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00:00:00,000 --> 00:00:04,000
We live on a

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00:00:04,000 --> 00:00:08,000
water planet. From millions of miles away, Earth

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00:00:08,000 --> 00:00:12,000
shines blue, with almost 70% of its surface covered

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00:00:12,000 --> 00:00:16,000
in water. But most of that water is in the oceans,

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00:00:16,000 --> 00:00:20,000
it’s salty. On Earth, only about 3%

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00:00:20,000 --> 00:00:24,000
of water is fresh — the stuff we drink and use

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00:00:24,000 --> 00:00:28,000
to feed our crops — and it’s constantly moving:

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00:00:28,000 --> 00:00:32,000
Through the atmosphere, soil,

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00:00:32,000 --> 00:00:36,000
aquifers deep underground, and even living things. That’s where NASA

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00:00:36,000 --> 00:00:40,000
satellites come in. Taking a global look at freshwater provides

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00:00:40,000 --> 00:00:44,000
important information about droughts, floods

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00:00:44,000 --> 00:00:48,000
and water quality around the globe. The more we know

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

about water and its availability, the better decisions we can

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00:00:52,000 --> 00:00:56,000
make about how to manage it. From identifying food insecurity

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00:00:56,000 --> 00:01:00,000
before aquifers run dry, to pinpointing when

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00:01:00,000 --> 00:01:04,000
and where rivers will flood, tracking water from space

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gives us an advantage in using it. For example:

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00:01:08,000 --> 00:01:12,000
Looking deep underground, the Gravity Recovery and Climate Experiment,

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00:01:12,000 --> 00:01:16,000
or GRACE mission, measured water stored in

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00:01:16,000 --> 00:01:20,000
aquifers. When human activity and drought drain aquifers,

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00:01:20,000 --> 00:01:24,000
they can be replenished by sufficient precipitation…but they aren’t always.

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00:01:24,000 --> 00:01:28,000
GRACE watched how water moved in and out of

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00:01:28,000 --> 00:01:32,000
aquifers from 2002 to 2016.

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00:01:36,000 --> 00:01:40,000
Closer to our feet, water in the soil changes quickly in response to precipitation.

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00:01:40,000 --> 00:01:44,000
We can see soil get wetter in response to rainfall, and about a month later,

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00:01:44,000 --> 00:01:48,000
watch as vegetation blooms where the soil is sufficiently

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00:01:48,000 --> 00:01:52,000
moist. We can track all of these steps with satellites,

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00:01:52,000 --> 00:01:56,000
which help us predict where food insecurity may crop up

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00:01:56,000 --> 00:02:00,000
before it becomes a problem. Satellites help us track

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00:02:00,000 --> 00:02:04,000
rivers and lakes, too. Reservoirs can become contaminated by

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00:02:04,000 --> 00:02:08,000
blooms of algae, which grow in response to fertilizer running off

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00:02:08,000 --> 00:02:12,000
from farms and cities. In the upper Midwestern U.S., there are hundreds

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00:02:12,000 --> 00:02:16,000
of lakes, so it can be difficult to track them all individually.

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00:02:16,000 --> 00:02:20,000
A view from space helps us keep an eye on lakes with blooming algae.

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00:02:20,000 --> 00:02:24,000
Rivers are an important source

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00:02:24,000 --> 00:02:28,000
of water for communities around the globe, and often, these

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00:02:28,000 --> 00:02:32,000
rivers originate as snow high in the mountains.

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00:02:32,000 --> 00:02:36,000

Snowpack, or the amount of snow and accumulates on the ground,

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00:02:36,000 --> 00:02:40,000
feeds rivers on a seasonal basis.

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00:02:40,000 --> 00:02:44,000
Earlier snowmelt can affect how and where water is available for irrigation.

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00:02:44,000 --> 00:02:48,000
And as the climate continues to warm, snowpack is disappearing at lower altitudes,

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00:02:48,000 --> 00:02:52,000
and what does exist is melting faster.

43
00:02:56,000 --> 00:03:00,000
Our planet is constantly in motion, with freshwater shifting

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00:03:00,000 --> 00:03:04,000
around the globe. Those changes are happening faster in a warming world,

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00:03:04,000 --> 00:03:08,000
with precipitation falling in different places, and rivers

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00:03:08,000 --> 00:03:12,000
flowing new speeds. NASA’s view

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00:03:12,000 --> 00:03:16,000
of where freshwater is, and how it moves, is even

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00:03:16,000 --> 00:03:20,000
more important than ever. From deep below

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00:03:20,000 --> 00:03:24,000
the ground up into the atmosphere, we’re helping manage their water better.