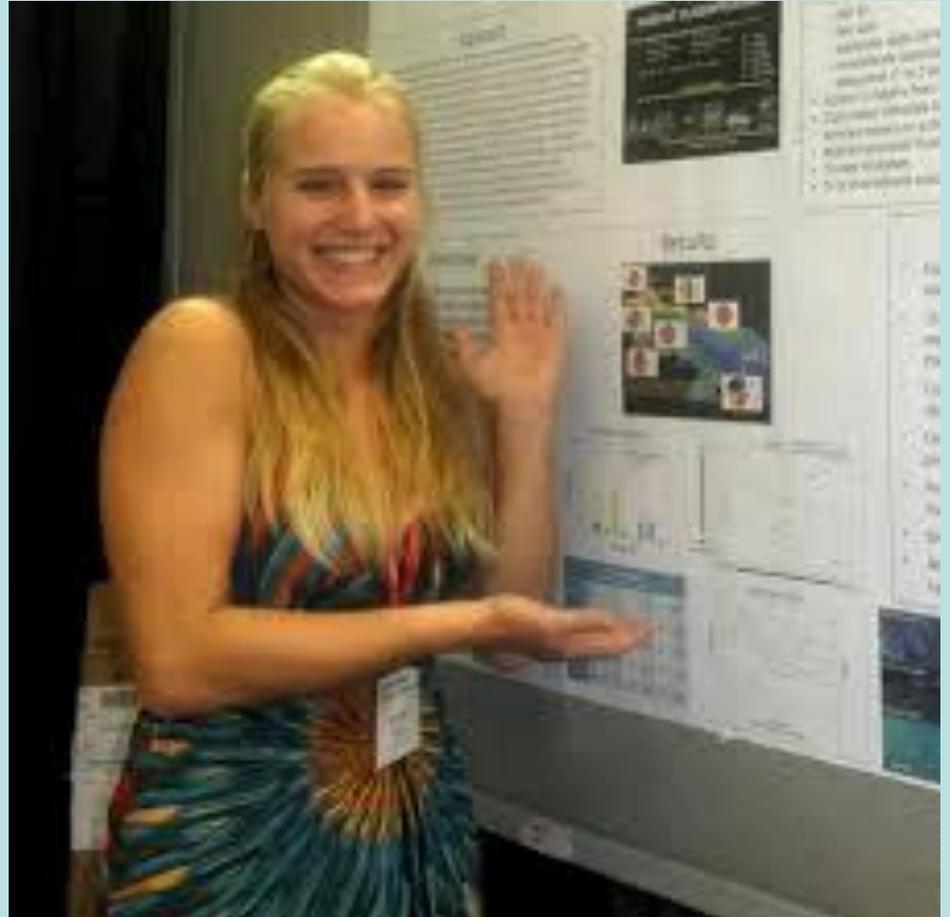
Astrid Leitner (Head TA)

Carlo Caruso

Paula Moehlenkamp

Kelly Pearson

Desiree Simandjuntak





Why are you in College?



Education pays in higher earnings
and lower unemployment rates*

Unemployment rate in 2012 (Percent)	Education attained	Median weekly/yearly earnings in 2014 (Dollars)	
2.5	Doctoral degree	\$1,624	\$84,448
2.1	Professional degree	\$1,735	\$90,220
3.5	Master's degree	\$1,300	\$67,600
4.5	Bachelor's degree	\$ 1066	\$55,432
6.2	Associate degree	\$ 785	\$40,820
7.7	Some college, no degree	\$ 727	\$37,804
8.3	High-school graduate	\$ 652	\$33,904
12.4	Some high-school, no diploma	\$ 471	\$24,492

Why are you here taking OCN 201?

To satisfy a Core requirement

a legitimate reason, but not the best one!



To increase your lifelong ENJOYMENT of the ocean

The more you know about a subject, the more you can enjoy it

This is an “OCEAN APPRECIATION” course!

To learn how SCIENCE works

How does science approach questions about the world?

What can science tell us about the world?

What CAN'T it tell us, i.e. what are its limitations?



