


Short Performance Assessment: HS-ESS2-1

Grade Level: **High School**

Adapted from [SNAP](#)¹

Title	HS-ESS2-1 Modeling the Formation of the Himalayan Mountains		
Designed by	Michael Kloczko, Charles Evans	Course(s)	Earth Science
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Performance Expectation	<p>HS-ESS2-1: 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.</p> <p>Clarification Statement: Emphasis is on how the appearance of land features (such as mountains, valleys, and plateaus) and seafloor features (such as trenches, ridges, and seamounts) are a result of both constructive forces (such as volcanism, tectonic uplift, and orogeny) and destructive mechanisms (such as weathering, mass wasting, and coastal erosion).</p> <p>Assessment Boundary: Assessment does not include memorization of the details of the formation of specific geographic features of Earth's surface.</p>
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Science and Engineering Practice	<p>Developing and Using Models</p> <ul style="list-style-type: none">Develop a model based on evidence to illustrate the relationships between systems or between components of a system.
Disciplinary Core Ideas	<p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none">Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes. <p>ESS2.B: Plate Tectonics and Large-Scale System Interactions</p> <ul style="list-style-type: none">Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a framework for understanding its geologic history. Plate movements are responsible for most continental and ocean-floor features and for the distribution of most rocks and minerals within Earth's crust. (ESS2.B Grade 8 GBE)
Crosscutting Concept	<p>Stability and Change</p> <ul style="list-style-type: none">Change and rates of change can be quantified and modeled over very short or very long periods of time. Some system changes are irreversible.

Student Performance	<ol style="list-style-type: none">Components of the modelRelationshipsConnections
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¹ The Short Performance Assessment (SPA) and the Assessment Rubric adapted from the Stanford NGSS Assessment Project <http://snappgse.stanford.edu/>



