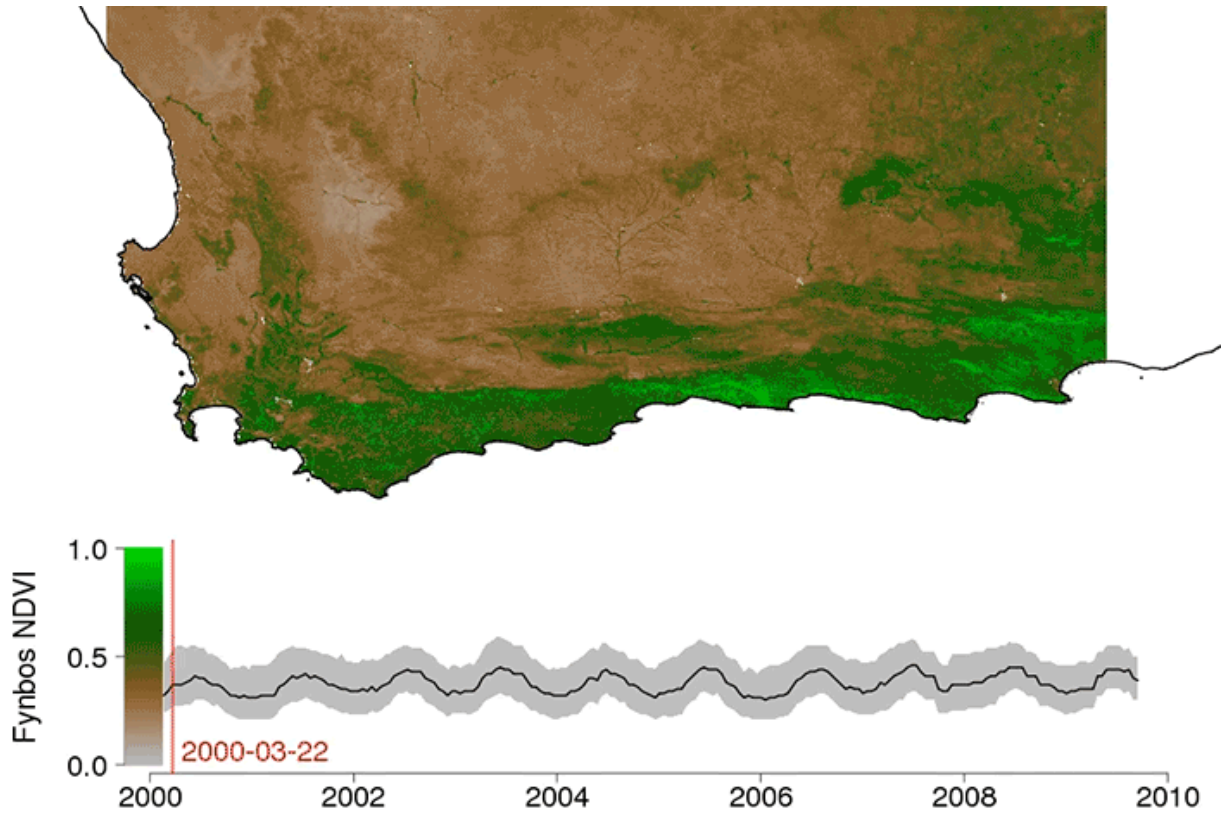
Warm winters, summer rain help wildfire recovery

July 7 2015, by Bill Hathaway



Using more than a decade's worth of daily satellite images, researchers have determined ecosystems of South Africa's Cape Floristic Region bounce back from wildfires much more quickly in warmer winter

weather.

However, there is an important caveat for other areas with Mediterranean climates at high risk of fires such as drought-stricken California: The rate of recovery also depends on sufficient summer rainfall.

The model developed by Yale's Adam Wilson and colleagues at the University of Connecticut and University California, Davis could help predict which ecosystems are most vulnerable to climate change, according to the study published the week of July 6 in the journal *Proceedings of the National Academy of Sciences*.

"This area of South Africa is rich in biodiversity and we noticed that some areas recover more quickly from fires than others," Wilson said. "This model helps explain why that is."

The NASA satellite captured images of the Cape Floristic Region on Africa's southern tip with a resolution of 500 meters. Over more than a decade, the images showed that western areas of the region recovered more slowly from fires than those in the east. The model developed by Wilson and his team revealed the two most important variables for rates of recovery were average temperature in winter and rainfall in the summer.

Wilson said these findings should also apply to the Mediterranean basin and places like California and Australia with similar climates.

In theory, such a model might help predict which ecosystems will be most and least resilient to climate driven changes such as fire.

"The study represents a methodological advance in our ability to infer what's going on "under the hood" of ecosystems using data collected

from space, Wilson said.

More information: "Climatic controls on ecosystem resilience: Postfire regeneration in the Cape Floristic Region of South Africa." *PNAS* 2015 ; published ahead of print July 6, 2015, DOI: 10.1073/pnas.1416710112

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