To learn about the SINGLE BIGGEST FEATURE on the surface of the Earth

The oceans affect everything on Earth, directly or indirectly,
including human affairs

What is Oceanography?

- is a branch of Earth Sciences --geology, atmospheric sciences...
- very hard to separate one part from another
- how do processes of biology, geology, chemistry and physics interact?

We will cover subjects as diverse as the origin of the Universe, traditional Polynesian navigation, waves, and climate change

We will learn about processes as far apart as the center of the Earth and the upper reaches of the atmosphere

We will learn about biology of the oceans from microscopic organisms to whales



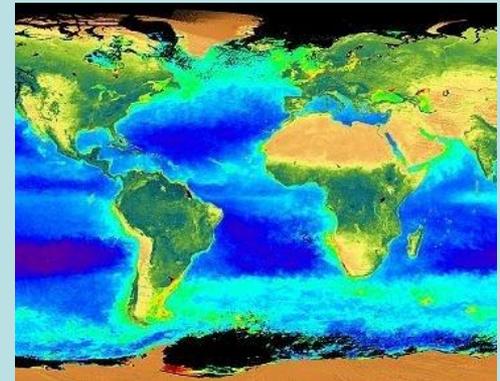
Study of our planet is still very young

Geology and Biology have been studied for ~ 200+ years



Oceanography ~ 80 years

Much has been learned, but there is still lots to discover → this makes the field exciting!



Some of what we teach may turn out not to be correct

**Science always challenges existing theories,
that's how they get improved**

Scientific theories may challenge certain religious beliefs

It is NOT the goal of science to challenge religion but the challenges are a by-product of certain religious assertions about natural phenomena

e.g., the age of the Earth can be measured & it is **not** 6,000 years old!

Scientific knowledge and theories underpin our entire modern economic system

The massive improvements in the standard of living and the improvements in life expectancy since the 1600's are both a result of the development of modern scientific theories and their application to our lives

OCN 201 web page

http://www.soest.hawaii.edu/oceanography/courses_html/OCN201/

Or, much easier:

Google: **OCN 201**

**All the class
information is
posted here**

Also links to the lab sections are found here

Class is organized into two lecture sections

Section 1 M/W/Fr 10:30 -11:20 Phys Sci Auditorium

Section 2 M/W/Fr 12:30 - 1:20 MSB 114

5 lab sections on Monday, Tuesday, Wednesday and Thursday

09:00 - 11:50 am, Marine Science Building 203

1:30 - 4:20 pm, Marine Science Building 203

General Education: Diversification requirements

OCN 201 counts as a physical science requirement (DP)

OCN 201L counts as Laboratory class (DY)

All the instructors are active researchers in the field of Oceanography
--you are learning from experts in the field

All the TAs in the class are graduate students in the
Oceanography Department or in Marine Biology,
--all are highly motivated and knowledgeable

Text book-- required

Garrison, An introduction to Marine Science 6th edition

Earlier editions are O.K. too

Exams

Class is taught in three sections:

Geology

Chemistry and Physics

Biology

There is an exam at the end of each section covering the material taught in that section

Grading

Each exam is worth 75 points

Tests are a mixture of:

True/false, multiple choice, fill in the blank = 60

Essay questions = 15

Final exam is worth the same as the other two



Final grades are on the same curve that has been used for more than 25 years (your parent(s) might have taken this class)

We use plus/minus grading but the distribution is the same

-- There is no grade inflation in this class!

