

# WINTER 2023 NEWSLETTER



## GROWING PLANTS ON EARTH & BEYOND

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# Our World Videos

Grades 3-5

## Systems to Grow Plants in Space

No matter where humans may live, they need plants. Dr. Gioia Massa explains how NASA grows plants on the International Space Station in preparation for growing plants beyond Earth and, someday, on the Moon and Mars. Jacob Torres describes the hardware needed to provide open and closed systems for plant growth in space.



## Plants in Space

Find out how plants use light to make their own food in a process called photosynthesis. See how NASA uses LED lights to help grow plants in space. Design your own plant growth chamber like the ones used by NASA.

## Where Do Crops Grow?

Learn how Dr. Catherine Nakalembe uses NASA satellite data to show the health and location of crops around Our World. Maps created from these data help people become more food secure.



# Real World Videos

Grades 6-8



## Food Security – Monitoring Crops From Space

Discover how NASA's Earth-observing satellites gather data to monitor food growth. Dr. Inbal Becker-Reshef describes how mathematics is used to interpret satellite data and describe vegetation and crop yield. Dr. Hannah Kerner shares how algorithms and models use NASA data to describe and predict food supply and food shortages.

## The Carbon Cycle – Essential for Life on Earth

Carbon is an essential building block for life. Learning how carbon is converted through slow- and fast-moving cycles helps us understand how this life-sustaining element moves through the environment.



## Earth Systems

Our Earth is a dynamic system with diverse subsystems that interact in complex ways. Jessica Taylor, an atmospheric scientist at NASA Langley Research Center, and Dr. Steven Pawson, an Earth scientist from NASA Goddard Space Flight Center, help answer questions and demonstrate how mathematical modeling helps scientists in their predictions of climate, weather, and natural hazards.

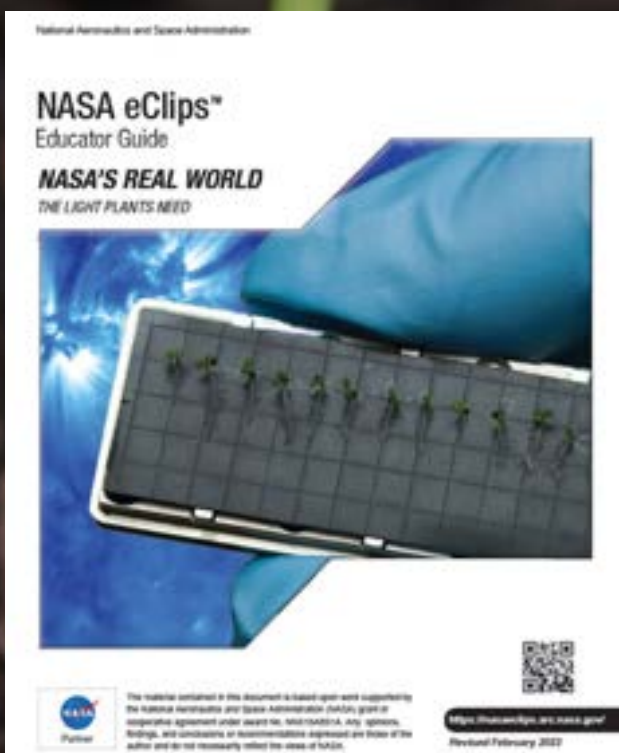
## Ask SME: Technical & Horticultural Scientist - Jacob Torres



In this close-up video, Jacob Torres, Technical and Horticultural Scientist at NASA's Kennedy Space Center, shares how space biology brings together his love of engineering and growing plants. For his work, he builds technology that supports growing crops in ways that have never been done before.

## NASA's Real World: The Light Plants Need

Students observe and compare three types of light sources. Students then conduct an experiment to determine how different colored light affects plant growth. Students analyze the data collected from this experiment by creating a line graph and calculating three measures of central tendency. Finally, students design a plant growth chamber to observe the effects of colored plastic, and filtered light on plant growth



OPPORTUNITIES

SAVE THE DATE!  
APRIL 18, 2023

# STUDENT EARTH DAY PRESENTATIONS

Sign up to have YOUR students present activities during our 2023 Earth Day Celebration.

Last year students shared their Earth-focused projects and led hands-on activities with more than 500 participants across the country.



**RSVP HERE!**  
**By March 18th**



# PARTNER RESOURCES

## GLOBE Observer

Help NASA keep an eye on clouds using the GLOBE Observer App. When your observations are matched to satellite data, you are helping capture a complete view of the complexity of the atmosphere.



## Growing Beyond Earth

Growing Beyond Earth® (GBE) is a classroom-based citizen science project operated in partnership with NASA, designed to advance NASA research on growing plants in space. It includes a series of plant experiments conducted by students in a Fairchild-designed plant habitat similar to the Vegetable Production System (Veggie) on the International Space Station.



## Why Does NASA Care About Food?

NASA satellites monitor lots of things about our Earth, including soil moisture, flooding and drought, groundwater, crop health, ocean temperatures, ocean currents, winds and severe storms, and melting sea ice. And understanding these details can help farmers make decisions about how they grow the food we eat.

## A Guide to Climate Change for Kids

Have you heard your parents or people in videos talking about climate change? Ever wondered what it is and why we care about it so much? NASA scientists have been studying Earth's climate for more than 40 years. We used what we've learned in that time to answer some of your biggest questions!

# VIRTUAL BADGES



**Earn Virtual Badges  
for Earth Day  
Presentations and Participation**

We Want To Hear From You!

Please fill out this brief  
one-minute survey.

[CLICK HERE](#)

