

Constructing a Hypothesis:

How to create your own hypothesis.



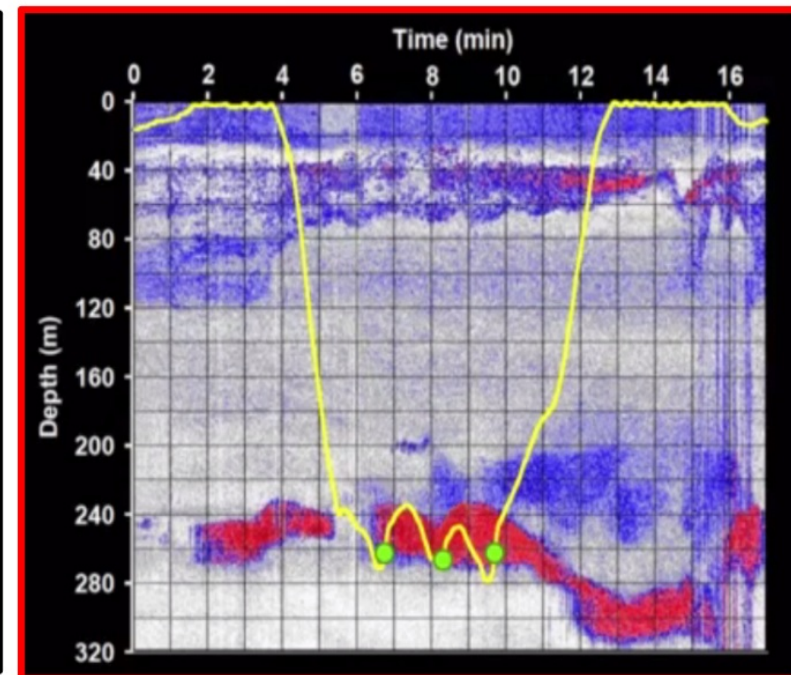
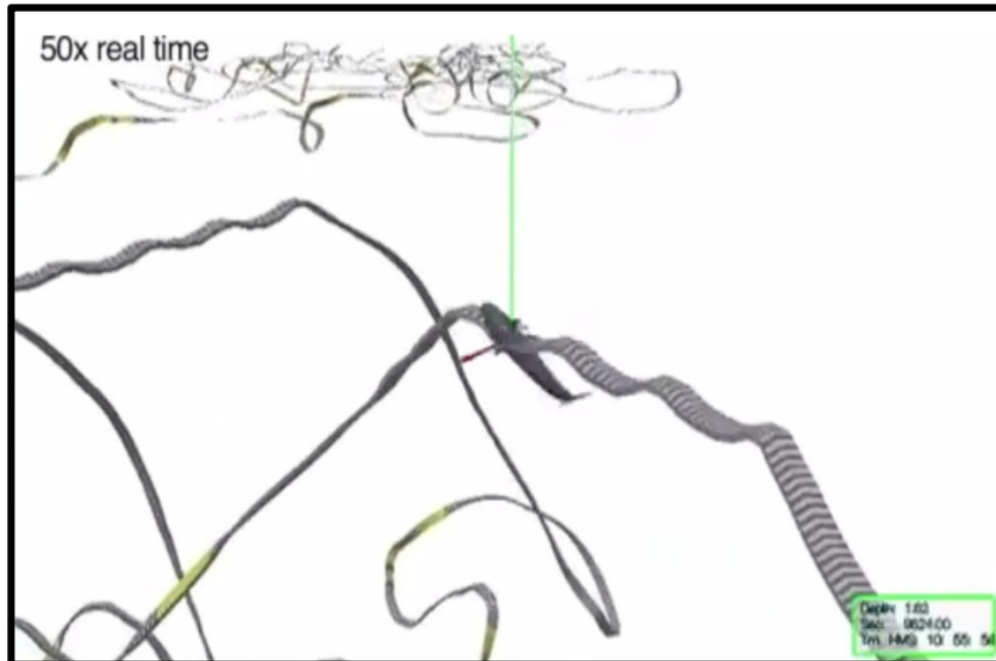
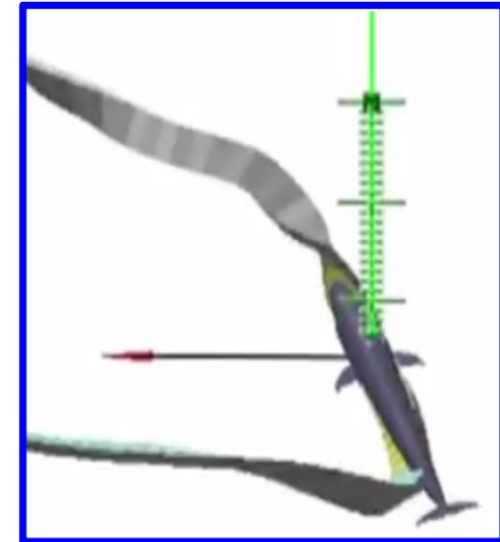
First Discovery: The Blue Whale Barrel Roll

Listen one
more time to
these
scientists as
they
DESCRIBE
their
discovery.

