

## THE SOLAR ECLIPSE OF NOVEMBER 25

On Friday, November 25, a solar eclipse swept across the southern part of the world, with the Moon covering about 80% of the Sun at the south pole. Only viewers close enough to Antarctica -- in Cape Town, South Africa, near sunrise, and in the Australian island of Tasmania and the South Island of New Zealand near sunset -- were able to see the Sun eclipsed. Even at its maximum on Earth, the eclipse was only partial, with some of the everyday Sun always visible. The central part of the shadow passed below the south pole; 90% of the Sun was covered at the part of Antarctica south of Patagonia, South America.

At most observing sites, the weather was sufficiently clear for part of the eclipse, which lasted over an hour, to be visible. Prof. Jay Pasachoff of Williams College in the United States, the Chair of the International Astronomical Union's Working Group on Solar Eclipses, viewed his 54th solar eclipse from Invercargill, New Zealand, where about 30% of the Sun's diameter was covered by the Moon shortly before sunset on Friday. He reports, "After a day of clouds and rain, and winds exceeding 100 km/hr, it was fabulous that the clouds parted for us to get a good view of the eclipse for about 20 minutes. Eclipses have inspired many astronomers and scientists as children, so it is wonderful when students and people of all ages have a chance to see an eclipse."

Wind and rain drove the observing team inland to a high floor of a building in town instead of their planned oceanside site. Pasachoff was joined in Invercargill, at the south end of New Zealand's south island, by Robert Lucas of the University of Sydney, Bob Evans from the Royal Astronomical Society of New Zealand, and colleagues and spouses. Farther north on that island, Prof. John Hearnshaw and graduate students of Canterbury University viewed the last minutes of the eclipse from the roof of their building as the Sun set. Even on New Zealand's north island, Luc Quaglia reported, to the Solar Eclipse Mailing List, seeing the 9% partial eclipse for fifteen minutes until the Sun set over a foreground mountain range.

In Cape Town, South Africa, the eclipse was observed by Dr.

Amanda Gulbis of the Southern African Astronomical Observatory, Darik Velez, an American teacher (and Williams College alumnus), and German amateur astronomer Joerg Schoppmeyer about an hour after sunrise, with maximum coverage of 10% of the Sun's diameter by the Moon. In Hobart, Tasmania, Australia, where the maximum coverage was only 6% of the Sun's diameter, Dr. Shevill Mathers of the University of Tasmania observed the eclipse.

The Moon's shadow over Antarctica was visible from the European Meteosat weather satellite. Dr. Christopher Walker of the University of Arizona could photograph only clouds and haze from the McMurdo base on Antarctica, even though almost 70% coverage would have been visible on a clear day.

The International Astronomical Union's website at <http://www.eclipses.info> includes information on how to view an eclipse safely and why solar eclipses are interesting. Maps and tables of future eclipses can be found through links there.

Partial eclipses are not usually scientifically useful, though the Moon's advancing edge can help radio astronomers pinpoint solar storms for comparison with space observations made in the ultraviolet. The year 2011 is unusual in that it had four partial solar eclipses, for all of which the darkest part of the Moon's shadow passed off the Earth's surface, and no eclipse in which the Moon passed centrally over the Sun. In 2012, an annular eclipse in which the Moon's disk is a little too small to cover the entire Sun will pass from Japan over the Pacific to California and farther into the western U.S. on May 20, with partial phases visible over the entire western U.S. On November 14, 2012, a total solar eclipse, in which it becomes dark as twilight, will start in northeastern Australia, ending in the ocean off South America on November 13 there, since it crosses the International Dateline.