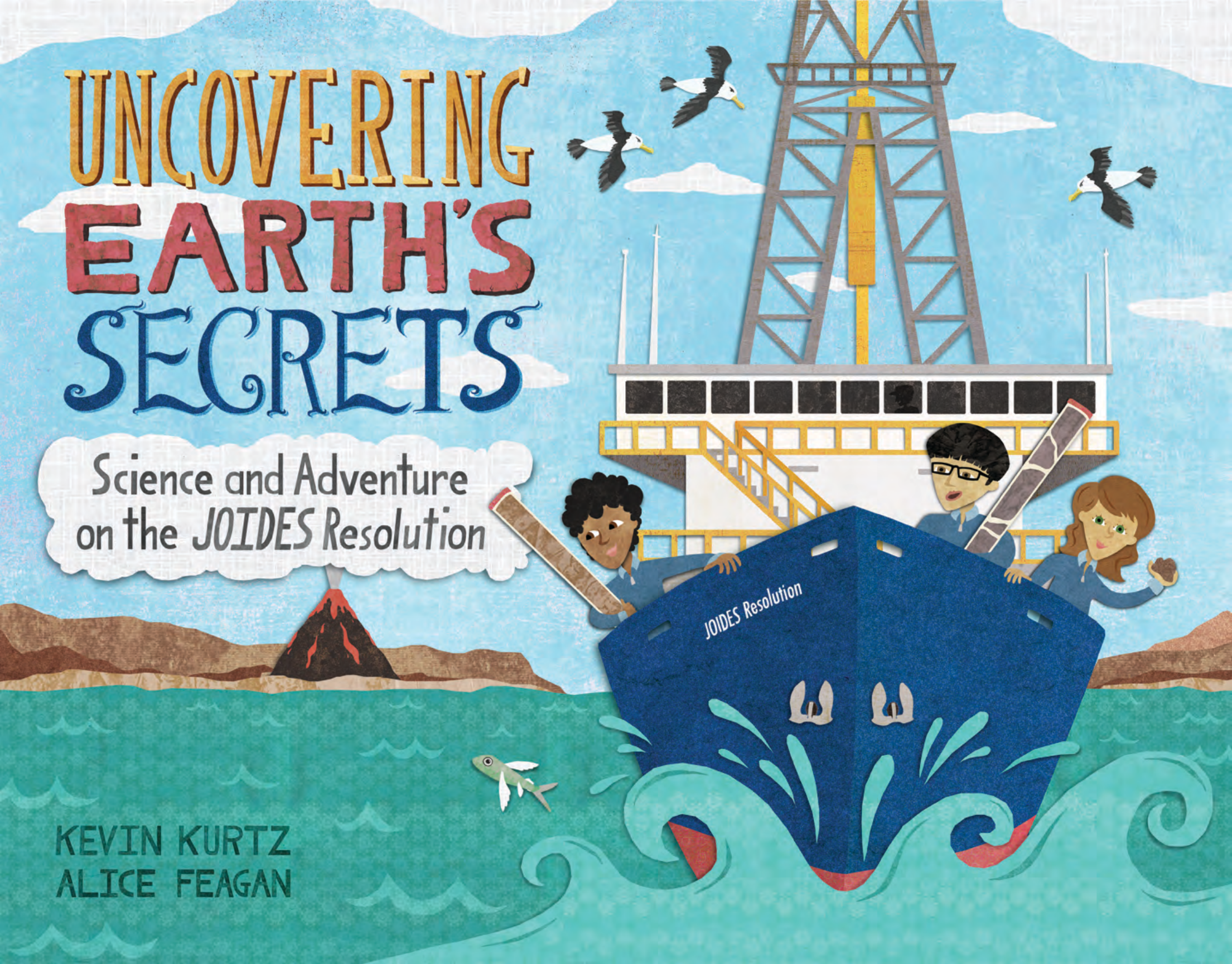


UNCOVERING EARTH'S SECRETS

Science and Adventure
on the *JOIDES Resolution*

KEVIN KURTZ
ALICE FEAGAN





UNCOVERING EARTH'S SECRETS

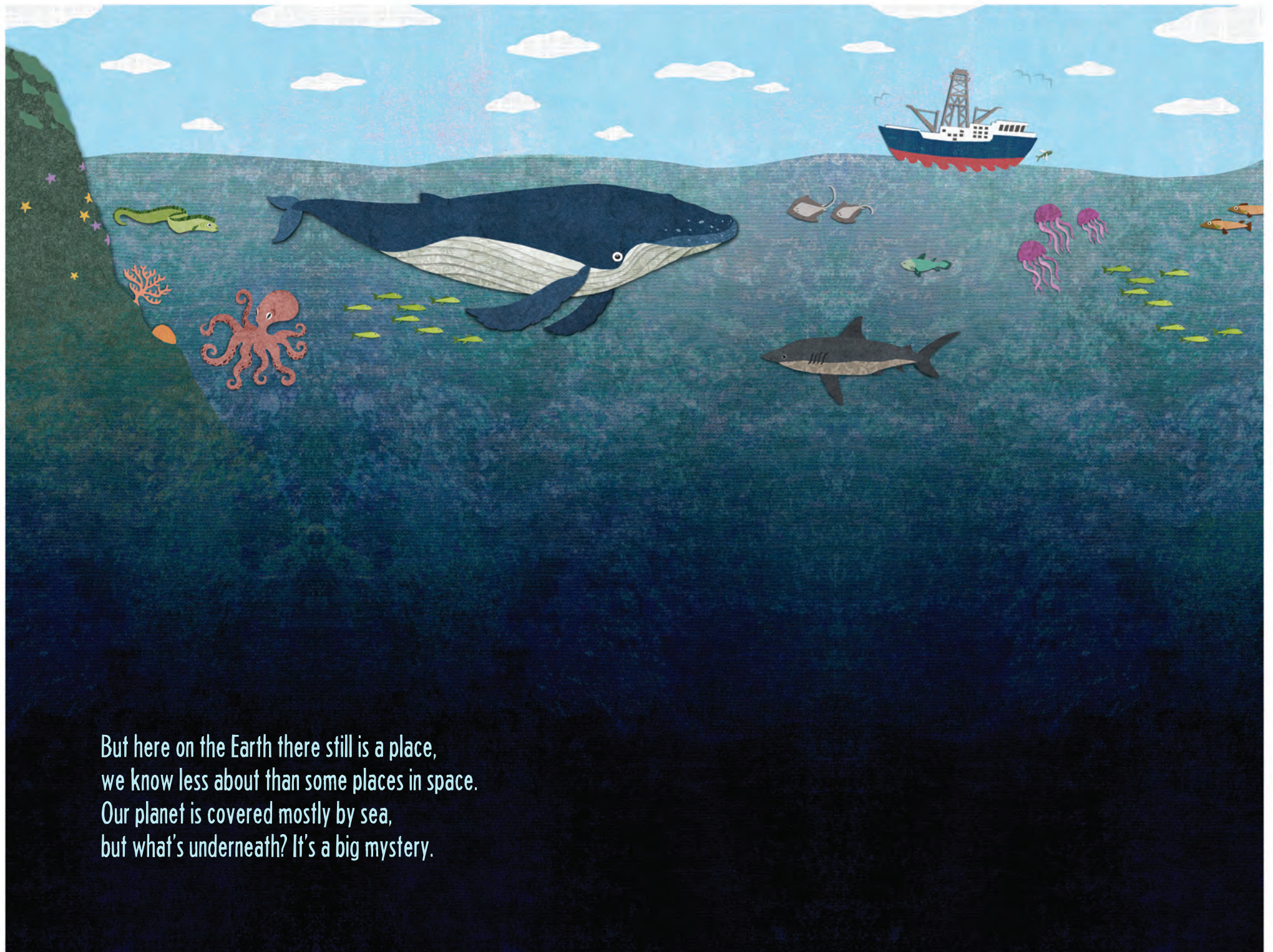
Science and Adventure on the *JOIDES Resolution*

Words By: Kevin Kurtz

Pictures By: Alice Feagan

People are curious. We like to explore.
We've traveled the land and to every shore
on ships and canoes, by horse and balloon.
We've ridden on rockets and walked on the moon!