A+/A/A-	12.5%
B+/B/B-	25%
C+/C/C-	50%
D/F	12.5%

We will calculate (approximate) grade boundaries for each exam
-- to show you how you are doing

BUT -- the only grade that counts is the final one that is based solely on the total number of points you earn this semester

You must take exams when they are scheduled or have a PRE-APPROVED excuse (look at the syllabus **NOW!!!**)

For those with valid excuses, a make up exam must be taken within **ONE WEEK** of original exam

Make up exam is usually significantly harder



Field trip

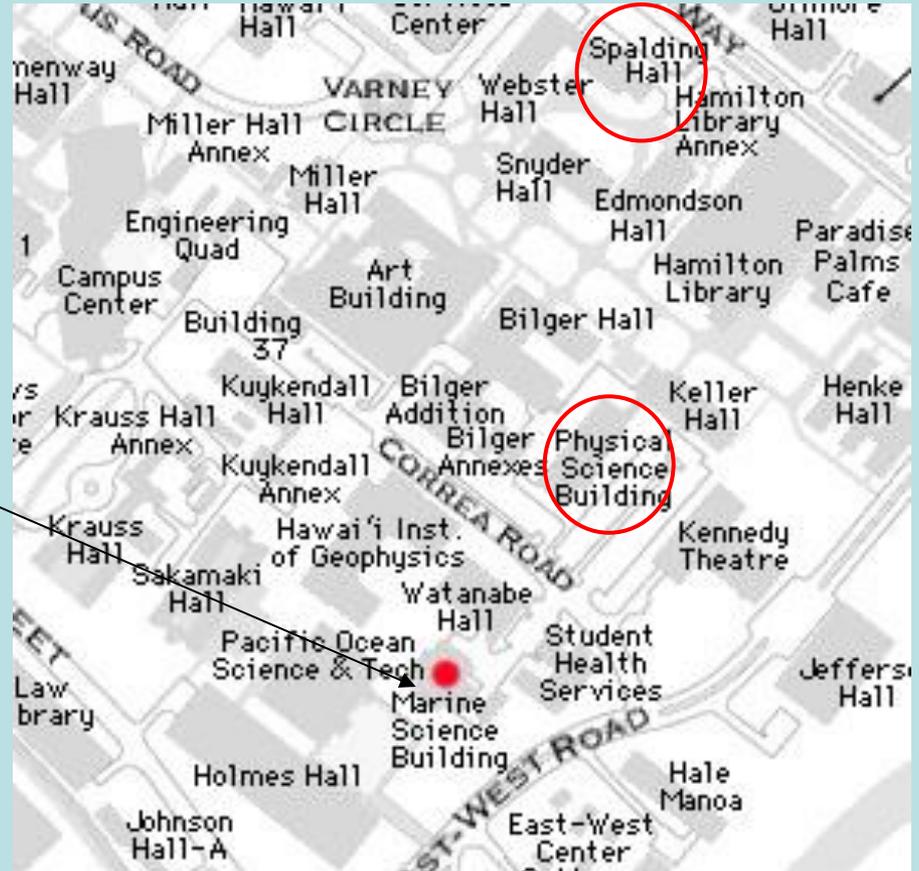
Everyone in the lecture class **MUST** take a **self-guided field-trip**
--25 points for the completed worksheet

Those taking lab class **MUST** take **another** guided field trip



If you are enrolled in OCN 201L

- **YOU MUST GO TO THE FIRST LAB THIS WEEK**
- You will learn to apply the concepts learned in lecture
- All labs are hands on and meant to reinforce what you learn in lecture
- You will have a selection of GUIDED field trips that span the topics covered in the various sub-disciplines.
- You may go on as many field trips as you like besides the one that is required, if space is available. Priority will be given to those taking their FIRST field trip.



Office hours held in Marine Science Building 113 --the glass walled office on the outside of the building

Labs are held in MSB 203... take the elevator to the 2nd floor and turn left (**after the first day... please walk up/down stairs!**)

Oceanography in the Southern Ocean...a superb natural laboratory



What is the implication of iceberg melting as a result of global warming? How about glaciers? Does “global warming” mean hotter all the time?

