Amplify.

Welcome to Amplify Science!

This site contains supporting resources designed for the Los Angeles Unified School District Amplify Science adoption for grades TK–8.

All LAUSD schools have access to Amplify Science resources at this time.

Click here for Remote Learning Resources for Amplify Science

Click here to go back to the LAUSD homepage.

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



https://amplify.com/lausd-science/

Do Now: Use the link in the chat to add your best remote learning tips and tricks for teaching Amplify Science to the Jamboard.

Amplify Science

Unit Internalization & Guided Planning

Deep-dive and strengthening workshop Grade 6: Ocean, Atmosphere, and Climate

LAUSD

xx/xx/2021 Presented by Your Name In a new tab, please log in to your Amplify Science account through Schoology.

Use two windows for today's webinar

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Window #1	Mille Copy of Nangatan Progr. X Angle Consolution X M Hassiers Collevense Travel: X +	- o x	Lesson 1.2: Using Fossils to Understand Farth	
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	GPEN PRINTABLE PROGRESS BUILD	Flextension Compilation		
	Progress Build Level 1: The Earth's entire outer layer (below the water and soil that we see) is made of soils rock that is divided into plates. Earth's plates can move. Undersentable head's vegatablead and water that we see on the surface of Earth is the outer layer of Earth's geosphere. The soil part of our nody platest. This outer layer of Earth's geosphere. The soil part of and rock that is divided into sections called plates. And, these plates can move.	The stigation Notebook NGSS Information for Parents and Guardians Print Materials (11" x 17") Note Materials (25 = 11")	24	
	Progress Build Level 2: The plates move on top of a soft, solid layer of rock called the mantle. At plate boundaries where the plates are moving	(a) Pint materials (6.5 X11)	Lesson Brief	e TEACHER-LED
	away from each other, rook risks from the manne and naroene, adoing new solid rock to the edges of the plates. At plate boundaries where plates are moving toward each other, one plate moves underneath the other and atinks into the mannet. Underneath the soli vegetation, and water that we see on the surface of Each it is the function start of Each months and a doing to the other.	Offline Preparation Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.	Elos RESET LESSON	GENERATE PRINTABLE LESSO
	Latoria de outre lager or Latoria geografia, ne sono par conounincen.	Offline Guide		
	Expandel Materials and Preparation		Lesson Brief	Digital Resources
			Overview ~	📡 All Projections
			Materials & Preparation ~	Completed Scientific
			Differentiation ~	🗮 Video: Meet a Pa
			Español rds ~	The Ancient Mesosaurus

Norms: Establishing a Culture of Learners



- Please keep your camera on, if possible.
- Take some time to orient yourself to the platform
 - "where's the chat box? what are these squares at the top of my screen?, where's the mute button?"



Mute your microphone to reduce background noise unless sharing with the group



The chat box is available for posting questions or responses to during the training



Make sure you have a note-catcher present



Be an active participant - chat, ask questions, discuss, share!

Workshop goals

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

- Internalize your upcoming unit.
- Plan for collecting **evidence of student learning** in order to make instructional decisions to **support diverse learner needs**.
- Gather resources to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format.



Plan for the day

- Framing the day
 - Welcome
 - Instructional Materials
- Unit Internalization
- Planning to teach
 - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing



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Instructional Materials



Middle school course curriculum structure

Integrated model*

Grade 6

 Launch: Microbiome

- Metabolism
- Engineering Internship: Metabolism
- Traits and Reproduction
- Thermal Energy
- Ocean, Atmosphere, and Climate
- Weather Patterns
- Earth's Changing Climate
- Engineering Internship: Earth's Changing Climate

AmplifyScience

Grade 7

- Launch: Geology on Mars
- Plate Motion
- Engineering Internship: Plate Motion
- Rock Transformations
- Phase Change
- Engineering Internship: Phase Change
- Chemical Reactions
- Populations and Resources
- Matter and Energy
 in Ecosystems

Grade 8

- Launch: Harnessing Human Energy
- Force and Motion
- Engineering Internship: Force and Motion
- Magnetic Fields
- Light Waves
- Earth, Moon, and Sun
- Natural Selection
- Engineering Internship: Natural Selection
- Evolutionary History



Launch unit

- First unit
 11 lesson
- 11 lessons

Core units

- Majority of units
- 19 lessons

Engineering Internships

- Two per year
- 10 lessons

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Standard Amplify Science Curriculum



Standard Amplify Science Curriculum

The Ocean, Atmosphere, and Climate unit has **19 lessons** across 4 chapters. Each lesson is written to be **45 minutes** long.





Chapter 4: Science Seminar Skip slide if modeling live on the platform.

Standard Amplify Science Curriculum

On the standard Amplify Science platform you will find all of your key documents for planning for the unit.

We will be using many of these in today's workshop.

Planning for the Unit		Printable Resources
Unit Overview	~	Article Compilation
Unit Map	~	Coherence Flowchart
Progress Build	~	Copymaster Compilation
Getting Ready to Teach	~	Flextension Compilation
Materials and Preparation	~	Investigation Notebook
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	~	Offline Preparation
Standards and Goals	~	Teaching without reliable classroom internet? Prepare unit and lesson
3-D Statements	~	materials for offline access.
Assessment System		
Embedded Formative Assessments	Skip slide	e if modeling
Articles in This Unit	live on t	he platform.
Apps in This Unit		
Flextensions in This Unit	~	

Standard Amplify Science Curriculum

On the standard Amplify Science platform you will find key lesson level information.

We will be navigating to lessons during today's workshop in order to better plan for collecting evidence of student learning in order to plan to meet the needs of diverse learners. ■ AmplifyScience CALIFORNIA > Ocean, Atmosphere, and Climate > Chapter 1 > Lesson 1.2



temperature. The Ocean, Atmosphere, and Climate Simulation helps students observe how adding and removing energy affects air Printable Article Set: Effects of Niño Around the World

Amplify Science @Home Curriculum



Amplify Science @Home Curriculum

In addition to the standard Amplify Science curriculum, you also have access to Amplify Science @Home Curriculum on the Science Program Hub.