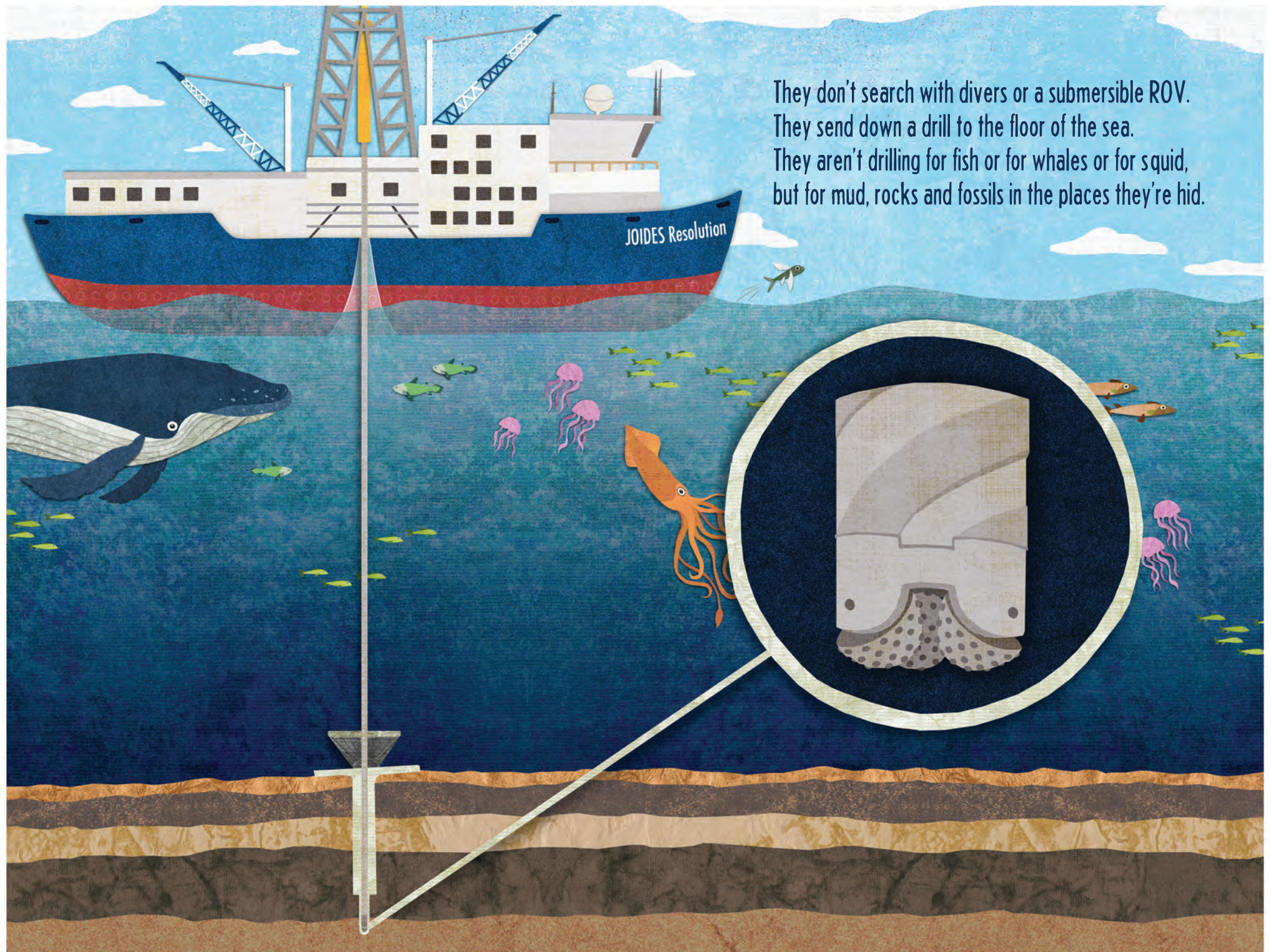
But here on the Earth there still is a place,
we know less about than some places in space.
Our planet is covered mostly by sea,
but what's underneath? It's a big mystery.

