

## Astrodienst Ephemeris Tables for the year 2022

## tropical zodiac

contains Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, True Node, Moon's Node, Lilith, Chiron

Programming
Dieter Koch and Alois Treindl
based on Swiss Ephemeris
Code D5EPH

JANUARY 2022 00:00 UT

| Day  | Sid.t   | 0                 | D                | ğ              | ·               | ď             | 4             | ħ              | )f(            | 卉               | В               | ß              | v              | Ç               | ç             | Day  |
|------|---------|-------------------|------------------|----------------|-----------------|---------------|---------------|----------------|----------------|-----------------|-----------------|----------------|----------------|-----------------|---------------|------|
| S 1  | 6 42 30 | 10 <b>ට</b> 31'44 | 15 <b>×</b> 29   | 28 <b>궁</b> 11 | 23°R18          | 13 <b>₹</b> 6 | 0 <b>∺</b> 33 | 11 <b>≈</b> 54 | 10°R57         | 20 <b>)</b> (40 | 25 <b>පි</b> 56 | 1°R13          | 29 <b>8</b> 32 | 18 <b>Ⅱ</b> 28  | 8 <b>Y</b> 30 | S 1  |
| S 2  | 6 46 27 | 11°32'55          | 0 <b>궁</b> 37    | 29°35          | 22 <b>~3</b> 48 | 13°49         | 0°45          | 12° 1          | 10856          | 20°41           | 25°58           | 1 <b>I</b> I10 | 29°29          | 18°34           | 8°31          | S 2  |
| M 3  | 6 50 23 | 12°34'06          | 15°46            | 0≈57           | 22°16           | 14°31         | 0°56          | 12° 7          | 10°55          | 20°42           | 26° 0           | 1° 5           | 29°25          | 18°41           | 8°32          | M 3  |
| T 4  | 6 54 20 | 13°35'17          | 0≈47             | 2°16           | 21°43           | 15°14         | 1° 8          | 12°14          | 10°55          | 20°43           | 26° 2           | 0°59           | 29°22          | 18°48           | 8°33          | T 4  |
| W 5  | 6 58 17 | 14°36'28          | 15°31            | 3°32           | 21° 9           | 15°57         | 1°20          | 12°20          | 10°54          | 20°45           | 26° 4           | 0°52           | 29°19          | 18°54           | 8°34          | W 5  |
| T 6  | 7 2 13  | 15°37'38          | 29°50            | 4°43           | 20°34           | 16°40         | 1°33          | 12°27          | 10°53          | 20°46           | 26° 6           | 0°45           | 29°16          | 19° 1           | 8°34          | T 6  |
| F 7  | 7 6 10  | 16°38'48          | 13 <b>) (</b> 41 | 5°50           | 19°58           | 17°23         | 1°45          | 12°34          | 10°53          | 20°47           | 26° 8           | 0°39           | 29°13          | 19°8            | 8°35          | F 7  |
| S 8  | 7 10 6  | 17°39'58          | 27° 3            | 6°52           | 19°21           | 18° 5         | 1°57          | 12°41          | 10°52          | 20°48           | 26°10           | 0°34           | 29°10          | 19°14           | 8°36          | S 8  |
| S 9  | 7 14 3  | 18°41'07          | 9 <b>Ƴ</b> 57    | 7°47           | 18°44           | 18°48         | 2° 9          | 12°47          | 10°52          | 20°49           | 26°12           | 0°32           | 29° 6          | 19°21           | 8°38          | S 9  |
| M10  | 7 17 59 | 19°42'16          | 22°27            | 8°35           | 18° 8           | 19°31         | 2°22          | 12°54          | 10°51          | 20°51           | 26°14           | 0°D32          | 29° 3          | 19°28           | 8°39          | M10  |
| T 11 | 7 21 56 | 20°43'24          | 4 <b>8</b> 39    | 9°15           | 17°31           | 20°14         | 2°34          | 13° 1          | 10°51          | 20°52           | 26°16           | 0°33           | 29° 0          | 19°34           | 8°40          | T 11 |
| W12  | 7 25 52 | 21°44'32          | 16°38            | 9°46           | 16°55           | 20°57         | 2°47          | 13° 8          | 10°50          | 20°53           | 26°18           | 0°34           | 28°57          | 19°41           | 8°41          | W12  |
| T 13 | 7 29 49 | 22°45'40          | 28°28            | 10° 8          | 16°20           | 21°40         | 3° 0          | 13°15          | 10°50          | 20°55           | 26°20           | 0°R35          | 28°54          | 19°47           | 8°42          | T 13 |
| F 14 | 7 33 46 | 23°46'46          | 10 <b>Ⅱ</b> 14   | 10°R19         | 15°46           | 22°24         | 3°12          | 13°22          | 10°50          | 20°56           | 26°22           | 0°34           | 28°51          | 19°54           | 8°44          | F 14 |
| S 15 | 7 37 42 | 24°47'53          | 22° 1            | 10°19          | 15°13           | 23° 7         | 3°25          | 13°28          | 10°49          | 20°58           | 26°24           | 0°32           | 28°47          | 20° 1           | 8°45          | S 15 |
| S 16 | 7 41 39 | 25°48'58          | 3952             | 10° 7          | 14°41           | 23°50         | 3°38          | 13°35          | 10°49          | 20°59           | 26°26           | 0°26           | 28°44          | 20° 7           | 8°47          | S 16 |
| M17  | 7 45 35 | 26°50'03          | 15°50            | 9°43           | 14°11           | 24°33         | 3°51          | 13°42          | 10°49          | 21° 1           | 26°28           | 0°19           | 28°41          | 20°14           | 8°48          | M17  |
| T 18 | 7 49 32 | 27°51'08          | 27°57            | 9° 8           | 13°43           | 25°16         | 4° 4          | 13°49          | 10°49          | 21° 2           | 26°29           | 0° 9           | 28°38          | 20°21           | 8°50          | T 18 |
| W19  | 7 53 28 | 28°52'12          | 10Ω12            | 8°22           | 13°17           | 26° 0         | 4°17          | 13°56          | 10°D49         | 21° 4           | 26°31           | 29 <b>8</b> 57 | 28°35          | 20°27           | 8°51          | W19  |
| T 20 | 7 57 25 | 29°53'15          | 22°39            | 7°26           | 12°53           | 26°43         | 4°30          | 14° 3          | 10°49          | 21° 5           | 26°33           | 29°46          | 28°31          | 20°34           | 8°53          | T 20 |
| F 21 | 8 1 22  | 0≈54'18           | 5 <b>M</b> p16   | 6°22           | 12°31           | 27°26         | 4°44          | 14°11          | 10°49          | 21° 7           | 26°35           | 29°35          | 28°28          | 20°41           | 8°54          | F 21 |
| S 22 | 8 5 18  | 1°55'21           | 18° 4            | 5°11           | 12°12           | 28°10         | 4°57          | 14°18          | 10°49          | 21° 8           | 26°37           | 29°25          | 28°25          | 20°47           | 8°56          | S 22 |
| S 23 | 8 9 15  | 2°56'22           | 1 <b>♀</b> 4     | 3°56           | 11°55           | 28°53         | 5°10          | 14°25          | 10°50          | 21°10           | 26°39           | 29°18          | 28°22          | 20°54           | 8°58          | S 23 |
| M24  | 8 13 11 | 3°57'24           | 14°17            | 2°40           | 11°40           | 29°37         | 5°24          | 14°32          | 10°50          | 21°12           | 26°41           | 29°14          | 28°19          | 21° 1           | 9° 0          | M24  |
| T 25 | 8 17 8  | 4°58'25           | 27°45            | 1°23           | 11°28           | 0 <b>궁</b> 20 | 5°37          | 14°39          | 10°50          | 21°13           | 26°43           | 29°12          | 28°16          | 21° 7           | 9° 2          | T 25 |
| W26  | 8 21 4  | 5°59'25           | 11 <b>M</b> .30  | 0° 9           | 11°19           | 1° 4          | 5°51          | 14°46          | 10°51          | 21°15           | 26°45           | 29°D12         | 28°12          | 21°14           | 9° 4          | W26  |
| T 27 | 8 25 1  | 7° 0'25           | 25°31            | 29る 0          | 11°12           | 1°47          | 6° 4          | 14°53          | 10°51          | 21°17           | 26°47           | 29°R13         | 28° 9          | 21°21           | 9° 6          | T 27 |
| F 28 | 8 28 57 | 8° 1'25           | 9 <b>∡</b> 149   | 27°57          | 11° 7           | 2°31          | 6°18          | 15° 0          | 10°51          | 21°19           | 26°49           | 29°12          | 28° 6          | 21°27           | 9°8           | F 28 |
| S 29 | 8 32 54 | 9° 2'24           | 24°23            | 27° 1          | 11°D 5          | 3°15          | 6°31          | 15° 8          | 10°52          | 21°20           | 26°51           | 29°10          | 28° 3          | 21°34           | 9°10          | S 29 |
| S 30 | 8 36 51 | 10° 3'23          | 9 <b>ろ</b> 9     | 26°13          | 11° 5           | 3°58          | 6°45          | 15°15          | 10°52          | 21°22           | 26°53           | 29° 5          | 28° 0          | 21°41           | 9°12          | S 30 |
| M31  | 8 40 47 | 11≈ 4'20          | 24 <b>る</b> 0    | 25 <b>る</b> 34 | 11궁 8           | 4 <b>궁</b> 42 | 6 <b>∺</b> 59 | 15≈22          | 10 <b>8</b> 53 | 21 <b>)</b> 24  | 26 <b>පි</b> 55 | 28 <b>8</b> 57 | 27 <b>8</b> 57 | 21 <b>II</b> 47 | 9 <b>Υ</b> 14 | M31  |

