# **Amplify** Science

## Unit 4: Weather & Climate

(with a focus on Science & Engineering Practices)

Grade 3, Part 1

School/District Name: LAUSD Date: Presented by:



## Last year's Amplify apps.



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#### mCLASS Assessment



Content Area: ELA Grade Level: ES Content Type: Assessment Integration Type: App (Left Navigation) Purchase Type: District Getting Started Guide Other Info: App to be installed for Course Admins only

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X

Content Area: ELA Grade Level: ES Content Type: Assessment Integration Type: App (Left Navigation) Purchase Type: District Getting Started Guide Other Info: App to be installed for Course Admins only Vendor Support Desk: P: 800.823.1969 E: help@amplify.com S: amplify.com/support/ Textbook Title(s): NA

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Content Area

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**Content Type** 

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- mCLASS CKLA
- Integration Type: App (Left Navigation) Amplify Science

Content Area: ELA Grade Level: ES Content Type: Supplemental Integration Type: App (Left Navigation) Purchase Type: District and School **Getting Started Guide** Other Info: School licenses required. This app is for

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Reading K-5



Science



Vocabulary











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#### • To join Amplify ES Group: W4PK-W466-63F5B



## Part 1





#### Ice Breaker!

• Question: In the chat, share one or two of the Science and Engineering Practices in NGSS.





## Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

#### Overarching goals

By the end of this workshop, you will be able to:

- □ Internalize the unit
- Identify the Science and Engineering Practices within the unit



## Next Generation Science Standards

#### Designed to help students build a cohesive understanding of science



### **Next Generation Science Standards**

#### Science and Engineering Practices



- 1. Asking questions (for science) and defining problems (for engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematics and computational thinking
- 6. Constructing explanations (for science) and designing solutions (for engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating, and communicating information

## **Amplify Science Approach**

Introduce a **phenomenon** and a related problem Collect **evidence** from multiple sources Build increasingly complex **explanations**  **Apply** knowledge to solve a different problem

S



## Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

## Activity 1 Introducing the Orangutan Reserve





We are starting a new science unit called *Weather and Climate.* 

We'll be working with the **Wildlife Protection Organization** to help orangutans.



This map and photo show where orangutans live.

What does it **look like** in the area where orangutans live? Describe what you see in the photo.

## In the wild, orangutans only live on the islands of Borneo and Sumatra. These are some of the **hottest, rainiest places** in the world.

There are places on Earth that are hotter than these islands and places that are rainier, but Borneo and Sumatra are special because of their **combination of heat and raininess**.



People are **destroying the rain forests** where orangutans live so they can plant oil palm trees.

Orangutans **cannot live** where the palm trees are planted.



The Wildlife Protection Organization is going to create a reserve where orangutans will have what they need to survive. They've asked for our help choosing an island for the reserve.







What do you think **meteorologists** study?

What **tools** do they use in their work?

What do they do?

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# In this unit, we will take on the role of **meteorologists**, or scientists who study the weather, so we can help the Wildlife Protection Organization select the **island** with the **best weather** for orangutans.



#### a scientist who studies and predicts weather



What **questions** do you have about **meteorologists** and how they do their work?

## **Unit Question**

## How can meteorologists predict the weather for a particular place and time?

## Weather and Climate

**Problem:** Which island would be the best location for an orangutan reserve?

How can you protect buildings from damage by weather-related natural hazards?

Role: Meteorologists

## Weather and Climate

#### **Coherent Storylines**



Chapter 1: Which island's weather would be best for orangutans?

6 Lessons



Chapter 2: Which island's weather will continue to be best for orangutans?

5 Lessons



Chapter 3: Over many years, which island's weather will be best for...

7 Lessons



Chapter 4: How can the WPO prepare for natural hazards that might damage thei...

