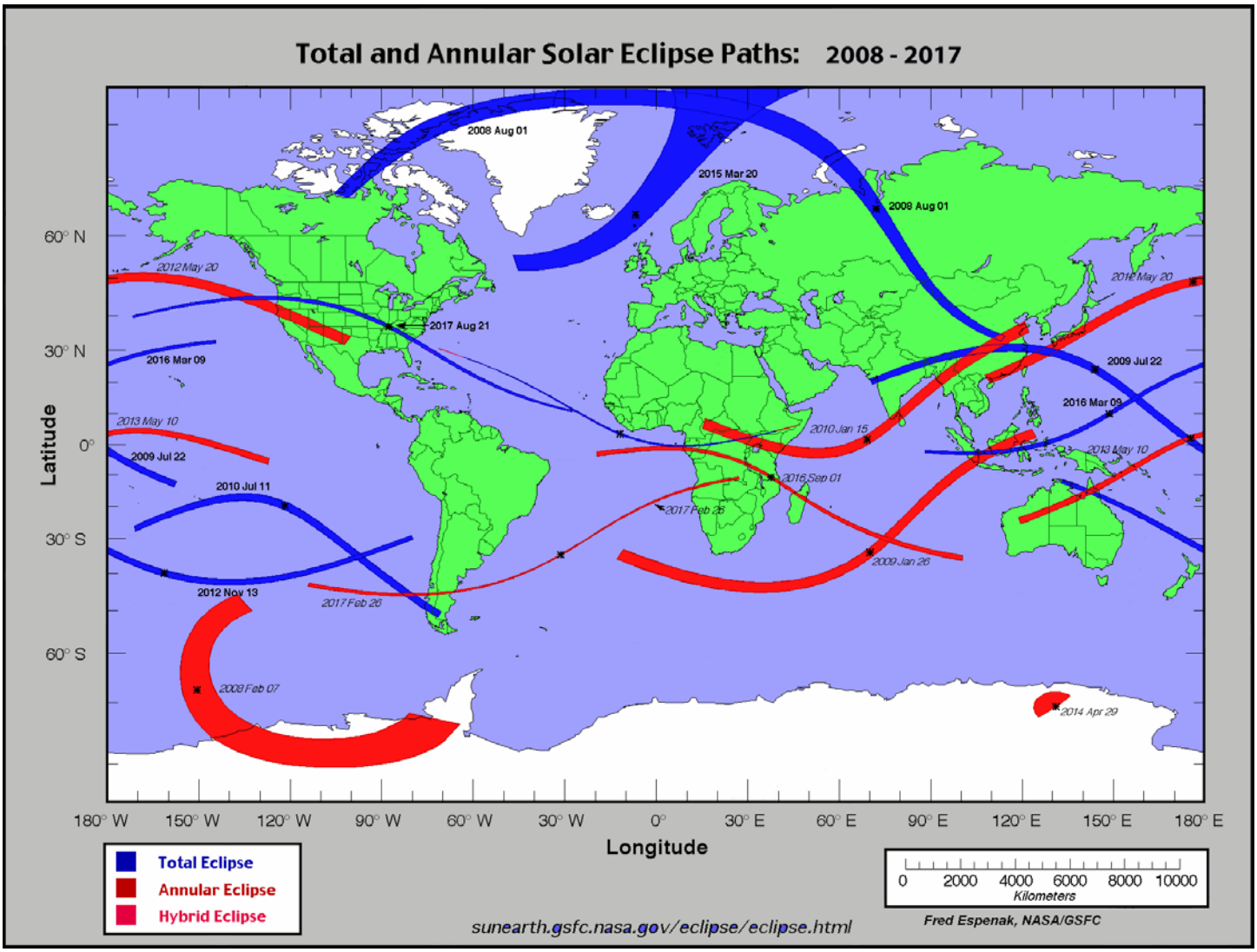
TOTALITY!

2007 FEBRUARY THE JOURNAL FOR ECLIPSE CHASERS ISSUE 4

AVAILABLE FOR FREE ON THE WEB AT;

http://xjubier.free.fr/en/site_pages/Solar_Eclipses.html



This chart is a modification of a chart made by Fred Espenak, therefore I give him credit for its creation. There are 7 total, 6 annular and 1 hybrid (annular / total) eclipses. Not pictured are partial eclipses, 2 in 2007, 4 in 2011, 1 in 2014, and 1 in 2015.