Feature One: The Data

The "tags" collected data and the data was translated into computer models.

Data: depth, speed, orientation (direction facing), feeding times, krill clouds



Feature Two: Problems and Solutions

This video did not specifically identify problems, but it did give us a few clues that tell us about the problems they may have faced.



Work with a shoulder-partner to brainstorm a list of problems that these scientists may have faced during their research.

Be prepared to share your thoughts in 3 minutes.

Feature Three: Generating Questions

Good research begins with good questions...



The scientists identified two questions in the video.

What were they?

Feature Four: Unexpected Findings

What was discovered that was unexpected?

The unexpected finding in the study of Blue Whale feeding habits was...

Second Discovery: Mystery in the Arctic



Vocabulary

isolated

field study

Woodshole Oceanographic Institute

graduate school

Gakke Ridge

vents

tube worms

AUV

CTT Team

"faction on the ship"

supposition



"biological oasis"

species

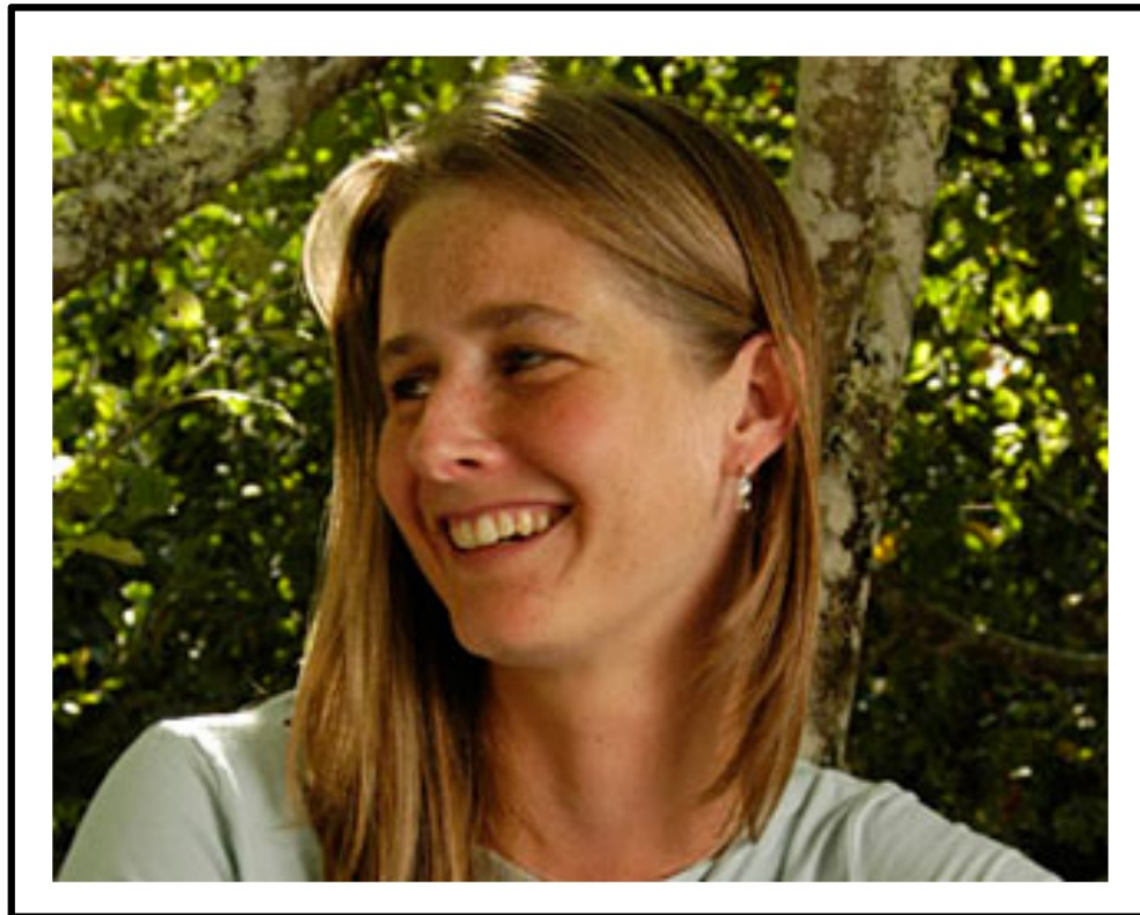
"on station"

microbes

"run of the mill"

Now let's listen to the radio interview of the scientist and the writer who went along to document the discovery.





