



# NEWSLETTER

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## Third Grade

Third grade will return to science on May 6th. We will be exploring our final unit of study Weather and Climate: Establishing an Orangutan Reserve

## STEM Student Showcase

On Thursday May 23, from 4:00-8:00 PM the Queens North Borough Office will be hosting an annual STEM Family Fun Night at the New York Hall of Science. They are selecting students to present a STEM related project. Students will present for 45 minutes early in the evening and then participate in the events afterwards. You must have a final project by May 1st and you need to complete an online application. Your project must reflect the Engineering Design Process, include elements of science technology, engineering and/or math. If students would like to participate, they should see me individually to apply.

## Trip

There are no trips scheduled for this unit.

## 5th Grade Unit 4: The Earth System: Investigating Water Shortages

In this exciting unit of study, students will take on the role of water resource engineers. Students will seek to answer the question: How much water is available for human use? Through an analysis of two fictional cities, East and West Ferris, which are located on different sides of a mountain on the fictional Ferris island, students will learn about the earth system and try to figure out what is causing a water shortage on one part of the island. They will be able to design ways to alleviate the effects of water shortages including freshwater collection systems and proposals for using chemical reactions to treat wastewater.

During Chapter 1 students will aim to answer the question: Why is East Ferris running out of water while West Ferris is not? Students will determine that Ferris Island is surrounded by ocean but salt water is unusable for most human purposes. East Ferris's growing population is using up their only fresh water source, a groundwater reservoir, whereas West Ferris has an additional source of freshwater- rain. Students will define the problem in East Ferris by analyzing graphs of global water distribution and reading about water shortages. They discuss how the biosphere and the hydrosphere interact and write a scientific explanation about why East Ferris is experiencing a water shortage.

During Chapter 2, students will aim to answer the question: Why does more rain form over West Ferris than East Ferris? Students will determine that more rain forms over West Ferris because more water vapor condenses there. During condensation water vapor gets colder and turns into liquid water. There is a lot of water getting cold in West Ferris, so a lot of rain forms. There is not a lot of rain forming over East Ferris, so there is not a lot of water

vapor getting colder and condensing into liquid water there. Students will gather information from hands-on-investigations. The Earth System Simulation and texts that help them understand condensation and evaporation at two scales: the observable and the nanoscopic. Students will then apply this to a discussion of how the atmosphere and hydrosphere interact. They also design and build freshwater collection systems.

During chapter 3, students will aim to answer the question: Why is more water vapor getting cold over West Ferris than East Ferris? Students will learn that there is more water vapor getting cold over West Ferris than East Ferris because on that side of the island more water vapor moves upward in the atmosphere where it is colder. This means that more water vapor can condense and fall as rain. Students synthesis information from texts, physical models and the simulation to determine that at higher altitudes the atmosphere where it is colder, water vapor can condense. They also evaluate and iterate on their freshwater collection system designs.

During chapter 4, students will aim to answer the question: Why is there more water vapor high up over West Ferris than East Ferris? Students will learn that more water vapor moves up in the atmosphere over West Ferris because a mountain directs the wind blowing from the ocean upward. This causes water vapor in the air to cool, condense, and fall as rain over West Ferris. Air that continues on over the mountain doe snot have enough water vapor left to condense and fall as rain over West Ferris. Students will investigate using the simulation an a hands-on activity to observe that water vapor gets directed upward when it blows toward a mountain. They synthesize this with their knowledge of where and why water vapor condenses in order to explain how Earth system interactions create rain shadows. They also iterate once more on their freshwater collection system designs.

During chapter 5, students will aim to answer the question: How can East Ferris turn wastewater into clean freshwater? Students will learn that East Ferris can add substances to wastewater the react with harmful substances in the water. The reaction creates new substances that are easier to remove from the water, so East Ferris can get clean freshwater. Students will observe a chemical reaction and read about everyday chemical reactions. They will use digital models to discover that matter is not created or destroyed in chemical reactions. Finally, they will write a scientific explanation about how waste water treatment, using chemical reactions could be another solution to the water shortage in East Ferris.