IN THIS ISSUE;

ECLIPSE TIMELINE: THE NEXT 10 YEARS

How soon is too soon to start planning for an eclipse? TEN YEARS? Maybe, but you should definitely know what eclipses are forthcoming so you can pick a destination that you would like to visit. This will allow you to start planning your eclipse future. If you are an *"Eclipse Chaser"* or about to become an eclipse chaser, once the last eclipse is over with, you need start planning for, or saving for, or paying for, the next eclipse trip. Sometimes you need to determine which location(s) you would like to visit. Remember my rule about eclipse trips, go and have a great trip, and if it is clear on eclipse day, then you have an additional bonus that is beyond compare.

Bookings for eclipse trips can come up to 2 years in advance. Some tour groups usually wait until one eclipse has passed, before starting to set up info for the next trip. This does not mean they have not been planning the next trip, likely they have been doing their research and scouting locations well in advance. As a rule of thumb, you should also follow the same schedule, and be ready to book your next trip up to a year or more in advance. By then the tour groups are gearing up their bookings. Of course if you book too early, there could be other good trips that come along.

You can still look forward to eclipses way down the road. I remember when I started getting excited about and planning for the 1991 eclipse a decade before hand, looking back that was 15 years ago! WOW! I am now starting some very special plans for the 2017 eclipse, which passes directly across the U.S. There is a lot for me to do for this one as I want to get thousands of people interested in watching this one on our home turf all across the country and [nearly] in my backyard. I plan to share these ideas with you in a future issue.

In this issue you will find information about the eclipses that lay in the near future, those occurring in the next 10 years that is. Eclipses are a great stepping stone to seeing locations in the world that you may never get a chance to see otherwise, and there are some really great places to travel to over the next ten eclipse years.

Following is a list of the upcoming eclipses, followed by a brief description for each. More detailed descriptions and weather forecasts will be forthcoming in future issues.

TOTAL ECLIPSES

2008.08.01 > Northern Greenland / Central Russia / China
2009.07.22 > Central India / China / Pacific Ocean SE of Japan
2010.07.11 > Easter Island / Patagonia Region
2012.10.13 > North East Australia (Cairns) and the Pacific Ocean
2015.03.20 > North Atlantic and Norwegian Sea
2016.03.09 > Indonesia / Central Pacific
2017.08.21 > Central U.S.

ANNULAR ECLIPSES

2008.02.07 > Antarctica
2009.01.26 > Southern Indian Ocean
2010.01.15 > NE Africa / Indian Ocean / China
2012.05.20 > China / Japan / Pacific Ocean / Western U.S.
2013.05.10 > Northern Australia / Central Pacific Ocean
2014.04.29 > Antarcticia
2016.09.01 > South Central Africa
2017.02.26 > Southern South America / South Central Atlantic / SE Central Africa

HYBRID ECLIPSES*

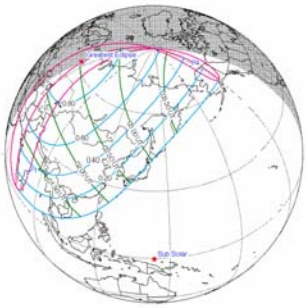
2013.11.03 > Central Atlantic Ocean / Central Africa

PARTIAL ECLIPSES

2007.03.19 > Eastern Asia
2007.09.11 > Central and Southern South America / Atlantic Ocean and Antarctica
2011.01.04 > Northern Africa / Europe / Western Asia
2011.06.01 > Easternmost Russia / Alaska / Northern Canada / Greenland
2011.07.01 > Southern Indian Ocean
2011.11.25 > Antarctica
2014.10.23 > North America
2015.03.13 > Southern Africa / Antarctica

* For those relatively new to solar eclipses, a hybrid eclipse is a cross between an annular eclipse, and a total eclipse. For this eclipse the Moon is just the right distance from the Earth to allow both the beginning and the end of the eclipse path along the centerline to not quite be totally eclipsed, and an annular eclipse is seen, but nearer the center of the path, the eclipse is total.