4 Lessons

## Weather and Climate

**Unit Question:** How can meteorologists predict the weather for a particular place and time?

## Explaining the phenomenon: Science Concepts

What **science concepts** do you think students need to understand in order to **explain the phenomenon?** 



#### Weather and Climate Progress Build

**Assumed prior knowledge (preconceptions)**: It is expected that students will have a basic familiarity with weather conditions and how they are described as the unit begins. Students are also likely to have experience with seasonal changes to the weather and the understanding that weather can be different in different places.

Level 2

#### The pattern to the weather over a month allows for comparisons and predictions.

#### Level 3

The annual pattern of repeating seasons allows climates to be compared and future weather to be predicted.

Level 1

Weather is measured in the same way to allow for comparisons.

Deep, causal understanding

Prior knowledge



## Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

## Navigate to the Unit Page



JUMP DOWN TO UNIT GUIDE

GENERATE PRINTABLE TEACHER'S GUIDE



h Chapter 2: V



Chapter 1: Which island's weather would be best for orangutans? Chapter 2: Which island's weather will continue to be best for orangutans? Chapter 3: Over many years, which island's weather will be best for...

7 Lessons

v



Chapter 4: How can the WPO prepare for natural hazards that might damage thei... 4Lessons

## **Key Unit Guide Documents for Planning**

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
Unit Map	~	Copymaster Compilation
Progress Build	~	Flextension Compilation
Getting Ready to Teach	~	Investigation Notebook
Materials and Preparation	~	Multi-Language Glossary
Science Background	~	MGSS Information for Parents and Guardians
Standards at a Glance	~	Print Materials (8.5" x 11")
Teacher References		Print Materials (11" x 17")
Lesson Overview Compilation	~	
Standards and Goals	~	Offline Preparation
3-D Statements	~	Teaching without reliable classroom internet? Prepare unit and lesson
Assessment System	~	materials for offline access.
Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

#### **Core Unit Planning & Internalization**

Unit Title:

#### Overview

[Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]

What is the phenomenon/real-world problem students are investiga your unit?	ting in Student Role:
	$\sim$
	2 3
Unit Question:	Relationship between the Unit Phenomenon and Unit
	4 5
By the end of the unit, students figure out	
	$\sim$
	6
How do students engage with three-dimensional learning to figure o	ut the phenomenon/real-world problem in your unit?
	7
	1

#### Unit Guide resources:

- Unit Overview
- Unit Map

1

• Coherence Flowchart

#### Unit Guide resources:

- Lesson Overview Compilation
- Unit Overview

#### Unit Guide resources: • Unit Map

Unit Guide resources:

• 3D Statements at the Unit Level

#### Core Unit Planning & Internalization

Unit Title:

#### Weather and Climate

Overview [Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]				
What is the phenomenon/real-world problem students are investigating in	Student Role:			
Which island would be the best location for an orangutan reserve? How can you protect buildings from damage by weather-related natural hazards?	Meteorologists			
Unit Question: How can meteorologists predict the weather for a particular place and time?	Relationship between the Unit Phenomenon and Unit Through this unit, students come to better understand weather and climate and how each influences and impacts not only daily life, but also the successful survival of living creatures in different locations around the world.			
By the end of the unit, students figure out The reserve should be built on Arc Island because one year of data reveals that Arc Island has a consistent seasonal pattern: it is warm and rainy throughout the year, while Blue Island has a dry season and Creek Island has a cold season.				
How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit?				
Students learn to make weather measurements and make sense of them (scale, proportion, and quantity). They analyze a day, then a month, then a year of weather data for three fictional locations. Using the climate patterns of precipitation and temperature, students discover (patterns) how to construct evidence-based arguments about which location would be the best habitat for an orangutan reserve, with a long-term climate (despite shorter-term changes) most similar to that of Borneo (stability and change), where orangutans live.				

