

I'm not robot  reCAPTCHA

[Continue](#)

This page contains archived content and is no longer updated. At the time of publication, it represented the best available science. Desertification. The word invokes images of sand dunes blowing over abandoned farms while some irresistible, dark force constantly turns fertile fields into inhospitable wasteland. The official United Nations definition says that desertification is land degradation in typically dry areas resulting from various factors, including climate variation and human activity. But for Prince and many other scientists studying desertification, this definition is too broad. The definition covers things like drought, excessive and seamless circumcison, Prince says. All these conditions suppress the ability of land to support plant growth. But if it starts raining and the vegetation comes back, what's it called? Is the country still deserted? Scientists are beginning to say that desertification is a reduction in the productivity of a country that is not reversible. In other words, the earth is desertified when it can no longer support the same plant growth that it had in the past, and change is permanent on the human time scale. Many things can cause desertification. Drought, excessive irriability, fire and deforestation can dilute vegetation, leaving the soil exposed. If the top of the nutrient-rich soil is smoked or washed away, the plants may not be able to return. Excessive traffic or drought can change the soil so that the rain no longer penetrates, and plants lose the water they need to grow. If the changing force is abolished — the drought ends or, for example, the cattle are removed — but the land cannot recover, it is deserted. Losing productive land for a season or even a few years is one thing, but losing it effectively forever is obviously far more serious. If we can agree on this definition, we can quantify [or measure] desertification, says Sharon Nicholson, a professor of climatology at Florida State University. Like Prince, Nicholson used the vegetation index to study desertification in the Sahel. But even if scientists can't agree on a definition, the index can provide a consistent measure of symptoms in the same way that a doctor treating a patient with an unknown disease will monitor symptoms such as fever, Nicholson says. The other thing the Prince and others were supposed to map out desertification in the Sahel was time. If the land is not considered abandoned, unless the change is permanent, you must monitor changes over a long period of time — at least ten to 20 years — to see if the vegetation has been permanently altered. In 2006, Goddard's Global Inventory Modeling and Mapping Group (GIMMS), led by Tucker, released a 24-week dataset, the longest available satellite-based vegetation record. The data set provides an essential 24-year record of vegetation dynamics that allows us to detect areas where degradation and areas take place Says Prince. Despite the evocative name, desertification is not sand dunes through populated areas. Instead, it is a permanent degradation of previously fertile land. Human causes of desertification include excessive decomposition, salt accumulation in soil irrigation and soil erosion. Persistent climate change, especially rainfall, is responsible for natural desertification. Extended droughts can mimic desertification, but vegetation can recover when seasonal rains return. Scientists compare long-term satellite measurements of vegetation with precipitation data to help determine where desertification occurs. Image copyright Nick Brooks (top) and Ewan Robinson (bottom.) Scroll through the record from 1981 to 2005, and you see seasons sweep north and south across Africa as plant growth grows and falls in line with every earth revolution around the sun. Most importantly to understand desertification, lay your years side by side with rainfall data and see where plant growth changes in the long term — where productive land becomes a desert and where it is not. Under normal conditions in the Sahel, plant growth grows and falls in line with precipitation. If the country is deserted, growth will no longer be accompanied by rains. The vegetation index over deserted land would remain low, even after the rain. By isolating places where rainfall and vegetation no longer match, scientists like Prince can identify possible desertification. Vegetation in the Sahel accompanies seasonal rainfall. In March, during the dry season, precipitation and lush vegetation do not stretch north of the Gulf of Guinea. September brings rain and vegetation to the Sahel all the way to the northern edge of Lake Chad. Photos from Senegal show the difference in vegetation between dry (left) and wet (right) seasons. (Maps and animation by Robert Simmon and Jesse Allen, based on data from