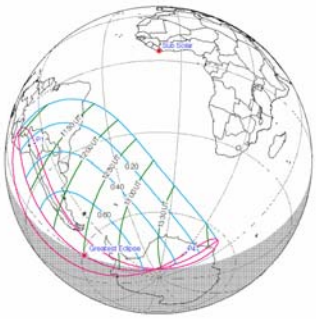
PARTIAL ECLIPSE



2007.03.19 > Eastern Asia

Maximum eclipse occurs at 02:31:46.6 UT in north central Russia with over 87 percent of the Sun covered. Virtually all of eastern Asia will see some amount of eclipse. Northernmost and southernmost Japan will also see a tiny edge of the Moon clip the edge of the Sun. A large portion of Alaska will also get to see a small slice of the eclipse.

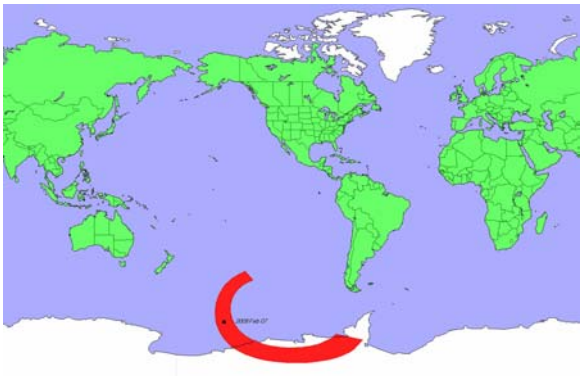
PARTIAL ECLIPSE



2007.09.11 > Central and Southern South America / Atlantic Ocean and Antarctica

Far south in the Pacific Ocean, not far from the Straights of Magellan is where this eclipse maxs out at 12:31:13.0 UT with almost 75 percent of the Sun being covered. About 1/3 of Antarctica will see a partial eclipse, as will nearly all of the countries of South America south of the equator.

ANNULAR ECLIPSE - 2m 12s



2008.02.07 > South Pacific / Antarctica
This eclipse begins in the far southern Pacific Ocean. The path arcs southward until it eventually encounters Antarctica. Since the only land that it encounters will be Antarctica, and since it is not a total eclipse, few will venture forth to see it, mostly because of the high cost of traveling to Antarctica. I have seen trips to Antarctica set up for meteorite hunting in the ice fields, so it may give a good opportunity to combine the annular eclipse with hunting for meteor rocks laying on the ice. Greatest eclipse occurs before making land at 2m 11.7s of annularity.

TOTAL ECLIPSE - 2m 27s

2008.08.01 > Northern Greenland / Central Russia / China
This eclipse follows six months after the annular eclipse in February at the opposite end of the Earth. This eclipse begins among the northern arctic islands of Canada, then skirts the northern shores of Greenland before dropping into central Russia, western Mongolia and ending up in China. Maximum eclipse occurs in Russia not far south of the northern coast at 2m 27.2s of totality. This location however is quite poor as weather prospects go, and the best weather predictions would place observers in China near the Mongolian border. If your worried about loosing too much of the duration of totality, the duration at this location drops to 1m 55+s. In my estimation loosing about 32 seconds of totality is a better bet where the weather prospects are nearly 40 percent greater.

Details of the weather prospects on this eclipse is available from Jay Anderson on his web site (see the last 2 pages of this issue for the web link), and the info on this eclipse and weather prospects will be highlighted in the next issue of **TOTALITY!** This eclipse is followed in less than a year by another total eclipse that partly passes through China.

ANNULAR ECLIPSE - 7m 54s

2009.01.26 > Southern Indian Ocean

This only location that this eclipse makes landfall is near or at sunset in Indonesia. It begins in the south central Atlantic Ocean, passes south of Africa as it moves into the Indian Ocean. It is here that greatest eclipse occurs for 7m 53.5s. The annular phase enters the western shores of two major regions of Indonesia. Firstly it enters Western Sumatra, where annularity will last just over 6m 16s with 84.7 percent coverage. Although the annular phase is not visible from Jakarta, it narrowly misses out, and nearly 84 percent of the Sun will be covered. Next it comes ashore in West Kalimantan with about 6m 02s duration of the annular phase, just as the Sun begins to set. It crosses Central and East Kalimantan as the Sun is setting.

