Lesson Number: Unit 6: Earths Changing Climate Date: **October 11th 2022**

Time Frame: 60 minutes Content Area: 6th Grade Science

Central Focus: What is the relationship between sea-level rise, precipitation, ice-melting and temperature?

Lesson Overview

MS MS-ESS1-3: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

Rationale/Purpose: Students will connect Sea-Level to be a major negative effect of climate change.

Lesson Objective/SWBAT:

- Identify correlations between temperature, ice melting and Sea-level rise.
- Analyze data from NASA's "My Data, Oceans Circulation" tools & Sea-Level Video.
- Analyze data from Amplify Earths Changing Climate Simulation
- Utilize reading and annotation strategies

Instructional Materials / Resources Needed:

- Projector & Lesson Slides
- Student Paperwork
- Pencils
- Chromebooks

Formal (Summative) Assessment of the Lesson Objective(s):	**Evaluation Criteria – how do you define proficiency?**
An exit slip within the handout/packet. Exit ticket will have 1 Open ended response, students will be able to use Claim, evidence and reasoning to identify that "an increase in ice melting, temperature, Precipitation and sea-level rise are interconnected/correlated"	An Exemplar of Possible student responses that have criteria for "Check for Understandings/CFU's", and major key words in sentences.
Academic Language: <u>Vocabulary</u> Sea-Level Rise Temperature Energy Precipitation CO_2 Methane	**Academic Language: <u>Analyze</u>** Utilize different media, (readings, simulations, data and videos to identify a proper claim, provide evidence and give reasoning behind chosen evidence.

Additional Language Demands for this Lesson:

<u>Discourse:</u>
Students will work in partners of four with rotating tasks every 6 minutes. Group work may be completed while using eachother for support.
Students on the Amplify sim are modelled their expectations for the laptop and what criteria they should see on the screen (example: more methane gas).

<u>Syntax:</u>
Modelling CER's, use of sentence starters, and visual representation and graphic organizers.

Lesson Procedure and Informal Assessments

"Before" – Opening (5 minutes)

Students will silently complete the do now for 5 minutes about the Earths changing climate simulation. What key differences/changes do they notice between images of before/after an increase in methane, and/or CO_2. Students will be probed with "Does this indicate higher or lower energy on earths surface?".

- Students should right **more** or less energy, **more** or less gasses, more or **less** ice, **higher** or lower temperature.

"Before/During" – Modeling / Inquiry / More Thorough Review if Needed (10 minutes)

- Students will be prefaced on classwork/partner work. All students will have 6 minutes within their one role in the group before alternating to the next task. (Students will be moved and grouped into groups of no more than 4).
- Student vocabulary and lessons are prefaced with "why do we care today?" We care because sea-level rise affects all people from different backgrounds and experiences, as it is part of the climate change we face today. The more informed we are about climate change, then we can make informed decisions to better the environment.

"During" – Main Practice (5 minutes)

Before Moving to independent practice, student exemplar/showcall will be provided on projector. Expectations of students should include the key criteria:

- Students should right **more** or less energy, **more** or less gasses, more or **less** ice, **higher** or lower temperature.
- Key Idea/Main focus in guided notes will be outlined "What is the relationship between; ice melting, sea-level rise, precipitation and temperature."
- Students will reinforce prior key concepts with fill in the blanks.

All Informal / Formative Assessment(s) / Questions:

- "What is the relationship between; ice melting, sea-level rise, precipitation and temperature."
- If there is a high amount of energy on earths surface, is there a higher or lower temperature.
    - Is there more or less ice visible on earth?

Independent Practice/Support (20 minutes) Cont'd

Monitoring of student progress will be provided, students on laptops should have their own headphones and utilizing google classroom for the link on what to do next.

- Student 1 will read an article and underline the facts regarding ice-melting in the polar caps. Students will answer questions such as "What was the main cause, described in the article, that leads to the polar caps melting?" "What organisms are negatively affected by the polar caps melting?" "What gasses have you studied that contribute to the polar caps melting?"
- Student 2 will explore the Weather patterns simulation and write the criteria for HEAVY rain fall. "What temperature differences areneeded for an air parcel to rain heavily?" "What pressure differences or contributions lead to heavy rainfall?" How does an increase in rainfall lead to an increase in sea-level rise?" "What natural disasters can you associate with heavy rainfall and how will that affect communities or ecosystems?"
- Student 3 will explore the Climate Change simulation and record the criteria for ice-melting. Student 1 and 3 may work together on the simulation and reading as their topics overlap. "What gasses increase the ice/polar caps?" "What gasses decrease/melt the polar caps?" What combination of gasses melts the polar caps the fastest. Does population have an effect on the icecaps melting.
- Student 4 will use the My Nasa Data website materials such as "Ocean Circulation" and Sea level rise with video. "Where are the oceans garbage patches found? About how much of a rise in sea level can we expect to see in the next few years? What do you think will happen to communities that live on the sea-coast?"

"After" – Closing (5 minutes) w/ 5 minutes before transition.

Exit ticket: Students have to use CER's in response, include vocabulary Temperature, sea-level rise, Ice-melting and Precipitation. (If one is high such as temperature then all other criteria is high and vice versa for low).

Planned Supports: Accommodations/Modifications (Throughout Lesson)

Monitoring of student progress with teacher moves, providing guided notes to students with IEP's/504's, using alternative forms of explanation, such as drawing and use of partner work to support students with the use of their peers.