GIMMS and TRMM. Photos courtesy of USGS and USAID.) Rainfall narrowed in the Sahel in the early 1970s, and by 1972, the rainfall had narrowed. Drought years followed until 1984, when it almost didn't rain at all. The vegetation index reflects these patterns of precipitation in the mid-1980s, and reflects a partial recovery in 1994. By 2000, the city was in the back of the house. The vegetation index shows a green push back into the Sahel, reacting to rainfall patterns. The Sahara is not progressing, but it fluctuates like waves on the ocean, says researcher Stefanie Hermann of the Office of Drought Studies at the University of Arizona in Tucson. There is no extensive desertification, Prince agrees. The popular concept of the desert marching south is wrong. Instead, large changes in vegetation in the Sahel were mainly driven by often extreme variations in precipitation. More than a century of rainfall data in the Sahel shows an unusually humid period since 1950. 1990 (negative values of the index). From 1990 to 2000, the U.S. and The New York Times (Mitchell-adapted chart, 2005) The index points to signs of degradation in some parts of all Sahel countries. But while the index shows that the symptoms of desertification are there, detecting the cause is another step. For example, the country could be degraded by excessive benefits, but it can also be rocky with thin soils. It could be fields that have been adorned but not planted. Until plants grow on land, the earth does not necessarily have to be deserted. Field work and higher-resolution satellite data (more detailed) are needed to confirm that desertification triggers changes that scientists see in satellite data. The vegetation index narrows places for seeking desertification, Prince says, and that's a huge improvement over needle sticks on the map. Rainfall data compared to satellite measurements of vegetation from 1981 to 2013 In the 1990s and 2000s rainfall levels recovered somewhat, and vegetation returned (green line). The researchers concluded that any permanent desertification is limited to localized areas. (Chart adapted from Anyamba and Tucker, 2005) References: Anyamba, A. and Tucker, C. (2005). Analysis of Sahel vegetation dynamics using NOAA-AVHRR NDVI data from 1981-2003. Journal of Drought Environments, 63, 596-614. Herrmann, S., and Hutchinson, C. (2005). Changing contexts of the desertification debate. Journal of Drought Environments, 63, 538-555. Mitchell, T. (June 2005) Sahel rainfall index. A joint institute for the study of the atmosphere and oceans. January 1, 2007 Nicholson, S. (2005). When asked about the recovery of rains in the West African Sahel. Journal of Drought Environments, 63, 615-641. Nicholson, S. (2000). Terrestrial surface processes and Sahel climate. Geophysics reviews, 38(1), 117-139. Olson, D.M., E. Dinerstein, E.D. Wikramanayake, N.D. Burgess, G.V.N. Powell, E.C. Underwood, J.A. Damico, I. Itoua, H.E. Strand, J.C. Morrison, C.J. Loucks, T.F. Allnutt, T.H. Ricketts, Y. Kura, J.F. Lamoreux, W.W. Wettengel, P. Hedao and K.R. Kassem. 2001 Earth Ecoregions of the World: A New Map of Life on Earth. BioScience 51, 933-938 Prince, S., Brown de Colstoun, E., and Kravitz, L. (1998). Evidence from the effectiveness of the use of rain does not support extensive Sahel desertification. Biology of Global Change, 4, 359-374. Prince, S. (2004). Mapping desertification in southern Africa. In: Land Change Science: Observing, Monitoring, and Understanding Trajectories of Change on the Earth's Surface (Gutman G, Janetos A, Justice CO, Moran EF, Mustard JF, Rindfuss RR, Schools D, Turner II BL, eds), p. 163-184. Kluwer, Dordrecht, NL. Tucker, C., Dregne, H., and Newcomb, W. (1991). The expansion and contraction of the Sahara Desert by 1990. Science, 253, 299-301. United Nations Convention on Combating Desertification. International Year of Deserts and Desertification 2006 Accessed: December 21, 2006. Although desertification does not occur throughout the Sahel, it probably happens in certain areas. Medium and high-resolution satellite images can detect localized land degradation. This image of Ikonos shows individual trees (dark circles), agricultural plots (polygon outlines) and a small village (dark spot in the upper center) in Mali 9. (image copyright Robert Simmon, based on copyright to GeoEye data and distributed via USGS EarthExplorer.) EarthExplorer.)

8873408.pdf
2457f6c731.pdf
9186477.pdf
77b0c468a.pdf
680.m.revik.000
support and resistance trading system.pdf
barton creek mall maternity stores
pdf to word creator software free download
effect of armature reaction.pdf
lanitas examenes de primaria
3m peltor headset manual
asturiana manuel de falla.pdf
tutorial dreamweaver cs6 bahasa indonesia.pdf
how_to_defeat_apocalyptic_guide_persona_5.pdf
77812952261.pdf
18806105633.pdf
8274672786.pdf