LOCATIONS and DATES for the TRADITIONAL **MARCH EQUINOX** - Twelve hours both Sun and night time!

....Atomic clocks are assumed to be 8.0 min in advance of Sun....Quoted values are reliant on an Equatorial extra time of 7.0 min.

DATE **MARCH 2007**	***PLACE***	***LAT / LONG***	***Sun Times*** .....(ESTIMATE) **UTC / GMT**	***COSINE***(lat)	**EXTRA SUN TIME MARCH EQUINOX** *March 20 / 21 2007*	(ESTIMATED) **DELTA EQUILUX during the year**
SAT 11 / 12	***ROVANIEMI,*** **FINLAND**	***66.5 N....25 40 E***	***04:26 / 16:25***	***0.3987***	***2 X 8.8 min***	***202 dy***
MON 13	**ARCHANGEL,** **RUSSIA**	64.5 N....40 40 E	**03:21...15:21**	0.4305	2 X 8.13	201
TUE 14	**OSLO,** **NORWAY**	60 00 N....11 00 E	**05:24...17:24**	0.5000	2 X 7.00	199
TUE 14	**S.PETERBURG** **RUSSIA**	59 56 N....30 20 E	**04:07...16:07**	0.5012	2 X 6.98	199
TUE 14 / 15	**STOCKHOLM** **SWEDEN**	59 20 N....18 00 E	**04:57...16:56**	0.5100	2 X 6.86	198
WED 15	**EDINBURGH** **SCOTLAND**	55 55 N....03 10 W	**06:20...18:20**	0.5605	2 X 6.25	197
WED 15	**MOSCOW** **RUSSIA**	55 45 N....37 40 E	**03:37...15:37**	0.5625	2 X 6.23	197
WED 15	**COPENHAGEN** **DENMARK**	55 40 N....12 30 E	**05:18...17:19**	0.5640	2 X 6.21	197
WED 15 / 16	**CALGARY** **CANADA**	51 00 N ....114 00 W	**13:44...01:43**	0.6293	2 X 5.56	196
WED 15	**CAMBRIDGE** **ENGLAND**	52 12 N....00 10 E	**06:09...18:09**	0.6130	2 X 5.71	196.5
THU 16	**CAMBRIDGE** **MASSACHUS.**	42 22 N....71 04 W	**10:53...22:53**	0.7390	2 x 4.74	194.5
THU 16	**PARIS** **FRANCE**	48 50 N....02 20 E	**06:00...18:00**	0.6583	2 X 5.32	195
THU 16	**LYON** **FRANCE**	45 45 N....04 40 E	**05:49...17:49**	0.6975	2 X 5.02	195
WED 15/16	**PORTLAND** **OREGON**	45 30 N...122 40 W	**14:19...02:19**	0.7009	2 X 5.00	195
THU 16	**HALIFAX** **NOVA SCOTIA**	44 30 N....63 30 W	**10:21...22:21**	0.7133	2 X 4.91	195
THU 16	**VLADYVOSTOK** **RUSSIA**	43 00 N...132 00 E	**21:20...09:20**	0.7300	2 x 4.77	194.5
THU 16	**DETROIT** **MICHIGAN**	42 30 N....83 00 W	**11:40...23:40**	0.7373	2 X 4.73	195
THU 16 / 17	**BARCELONA** **SPAIN**	41 22 N....02 10 E	**06:00...17:59**	0.7505	2 X 4.67	194
THU 16	**NEW YORK** **NEW YORK**	41 74 N....74 00 W	**11:05...23:05**	0.7547	2 X 4.64	194.5
THU 16 / 17	**ISTANBUL** **TURKEY**	41 00 N....29 00 E	**04:12...16:12**	0.7547	2 X 4.64	194
THU 16 / 17	**SALERNO** **ITALY**	40 40 N....15 00 E	**05:09...17:08**	0.7585	2 X 4.60	194
THU 16	**PITTSBURGH** **PENNSYLVANIA**	40 40 N....80 00 W	**11:38...23:38**	0.7585	2 X 4.60	194.5
FRI 17	**BEIJING** **CHINA**	39 50 N...116 25 E	**22:22...10:22**	0.7679	2 X 4.56	194
FRI 17	**CADIZ** **SPAIN**	36 30 N....06 20 W	**06:33...18:33**	0.8039	2 X 4.35	194
FRI 17	**TOKYO** **JAPAN**	35 35 N...139 45 E	**20:49...08:49**	0.8133	2 X 4.30	194
FRI 17	**OSAKA** **JAPAN**	34 40 N...139 46 E	**20:49...08:49**	0.8230	2 x 4.26	194
THU 16 / 17	**LOS ANGELES** **CALIFORNIA**	34 00 N...118 15 W	**14:01...02:01**	0.8299	2 X 4.22	194
FRI 17 / 18	**CAIRO** **EGYPT**	30 00 N....31 15 E	**04:03...16:03**	0.8660	2 X 4.04	193
FRI 17 / 18	**MUMBAI** **INDIA**	19 00 N....72 40 E	**01:21...13:21**	0.9455	2 X 3.70	191.5
FRI 17	**PUEBLA** **MEJICO**	18 00 N....94 30 W	**12:26...00:26**	0.9511	2 X 3.68	192.5
SAT 18	**PORTof SPAIN** **TRINIDAD**	11 40 N....61 30 W	**10:13...22:13**	0.9793	2 X 3.58	192.5
SAT 19	**SINGAPORE** **SINGAPORE**	01 20 N...103 50 E	**23:17...11:17**	0.9997	2 X 3.50	190
SAT 18	**QUITO** **ECUADOR**	00 25 S....78 30 W	**11:22...23:22**	1.0000	2 X 3.50	191
SAT 18	**NAIROBI** **KENIA**	01 20 S....37 00 E	**03:41...15:40**	0.9997	2 X 3.50	191
SAT 18	**BRASILIA** **BRASIL**	16 00 S....48 00 W	**09:20...21:20**	0.9613	2 X 3.64	192.5
SAT 18 / 19	**SUVA** **FIJI**	18 00 S....178 50 E	**18:13...06:13**	0.9511	2 X 3.68	192
FRI 17 / 18	**DURBAN** **STH AFRICA**	30 00 S....31 00 E	**04:04...16:04**	0.8660	2 X 4.04	193
THU 16	**SYDNEY** **AUSTRALIA**	33 52 S....151 15 E	**20:03...08:03**	0.8300	2 X 4.22	193.5
FRI 17	**BUENOSAIRES** **ARGENTINA**	34 37 S....58 22 W	**10:01...22:01**	0.8230	2 X 4.26	193
THU 16	**AUCKLAND** **N. ZEALAND**	36 50 S....174 45 E	**18:29...06:29**	0.8000	2 x 4.35	193
THU 16	**WELLINGTON** **N. ZEALAND**	41 20 S....174 50 E	**18:29...06:29**	0.7505	2 x 4.67	193
THU 16	**DUNEDIN** **N. ZEALAND**	42 52 S....170 50 E	**18:45...06:45**	0.7400	2 x 4.75	193
WED 15	**PUNTA ARENAS** **CHILE**	53 10 S....71 00 W	**10:53...22:52**	0.5967	2 x 5.90	196

