Enriched Earth Science Curriculum Map

Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
S.1 – SWBAT formulate questions about themselves and their surroundings	SWBAT define observation and inference, and can differentiate between the two. SWBAT measure	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous	Month of September UNIT - Observations, Inferences, and Measurement
S.2 – SWBAT collect data using observation and surveys, and record appropriately	and define mass, weight, area, volume, temperature, and time using metric units.		School-issued Chromebooks Earth Science Reference Tables	administrations of NYS Earth Science Regents examinations. Quizzes - Castle Learning and problem-attic.com	
 S.3 – SWBAT construct a table to represent a collection of data S.4 – SWBAT identify the parts of 	SWBAT convert between base metric units and those with prefixes centi- , kilo- , and milli- .		Mill's Notes Packet Lab Manual developed by Michael Breed	Homework assignments from textbook, CK12.org, Castle Learning, Edpuzzle, Newsela.com, teacher-created handouts and worksheets, readings from selected works, and	
a graph S.5 – SWBAT display data in a	SWBAT identify direct, inverse, and cyclic relationships from		www.problem-attic.co m www.newsela.com	review book Test Review Packets created with	

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graph	both		Castle Learning and/or
	data and graphs.	www.castlelearning.c	Problem-Attic website
S.7 – SWBAT read		om	
and interpret	SWBAT read and		Labs -
data in graphs	interpret the	www.ck12.org	Graphing Skills
5 - F - 5 - F - 5	appropriate Earth		
S.8 – SWBAT	Science	www.edpuzzle.com	Observations
formulate	Reference Tables	······································	& Inferences
conclusions and	when necessary.	Various videos from	
make predictions		iTunes, Netflix, PBS,	Scientific Method
from graphs	Additional	etc.	
nom graphs	Vocabulary:	0.0.	Density
SWBAT determine	Scientific notation	www.newyorksciencet	Density
what will be	Quantitative	eacher.com	Metric Measurement
measured and how	Qualitative	eacher.com	
		SUNY Oneonta Earth	Lab Safaty
in a laboratory	Magnitude Scale	Science Listserv	Lab Safety
setting, using	Volume	Science Listserv	Demonstrano Error
appropriate		Document Camera	Percentage Error
methods	Area		
and formulas.	Mass	and projector	Sunspot Analysis
	Weight		
SWBAT organize	Independent	Promethean Board	Cumulative Summative
and neatly label	Variable		Assessment – NYS Earth
their work.	Dependent	Digital balance	Science Regents
	Variable		Examination in June
SWBAT analyze		Ruler	
problems by			
observing patterns.		Graduated Cylinder	
SWBAT perform		Timer/Stopwatch	
calculations			
involving mass,			
length, area,			

volume, time, temperature, and Density.			
MP.2 – SWBAT			
reason abstractly			
and quantitatively.			
MP.4 – SWBAT			
model			
Mathematically.			
HSN-Q.A.1 –			
SWBAT use units			
as a way to			
understand			
problems and to			
guide the solution			
of multi-step			
problems; choose			
and interpret units			
consistently in			
formulas; choose			
and interpret the			
scale and the			
origin in graphs			
and data displays.			
HAS-CED.A.4 –			
SWBAT rearrange			
formulas to			
highlight a quantity			
of interest, using			

Standards Co	ontent	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
SWBAT use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units formulas; choose and interpret the scale and the origin in graphs and data displays.modelingHSN-Q.A.2 – 	WBAT define odel and cplain ow models are sed to describe arth's opearance. WBAT describe arth as an blate spheroid nd explain, using oservations, why is that shape. WBAT calculate e circumference f a circle/Earth by sing ratosthenes ethod. WBAT describe arth's latitude	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum School-issued Chromebooks Earth Science ReferenceTables Mill's Notes Packet Lab Manual developed by Michael Breed <u>www.problem-attic.co</u> <u>m</u>	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous administrations of NYS Earth Science Regents examinations. Quizzes - Castle Learning and problem-attic.com Homework assignments from textbook, CK12.org, Castle Learning, Edpuzzle, Newsela.com, teacher-created handouts and worksheets, readings from selected works, and review book Test Review Packets	First Three Weeks of October UNIT - Earth's Shape & Mapping Earth's Surface

Choose a level of	and longitude		created with
accuracy	coordinate	www.castlelearning.c	Castle Learning and/or
appropriate for the	system	<u>om</u>	Problem-Attic website
purpose of	and determine		
descriptive	locate coordinates	www.ck12.org	Labs -
modeling.	from maps such as	_	Latitude & Longitude
_	those on pages	www.edpuzzle.com	
MP.2 – SWBAT	3, 4, and 5 of the		Earth's Shape
reason abstractly	Earth Science	Various videos from	
and quantitatively.	Reference Tables.	iTunes, Netflix, PBS,	USGS Topographic Maps/
		etc.	Chenango Forks
MP.4 – SWBAT	SWBAT state the		Quadrangle
model	time in an area,	www.newyorksciencet	
mathematically.	given a map of	eacher.com	Drawing Map Profiles
	continental US		
S.1 – SWBAT	time zones.	SUNY Oneonta Earth	Field Mapping
formulate		Science Listserv	
questions	SWBAT use		Eratosthenes
about themselves	Earth's angular	Document Camera	Circumference
and their	rate of	and projector	
surroundings.	rotation (15°/hour)		Cumulative Summative
	to determine an	Promethean Board	Assessment – NYS Earth
S.2 – SWBAT	observer's		Science Regents
collect data using	longitude.	Magnifying glasses	Examination in June
observation and			
surveys, and	SWBAT find a	Various topographic	
record	location on a map	maps, including the	
appropriately	based upon its	1:24,000 scale	
	latitude, given the	USGS Chenango	
SWBAT determine	altitude of Polaris.	Forks Quadrangle	
what will be			
measured and how	SWBAT		
in a laboratory	determine the		

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setting, using	direction of			
appropriate	flow of a			
methods	river/stream on a			
and formulas.	topographic map.			
anu iomulas.	topographic map.			
SWBAT organize	SWBAT calculate			
and neatly label				
their work.	the gradient between two			
unen work.				
	points on a			
SWBAT analyze problems by	topographic map.			
observing patterns.	SWBAT correctly			
3	draw			
	isolines/contour			
	lines on a field			
	Map.			
	SWBAT identify			
	areas of steep			
	and gentle			
	gradients on			
	topographic			
	maps based upon			
	the spacing of			
	contour lines.			
	contour nines.			
	SWBAT correctly			
	draw a			
	topographic map			
	profile between			
	two points on a			
	field map.			

