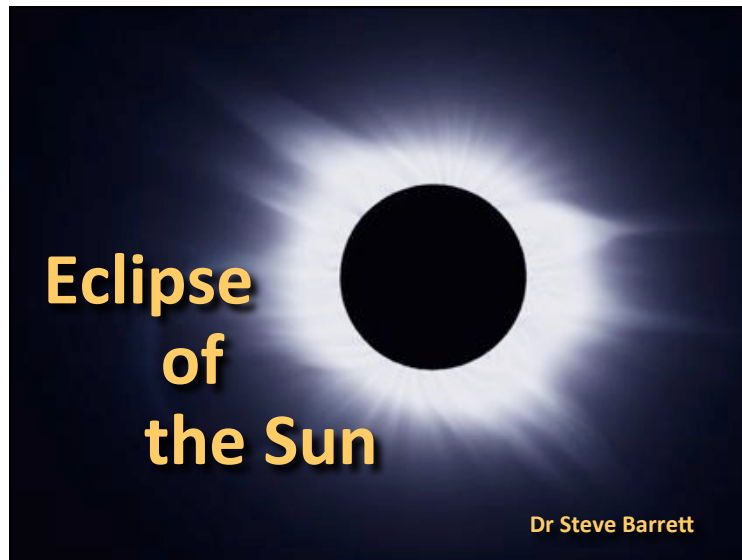


Eclipse of the Sun



Eclipse of the Sun

Eclipses

Why do they happen?
When do they happen?

Total Eclipse
in March 2006

Where was it seen?
What was it like?

Partial Eclipse
in March 2015

What will I see?

Eclipse of the Sun / Introduction

2

Safety

Remember that you should **NEVER** look at the Sun without using special eclipse glasses like these:



Eclipse of the Sun / Safety

3

Safety

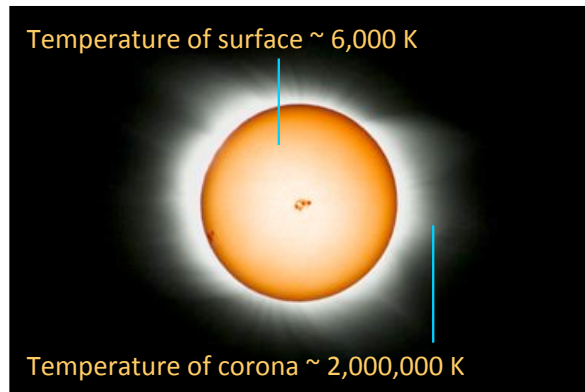


Eclipse of the Sun / Safety

4

Eclipse of the Sun

The Sun



Eclipse of the Sun / The Sun

5

Aurora



Eclipse of the Sun / Sun and Earth / Aurora Borealis

6

Aurora



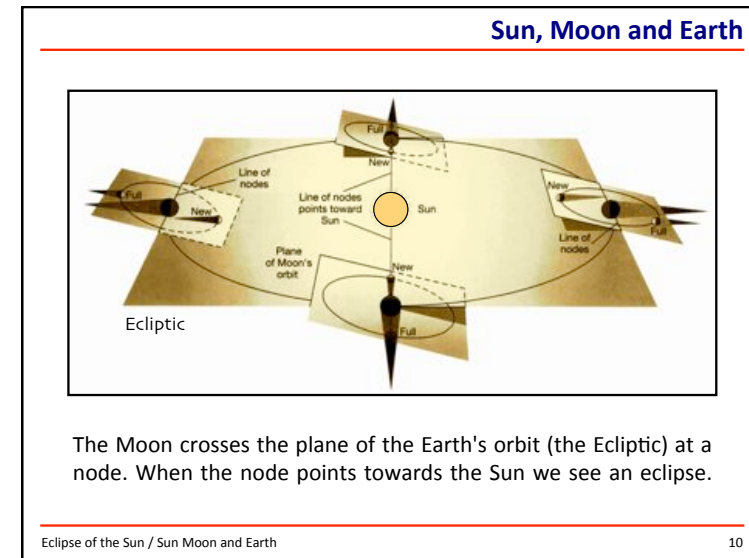
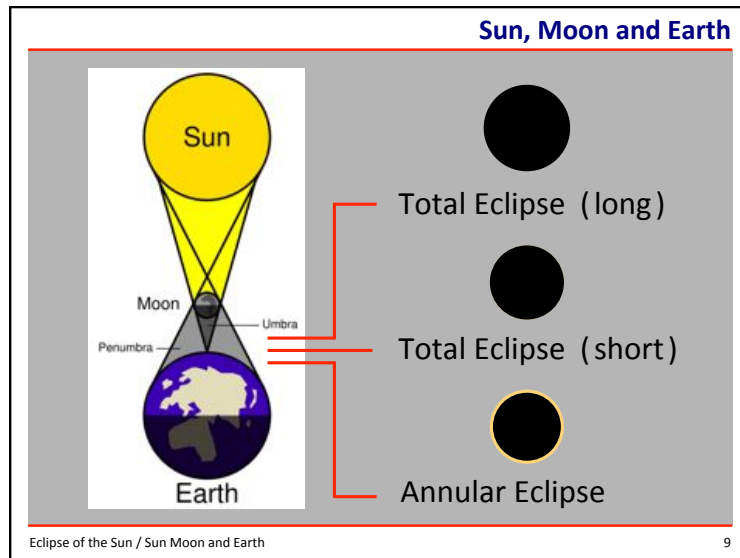
Eclipse of the Sun / Sun and Earth / Aurora Borealis

