Grade Level: 1st grade

NGSS 1st grade: Students who demonstrate understanding can:

1-ESS1-1. **Use observations of the sun, moon, and stars to describe patterns that can be predicted.** [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [*Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.*]

1-ESS1-2. **Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [*Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.*]

Students will focus intensively on the four critical areas specified by the Common Core State Standards for Mathematics in Grade One:

- Addition and subtraction within 20
- Whole number relationships and place value
- Linear measurement in non-standard units
- Reasoning with shapes and their attributes

Objective: The students will create a list and construct a graph of the number of sunspots using construction paper. The student will explore patterns in the data set from 2020 and locate the maximum and minimum numbers on the graph bar.

Materials:

Construction paper
Ruler
Crayons
Sunspot data table

Engagement questions:

Students will have different pictures with questions such as:
What is a Solar Storm?
What is space weather? Why do you think scientists monitor space weather? What is the sun? What are Solar flares?
Students will answer these questions using a thinking map to define weather, science, sun, and solar flares. Students will turn and talk and interact with each other and answer the questions.

Cognates list- Lista de cognados

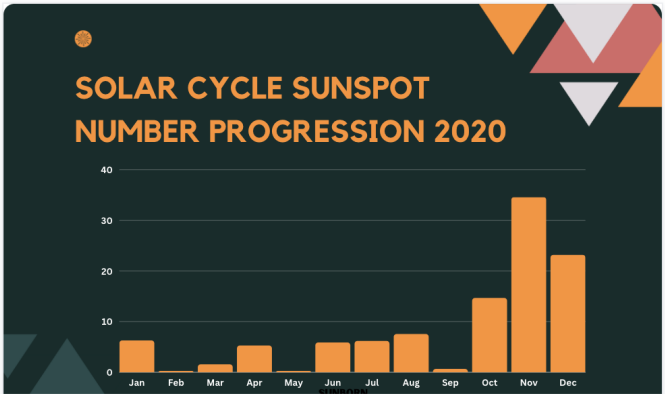
Sol-sun
Cientifico- Scientist
Sistema solar- Solar system
Erupciones solares-Solar flares

Analizar- Analysis

Activity:

Students will work with a small group of 4. Each student will have a data set with the sunspots and will recognize the most significant and minor numbers for each month. Students will practice more than or less than. Students will draw two graphs with the highest and smallest number.

Data resources:



https://www.swpc.noaa.gov/products/solar-cycle-progression: Students can examine the data and identify patterns in the sunspot numbers over time. They can create line or bar graphs to represent the data, observe sunspot activity's rise and fall throughout the solar cycle, and develop mathematical models to describe the relationship between sunspot numbers and time.

After this activity, students will draw and write a picture of the sun and write the scientific vocabulary from this paragraph:

The Sun, our nearest star, is a powerful, sitting furnace that produces light and heat. For thousands of years, naked-eye observers have seen dark spots slowly cross the disk of the Sun. With more powerful instruments today, astronomers can zoom in to see astonishing details in these sunspots. The image on the left is a close-up view of a sunspot about twice Planet Earth's diameter!

Solar Cycle Progression NOAA NWA Weather Prediction
Sun Spot Number Progression

May 2020
Monthly Values: 0.2
Smoothed Monthly Values: 5.6
Predicted Values: 0.7
Predicted Range: 0 - 4.9

This data represents that during the 2020 year, you can observe the progression of the sunspots and solar activity. At the end of 2020, the sunspots will be active and increase Earth's geomagnetic storm activity.
This data shows a period of low solar activity with fewer sunspots at the beginning of 2020. There are fewer high-energy particles emitted from the Sun. Watching the northern lights will be a better time when the sun is more active.

These values are a progression for the entire 2020 year. At the end of the year, there is an increase in sunspot values.

Formative Assessment:

Students will go to the Quizlet website and practice the vocabulary for the solar cycle and practice with the flashcards.
https://quizlet.com/355625631/solar-cycle-flash-cards/