TOTAL ECLIPSE- 6m 39s

2009.07.22 > Central India / China / Pacific Ocean Southeast of Japan

This is the "Big One", the longest total eclipse of the 21st century. The longest duration of totality finds itself at a location in the Pacific Ocean, south and east of Japan for 6m 38.9s, not far from the island of Iwo Jima. At sunrise the westernmost point where totality occurs, happens at sunrise on the western shore of India, and crosses the central part of the country as the path heads diagonally toward the northeast. It clips the corners of Nepal, Bangladesh and almost the entirety of Butan before it passes into China. A second total eclipse in China in less than a year, and to be followed by two annular eclipses in the near future makes China a great location for eclipses in a very short period of time. The longest duration on the mainland will be near Shanghai, China with a

duration of 5m 54s before it passes out into the Pacific Ocean. The eclipse will be visible from the small island of Iwo Jima for 5m 11s and an even smaller nearby spot of land known as Kitaio Island, for 6m 36s, and I have little doubt that it is destined to be jam packed by the Japanese astronomers. More on this eclipse and weather predictions will appear in Issue 5 of **TOTALITY!**, also slated for distribution later this year.

ANNULAR ECLIPSE- 11m 08s

2010.01.15 > Africa / India / China

This eclipse begins in central Africa along the western border of Central African Republic, then enters the Congo, Uganda, Kenya and Somalia. The greatest phase of annularity occurs out over the Indian Ocean at 11m 07.9s, but here is a great excuse to visit the fabulous Maldives before they succumb to rising water due to global warming. In Male (pronounced Maaley), the eclipse will last 10m 46s. The path continues to the Gulf of Mennar and clips the southeast coast of India and the northern parts of Sri Lanka where both countries will be able to see the eclipse along the central path. Across the Bay of Bengal the next landfall comes in Myanmar, and continues into China, the 3rd eclipse path to be visible fro, China in 1½ years, and will be followed by yet another annular in 2012!

TOTAL ECLIPSE- 5m 20s

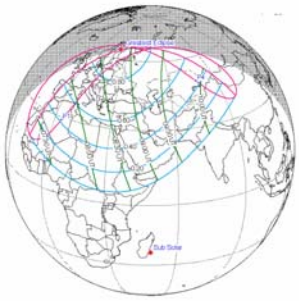
2010.07.11 > Easter Island / Patagonia Region

As you know, the Earth is covered mostly in water, and with the exception of two small [but notable] chunks of land, this eclipse is visible ONLY from cruise ships in the south Pacific Ocean. The path takes it very near to Tahiti (French Polynesia), where the path passes just south of the island, and the centerline passes only 175 kms (106 miles) away where the duration will be 3m 54s. The path proceeds to the Tuamotu Islands several hundred kilometers east of Tahiti where several atolls fall within the path, two of which are Hikuaru (4m 20s) and Tauere Atolls (4m 24s), and the longest duration will be 4m 35s on Tatakoto Island.

By far, the most popular location for this eclipse will likely be on the small Chilean Island of Rapa Nui, known also as "Easter Island". I have little doubt that the eclipse will bring more people to the island than have ever lived on it at any one time, assuming that the tour operators can handle the volume. Only slightly off the centrerline, the northern edge of Easter Island will receive 4m 46s of totality, less than 3 seconds off the maximum possible from this location. Maximum totality of 5m 20s occurs long before reaching here, in the middle of the southern Pacific Ocean.

The last location to see totality will be near the Patagonia region of Chile and Argentina. The centerline passes directly over the Parque Nacional Bernardo O'Higgins in Chile and the situated back-to-back with the Los Glaciares National Park in Argentina. Both of these locations combined would make a great location to visit, and a recommended extension to your Easter Island trip. But if you want to observe your totality from here, it will be 2m 49s long.

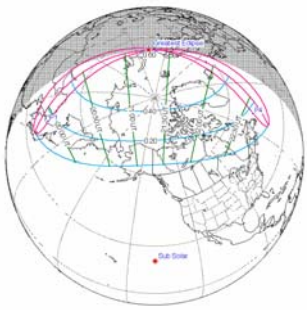
PARTIAL ECLIPSE



2011.01.04 > Northern Africa / Europe / Western Asia

2011 is one of those years that there is no total or annular eclipse, but will have 4 partial eclipses of the Sun. This eclipse will be visible across northern Africa, Europe and western Asia. Greatest eclipse occurs along the day/night terminator in Sweden along the Gulf of Bothnia with about 85 percent covered. Observers in London should be able to see nearly 77 percent covered at sunrise.