7

Our closest
neighbour can
be fascinating ...
... watching the
shadows of the
craters and
mountains
change from
night to night



Eclipse of the Sun



How Long is a Month?

Synodic Month		
New Moon to New Moon	29.53	days
Draconic Month		
Node to Node	27.21	days
Anomalistic Month		
Perigee to Perigee	27.55	days

Eclipse of the Sun / Month

11

Periods Between Eclipses

223 Synodic months	=	6585.32 days
242 Draconic months	=	6585.36 days
239 Anomalistic months	=	6585.54 days

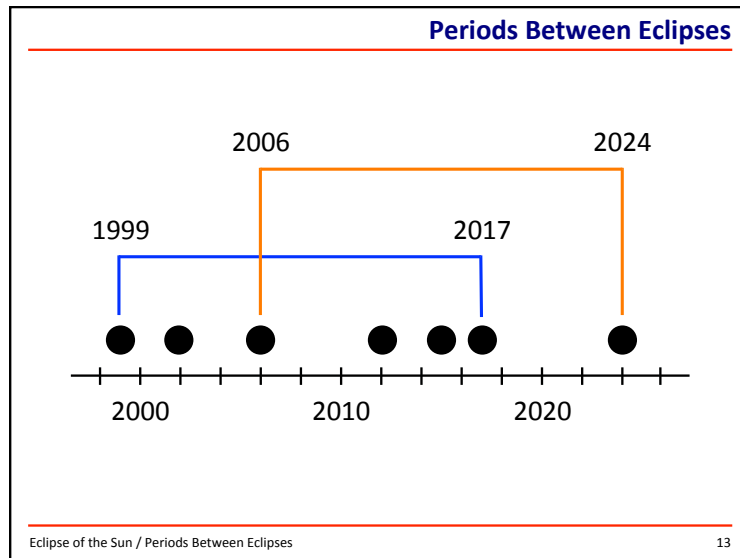
Over this time period, the so-called **saros** cycle, the Moon's orbital periods are back in 'synch'.

Two eclipses separated by one saros cycle have similar geometries and so the eclipses repeat.

Eclipse of the Sun / Periods Between Eclipses

12

Eclipse of the Sun



13

Saros 139

Date	$\phi M / \phi S$	Length	Seen from
1988 Mar 18	1.046	3 ^m 46 ^s	Asia
2006 Mar 29	1.052	4 ^m 07 ^s	Africa
2024 Apr 08	1.057	4 ^m 28 ^s	Americas
2042 Apr 20	1.061	4 ^m 51 ^s	Asia
2060 Apr 30	1.066	5 ^m 15 ^s	Africa
2078 May 11	1.070	5 ^m 40 ^s	Americas
2096 May 22	1.074	6 ^m 06 ^s	Asia