Name_____

Modeling the Formation of the Himalayan Mountains

Performance Assessment

Phenomenon - Formation of the Himalaya

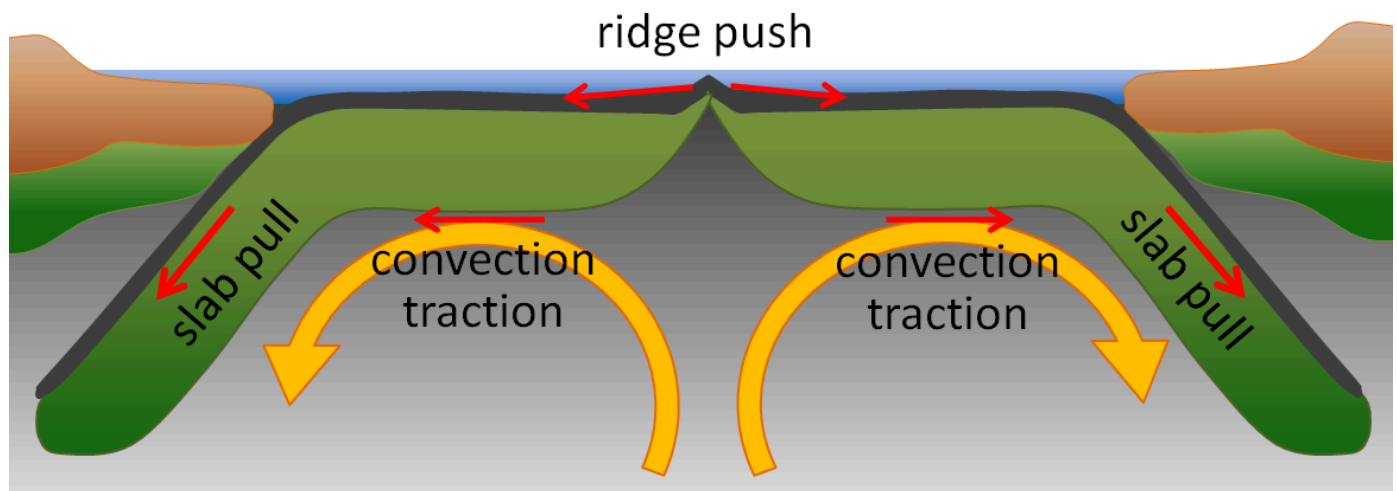


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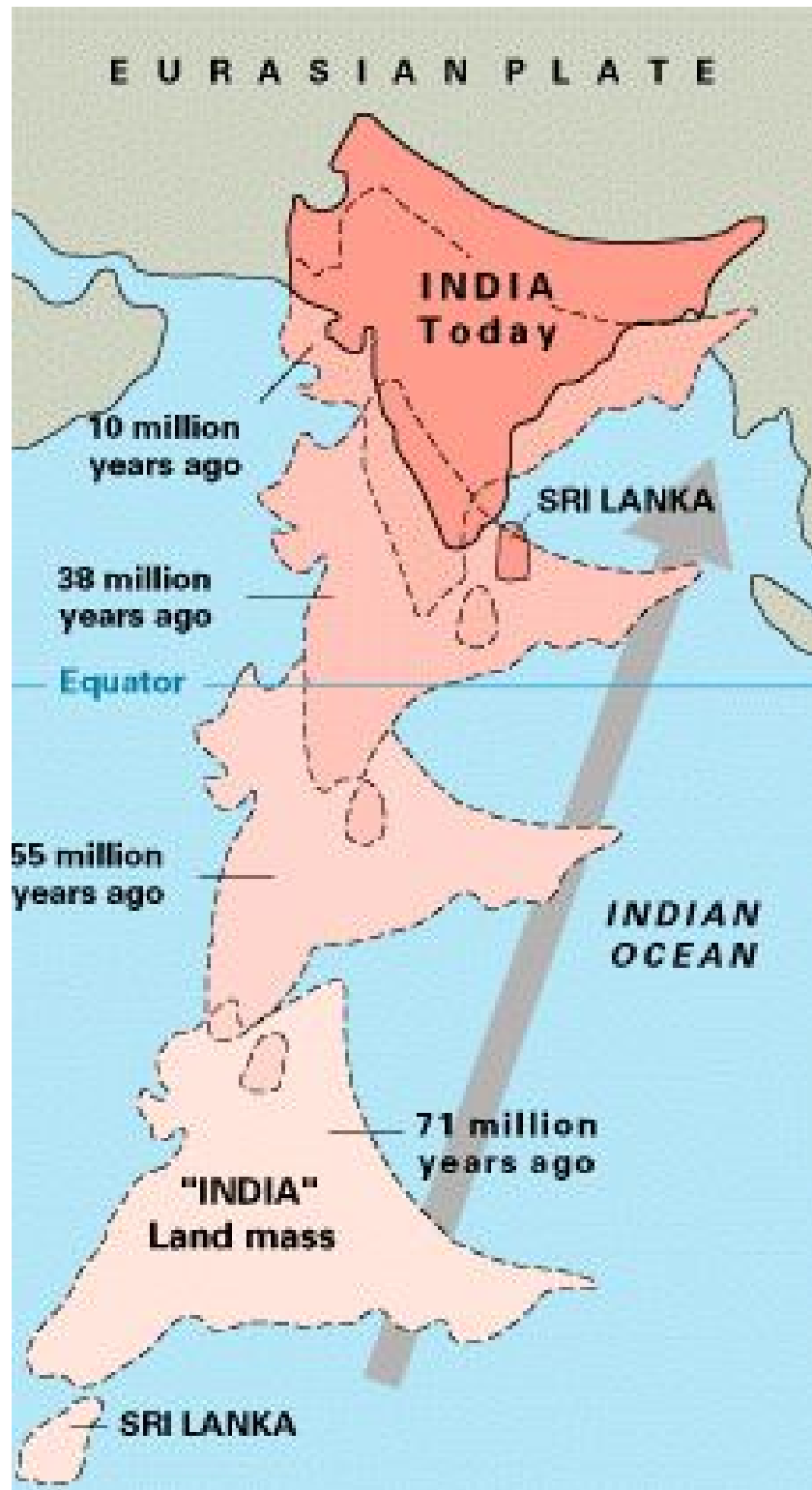
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<https://www.today.com/video/safety-concerns-increase-due-to-overcrowding-at-mount-everest-60389445990>



<https://opentextbc.ca/geology/chapter/10-5-mechanisms-for-plate-motion/>



<https://www.geolsoc.org.uk/Plate-Tectonics/Chap3-Plate-Margins/Convergent/Continental-Collision>



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Prompt

1. Develop a series of cross-sectional models, based on the evidence above, to illustrate how the Himalayan Mountains have formed. The models should include a pre, mid, and post collision model. Each model should include specific features labeled (such as trenches, subduction zones, and mountains), arrows for the relative motions of both the continental and internal processes such as convection cells, as well as the names of appropriate layers of the Earth.