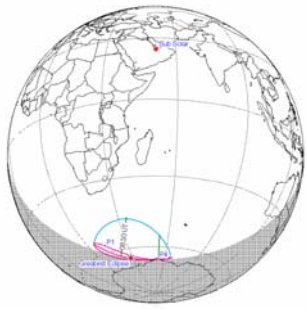
PARTIAL ECLIPSE



2011.06.01 > Easternmost Russia / Alaska / Northern Canada / Greenland

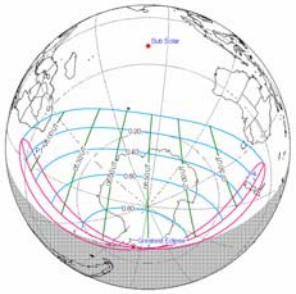
The 2nd partial eclipse of 2011 primarily occurs across the north pole. A very tiny eclipse touches northern Japan at sunrise, and in Alaska the eclipse is under 20 percent as will Newfoundland, Prince Edward Island and part of Nova Scotia and northern Canada. 60 percent is the maximum phase of the Sun being covered, again along the day/night terminator along the northern coast of Russia.

PARTIAL ECLIPSE



2011.07.01 > Southern Indian Ocean
The 3rd partial eclipse is one that is very small and located off the coast of Antarctica. Under 10 percent of the Sun will be covered in this location in the southern Indian Ocean where it meets the southern Atlantic.

PARTIAL ECLIPSE



2011.11.25 > Antarctica
The 4th and last partial eclipse of 2011 returns to Antarctica. Capetown, South Africa will see a 10 percent eclipse after sunrise, and the south island of New Zealand will get up to 30 percent eclipse during sunset. Maximum phase occurs just off the coast of Antarctica toward Chile with 90 percent obscured.

ANNULAR ECLIPSE- 5m 46s

2012.05.26 > Asia / Japan / Western United States
This annular eclipse will span the breadth of the Pacific Ocean from China to the United States of America. An annular eclipse was last visible in China a little over 2 years hence, but the last annular visible in the U.S. was in 1994, over 18 years, or one saros later. The annular phase is visible along the southeast shores of China. In Hong Kong it reaches the annular phase just minutes after sunrise, and arrives in Tokyo less than 30 minutes later. The path continues its arc northward to narrowly miss the Aleutian Islands of Alaska, and then turns southward to finally again make landfall in California and Oregon. Many national parks and national monuments fall directly in the path of annularity, several of them in the desert southwest, this may give those wishing a scenic

location for viewing the eclipse, and may inspire some spectacular images. These come near sunset, so choose your location wisely, you would not want to have your view blocked by canyon walls at the last minute. The annular phase ends near Abilene, TX as the Sun sets in the west. I am planning a lengthy article in order to give you the specifics on the scenic locations for this eclipse in a future issue.

TOTAL ECLIPSE - 4m 02s

2012.10.13 > North East Australia (Cairns) and the Pacific Ocean

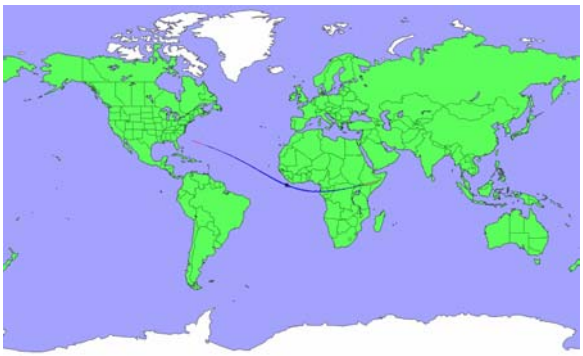
Shortly after sunrise, 2m 05s of this eclipse will be visible from Cairns in the Northern Territory of northeast Australia. Just off shore lies the Great Barrier Reef, so this is a great location for snorkelers and divers. The maximum duration of the eclipse will be 4m 22s several hundred miles east of New Zealand, once more, in the middle of the ocean.

ANNULAR ECLIPSE - 6m 03s

2013.05.10 > Northern Australia / Central Pacific Ocean

Less than 7 months after the 2012 total eclipse, the Sun is again occulted by the Moon, but this time not to completely cover the disk of the Sun. The path takes it from north central Western Australia at sunrise, where the eclipse will be in excess of 4m. When it reaches the eastern shore of Australia, 300 kilometers north of Cairns, annularity will last over 4m 40s. It will intersect the Solomon Islands, with 5m 13s visible. Maximum eclipse of 6m 03s occurs well into the Pacific Ocean, as does the rest of the eclipse path.

