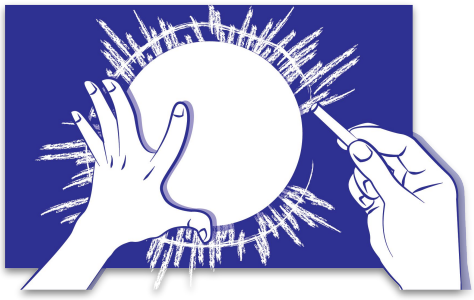
Predict the Corona Chalk Art

What do you think the corona will look like during the April 8, 2024 total solar eclipse?

Steps:

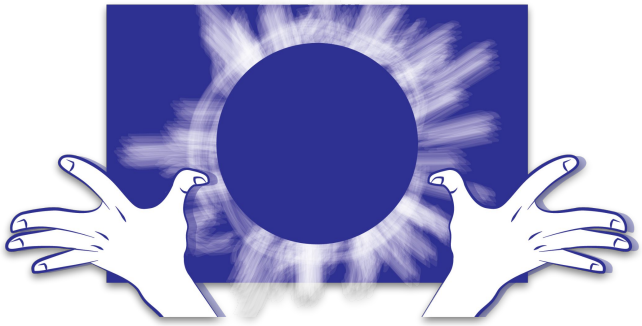
1. Place the circle template on construction paper and hold it down. Draw a thick circle or lines of chalk around the template.



2. Holding the template in place with one hand, use the other hand to smudge the chalk away from the circle, outward in all directions to represent the corona of the Sun.



3. Remove the template and label the features in the corona.



Explore the Full Activity:
https://science.nasa.gov/learn/heat/resource/predict-the-corona-activities-2/

This product is supported by the NASA Heliophysics Education Activation Team (NASA HEAT), part of NASA's Science Activation portfolio.
NP-2023-2-012-GSFC

NASA HEAT

Predict the Corona Chalk Art

Talking Points

- **The corona looks unique during each total solar eclipse, which depends on how active the Sun is.**
  - The Sun experiences seasons, similar to how Earth does. There are times when there is "stormy weather" and times of "good weather." This is known as the solar cycle. ***(Refer to The Solar Cycle Tabletop.)***
  - Scientists can track the solar cycle by counting the number of sunspots.
  - Scientists have been tracking sunspots since the 18th century and can accurately predict the solar cycle.
  - Solar Maximum is when the Sun is very active and has an increased number of sunspots.
  - Solar Minimum occurs when the Sun is less active and has a fewer number of sunspots.

- **Sunspots are darker, cooler spots on the Sun where the Sun's magnetic fields are concentrated.**
  - Magnetic energy increases in the Sun's atmosphere during solar maximum and the Sun's magnetic poles are flip-flopping.
  - Notice the features in the corona on image A. Prominences, coronal loops and helmet streamers are all caused by increased magnetic activity on the Sun. ***(Refer to The Solar Cycle Tabletop.)***
  - Image A was taken during a total solar eclipse in 2015.
  - As you can see from the solar cycle sunspot progression graph, the Sun was very active during 2015.
  - Solar Maximum was in the year 2014, with a maximum average of 116 sunspots that year.

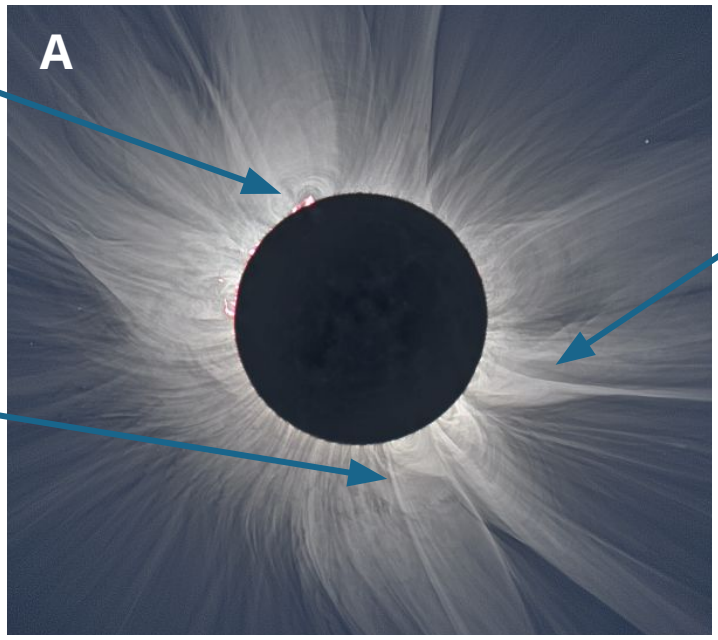
- **Examine the corona in images B, C, and D.** ***(Refer to the Imaging the Corona During Total Solar Eclipses Tabletop.)***
  - What features do you see in these images? Prominences? Coronal loops? Helmet Streamers?
  - Where on the solar cycle did these total solar eclipses occur?
  - Consider these images in making your prediction for what the corona will look like on April 8, 2024.
  - Also consider the Solar Cycle Sunspot Progression graph. Do you expect a lot of magnetic activity on the Sun?