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## Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing
# Key Documents for Planning Work Time

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
Unit Map	~	🔤 Copymaster Compilation
Progress Build	~	Flextension Compilation
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Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

## Weather and Climate 3D Statements

Key

 Practices
 Disciplinary Core Ideas
 Crosscutting Concepts

 Unit Level

Students learn to make weather measurements and make sense of them (scale, proportion and quantity). They analyze a day, then a month, then a year of weather data for three fictional locations. Using the climate patterns of precipitation and temperature, students discover (patterns) how to construct evidence -based arguments about which location would be the best habitat for an orangutan reserve, with a long-term climate (despite shorter-term changes) mots similar to that of Borneo (stability and change), where orangutans live.

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### Weather and Climate

**Science and Engineering Practices** 



These are the two main categories of Science and Engineering Practices that the students will be engaged with in this unit.



### Weather and Climate



## **3D Statements**

Key

### **Disciplinary Core Ideas**

**Crosscutting Concepts** 

**Chapter Level** 

Practices

### Chapter 1: Which island's weather would be best for orangutans?

Tasked with figuring out which of three islands has weather most similar to that of orangutans' habitat on Borneo, students plan and conduct investigations to measure rainfall and temperature (scale, proportion, and quantity). They then analyze quantitative data to compare Borneo's weather to the weather on three islands (patterns) as evidence in an argument about which island would be the best habitat for orangutans.

### **Science & Engineering Practices**



### Weather and Climate Chapter 1 Overview





### **Science & Engineering Practices**



# **3D Statements** Work time

- 1. Go to the **3D Statement** on the **Unit Page.**
- Look at the 3D Statement
   for each chapter
- 3. Identify the **Science and Engineering Practices** for each chapter.
- 4. Categorize them.

Weather and Climate		~	Coherence Flowcharts
Teacher References	3-D Statements 🥡	~	Copymaster Compilation
		~	Flextension Compilation
3-D Statements Key Prac	tices Disciplinary Core Ideas Crosscutting Concepts	~	Investigation Notebook
Unit Level		~	👜 Multi-Language Glossary
Students learn to make weather measurements and make sense o analyze a day, then a month, then a year of weather data for three precipitation and temperature, students discover (patterns) how t	f them (scale, proportion, and quantity). They fictional locations. Using the climate patterns of o construct evidence-based arguments about which	~	NGSS Information for Parents and Guardians
ocation would be the best habitat for an orangutan reserve, with a most similar to that of Borneo (stability and change), where orang	long-term climate (despite snorter-term changes) utans live.	~	Print Materials (8.5" x 11")
Chapter Level			Print Materials (11" x 17")
Chapter 1: Which island's weather would be best for orange	utans?		
Tasked with figuring out which of three islands has weather most s students plan and conduct investigations to measure rainfail and the then analyze quantitative data to compare Borneo's weather to the an argument about which island would be the best habitat for oran	imilar to that of orangutans' habitat on Borneo, emperature (scale, proportion, and quantity). They weather on three islands (patterns) as evidence in gutans.	~	Offline Preparation
Chapter 2: Which island's weather will continue to be best	for orangutans?		Teaching without reliable classroom internet? Prepare unit and lesson
Students analyze and interpret a month of temperature data from day to day, so in order to identify patterns in weather (patterns), si data collected over a longer span of time into total monthly precipi	the three islands and realize that weather changes udents use computational thinking to summarize tation and monthly temperature range.	,	materials for online access.
Chapter 3: Over many years, which island's weather will be	best for orangutans?	~	Offline Guide
Students use mathematics and computational thinking as they co many years (scale, proportion, and quantity). They figure out that	mpare bar graphs representing weather data over the weather in a place typically changes throughout	~	
the year, but its seasons repeat in a stable pattern (stability and ch place's climate (patterns). Students communicate this information sanch larv for a final time based on new climate evidence	ange) and that meteorologists call that pattern a by revising their arguments about the orangutan	~	
Chapter 4: How can the WPO prepare for natural hazards t	hat might damage their offices?	~	-
After obtaining information from a book and analyzing map data to occur in a spatial pattern (patterns), students design building prot wind of a hurricane. They make arguments for how an organization	p figure out that weather-related natural hazards otypes that can withstand the simulated rain and in Florida should prepare its building for local severe		

### Let's Review Weather and Climate





# Questions?



### Share Out

### Jamboard

**Reflect** on how these practices are scaffolded through the unit and what that means for student learning.



### Science & Engineering Practices: Weather and Climate

Building the practices incrementally, chapter by chapter.







## Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

### Overarching goals

By the end of this workshop, you will be able to:

- □ Internalize the unit
- Identify the Science and Engineering Practices within the unit



### Additional resources

### Welcome, caregivers!

EDREPORTS A

Grades 6-8





We hope you enjoy learning more about Amplify Science and what students are learning in science this year.

#### Para acceder a este sitio en español haga clic aquí.

Amplify welcomes you and your learner to the Science program for the new school vear. We are verv excited to



### LAUSD Micrositehttps://amplify.com/lausd-science



# Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

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### Additional resources and ongoing support

**Customer Care** 

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.



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Amplify Chat



# End of Part 1











### Overarching goals

By the end of this workshop, you will be able to:

 Identify the Science and Engineering Practices within a lesson and how they are taught.

Amplify

□ Apply this knowledge to prepare to teach.



## Plan for the day: Part 2

### • Review

- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

### Next Generation Science Standards

### Designed to help students build a cohesive understanding of science



### **Next Generation Science Standards**

### Science and Engineering Practices



- 1. Asking questions (for science) and defining problems (for engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematics and computational thinking
- 6. Constructing explanations (for science) and designing solutions (for engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating, and communicating information

### Weather and Climate

**Problem:** Which island would be the best location for an orangutan reserve?

How can you protect buildings from damage by weather-related natural hazards?

Role: Meteorologists

# Weather and Climate Unit 3D Statements

Key

 Practices
 Disciplinary Core Ideas
 Crosscutting Concepts

 Unit Level

Students learn to make weather measurements and make sense of them (scale, proportion and quantity). They analyze a day, then a month, then a year of weather data for three fictional locations. Using the climate patterns of precipitation and temperature, students discover (patterns) how to construct evidence -based arguments about which location would be the best habitat for an orangutan reserve, with a long-term climate (despite shorter-term changes) mots similar to that of Borneo (stability and change), where orangutans live.

## Weather and Climate Chapter 3D Statements



**Chapter Level** 

### Chapter 1: Which island's weather would be best for orangutans?

Tasked with figuring out which of three islands has weather most similar to that of orangutans' habitat on Borneo, students plan and conduct investigations to measure rainfall and temperature (scale, proportion, and quantity). They then analyze quantitative data to compare Borneo's weather to the weather on three islands (patterns) as evidence in an argument about which island would be the best habitat for orangutans.

### Let's Review Weather and Climate





## Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

### Weather and Climate



## 3D Statements, Lesson 1.1

Key

Practices

**Disciplinary Core Ideas** 

**Crosscutting Concepts** 

Students record observations and ask questions about videos of different weather conditions. They begin considering the challenge of the orangutan island preserve, wondering which of the three habitats has the best weather (patterns) for orangutans.

# Grade 3 | Weather and Climate Lesson 1.1: Pre-Unit Assessment

# Activity 1 Introducing the Orangutan Reserve





We are starting a new science unit called *Weather and Climate*.

We'll be working with the **Wildlife Protection Organization** to help orangutans.



This map and photo show where orangutans live.

What does it **look like** in the area where orangutans live? Describe what you see in the photo.
In the wild, orangutans only live on the islands of Borneo and Sumatra. These are some of the **hottest, rainiest places** in the world.

There are places on Earth that are hotter than these islands and places that are rainier, but Borneo and Sumatra are special because of their **combination of heat and raininess**.



People are **destroying the rain forests** where orangutans live so they can plant oil palm trees.

Orangutans **cannot live** where the palm trees are planted.



The Wildlife Protection Organization is going to create a reserve where orangutans will have what they need to survive. They've asked for our help choosing an island for the reserve.