	SWBAT determine the contour interval on a field map. SWBAT identify directions on a map based upon the four cardinal Directions. SWBAT determine the distance between two points on a map using a map scale. Additional Vocabulary: Index Contour Compass Rosette				
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
HSN-Q.A.3 – Choose a level of accuracy appropriate for the purpose	HS-ESS2-3 – SWBAT explain that rocks and minerals can be identified and	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist	Late October through mid-November UNIT-

of descriptive modeling.	classified using various tests	our curriculum from previou	
	and protocols that	administratio	
MP.2 – SWBAT	determine their	School-issued Earth Scient	
reason abstractly	physical and	Chromebooks Regents exa	aminations.
and quantitatively	chemical		
	properties.		astle Learning
S.1 – SWBAT		ReferenceTables and problem	n-attic.com
formulate	HS-ESS2-5 –		
questions about	SWBAT perform		assignments
themselves and	mechanical and	from textboo	ok, CK12.org,
their surroundings	chemical	Lab Manual Castle Lear	ning, Edpuzzle,
	investigations with	developed by Newsela.co	m,
S.2 – SWBAT	water and a	Michael Breed teacher-crea	ated handouts
collect data using	variety of solid	and worksho	eets, readings
observation and	materials to	www.problem-attic.co from selecte	ed works, and
surveys, and	provide	m review book	
record	the evidence for		
appropriately	connections	www.newsela.com Test Review	v Packets
	between the	created with	
SWBAT determine	hydrologic cycle	www.castlelearning.c Castle Learn	
what will be	and system	om Problem-Att	0
measured and how	interactions		
in a laboratory	commonly	www.ck12.org Labs -	
setting, using	known as the rock	Mineral Ider	ntification
appropriate	cycle.	www.edpuzzle.com	
methods and	cycic.	Sedimentar	/ Bock
formulas.	ESS2.B – SWBAT	Various videos from Identification	
iomulas.	explain that	iTunes, Netflix, PBS,	'
SWBAT organize	minerals are the		ak Identification
•			ck Identification
and neatly label	building blocks of		a Daak
their work.	igneous,	www.newyorksciencet Metamorphi	
	metamorphic, and	eacher.com Identification	1

SWBAT analyze	sedimentary rocks			
problems by	and can be	SUNY Oneonta Earth	Cumulative Summative	
observing patterns.	identified using	Science Listserv	Assessment – NYS Earth	
	physical and		Science Regents	
WHST.9.12.1 -	chemical	Document Camera	Examination in June	
SWBAT write	characteristics.	and projector		
arguments focused	These rock			
on rocks and	types are evidence	Promethean Board		
minerals.	of stages of			
	constant recycling	Mineral Kits		
WHST.9.12.2 –	of Earth material			
SWBAT write	by surface	Mineral Test kits,		
informative/explan	processes and	which include		
atory texts,	convection	magnifying glasses,		
including the	currents in the	glass plates, streak		
narration of	mantle.	plates, iron nails,		
historical		copper pennies,		
events, scientific	(HS- ESS2-3)	steel files, and dilute		
procedures/experi	HS-ESS3-1 –	hydrochloric acid in		
ments, or technical	SWBAT construct	dropper bottles.		
processes.	an explanation			
	based on evidence	Sedimentary Rock		
SL.11-12.5 –	for	Kits		
SWBAT make	how the availability			
strategic use of	of natural	Igneous Rock Kits		
digital media (e.g.,	resources,			
textual, graphical,	occurrence of	Metamorphic Rock		
audio, visual, and	natural	Kits		
interactive	hazards, and			
elements) in	changes in climate			
presentations to	have influenced			
enhance	human activity.			
understanding of	Examples of key			
informative/explan atory texts, including the narration of historical events, scientific procedures/experi ments, or technical processes. SL.11-12.5 – SWBAT make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance	processes and convection currents in the mantle. (HS-ESS2-3) HS-ESS3-1 – SWBAT construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	 which include magnifying glasses, glass plates, streak plates, iron nails, copper pennies, steel files, and dilute hydrochloric acid in dropper bottles. Sedimentary Rock Kits Igneous Rock Kits Metamorphic Rock 		

findings,	natural resources			
reasoning, and	could include			
evidence and to	access to fresh			
add interest.	water (such as			
	rivers, lakes, and			
	groundwater),			
	regions of fertile			
	soils such as river			
	deltas, and high			
	concentrations of			
	minerals and			
	fossil fuels.			
	HS-ESS3-2 –			
	SWBAT evaluate			
	competing design			
	solutions for			
	developing,			
	managing, and			
	utilizing			
	energy and			
	mineral resources			
	based			
	on cost-benefit			
	ratios. Emphasis is			
	on the			
	conservation,			
	recycling, and			
	reuse of resources			
	(such as minerals			
	and metals) where			
	possible, and on			
	minimizing impacts			
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	where it is not. Examples could include developing best practices for agricultural soil use, mining (for coal, tar sands, and oil shales), and pumping (for petroleum and natural gas). Science knowledge indicates what can happen in natural systems—not what should happen. SWBAT use and understand the diagrams and tables on pages 6,7, and 16 of the Earth Science Reference Tables.				
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
HSN-Q.A.3 – Choose a level of accuracy	HS-ESS1-5 - SWBAT evaluate evidence of the	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth	Tests - all tests throughout the year are written using Castle	All of December

nast and current		Science as	Learning or problem-attic	Plate Tectonics,
		•		Earthquakes,
		3		and Volcanoes
		School-issued		
•		Onomebooks		
		Earth Science	Quizzes - Castle Learning	
		Mill's Notes Packet	Homework assignments	
		Lab Manual		
			, , , , , , , , , , , , , , , , , , , ,	
•				
		www.problem-attic.co		
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		www.newsela.com	Test Review Packets	
the North			created with	
American		www.castlelearning.c	Castle Learning and/or	
continental		om	Problem-Attic website	
crust contains a				
much older central		www.ck12.org	Labs -	
ancient core			Divergent Boundaries	
compared to the		www.edpuzzle.com		
surrounding			Subduction Boundaries	
continental crust		Various videos from		
as a result of		iTunes, Netflix, PBS,	Continental Drift	
complex and		etc.		
numerous			Locating an Epicenter	
	American continental crust contains a much older central ancient core compared to the surrounding continental crust as a result of complex and	movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. Emphasis is on the ability of plate tectonics to explain the ages of crustal rocks. Examples of evidence could include that the age of oceanic crust increases with distance from mid-ocean ridges as a result of plate spreading and that the North American continental crust contains a much older central ancient core compared to the surrounding continental crust as a result of complex and	movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. Emphasis is on the ability of plate tectonics to explain the ages of crustal rocks.School-issued Chromebookson the ability of plate tectonics to explain the ages of crustal rocks.Earth Science ReferenceTablesexidence could include that the age of oceanic crust increasesLab Manual developed by Michael Breedwith distance from mid-ocean ridges as a result of plate spreading and that the Northwww.castlelearning.c om om crust contains a much older central ancient core compared to the surrounding continental crust as a result of complex andwww.ck12.org various videos from iTunes, Netflix, PBS, etc.	movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. Emphasis is