HYBRID ECLIPSE- 1m 40s

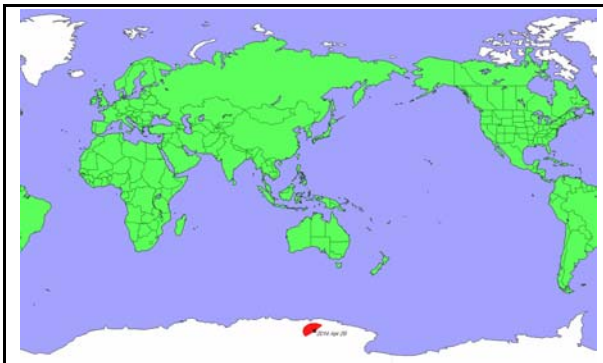


2013.11.03 > Central Atlantic Ocean / Central Africa > THE HYBRID ECLIPSE
This is an eclipse I encourage everybody to go see, but the odd thing is, I do not want you to go see the maximum duration of this eclipse off the eastern coast of central Africa, where totality can last for 1m 40s. Rather I encourage everyone to take a cruise ship to a location about 285 miles SW of Bermuda.

If you don't know what a hybrid eclipse is, it is an eclipse where, at both ends of the path, the eclipse is annular, and somewhere in the middle of the path, the eclipse is total.

When the sun rises off the SE coast of the U.S., the eclipse will be nearly 4s of annularity, but the apparent size of the Moon rapidly grows as the surface curvature of the Earth turns to greet the Moon, and at a point about 450 kilometers (285 miles) southwest of Bermuda, will be a very good location to see an eclipse that will not quite be total. For what purpose? Why would you not want to see the *TOTAL* eclipse? Simple, because you will see, for a very brief few fleeting moments, all the things that will be seen during a total eclipse, AND dozens of bailey's beads, not just 2 or 3, but literally dozens. I was fortunate to view the annular eclipse in 1984, visible from the U.S., which was an 11 second annular eclipse. It was still too bright for direct observation, but the photos that I got from this trip were beyond compare! I will be expanding more on this experience in a future issue of **TOTALITY!**, and include some of my photos. Trust me, you will enjoy it, and a stop over in Bermuda would be a great rest after seeing the eclipse.

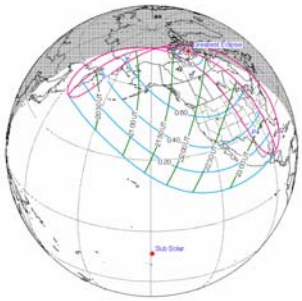
ANNULAR ECLIPSE- 0m 48s



2014.04.29 > Antarctica

This eclipse likely will not be visible for anyone as it covers a tiny portion of Antarctica. This is one of the rare eclipses that has NO central path of annularity. Whereas most eclipses in Antarctica occur over water and land, the nature of this eclipse does not let this occur, and is visible somewhat inland in an area south of Australia.

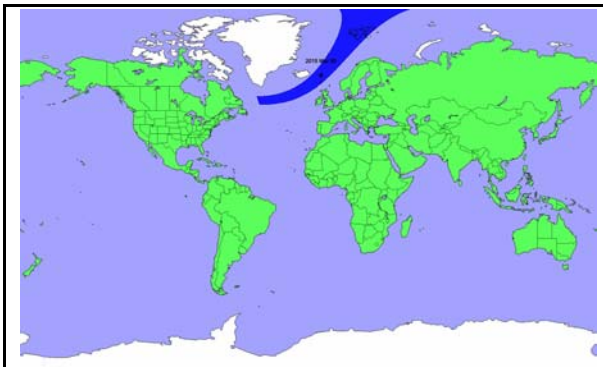
PARTIAL ECLIPSE



2014.10.23 > North America

Nearly all of North America will get to see a partial eclipse in October. Maximum eclipse occurs in the artic circle north of Canada with 81 percent of the Sun obscured. The central and eastern half of the U.S will see maximum eclipse at sunset. The further north the observer is in North America, the greater the eclipse. The continental U.S. [around North Dakota] and Alaska will see up to about 65 percent of the Sun eclipsed. The extreme northeastern U.S. and Canada will be the only part of North America not able to see the eclipse.