AmplifyScience@Home

Two different options:

@Home Units

 Digital or print-based versions of Amplify Science units condensed by about 50%

@Home Videos

Video playlists of Amplify
 Science lessons, taught by real
 Amplify Science teachers





@Home Units

A shift in approach to respond to user feedback

Original approach: two different resources



Print-based:@HomeDpackets@

Digital: @Home slides and student sheets **Print-based:** PDFs of @Home Slides and student sheets

Traite and Re-

@Home Lessor

Today, we will beg and Reproduction.

> **Digital:** Google Slides @Home Slides and Google Doc student sheets

Updated approach: one resource, two formats



Amplify Science @Home Curriculum

You have access to the Ocean, Atmosphere, and Climate @Home Unit.

The Ocean, Atmosphere, and Climate @Home Unit has **14 lessons.** Each lesson is written to be **30 minutes** long.

Ocean, Atmosphere, and Climate 🔻 Spanish @Home unit to come February 2 @Home Unit @Home Videos Hands-on investigations videos @Home Unit Instructions > English **OAC@Home Family** OAC@Home Teacher OAC@Home Student Materials Compilations Resources Overview TEACHER OVERVIEW C Google ALL SLIDES C. Google PDF C Google PDF ALL STUDENT SHEETS LESSON INDEX C Google PDF ALL PACKETS (INCL. STUDENT SHEETS) PDF Digital option OAC@Home I OAC @Home Lesson 3 asson 1 Paper option SLIDES SLIDES SLIDE 2 C Google C Google PDF PDF DPDF STUDENT SHEET STUDENT SHEETS STUDENT SHEETS C Google C Google C Google PDF PDF PDF

Amplify Science @Home Curriculum

You have access to the Ocean, Atmosphere, and Climate @Home Videos.

There are 16 @Home Videos for the Ocean, Atmosphere, and Climate unit. This covers all lessons expect for the assessment lessons (1.1, 2.5, and 4.4). The video playlists on YouTube teach the standard Amplify Science Lessons.











Plan for the day

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- Planning to teach
 - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Unit Guide Resources

	Planning for the Unit		Printable Resources
	Unit-Overview	~	Article Compilation
/	Unit Map	~	Coherence Flowchart
N	Progress Build	~	Copymaster Compilation
	Getting Ready to Teach	~	Flextension Compilation
	Materials and Preparation	~	Investigation Notebook
	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	~	Offline Preparation
	Standards and Goals	~	Teaching without reliable classroom internet? Prepare unit and lesson
	3-D Statements	~	materials for offline access.
	Assessment System	~	Offline Guide
	Embedded Formative Assessments	~	
	Articles in This Unit	~	
	Apps in This Unit	~	
	Flextensions in This Unit	~	

Unit Guide resources

Once a unit is selected, select JUMP DOWN TO UNIT GUIDE in order to access all unit-level resources in an Amplify Science unit.

Unit Overview	Describes what's in each unit, the rationale, and how students learn across chapters
Unit Map	Provides an overview of what students figure out in each chapter, and how they figure it out
Progress Build	Explains the learning progression of ideas students figure out in the unit
Betting Ready Triteach	Provides tips for effectively preparing to teach and teaching the unit in your classroom
Materials and Preparation	Lists materials included in the unit's kit, items to be provided by the teacher, and briefly outlines preparation requirements for each lesson
Science Background	Adult-level primer on the science content students figure out in the unit
Standards at a Glance	Lists NGSS Standards (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts), Common Core State Standards for Eng Language Arts, and Common Core State Standards for Mathematics
Teacher references	
Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics) standards in the unit, explains how the standards are reached
3-D Statements	Describes 3-D learning across the unit, chapters, and in individual lessons
Assessment System	Describes components of the Amplify Science assessment system, identifies each 3-D assessment opportunity in the unit
Embedded Formative Assessments	Includes full text of formative assessments in the unit
Articles in This Unit	Summarizes each unit text and explains how the text supports instruction
Apps in This Unit	Outlines functionality of digital tools and how students use them (in grades 6-8)
Flextensions in This Unit	Summarizes information about the Hands-On Flextension lesson(s) in the unit
Printable resources	
Coherence Flowcharts	Visual representation of the storyline of the unit
Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Flextension Compilation	Compilation of all copymasters for Hands-on Flextension lessons throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Unit vocabulary words in 10 languages
NGSS Information for Parents and Guardians	Information for parents about the NGSS and the shifts for teaching and learning
Print Materials (8.5" x 11")	Digital compilation of printed cards (i.e. vocabulary cards, student card sets) provided in the
Print Materials (11" x 17")	Digital compilation of printed Chapter Questions and Key Concepts provided in the kit
2	



Unit Map

Planning for the Unit		Printable Resources
Unit Overview	~	Article Compilation
Unit Map		
Progress Build	¥	
Getting Ready to Teach	~	Flextension Compilation
Materials and Preparation	~	Investigation Notebook
Science Background	~	NGSS Information for Parents and Guardians
Standards at a Glance	~	Print Materials (8.5" x 11")
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3-D Statements	~	materials for offline access.
Assessment System	~	Offline Guide
Embedded Formative Assessments	~	
Articles in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

Ocean, Atmosphere, and Climate Planning for the Unit



Unit Map

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

Students act as student climatologists helping a group of farmers near Christchurch. New Zaland figure out the cause of significantly colder ar temperatures in New Zaland artigre the LiNic of instel event. To solve the puzzle, students investigate what causes regional climates. They learn about energy from the sun and energy transfer between Earth's surface and atmosphere, coean currents, and prevailing winds.

Chapter 1: What determines the air temperature of Christchurch, New Zealand?