# What do you think **meteorologists** study?

What **tools** do they use in their work?

What do they do?

# In this unit, we will take on the role of **meteorologists**, or scientists who study the weather, so we can help the Wildlife Protection Organization select the **island** with the **best weather** for orangutans.



### a scientist who studies and predicts weather



# What **questions** do you have about **meteorologists** and how they do their work?

## **Unit Question**

# How can meteorologists predict the weather for a particular place and time?

### **Chapter 1 Question**

Which island's weather would be best for orangutans?

We'll explore the topic of weather to figure out which island is best.

# What do you **picture in your mind** when you hear the word **weather?**



We'll watch a video about weather and write words on sticky notes that **describe** what we see. For example, if you observe sunny weather, you could write "sunny" or "the sun."



# Sort your pink sticky notes into **different** categories.

Use the yellow sticky notes as **labels** for the categories. The label should be a word or words that describe what is **similar** about the observations on the pink notes.

I'll make a table with our categories and observations.

**Share a category** from a yellow sticky note. I'll make columns with our categories.

**Share an observation** from a pink sticky note and say what category it goes in.



# These are all forms of **precipitation**.

Three forms of precipitation include **frozen water.** 



### water that falls to Earth as rain, snow, sleet, or hail



# What **questions** do you have about the weather we observed or about other weather?

# What is the weather like outside today in terms of **temperature**, **precipitation**, and **wind**?



# Activity 2 Pre-Unit Assessment



As we begin our **weather** unit, we'll reflect on what we already understand and what we don't yet understand about weather.

The Wildlife Protection Organization receives many emails from people who want to learn more about animals, plants, and weather. We will try to answer some of their **questions**. Name

Pre-Unit Writing: Explaining Weather Data

Date:

Directions: Read the messages to the Wildlife Protection Organization. Answer the questions that go with each message.

	2							
I want to o somewhe Where I lin shorts, an him in the	o, adopt a rabbit. re that rabbits /e, it sometime d I drink a lot c hutch outside	I have a big h shouldn't be ir s gets pretty h f water. If I ado	utch outside n temperatu not. I need to opt a rabbit	e in my yard. ures over 80 o wear a T-sf ;, is it safe for	l read degrees. iirt and me to keep			
Thanks fo Carissa	r your help.							
Do you th	ink it is safe for	Carissa to kee	ep a rabbit (	outside wher	e she lives?			
Is there ar this out?	ny other inform	ation she coul	d provide th	nat would he	lp you figure			
						_		
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# You'll **answer the questions** on these pages.

# Let's **review the messages** to make sure we all understand the questions.

#### Lesson 1.1: Pre-Unit Assessment

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Pre-Unit Writing: Explaining Weather Data

Directions: Read the messages to the Wildlife Protection Organization. Answer the questions that go with each message.

#### Part 1

Dear WPO, I want to adopt somewhere the Where I live, it s shorts, and I dr him in the hutch	a rabbit. I have a big hutch outside in my yard. I read t rabbits shouldn't be in temperatures over 80 degrees. ometimes gets pretty hot. I need to wear a T-shirt and nk a lot of water. If I adopt a rabbit, is it safe for me to keep outside?
Thanks for your	help.
Do you think it i	s safe for Carissa to keep a rabbit outside where she lives?
Is there any oth this out?	er information she could provide that would help you figure
0.0	Weather and Climate—Lesson 1.1 1
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L	Weather and Climate—Lesson 1.1 © 2015 The Regents of the University of California. All rights reserved. Permission granted to photoscop

4

# Complete the Pre-Unit Writing sheets.



# Activity 3 Introducing Investigation Notebooks



#### AmplifyScience



#### Weather and Climate:

Establishing an Orangutan Reserve

Scientists use **notebooks** like this one to **record** observations and information, keep track of investigations, and make sense of their thinking.

