This summer's solar eclipses from the ends of the Earth

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Solar eclipses will occur at opposite ends of the Earth this summer, 2018. Both will be merely partial solar eclipses as seen from the Earth's surface, not as dramatic as last summer's total solar eclipse whose path of totality crossed the United States, with partial eclipses being seen from as far north as Canada and as far south as northern South America. Prof. Jay Pasachoff, Chair of the International Astronomical Union's Working Group on Eclipses, will attempt to view both, weather permitting. Since part of the everyday solar surface will remain visible at all times, he will discuss eye-safety issues for the general public at each location.

The July 13, 2018, partial solar eclipse will be visible only from a northern rim of Antarctica and the southern edge of Australia, including the island of Tasmania, as well as the ocean in between. Only about 10 percent of the Sun's diameter will be covered by the Moon at maximum at 1:24 p.m. local time in Hobart, Tasmania, with a total partial-eclipse duration of 1 hour 4 minutes, which is where Pasachoff will travel for the eclipse. Melbourne will have only 2 percent coverage and the eclipse limit will be reached at Adelaide. In New Zealand, the eclipse will be barely visible from Stewart Island south of Invercargill. No eclipse will be visible from the South Pole, which is in the midst of six months of nighttime.

The August 11, 2018, partial solar eclipse will be visible from the northernmost parts of the world. The Norwegian-controlled Archipelago of Svalbard, site of visibility of a total solar eclipse in 2015, will have a

45 percent partial eclipse. At Scandinavian capitals of Oslo, Stockholm, and Helsinki, coverage will be 5 percent, 4 percent, and 8 percent, respectively; with 9 percent coverage at St. Petersburg, Russia. Pasachoff will join Swedish colleagues in the northern Swedish city of Kuruna about 100 miles above the Arctic Circle for 25 percent coverage, perhaps traveling north to Torneträsk; Tromsø, Norway, will have 29 percent coverage. The eclipse will extend as far south as Moscow, with only about 2 percent coverage of the Sun, which will be high in the sky. In Yakutsk, Russia, just south of the Arctic Circle, coverage will be 57 percent. Coverage will be 25 percent to 50 percent in Greenland and 20 percent in Iceland. A narrow band of visibility will extend to 35 percent coverage of the solar diameter at Seoul, South Korea, and 20 percent at Shanghai, both with the Sun at the horizon. About 65 percent of the Sun's diameter will be eclipsed at the North Pole.

The International Astronomical Union's Working Group on Solar Eclipses, in existence in some form since the IAU's formation 100 years ago, includes members from the U.S., Canada, England, Slovakia, Russia, Japan, China, India, and France. Pasachoff will report on the history of the Working Group, and its predecessor Commissions and Subcommissions, at the Centennial Symposium to be held at the IAU's triennial General Assembly in Vienna, Austria, in late August. The Working Group is joint between the "Sun and Heliosphere" Division and the "Education, Outreach, and Heritage" Division.

After 2017's major total solar eclipse, 2018 is a year without a total or annular ("ring") eclipse, so there will be a Solar Eclipse Conference (sec2018.be). It will be held in Genk, Belgium, during August 3-6, and various professional and amateur astronomers will discuss scientific and non-scientific eclipse-related matters. Previous Solar Eclipse Conferences were held in Antwerp in 2000, Milton Keynes, UK, in 2004, Los Angeles's Griffith Observatory in 2007, New Delhi in 2011, and the Sacramento Peak Observatory in Sunspot, New Mexico, in 2014.

The following solar eclipse to the ones discussed above will be a partial eclipse visible in eastern Asia—including Japan, eastern China, South Korea, and North Korea, as well as southwestern Alaska on January 6, 2019. (42 percent coverage in Tokyo and 20 percent coverage in Shanghai.) A total solar eclipse will cross the Pacific in the South American winter on July 2, 2019, including Oeno Island in the Pitcairn Islands for almost 3 minutes of totality, reaching Chile for 2½ minutes of totality only 13° above the horizon and then extending until sunset near the Argentinian Atlantic Coast. An annular eclipse extending from Saudi Arabia and Oman through southern India and Sri Lanka to southern Malaysia and Singapore and on to Guam in mid-Pacific will occur on December 26, 2019. Following will be another annular eclipse with a path of annularity from Africa through southern Asia to the Pacific on June 20, 2020. A total solar eclipse peaking over Argentina, and with its path of totality crossing Chile and Argentina, will occur in the South American summer on December 14, 2020, with up to 2 minutes 10 seconds of totality.

For American viewers, the northeastern states will see partial phases of the annular solar eclipse of June 10, 2021. All of Europe and the Middle East will see the partial eclipse of October 25, 2022. Almost all of North America and South America will see partial phases of the annular solar eclipse of October 14, 2023, whose path of annularity passes from the United States into northern South America. The path of totality of the April 8, 2024, total solar eclipse crosses Mexico and the United States from Texas to Maine, and on into easternmost Canada, with partial phases through all but northernmost North America and all of Central America.

More information: Working Group on Solar Eclipses: eclipses.info

Pasachoff's eclipse expeditions: totalsolareclipse.org

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