Erica Lloyd
Editor, Reporter, Freelance Writer









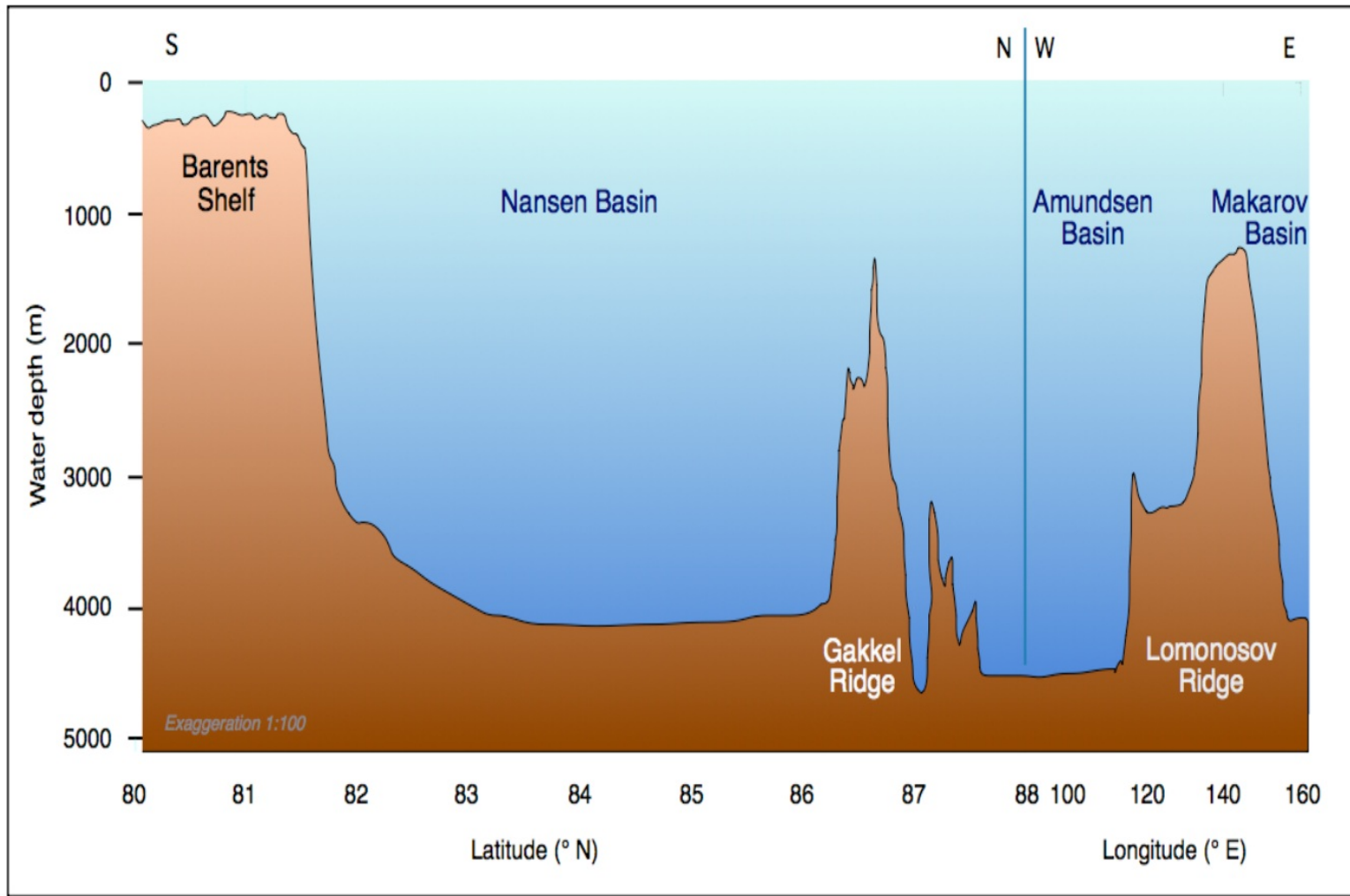


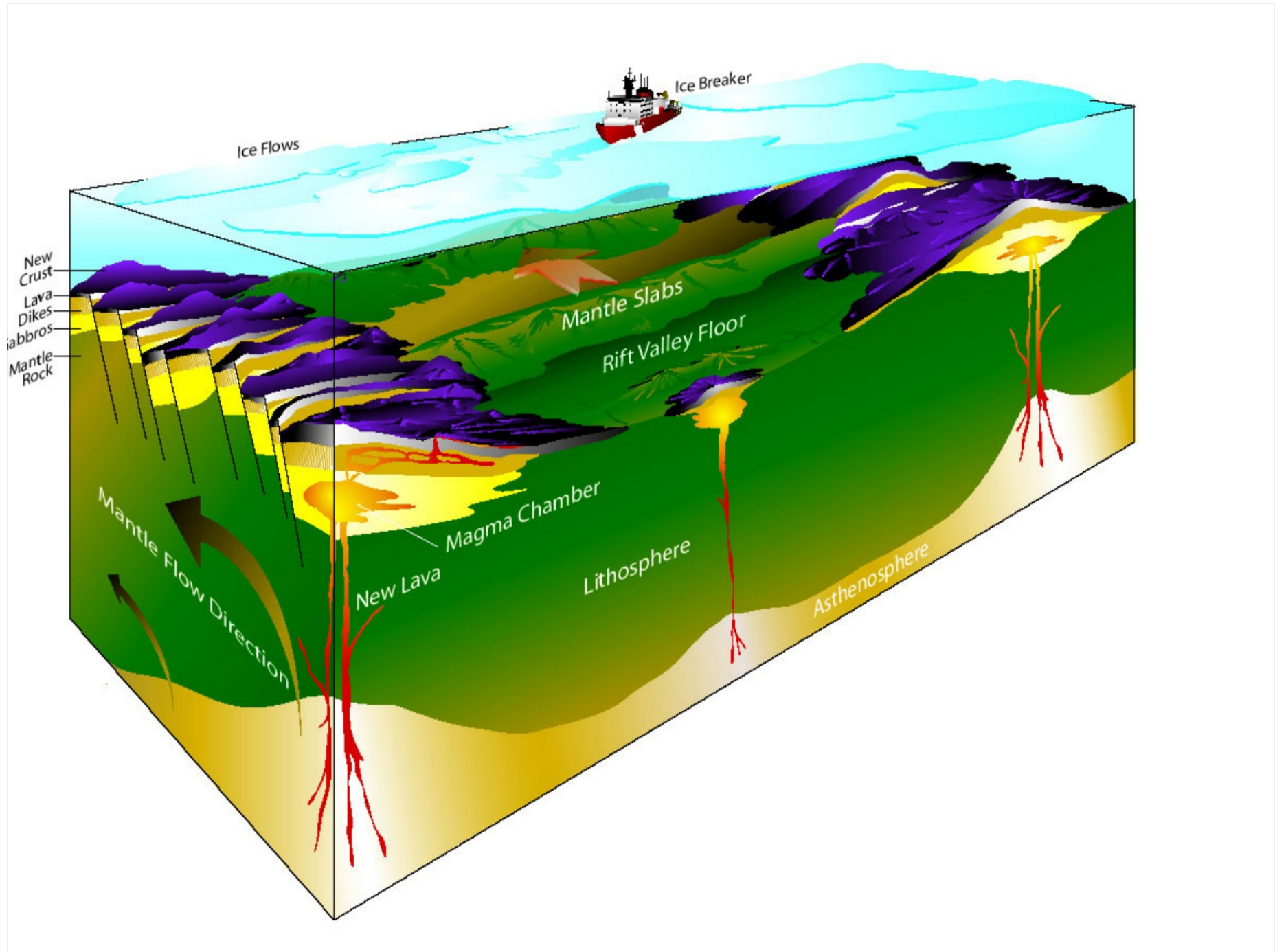