Delta T = 70.60 sec

FEBRUARY 2022 00:00 UT

| Day  | Sid.t    | 0                | D               | ğ              | φ              | ď              | 4              | ħ              | )f(   | ¥                | В              | ₽.             | v              | Ç              | ę,             | Day  |
|------|----------|------------------|-----------------|----------------|----------------|----------------|----------------|----------------|-------|------------------|----------------|----------------|----------------|----------------|----------------|------|
| T 1  | 8 44 44  | 12≈ 5'17         | 8≈48            | 25°R 3         | 11 <b>る</b> 13 | 5 <b>る</b> 26  | 7 <b>)</b> €13 | 15≈29          | 10854 | 21 <b>)</b> (26  | 26 <b>궁</b> 57 | 28°R47         | 27 <b>8</b> 53 | 21 <b>Ⅱ</b> 54 | 9 <b>Υ</b> 16  | T 1  |
| W 2  | 8 48 40  | 13° 6'12         | 23°25           | 24 <b>궁</b> 41 | 11°20          | 6°10           | 7°27           | 15°36          | 10°55 | 21°28            | 26°59          | 28 <b>8</b> 35 | 27°50          | 22° 1          | 9°18           | W 2  |
| T 3  | 8 52 37  | 14° 7'07         | 7 <b>) (</b> 42 | 24°28          | 11°30          | 6°54           | 7°40           | 15°43          | 10°55 | 21°30            | 27° 1          | 28°23          | 27°47          | 22° 7          | 9°21           | T 3  |
| F 4  | 8 56 33  | 15° 8'00         | 21°35           | 24°D23         | 11°42          | 7°37           | 7°54           | 15°51          | 10°56 | 21°32            | 27° 3          | 28°13          | 27°44          | 22°14          | 9°23           | F 4  |
| S 5  | 9 0 30   | 16° 8'52         | 5 <b>℃</b> 1    | 24°25          | 11°56          | 8°21           | 8° 8           | 15°58          | 10°57 | 21°33            | 27° 5          | 28° 4          | 27°41          | 22°21          | 9°25           | S 5  |
| S 6  | 9 4 26   | 17° 9'42         | 18° 0           | 24°35          | 12°12          | 9° 5           | 8°22           | 16° 5          | 10°58 | 21°35            | 27° 7          | 27°58          | 27°37          | 22°27          | 9°28           | S 6  |
| M 7  | 9 8 23   | 18°10'31         | 0 <b>8</b> 35   | 24°51          | 12°30          | 9°49           | 8°36           | 16°12          | 10°59 | 21°37            | 27° 8          | 27°55          | 27°34          | 22°34          | 9°30           | M 7  |
| T 8  | 9 12 20  | 19°11'19         | 12°50           | 25°13          | 12°50          | 10°33          | 8°50           | 16°19          | 11° 0 | 21°39            | 27°10          | 27°54          | 27°31          | 22°41          | 9°33           | T 8  |
| W 9  | 9 16 16  | 20°12'05         | 24°50           | 25°41          | 13°12          | 11°17          | 9° 5           | 16°27          | 11° 1 | 21°41            | 27°12          | 27°54          | 27°28          | 22°47          | 9°35           | W 9  |
| T 10 | 9 20 13  | 21°12'50         | 6 <b>Ⅱ</b> 41   | 26°15          | 13°35          | 12° 1          | 9°19           | 16°34          | 11° 2 | 21°43            | 27°14          | 27°54          | 27°25          | 22°54          | 9°38           | T 10 |
| F 11 | 9 24 9   | 22°13'33         | 18°28           | 26°53          | 14° 1          | 12°45          | 9°33           | 16°41          | 11° 3 | 21°45            | 27°16          | 27°52          | 27°22          | 23° 1          | 9°40           | F 11 |
| S 12 | 9 28 6   | 23°14'14         | 09୍ଚୀ6          | 27°35          | 14°28          | 13°30          | 9°47           | 16°48          | 11° 5 | 21°47            | 27°18          | 27°49          | 27°18          | 23° 7          | 9°43           | S 12 |
| S 13 | 9 32 2   | 24°14'54         | 12°11           | 28°21          | 14°57          | 14°14          | 10° 1          | 16°55          | 11° 6 | 21°49            | 27°19          | 27°42          | 27°15          | 23°14          | 9°45           | S 13 |
| M14  | 9 35 59  | 25°15'33         | 24°15           | 29°11          | 15°27          | 14°58          | 10°16          | 17° 2          | 11° 7 | 21°52            | 27°21          | 27°33          | 27°12          | 23°21          | 9°48           | M14  |
| T 15 | 9 39 55  | 26°16'10         | $6\Omega$ 32    | 0≈ 5           | 15°59          | 15°42          | 10°30          | 17°10          | 11° 9 | 21°54            | 27°23          | 27°21          | 27° 9          | 23°27          | 9°51           | T 15 |
| W16  | 9 43 52  | 27°16'45         | 19° 2           | 1° 1           | 16°32          | 16°26          | 10°44          | 17°17          | 11°10 | 21°56            | 27°25          | 27° 8          | 27° 6          | 23°34          | 9°54           | W16  |
| T 17 | 9 47 49  | 28°17'19         | 1 <b>M</b> p46  | 2° 1           | 17° 7          | 17°11          | 10°59          | 17°24          | 11°11 | 21°58            | 27°27          | 26°54          | 27° 3          | 23°41          | 9°56           | T 17 |
| F 18 | 9 51 45  | 29°17'51         | 14°43           | 3° 3           | 17°43          | 17°55          | 11°13          | 17°31          | 11°13 | 22° 0            | 27°28          | 26°40          | 26°59          | 23°47          | 9°59           | F 18 |
| S 19 | 9 55 42  | 0 <b>¥</b> 18'22 | 27°52           | 4° 7           | 18°20          | 18°39          | 11°27          | 17°38          | 11°15 | 22° 2            | 27°30          | 26°29          | 26°56          | 23°54          | 10° 2          | S 19 |
| S 20 | 9 59 38  | 1°18'51          | 11 <b>≏</b> 13  | 5°14           | 18°59          | 19°24          | 11°42          | 17°45          | 11°16 | 22° 4            | 27°32          | 26°20          | 26°53          | 24° 1          | 10° 5          | S 20 |
| M21  | 10 3 35  | 2°19'19          | 24°43           | 6°23           | 19°39          | 20° 8          | 11°56          | 17°52          | 11°18 | 22° 6            | 27°33          | 26°14          | 26°50          | 24° 7          | 10° 8          | M21  |
| T 22 | 10 7 31  | 3°19'46          | 8M22            | 7°34           | 20°20          | 20°52          | 12°10          | 17°59          | 11°20 | 22° 9            | 27°35          | 26°11          | 26°47          | 24°14          | 10°11          | T 22 |
| W23  | 10 11 28 | 4°20'11          | 22°11           | 8°47           | 21° 2          | 21°37          | 12°25          | 18° 6          | 11°21 | 22°11            | 27°37          | 26°D11         | 26°43          | 24°20          | 10°14          | W23  |
| T 24 | 10 15 24 | 5°20'35          | 6 <b>₹</b> 8    | 10° 1          | 21°45          | 22°21          | 12°39          | 18°13          | 11°23 | 22°13            | 27°38          | 26°R11         | 26°40          | 24°27          | 10°17          | T 24 |
| F 25 | 10 19 21 | 6°20'58          | 20°15           | 11°18          | 22°29          | 23° 6          | 12°54          | 18°20          | 11°25 | 22°15            | 27°40          | 26°10          | 26°37          | 24°34          | 10°20          | F 25 |
| S 26 | 10 23 18 | 7°21'20          | 4 <b>る</b> 30   | 12°35          | 23°14          | 23°51          | 13° 8          | 18°27          | 11°27 | 22°17            | 27°42          | 26° 8          | 26°34          | 24°40          | 10°23          | S 26 |
| S 27 | 10 27 14 | 8°21'40          | 18°51           | 13°55          | 24° 0          | 24°35          | 13°23          | 18°34          | 11°29 | 22°20            | 27°43          | 26° 3          | 26°31          | 24°47          | 10°26          | S 27 |
| M28  | 10 31 11 | 9 <b>米</b> 21'58 | 3≈15            | 15≈15          | 24 <b>궁</b> 47 | 25 <b>る</b> 20 | 13 <b>米</b> 37 | 18 <b>≈</b> 41 | 11831 | 22 <b>) (</b> 22 | 27 <b>云</b> 45 | 25 <b>8</b> 55 | 26 <b>8</b> 28 | 24∏54          | 10 <b>Υ</b> 29 | M28  |

