

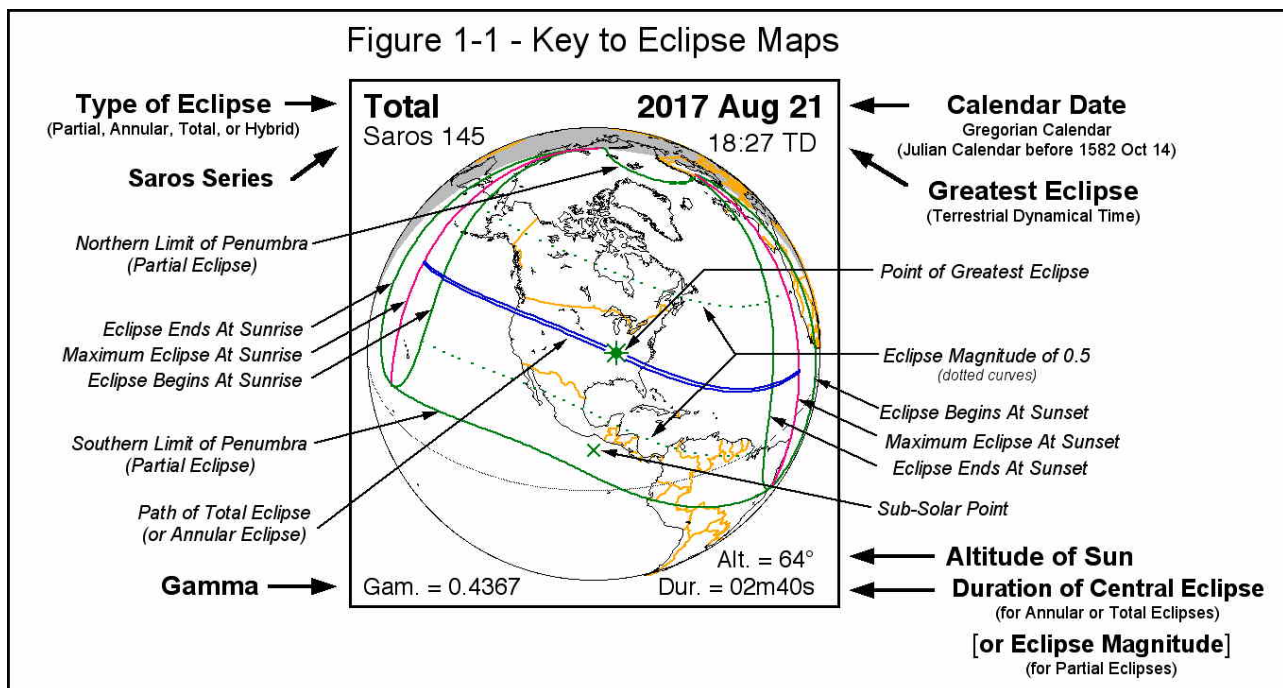
Section 1: Eclipse Maps and Predictions

1.1 Introduction

Earth will experience 11,898 eclipses of the Sun during the 5000-year period from –1999 to +3000 (2000 BCE¹ to 3000 CE). An individual global map for every solar eclipse over the five millennium interval is presented in the Appendix. For partial eclipses, the path of the Moon's penumbral path depicts the geographic region of eclipse visibility. For total, hybrid, and annular eclipses, the track of the Moon's umbral/antumbral² shadow is also plotted. The maps include modern political borders to assist in identifying the geographic visibility of each eclipse.

1.2 Explanation of Solar Eclipse Maps

For each eclipse, an orthographic projection map of Earth shows the path of the Moon's penumbral (partial) and umbral/antumbral (total, hybrid, or annular) shadows with respect to the continental coastlines, political boundaries (circa 2000 CE) and the Equator. North is to the top and the daylight terminator is drawn for the instant of greatest eclipse. An "x" symbol marks the sub-solar point or geographic location where the Sun appears directly overhead (zenith) at that time. All salient features of the eclipse maps are identified in Figure 1-1 which serves as a key.



The limits of the Moon's penumbral shadow delineate the region of visibility of a partial solar eclipse. This irregular or saddle shaped region often covers more than half the daylight hemisphere of Earth and consists of several distinct zones or limits. At the northern and/or southern boundaries lie the limits of the penumbra's path. Partial eclipses have only one of these limits, as do central eclipses when the Moon's shadow axis no closer than about 0.45 radii from Earth's center. Great loops at the western and eastern extremes of the penumbra's path identify the areas where

¹ The terms BCE and CE are abbreviations for "Before Common Era" and "Common Era," respectively. They are the secular equivalents to the BC and AD dating conventions. A major advantage of the BCE/CE convention is that both terms are suffixes whereas BC and AD are used as suffix and prefix, respectively.

² The term "umbral/antumbral" means "umbral and/or antumbral."