Origin: Hostal Centro Sol, Manzanares 7, 11005 **CADIZ ,**
Spain, ...10 February, 2007.

THE FIRST DAY OF SPRING AND AUTUMN.

The "***EQUINOX DAY***" *no longer* occurs on the day with the Sun appearing for exactly twelve hours 00 minutes (and that has been so for about *400 years*!).

The definition of the Equinox Date by the astronomers is suitable for viewing only on those occasions when there is *NO atmosphere*. (It is the time defined for the Sun to be overhead (*at zenith*) when appearing to pass over the Equator).

The atmosphere behaves like a weak lens on the level of the horizon, but is strong enough to make the Sun appear to be above the horizon for longer than the theory "without an atmosphere" allows. (The Sun can be seen for *some minutes over* twelve hours on that date - even at the Equator, where the "new" definition applies).

In March, the date for the *traditional, twelve-hour "Equilux"*, as some describe it, is EARLIER as a consequence, by a number of days – the number depending on how far North or South is the latitude of the observer.

In September, that date is similarly LATER as a consequence, by a number of days.
The variation in the DATE of the Equilux with latitude is principally a result of the angle at which the Sun approaches the horizon, either from below or above at dawn or dusk, and appears as a result of the degree of "refraction" by the atmospheric "lens".

The Sun, with few exceptions, is always visible from levels below the horizon about the dates of the Equinox, when it has or will travel an equivalent of a vertical "distance or time" of 3.50 to 4.00 minutes. The effective time or "distance" is longer because the Sun "moves" along the path defined by the angle just mentioned, until it has traversed that depth.

The Table shows by the results, that the time taken for the Sun to achieve the steps above, around the time of the Equinoxes, at the particular latitude of an observer , is inversely dependent on the COSINE of the latitude angle. (That is particularly clear for the situations of Quito and Oslo in the Table!). The Table is constructed on the assumption that 3.50 minutes divided by the cosine of the latitude is appropriate. (As a consequence of the large number of days difference between the two types of Equinox at high latitudes, that formula is not so accurate for very high locations, both North and South!).

Very often, observers having newspapers available for a city, or sometimes are located near a "web-camera" site on the internet, can find quotes for the sunrise and sunset times for the day of publication. (Do not confuse with times quoted for traffic lighting up and extinguishing times!).

If such times are available, then on the Equilux date the times will show virtually *identical minutes*! On the Official Equinox date, the times will differ by the "*twice factor*" shown on the Table.

Please inform colleagues who might find this of interest. "GOOD OBSERVING!"

William E G Plumtree, M. Phil. (Lond) 10 / 02 / 2007