Delta T = 70.63 sec

MARCH 2022 00:00 UT

| Day          | Sid.t                | 0                    | D                       | ğ                        | φ              | ♂                                  | 4              | ħ              | )∤(            | 并              | В              | u               | v              | Ç               | ę,                      | Day          |
|--------------|----------------------|----------------------|-------------------------|--------------------------|----------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|-----------------|-------------------------|--------------|
| T 1          | 10 35 7              | 10 <b>¥</b> 22'15    | 17 <b>≈</b> 36          | 16 <b>≈</b> 38           | 25 <b>る</b> 35 | 26 <b>궁</b> 4                      | 13 <b>米</b> 52 | 18 <b>≈</b> 48 | 11833          | 22 <b>)</b> 24 | 27 <b>る</b> 46 | 25°R45          | 26824          | 25Ⅱ 0           | 10 <b>Y</b> 32          | T 1          |
| W 2          | 10 39 4              | 11°22'31             | 1 <b></b> ₩50           | 18° 1                    | 26°24          | 26°49                              | 14° 6          | 18°55          | 11°35          | 22°26          | 27°48          | 25 <b>8</b> 33  | 26°21          | 25° 7           | 10°35                   | W 2          |
| T 3          | 10 43 0              | 12°22'44             | 15°50                   | 19°26                    | 27°13          | 27°34                              | 14°21          | 19° 2          | 11°37          | 22°29          | 27°50          | 25°21           | 26°18          | 25°14           | 10°38                   | T 3          |
| F 4<br>S 5   | 10 46 57             | 13°22'56             | 29°31<br>12 <b>Y</b> 50 | 20°52<br>22°19           | 28° 3<br>28°54 | 28°19<br>29° 3                     | 14°35          | 19° 8          | 11°39<br>11°41 | 22°31          | 27°51          | 25°10<br>25° 1  | 26°15<br>26°12 | 25°20           | 10°42<br>10°45          | F 4<br>S 5   |
| S 5          | 10 50 53             | 14°23'06             |                         | -                        |                |                                    | 14°50          | 19°15          |                | 22°33          | 27°53          |                 | _              | 25°27           |                         |              |
| S 6          | 10 54 50             | 15°23'13             | 25°46                   | 23°48                    | 29°46          | 29°48                              | 15° 4          | 19°22          | 11°43          | 22°35          | 27°54          | 24°55           | 26° 9          | 25°34           | 10°48                   | S 6          |
| M 7          | 10 58 46             | 16°23'19             | 8821                    | 25°18                    | 0≈38           | 0≈33                               | 15°19          | 19°29          | 11°46          | 22°38          | 27°55          | 24°52           | 26° 5          | 25°40           | 10°51                   | M 7          |
| T 8<br>W 9   | 11 2 43              | 17°23'23<br>18°23'25 | 20°38<br>2 <b>∏</b> 40  | 26°49<br>28°21           | 1°31<br>2°25   | 1°18<br>2° 3                       | 15°33<br>15°48 | 19°35          | 11°48<br>11°50 | 22°40<br>22°42 | 27°57<br>27°58 | 24°D50<br>24°50 | 26° 2<br>25°59 | 25°47<br>25°54  | 10°55<br>10°58          | T 8<br>W 9   |
| T 10         | 11 6 40<br>11 10 36  | 18°23'25<br>19°23'24 | 14°32                   | 28°21<br>29°54           | 3°19           | 2°47                               | 15°48<br>16° 2 | 19°42<br>19°49 | 11°53          | 22°42<br>22°44 | 27°58<br>28° 0 | 24°S0<br>24°R51 | 25°56          | 25°54<br>26° 0  | 10°58<br>11° 1          | T 10         |
| F 11         | 11 14 33             | 20°23'22             | 26°21                   | 1 <b>)</b> 28            | 4°13           | 3°32                               | 16°17          | 19°55          | 11°55          | 22°47          | 28° 1          | 24°51           | 25°53          | 26° 7           | 11° 5                   | F 11         |
| S 12         | 11 18 29             | 21°23'17             | 89512                   | 3° 4                     | 5° 9           | 4°17                               | 16°31          | 20° 2          | 11°58          | 22°49          | 28° 2          | 24°49           | 25°49          | 26°14           | 11° 8                   | S 12         |
| S 13         | 11 22 26             | 22°23'10             | 20° 9                   | 4°41                     | 6° 4           | 5° 2                               | 16°46          | 20° 8          | 12° 0          | 22°51          | 28° 4          | 24°45           | 25°46          | 26°20           | 11°11                   | S 13         |
| M14          | 11 26 22             | 23°23'01             | $2\Omega$ 17            | 6°19                     | 7° 1           | 5°47                               | 17° 0          | 20°14          | 12° 3          | 22°54          | 28° 5          | 24°39           | 25°43          | 26°27           | 11°15                   | M14          |
| T 15         | 11 30 19             | 24°22'50             | 14°40                   | 7°58                     | 7°58           | 6°32                               | 17°15          | 20°21          | 12° 5          | 22°56          | 28° 6          | 24°31           | 25°40          | 26°34           | 11°18                   | T 15         |
| W16          | 11 34 15             | 25°22'36             | 27°20                   | 9°38                     | 8°55           | 7°17                               | 17°29          | 20°27          | 12° 8          | 22°58          | 28° 7          | 24°21           | 25°37          | 26°40           | 11°22                   | W16          |
| T 17         | 11 38 12             | 26°22'21             | 10 <b>M</b> )19         | 11°20                    | 9°53           | 8° 2                               | 17°44          | 20°34          | 12°10          | 23° 0          | 28° 9          | 24°10           | 25°34          | 26°47           | 11°25                   | T 17         |
| F 18         | 11 42 9              | 27°22'03             | 23°35                   | 13° 2                    | 10°51          | 8°47                               | 17°58          | 20°40          | 12°13          | 23° 3          | 28°10          | 24° 0           | 25°30          | 26°54           | 11°28                   | F 18         |
| S 19         | 11 46 5              | 28°21'43             | 7 <b>요</b> 7            | 14°46                    | 11°49          | 9°32                               | 18°13          | 20°46          | 12°16          | 23° 5          | 28°11          | 23°51           | 25°27          | 27° 0           | 11°32                   | S 19         |
| S 20         | 11 50 2              | 29°21'22             | 20°53                   | 16°31                    | 12°48          | 10°17                              | 18°27          | 20°52          | 12°18          | 23° 7          | 28°12          | 23°45           | 25°24          | 27° 7           | 11°35                   | S 20         |
| M21          | 11 53 58             | 0 <b>Υ</b> 20'58     | 4 <b>M</b> .48          | 18°18                    | 13°48          | 11° 2                              | 18°41          | 20°58          | 12°21          | 23° 9          | 28°13          | 23°41           | 25°21          | 27°14           | 11°39                   | M21          |
| T 22         | 11 57 55             | 1°20'33              | 18°51                   | 20° 5                    | 14°48          | 11°47                              | 18°56          | 21° 4          | 12°24          | 23°12          | 28°14          | 23°D39          | 25°18          | 27°20           | 11°42                   | T 22         |
| W23          | 12 1 51              | 2°20'06              | 2 <b>7</b> 57           | 21°54                    | 15°48          | 12°33                              | 19°10          | 21°10          | 12°27          | 23°14          | 28°15          | 23°40           | 25°14          | 27°27           | 11°46                   | W23          |
| T 24<br>F 25 | 12 5 48              | 3°19'37<br>4°19'07   | 17° 6                   | 23°45<br>25°36           | 16°48<br>17°49 | 13°18<br>14° 3                     | 19°24<br>19°39 | 21°16<br>21°22 | 12°30          | 23°16<br>23°18 | 28°17<br>28°18 | 23°41           | 25°11          | 27°34<br>27°40  | 11°49                   | T 24<br>F 25 |
| S 26         | 12 9 44<br>12 13 41  | 5°18'34              | 1 <b>る</b> 14<br>15°22  | 25°36<br>27°29           | 17°49<br>18°51 | 14° 48                             | 19°53          | 21°22          | 12°33<br>12°35 | 23°18<br>23°21 | 28°18          | 23°R41<br>23°41 | 25° 8<br>25° 5 | 27°40<br>27°47  | 11°53<br>11°56          | S 26         |
|              |                      |                      |                         |                          |                |                                    |                |                |                |                |                | _               |                |                 |                         |              |
| S 27         | 12 17 38             | 6°18'01              | 29°28                   | 29°23                    | 19°52          | 15°33                              | 20° 7          | 21°34          | 12°38          | 23°23          | 28°20          | 23°39           | 25° 2          | 27°54           | 12° 0                   | S 27         |
| M28<br>T 29  | 12 21 34<br>12 25 31 | 7°17'25<br>8°16'47   | 13 <b>≈</b> 29<br>27°24 | 1 <b>Υ</b> 18<br>3°15    | 20°54<br>21°56 | 16°19<br>17° 4                     | 20°21<br>20°36 | 21°40<br>21°46 | 12°41<br>12°44 | 23°25<br>23°27 | 28°20<br>28°21 | 23°34<br>23°28  | 24°59<br>24°55 | 28° 0<br>28° 7  | 12° 3<br>12° 7          | M28<br>T 29  |
| W30          | 12 25 31             | 9°16'08              | 11 <b>)</b> 9           | 5°13                     | 21°56<br>22°59 | 17°49                              | 20°50          | 21°46<br>21°51 | 12°44<br>12°47 | 23°27<br>23°30 | 28°21          | 23°28<br>23°21  | 24°53          | 28°14           | 12° 7                   | W30          |
| T 31         | 12 33 24             | $10^{\circ}1008$     | 24 <b>¥</b> 42          | $7\mathbf{\hat{Y}}_{12}$ | 24 <b>≈</b> 2  | 17 <del>49</del><br>18 <b>≈</b> 34 | 21 💥 4         | 21≈57          | 12850          | 23 <b>)</b> 32 | 28 <b>3</b> 23 | 23813           | 24849          | 28 <b>II</b> 20 | 12 10<br>12 <b>Y</b> 14 | T 31         |