Students figure out: One thing that determines Christchurch's air temperature is its listitude. Energy from the sun is transferred to Earth's surface. Some of that energy is then transferred to the air above the surface. The closer a location is to the equator. The more energy treeviews from the sur. Therefore, a location si ar temperature is alfected by its distance from the equator. The amount of energy from the Sun does not change during El Niño years, so there must be some other cause for cooling in New Sealand.

How they figure it out: They test how energy is transferred to air, using both the Simulation and a physical experiment. They analyze may fail and energy from the sum and average air temperatures. They read articles a physical experiments is Nifo has on different locations around the work. They create models in the digital Modeling Tool showing how latitude affects here 2alamids air temperature.

Chapter 2: Other than latitude, what else affects the air temperature of Christchurch?

Students figure out: Ocean currents also affect Christichurch's air temperature. Water moving from the equator is warmer than the air it passes. Water moving from a pole is colder than the air it passes. Energy transfers from warmer substances to colder substances. Warren air transfers are snergy to cooler currents, and warmer currents transfer arenergy to cooler air. In normal years, a warm current passes by New Zealand and warms its air. Something may disrupt this current during [11 Mix0 years.

How they figure it out: They analyze data from Cape Town, South Africa and Buenos Aires, Argentina, which are both at the same latitude but which have different air temperatures. They read an article about coera currents. They test the effect of ocean currents first on ocean surface temperature and then on air temperature. They use a game-like physical model to further investigate currents and air temperature.

Chapter 3: What determines how the ocean currents near Christchurch move?

Students figure out: Prevailing winds and the position of continents determine the direction of ocean currents. Changes to prevailing winds affect ocean currents. Oranges to ocean currents affect how much energy is brought for taken away from) a location. In El Niño years, the prevailing winds that normally drive a warm current from the Equator past New Zealand are disrupted and may stop or even reverse. This interrupts the warm current, which means less energy is transfered to New Zealand sar.

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Pages 2-3

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Progress Build

Planning for the Unit		Printable Resources
Unit Overview	~	Article Compilation
Unit Map	~	Coherence Flowchart
Progress Build		
Getting Ready to Teach	~	Flextension Compliation
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Embedded Formative Assessments	~	
Articles in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

Ocean, Atmosphere, and Climate Planning for the Unit Progress Build

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2

Progress Build

Each Amplify Science Middle School unit is structured around a unit specific learning progression, which we all the Progress Build: more than the unit's hogens Build describes the way utildent' adpointed our understanding of the unit's hogens build: the unit's hogens Build describes the way admission that an important tool in understanding the structure of a unit an importing structure's learning to admission the supervised of the Progress Build corresponds to a chapter), adheres the focus of assessments, and provide the interences about student learning progress that guida suggested instructioning admissional adjustments and differentiation. By adjuster understanding is developing may be used during the course of the unit to support students and morely instruction in an informed way.

The Gears, Attractophen, and Climite Progress Build consists of three levels of science understanding. To support a growth model for student learning progress, each herel encourses and of the ideas of price levels and represents an explanatory secound of unit phenomena, with the sophistication of that account nervasing as the levels increase. At each level, students add new ideas and integrate them into a progressively deeper understanding of how a location's latitude and the progressing which study punce and uncertainties to location's air themperature. Since the Progress Build reflects an increasingly complex yet integrated explanation, we represent it by including the new ideas for each level in bold.

Prior knowledge (precence globa), Educational reasarch and our own studius have shown that at the start of the Ocean, Alwnspher, and Climate unit, mildle school studies are likely to be family with the geographic position of the equator and poles. Most students will understand that, on average, locations along the equator are the warmest paces on Earth while locations near the poles are the coldest. Although the will have varying ideas about the cause of this pattern. Some students will be familiar with the movement of ocean currents around Earth, but they are unlikely to set thess currents as mechanism for energy transfer that infumores regional dimeters. Alt students will have experimence wind has a strong enough to put shurds concean currents. This agenerisme and prior knowledge can be built on and relined, which is what the *Ocean, Altmosphere, and Climate* Progress Build and unit structure are designed to do.

Progress Build Level 1: The amount of energy transferred from the sun to the surface of a location depends on the location's latitude.

Energy from the sun is transferred to Earth's surface (water and land), warning the surface. Energy transfers from the surface to the air above it. Sunigit transfers the most energy at the equator, and the amount of energy transfered gradually decreases as latitude increases. Therefore, the amount of energy in the air of a location is affected by its latitude, which detrainings the amount of energy transferred to that location's land and ocean water.

Progress Build Level 2: Ocean currents can affect the air temperature of a location by affecting the amount of energy in the surface of the location.

Energ from the suns it transferred to Earth's surface (water and land), waring the surface. Energy transfers from the surface to the air above. It Surfight transfers the most energy the the equation, and the amount of energy transfersed gradually decreases as tatitude increases. Therefore, the amount of energy in the air of a location is affected by its tatitude, which determines the amount of energy transfersed for the location's time and ocean vater. Cean move around an ocean basin as surface ocean currents. This can cuse the surface temperature (energy) of a location to be different than expected, takes of lastitude. States of lastice temperature (nergy) of a surface to the surface than expected, these on lastitude. States of lastitude is the surface temperature (nergy) of a surface to the surface that may be also on lastitude. States our sufficiency from the pole toward the descent to the different than expected, these on lastitudes is the surface temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred to the sufficience temperature (nergy) of a sufficience temperature (nergy) transferred temperature (nergy) of a suf

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Pages 4-5

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Planning for the Unit

e. Energy transfers from the sunt of energy transferred location is affected by its cean water. Ocean water can erature (energy) of a location ward the equator are cooler the air to the water, a pole are warmer than the air water to air, increasing the mother by these currents. idirection they are blowing. int. Therefore, ocean e direction.

Unit Internalization Work Time

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title:

what is the phenomenon students are investigating in your unit	What is the	phenomenon	students are	investigating	t in	your unit?
--	-------------	------------	--------------	---------------	------	------------

Unit Question:	Student role:

By the end of the unit, students figure out ...

