Cloudsat Mission and Weather Forecasting 5E Lesson Plan

Teacher: April Peacock

Date: June 1, 2019 (Use in August or September during Hurricane Season)

Subject / grade level: 4th grade

Materials: **Teacher** ~ SMARTBoard, computer, wifi
Students ~ 1:1 student Chromebook, Google Classroom, wifi

VA SOL Essential Standards and Clarifying Objectives

Science 4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. Key concepts include
a) weather phenomena;
b) weather measurements and meteorological tools; and
c) use of weather measurements and weather phenomena to make weather predictions.

Math 4.14a Collect, organize, and represent data in bar graphs and line graphs,
4.14b Interpret data represented in bar graphs and line graphs, and
4.14c Compare two different representations of the same data (chart and bar graph or pictograph and bar graph).

ELA 4.6 The student will continue to read a variety of nonfiction materials
a) in order to predict and categorize information;
i) use prior knowledge and build additional background knowledge as context for new learning.
4.9 The student will demonstrate comprehension of information and resources to research a topic.

Lesson objective(s):

Students will observe what the Cloudsat Satellite Mission does and how it helps in identifying weather related phenomena like hurricanes, rainfall, and how pollution is related.

Differentiation strategies to meet diverse learner needs:

Students will be able to progress through the exploration of resources at their own pace.
There are two students who will do less than what is assigned. They will approximately one-half of the work.
There are three students who will want to extend their knowledge and they will be able to explore further once they have completed the assignment.

ENGAGEMENT

- We will begin class with a discussion about weather phenomena and how the technologies that help us identify hurricanes have changed over the last 30 years.
- In a pair and share, students will begin by naming 2 hurricanes that they remember and why they remember them. What was significant about them? Did other people remember them?
- Students will share with the whole group what some of the hurricanes were they remembered and why.

EXPLORATION

- Students will be working independently, however collaboration is welcome when students need assistance or guidance from a peer (and teacher is working with someone else).
- http://www.weatherwizkids.com/weather-forecasting.html
- https://www.jpl.nasa.gov/missions/cloudsat/ and http://cloudsat.atmos.colostate.edu/home

EXPLANATION

- Students will utilize a Google Classroom Assignment to do their note taking and create their Slides Presentation.
- Students will explore the above noted websites with the goal of understanding how the Cloudsat Mission assists meteorologists in their efforts to forecast hurricanes and rainfall.
- What might happen to temperature in the atmosphere as your altitude increases?
- What might happen to relative humidity with increases in altitude?
- What might happen to air pressure as altitude increases?
- The highest peaks in the USA are approximately 9,000 meters. What was the air temperature this morning at that height?
- Clouds form at altitudes where the relative humidity is approximately 100%. At which altitudes might clouds have been present today?
- Large passenger Airliners fly at altitudes of 12,000 meters or more. What is the air temperature and air pressure at this height over Roanoke, VA? Richmond, VA? Virginia Beach, VA?
- The Jet Stream is a high-altitude wind where speeds of 75 knots are common. Is there any evidence which suggests the Jet Stream was over Roanoke, VA? Richmond, VA? Virginia Beach, VA?

ELABORATION

- Students will create a slide presentation of information and graphics to illustrate what they have learned regarding how the Cloudsat Mission provides information.
- Students will also do a Seesaw video sharing this information with their parents.

EVALUATION

- Students will be evaluated on their research of the 3 websites shares.
- They will be evaluated on the slide presentation of information and the exploration questions that they answered.
- Students will be evaluated on whether they completed the Seesaw video.