Delta T = 70.66 sec

APRIL 2022 00:00 UT

| Day          | Sid.t                | 0                           | D                      | ğ              | φ                   | ð                         | 4                | ħ              | )f(            | ¥                       | В              | ₽.             | ಬ              | Ç              | , k            | Day          |
|--------------|----------------------|-----------------------------|------------------------|----------------|---------------------|---------------------------|------------------|----------------|----------------|-------------------------|----------------|----------------|----------------|----------------|----------------|--------------|
| F 1          | 12 37 20             | 11 <b>°</b> 14'43           | 8 <b>Υ</b> 0           | 9 <b>Υ</b> 12  | 25≈ 5               | 19≈20                     | 21 <b>)</b> 18   | 22≈ 2          | 12 <b>8</b> 53 | 23 <b>)</b> 34          | 28 <b>중</b> 24 | 23°R 7         | 24846          | 28 <b>Ⅲ</b> 27 | 12 <b>Y</b> 17 | F 1          |
| S 2          | 12 41 17             | 12°13'58                    | 21° 2                  | 11°13          | 26° 8               | 20° 5                     | 21°32            | 22° 8          | 12°56          | 23°36                   | 28°25          | 238 1          | 24°43          | 28°34          | 12°21          | S 2          |
| S 3          | 12 45 13             | 13°13'10                    | 3 <b>8</b> 46          | 13°15          | 27°11               | 20°50                     | 21°46            | 22°13          | 13° 0          | 23°38                   | 28°26          | 22°57          | 24°40          | 28°40          | 12°24          | S 3          |
| M 4          | 12 49 10             | 14°12'21                    | 16°14                  | 15°18          | 28°15               | 21°35                     | 22° 0            | 22°19          | 13° 3          | 23°41                   | 28°26          | 22°56          | 24°36          | 28°47          | 12°28          | M 4          |
| T 5          | 12 53 7              | 15°11'29                    | 28°27                  | 17°22          | 29°19               | 22°21                     | 22°14            | 22°24          | 13° 6          | 23°43                   | 28°27          | 22°D55         | 24°33          | 28°54          | 12°31          | T 5          |
| W 6          | 12 57 3              | 16°10'35                    | 10Ⅱ28                  | 19°27          | 0 <b>∺</b> 23       | 23° 6                     | 22°28            | 22°29          | 13° 9          | 23°45                   | 28°28          | 22°57          | 24°30          | 29° 0          | 12°35          | W 6          |
| T 7          | 13 1 0               | 17° 9'39                    | 22°22                  | 21°31          | 1°28                | 23°51                     | 22°42            | 22°34          | 13°12          | 23°47                   | 28°28          | 22°58          | 24°27          | 29° 7          | 12°38          | T 7          |
| F 8          | 13 4 56              | 18° 8'41                    | 49511                  | 23°36          | 2°32                | 24°37                     | 22°56            | 22°39          | 13°15          | 23°49                   | 28°29          | 23° 0          | 24°24          | 29°14          | 12°42          | F 8          |
| S 9          | 13 8 53              | 19° 7'40                    | 16° 2                  | 25°41          | 3°37                | 25°22                     | 23° 9            | 22°44          | 13°19          | 23°51                   | 28°30          | 23°R 1         | 24°20          | 29°20          | 12°45          | S 9          |
| S 10         | 13 12 49             | 20° 6'37                    | 28° 0                  | 27°45          | 4°42                | 26° 7                     | 23°23            | 22°49          | 13°22          | 23°53                   | 28°30          | 23° 1          | 24°17          | 29°27          | 12°49          | S 10         |
| M11          | 13 16 46             | 21° 5'32                    | 10 <b>N</b> 8          | 29°49          | 5°48                | 26°53                     | 23°37            | 22°54          | 13°25          | 23°55                   | 28°31          | 22°59          | 24°14          | 29°34          | 12°52          | M11          |
| T 12         | 13 20 42             | 22° 4'25                    | 22°33                  | 1 <b>8</b> 52  | 6°53                | 27°38                     | 23°50            | 22°59          | 13°28          | 23°58                   | 28°31          | 22°56          | 24°11          | 29°40          | 12°56          | T 12         |
| W13          | 13 24 39             | 23° 3'15                    | 5 <b>m</b> ) 17        | 3°53           | 7°59                | 28°23                     | 24° 4            | 23° 4          | 13°32          | 24° 0                   | 28°32          | 22°52          | 24° 8          | 29°47          | 12°59          | W13          |
| T 14         | 13 28 36             | 24° 2'03                    | 18°22                  | 5°53           | 9° 4                | 29° 9                     | 24°18            | 23° 8          | 13°35          | 24° 2                   | 28°32          | 22°47          | 24° 5          | 29°54          | 13° 3          | T 14         |
| F 15         | 13 32 32             | 25° 0'49                    | 1 <u>₽</u> 50          | 7°50           | 10°10               | 29°54                     | 24°31            | 23°13          | 13°38          | 24° 4                   | 28°33          | 22°43          | 24° 1          | 095 0<br>0° 7  | 13° 6          | F 15         |
| S 16         | 13 36 29             | 25°59'32                    | 15°39                  | 9°45           | 11°16               | 0 <b>)</b> 40             | 24°45            | 23°18          | 13°42          | 24° 6                   | 28°33          | 22°39          | 23°58          | 0° /           | 13°10          | S 16         |
| S 17         | 13 40 25             | 26°58'14                    | 29°47                  | 11°38          | 12°23               | 1°25                      | 24°58            | 23°22          | 13°45          | 24° 8                   | 28°34          | 22°36          | 23°55          | 0°14           | 13°13          | S 17         |
| M18          | 13 44 22             | 27°56'54                    | 14 <b>M</b> 8          | 13°27          | 13°29               | 2°10                      | 25°11            | 23°26          | 13°48          | 24°10                   | 28°34          | 22°35          | 23°52          | 0°20           | 13°17          | M18          |
| T 19         | 13 48 18             | 28°55'32                    | 28°37                  | 15°13          | 14°36               | 2°56                      | 25°25            | 23°31          | 13°52          | 24°12                   | 28°34          | 22°D35         | 23°49          | 0°27           | 13°20          | T 19         |
| W20          | 13 52 15             | 29°54'08                    | 13×10                  | 16°56          | 15°43               | 3°41                      | 25°38            | 23°35          | 13°55          | 24°13                   | 28°35          | 22°36          | 23°46          | 0°34           | 13°23          | W20          |
| T 21<br>F 22 | 13 56 11<br>14 0 8   | 0 <b>8</b> 52'42<br>1°51'15 | 27°40<br>12る 4         | 18°35<br>20° 9 | 16°49<br>17°57      | 4°26<br>5°12              | 25°51<br>26° 4   | 23°39<br>23°43 | 13°58<br>14° 2 | 24°15<br>24°17          | 28°35<br>28°35 | 22°37<br>22°38 | 23°42<br>23°39 | 0°40<br>0°47   | 13°27<br>13°30 | T 21<br>F 22 |
| S 23         | 14 0 8               | 2°49'47                     | 26°18                  | 20°9<br>21°40  | 17 37<br>19° 4      | 5°57                      | 26°17            | 23°47          | 14° 5          | 24°17                   | 28°35          | 22°39          | 23°36          | 0°54           | 13°34          | S 23         |
|              |                      |                             |                        |                | _                   |                           |                  |                | _              |                         |                |                |                |                |                |              |
| S 24         | 14 8 1               | 3°48'16                     | 10≈21                  | 23° 6          | 20°11               | 6°42                      | 26°30            | 23°51          | 14° 9          | 24°21                   | 28°35          | 22°R39         | 23°33          | 1° 1           | 13°37          | S 24         |
| M25          | 14 11 58             | 4°46'44                     | 24°10                  | 24°27          | 21°19               | 7°28                      | 26°43            | 23°55          | 14°12          | 24°23                   | 28°36          | 22°38          | 23°30          | 1° 7           | 13°40          | M25          |
| T 26         | 14 15 54             | 5°45'11                     | 7 <b>)</b> €46         | 25°44          | 22°26               | 8°13                      | 26°56<br>27° 9   | 23°59          | 14°16          | 24°25                   | 28°36          | 22°37          | 23°26          | 1°14           | 13°44          | T 26         |
| W27<br>T 28  | 14 19 51<br>14 23 47 | 6°43'36<br>7°41'59          | 21° 8<br>4 <b>°</b> 16 | 26°57<br>28° 4 | 23°34<br>24°42      | 8°59<br>9°44              | 27° 9<br>27°21   | 24° 2<br>24° 6 | 14°19<br>14°22 | 24°27<br>24°28          | 28°36<br>28°36 | 22°35<br>22°32 | 23°23<br>23°20 | 1°21<br>1°27   | 13°47<br>13°50 | W27<br>T 28  |
| F 29         | 14 23 47             | 8°40'20                     | 17°10                  | 28 4<br>29° 6  | 24 42<br>25°50      | 10°29                     | 27°34            | 24°10          | 14°26          | 24°28                   | 28°36          | 22°30          | 23°17          | 1°34           | 13°54          | F 29         |
| S 30         | 14 31 40             | 9838'40                     | 29 <b>Υ</b> 50         | 0 <b>Ⅱ</b> 4   | 26 <del>)(</del> 58 | 10 29<br>11 <b>) (</b> 15 | 27 <b>) (</b> 47 | 24×10          | 14829          | 24 30<br>24 <b>)</b> 32 | 28°R36         | 22829          | 23814          | 19941          | $13^{\circ}54$ | S 30         |

