

Solar Radiation and Climate Experiment (SORCE)



The Solar Radiation and Climate Experiment (SORCE) was a NASA-sponsored satellite mission that measured incoming X-ray, ultraviolet, visible, near-infrared, and totalsolar radiation. These measurements specifically addressed long-term climate change, natural variability, atmospheric ozone, and UV-B radiation, enhancing climate prediction. These measurements are critical to studies of the Sun, its effect on our Earth system, and its influence on humankind. SORCE was launched on January 25, 2003 on a Pegasus XL launch vehicle.

SORCE measured the Sun's output using radiometers, spectrometers, photodiodes, detectors, and bolometers mounted on a satellite observatory orbiting the Earth. Spectral measurements identify the irradiance of the Sun by characterizing the Sun's energy and emissions in the form of color that can then be translated into quantities and elements of matter. Data obtained by SORCE can be used to model the Sun's output and to explain and predict the effect of the Sun's radiation on the Earth's atmosphere and climate.

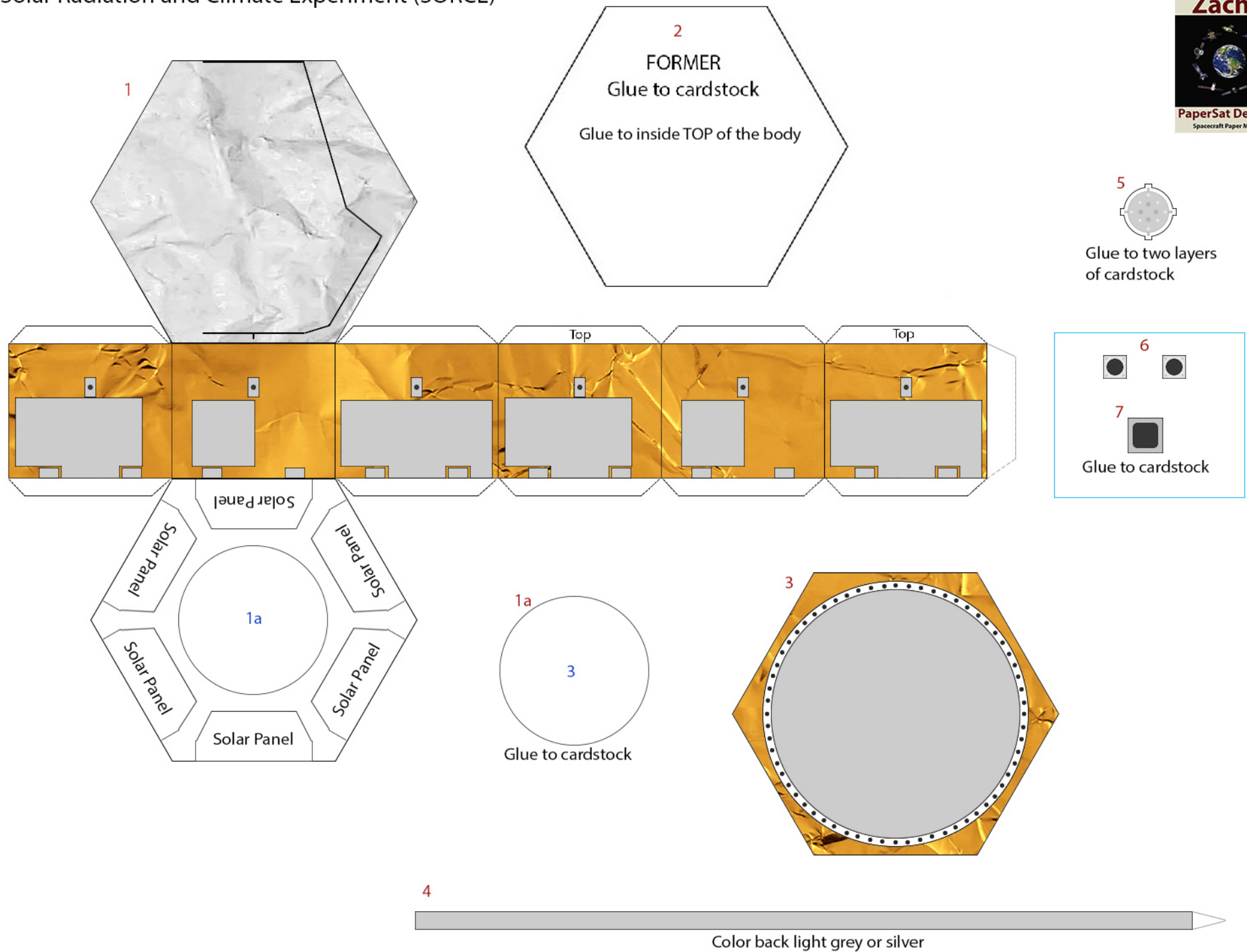
Basically, SORCE data has provided scientists a unique understanding of how the sun varies both slowly and rapidly, affecting Earth's weather and climate systems and ultimately all the life on Earth that depends on the sun's flow of energy.