# AmplifyScience

#### Weather and Climate:

Establishing an Orangutan Reserve

As **meteorologists**, we'll use our Investigation Notebooks to keep track of our ideas and what we learn about **weather**.

Investigation Notebook

Lesson 1.1: Pre-Unit Assessment

# **End of Lesson**





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### **Science and Engineering Practices**

Describe the science and engineering practices the students were engaged in during this lesson.



## Science & Engineering Practices: Weather and Climate



### Weather and Climate Lesson Brief

#### Lesson at a Glance

1: Introducing the Oran eutan Reserve (10 min.) Students learn about the Weather and Climate unit and their role as meteorologiste who must recommend a suitable location for an orangutan reserve.

#### (Teacher Only) Introducing Weather (20 min.)

Students watch a video that shows different weather conditions and list weather-related words on sticky notes. Groups sort their sticky notes into categories. After a class discussion about the sorting results, they are introduced to precipitation. Students then practice observing and describing today's local weather. This invitational activity allows students to explore a variety of atmospheric conditions

#### 2: Pre-Unit Assessment (20 min.)

Students complete a pre-unit writing assessment to reveal their initial understanding of the core content of the unit, which can be assessed with the Assessment Guide: Interpreting Students' Pre-Unit Explanations About Weather Data (in Digital Resources). In addition to providing insight to the teacher, asking students to take stock of their initial knowledge helps prepare them to make connections to new knowledge.

3: Introducing Investigation Notebooks (10 min.) Students receive their Weather and Climate Investigation Notebooks and learn some ways that scientists use notebooks.



Bistoducing Investigation Pre-Unit Assessment

#### E RESET LESSON

Overview Materials & Preparation Differentiation

Standards Vocabulary Unplugged? including the role they will take on and the problem they will try to solve. Students learn that the rain forests where orangutans' lives are being destroyed, so the Wildlife Protection Organization is looking for a place with comparable weather for an orangutan reserve. Students find out that they will be consulting meteorologists so they can advise the Wildlife Protection Organization about the best location for the reserve. Students watch a video showing different kinds of weather and record their observations. Afterward, they sort these observations into categories. The class focuses on one category: precipitation. Students write responses to guestions about weather and climate, which serve as a Pre-Unit Assessment for formative purposes, designed to reveal students' initial understanding of the unit's core content, both unit-specific science concepts and the crosscutting concept of Patterns, prior to instruction. As such students' responses offer a baseline from which to measure growth of understanding over the course of the unit and can also provide the teacher with insight into students' thinking. This three-dimensional experiences and to watch for preconceptions that might get in the way of students' understanding. Finally, students receive their use notebooks. The purpose of this lesson is to introduce the unit and allow students to demonstrate their current understanding of

This lesson introduces students to the Weather and Climate unit,

#### masther Unit Anchor Phenomenon: Orangutans can only live in certain places

in the world that have the right weather conditions. Chapter-level Anchor Phenomenon: Arc, Blue, and Creek Islands have different weather.

Investigative Phenomena: A variety of weather phenomena can be observed including clouds passing over a field, rain and wind striking trees, hail falling on the ground, and raindrops landing in water.

Eliciting and Leveraging Students' Prior

#### GENERATE PRINTABLE LESSON GUIDE

#### **Digital Resources** Classroom Slides 1.1 | PowerPoint

#### Classroom Slides 1.1 | Google Slides

All Projections

#### Classroom Videos 11 | Zip

Pre-Unit Writing: Explaining Weather Data convenaster

- Assessment Guide: Interpreting Students' Pre Unit Explanations About Weather Data
- Extension: Rain Forests Are Important to Human Life copymaster
- Extension: Building Palm Oil Plantations Copymaster
- [11] Video: Weather
- ( Weather Sort chart
- (2) Weather and Climate Investigation Notebook
- Questioning Strategies for Grades 2–5
- Weather and Climate Family Connections Homework
- Crosscutting Concept Tracker
- Knowledge, Personal Experiences, and Cultural Backgrounds