Eclipse of the Sun / Periods Between Eclipses

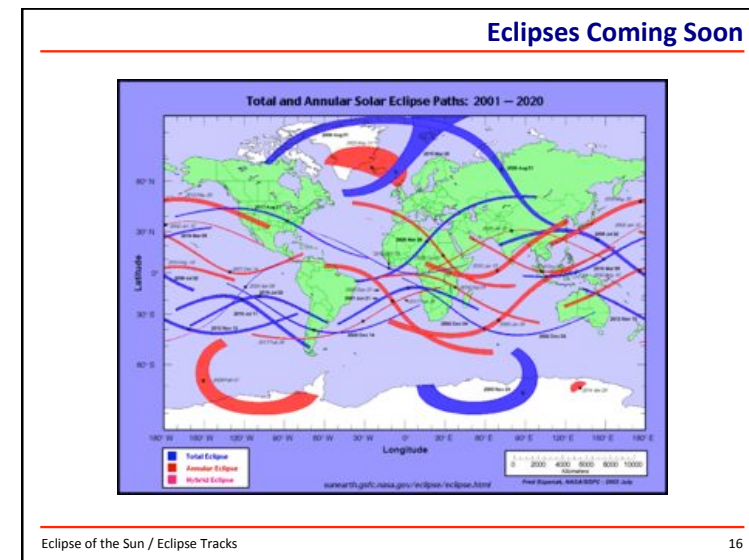
14

Eclipses Coming Soon

Date	Total?	Length	Seen from
2006 Mar 29	Total	4 ^m 07 ^s	Africa, Turkey
2015 Mar 20	Total	2 ^m 47 ^s	N Atlantic, Faeroes
2016 Mar 09	Total	4 ^m 09 ^s	Australia
2016 Sep 01	Annular	3 ^m 06 ^s	Africa
2017 Feb 26	Annular	0 ^m 44 ^s	S America, Africa
2017 Aug 21	Total	2 ^m 40 ^s	N America
2019 July 02	Total	4 ^m 33 ^s	S Pacific, S America