We curious people who like to explore,
are beginning to discover what's on the seafloor.
One way that scientists make a contribution
is by exploring the deep on the *JOIDES Resolution*.



They come from all over and work as a team,
to accomplish a worthy and wonderful dream:
to study the Earth that's under the seas
from tropical oceans to seas where you freeze.





They don't search with divers or a submersible ROV.
They send down a drill to the floor of the sea.
They aren't drilling for fish or for whales or for squid,
but for mud, rocks and fossils in the places they're hid.



The drillpipe is held in the derrick's tight grip,
and lowered through a hole in the base of the ship.
The pipe descends down; link to link, link,
while the big hole stays open and the ship doesn't sink.

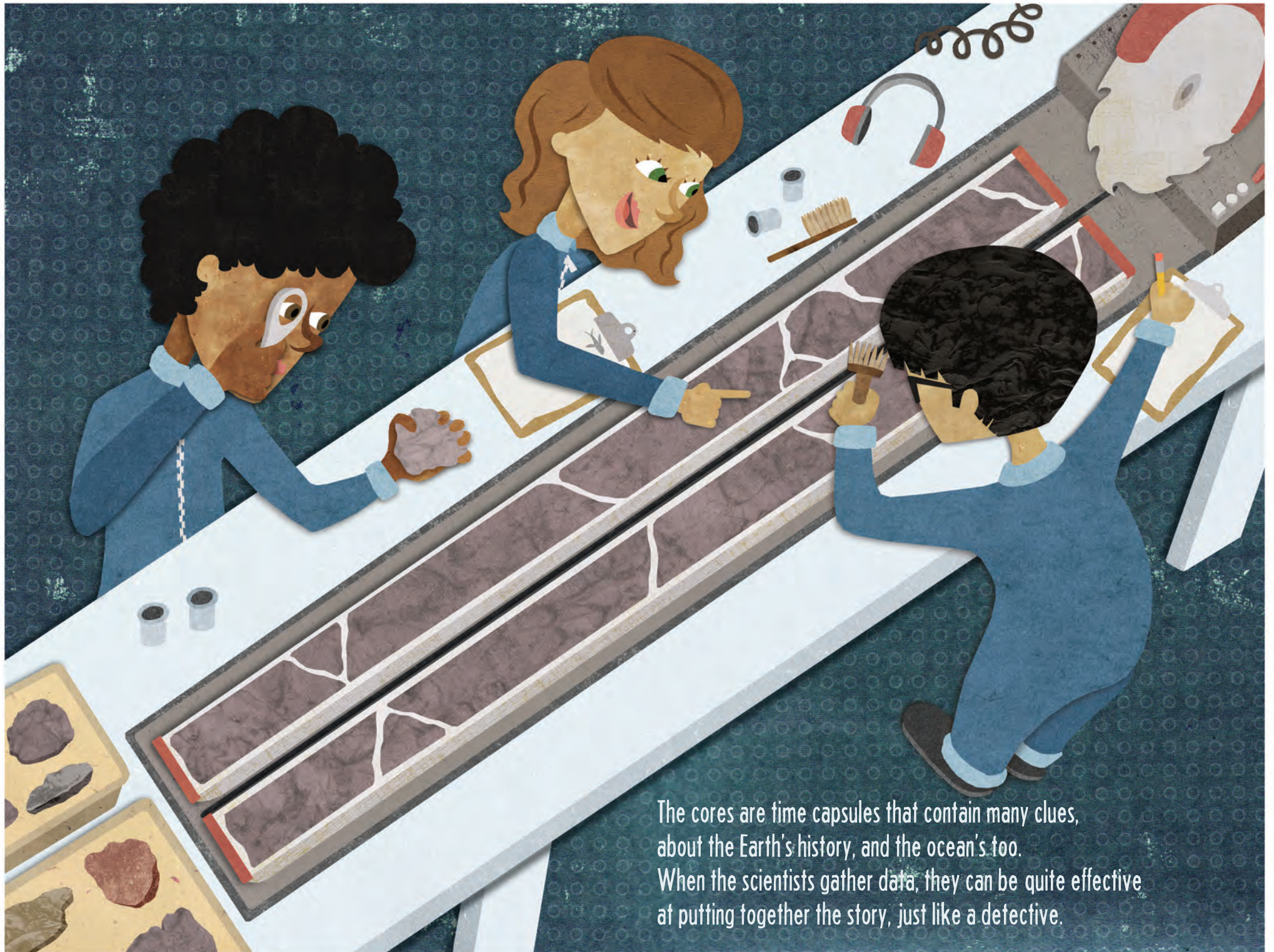




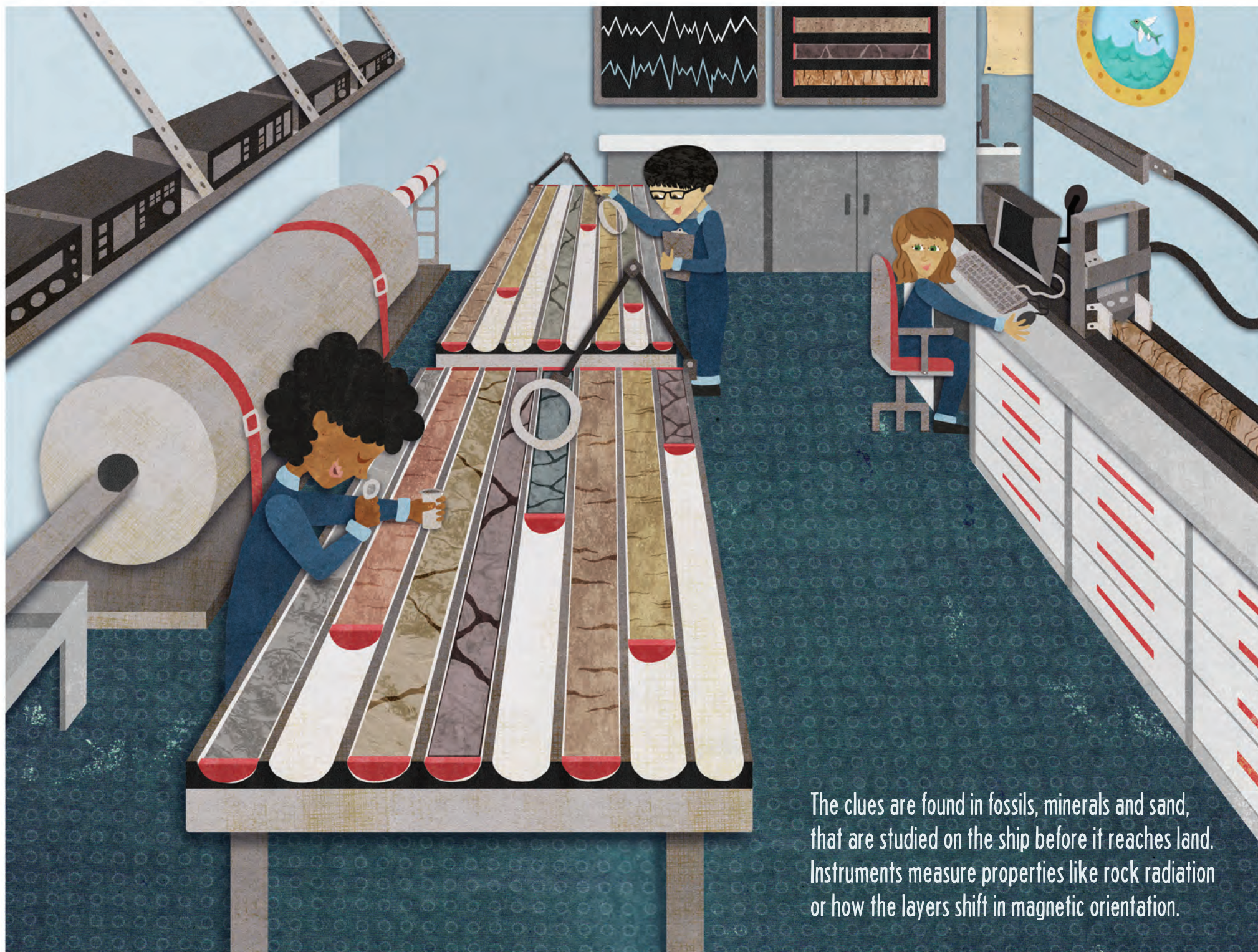
The seafloor is different from rocks found on land.
It's covered by grains of fossils and sand.
And some of the seafloor is almost brand new.
Rocks form in places where magma comes through.