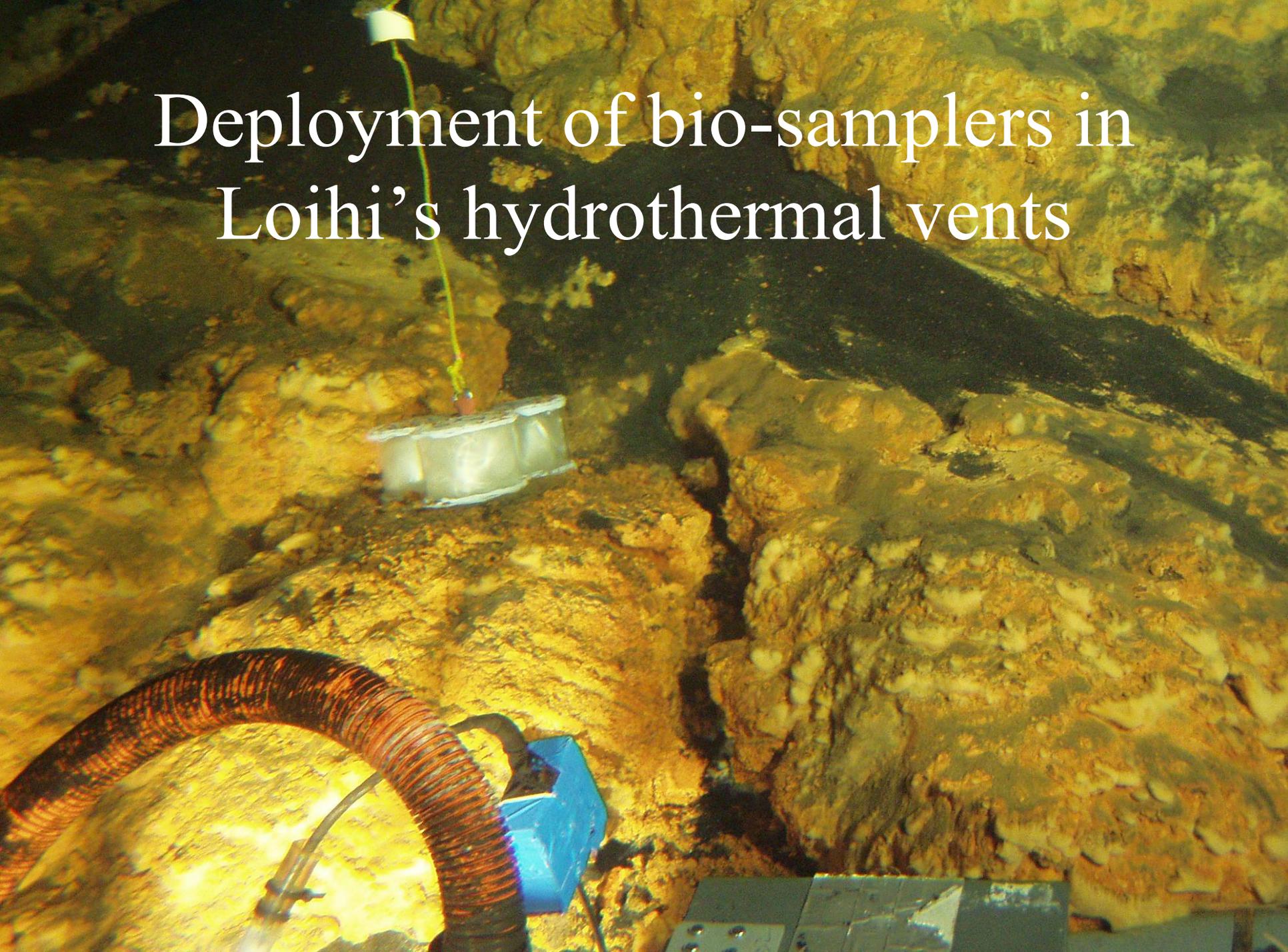
<http://www.youtube.com/watch?v=5eDTzV6a9F4>