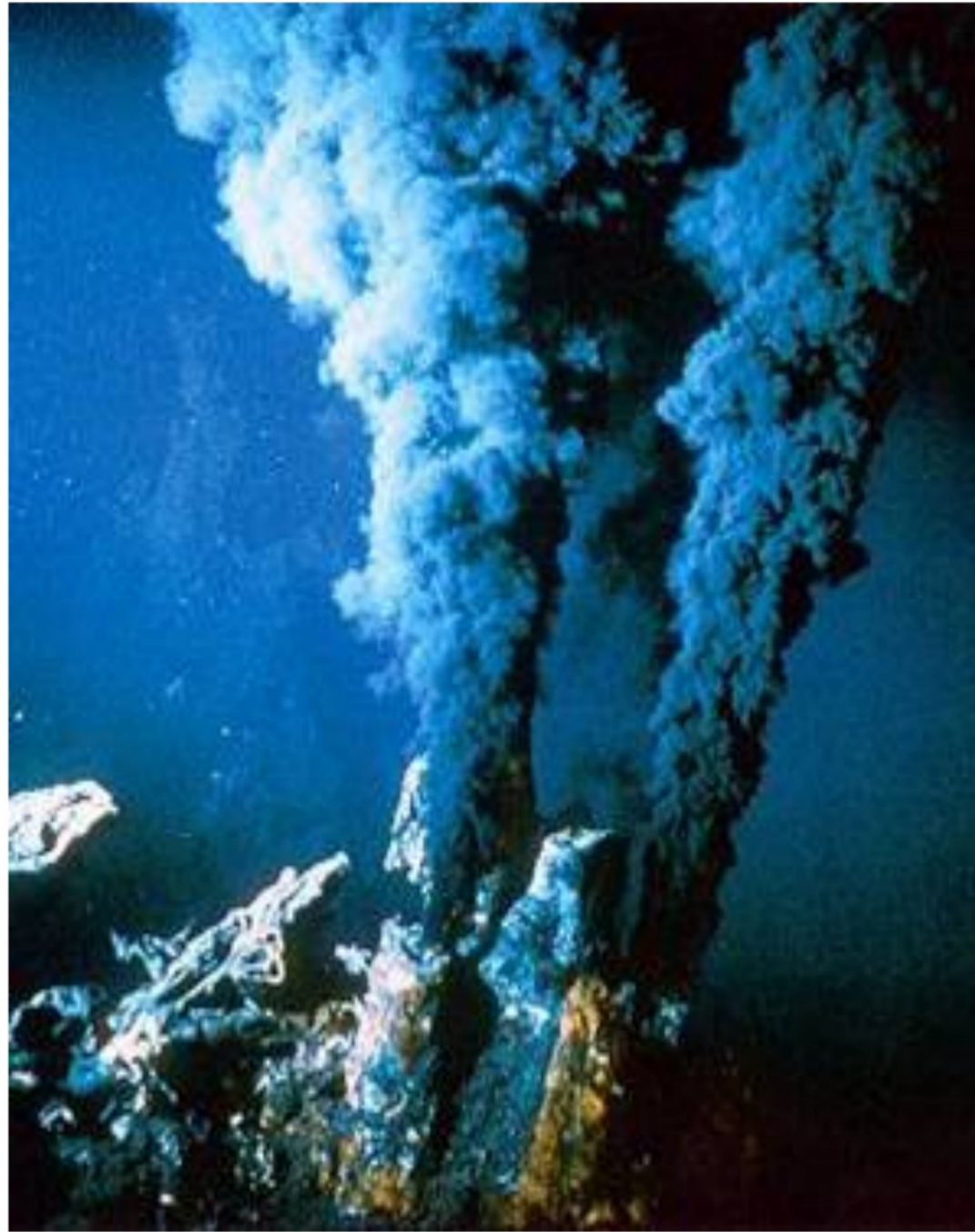
Rob Reves-Sohn
Associate Scientist
Geology and Geophysics Department
Woods Hole Oceanographic Institution