their work.	plate interactions.	www.newyorksciencet	
		eacher.com	Indonesian Tsunami
SWBAT analyze	HS-ESS2-1 –		
problems by	SWBAT develop a	SUNY Oneonta Earth	New York State
observing patterns.	model to illustrate	Science Listserv	Landscape Regions
	how Earth's		
WHST.9.12.1 –	internal and	Document Camera	The Rock Cycle
SWBAT write	surface processes	and projector	
arguments focused	operate at different		
on plate	spatial and	Promethean Board	Cumulative Summative
tectonics and	temporal scales to		Assessment – NYS Earth
associated	form continental	Safety compass	Science Regents
processes.	and ocean-floor		Examination in June
	features.	Ruler	
WHST.9.12.2 -	Emphasis		
SWBAT write	is on how the	Meter Sticks	
informative/explan	appearance of		
atory texts,	land features (such	Classroom AS-1	
including the	as mountains,	Seismometer	
narration of	valleys, and		
historical	plateaus) and	Seismograms	
events, scientific	sea-floor	-	
procedures/experi	features (such as		
ments, or technical	trenches, ridges,		
Processes.	and seamounts)		
	are a result of both		
SL.11-12.5 –	constructive		
SWBAT make	processes (such		
strategic use of	as volcanism,		
digital media (e.g.,	tectonic uplift, and		
textual, graphical,	deposition) and		
audio, visual, and	destructive		
interactive	processes (such		
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elements) in	as weathering,		
presentations to	subduction, and		
enhance	coastal erosion).		
understanding of			
findings,	HS-ESS2.A –		
reasoning, and	Earth Materials &		
evidence and to			
	Systems		
add interest.			
	SWBAT explain		
SBWAT identify,	that Earth's		
state the various	systems, being		
characteristics of,	dynamic and		
and locate various	interacting, cause		
types of tectonic	feedback effects		
plate boundaries	that can increase		
using page 5 from	or decrease the		
the Earth Science	original changes.		
Reference Tables.			
	HS-ESS2.B –		
SWBAT draw	Plate Tectonics &		
and/or recognize	Large-Scale		
the patterns of	System		
convection	Interactions		
currents in the			
asthenosphere at	SWBAT explain		
divergent and	that plate tectonics		
convergent	is the unifying		
tectonic plate	theory that		
boundaries.	explains		
SWBAT identify	the past and		
and explain the	current		
existence of the	movements of		
landforms	the rocks at		

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(volcanoes, island	Earth's surface		
arcs, oceanic	and provides a		
trenches, etc.)	framework for		
associated with	understanding its		
convergent,	geologic history.		
divergent, and	Plate movements		
transform tectonic	are responsible		
plate boundaries.	for most		
SWBAT state the	continental and		
properties of	ocean-floor		
primary and	features and for		
secondary seismic	the distribution of		
Waves.	most rocks and		
	minerals within		
SWBAT calculate	Earth's crust.		
the difference in			
arrival times of	HS-ESS2.A –		
primary and	Earth Materials		
secondary seismic	and Systems		
waves.	SWBAT recognize		
	that Earth's		
SWBAT determine	systems, being		
the distance to	dynamic and		
the epicenter of an	interacting, cause		
earthquake, using	feedback effects		
"Earthquake	that can increase		
P-Wave & S-Wave	or decrease the		
Travel Time" chart	original changes.		
on page 11 of	Evidence from		
the Earth Science	deep probes and		
Reference Tables	seismic waves,		
and a provided	reconstructions of		
seismogram.	historical		
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	changes in Earth's		
SWBAT correctly	surface and its		
draw epicenter	magnetic field, and		
distances from	an		
seismometers/citie	understanding of		
s on a map to	physical and		
triangulate the	chemical		
location	processes lead to		
of an earthquake	a model of Earth		
	with a hot but solid		
epicenter.			
	inner core, a liquid		
SWBAT calculate	outer core, a solid		
earthquake origin	mantle and crust.		
times and primary	Motions of the		
and secondary	mantle and its		
seismic waves	plates occur		
travel times using	primarily through		
the Earth Science	thermal		
Reference Tables.	convection, which		
SWBAT recognize	involves the		
that the worldwide	cycling of matter		
patterns of	due to the		
earthquakes and	outward flow of		
volcanoes	energy from		
correspond to	Earth's interior and		
tectonic plate	gravitational		
boundaries.	movement of		
	denser materials		
	toward the interior.		
	HS-ESS2.B –		
	Plate Tectonics &		
	Large-Scale		
	System		
	,		

Interactions		
SWBAT		
understand that		
residual heat from		
Earth's formation		
and the radioactive		
decay of unstable		
isotopes in Earth's		
interior		
continually		
generate energy that is absorbed by		
Earth's mantle and		
crust, driving		
mantle convection.		
Plate tectonics can		
be viewed as the		
surface expression of mantle		
convection.		
PS4-A - Wave		
Properties		
SWBAT		
understand how geologists use		
seismic waves and		
their reflection at		
interfaces between		
layers to probe		
structures deep in		

	the planet.				
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
 HSN-Q.A.3 – SWBAT choose a level of accuracy appropriate for the purpose of descriptive modeling. MP.2 – SWBAT reason abstractly and quantitatively. S.1 – SWBAT formulate questions about themselves and their Surroundings. S.2 – SWBAT collect data using observation and surveys, and record appropriately. SWBAT determine what will be 	HS-ESS2-1 – SWBAT develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features. Emphasis is on how the appearance of land features (such as mountains, valleys, and plateaus) and sea-floor features (such as trenches, ridges, and seamounts) are a result of both constructive processes (such as volcanism, tectonic uplift, and	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum School-issued Chromebooks Earth Science ReferenceTables Mill's Notes Packet Lab Manual developed by Michael Breed www.problem-attic.co m www.castlelearning.c om	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous administrations of NYS Earth Science Regents examinations. Quizzes - Castle Learning and problem-attic.com Homework assignments from textbook, CK12.org, Castle Learning, Edpuzzle, Newsela.com, teacher-created handouts and worksheets, readings from selected works, and review book Test Review Packets created with Castle Learning and/or Problem-Attic website	January through early February UNIT - Weathering and Erosion (Surface Processes)

measured and how	deposition) and	www.ck12.org	Labs -	
in a laboratory	destructive		Weathering of a Sugar	
setting, using	processes (such	www.edpuzzle.com	Cube/Alka- Seltzer	
appropriate	as weathering,			
methods and	subduction, and	Various videos from	Rates of Weathering	
formulas.	coastal erosion).	iTunes, Netflix, PBS,	Ũ	
	,	etc.	Stream Discharge	
SWBAT organize	HS-ESS2-2 –		5	
and neatly label	SWBAT analyze	www.newyorksciencet	Drainage Patterns of NYS	
their work.	geoscience data to	eacher.com		
	make the claim		Direction of Worldwide	
SWBAT analyze	that one change to	SUNY Oneonta Earth	Rivers Flow	
problems by	Earth's surface	Science Listserv		
observing patterns.	can create		Cumulative Summative	
_	feedbacks that	Document Camera	Assessment – NYS Earth	
WHST.9.12.1 –	cause changes to	and projector	Science Regents	
SWBAT write	Earth's systems.		Examination in June	
arguments focused	Examples of data	Promethean Board		
on weathering,	could also include			
erosion, and	descriptions of	All necessary lab		
deposition and all	other system	equipment to		
associated	interactions, such	complete labs for this		
processes.	as how the loss of	unit.		
	ground vegetation			
WHST.9.12.2 –	causes an			
SWBAT write	increase in water			
informative/explan	runoff and soil			
atory texts,	erosion; how			
including the	dammed rivers			
narration of	increase			
historical events,	groundwater			
scientific	recharge,			
procedures/experi	decrease sediment			