What science ideas do students need to figure out in order to explain the phenomenon?



Planning for the Unit

Unit Map	
	_

Unit Map

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

Students act as student climatologists helping a group of far of significantly colder air temperatures in New Zealand durin investigate what causes regional climates. They learn about e surface and atmosphere, ocean currents, and prevailing wing

Chapter 1: What determines the air temperature of CI

Students figure out: One thing that determines Christchurd transferred to Earth's surface. Some of that energy is then tr is to the equator, the more energy it receives from the sun. It distance from the equator. The amount of energy from the S some other cause for cooling in New Zealand.

How they figure it out: They test how energy is transferred to They analyze map data of energy from the sun and average a Niño has on different locations around the world. They create affects New Zealand's air temperature.

Chapter 2: Other than latitude, what else affects the a

Students figure out: Ocean currents also affect Christchurc warmer than the air R passes. Water moving from a pole is or substances to colder substances. Warmer air transfers ener to cooler air. In normal years, a warm current passes by New current during El Niño years.

How they figure it out: They analyze data from Cape Town, s at the same labitude but which have different air temperature effect of ocean currents first on ocean surface temperature a model to further investigate currents and air temperature.

Chapter 3: What determines how the ocean currents

Students figure out: Prevailing winds and the position of cor Changes to prevailing winds affect ocean currents. Changes taken away from) a location. In El Niño years, the prevailing w past New Zealand are disrupted and may stop or even revers energy is transferred to New Zealand's air. Ocean, Atmosphere, and Climate Planning for the Unit

Progress Build

Each Angly Science Middle School unit is structured around a unit-specific learning progression, which we call the Progress Built. The unit's Noted phenomen is likely to develop and depen over the course of a unit. It is an important tori in understanding the anticulture of a unit and in supporting builtering. If suprimise the sequence of introduction (generally, each heir of the Progress Built corresponds to a chapter), definiter learning of anginatements and differentiation. By aligning intervals tabler learning and the sequence of the second second

, and Climate

ing for the Unit

rogress Build

The Ocean, Atmosphere, and Climate Progress Build consists of three levels of science understanding. To support a growth model for state learning progress, and level encompasses of the fuelds of provides and represents an explanatory account of unit phenomena. with the sophistication of that account interessing as the level increase. All each level, students dawn ideas and implication that many the source of the strangest science in the source of the source

Prior knowledge (precenception), Educational reason and our own studies have shown that at the start of the Grean. Atmosphere, and Climatout, mit challs school studiest and while by the himit are write the agentary the possible of the equator and poles. Most students will understard relat, on average, locations along the equator and the summer the source of the equator and poles. Most students will understard relat, on average, locations along the equator and the summer the polestice. The summer students will be apprecised on the source of the source and the source and the source students will be apprecised and the source of the source and the source and the source and the source of the source and the source and the source and the source prevaling winds that are storegrouph to push surface coarse. This source the global pattern of prevaling winds that are storegrouph to push surface coarse. The source and prior investing the source and poles. The source and prior investing the source the source and poles. The source and pole investing are designed to be not an endrouph to push surface coarse. This source is the source are designed to be in source of the source of the source the t

Progress Build Level 1: The amount of energy transferred from the sun to the surface of a location depends on the location's latitude.

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Progress Build Level 2: Ocean currents can affect the air temperature of a location by affecting the amount of energy in the surface of the location.

Energ from the sun is transferred to Earth's aurties (water and land), awring the surface. Energ transfers from the surface to the air above. Is subject transfers the most neary at the eards, and the amound of anerg transfers gradually decreases as latitude normass. Therefore, the amount of energy in the air of a location is affected by its latitud, with differenties the amount of energy transferred that the latitude. Surface temperature (energy) of a location to be different than appeted, based on latitude. Surface temperature (energy) of a location to be different than appeted, based on latitude. Surface enteres fromity from the pole loward the

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Pages 2-5

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ce. Energy transfers from the punt of energy transferred location is affected by its sean water. Ocean water can erature (energy) of a location award the equator are cooler the air to the water. a pole are warmer than the air water to air, increasing the another by these currents. a direction they are blowing, int. Therefore, ocean a direction

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Unit Guide	Guided Unit Internalization Part 1: Unit-level internalization	Page
Document	Unit title: Ocean, Atmosphere, and Climate	
Unit Map	What is the phenomenon students are investigating in your unit? Students help a group of farmers near Christchurch, N cause of significantly colder air temperatures in New 2 climate event.	lew Zealand figure out the 🧲 Zealand during the El Niño
Lesson Overview Compilation	Unit Question: What determines the air temperature of a location Earth?	Student role: Student climatologists
Unit Map	By the end of the unit, students figure out Location and ocean currents affect Christchurch's air temperature. The close energy it receives from the sun. Also, water moving from the equator is wa warmer currents transfer energy to cooler air. In normal years, a warm curr its air. Changes to the prevailing winds affect ocean currents, which affect h away from) a location. In El Niño years, the prevailing winds that normally of past New Zealand are disrupted and may stop or even reverse, which mean	er a location is to the equator, the more rmer than the air it passes, and the rent passes by New Zealand and warms how much energy is brought to (or taken drive a warm current from the Equator hs less energy is transferred to the air.
Progress Buld	What science ideas do students need to figure out in order to explain the phenomenor. The amount of energy in the air of a location is affected by its latitude, which transferred to that location's land and ocean water. Ocean water can move of currents. This can cause the surface temperature (energy) of a location to be Surface currents moving from the equator toward a pole are warmer than the warmer than the air they pass, energy transfers from water to air, increasin currents are set in motion by prevailing winds, which push the currents in the of prevailing winds and the position of the continents determine the path of	n determines the amount of energy around an ocean basin as surface ocean different than expected, based on latitude. he air they pass. Since these currents are ing the temperature of the air. Surface e direction they are blowing. The direction ocean currents.

