New York Science

MS. Earth's Systems

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A **Performance Expectations** MS.ESS2.ES

1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. MS.ESS2.1

2 Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity. MS.ESS2.4

3 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geologic processes. MS.ESS3.1

B **Science and Engineering Practices** MS.ES.SEP

1 Developing and Using Models MS.ES.SEP.1

a Develop and use a model to describe phenomena. (MS- ESS2-1) MS.ES.SEP.1A

b Develop a model to describe unobservable mechanisms. (MS-ESS2-4) MS.ES.SEP.1B

2 Constructing Explanations and Designing Solutions MS.ES.SEP.2

a Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-ESS3-1) MS.ES.SEP.2A

C **Disciplinary Core Ideas** MS.ES.DCI

1 ESS2.A: Earth's Materials and Systems MS.ES.DCI.ESS2.A

a All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1) MS.ES.DCI.ESS2.A.1

2 ESS2.C: The Roles of Water in Earth's Surface Processes MS.ES.DCI.ESS2.C

a (NYSED) Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation, sublimation, deposition, precipitation, infiltration, and runoff. (MS-ESS2-4) MS.ES.DCI.ESS2.C.1

b (NYSED) Global movements of water and its changes in form are driven by sunlight and gravity. (MS-ESS2-4) MS.ES.DCI.ESS2.C.2

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3 ESS3.A: Natural Resources MS.ES.DCI.ESS3.A

a Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3- 1) MS.ES.DCI.ESS3.A.1

D Crosscutting Concepts MS.ES.CC

1 Cause and Effect MS.ES.CC.1

a Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-1) MS.ES.CC.1A

2 Energy and Matter MS.ES.CC.2

a Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. (MS-ESS2-4) MS.ES.CC.2A

3 Stability and Change MS.ES.CC.3

a Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale. (MS-ESS2-1) MS.ES.CC.3A

4 Influence of Science, Engineering, and Technology on Society and the Natural World MS.ES.CC.4

a All human activity draws on natural resources and has both short and long- term consequences, positive as well as negative, for the health of people and the natural environment. (MS-ESS3-1) MS.ES.CC.4A