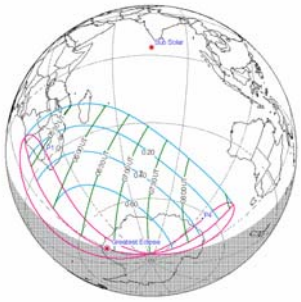
TOTAL ECLIPSE- 2m 47s



2015.03.20 > North Atlantic and Norwegian Sea

This eclipse begins south of Greenland in the north Atlantic Ocean and makes a small arc passing between Iceland and Brittany on its way toward the north pole, where the eclipse ends at sunset. The only land that it passes over is the Faroe Islands and Svalbard, which is well north of the arctic circle. The Faroe Islands lie not far from maximum duration, and appears to be the best location, where up to 2m 22s of totality will be visible.

PARTIAL ECLIPSE



2015.09.13 > Southern Africa / Antarctica

Greatest eclipse occurs just inland from the Antarctic shores south of Africa with over 78 percent of the Sun eclipsed. Southern Africa, south Madagascar and the Indian Ocean will experience the partial phases as well.

TOTAL ECLIPSE - 4m 10s

2016.03.09 > Indonesia / Central Pacific

This eclipse begins in the Indian Ocean just west of Indonesia. More than 400 miles north of Bali, the path passes over the Island of Borneo, with a duration of 2m 38s visible along the eastern coast. When it arrives in Kobe, Indonesia, the eclipse will last for 3m 16s. Maximum eclipse will last for 4m 10s, approximately 310 miles southeast of Guam. The path will keep it out over the Pacific Ocean without making landfall again. The eclipse ends several hundred miles north and east of the Hawaiian Islands.

ANNULAR ECLIPSE- 3m 06s

2016.09.01 > South Central Africa / Madagascar

Back to back annular eclipses 6 months apart. This one begins in the mid Atlantic west of Africa and the path comes ashore in Gabon, crosses the Congo, the Democratic Republic of the Congo and the United Republic of Tanzania where the annular phase reaches maximum of 3m 06s. It then crosses into Mozambique and crosses northern Madagascar. The eclipse ends in the Indian Ocean well shy of reaching the Australian coast.

ANNULAR ECLIPSE- 0m 44s

2017.02.26 > Southern South America / South Central Atlantic / SE Central Africa

The 2nd back to back annular eclipses starts in the Pacific Ocean and crosses South America in the south, passing over Chile with an annularity of 1m 02s, and leaves Argentina with a 0m 55s duration, before it heads back over water, this time in the Atlantic Ocean. Because the Earth is nearer the Moon at the middle of the eclipse path, annularity lasts only 0m 44s out over the ocean, allowing a very thin ring to be visible. The path moves on to Africa, entering Angola, I swear the country where more eclipses occur than any other. The eclipse lasts 1m 08s on the chore here, then it clips Zambia and ends at sunset in the Democratic Republic of Congo with 1m 17s of annularity.

TOTAL ECLIPSE - 2m 40s

2017.08.21 > USA Coast-to-Coast

At long last a total eclipse comes to the United States. The last total eclipse in the U.S. occurred in 1979 and only passed across Washington, Idaho, Montana and part of North Dakota before it crossed the border into Manitoba, Canada. But this eclipse is ideally placed as its path crosses the country diagonally, entering the continent in northern Oregon and leaving in South Carolina. Not since 1918, 99 years previous, had there been an eclipse that traversed from the Pacific to the Atlantic. The maximum phase of this eclipse occurs in westernmost Kentucky with a duration of 2m 40s.