Unit Guida	Guided Unit Internalization Part 1: Unit-level internalization	
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Unit Map	What is the phenomenon students are investigating in your unit? Students help a group of farmers near Christchurch, N cause of significantly colder air temperatures in New 2 climate event.	lew Zealand figure out the Zealand during the El Niño
Lesson Overview Compilation	Unit Question: What determines the air temperature of a location Earth?	Student role: Student climatologists
Unit Map	By the end of the unit, students figure out Location and ocean currents affect Christchurch's air temperature. The close energy it receives from the sun. Also, water moving from the equator is wa warmer currents transfer energy to cooler air. n normal years, a warm cur its air. Changes to the prevailing winds affect ocean currents, which affect h away from) a location. In El Niño years, the prevailing winds that normally of past New Zealand are disrupted and may stop or even reverse, which mean	er a location is to the equator, the more rmer than the air it passes, and the rent passes by New Zealand and warms how much energy is brought to (or taken drive a warm current from the Equator hs less energy is transferred to the air.
Progress Buld	What science ideas do students need to figure out in order to explain the phenomenon. The amount of energy in the air of a location is affected by its latitude, which transferred to that location's land and ocean water. Ocean water can move of currents. This can cause the surface temperature (energy) of a location to be Surface currents moving from the equator toward a pole are warmer than the warmer than the air they pass, energy transfers from water to air, increasin currents are set in motion by prevailing winds, which push the currents in the of prevailing winds and the position of the continents determine the path of	n? In determines the amount of energy around an ocean basin as surface ocean different than expected, based on latitude. he air they pass. Since these currents are ing the temperature of the air. Surface he direction they are blowing. The direction ocean currents.









Plan for the day

- Framing the day
 - Welcome
 - Instructional Materials
- Unit Internalization
- Planning to teach
 - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing



Unit Map

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

Students act as student climatologists helping a group of farmers near Christchurch, New Zealand figure out the cause of significantly colder air temperatures in New Zealand during the El Niño climate event. To solve the puzzle, students investigate what causes regional climates. They learn about energy from the sun and energy transfer between Earth's surface and atmosphere, ocean currents, and prevailing winds.

Chapter 1: What determines the air temperature of Christchurch, New Zealand?

Students figure out: One thing that determines Christchurch's air temperature is its latitude. Energy from the sun is transferred to Earth's surface. Some of that energy is then transferred to the air above the surface. The closer a location is to the equator, the more energy it receives from the sun. Therefore, a location's air temperature is affected by its distance from the equator. The amount of energy from the Sun does not change during El Niño years, so there must be some other cause for cooling in New Zealand.

How they figure it out: They test how energy is transferred to air, using both the Simulation and a physical experiment. They analyze map data of energy from the sun and average air temperatures. They read articles about the effects El Niño has on different locations around the world. They create models in the digital Modeling Tool showing how latitude affects New Zealand's air temperature.

Chapter 1: Air Temperature

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1: Pre-Unit Assessment Lesson 1.2: What Determines the Air Temperature

Lesson 1.3: Energy Transferred to Air

🔹 SETTINGS

Lesson 1.4: Air Temperatures Around the World Lesson 1.5:

of a Location?

Air Temperature in Christchurch

Pages 8-11

Amplify

the unit's es were also

e titles and

@Home Unit Lesson Index

This resource correlates lessons from the Standard Curriculum with @Home Unit Lessons.

It also lists the @Home Unit Student Sheets with information about where they came from (i.e. Student Investigation Notebook, copymaster, or new for the @Home Unit)

AmplifyScience

Ocean, Atmosphere, and Climate @Home Lesson Index

The Amplify Science@Home Units are versions of Amplify Science units adapted for use in a remote learning or hybrid learning situation. To help you plan instruction, below we have listed the @Home Lessons alongside the Amplify Science unit's Lesson(s) from which they come.

Index: @Home Unit Lessons and corresponding Ocean, Atmosphere, and Climate Lessons

	and Climate		soprisie,		<u> </u>
@Home Lesson 1	Lesson 1.2		5		peeible
@Home Lesson 2	Lessons 1.3				USSIDIE
@Home Lesson 3	Lessons 1.4 and 1.5		3, Card 2,		
@Home Lesson 4	Lesson 1.5 and 2.1			-	ard 2,
@Home Lesson 5	Lesson 2.2				
@Home Lesson 6	Lesson 2.3		3, Possible		
@Home Lesson 7	Lesson 2.4		4, Card 2,		
@Home Lesson 8	Lesson 3.1		2. Card 3.	-	
@Home Lesson 9	Lesson 3.2				
@Home Lesson 10	Lesson 3.3				ossible
@Home Lesson 11	Lessons 3.4		3, Possible		
@Home Lesson 12	Lessons 4.1				
@Home Lesson 13	Lesson 4.2 and 4.3				ossible
@Home Lesson 14	Lesson 4.4				ossible
					ossible
Ocean, A	tmosphere, and Climate @Home Lesson Index	1	3, Card 1, 3, Card 2, 2, Possible	-	ossible
Ocean, A	Ntmosphere, and Climate @Home Lesson Index	1	3, Card 1, 3, Card 2, 2, Possible		ossible
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Key activities

- Introducing Christchurch, New Zealand and air temperature during El Niño years: Students are introduced to the unit problem and their role as student climatologists.
- Do: Students are introduced to the Ocean, Atmosphere, and Climate Simulation, then use the Sim to determine what causes the air temperature of a place to change.

Ideas for synchronous or in-person instruction

While meeting, first introduce the unit, then have student pairs work together on the Sim Missions.

Ocean, Atmosphere, and Climate **Ocean, Atmosphere, and Climate**

AmplifyScience



Today, we will begin a new unit called *Ocean*, *Atmosphere, and Climate*.

