
Jun 18 2020

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00:00:00,000 --> 00:00:04,000
Earth is a system

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00:00:04,000 --> 00:00:08,000
of systems. That means that even small changes

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00:00:08,000 --> 00:00:12,000
in one part of the planet can have effects felt all the way around the globe.

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00:00:12,000 --> 00:00:16,000
The world’s largest,

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00:00:16,000 --> 00:00:20,000
hottest desert --the Sahara -- is nearly the size of the continental United States.

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00:00:20,000 --> 00:00:24,000
Each year millions of tons of its nutrient-laden

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00:00:24,000 --> 00:00:28,000
dust are swirled up into the atmosphere by easterly trade winds,

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00:00:28,000 --> 00:00:32,000
and carried across the Atlantic. The plumes can make

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00:00:32,000 --> 00:00:36,000
their way from the African continent as far as the Amazon rainforest,

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00:00:36,000 --> 00:00:40,000
where they fertilize the plant life of one of Earth’s most biodiverse regions.

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00:00:40,000 --> 00:00:44,000
The dust carries phosphorus, a nutrient necessary

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00:00:44,000 --> 00:00:48,000
for plant growth. As it travels around

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00:00:48,000 --> 00:00:52,000

the globe, the resultant layer of dust can easily be seen from space.

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00:00:52,000 --> 00:00:56,000
This was especially true over the month of June 2020,

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when satellites and astronauts observed an unusually large quantity

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of dust, nicknamed the Godzilla plume, heading west from Northern Africa.

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It thinned out over its 3000-mile

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00:01:08,000 --> 00:01:12,000
mile journey, depositing nutrients into the ocean and land below.\h

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To travel such a distance requires strong winds.

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These winds are from the trade wind system. The trade winds are affected

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by differences in sea surface temperature between the northern and southern Atlantic Ocean.

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Over the last century, the North Atlantic

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00:01:28,000 --> 00:01:32,000
Ocean has experienced a shift in sea surface temperature every few decades,

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00:01:32,000 --> 00:01:36,000
referred to as the Atlantic Multidecadal Oscillation,

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or the Atlantic Multidecadal Variability.

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Warmer sea surface temperatures in the north, like those observed in recent years,

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00:01:44,000 --> 00:01:48,000
lower the contrast between north and south and change wind circulation,

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00:01:48,000 --> 00:01:52,000
slowing the trade winds down.\h

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00:01:52,000 --> 00:01:56,000
The northern and southern trade winds converge along a latitudinal band called the

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the Intertropical Convergence Zone, or ITCZ, which is where

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rainfall is most concentrated in the region. The ITCZ

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00:02:04,000 --> 00:02:08,000
and its connection to sea surface temperature and

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00:02:08,000 --> 00:02:12,000
wind has been supported by observations over thousands of years.

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Though the band of rain always moves north and south

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with the seasons, a recent NASA study shows that the ITCZ

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has been migrating farther and farther north over the last several decades,

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likely a result of the warming climate.\hAs the band covers more of the Sahara,

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00:02:28,000 --> 00:02:32,000

increased quantities of rainfall over the desert dampen down

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00:02:32,000 --> 00:02:36,000
the dust, making it less likely to be carried off by the already

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00:02:36,000 --> 00:02:40,000
weakened winds. As the climate changes,

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dust activity will continue to be affected. NASA researchers

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predict that within the next century we will see dust transport