Aligning with Next Generation Science Standards: For Educators, By Educators

Monster Storms: Exploring the Powerful Forces of Weather

JASON Learning's weather curriculum is aligned to Next Generation Science Standards (NGSS), Common Core and individual state science standards. JASON's NGSS Task Force, based in Rhode Island and comprised of administrators and classroom teachers, created this table to describe the alignments to NGSS. Performance Expectations, Disciplinary Core Ideas, Crosscutting Concepts, and Science and Engineering Practices supported by the chapter readings, labs, and field assignments for each expedition are included here for grades 5-12. This table does not include alignments to elementary school levels though they may be present. Alignments to Common Core, and state and local standards are searchable from within the JASON Mission Center (JMC). The Digital Library in the JMC includes more detailed alignments of individual resources (articles, images, videos, labs, field assignments, and digital simulations) to these standards.

*** (Asterisk):** The lab activity or field assignment engages students in three-dimensional learning as presented in *A Framework for K-12 Science Education* (National Research Council, 2012), and prepares students to reach associated performance expectations by the end of the grade or grade bands. Readings deepen and support student understanding of core ideas, crosscutting concepts, and science and engineering practices.

E (Extension): The lab activity or field assignment provides the opportunity to prepare students to reach associated performance expectations and develop core ideas, cross-cutting concepts and science & engineering practices by extending the existing lesson as suggested in the teaching tips section (teacher's edition) or through simple modification.

	Mission 1 Profiling the Suspects - Trouble Brewing in the Earth's Atmosphere					Mission 2 The Plot Condenses - Air and Water				Mission 3 The Chase - On the Run in Tornado Alley						Mission 4 The Hunt - Flying into the Eye					Mission 5 The Recovery - Living with Monster Storms			
	Chapter Readings	**Lab 1** Measuring Weather	**Lab 2** Pushing Up with Pressure	**Lab 3** Observing Convection	**Field Assignment** Profile of a Storm	Chapter Readings	**Lab 1** Energy and the Water Cycle	**Lab 2** Clouds in a Bottle	**Field Assignment** Modeling Atmospheric Signatures	Chapter Readings	**Lab 1** It's Not Just the Heat, It's the Dew Point!	**Lab 2** Distance to a Thunderstorm	**Lab 3** Modeling Tornadoes	**Lab 4** What's in a Map?	**Field Assignment** Predicting Severe Weather	Chapter Readings	**Lab 1** Wind Shear in Hurricanes	**Lab 2** Interpreting Hurricane Data	**Lab 3** Saharan Air Layer	**Field Assignment** What's a Storm to Do?	Chapter Readings	**Lab 1** Risk Assessment	**Lab 2** Storm Surge	**Field Assignment** Build a Better Building
Performance Expectations																								
5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.				*		*	*	*	E	*	*	*			*	*			*					
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.																							E	
MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	*	*			*	*		E	E	*	*	*	*	*	*	*	*	*	*		*	E		E
MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.				*	*									E		*	*	E						
MS-ESS3-2 - Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.										*						*		*		*	*	*	*	
MS-ESS3-3 - Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.																					*		E	
5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.			*			*		*	*	*														

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MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.									*									*		*		*	*	*
MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		*			*				*											E		E	*	*
MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.					*				E						*								E	E
MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that optimal design can be achieved.													*		*					*			E	E
HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.								E																
HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.								E				E												
HS-ESS2-5 Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.											E													
HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.					*				E						E									
Disciplinary Core Ideas																								
ESS2.A Earth's Materials and Systems				*		*	*		E	*	*	*	*	E	*				*					
ESS2.C The Roles of Water in Earth's Surface Processes		*		*	*	*	*	*		*	*	*	E	E		*			*	*	*	*	*	
ESS2.D Weather and Climate		*			*	*				*	*	*		E	*	*	E	*		*	*	*	*	
ESS3.B Natural Hazards																		*	*		*	*	*	*
ESS3.C Human Impacts on Earth's Systems															E							E	E	
ESS3.D Global Climate Change											E													

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ETS1.A Defining and Delimiting Engineering Problems									*						*	*		*		*	*	*	*	*
ETS1.B Developing Possible Solutions					*				E									E		E	*	E	*	*
ETS1.C Optimizing the Design solution					*				E						*								E	*
PS1.A Structure and Properties of Matter			*			*		*																
Crosscutting Concepts																								
Patterns		*			*	*		*	*	*				*	*						*	*		*
Cause and Effect		*	*		*	*	*	*		*	*	*		*	*		*	*	*	*	*	*	*	*
Scale, Proportion, and Quantity			*	*	*		*	*	*									*	*		*		*	
Systems and System Models			*	*	*	*	*	*	*	*	*		*	*	*		*	*	*		*		*	*
Energy and Matter				*			*			*														
Structure and Function		*												*									*	*
Stability and Change		*			*	*	*	*		*	*			*				*			*	*	*	*
Science and Engineering Practices																								
Asking Questions and Defining Problems					*				*			*		*	*		*			*		*	*	*
Developing and Using Models		*	*	*	*		*	*	*	*	*		*	*	*	*	*	*	*		*	*	*	*
Planning and Carrying Out Investigations		*		*	*				*		*	*			*		*						*	*
Analyzing and Interpreting Data		*		*	*	*	*	*	*	*	*	*		*	*	*		*	*	*	*	*	*	*
Using Mathematics and Computational Thinking		*							*			*											*	
Constructing Explanations and Designing Solutions			*	*	*		*	*	*				*	*	*		*		*	*		*	*	*
Engaging in Argument from Evidence					*				*			*			*			*		*			*	
Obtaining, Evaluating, and Communicating Information					*	*			*	*				*	*			*		*		*	*	*