

Rising seas could change coastal regions

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With climate change impacting the Earth, sea levels are beginning to rise again, and as they rise it will impact the shorelines many in Oregon and California call home.

That's the message Kim McCoy shared during a virtual meeting celebrating the 50th anniversary of the Oregon Shores Conservation Coalition.

McCoy recently updated the book, *Waves and Beaches*, which was originally written by Willard Bascom. The book is considered the leading authority on beaches, shorelines and the impact waves and weather have on them.

McCoy, a physical oceanographer, adventurer and expert on coastal wave dynamics, said the impact on the coast is directly linked to weather events far away.

"Everything that happens upstream impacts what happens on the coast," McCoy said. "What happens upstream could very easily push out millions of pounds of sediment."

For decades, Bascom was the expert when it came to coastal areas. McCoy worked under Bascom and was asked to write the third update of Waves and Beaches. McCoy said the book covers coasts worldwide, but the work began in Astoria when Bascom was hired for the Waves Project. Last year, McCoy brought the new edition of the book to Astoria, going full circle.

"Where Willard Bascom started studying waves was in Astoria, and here it was returning a book all these years later," McCoy said.

McCoy said as the Earth's temperature has slowly risen, it has caused ice, both on shore and in the sea to melt.

"When things melt above sea level, they raise the sea level," McCoy said. "When it's sea ice, it doesn't, so it's important what happens inland. As the Earth warms, ice not only melts and fractures, but it also melts from below because the water is warming."

As far as climate change, the ocean is the key to changing weather, McCoy said.

"The ocean is the key component to climate change," he said. "The ocean is turbulent. Turbulence is everywhere in the universe. The warming Earth is causing the rapid fluctuations in our weather patterns. You can't separate what's happening anywhere on Earth. It's all connected."

One impact on the coast is the loss of ice. McCoy explained that permafrost and ice on the coast protect the coast from waves and change. As the ice disappears, waves have a greater impact on shorelines.

And the changes could be devastating if something doesn't change.

"If there's a two-degree centigrade increase in global temperature, this is what will happen," McCoy said. "Miami will be underwater."

In Indonesia, rising water is putting 5 million people living in the capital city of Jakarta at risk. The risk is so severe, plans are being made to move the capital.

The danger is rising waters lead to rising waves. And waves change everything they touch.

"Every time a wave come into shore, it moves some sediment," McCoy said. "Every single wave moves particles, millions of grains of sand. Every wave is unique. There's no one wave that is repeated over time. Every single wave stirs up sediment, and that sediment goes someplace."

The good news is, the changes are just starting.

"The sea level hasn't changed much in the last 4,000 years," McCoy said. "It's starting to change. In the last 20,000 years, the sea level has gone up 400 feet, but not much in the last 4,000 years. But it is rising again."

And if climate change continues to lead to a warming Earth, sea levels will begin to rise quickly.

"We're all connected, and I can't stress enough, we need to have an understanding of what's happening," McCoy said. "We need to have average citizens have a sane approach to our coast."

