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## Endeavour Carries an Ocean Explorer



Wendy Lawrence,  
astronaut and  
oceanographer.

As Space Shuttle astronauts circle the globe, most of them find other things to do than look out the window during long intervals over the ocean. Not Wendy Lawrence, who earned a master's degree in ocean engineering in a program run by WHOI and MIT. She kept her face pressed to the window during ocean fly-overs, in spite of the teasing she sometimes got from her fellow astronauts, whom she points out, "were all astronomers!"

Laughs Wendy, "I'd tell them, 'I've studied oceanography. I kind of like looking at the water.' The others said they'd rather look at the dirt. The dirt is more colorful."

"What you're able to see about the ocean from space is really amazing," says Wendy. By studying the way the sun reflected off the water, Wendy found she was able to observe ocean circulation. "I could see eddies, and internal wave patterns from space."

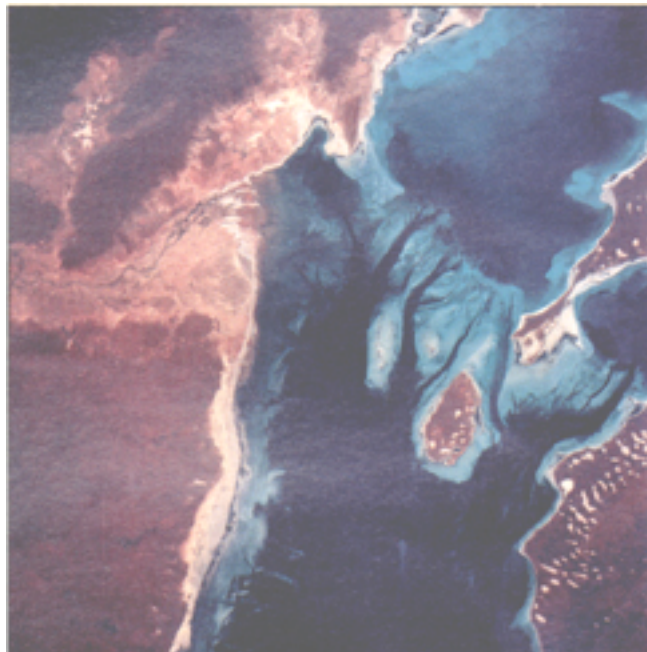
She also liked looking at alongshore currents and sediment transfer at river deltas. "There are some very impressive river deltas off India," says Wendy. "I looked at the runoff into the sea off Madagascar. I could see so much of the soil being washed out into the sea. You can really see how the current effects its transport into the open ocean."

Looking at the sea from space helped Wendy develop what she now refers to as an "intuitive insight" into how the ocean circulates. "You can really see it happening," she says. She has shared many of her ocean photographs with scientists who are interested by her perspective as an astronaut who has studied the ocean.

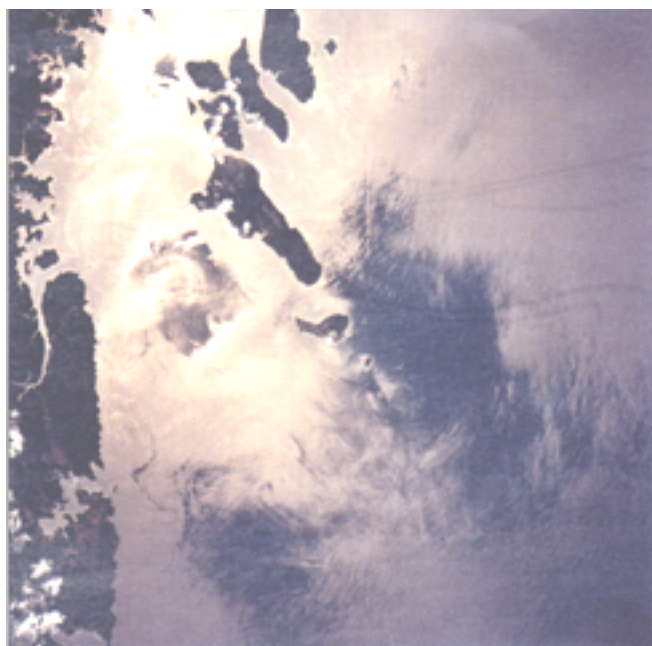
### UP, UP AND AWAY

Wendy says she'll never forget what it felt like to be shaken by the blast of the solid rocket boosters that shot her into space. "The ride up was spectacular. You definitely know you're going someplace and going fast," she says. "The vibration is incredible. You don't hear anything, you feel the acceleration. It's like nothing I've been through before. Eight million pounds of thrust is an amazing ride uphill!"

The only problem with that phase of the flight was "it's not long enough. It's only 8.5 minutes from take-off to orbit."



Sediment moved by wind and water creates a colorful scene at Disappointment Reach, Australia.



Wendy also likes to think back on being in orbit, weightless, "looking out the window to see how beautiful this earth is."

Perhaps strongest of all are her memories are of coming back to Earth: "Looking out the window over the Pacific at Mach 20, 250,000 feet up, realizing how incredibly fast we were travelling. I will never forget that. The clouds were going by faster than I could focus on them."

Does Wendy feel like the experience in space changed her as a person? "People ask if I find myself looking up at the night sky, thinking I've been up above the earth, closer to the stars. I do, particularly when I watch the news now. I hear about countries in Africa or South America or Indonesia, I find myself stopping and thinking, 'I've seen that country from space. I've never been there, but I've seen it.' It's a really great feeling.

Sun-glint reflects on surface oil to show a current in the Andaman Islands.