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ments, or technical	transport, and			
Processes.	increase coastal			
	erosion; or how the			
SL.11-12.5 –	loss of wetlands			
SWBAT make	causes a decrease			
strategic use of	in local humidity			
digital media (e.g.,	that further			
textual, graphical,	reduces the			
audio, visual, and	wetland extent.			
interactive				
elements) in	HS-ESS2-5 –			
presentations to	SWBAT plan and			
enhance	conduct an			
understanding of	investigation of the			
findings,	properties of water			
reasoning, and evidence and to	and its effects on Earth materials			
add interest.	and surface			
	processes.			
	Emphasis is on			
	mechanical and			
	chemical			
	investigations with			
	water and a			
	variety of solid			
	materials to			
	provide the			
	evidence for			
	connections			
	between the			
	hydrologic cycle			
	and system			
	interactions			
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commonly			
known as the rock			
cycle. Examples			
of mechanical			
investigations			
could include			
stream			
transportation			
(erosion) and			
deposition using a			
stream table,			
infiltration and			
runoff by			
measuring			
permeability and			
porosity of different			
materials, or frost			
wedging by the			
expansion of water			
as it freezes.			
Examples of			
chemical			
investigations			
could include			
chemical			
weathering and			
recrystallization			
(by testing the			
solubility of			
different materials)			
or melt generation			
(by examining how			
water lowers the			
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melting		
temperature of		
most solids).		
HS-ESS2-7 –		
SWBAT construct		
an argument		
based on evidence		
about the		
coevolution of		
Earth's systems		
and life on Earth.		
Emphasis is on		
the dynamic		
causes, effects,		
and feedbacks		
between the		
biosphere		
and Earth's other		
systems, whereby		
geoscience factors		
control the		
evolution of life,		
which in turn		
continuously alters		
Earth's surface.		
Examples could		
include how		
photosynthetic life		
altered the		
atmosphere		
through the		
production		

Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/
Otomianda	 weathering rates and allowed for the evolution of animal life; how microbial life on land increased the formation of soil, which in turn allowed for the evolution of land plants; or how the evolution of corals created reefs that altered patterns of erosion and deposition along coastlines and provided habitats for the evolution of new life forms. SWBAT define and differentiate between physical weathering and chemical weathering. 				
	of oxygen, which in turn increased				

					Days)
 1.2g - Earth has continuously been recycling water since the outgassing of water early in its history. This constant recirculation of water at and near Earth's surface is described by the hydrologic (water) cycle. Water is returned from the atmosphere to Earth's surface by precipitation. Water returns to the atmosphere by evaporation or transpiration from plants. A portion of the precipitation becomes runoff over the land or infiltrates into the ground to become stored in the soil or groundwater below the water table. Soil capillarity influences these processes. The amount of precipitation that seeps into the 	Students will be able to define <i>permeability</i> and describe the factors affecting its rate within soils. Students will be able to define <i>porosity</i> and describe the factors affecting its rate within soils. Students will be able to define <i>capillarity</i> and describe the factors affecting its rate within soils. Students will be able to describe how wells draw water from the ground. Students will be able to describe an <i>artesian well</i> formation.	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum School-issued Chromebooks Earth Science ReferenceTables Mill's Notes Packet Lab Manual developed by Michael Breed <u>www.problem-attic.co</u> m <u>www.newsela.com</u> <u>www.castlelearning.c</u> om <u>www.ck12.org</u>	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous administrations of NYS Earth Science Regents examinations. Quizzes - Castle Learning and problem-attic.com Homework assignments from textbook, CK12.org, Castle Learning, Edpuzzle, Newsela.com, teacher-created handouts and worksheets, readings from selected works, and review book Test Review Packets created with Castle Learning and/or Problem-Attic website Cumulative Summative Assessment – NYS Earth Science Regents	February UNIT - Groundwater & Soil Characteristics

ground or runs off is influenced by climate, slope of the land, soil, rock type, vegetation, land use, and degree of saturation. Porosity, permeability, and water retention affect runoff and infiltration. 2.1s - Weathering is the physical and chemical breakdown of rocks at or near Earth's surface. Soils are the result of weathering and biological activity over long periods of time.			Various videos from iTunes, Netflix, PBS, etc. <u>www.newyorksciencet</u> <u>eacher.com</u> SUNY Oneonta Earth Science Listserv Document Camera and projector Promethean Board All necessary lab equipment to complete labs for this unit.	Examination in June	
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
2.1u - Wave Action: Erosion and deposition cause changes in shoreline features, including	Beach erosion/deposition al patterns Ocean currents as outlined on the Earth Science Reference Tables	Listed in Standards	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous administrations of NYS	February UNIT - Coastal Processes/ Oceanography

beaches,		School-issued	Earth Science
sandbars, and	Tides and coastal	Chromebooks	Regents examinations.
barrier islands.	changes		
Wave action		Earth Science	Quizzes - Castle Learning
	Shoreline	ReferenceTables	and problem-attic.com
rounds		Telefence lables	
sediments as a	management and	Millio Niete e De skiet	
result of	environmental	Mill's Notes Packet	Homework assignments
abrasion. Waves	impacts		from textbook, CK12.org,
approaching a		Lab Manual	Castle Learning, Edpuzzle,
shoreline move		developed by	Newsela.com,
		Michael Breed	teacher-created handouts
sand parallel to			and worksheets, readings
the shore within		www.problem-attic.co	from selected works, and
the zone of		m	review book
breaking waves.			
Ŭ		www.newsela.com	Test Review Packets
Wind: Erosion of			created with
sediments by wind			
is most common in		www.castlelearning.c	Castle Learning and/or
		om	Problem-Attic website
arid climates and			
along shorelines.		www.ck12.org	Labs -
Wind-generated			Stream Divides & River
features include		www.edpuzzle.com	Systems
dunes and			
sand-blasted		Various videos from	Ocean Water vs. Fresh
bedrock.		iTunes, Netflix, PBS,	Water
		etc.	
			Cumulative Summative
		www.newyorksciencet	Assessment – NYS Earth
		eacher.com	Science Regents
			Examination in June
		SUNY Oneonta Earth	
		Science Listserv	
<u> </u>			

			Document Camera and projector Promethean Board All necessary lab equipment to complete labs for this unit.		
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
2.1h Atmospheric moisture, temperature and pressure distributions; jet streams, wind; air masses and frontal boundaries; and the movement of cyclonic systems and associated tornadoes, thunderstorms, and hurricanes occur in observable patterns. Loss of property, personal injury, and loss of life can be	Students will be able to describe the factors contributing to and the effects of periods of global warming and cooling. Students will observe and analyze the effect humans are having on Earth's climate. Students will be able to work in groups to create a poster presentation.	Listed in Standards and Content	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit our curriculum School-issued Chromebooks Earth Science ReferenceTables Mill's Notes Packet Lab Manual	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken from previous administrations of NYS Earth Science Regents examinations. Quizzes - Castle Learning and problem-attic.com Homework assignments from textbook, CK12.org, Castle Learning, Edpuzzle,	March UNIT - Meteorology