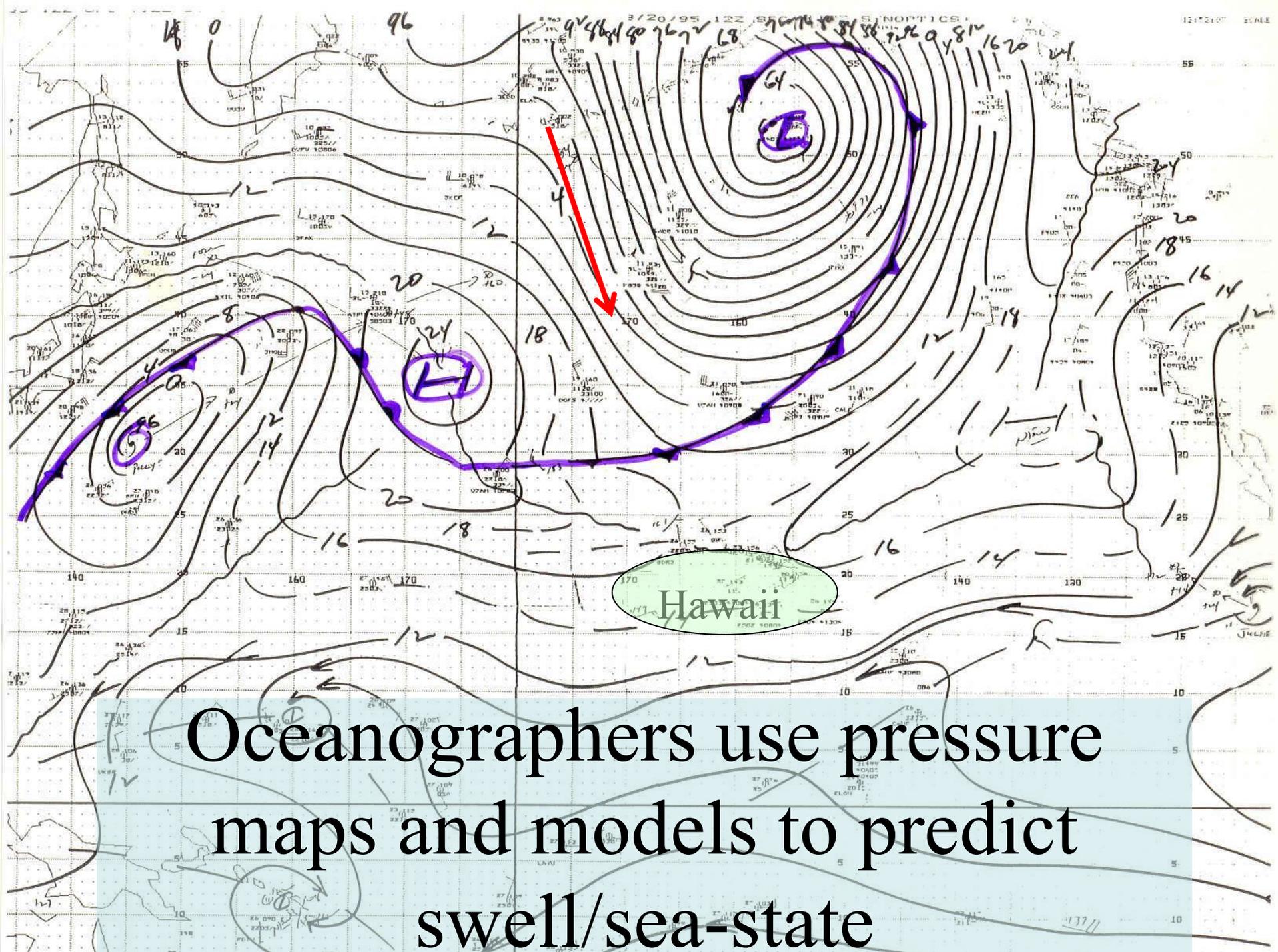
One of the oceanographer's tools

Deployment of bio-samplers in Loihi's hydrothermal vents



Oceanography lets us calculate
how big waves will be and when
they will come in...





Oceanographers use pressure maps and models to predict swell/sea-state

Studies of coastal erosion



Rocky Point, Dec 2013

What causes beach erosion?

Is it just big surf?

Is big surf related to climate change?

Where is it safe to build?



What causes the red/orange at sunset?



Opportunities for the Oceanographer ...Sashimi...



Remember---

This is Oceanography,
It's meant to be fun!

We do this for a living,
because we enjoy it

We hope you will
enjoy it too!