Read the Unit Question on the next slide. This is the question that will guide our work for the rest of the unit. Ocean, Atmosphere, and Climate @Home Lesson 1

Unit Question

What determines the air temperature of a location on Earth?
Ocean, Atmosphere, and Climate @Home Lesson 1





You can probably think of a place on Earth that is usually **very warm** or a place that is usually very cold. Have you ever thought about what determines the air **temperature** of a place? This is what we will focus on in the Ocean, Atmosphere, and Climate unit.



Let's watch a video about real-life scientists who are **researching air temperatures** in different places and what it is that can make the air temperature change.

Note: all videos in this @Home Unit can be viewed on a smartphone or any other connected device.



Using the print version? Watch the video at tinyurl.com/AMPOAC-01

Ocean, Atmosphere, and Climate @Home Lesson 1





What are your **reactions** to the video?

Do you have any **questions** about it?

Here is an important word you just heard in the video:



general weather patterns over a long period of time

Ocean, /	Atmosphere, and Climate Glossary (continued)
nodel: an object, dia simpler or easier to nodelo: un objeto, di aciéndolo más simp	gram, or computer program that helps us understand something by making isee grama o programa de computadora que nos ayuda a entender algo leo fácil de ve
bserve: to use any	of the five senses to gather information about something
bservar: usar cuali	
cean current: oce orriente oceánica:	Ocean, Atmosphere, and Climate Glossary
rediction: an idea redicción: una idea	cause: an event or process that leads to a result or change causa: un evento o proceso que provoca un resultado o cambio
revailing winds: w cean currents	climate: general weather patterns over a long period of time clima: patrones atmosféricos generales que ocurren durante un periodo largo de tiempo
ientos dominantes ara empujar corrie	climatology: the study of weather patterns over a long period of time climatologia: el estudio de patrones del clima durante un periodo Jarco de tiempo
cientific commun omunidad científic olar: related to the	continent: any of Earth's main continuous areas of land, such as Africa, Asia, and North Americ continente: cualquiera de las principales áreas continuas de terreno de la Tierra, como Africa, Asi
olar: relacionado c urface: the outsid	y Norteamenca effect: a result or change that happens because of an event or process efecto: un resultado o cambio que ocurre debido a un evento o proceso
uperficie: la parte e emperature: a me emperatura: una m ransfer: to move fi	El Niño: a climate pattern where water near the equator gets hotter than usual and affects the weather around the world; El Niño happens in the Pacific Ocean El Niño: un patrón climático en el cual las aguas cercanas al ecuador se calientan más de lo normal y afectan el clima de todo el mundo. El Niño courte en el Océano Pacífico
ansferir: mover de	energy: the ability to make things move or change energia: la capacidad de hacer que las cosas se muevan o cambien
floramiento: un pro floramiento: un pro el océano	equator: the imaginary line that divides Earth into northern and southern hemispheres (halves) ecuador: la linea imaginaria que divide a la Tierra en dos hemisferios (mitades): norte y sur
	gyre: a giant pattern of moving water that spans whole oceans and moves water from place to place in a circle giro: un patrón gigantesco de agua en movimiento que abarca océanos enteros y mueve el agua de un lugar a otro en forma circular
	latitude: the distance of a place north or south of Earth's equator latitud: la distancia desde el ecuador de la Tierra hasta un lugar al norte o sur
	longitude: the distance of a place east or west of Earth's prime meridian longitud: la distancia desde el primer meridiano de la Tierra hasta un lugar al este u oeste
	longitude: the distance of a place east or west of Earth's prime meridian longitud: la distancia desde el primer meridiano de la Tierra hasta un lugar al este u oeste

Ocean, Atmosphere, and Climate @Home Lesson 1

Throughout the year, you can look up vocabulary words in the glossary to help you understand what they mean. You can find this in your student pages or in the Amplify Library.

Ocean, Atmosphere, and Climate Glossary pages or Amplify Library



Climate scientists, or climatologists, study weather patterns over time, for example, a location's average temperature over a long time, not the temperature on one particular day.

On the next slide you will read a **message** from Kiri Parata, the Director of the New Zealand Farm Council to learn more about what you will be doing in this unit.

Kiri Parata

To: Student Climatologists Re: Influences on Christchurch, New Zealand's Air Temperature



I am the director of the New Zealand Farm Council. Our organization represents farmers in the area surrounding Christchurch. Every few years, we notice climate changes that affect the crops. During El Niño years, the air temperature is much cooler than usual, and we would like to learn why.

So the farmers are better prepared for these temperature changes, we are asking you—our student climatologists—to conduct some research on what determines Christchurch's air temperature, especially why it decreases during El Niño.

Looking forward to working with you and hearing what you find out!

Kiri

Kiri Parata, Director New Zealand Farm Council



Climatologists expect a particular location's climate to **stay mostly the same**.

When they get data outside of the expected pattern, it often leads them to investigate the cause of the unusual data. In this unit, you will work as **student climatologists** to investigate why Christchurch, New Zealand's air temperature is cooler than usual during El Niño years.

Like the scientists you saw in the video, you will work with **real climate data** to conduct research about El Niño—this is similar in many ways to the work done by professional scientists. Examine the map of the world on the next slide. New Zealand is a country located in the Southwestern Pacific, near Australia. There are two main islands that make up the country of New Zealand. Christchurch is on South Island.

There is a **yellow star** on the map to show where Christchurch, New Zealand is.



During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?



In your role as **student climatologists**, you will begin by researching this question:

Research Question:

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?



Climatologists use the term atmosphere to describe the mixture of gases or air that surround a planet.

We will be investigating the air **right above the surface**, not the air higher up in the atmosphere.



When we talk about Christchurch's air temperature, we are talking about the temperature of the air directly above Christchurch.



Let's think about some of your ideas about the Research Question.

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

During El Niño years, why is Christchurch, New Zealand's air temperature cooler than usual?

Claim 1: The amount of incoming energy from the sun changes.

Claim 2: Something about Earth's surface (land or water) changes.