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reduced by effective	Students will be able	developed by	Newsela.com,
emergency	to describe the effect	Michael Breed	teacher-created handouts
preparedness.	that the angle of		and worksheets, readings
1.2d	insolation has on	second and the second	, s
	how warm or cold	www.problem-attic.co	from selected works, and
Asteroids, comets,	the climate is.	<u>m</u>	review book
and meteors are			
components of our	Students will be able	www.newsela.com	Test Review Packets
solar system.	to describe and		created with
a Impost	name the	www.castlelearning.c	Castle Learning and/or
 Impact events have 	instruments used to	-	
	measure	<u>om</u>	Problem-Attic website
been	temperature, air		
correlated	pressure, wind	www.ck12.org	Labs -
with mass	direction, wind		Absorption & Radiation of
extinction	speed, and relative	www.edpuzzle.com	Energy
and global	humidity/dew point.	······································	
climatic	numuity/dew point.	Various videos from	Isolines
change.	Students will be able		ISOIITIES
 Impact 	to use "Selected	iTunes, Netflix, PBS,	
craters can	Properties of Earth's	etc.	Shipwrecks of Lake
be identified	Atmosphere" chart		Ontario
in Earth's	on page 14 in the	www.newyorksciencet	
crust.	Earth Science	eacher.com	Weather Patterns
	Reference Tables to		
2.10	describe the various	SUNY Oneonta Earth	Deading leabare
Plate motions have	layers of Earth's		Reading Isobars
resulted in global	atmosphere.	Science Listserv	
changes in	atmosphere.		Air Pressure and Wind
geography, climate,	Students will be able	Document Camera	Speeds
and the patterns of	to explain why the	and projector	
organic evolution.	layers of the		Hurricane Tracking
2.1i	atmosphere develop,	Promethean Board	
	based on the	FIOHELIEAII DUAIU	Determining Cloud Deep
Seasonal changes	concept of density.		Determining Cloud Base
can be explained	concept of density.	All necessary lab	
using concepts of	Students will be able	equipment to	NY Metar Lab
density and heat	to observe trends	complete labs for this	
energy. These			

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changes include the shifting of global temperature zones, the shifting of	and identify patterns in data at different altitudes.	unit.	Station Model Interpretation	
planetary wind and ocean current	Students will be able to infer the		Humidity & Dewpoint	
patterns, the occurrence of monsoons, hurricanes, flooding,	characteristics of the layers of the atmosphere from the graph and data		Coastal & Continental Weather Patterns	
and severe weather.	table.		Cumulative Summative	
2.1r	Students will be able		Assessment – NYS Earth	
Climate variations,	to identify the		Science Regents	
structure, and characteristics of bedrock influence the development of landscape features	troposphere, stratosphere, mesosphere, and thermosphere.		Examination in June	
including mountains,	Students will be able			
	to define what a			
stream drainage	science.			
2.2	Students will be able			
Students explain how incoming solar radiations, ocean currents, and land	of heat conduction (conduction, convection, and			
weather and climate	they occur.			
2.2c	Students will			
large bodies of water, ocean	energy is			
including mountains, plateaus, plains, valleys, ridges, escarpments, and stream drainage patterns. 2.2 Students explain how incoming solar radiations, ocean currents, and land masses affect weather and climate 2.2c A location's climate is influenced by latitude, proximity to large bodies of	to define what a <i>pause</i> is in terms of atmospheric science. Students will be able to state the 3 modes of heat conduction (conduction, convection, and radiation) and how they occur. Students will demonstrate an understanding of how the Sun's			

currents, prevailing winds, vegetative cover, elevation, and mountain ranges. 1.1f Earth's changing position with regard to the Sun and the moon has noticeable effects. Earth revolves around the Sun with its rotational axis tilted at 23.5 degrees to a line perpendicular to the plape of its orbit with	absorbed/reflected by Earth. Students will be able to state how a surface's properties affect its ability to absorb/radiate heat. Students will know that heat is also infrared light. Students will be able to state that dark-colored rough surfaces absorb and re-radiate heat better		
plane of its orbit, with the North Pole aligned with Polaris.	than smooth, reflective ones.		
During Earth's one-year period of revolution, the tilt of its axis results in changes in the angle of incidence of the Sun's rays at a given latitude; these	Students will be able to collect temperature data, put it into graph form, and interpret those data as it applies to thermodynamics. Students will be able		
changes cause variation in the heating of the surface. This produces seasonal	to define relative and absolute humidity and factors affecting their levels.		
variation in weather.	Students will be able to use a sling psychrometer to		

Students use the concepts of density and heat energy to explain observations of weather patterns, seasonal changes, and the movements of the Earth's plates 2.1c	measure dew point and humidity using page 12 in the Earth Science Reference Tables. Students will be able to define dewpoint and describe how it		
Weather patterns become evident when weather	is a truer measure of atmospheric moisture content.		
variables are observed, measured, and recorded. These variables include air temperature, air pressure, moisture (relative humidity and dewpoint),	Students will be able to describe that water condenses to form clouds/fog when air rises, expands, cools, and condenses.		
precipitation (rain, snow, hail, sleet, etc.), wind speed and direction, and cloud cover. 2.1d Weather variables	Students will be able to identify basic cloud types and describe the weather conditions associated with them.		
are measured using instruments such as thermometers, barometers, psychrometers, precipitation gauges, anemometers, and wind vanes.	Students will be able to state the relationship between air pressure and wind speed in a tropical storm system.		
2.1e Weather variables	Students will be able		

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are interrelated.	to interpret data and		
	plot it on a dual		
temperature and			
humidity affect air	y-axis plot.		
pressure and	Students will be able		
probability of	to accurately plot		
precipitation	latitude and		
	longitude		
air pressure gradient	coordinates.		
controls wind velocity			
	Students will be able		
2.1 a	to define relative		
2.1g	humidity and state		
Weather variables	how it changes as		
can be represented	temperature		
in a variety of	changes.		
formats including	ending eet		
radar and satellite	Students will be able		
images, weather	to use page 12 on		
maps (including	the Earth Science		
station models,	Reference Tables		
isobars, and fronts),	and a sling		
atmospheric	psychrometer to		
cross-sections, and	measure relative		
computer models.			
•	humidity.		
2.1i	Students will be able		
Seasonal changes	to state that as air		
can be explained			
using concepts of	masses rise, they		
density and heat	expand, cool, and		
energy. These	condense.		
changes include the			
shifting of global	Students will be able		
temperature zones,	to state that		
the shifting of	atmospheric		
planetary wind and	condensation must		
ocean current	occur on		
patterns, the	condensation nuclei.		
patterno, trie			