The drillbit is hard! It can cut ocean floor
and carve out the rock in the form of a core.
The drillers and roughnecks who operate the drill,
retrieve the long cores with incredible skill.



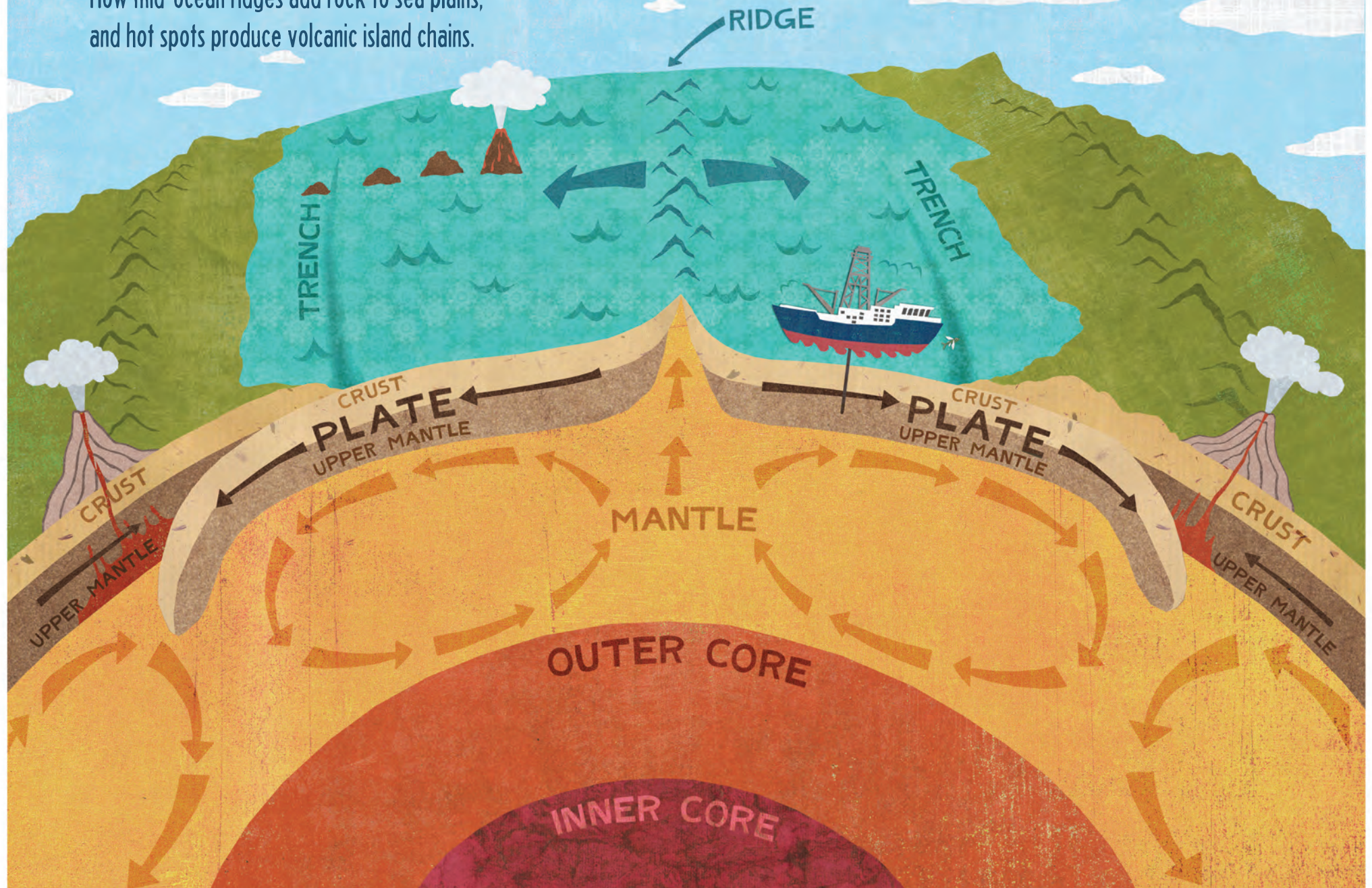


The cores are time capsules that contain many clues, about the Earth's history, and the ocean's too. When the scientists gather data, they can be quite effective at putting together the story, just like a detective.



The clues are found in fossils, minerals and sand, that are studied on the ship before it reaches land. Instruments measure properties like rock radiation or how the layers shift in magnetic orientation.

And what have we learned? So many things!
About plate tectonics and the changes it brings.
How mid-ocean ridges add rock to sea plains,
and hot spots produce volcanic island chains.



Clues in the cores helped us understand
how some ocean floor sinks under the land.
We now know better the disasters this makes
from tsunamis, volcanoes and even earthquakes.



Cores helped us find a volcano so vast,
that giant Mauna Loa has now been surpassed.
This underwater volcano, made of basalts (not granites),
is almost the biggest on all the eight planets.





Or the mystery of the dinosaurs: how did they die?
We found evidence an asteroid fell from the sky!
Core layers from all over were each found intact,
with debris that was kicked up by the asteroid impact.



Paleontologists find fossils from the floor of the sea, that act as a record of Earth's changing history. Fossils from a species we know liked it hot, show the climate was once warmer at that very spot.



The folks on this ship were once kids just like you!
Being a scientist is what you could do too!
And like the explorers whose discoveries have worth,
you can search to uncover more secrets of the Earth.