Claim 3: Something about the air changes.

Here are **three claims** that represent possible answers to our Research Question.

When we refer to **Earth's surface**, we're talking about **land and water**.

Next, you will use the Ocean, Atmosphere, and Climate Simulation or watch a video of a Sim investigation.

Check with your teacher about how you will access Sims and other digital tools in this @Home Unit.

Key activities

- Introducing Christchurch, New Zealand and air temperature during El Niño years: Students are introduced to the unit problem and their role as student climatologists.
- Do: Students are introduced to the Ocean, Atmosphere, and Climate Simulation, then use the Sim to determine what causes the air temperature of a place to change.

Ideas for synchronous or in-person instruction

While meeting, first introduce the unit, then have student pairs work together on the Sim Missions.



The Ocean, Atmosphere, and Climate Simulation is a scientific model that will help us investigate climate.

Let's watch a video to learn about some of the features of this Sim.



Using the print version? Watch the video at tinyurl.com/AMPOAC-02

The Sim and other sources of evidence can help us answer our first Chapter Question:

Chapter 1 Question

What determines the air temperature of Christchurch, New Zealand?



As Kiri Parata explained, we know the temperature in Christchurch changes during El Niño years.

To understand **why**, we'll need to figure out what can **cause a temperature change**.



Let's go to the Sim with a **mission** to determine how to change air temperature.

For this mission, we will use **Energy Test** mode.



In the Sim, we will find a way to make the air temperature **increase** and **decrease**.

Then, you will answer the questions.

Ocean, Atmosphere, and Climate @Home Lesson 1

Name:

Exploring Temperature and Energy in the Sim

Date:

Use the Ocean, Atmosphere, and Climate Sim to find ways to make the air temperature change or if you cannot use the Sim, watch a video of someone completing the investigation.

Using the Sim? Follow the instructions for the Sim investigation below.

Not using the Sim? Go to tinyurl.com/AMPOAC-02 to watch a video of someone completing the steps of the Sim investigation. Then, answer the questions below. Note: all videos in this @Home Unit can be viewed on a smartphone or any other connected device.

Sim Investigation Instructions:

1. Go to Energy Test mode.

- 2. Find a way to make the air temperature increase.
- 3. Find a way to make the air temperature decrease.

How did you make the temperature increase? (circle one)

I (added / removed) energy to make the temperature increase.

How did you make the temperature decrease? (circle one)

I (added / removed) energy to make the temperature decrease.

Ocean, Atmosphere, and Climate @Home Lesson 1

Find the Exploring Temperature and Energy in the Sim page. Use the Sim or watch a video of this Sim investigation.

Complete the Sim mission by causing the **air temperature to change**.

Exploring Temperature and Energy in the Sim page



Let's think about what you noticed about **temperature and energy**.



You probably observed that when you **added energy** to the land or the air it made the **air temperature increase**?



And, when you **removed energy** from the air or land in the Sim it made the **temperature decrease?** Think about the question:

Where does the **energy** in air and water come from?

Ocean, Atmosphere, and Climate @Home Lesson 1

You will learn more about where energy on Earth comes from in the next lesson.

Energy can take different forms, for example, light energy (such as sunlight) or thermal energy (the energy measured by temperature).



the ability to make things move or change

As we saw in the Sim, for air temperature the higher the temperature, the more energy the air has.



a measure of how hot or cold something is

Ocean, Atmosphere, and Climate @Home Lesson 1

End of @Home Lesson





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Key activities

- Introducing Christchurch, New Zealand and air temperature during El Niño years: Students are introduced to the unit problem and their role as student climatologists.
- Do: Students are introduced to the Ocean, Atmosphere, and Climate Simulation, then use the Sim to determine what causes the air temperature of a place to change.

Ideas for synchronous or in-person instruction

While meeting, first introduce the unit, then have student pairs work together on the Sim Missions.
Suggestions for Online Synchronous Time







Online synchronous time

Online discussions: It's worthwhile to establish norms and routines for online discussions in science to ensure equity of voice, turn-taking, etc.

Digital tool demonstrations: You can share your screen and demonstrate, or invite your students to share their screen and think-aloud as they use a Simulation or other digital tool.

Interactive read-alouds: Screen share a digital book or article, and pause to ask questions and invite discussion as you would in the classroom.

Shared Writing: This is a great opportunity for a collaborative document that all your students can contribute to.

Co-constructed class charts: You can create digital charts, or create physical charts in your home with student input.

page 16



Reflection: Teaching @Home Lesson 1 How would you teach this lesson?





Multi-day planning, including planning for differentiation and evidence of student work

Minutes for science: 15 milit. Minutes for science:	Day@Home Lesson 1				Page I
Instructional format: A synchronous A synchronous A synchronous Synchronous Synchronous Synchronous Synchronous Lesson or part of lesson: Introducing the unit (Sildes 1-9) Lesson or part of lesson: Introducing the unit (Sildes 1-9) Mode of instruction: Preview Review Preview Review Preview Review Teach full lesson live Preview Review Preview Review Preview Preview Review Digital @Home Sildes Digital @Home Sildes Printed @Home Sildes Digital @Home Sildes Printed @Home Sildes Digital @Home Sildes Printed @Home Sildes Digital @Home Sildes @Home Videos Students will Teacher will Students work independently using: Printed @Home Sildes @Home Videos Students will Teacher will Students will Teacher will Teacher will View the video that Assign slides 1-9 in Stocology and provide direction for and El Niño. Students will Teacher will Jot down Initial down their ideas about the unit reaction for students to jot down initial about the unit reactions to the problem to share when the class when the class </th <th>Minutes for science: <u>15 min</u></th> <th>•</th> <th>Minutes for science:</th> <th></th> <th></th>	Minutes for science: <u>15 min</u>	•	Minutes for science:		
Lesson or part of lesson: Introducing the unit (slides 1-9) Lesson or part of lesson: Mode of instruction: Preview Teach full lesson live Teach using synchronous suggestions Students work independently using: Printed @Home Slides Digital @Home Slides @Home Videos Mode of instruction: Preview Review Teach using synchronous suggestions Students work independently using: Printed @Home Slides @Home Videos Students will Teacher will Assign slides 1-9 in Introduces students Schoology and to climatologists Ideas about their eactions to the Video. Students will Teacher will	Asynchronous Synchronous		Instructional format: Asynchronous Synchronous		
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meets together.	Students will View the video that introduces students to climatologists and El Niño. Jot down initial ideas about their reactions to the video.	Teacher will Assign slides 1-9 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.	Students will	Teacher will	