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occurrence of monsoons, hurricanes, flooding, and severe weather.	Students will be able to define air pressure and state what causes it.			
2.2 Students explain how incoming solar radiations, ocean currents, and land masses affect weather and climate 2 Many of the phenomena that we observe on Earth	Students will be able to measure air pressure with a barometer and perform conversions between mm Hg and inches using the scale on page 13 of the Earth Science Reference Tables			
involve interactions among components of air, water, and land. 2.1f	Students will be able to state the relationship between relative humidity and temperature.			
Air temperature, dewpoint, cloud formation, and precipitation are affected by the expansion and contraction of air due	Students will understand that as air temperature and dewpoint get closer together, relative humidity increases.			
to vertical atmospheric movement. 2.1h Atmospheric moisture, temperature and	Students will be able to state the effects of changing altitude, temperature, and moisture content on air pressure.			
pressure distributions; jet	Students will be able to define isobar and			

streams, wind; air masses and frontal boundaries; and the movement of cyclonic systems and associated torandoes; thunderstorms, and hurricanes occur ind boser value patterns, cost of property, personal injury, and loss of frie can be reduced by effective energency personal injury, and continuously been recycling water since the indext swill be able to correctly draw isobars on a nair pressure field map.Students will be able to correctly draw isobars on an air pressure field map.Students will be able to correctly draw isobars on an air pressure field map.Students will be able to correctly draw isobar map.Students will be able to correctly draw isobar map.Students will be able to correctly calculate pressure field map.Students will be able to correctly calculate pressure gradientsStudents will be able to correctly calculate precipitation from the the direction of travel of storm/pressure systems on a map.Water early in by the hydrologic (water) cycle.Students will be able to correctly use the direction of travel of storm/pressure systems on a map.Water is returned for the there Barthy sufface by be hydrologic (water) cycle.Students will be able to correctly use the direction of travel of storm/pressure storms on a map.Water is returned room the time Earthy science Reference transpiration from	· · · · · · · · · · · · · · · · · · ·			
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from the atmosphere to Earth's surface by precipitation. Water returns to the atmosphere by evaporation orStudents will be able to correctly use the Global Wind and Moisture Belts chart in their Earth Science ReferenceStudents will be able to correctly use the Global Wind and Moisture Belts chart in their Earth Science ReferenceImage: Content of the state to correctly use the s		systems on a map.		
to Earth's surface by precipitation. Water returns to the atmosphere by evaporation or to correctly use the Global Wind and Moisture Belts chart in their Earth Science Reference		Otudanta will be able		
precipitation. Water Global Wind and returns to the Moisture Belts chart atmosphere by in their Earth evaporation or Science Reference	•			
returns to the Moisture Belts chart atmosphere by in their Earth evaporation or Science Reference	,			
atmosphere by in their Earth evaporation or Science Reference	precipitation. Water			
evaporation or Science Reference	returns to the			
evaporation or Science Reference	atmosphere by			
	evaporation or			
		Tables.		

plants. A portion of	Students will be able		
the precipitation	to correctly read		
becomes runoff over	station models on a		
the land or infiltrates	synoptic weather		
into the ground to	map.		
become stored in the			
soil or groundwater	Students will be able		
below the water	to describe the		
table. Soil capillarity	temperature and		
influences these	moisture		
processes.	characteristics of an		
processes.	air mass by looking		
	at its name.		
The amount of			
precipitation that	Students will be able		
seeps into the			
ground or runs off is	to use page 13 in		
influenced by	their Earth Science		
climate, slope of the	Reference Tables to		
land, soil, rock type,	identify and correctly		
	write the symbols of		
vegetation, land use,	air masses.		
and degree of			
saturation.	Students will be able		
	to predict the source		
Porosity,	region of an air mass		
permeability, and	on a map of North		
water retention affect	America.		
runoff and infiltration.	, anonoa.		
	Students will be able		
	to identify cold,		
1.2e	warm, stationary,		
Earth's early	and occluded fronts		
atmosphere formed			
as a result of the	on a synoptic		
outgassing of water	weather map.		
vapor, carbon			
dioxide, nitrogen,	Students will be able		
and lesser amounts	to describe the		
of other gases from	structures of cold		

duration, which varies with seasons and latitude.					
 2.2b The transfer of heat energy within the atmosphere, the hydrosphere, and Earth's surface occurs as the result of radiation, convection, and conduction. Heating of Earth's surface and atmosphere by the Sun drives convection within the atmosphere and oceans, producing winds and ocean currents. 					
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
1.1f Earth's changing position with regard to the Sun and the moon has noticeable effects.	Students will be able to define and describe the celestial hemisphere. Students will be able to use altitude and	Listed in Standards and Content	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by Michael Breed to suit	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist solely of questions taken	April through early May UNIT - Astronomy & Earth's Motions

Earth revolves around the Sun with	azimuth coordinates to locate objects in	our curriculum	from previous administrations of NYS	in Space
its rotational axis	the sky.	School-issued	Earth Science	
tilted at 23.5 degrees	Students will be able	Chromebooks	Regents examinations.	
to a line	to define the term			
perpendicular to the	gravity and how it	Earth Science	Quizzes - Castle Learning	
plane of its orbit, with the North Pole	affects objects and	ReferenceTables	and problem-attic.com	
aligned with Polaris.	orbital paths.			
Ŭ	Students will be able	Mill's Notes Packet	Homework assignments	
During Earth's	to describe how	Leh Manual	from textbook, CK12.org,	
one-year period of	inertia affects the	Lab Manual developed by	Castle Learning, Edpuzzle, Newsela.com,	
revolution, the tilt of	paths of orbiting	Michael Breed	teacher-created handouts	
its axis results in changes in the angle	objects.	Michael Dieeu	and worksheets, readings	
of incidence of the	Students will be able	www.problem-attic.co	from selected works, and	
Sun's rays at a given	to describe and	<u>m</u>	review book	
latitude; these	identify the changing paths of the Sun	—		
changes cause variation in the	across the sky at	www.newsela.com	Test Review Packets	
heating of the	various times of the		created with	
surface. This	year.	www.castlelearning.c	Castle Learning and/or	
produces seasonal	Students will be able	<u>om</u>	Problem-Attic website	
variation in weather.	to describe how the	1.40		
1.1b	path of the Sun	www.ck12.org	Labs -	
Nine planets move	changes at different	www.edpuzzle.com	Sunspot Analysis	
around the Sun in	latitudes, such as the Equator and the		Dimension of the Solar	
nearly circular orbits.	poles.	Various videos from	System	
The orbit of each		iTunes, Netflix, PBS,		
planet is an ellipse	Students will be able	etc.	Apparent Diurnal Motion	
with the Sun located	to identify the star, Polaris, and explain		of the Sun	
at one of the foci.	why stars appear to	www.newyorksciencet		
	circumnavigate it.	eacher.com	Duration of Insolation	
Earth is orbited by			The Ellipse	
one moon and many				

artificial satellites.	Students will be able	SUNY Oneonta Earth		
	to describe the	Science Listserv	Properties of Stars (H-R	
1.1a	apparent rising and		Diagram)	
Most objects in the	setting of the Moon.	Document Camera		
solar system are in		and projector	Phases of the Moon	
regular and	Students will be			
predictable motion.	able to explain the			
	difference between	Promethean Board		
These motions	rotation and		Cumulative Summative	
explain such	revolution.	All necessary lab	Assessment – NYS Earth	
phenomena as the		equipment to	Science Regents	
day, the year,	Students will be	complete labs for this	Examination in June	
seasons, phases of	able to recognize			
the moon, eclipses,	that constellations	unit.		
and tides.	change throughout			
	the year due to Earth			
Gravity influences	revolving around the			
the motions of	Sun.			
celestial objects. The				
force of gravity	Students will be able			
between two objects	to list the			
in the universe	components of the			
	solar system.			
depends on their	Otudanta will be able			
masses and the	Students will be able			
distance between	to look up data about			
them.	the solar system			
	using the Solar			
	System Data Table			
1.1	on page 15 in their			
Students explain	Earth Science			
complex	Reference Tables.			
phenomena, such as	Ctudente will be abla			
tides, variations in	Students will be able			
day length, solar	to recognize that the			
insolation, apparent	orbits of objects are			
motion of the	actually elliptical and			
planets, and annual	not circular in shape.			