The Solar Cycle

The corona looks differently during each total solar eclipse, displaying different features depending on how active the Sun is.

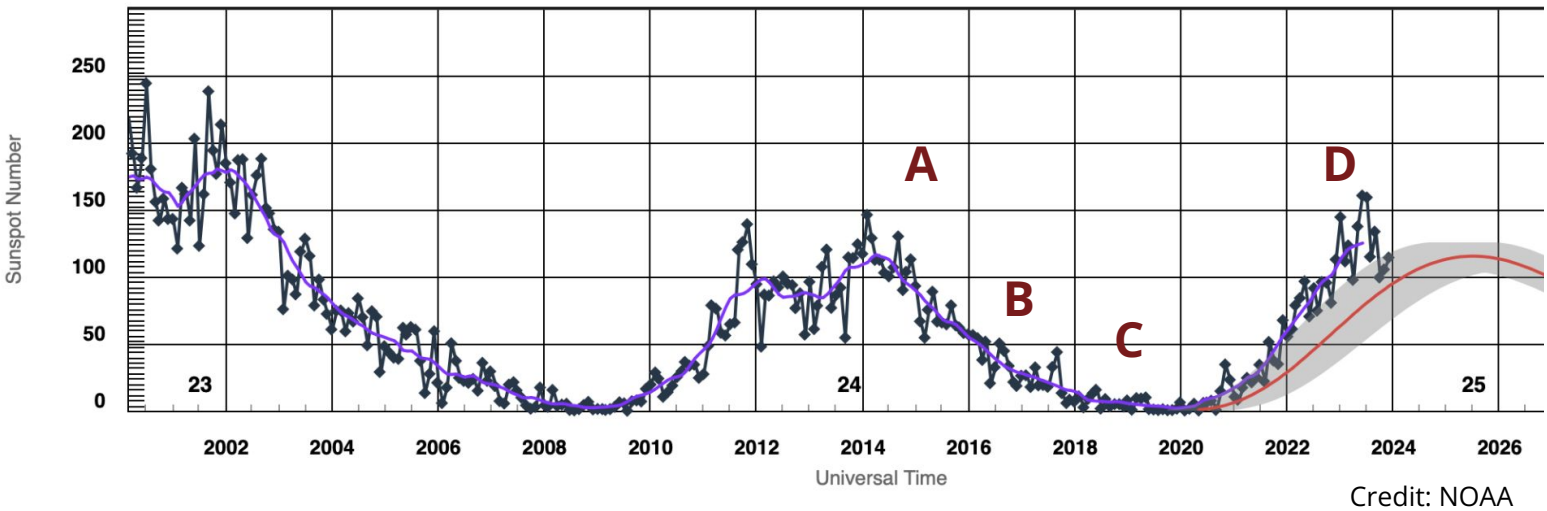
Prominences
Bright strands of cooler, denser solar material suspended above the Sun's surface by magnetic fields

Coronal Loops
Found near sunspots, these loops of solar material connect magnetic regions on the solar surface



Helmet Streamers
large cap-like structures with long pointed peaks that usually overlie sunspots and active regions

Total Solar Eclipse over Chile
March 20, 2015
Credit: S. Habbal, M. Druckmüller, and P. Aniol