The *JOIDES Resolution*

The *JOIDES Resolution* (the JR) is one of the world's most important research ships! You can learn about the ship and its latest expeditions by visiting <http://joidesresolution.org>.

JOIDES Resolution Teacher Resources

The JR website has a variety of resources that can be used in conjunction with Uncovering Earth's Secrets, including classroom activities, blogs from the latest expedition, online games, opportunities to connect live with the JR while it is at sea, and much more! To explore these resources, visit <http://joidesresolution.org>.

Downloading the eBook

Uncovering Earth's Secrets is an eBook that can be downloaded for free. It can be read on iPads and other tablets and computer devices, including interactive whiteboards. For information on downloading Uncovering Earth's Secrets, visit: <http://joidesresolution.org/node/2998>.



About the Author

Kevin Kurtz is the author of the nonfiction children's books *A Day in the Deep*, *A Day on the Mountain* and *A Day in the Salt Marsh*. He has been onboard the JR for School of Rock educator workshops and as the Education Officer during a research expedition in the South Pacific. You can learn more about Kevin's books and author school programs by visiting <http://kevinkurtz.homestead.com>.



About the Illustrator

Alice Feagan specializes in traditional and digital cut paper illustration. She has illustrated picture books, chapter books, children's wall art, and products for clients such as World Book Encyclopedia, Children's Miracle Network, and Gauthier Publications. She was onboard the JR for a School of Rock educator workshop as the ship traveled from Curacao to Bermuda. To view Alice's illustrations and learn more about her work, visit <http://alicefeagan.com>.

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