Pre-collision

Mid-Collision

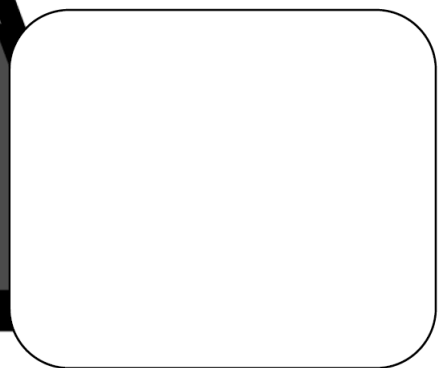
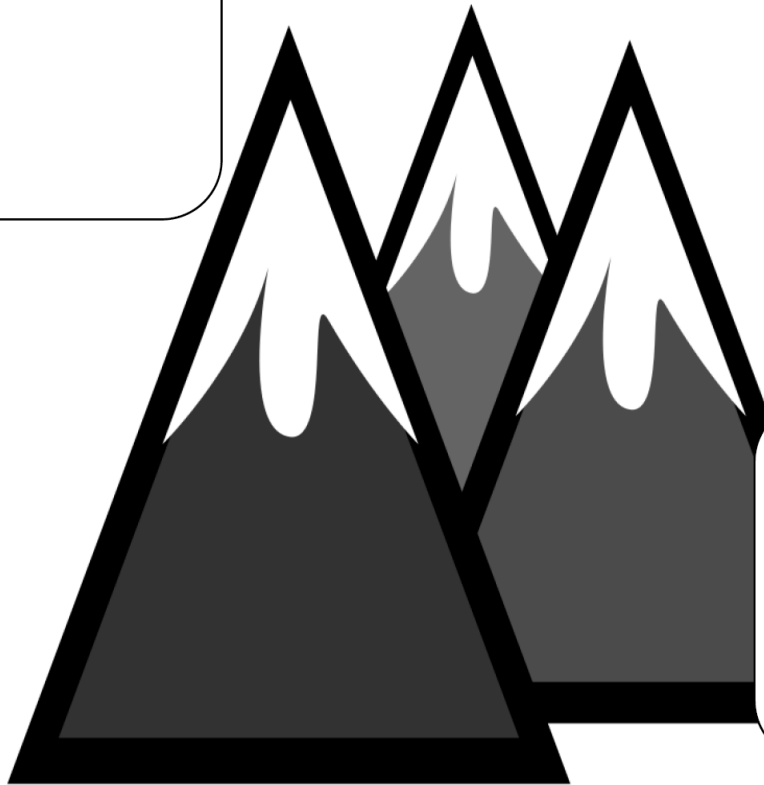
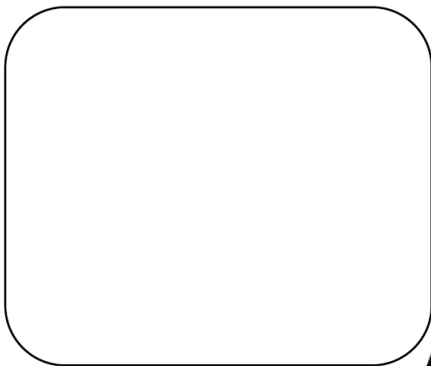
Present Day



2. Describe each process labeled on your diagrams. Be sure to state the location of the process. (are they on the surface of the continent, ocean floor, or a specific layer inside the Earth)

3. Using your model and the surface and internal processes at work, complete the graphic organizer.

**Processes Leading to
Increase in Elevation**



**Processes Leading to
Decrease in Elevation**



5. Describe how the creation of the Himalayan Mountains has changed the weather patterns, as well as the weathering and erosion of the Indian subcontinent.

6. Describe the surface processes and changes that will take place in the Himalayan Mountains once collision of the plates ends.



Assessment Rubric* - Question 1

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Assessment Rubric* - Question 2

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				



Assessment Rubric* - Question 3

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Assessment Rubric* - Question 4

	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				



Assessment Rubric* - Question 5				
	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Assessment Rubric* - Question 6				
	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Insert additional Assessment Rubrics (if needed) here.