Overview



# Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

# **3D Statements** Lesson Work time

- 1. Identify what Science and Engineering **Practices** are addressed in each lesson in Chapter One
- 2. Identify how the Science and Engineering **Practices** are addressed

Weather and Climate Teacher References	3-D Statements 👔
3-D Statements	Кеу
	Practices Disciplinary Core Ideas Crosscutting Concepts

Students learn to make weather measurements and make sense of them (scale, proportion, and quantity). They analyze a day, then a month, then a year of weather data for three fictional locations. Using the climate patterns of precipitation and temperature, students discover (patterns) how to construct evidence-based arguments about which location would be the best habitat for an orangutan reserve, with a long-term climate (despite shorter-term changes) most similar to that of Borneo (stability and change), where orangutans live.

#### Chapter Level

#### Chapter 1: Which island's weather would be best for orangutans?

Tasked with figuring out which of three islands has weather most similar to that of orangutans' habitat on Borneo, students plan and conduct investigations to measure rainfall and temperature (scale, proportion, and quantity). They then analyze quantitative data to compare Borneo's weather to the weather on three islands (patterns) as evidence in an argument about which island would be the best habitat for orangutans.

#### Chapter 2: Which island's weather will continue to be best for orangutans?

Students analyze and interpret a month of temperature data from the three islands and realize that weather changes day to day, so in order to identify patterns in weather (patterns), students use computational thinking to summarize data collected over a longer span of time into total monthly precipitation and monthly temperature range

#### Chapter 3: Over many years, which island's weather will be best for orangutans?

Students use mathematics and computational thinking as they compare bar graphs representing weather data over many years (scale, proportion, and quantity). They figure out that the weather in a place typically changes throughout the year, but its seasons repeat in a stable pattern (stability and change) and that meteorologists call that pattern a place's climate (patterns). Students communicate this information by revising their arguments about the orangutan sanctuary for a final time based on new climate evidence.

#### Chapter 4: How can the WPO prepare for natural hazards that might damage their offices?

After obtaining information from a book and analyzing map data to figure out that weather-related natural hazards occur in a spatial pattern (patterns), students design building prototypes that can withstand the simulated rain and wind of a hurricane. They make arguments for how an organization in Florida should prepare its building for local severe weather.

nin	ing for the Unit		Printable Resources			
0\	Overview ~		Coherence Flowcharts			
Ma	ap	~	🔤 Copymaster Compilation			
	Build	~	Flextension Compilation			
	Ready to Teach	~	Investigation Notebook			
	s and Preparation	~	🔯 Multi-Language Glossary			
	Background	~	MGSS Information for Parents and Guardians			
	is at a Glance	~	Print Materials (8.5" x 11")			
	References		🔤 Print Materials (11" x 17")			
	verview Compilation	~				
	Is and Goals	~	Offline Preparation			
	ements	~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline cases.			
	ent System	~	materials for online access.			
	ed Formative Assessments	~	Offline Guide			
	This Unit	~				
	This Unit	~				
	ions in This Unit	~				
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# **3D Statements Share Out**

Share the what and how of the Science and Engineering **Practices** addressed in each lesson

Weather and Climate Teacher References	3-D Statemen
2 D Statemente	
3-D Statements	Key

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indards and Goals	~	Offline Preparation	
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sessment System	~		
bedded Formative Assessments	~	Offline Guide	
pks in This Unit	~		
ps in This Unit	~		
xtensions in This Unit	~		

## Science & Engineering Practices: Weather and Climate

Chapter 1: Which island's weather would be best for orangutans?

Chapter 1: Analyze quantitative data...

Chapter 1: ...as evidence in an argument

Lesson 1.1: What - Record observations and ask questions How -By observing the weather in the video, and use sticky notes to describe and categorize.

Lesson 1.2: What - Compare and evaluate data, Plan and conduct investigations How - Partners discuss weather data for Arc, Blue, and Creek Islands.