Eclipse of the Sun / Periods Between Eclipses

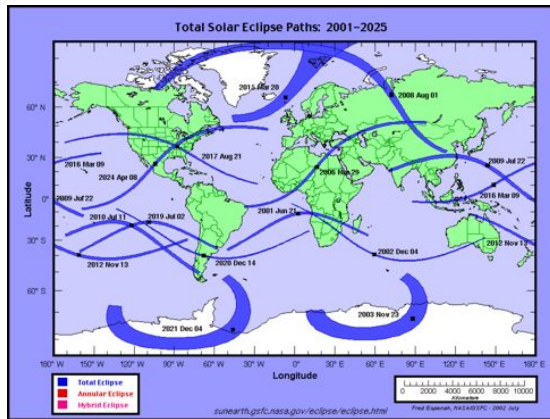
15



16

Eclipse of the Sun

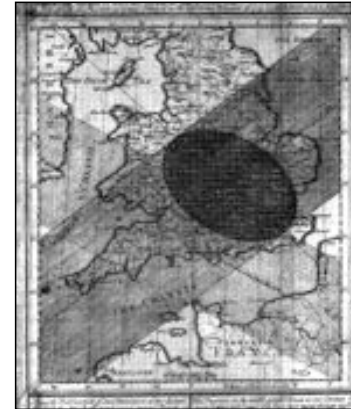
Eclipses Coming Soon



Eclipse of the Sun / Eclipse Tracks

17

Eclipses in the UK



1715

1724

Eclipse of the Sun / Eclipse Tracks

18

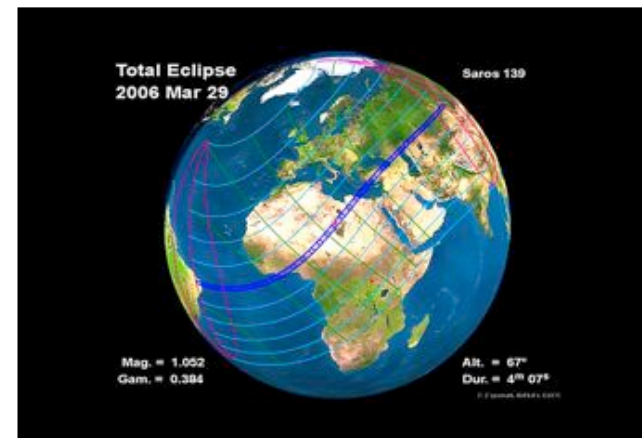
Cornwall 11 Aug 1999



Eclipse of the Sun / 1999

19

Total Eclipse 2006

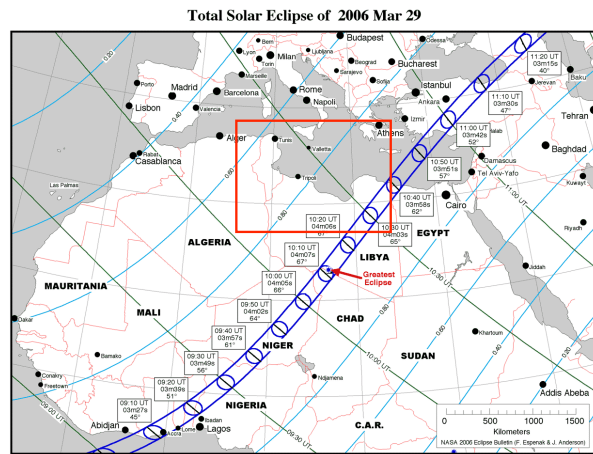


Eclipse of the Sun / Total Eclipse 2006

20

Eclipse of the Sun

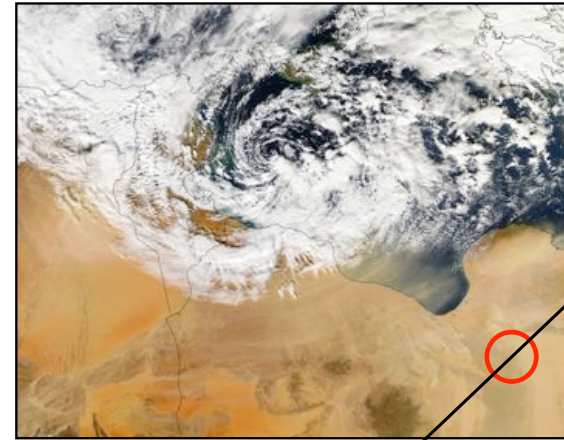
Total Eclipse 2006



Eclipse of the Sun / Total Eclipse 2006

21

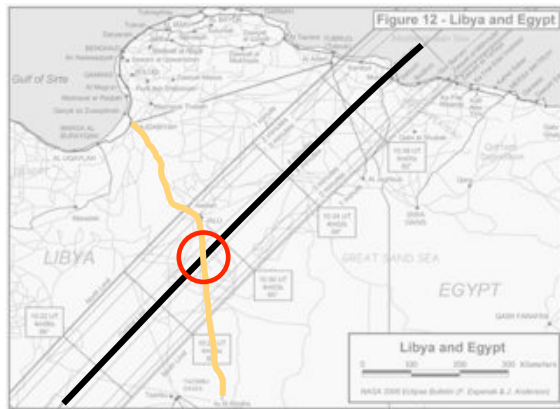
Total Eclipse 2006



Eclipse of the Sun / Total Eclipse 2006

22

Total Eclipse 2006



Eclipse of the Sun / Total Eclipse 2006

23

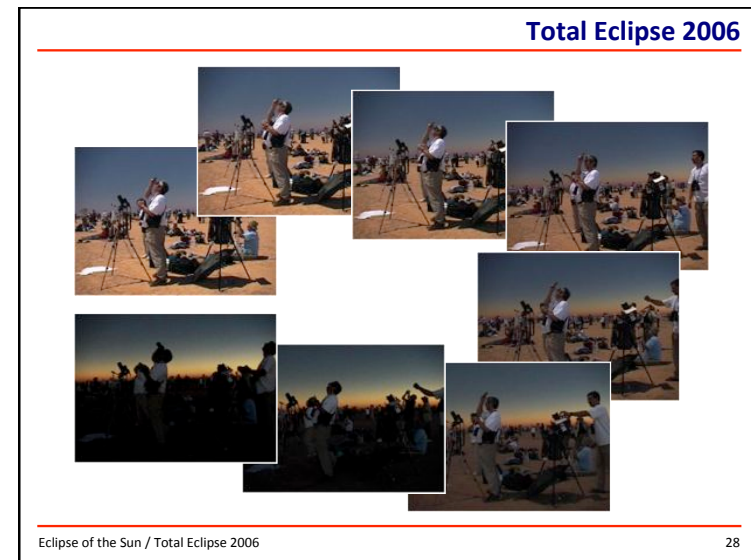
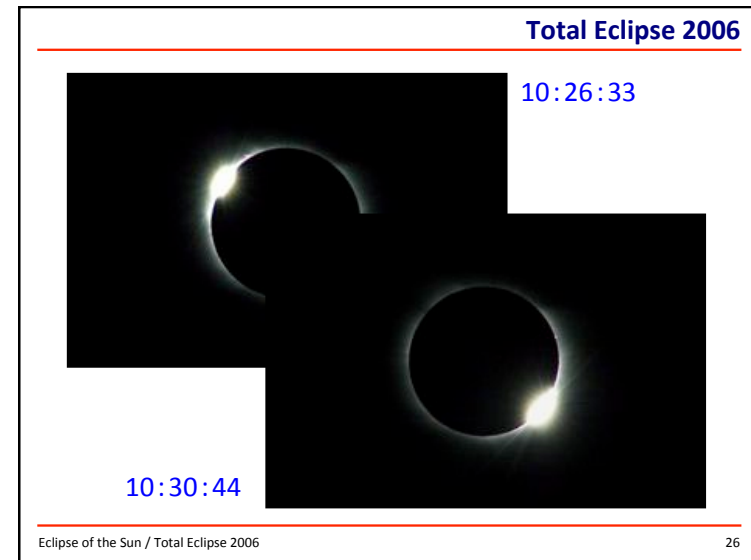
Total Eclipse 2006



Eclipse of the Sun / Total Eclipse 2006

24

Eclipse of the Sun



Eclipse of the Sun