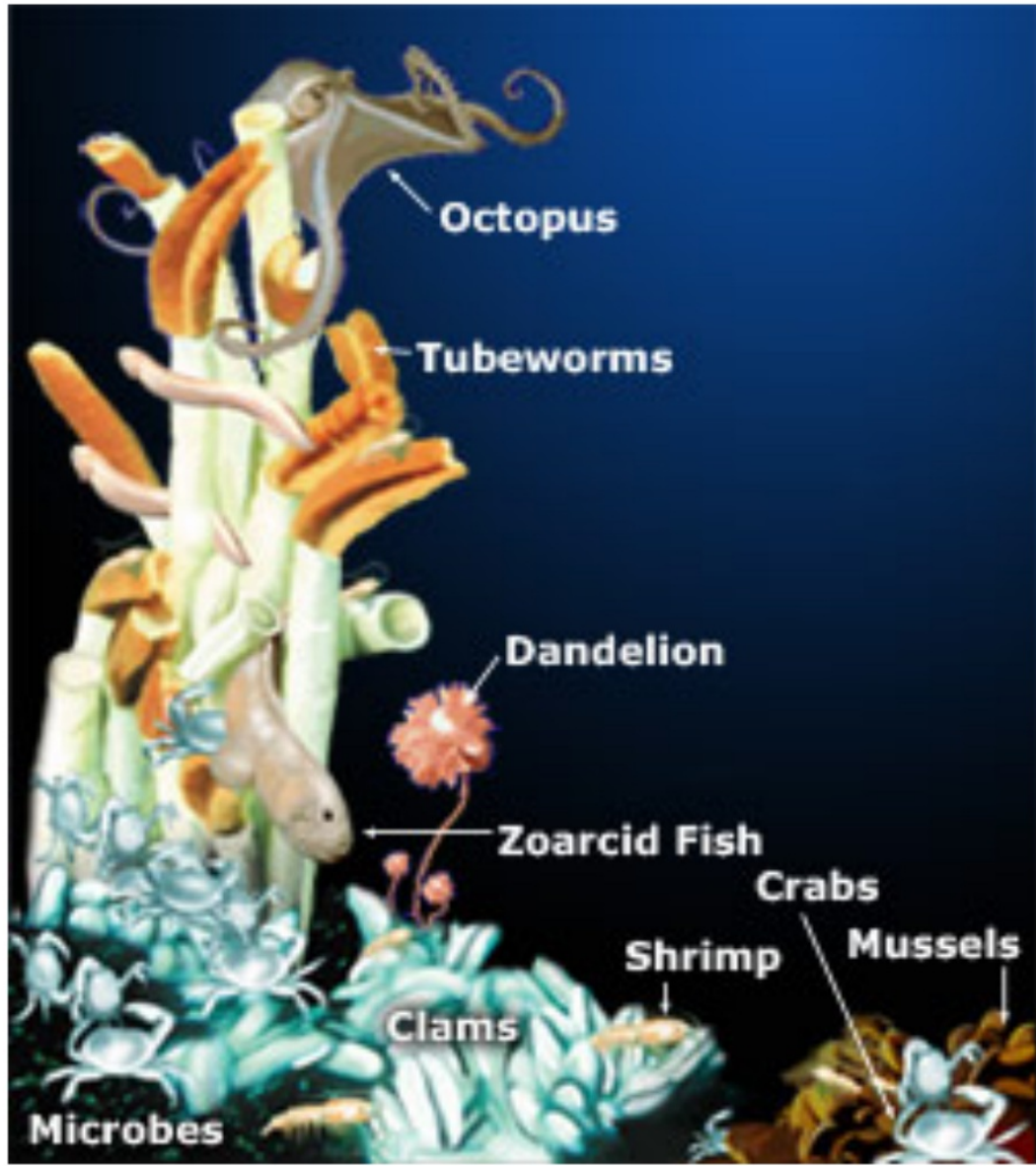




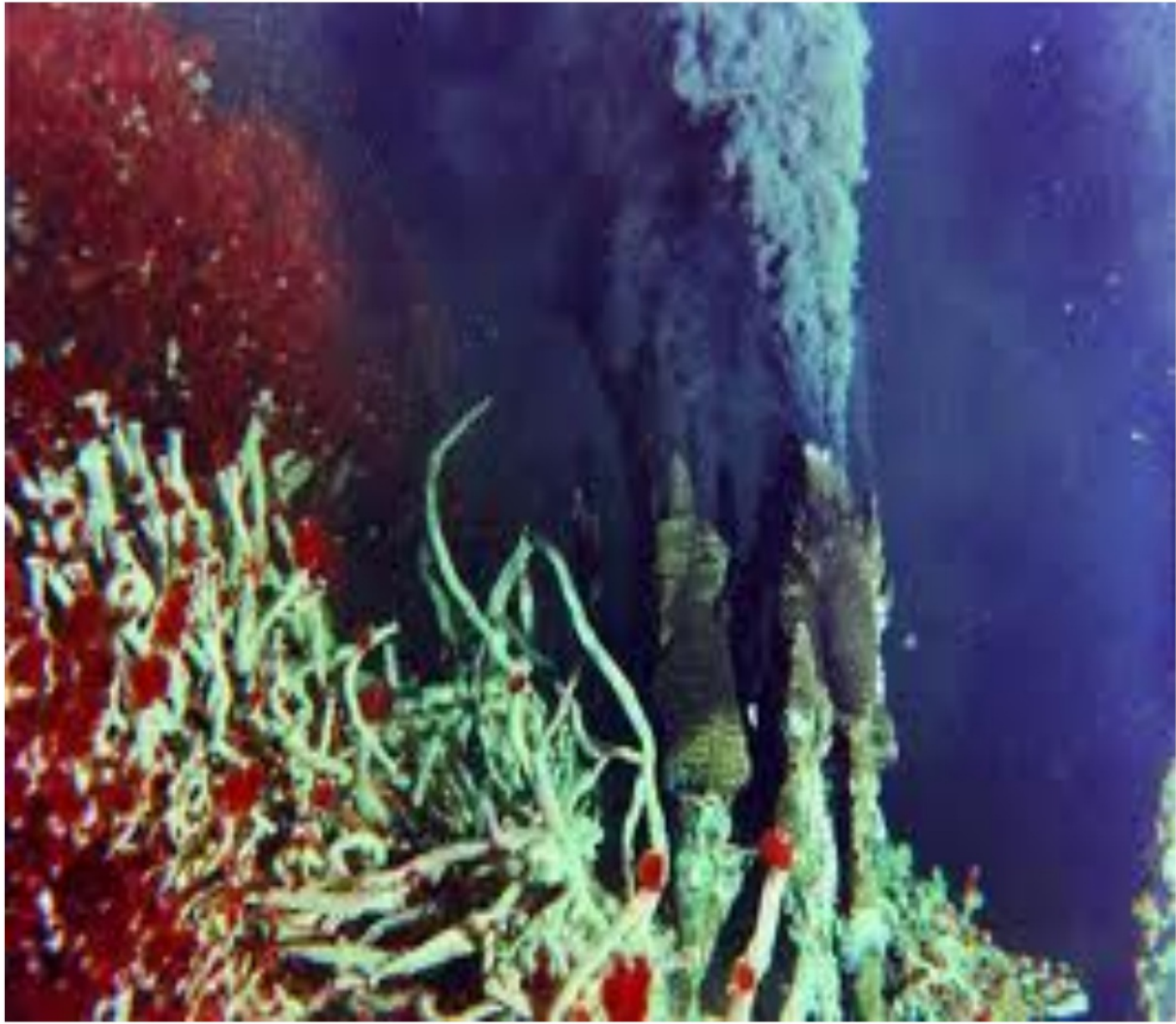