Delta T = 70.69 sec

MAY 2022 00:00 UT

| Day  | Sid.t    | 0                | D               | ğ              | φ             | ♂ <sup>™</sup> | 4              | ħ     | )f(            | 卉                | В              | v              | Ω     | Ç     | ç              | Day  |
|------|----------|------------------|-----------------|----------------|---------------|----------------|----------------|-------|----------------|------------------|----------------|----------------|-------|-------|----------------|------|
| S 1  | 14 35 37 | 10836'58         | 12818           | 0Д56           | 28 <b>米</b> 6 | 12 <b>)</b> 0  | 27 <b>)</b> 59 | 24≈16 | 14 <b>8</b> 33 | 24 <b>) (</b> 34 | 28°R36         | 22°R28         | 23811 | 19547 | 14 <b>Y</b> 0  | S 1  |
| M 2  | 14 39 33 | 11°35'14         | 24°33           | 1°43           | 29°14         | 12°45          | 28°12          | 24°20 | 14°36          | 24°35            | 28 <b>궁</b> 36 | 22°D28         | 23° 7 | 1°54  | 14° 3          | M 2  |
| T 3  | 14 43 30 | 12°33'29         | 6 <b>Ⅱ</b> 38   | 2°25           | 0Y22          | 13°30          | 28°24          | 24°23 | 14°40          | 24°37            | 28°36          | 22 <b>8</b> 28 | 23° 4 | 2° 1  | 14° 6          | T 3  |
| W 4  | 14 47 27 | 13°31'42         | 18°36           | 3° 2           | 1°31          | 14°16          | 28°36          | 24°26 | 14°43          | 24°39            | 28°36          | 22°29          | 23° 1 | 2° 7  | 14°10          | W 4  |
| T 5  | 14 51 23 | 14°29'52         | 0927            | 3°33           | 2°39          | 15° 1          | 28°49          | 24°29 | 14°47          | 24°40            | 28°36          | 22°30          | 22°58 | 2°14  | 14°13          | T 5  |
| F 6  | 14 55 20 | 15°28'01         | 12°16           | 3°59           | 3°48          | 15°46          | 29° 1          | 24°32 | 14°50          | 24°42            | 28°35          | 22°31          | 22°55 | 2°21  | 14°16          | F 6  |
| S 7  | 14 59 16 | 16°26'08         | 24° 8           | 4°20           | 4°57          | 16°31          | 29°13          | 24°35 | 14°54          | 24°43            | 28°35          | 22°31          | 22°52 | 2°27  | 14°19          | S 7  |
| S 8  | 15 3 13  | 17°24'14         | 6 <b>N</b> 5    | 4°36           | 6° 5          | 17°17          | 29°25          | 24°37 | 14°57          | 24°45            | 28°35          | 22°32          | 22°48 | 2°34  | 14°22          | S 8  |
| M 9  | 15 7 9   | 18°22'17         | 18°12           | 4°46           | 7°14          | 18° 2          | 29°37          | 24°40 | 15° 1          | 24°47            | 28°35          | 22°R32         | 22°45 | 2°41  | 14°25          | M 9  |
| T 10 | 15 11 6  | 19°20'18         | 0 <b>m</b> 35   | 4°R51          | 8°23          | 18°47          | 29°49          | 24°42 | 15° 4          | 24°48            | 28°34          | 22°32          | 22°42 | 2°47  | 14°28          | T 10 |
| W11  | 15 15 3  | 20°18'17         | 13°17           | 4°51           | 9°32          | 19°32          | 0 <b>Υ</b> 0   | 24°45 | 15° 7          | 24°50            | 28°34          | 22°32          | 22°39 | 2°54  | 14°31          | W11  |
| T 12 | 15 18 59 | 21°16'15         | 26°21           | 4°46           | 10°41         | 20°17          | 0°12           | 24°47 | 15°11          | 24°51            | 28°34          | 22°31          | 22°36 | 3° 1  | 14°34          | T 12 |
| F 13 | 15 22 56 | 22°14'10         | 9 <b>≙</b> 50   | 4°36           | 11°51         | 21° 2          | 0°24           | 24°49 | 15°14          | 24°52            | 28°33          | 22°D31         | 22°32 | 3° 7  | 14°37          | F 13 |
| S 14 | 15 26 52 | 23°12'04         | 23°45           | 4°22           | 13° 0         | 21°47          | 0°35           | 24°52 | 15°18          | 24°54            | 28°33          | 22°31          | 22°29 | 3°14  | 14°40          | S 14 |
| S 15 | 15 30 49 | 24° 9'57         | 8 <b>M</b> 3    | 4° 4           | 14° 9         | 22°32          | 0°46           | 24°54 | 15°21          | 24°55            | 28°33          | 22°31          | 22°26 | 3°21  | 14°43          | S 15 |
| M16  | 15 34 45 | 25° 7'47         | 22°41           | 3°42           | 15°19         | 23°17          | 0°58           | 24°56 | 15°25          | 24°57            | 28°32          | 22°R31         | 22°23 | 3°27  | 14°46          | M16  |
| T 17 | 15 38 42 | 26° 5'37         | 7 <b>,</b> ₹33  | 3°16           | 16°28         | 24° 2          | 1° 9           | 24°58 | 15°28          | 24°58            | 28°32          | 22°31          | 22°20 | 3°34  | 14°49          | T 17 |
| W18  | 15 42 38 | 27° 3'25         | 22°30           | 2°48           | 17°38         | 24°47          | 1°20           | 24°59 | 15°31          | 24°59            | 28°31          | 22°31          | 22°17 | 3°41  | 14°51          | W18  |
| T 19 | 15 46 35 | 28° 1'12         | 7 <b>궁</b> 26   | 2°17           | 18°47         | 25°32          | 1°31           | 25° 1 | 15°35          | 25° 1            | 28°31          | 22°31          | 22°13 | 3°47  | 14°54          | T 19 |
| F 20 | 15 50 32 | 28°58'57         | 22°11           | 1°45           | 19°57         | 26°17          | 1°42           | 25° 3 | 15°38          | 25° 2            | 28°30          | 22°30          | 22°10 | 3°54  | 14°57          | F 20 |
| S 21 | 15 54 28 | 29°56'41         | 6≈41            | 1°11           | 21° 7         | 27° 2          | 1°53           | 25° 4 | 15°42          | 25° 3            | 28°30          | 22°29          | 22° 7 | 4° 1  | 15° 0          | S 21 |
| S 22 | 15 58 25 | 0∏54'25          | 20°51           | 0°36           | 22°16         | 27°47          | 2° 3           | 25° 6 | 15°45          | 25° 4            | 28°29          | 22°29          | 22° 4 | 4° 7  | 15° 2          | S 22 |
| M23  | 16 221   | 1°52'07          | 4 <b>) (</b> 40 | 0° 2           | 23°26         | 28°32          | 2°14           | 25° 7 | 15°48          | 25° 5            | 28°28          | 22°D29         | 22° 1 | 4°14  | 15° 5          | M23  |
| T 24 | 16 6 18  | 2°49'48          | 18° 8           | 29 <b>8</b> 28 | 24°36         | 29°17          | 2°24           | 25° 8 | 15°52          | 25° 6            | 28°28          | 22°29          | 21°57 | 4°21  | 15° 8          | T 24 |
| W25  | 16 10 14 | 3°47'28          | 1 <b>Υ</b> 16   | 28°55          | 25°46         | 0 <b>Υ</b> 1   | 2°35           | 25° 9 | 15°55          | 25° 8            | 28°27          | 22°30          | 21°54 | 4°28  | 15°10          | W25  |
| T 26 | 16 14 11 | 4°45'07          | 14° 7           | 28°24          | 26°56         | 0°46           | 2°45           | 25°10 | 15°58          | 25° 9            | 28°26          | 22°31          | 21°51 | 4°34  | 15°13          | T 26 |
| F 27 | 16 18 7  | 5°42'45          | 26°42           | 27°55          | 28° 7         | 1°31           | 2°55           | 25°11 | 16° 2          | 25°10            | 28°26          | 22°32          | 21°48 | 4°41  | 15°15          | F 27 |
| S 28 | 16 22 4  | 6°40'22          | 9 <b>8</b> 4    | 27°28          | 29°17         | 2°15           | 3° 5           | 25°12 | 16° 5          | 25°11            | 28°25          | 22°33          | 21°45 | 4°48  | 15°18          | S 28 |
| S 29 | 16 26 1  | 7°37'58          | 21°16           | 27° 5          | 0 <b>8</b> 27 | 3° 0           | 3°15           | 25°13 | 16° 8          | 25°12            | 28°24          | 22°R33         | 21°42 | 4°54  | 15°20          | S 29 |
| M30  | 16 29 57 | 8°35'33          | 3 <b>II</b> 19  | 26°45          | 1°37          | 3°45           | 3°25           | 25°13 | 16°12          | 25°13            | 28°23          | 22°33          | 21°38 | 5° 1  | 15°23          | M30  |
| T 31 | 16 33 54 | 9 <b>Ⅱ</b> 33'07 | 15 <b>Ⅱ</b> 16  | 26 <b>8</b> 29 | 2 <b>8</b> 48 | <b>4Υ</b> 29   | 3 <b>Ƴ</b> 35  | 25≈14 | 16 <b>8</b> 15 | 25 <b>米</b> 14   | 28 <b>궁</b> 23 | 22 <b>8</b> 32 | 21835 | 599 8 | 15 <b>Υ</b> 25 | T 31 |