traverse of the constellations 1.1a Most objects in the solar system are in regular and predictable motion.	Students will be able to calculate eccentricity, using the formula on page 1 of the Earth Science Reference Tables		
These motions explain such phenomena as the day, the year, seasons, phases of the mon, eclipses,	Students will be able to identify the part of an orbit where the orbiting object travels fastest and/or slowest.		
and tides. Gravity influences the motions of celestial objects. The force of gravity between two objects in the universe depends on their masses and the distance between them. 1.1b Nine planets move around the Sun in nearly circular orbits. The orbit of each	Students will be able to recognize that planets closer to the sun have shorter periods of revolution and greater revolutionary rates than planets farther from the Sun. Students will be able to state that Earth moves 1 degree/ day in its orbit around the Sun. Students will be able to state relative orbital speeds of		
planet is an ellipse with the Sun located at one of the foci.	planets, based upon their distance from the Sun.		

Earth is orbited by	Students will be able		
one moon and many	to use planetary data		
artificial satellites.	to convert scale		
	distances between		
1.1c	planets of the solar		
Earth's coordinate	system.		
system of latitude	,		
and longitude, with	Students will be able		
the equator and	to construct a scale		
prime meridian as	model of the solar		
reference lines, is	system on adding		
based upon Earth's	machine tape.		
rotation and our			
observation of the	Students will be able		
Sun and stars.	to draw an ellipse		
	using the		
1.1d	appropriate tools		
Earth rotates on an	Ctudente will be able		
imaginary axis at a	Students will be able to measure the focal		
rate of 15 degrees	distance and major		
per hour. To people on Earth, this turning	axis of an ellipse and		
of the planet makes	calculate its		
it seem as though	eccentricity		
the Sun, the moon,	cocontricity		
and the stars are	Students will be able		
moving around Earth	to compare ellipse		
once a day. Rotation	eccentricities to		
provides a basis for	those of the planets		
our system of local	of the solar system		
time; meridians of			
longitude are the	Students will be able		
basis for time zones.	to predict where an		
	object travels fastest		
1.1e The Foucault	in its orbit around the		
	Sun.		
pendulum and the Coriolis effect			
	Students will be able		
provide evidence of	to describe why		

Earth's rotation.	constellations in the		
1.1f	nighttime sky		
Earth's changing	change throughout		
position with regard	the year.		
to the Sun and the	5		
moon has noticeable	Students will be able		
effects.	to state the calendar		
ellecis.	dates of the spring		
Earth revolves	and fall equinoxes		
around the Sun with	and the summer and		
its rotational axis	winter solstices.		
tilted at 23.5 degrees			
to a line	Students will be able		
perpendicular to the	to state the latitude		
plane of its orbit, with	of the noon sun		
the North Pole	being directly		
aligned with Polaris.	overhead on each of		
angrica warr clane.	the calendar dates		
During Earth's	listed above.		
one-year period of			
revolution, the tilt of	Students will be able		
its axis results in	to recognize these calendar dates on a		
changes in the angle			
of incidence of the	diagram of Earth in		
Sun's rays at a given	its orbit around the		
latitude; these	Sun.		
changes cause	Students will be able		
variation in the	to explain how the		
heating of the	length of daylight /		
surface. This	daily temperatures		
produces seasonal	changes in NYS		
variation in weather.	over the course of a		
	year.		
1.1g	,		
	Students will be able		
Seasonal changes in	to draw and label		
the apparent positions of	Earth in its orbit		

	1		1
constellations	around the Sun in its		
provide evidence of	correct orientation		
Earth's revolution.	on June 21,		
	December 21, March		
1.1h	21, and September		
The Sun's apparent			
path through the sky	21. They will also		
varies with latitude	label where the		
and season.	Sun's direct rays		
1.1i	strike Earth on those		
Approximately 70	dates.		
percent of Earth's			
surface is covered by	Students will be able		
-	to relate that the		
a relatively thin layer	angle of insolation is		
of water, which	directly related to its		
responds to the	angle of incidence.		
gravitational			
attraction of the	Students will be able		
moon and the Sun	to describe how		
with a daily cycle of	Earth's shape,		
high and low tides.	season of the year,		
	and time of day		
Describe current	affect the		
theories about the	angle/intensity of		
origin of the universe	insolation.		
and solar system.			
	Students will be able		
1.2	to describe how the		
Students describe	Sun's path changes		
current theories	throughout the		
about the origin of	course of a year as		
the universe and	the seasons change.		
solar system	-		
-	Students will be able		
1.2a	to state the length of		
The universe is vast	the lunar cycle (29.5		
and estimated to be	days).		
over ten billion years			
old. The current			

theory is that the	Students will be able		
universe was created	to explain why the		
from an explosion	same side of the		
called the Big Bang.	Moon always faces		
Evidence for this	Earth. (rate of		
theory includes:	rotation is equal to		
	the rate of		
cosmic background	revolution)		
radiation	,		
	Students will be able		
a red-shift (the	to recognize the		
Doppler effect) in the	eight primary phases		
light from very	of the Moon and be		
distant galaxies.	able to draw the		
-	Moon's appearance		
1.2b	as viewed from		
Stars form when	Earth in each of the		
gravity causes	corresponding eight		
clouds of molecules	positions in its orbit.		
to contract until	Students will be able		
nuclear fusion of light	to describe the		
elements into	differences between		
heavier ones occurs.	total solar, annular		
Fusion releases	solar, and lunar		
great amounts of	eclipses.		
energy over millions	compoco.		
of years.	Students will be able		
The store difference	to recognize the		
The stars differ from	positioning of the		
each other in size,	Sun, Earth, and		
temperature, and	Moon in creating		
age.	solar and lunar		
Our Cup is a	eclipses.		
Our Sun is a	Otivida interville i		
medium-sized star	Students will be		
within a spiral galaxy of stars known as the	table to define the		
UI STAIS KHUWH AS THE			