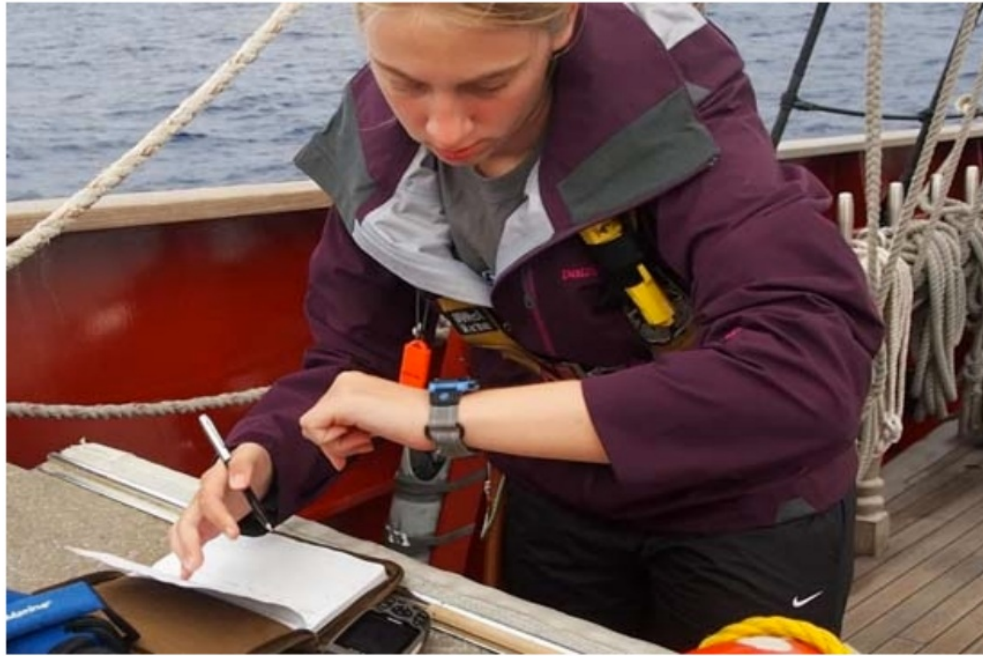