Delta T = 70.73 sec

JUNE 2022 00:00 UT

| Day  | Sid.t    | 0        | D              | ğ             | Ф              | ď              | 4             | ħ      | )f(            | ¥              | В              | U      | v     | Ç     | ę,             | Day  |
|------|----------|----------|----------------|---------------|----------------|----------------|---------------|--------|----------------|----------------|----------------|--------|-------|-------|----------------|------|
| W 1  | 16 37 50 | 10∏30'40 | 27Ⅱ 8          | 26°R17        | 3 <b>8</b> 58  | 5 <b>Υ</b> 14  | 3 <b>Υ</b> 44 | 25≈14  | 16818          | 25 <b>)</b> 14 | 28°R22         | 22°R30 | 21832 | 59914 | 15 <b>Ƴ</b> 27 | W 1  |
| T 2  | 16 41 47 | 11°28'12 | 8958           | 268 9         | 5° 9           | 5°58           | 3°54          | 25°15  | 16°21          | 25°15          | 28 <b>궁</b> 21 | 22827  | 21°29 | 5°21  | 15°30          | T 2  |
| F 3  | 16 45 43 | 12°25'43 | 20°47          | 26°D 5        | 6°19           | 6°42           | 4° 3          | 25°15  | 16°25          | 25°16          | 28°20          | 22°24  | 21°26 | 5°28  | 15°32          | F 3  |
| S 4  | 16 49 40 | 13°23'12 | 2 <b>Ω</b> 40  | 26° 6         | 7°30           | 7°27           | 4°12          | 25°15  | 16°28          | 25°17          | 28°19          | 22°21  | 21°23 | 5°34  | 15°34          | S 4  |
| S 5  | 16 53 36 | 14°20'40 | 14°38          | 26°11         | 8°40           | 8°11           | 4°21          | 25°R15 | 16°31          | 25°18          | 28°18          | 22°18  | 21°19 | 5°41  | 15°36          | S 5  |
| M 6  | 16 57 33 | 15°18'07 | 26°45          | 26°21         | 9°51           | 8°55           | 4°30          | 25°15  | 16°34          | 25°18          | 28°17          | 22°16  | 21°16 | 5°48  | 15°38          | M 6  |
| T 7  | 17 130   | 16°15'33 | 9Mm, 6         | 26°35         | 11° 1          | 9°39           | 4°39          | 25°15  | 16°37          | 25°19          | 28°16          | 22°14  | 21°13 | 5°54  | 15°40          | T 7  |
| W 8  | 17 5 26  | 17°12'57 | 21°44          | 26°54         | 12°12          | 10°23          | 4°48          | 25°15  | 16°40          | 25°20          | 28°15          | 22°D14 | 21°10 | 6° 1  | 15°42          | W 8  |
| T 9  | 17 9 23  | 18°10'21 | 4 <b>≏</b> 43  | 27°17         | 13°23          | 11° 7          | 4°57          | 25°14  | 16°43          | 25°20          | 28°14          | 22°15  | 21° 7 | 6° 8  | 15°44          | T 9  |
| F 10 | 17 13 19 | 19° 7'43 | 18° 6          | 27°44         | 14°34          | 11°51          | 5° 5          | 25°14  | 16°47          | 25°21          | 28°13          | 22°17  | 21° 3 | 6°14  | 15°46          | F 10 |
| S 11 | 17 17 16 | 20° 5'04 | 1 <b>M</b> .56 | 28°16         | 15°45          | 12°35          | 5°13          | 25°13  | 16°50          | 25°22          | 28°12          | 22°18  | 21° 0 | 6°21  | 15°48          | S 11 |
| S 12 | 17 21 12 | 21° 2'25 | 16°13          | 28°52         | 16°56          | 13°19          | 5°21          | 25°13  | 16°53          | 25°22          | 28°11          | 22°R19 | 20°57 | 6°28  | 15°50          | S 12 |
| M13  | 17 25 9  | 21°59'44 | 0 <b>∡</b> 755 | 29°32         | 18° 6          | 14° 3          | 5°29          | 25°12  | 16°56          | 25°23          | 28°10          | 22°19  | 20°54 | 6°35  | 15°52          | M13  |
| T 14 | 17 29 5  | 22°57'03 | 15°56          | 0 <b>Ⅱ</b> 16 | 19°17          | 14°47          | 5°37          | 25°11  | 16°59          | 25°23          | 28° 9          | 22°17  | 20°51 | 6°41  | 15°54          | T 14 |
| W15  | 17 33 2  | 23°54'21 | 1ਰ 7           | 1° 4          | 20°28          | 15°31          | 5°45          | 25°10  | 17° 1          | 25°24          | 28° 8          | 22°14  | 20°48 | 6°48  | 15°55          | W15  |
| T 16 | 17 36 59 | 24°51'38 | 16°20          | 1°56          | 21°40          | 16°14          | 5°53          | 25° 9  | 17° 4          | 25°24          | 28° 7          | 22°10  | 20°44 | 6°55  | 15°57          | T 16 |
| F 17 | 17 40 55 | 25°48'55 | 1≈25           | 2°52          | 22°51          | 16°58          | 6° 0          | 25° 8  | 17° 7          | 25°24          | 28° 6          | 22° 6  | 20°41 | 7° 1  | 15°59          | F 17 |
| S 18 | 17 44 52 | 26°46'12 | 16°12          | 3°52          | 24° 2          | 17°41          | 6° 8          | 25° 7  | 17°10          | 25°25          | 28° 5          | 22° 1  | 20°38 | 7° 8  | 16° 0          | S 18 |
| S 19 | 17 48 48 | 27°43'28 | 0 <b>)</b> €35 | 4°55          | 25°13          | 18°25          | 6°15          | 25° 6  | 17°13          | 25°25          | 28° 3          | 21°58  | 20°35 | 7°15  | 16° 2          | S 19 |
| M20  | 17 52 45 | 28°40'43 | 14°31          | 6° 2          | 26°24          | 19° 8          | 6°22          | 25° 4  | 17°16          | 25°25          | 28° 2          | 21°55  | 20°32 | 7°21  | 16° 4          | M20  |
| T 21 | 17 56 41 | 29°37'59 | 28° 0          | 7°12          | 27°36          | 19°51          | 6°29          | 25° 3  | 17°19          | 25°26          | 28° 1          | 21°D54 | 20°29 | 7°28  | 16° 5          | T 21 |
| W22  | 18 0 38  | 0935'14  | 11 <b>°</b> 4  | 8°26          | 28°47          | 20°35          | 6°35          | 25° 1  | 17°21          | 25°26          | 28° 0          | 21°55  | 20°25 | 7°35  | 16° 6          | W22  |
| T 23 | 18 4 34  | 1°32'29  | 23°47          | 9°44          | 29°58          | 21°18          | 6°42          | 24°59  | 17°24          | 25°26          | 27°58          | 21°56  | 20°22 | 7°41  | 16° 8          | T 23 |
| F 24 | 18 8 31  | 2°29'44  | 6811           | 11° 5         | 1 <b>I</b> I10 | 22° 1          | 6°48          | 24°58  | 17°27          | 25°26          | 27°57          | 21°57  | 20°19 | 7°48  | 16° 9          | F 24 |
| S 25 | 18 12 28 | 3°26'59  | 18°22          | 12°29         | 2°21           | 22°44          | 6°55          | 24°56  | 17°29          | 25°26          | 27°56          | 21°R58 | 20°16 | 7°55  | 16°10          | S 25 |
| S 26 | 18 16 24 | 4°24'14  | 0 <b>Ⅱ</b> 23  | 13°56         | 3°33           | 23°27          | 7° 1          | 24°54  | 17°32          | 25°26          | 27°55          | 21°58  | 20°13 | 8° 1  | 16°12          | S 26 |
| M27  | 18 20 21 | 5°21'29  | 12°18          | 15°27         | 4°44           | 24°10          | 7° 7          | 24°52  | 17°35          | 25°27          | 27°53          | 21°56  | 20° 9 | 8° 8  | 16°13          | M27  |
| T 28 | 18 24 17 | 6°18'43  | 24° 9          | 17° 2         | 5°56           | 24°53          | 7°12          | 24°50  | 17°37          | 25°R27         | 27°52          | 21°52  | 20° 6 | 8°15  | 16°14          | T 28 |
| W29  | 18 28 14 | 7°15'58  | 5958           | 18°39         | 7° 7           | 25°35          | 7°18          | 24°47  | 17°40          | 25°27          | 2 <u>7</u> °51 | 21°46  | 20° 3 | 8°22  | 16°15          | W29  |
| T 30 | 18 32 10 | 89613'12 | 179548         | 20Ⅱ20         | 8耳19           | 26 <b>Y</b> 18 | 7 <b>Υ</b> 24 | 24≈45  | 17 <b>8</b> 42 | 25 <b>米</b> 27 | 27 <b>궁</b> 49 | 21838  | 208 0 | 8928  | 16 <b>Y</b> 16 | T 30 |