Milky Way. Our	term <i>light year</i> .		
galaxy contains	········		
billions of stars, and	Students will be able		
the universe contains	to describe the time		
billions of such	frame it takes for		
galaxies.	sunlight to reach the		
galaxies.	various planets of		
4.0	the solar system.		
1.2c			
Our solar system	Students will be able		
formed about five	to describe what a		
billion years ago	galaxy is and where		
from a giant cloud of	the solar system is		
gas and debris.	located in the Milky		
Gravity caused Earth	Way galaxy.		
and the other planets			
to become layered	Students will be able		
according to density	to describe the		
differences in their	similarities and		
materials.	differences between		
The characteristics	the heliocentric and		
of the planets of the	geocentric models of		
solar system are	the universe.		
affected by each			
planet's location in	Students will be able		
relationship to the	to use the		
Sun.	Electromagnetic		
	Spectrum Chart on		
The terrestrial	page 14 of the Earth		
	Science Reference		
planets are small, rocky, and dense.	Tables to compare		
The Jovian planets	the wavelengths and		
are large, gaseous,	frequencies of		
and of low density.	cosmic rays, x-rays,		
	ultraviolet, visible, infrared, television,		
4.04	microwave, and		
1.2d	radio forms of		
Asteroids, comets,			

and meteors are components of our solar system. Impact events have been correlated with mass extinction and global climatic change. Impact craters can be identified in Earth's crust. Students will investigate the relationships between the temperatures, brightnesses, and diameters of stars. Students will be able to recognize can be explained wing concersof density and heat energy. These changes include the shifting of planetary wind and cocan current patterns, the coccurrence of monsoons, furvicanes, flooding, and severe weather. 222 323 324 324 325 324 325 325 326 326 326 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327 327				
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occurrence of monsoons, hurricanes, flooding, and severe weather.supporting the cosmic background radiation.2.2aStudents will be able to state the current.	. ,	Students will be able		
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hurricanes, flooding, and severe weather. radiation. 2.2a Students will be able				
and severe weather. 2.2a Students will be able to state the current				
2.2a Students will be able		radiation.		
2.2a to state the surrent		Students will be able		
	2.2a Insolation (solar	to state the current		
radiation) heats		e l		
Farth's surface and of the Universe -				
atmosphere 13.567 billion years.		13.567 billion years.		
unequally due to Students will		Students will		

variations in: the intensity caused by differences in atmospheric transparency and angle of incidence which vary with time of day, latitude, and season characteristics of the materials absorbing the energy such as color, texture, transparency, state of matter, and specific heat duration, which varies with seasons and latitude.	observe the bright line spectra of hydrogen, helium, oxygen, air, argon, krypton, and neon.				
Standards	Content	Skills/Practices	Materials/ Resources	Assessments (All) Daily/Weekly/ Benchmarks	Timeline (Months/Weeks/ Days)
1.2j Geologic history can be reconstructed by observing sequences of rock types and fossils to correlate	Students will be able to identify meteorites as the causes of impact craters. Students will be able	Listed in Standards and Content	CK12 Organization Digital Textbook - Secondary Earth Science, as customized by	Tests - all tests throughout the year are written using Castle Learning or problem-attic software, and consist	Last half of May UNIT - Earth's History

bedrock at various	to describe the	Michael Breed to suit	solely of questions taken
locations.	global and local	our curriculum	from previous
	consequences of		administrations of NYS
The characteristics	meteorite impacts of	School-issued	Earth Science
of rocks indicate the	varying sizes.	Chromebooks	
processes by which		Chromebooks	Regents examinations.
they formed and the	Students will be able		
environments in	to define what a	Earth Science	Quizzes - Castle Learning
which these	fossil is and some of	ReferenceTables	and problem-attic.com
processes took	the characteristics of		
place.	organisms that	Mill's Notes Packet	Homework assignments
	promote		from textbook, CK12.org,
Fossils preserved in	preservation as a	Lab Manual	Castle Learning, Edpuzzle,
rocks provide	fossil.		
information about		developed by	Newsela.com,
past environmental	Students will be able	Michael Breed	teacher-created handouts
conditions.	to describe how		and worksheets, readings
	fossils form in a	www.problem-attic.co	from selected works, and
Geologists have	depositional	m	review book
divided Earth history	environment.		
into time units based	Students will be able	www.newsela.com	Test Review Packets
upon the fossil	to list various types		created with
record.	of fossils: casts,	www.cootloloorping.c	
	molds, imprints,	www.castlelearning.c	Castle Learning and/or
Age relationships	amber, ice, tar,	om	Problem-Attic website
among bodies of	petrification, and		
rocks can be	carbonaceous films.	www.ck12.org	Labs -
determined using			Half-life of M&M'ium
principles of original	Students will be able	www.edpuzzle.com	
horizontality,	to describe		Bedrock Correlation of
superposition,	information provided	Various videos from	Cayuga Lake
inclusions,	by fossils: species		
cross-cutting	change over time,	iTunes, Netflix, PBS,	Converse of Events
relationships, contact	biodiversity in the	etc.	Sequence of Events
metamorphism, and	past, changes in		
unconformities. The	Earth's surface,	www.newyorksciencet	Important geologic events
presence of volcanic	Earth's past climate,	eacher.com	in NYS

ash layers, index fossils, and	and appearances/activiti	SUNY Oneonta Earth	Cumulative Summative	
meteoritic debris can provide additional	es of extinct species.	Science Listserv	Assessment – NYS Earth	
information.	Students will be able	Document Camera	Science Regents Examination in June	
The regular rate of nuclear decay	to use the concepts of relative dating, the Principle of	and projector		
(half-life time period) of radioactive	Superposition, the Law of Crosscutting	Promethean Board		
isotopes allows	Relationships, index fossils, and	All necessary lab		
geologists to determine the	unconformities in order to be able to	equipment to complete labs for this		
absolute age of materials found in	list the sequence of formation of rock	unit.		
some rocks.	layers in an outcrop			
1.2i The pattern of	in chronological fashion.			
evolution of life-forms on Earth is	Students will be able			
at least partially	to define the term <i>stratigraphic</i>			
preserved in the rock record.	column.			
Fossil evidence	Students will be able to reconstruct a			
indicates that a wide variety of life-forms	stratigraphic column by correlating rock			
has existed in the past and that most of	layers from 12 different rock			
these forms have become extinct.	outcrops from the same area.			
Human existence	Students will learn			
has been very brief	some of the geologic			
compared to the expanse of geologic	background of central New York			

time.	State.		
1.2f	Students will be able to describe the		
Earth's oceans formed as a result of	process of		
precipitation over	radioactive decay.		
millions of years. The	Students will be able		
presence of an early ocean is indicated by	to define half life,		
sedimentary rocks of	parent atom, and daughter atom.		
marine origin, dating	-		
back about four billion years.	Students will be able		
	to calculate the age of an object, given		
	the relative		
	abundances of parent and daughter		
	atoms and the half		
	life of the		
	radioisotope measured.		
	Students will be able to state that		
	carbon-14 is the		
	radioisotope used for		
	organic remains less than 50,000 years		
	old.		
	Students will be able		
	to read the		
	"Half-Lives of		
	Selected Radioisotopes" and		
	the "Geologic History		
	of New York State"		

charts in the Earth Science Reference Tables		
Students will be able to model the half life of a radioisotope.		
Students will be able to graphically plot the data collected during today's lab activity.		
Students will be able to predict the reliability of larger data sets.		
Students will be able to use pages 8 & 9 on the Earth Science Reference Tables efficiently and accurately.		
Students will be able to differentiate between eras, eons, periods, and epochs.		
Students will be able to recognize that humans have occupied Earth for a tiny percentage of its history.		
Students will be able		

to state that Earth formed 4.5 billion years ago.		