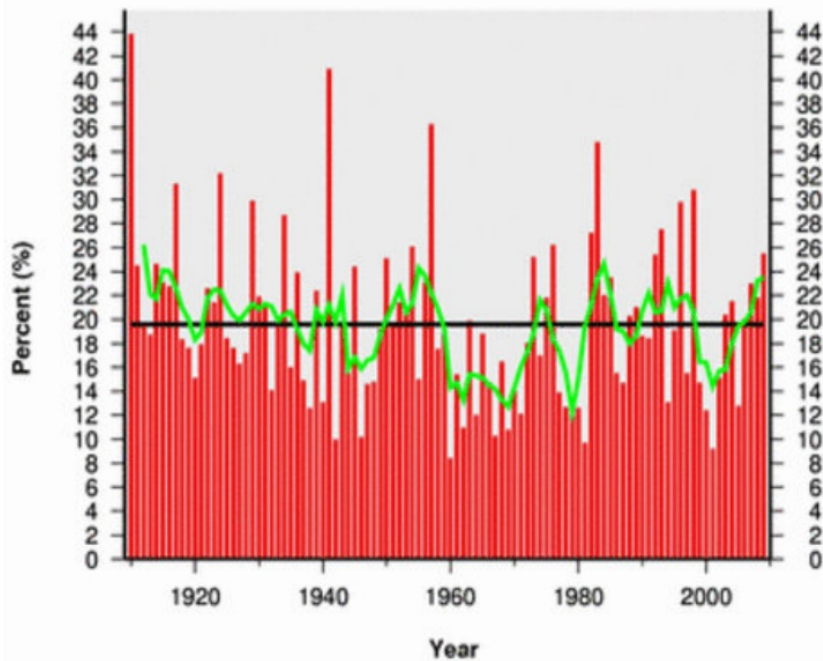
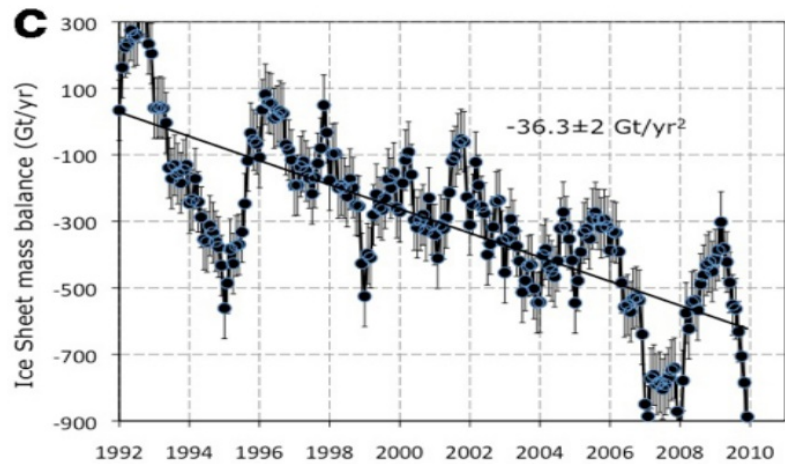