Delta T = 70.76 sec

JULY 2022 00:00 UT

| Day  | Sid.t    | 0                | 9               | φ                   | <b>Q</b> +    | δ              | 4             | ħ      | ኊ              | ¥              | Р              | ß              | Ω              | Ç      | ę,             | Day  |
|------|----------|------------------|-----------------|---------------------|---------------|----------------|---------------|--------|----------------|----------------|----------------|----------------|----------------|--------|----------------|------|
| F 1  | 18 36 7  | 99510'26         | 299540          | 22 <b>I</b> 4       | 9 <b>Ⅲ</b> 31 | 27 <b>Υ</b> 0  | 7 <b>Υ</b> 29 | 24°R43 | 17 <b>8</b> 45 | 25°R26         | 27°R48         | 21°R29         | 19 <b>8</b> 57 | 8935   | 16 <b>Y</b> 17 | F 1  |
| S 2  | 18 40 4  | 10° 7'39         | 11 <b>£</b> 37  | 23°51               | 10°43         | 27°43          | 7°34          | 24≈40  | 17°47          | 25 <b>米</b> 26 | 27 <b>중</b> 47 | 21820          | 19°54          | 8°42   | 16°18          | S 2  |
| S 3  | 18 44 0  | 11° 4'53         | 23°40           | 25°41               | 11°54         | 28°25          | 7°39          | 24°38  | 17°49          | 25°26          | 27°45          | 21°12          | 19°50          | 8°48   | 16°19          | S 3  |
| M 4  | 18 47 57 | 12° 2'06         | 5 m 51          | 27°33               | 13° 6         | 29° 7          | 7°44          | 24°35  | 17°52          | 25°26          | 27°44          | 21° 5          | 19°47          | 8°55   | 16°20          | M 4  |
| T 5  | 18 51 53 | 12°59'19         | 18°14           | 29°29               | 14°18         | 29°49          | 7°48          | 24°32  | 17°54          | 25°26          | 27°43          | 21° 0          | 19°44          | 9° 2   | 16°20          | T 5  |
| W 6  | 18 55 50 | 13°56'31         | 0 <b>ჲ</b> 51   | 19527               | 15°30         | 0 <b>8</b> 31  | 7°53          | 24°30  | 17°56          | 25°26          | 27°41          | 20°57          | 19°41          | 9° 8   | 16°21          | W 6  |
| T 7  | 18 59 46 | 14°53'43         | 13°46           | 3°27                | 16°42         | 1°13           | 7°57          | 24°27  | 17°59          | 25°25          | 27°40          | 20°D56         | 19°38          | 9°15   | 16°22          | T 7  |
| F 8  | 19 3 43  | 15°50'55         | 27° 3           | 5°29                | 17°54         | 1°55           | 8° 1          | 24°24  | 18° 1          | 25°25          | 27°39          | 20°57          | 19°35          | 9°22   | 16°22          | F 8  |
| S 9  | 19 7 39  | 16°48'07         | 10 <b>M</b> .44 | 7°33                | 19° 6         | 2°37           | 8° 5          | 24°21  | 18° 3          | 25°25          | 27°37          | 20°57          | 19°31          | 9°28   | 16°23          | S 9  |
| S 10 | 19 11 36 | 17°45'19         | 24°51           | 9°39                | 20°18         | 3°18           | 8° 8          | 24°18  | 18° 5          | 25°24          | 27°36          | 20°R58         | 19°28          | 9°35   | 16°24          | S 10 |
| M11  | 19 15 33 | 18°42'31         | 9 <b>₹</b> 24   | 11°46               | 21°30         | 4° 0           | 8°12          | 24°15  | 18° 7          | 25°24          | 27°34          | 20°56          | 19°25          | 9°42   | 16°24          | M11  |
| T 12 | 19 19 29 | 19°39'43         | 24°19           | 13°54               | 22°42         | 4°41           | 8°15          | 24°11  | 18° 9          | 25°24          | 27°33          | 20°53          | 19°22          | 9°49   | 16°24          | T 12 |
| W13  | 19 23 26 | 20°36'54         | 9 <b>ට</b> 30   | 16° 3               | 23°54         | 5°23           | 8°18          | 24° 8  | 18°11          | 25°23          | 27°31          | 20°47          | 19°19          | 9°55   | 16°25          | W13  |
| T 14 | 19 27 22 | 21°34'06         | 24°47           | 18°12               | 25° 6         | 6° 4           | 8°21          | 24° 5  | 18°13          | 25°23          | 27°30          | 20°39          | 19°15          | 10° 2  | 16°25          | T 14 |
| F 15 | 19 31 19 | 22°31'19         | 9 <b>≈</b> 58   | 20°21               | 26°18         | 6°45           | 8°24          | 24° 1  | 18°15          | 25°22          | 27°29          | 20°30          | 19°12          | 10° 9  | 16°25          | F 15 |
| S 16 | 19 35 15 | 23°28'31         | 24°55           | 22°30               | 27°31         | 7°26           | 8°27          | 23°58  | 18°17          | 25°22          | 27°27          | 20°21          | 19° 9          | 10°15  | 16°26          | S 16 |
| S 17 | 19 39 12 | 24°25'44         | 9 <b>∺</b> 28   | 24°39               | 28°43         | 8° 7           | 8°29          | 23°54  | 18°19          | 25°21          | 27°26          | 20°14          | 19° 6          | 10°22  | 16°26          | S 17 |
| M18  | 19 43 8  | 25°22'58         | 23°33           | 26°47               | 29°55         | 8°48           | 8°31          | 23°51  | 18°21          | 25°20          | 27°24          | 20° 8          | 19° 3          | 10°29  | 16°26          | M18  |
| T 19 | 19 47 5  | 26°20'12         | 7 <b>Y</b> 8    | 28°54               | 195 8         | 9°28           | 8°33          | 23°47  | 18°23          | 25°20          | 27°23          | 20° 4          | 19° 0          | 10°35  | 16°26          | T 19 |
| W20  | 19 51 2  | 27°17'27         | 20°15           | 1 <b>0</b> 0        | 2°20          | 10° 9          | 8°35          | 23°43  | 18°24          | 25°19          | 27°21          | 20° 2          | 18°56          | 10°42  | 16°R26         | W20  |
| T 21 | 19 54 58 | 28°14'42         | 2 <b>8</b> 56   | 3° 5                | 3°33          | 10°49          | 8°37          | 23°39  | 18°26          | 25°18          | 27°20          | 20°D 2         | 18°53          | 10°49  | 16°26          | T 21 |
| F 22 | 19 58 55 | 29°11'59         | 15°18           | 5° 8                | 4°45          | 11°29          | 8°38          | 23°36  | 18°28          | 25°18          | 27°19          | 20°R 3         | 18°50          | 10°55  | 16°26          | F 22 |
| S 23 | 20 2 51  | 0 <b>Ω</b> 9'16  | 27°25           | 7°10                | 5°58          | 12° 9          | 8°40          | 23°32  | 18°29          | 25°17          | 27°17          | 20° 2          | 18°47          | 11° 2  | 16°26          | S 23 |
| S 24 | 20 6 48  | 1° 6'34          | 9 <b>Ⅲ</b> 21   | 9°11                | 7°10          | 12°49          | 8°41          | 23°28  | 18°31          | 25°16          | 27°16          | 20° 1          | 18°44          | 11° 9  | 16°26          | S 24 |
| M25  | 20 10 44 | 2° 3'53          | 21°12           | 11°10               | 8°23          | 13°29          | 8°42          | 23°24  | 18°32          | 25°15          | 27°14          | 19°57          | 18°41          | 11°16  | 16°25          | M25  |
| T 26 | 20 14 41 | 3° 1'13          | 3 <b>99</b> 0   | 13° 8               | 9°36          | 14° 9          | 8°42          | 23°20  | 18°34          | 25°14          | 27°13          | 19°50          | 18°37          | 11°22  | 16°25          | T 26 |
| W27  | 20 18 37 | 3°58'34          | 14°50           | 15° 4               | 10°48         | 14°49          | 8°43          | 23°16  | 18°35          | 25°14          | 27°11          | 19°41          | 18°34          | 11°29  | 16°25          | W27  |
| T 28 | 20 22 34 | 4°55'55          | 26°43           | 16°58               | 12° 1         | 15°28          | 8°43          | 23°12  | 18°36          | 25°13          | 27°10          | 19°29          | 18°31          | 11°36  | 16°24          | T 28 |
| F 29 | 20 26 31 | 5°53'17          | 8 <b>Ω</b> 41   | 18°50               | 13°14         | 16° 7          | 8°R43         | 23° 7  | 18°38          | 25°12          | 27° 9          | 19°16          | 18°28          | 11°42  | 16°24          | F 29 |
| S 30 | 20 30 27 | 6°50'40          | 20°46           | 20°41               | 14°27         | 16°46          | 8°43          | 23° 3  | 18°39          | 25°11          | 27° 7          | 19° 3          | 18°25          | 11°49  | 16°23          | S 30 |
| S 31 | 20 34 24 | 7 <b>Ω</b> 48'03 | 2 <b>m</b> 58   | 22 <b>\Omega</b> 30 | 159540        | 17 <b>8</b> 25 | 8 <b>Ƴ</b> 43 | 22≈59  | 18 <b>8</b> 40 | 25 <b>∺</b> 10 | 27 <b>ප</b> 6  | 18 <b>8</b> 50 | 18 <b>8</b> 21 | 119556 | 16 <b>Y</b> 23 | S 31 |