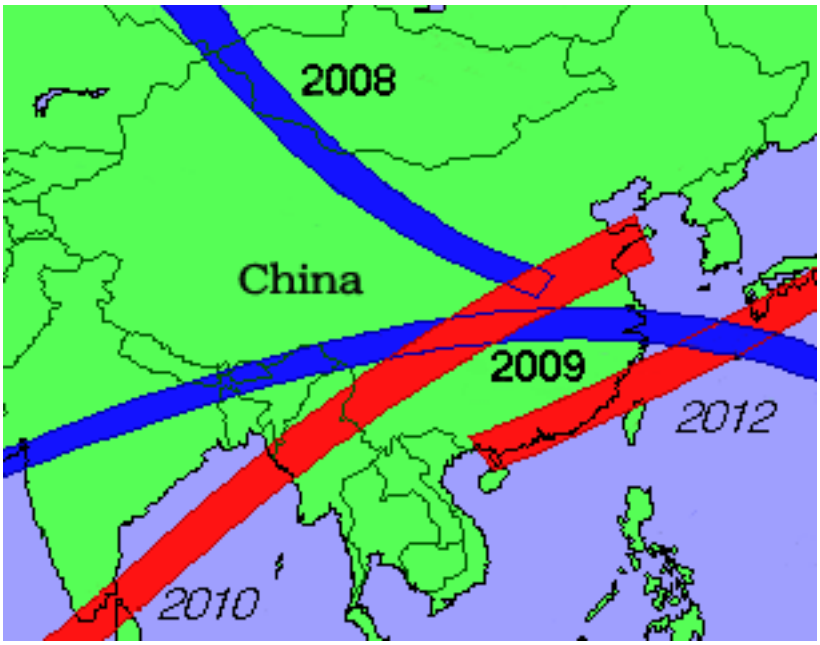
For those looking for a unique location to view totality from, the eclipse will be visible from the Grand Tetons in western Wyoming. For those that want to fly in to the greatest eclipse, a good choice would be St. Louis or even Kansas City. Even though Kansas City lies nearly 300 miles west and north of the point of maximum eclipse, about 30 miles north of K.C., near Lathrop, Missouri, the eclipse will last for 2m 39s, only 1 second shy of maximum eclipse. Relatively short in duration, observers need to be well prepared for doing your selected task(s) during this totality.

The 2017 eclipse will then be followed in relatively short order by one in 2024 which intersects the 2017 path entering the U.S. in Texas from Mexico, and exiting the country in the northeast. This eclipse has a longer duration, and maximum eclipse actually occurs

in Mexico. After 2024, total eclipses only visit small pieces of the U.S in the coming years, and another coast-to-coast eclipse does not occur again until 2056.

There are a few eclipses here that may be somewhat remote, which may push the cost of the trip up, and in general, eclipse trips are a specialty industry. Eclipse trips for the masses have however become more commonplace since the first cruise ship was booked to travel to the eclipse off of Nova Scotia in 1972 aboard the SS Olympia.

In a localized region of China, in only 5 short years, 2 total eclipses and 2 annular eclipses will be visible, in 2008, 2009, 2010 and 2012 as the diagram below shows.



Eclipse Specialty Tour Group Web Sites . . .

Eclipse City
http://www.eclipse-city.com/
Far Horizons
http://www.farhorizon.com/2006-solar-eclipse.htm
Mayhugh Travel – Astronomy Vacations
http://astronomyvacations.com/
MWT Associates (Astronomical Tours)
http://www.melitatrips.com/
Ring of Fire Expeditions
http://www.eclipsetours.com
Sirius Travel
http://www.siriustravel.com/
Sita Solar Eclipse Tours
http://www.eclipsetours.net/
TravelQuest International
http://www.tq-international.com/index.htm
Travel Wizard
http://www.travelwizardtravel.com/astro.htm
Winco Eclipse Tours, Inc.
http://www.wincoeclipsetours.com

Other Useful Eclipse Web Sites . . .

NASA Eclipse Home Page
http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html
Fred Espenak's Web Site
http://www.mreclipse.com/
Jay Anderson – Eclipse Weather Predictions
http://home.cc.umanitoba.ca/~jander/
Xavier Jubier's Google Earth Eclipse Maps
http://xjubier.free.fr/en/site_pages/SolarEclipsesGoogleMaps.html
IAU Solar Eclipse Working Group
http://www.williams.edu/Astronomy/eclipses/
Sheridan Williams Web Site
http://www.clock-tower.com/

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Larry A. Stevens
5114 Walnut, West Des Moines, IA 50265-2828.

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Some future issues will occasionally use photos that have been posted to web sites that are saved at 72 dpi, and likely will not be as sharp as others posted at 128 dpi.

Please send any correspondence, suggestions or submissions to TOTALITYnewzine@aol.com.

Photo submissions can also be sent to the TOTALITYnewzine@aol.com, please format @128dpi.

In the Next Issue;

- 2008 Total Solar Eclipse – The Hermit Eclipse

In Future Issues;

- 2009 Total Solar Eclipse – Longest Eclipse of the 21st Century
- Total & Annular Solar Eclipse Maps 2001 to 2050
- Will Your Next Eclipse Trip Weather It?
- Eclipses of the Past >
  1984 – The "Broken Ring" Eclipse / 1991 – The "Great" Eclipse
- Eclipse Chaser Profile