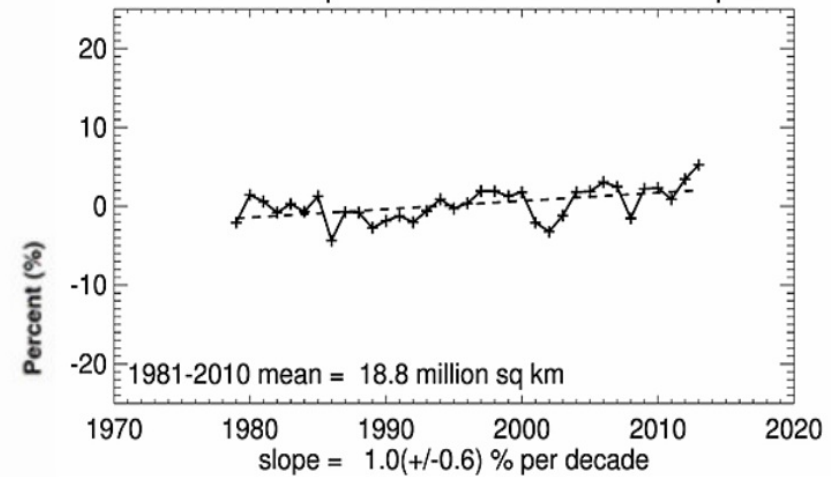








Southern Hemisphere Extent Anomalies Sep 2013





Feature One: The Data

What do we know about the data that was collected?



Here is how the recording described the data.

Feature Two: The Problems or Issues

What problems did the scientists run into?



Make a list of the problems faced during
this research trip.

Feature Three: Generating Questions

What questions did the researchers ask?



These are the questions posed in the recording.

Feature Four: Lessons Learned

Dr. Reves-Sohn learned a big lesson throughout this discovery story. What was it?



Here is the lesson that was learned by everyone involved.

The Story of Scientific Discoveries

Blue Whale Barrel
Roll Discovery

whales
feeding
krill
rolling/acrobatics
tags
computer models

underwater

Oldest Micro-organism
Discovery

robot
very deep
interview/radio
yellow fluffy stuff
micro-organisms
disappointments/problems
did not find what they
wanted to find

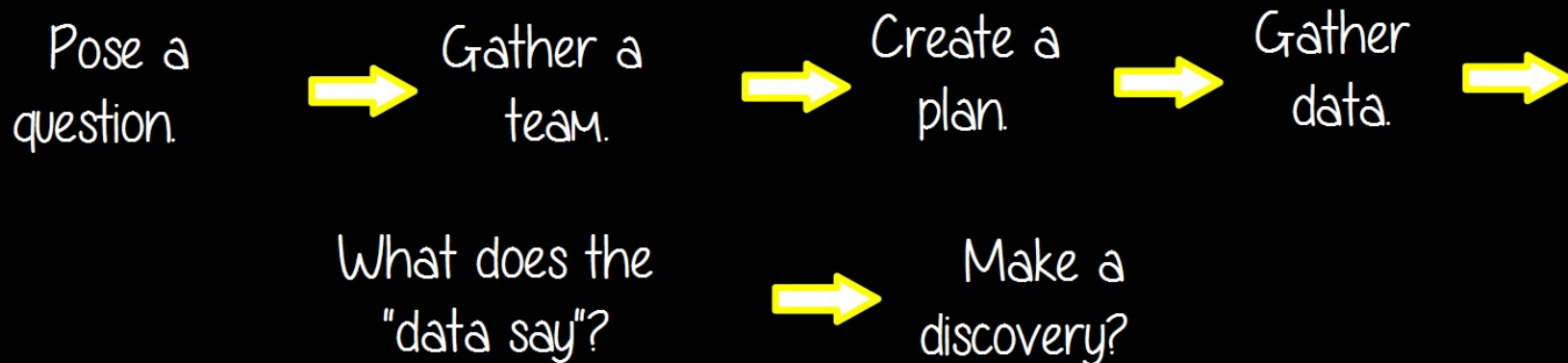
Third Discovery: Get Ready...

Next week we'll be generating hypotheses about an upcoming discovery... you'll need to use your new knowledge of the structure of scientific discovery to create your hypotheses.

But before we do that, we should consider this...

So... does the process of
scientific discovery
have a **structure** ?

If so, can you describe it?



I can't wait for next week!



Did you notice that they used analogies?

ice = "cold campfire"

fear of only studying what other people have already
studied = "gnawing on bones"

Making a big new discovery
bones' and bring down some big game." = "Move beyond 'gnawing on

putting the robots in the water
school..." = "sending your child to pre-

the still undiscovered spectacular discovery
eyed worm is still out there." and "... the unicorn of the
arctic..." = "The three-