Lesson 1.3: What - Making observations, taking numerical measurements, obtaining information from a reference book How - Students contrast measurements taken with thermometers to measurements gathered with their sense of touch. Students acquaint themselves with the unit's reference book. Lesson 1.1

Lesson 1.2

Lesson 1.3

## Science & Engineering Practices: Weather and Climate

Chapter 1: Which island's weather would be best for orangutans?

Lesson 1.4:

Chapter 1: Analyze quantitative data...

Chapter 1: ...as evidence in an argument

Lesson 1.4: What - Use mathematical and computational thinking to analyze and compare one set of data to the data the class has collected How - Students read *Sky Notebook* with a partner. Then, the class discusses why and how the book's weather data for each day can be compared.

Lesson 1.5: What - Observe and visualize How - Students predict and then observe the amount of water that comprises 35 mm of rainfall in order to develop a context for visualizing rainfall data.

Lesson 1.6: What - Analysis of weather data How - Students are introduced to and participate in their first Evidence Circle, a structured routine for student-guided, small-group discussions about evidence. **Lesson 1.5: What** - Evaluate evidence as more useful or less useful for making an argument **How** - Students are introduced to the scientific practice of argumentation

**Lesson 1.6: What** - Make arguments based on evidence **How** - The class converges on the claim they think is best supported by evidence. The teacher introduces two of four guidelines for writing a scientific argument and guides students in composing a scientific argument.

# Standards at a Glance

			22 Lessons Weather and Clin	nate	MAN TANK		Triny.
	Planning for the Unit	Printable Resources				NA C CHARTER	
	Unit Overview	✓	IIIMP DOWN TO UNIT GUIDE	GENER	RATE PRINTABLE TEACHER'S		_
	Unit Map	✓		GUIDE			
	Progress Build	✓			•		
	Getting Ready to Teach	✓			COM HELL		
	Materials and Preparation	✓ Multi-Language Glossary	Chapter 1: Which	Chapter 2: Which	Chapter 3: Over		
	Science Background	<ul> <li>NGSS Information for Parents and Guardians</li> </ul>	island's weather would be best for	island's weather will continue to be best	many years, which island's weather will be best for		
77	Standards at a Glance	∽ i → Print Materials (8.5" x 11")	6 Lessons	5 Lessons	7 Lessons		
	Teacher References	Print Materials (11" x 17")	(16)				
	Lesson Overview Compilation	×					
	Standards and Goals	Offline Preparation					
	3-D Statements	<ul> <li>internet? Prepare unit and lesson</li> <li>materials for offline access.</li> </ul>	Chapter 4: How can the WPO prepare for				
	Assessment System	*	might damage thei				
	Embedded Formative Assessments	Offline Guide					
	Books in This Unit	~					
	Apps in This Unit	~					
	Flextensions in This Unit	*					

## **Next Generation Science Standards**

### Science and Engineering Practices



Asking questions (for science) and defining Ch. 1-4 problems (for engineering) Developing and using models Ch. 2-4 Planning and carrying out investigations Ch. 1-4 Analyzing and interpreting data Ch. 1-4 Using mathematics and computational thinking Ch. 1-4 Constructing explanations (for science) and designing solutions (for engineering) Ch. 3.4 Engaging in argument from evidence Ch. 1-4 Obtaining, evaluating, and communicating information Ch. 1-4
#### Science & Engineering Practices: Weather and Climate



## Questions?







### Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

#### Overarching goals

By the end of this workshop, you will be able to:

 Identify the Science and Engineering Practices within a lesson and how they are taught.

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□ Apply this knowledge to prepare to teach.

#### Closing reflection

Based on our work today, share:

Head: something you'll keep in mind

Heart: something you're feeling

Feet: something you're planning to do

#### LAUSD Micrositehttps://amplify.com/lausd-science



# Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

#### Additional resources and ongoing support

**Customer Care** 

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.



help@amplify.com





Amplify Chat



## End of Part 2