One of the primary results of the SORCE mission is the daily record of Total Solar Irradiance (TSI), above the atmosphere of the Earth. TSI is a critical, fundamental variable for the Earth's climate system, because even small variations in the amount of energy received by the Earth globe from the sun can affect Earth's climate and weather systems. TSI is slightly lower during solar minimum periods and higher during solar maximum periods, with higher variability evident during solar maximum periods. Solar flares and sunspots, which occur more frequently during solar maxima, cause measurable variability in TSI.

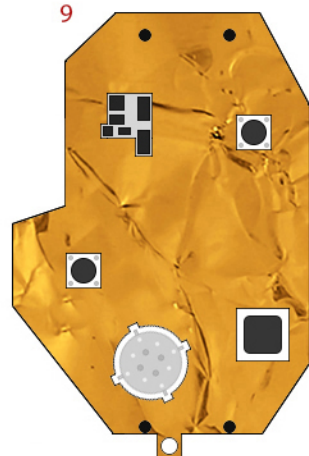
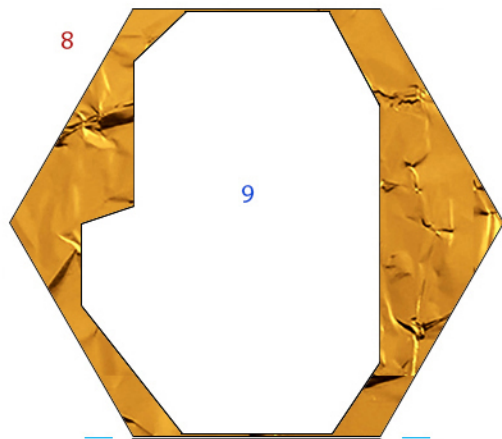
NASA decommissioned SORCE on 25 February 2020, after 17 years of operation (over three times the original design life of five years). The spacecraft had struggled with battery degradation problems since 2011, which prevented SORCE from conducting measurements full-time. Ground teams switched to daytime-only observations, effectively allowing SORCE to operate with no functioning battery through its solar panels.

Left to drift in orbit, SORCE is projected to re-enter the atmosphere in 2032, with most of the spacecraft expected to burn up during re-entry.

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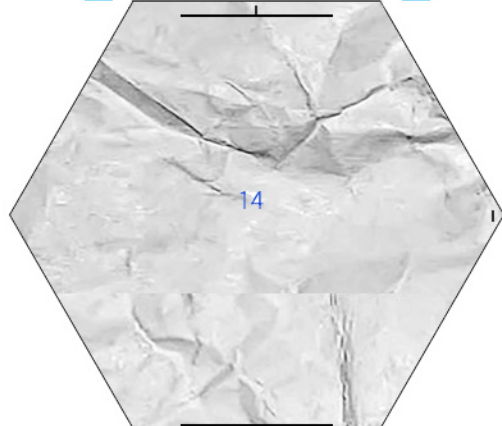
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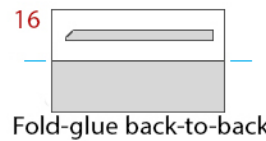
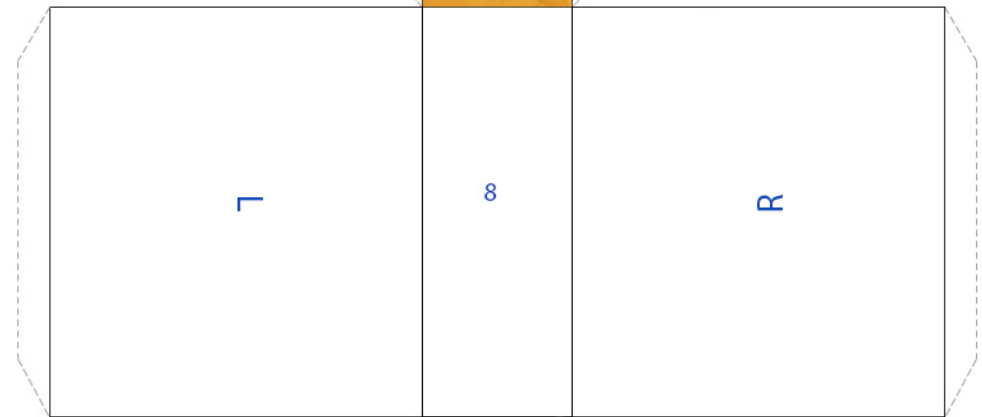
Poke small holes on the four small black dots.
Glue to three layers of cardstock

Cut four plastic broom straws or similar material the same length as the line below, colored light grey

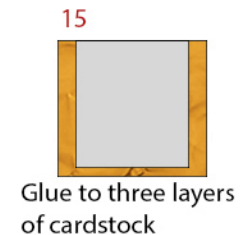
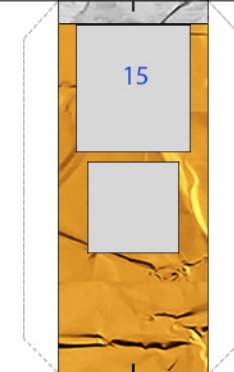
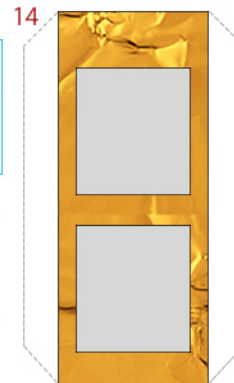
Cut toothpick the same length as the line below, colored white.