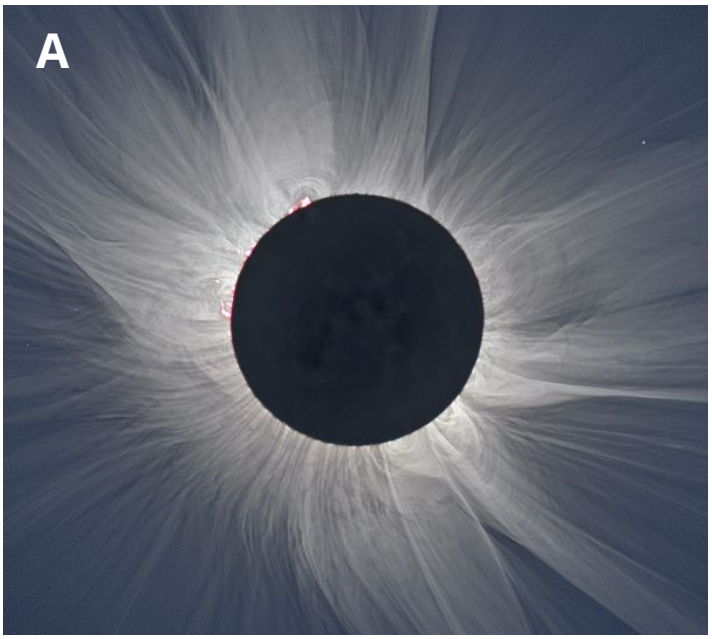


Credit: NOAA

Solar Cycle Sunspot Progression

The Solar Cycle is approximately 11 years, as the Sun goes through a cycle of lower activity and higher activity, which is indicated by the number of sunspots. The red line represents predictions.

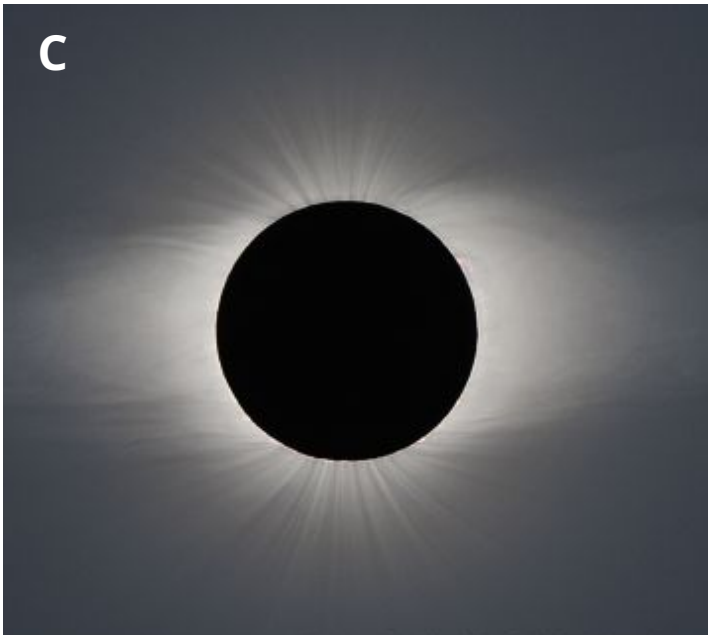
Imaging the Corona During Total Solar Eclipses



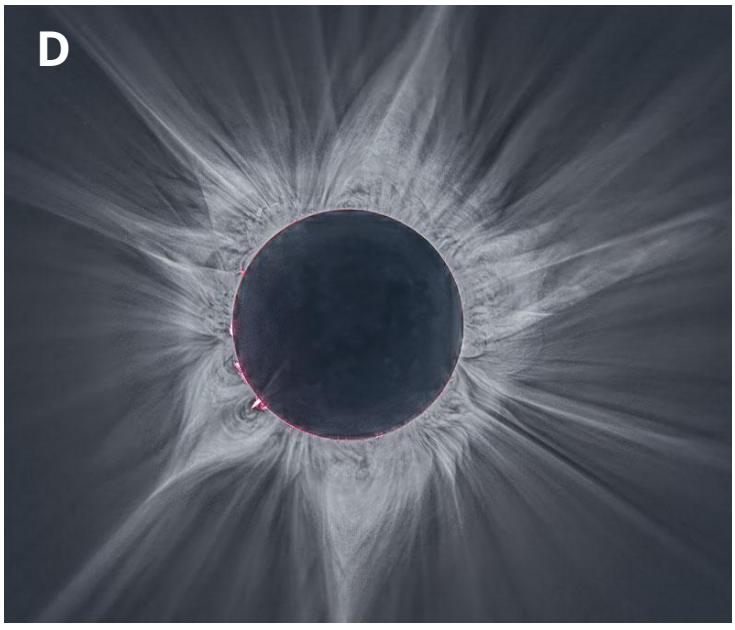
Total Solar Eclipse over Chile
March 20, 2015
Credit: S. Habbal, M. Druckmüller, and P. Aniol



Total Solar Eclipse over USA
August 17, 2017
Credit: Nicholas Lefaudeux



Total Solar Eclipse over Argentina
July 2, 2019
Credit: Williams College Expedition Team



Total Solar Eclipse over Australia
April 20, 2023
Credit: Reinhold Wittich