Multi-day planning, including planning for differentiation and evidence of student work

Day@Home Lesson 1				Pu8
Minutes for science: <u>15 mln.</u>		Minutes for science: <u>30 mln</u>		
Asynchronous Synchronous		Instructional format: Asynchronous Synchronous		
Lesson or part of lesson: Introducing the unit (slides 1-9)		Lesson or part of lesson: Observe and Do activities (slides 10-37)		V
Mode of instruction: Preview Review Teach full lesson live Teach using synchronous suggestions Students work independently using: Printed @Home Slides Digital @Home Slides @Home Videos		Mode of instruction: Preview Review Teach full lesson live Yeach using synchronous suggestions Students work independently using: Printed @Home Slides Digital @Home Slides @ Home Videos		
Students will View the video that introduces students to climatologists and El Niño. Jot down initial ideas about their reactions to the video.	Teacher will Assign slides 1-9 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.	Students will Pause for pair discussion prompts on slides 20 and 33, Watch Sim model, assign students partners to complete Sim Mission and Student Sheet (slide 29).	Teacher will Lead students through the lesson activities using slides 10-37, pausing for partner discussion. Model Sim, assign partners, and lead class discussion about the relationship energy and air temperature.	

Breakout groups

Discussion prompts

Planning:

• Share additional ideas for how you plan to lead Lesson 1

Student work:

• Discuss how you can collect evidence of student work

Differentiation:

• Consider how you might differentiate this lesson



page 13

Look at the <i>Students will</i> columns. What are students working in the lesson(s)	Some Types of Written	Work in Amplify Science
that you could collect, review, or provide feedback on? See Some Types of Written Work in Amplify Science to the right for guidance. If there isn't a work product listed above, do you want to add one? Make notes below.	 Daily written reflections Homework tasks Investigation notebook pa Written explanations (typi Diagrams Recording pages for Sim to 	ages ically at the end of Chapter) uses, investigations, etc
How will students submit this work product to you?	Completing Written Work	Submitting Written Work
tudents can complete and submit work.	 Plain paper and pencil (videos include prompts for setup) (6-8) Student platform Investigation Notebook Record video or audio file describing work/answering prompt Teacher-created digital format (Google Classroom, etc) 	 Take a picture with a smartphone and email or text to teacher Through teacher-created digital format During in-school time (hybrid model) or lunch/materials pick-up times (6-8) Hand-in button on student platform
will you differentiate this lesson for diverse learners? (Navigate to the lesson level on t	the standard Amplify Science platform and c	lick on differentiation in the left menu.)

Planning Resource

pages 14-15

Day 2: Minutes for science: Instructional format: Asynchronous Synchronous		Minutes for science: Instructional format: Asynchronous Synchronous		ten reflections rk tasks ion notebook pages xplanations (typically at the end of Chapter) 3 pages for Sim uses, investigations, etc	
Lesson or part of lesson:		Lesson or part of lesson:		 Written Work	Submitting Written Work
Vode of instruction: Preview Review Teach full lesson live Teach using synchronous suggestions Students work independently using: @Home Packet @Home Slides and @Home Studen @Home Videos Teach	it Sheets	Mode of instruction: Preview Review Teach full lesson live Students work independently i @Home Packet @Home Slides and @Hom @Home Videos	estions using: ne Student Sheets Teacher will	r and pencil lude prompts nt platform on Notebook eo or audio file vering prompt eated digital oogle	 Take a picture with a smartphone and email or text to teacher Through teacher-created digital format During in-school time (hybrid model) or lunch/materials pick-up times (6-8) Hand-in button on
				i, etc) Science platform and o	student platform









Plan for the day

- Framing the day
 - Welcome
 - Instructional Materials
- Unit Internalization
- Planning to teach
 - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Amplify.

During this workshop did we meet our objectives?

- Were you able to internalize your upcoming unit?
- Do you know how to plan for <u>collecting evidence of student</u> <u>learning</u> in order to make instructional decisions to <u>support</u> <u>diverse learner needs</u>?
- Do you have the resources you need to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format?

Upcoming LAUSD Office Hours

Twice Monthly

- Thursday, 2/11 (3-4pm)
- Thursday, 2/25 (3-4pm)
- Thursday, 3/11 (3-4pm)
- Thursday, 3/25 (3-4pm)



http://bit.ly/LAUSDMSOfficeHours

Program Hub: Self Study Resources



Back to school national webinar series



Topics included:

- Remote and hybrid learning support
- Navigation support
- What's new for 2020-2021
- Planning support
- Curriculum overview

bit.ly/BTSwebinars

Additional Amplify resources



Caregivers site

Provide your students' families information about Amplify Science and what students are learning **amplify.com/amplify-science-familyresource-intro/**

Additional Amplify resources



Program Guide

Glean additional insight into the program's structure, intent, philosophies, supports, and flexibility.

http://amplify.com/science/california/r eview

Amplify Help

Find lots of advice and answers from the Amplify team. **my.amplify.com/help**

Additional Amplify Support

Customer Care

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



scihelp@amplify.com



800-823-1969



When contacting the customer care team:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows, laptop).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible.
- Copy your district or site IT contact on emails.

Please provide us feedback!

URL: https://www.surveymonkey.com/r/AmplifyLAUSDMS

Presenter names:

Date: xx