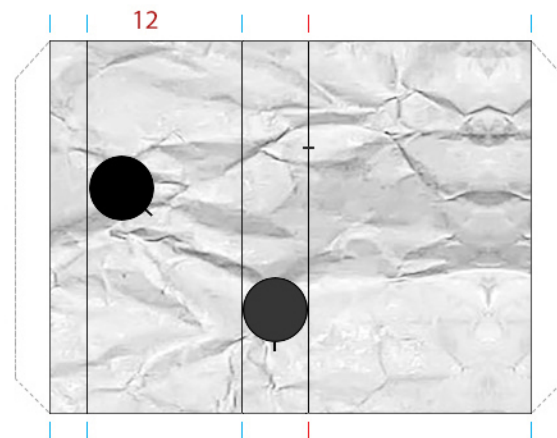
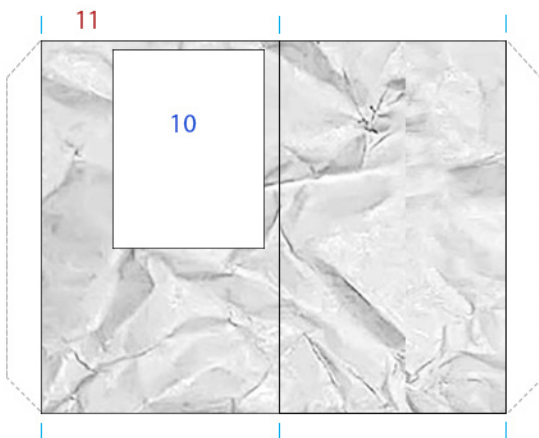
Fold-Glue back-to-back



Fold-glue back-to-back

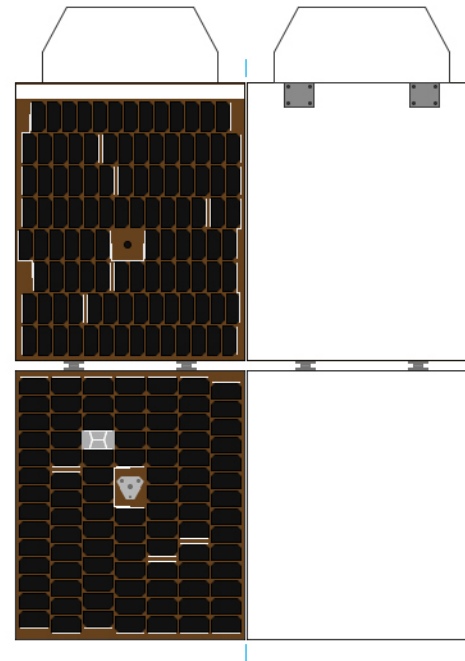
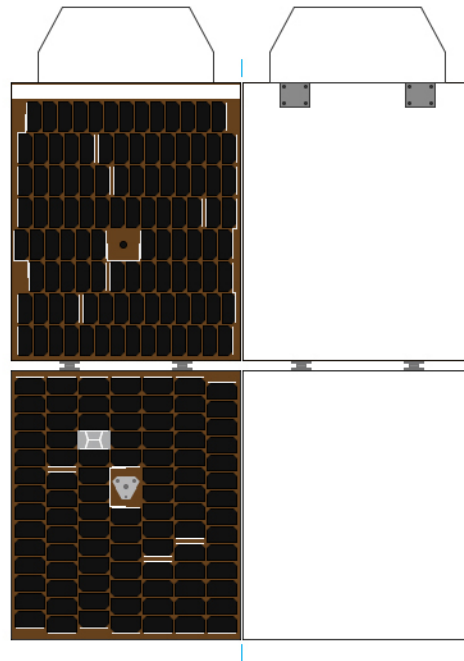
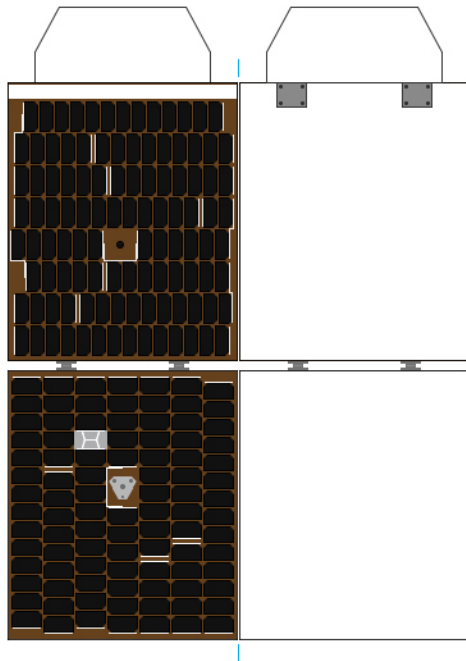


Glue to three layers of cardstock



Color back Black

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Fold-glue each back-to-back