Delta T = 70.79 sec

AUGUST 2022 00:00 UT

| Day  | Sid.t    | 0                | D              | ğ             | ·              | ď             | 4             | ħ      | )ұ(            | 卉              | В              | v              | Ω              | Ç      | ę,             | Day  |
|------|----------|------------------|----------------|---------------|----------------|---------------|---------------|--------|----------------|----------------|----------------|----------------|----------------|--------|----------------|------|
| M 1  | 20 38 20 | 8 <b>Ω</b> 45'27 | 15 <b>m</b> 20 | 24Ω18         | 16952          | 18 <b>8</b> 4 | 8°R42         | 22°R55 | 18 <b>8</b> 41 | 25°R 9         | 27°R 4         | 18°R40         | 18818          | 1295 2 | 16°R22         | M 1  |
| T 2  | 20 42 17 | 9°42'52          | 27°51          | 26° 4         | 18° 5          | 18°43         | 8 <b>Ƴ</b> 41 | 22≈50  | 18°43          | 25 <b>米</b> 8  | 27중 3          | 18 <b>8</b> 32 | 18°15          | 12° 9  | 16 <b>Y</b> 21 | T 2  |
| W 3  | 20 46 13 | 10°40'18         | 10 <b>≏</b> 34 | 27°48         | 19°18          | 19°21         | 8°40          | 22°46  | 18°44          | 25° 7          | 27° 2          | 18°26          | 18°12          | 12°16  | 16°21          | W 3  |
| T 4  | 20 50 10 | 11°37'44         | 23°32          | 29°31         | 20°31          | 20° 0         | 8°39          | 22°42  | 18°45          | 25° 6          | 27° 0          | 18°23          | 18° 9          | 12°22  | 16°20          | T 4  |
| F 5  | 20 54 6  | 12°35'10         | 6 <b>M</b> .47 | 1 Mp 1 1      | 21°44          | 20°38         | 8°38          | 22°37  | 18°46          | 25° 5          | 26°59          | 18°23          | 18° 6          | 12°29  | 16°19          | F 5  |
| S 6  | 20 58 3  | 13°32'38         | 20°22          | 2°51          | 22°58          | 21°16         | 8°36          | 22°33  | 18°47          | 25° 4          | 26°57          | 18°22          | 18° 2          | 12°36  | 16°18          | S 6  |
| S 7  | 21 2 0   | 14°30'06         | 4 <b>₹</b> 19  | 4°28          | 24°11          | 21°54         | 8°35          | 22°29  | 18°48          | 25° 2          | 26°56          | 18°22          | 17°59          | 12°43  | 16°17          | S 7  |
| M 8  | 21 5 56  | 15°27'35         | 1 <u>8</u> °38 | 6° 4          | 25°24          | 22°31         | 8°33          | 22°24  | 18°48          | 25° 1          | 26°55          | 18°20          | 17°56          | 12°49  | 16°16          | M 8  |
| T 9  | 21 9 53  | 16°25'05         | 3 <b>궁</b> 18  | 7°39          | 26°37          | 23° 9         | 8°31          | 22°20  | 18°49          | 25° 0          | 26°53          | 18°15          | 17°53          | 12°56  | 16°15          | T 9  |
| W10  | 21 13 49 | 17°22'35         | 18°14          | 9°12          | 27°50          | 23°46         | 8°29          | 22°15  | 18°50          | 24°59          | 26°52          | 18° 8          | 17°50          | 13° 3  | 16°14          | W10  |
| T 11 | 21 17 46 | 18°20'07         | 3≈18           | 10°43         | 29° 3          | 24°23         | 8°26          | 22°11  | 18°51          | 24°58          | 26°51          | 17°59          | 17°47          | 13° 9  | 16°13          | T 11 |
| F 12 | 21 21 42 | 19°17'39         | 18°22          | 12°12         | 0Ω17           | 25° 0         | 8°23          | 22° 6  | 18°51          | 24°56          | 26°49          | 17°48          | 17°43          | 13°16  | 16°12          | F 12 |
| S 13 | 21 25 39 | 20°15'13         | 3 <b>¥</b> 14  | 13°40         | 1°30           | 25°37         | 8°21          | 22° 2  | 18°52          | 24°55          | 26°48          | 17°37          | 17°40          | 13°23  | 16°11          | S 13 |
| S 14 | 21 29 35 | 21°12'47         | 17°47          | 15° 6         | 2°44           | 26°13         | 8°17          | 21°57  | 18°52          | 24°54          | 26°47          | 17°27          | 17°37          | 13°29  | 16°10          | S 14 |
| M15  | 21 33 32 | 22°10'23         | 1 <b>Υ</b> 54  | 16°31         | 3°57           | 26°50         | 8°14          | 21°53  | 18°53          | 24°52          | 26°46          | 17°19          | 17°34          | 13°36  | 16° 8          | M15  |
| T 16 | 21 37 29 | 23° 8'01         | 15°33          | 17°54         | 5°10           | 27°26         | 8°11          | 21°48  | 18°53          | 24°51          | 26°44          | 17°14          | 17°31          | 13°43  | 16° 7          | T 16 |
| W17  | 21 41 25 | 24° 5'40         | 28°43          | 19°15         | 6°24           | 28° 2         | 8° 7          | 21°44  | 18°54          | 24°50          | 26°43          | 17°11          | 17°27          | 13°50  | 16° 6          | W17  |
| T 18 | 21 45 22 | 25° 3'20         | 11828          | 20°34         | 7°37           | 28°37         | 8° 3          | 21°39  | 18°54          | 24°48          | 26°42          | 17°10          | 17°24          | 13°56  | 16° 4          | T 18 |
| F 19 | 21 49 18 | 26° 1'02         | 23°52          | 21°51         | 8°51           | 29°13         | 7°59          | 21°35  | 18°54          | 24°47          | 26°41          | 17°10          | 17°21          | 14° 3  | 16° 3          | F 19 |
| S 20 | 21 53 15 | 26°58'46         | 5 <b>Ⅱ</b> 59  | 23° 7         | 10° 5          | 29°48         | 7°55          | 21°30  | 18°55          | 24°46          | 26°40          | 17°10          | 17°18          | 14°10  | 16° 1          | S 20 |
| S 21 | 21 57 11 | 27°56'32         | 17°55          | 24°21         | 11°18          | 0 <b>Ⅱ</b> 23 | 7°51          | 21°26  | 18°55          | 24°44          | 26°38          | 17° 8          | 17°15          | 14°16  | 16° 0          | S 21 |
| M22  | 22 1 8   | 28°54'19         | 29°46          | 25°32         | 12°32          | 0°58          | 7°46          | 21°21  | 18°55          | 24°43          | 26°37          | 17° 5          | 17°12          | 14°23  | 15°58          | M22  |
| T 23 | 22 5 4   | 29°52'07         | 11935          | 26°42         | 13°46          | 1°33          | 7°42          | 21°17  | 18°55          | 24°41          | 26°36          | 16°59          | 17° 8          | 14°30  | 15°56          | T 23 |
| W24  | 22 9 1   | 0 m/49'58        | 23°27          | 27°49         | 15° 0          | 2° 7          | 7°37          | 21°13  | 18°55          | 24°40          | 26°35          | 16°50          | 17° 5          | 14°36  | 15°55          | W24  |
| T 25 | 22 12 58 | 1°47'50          | 5 <b>Ω</b> 25  | 28°55         | 16°13          | 2°42          | 7°32          | 21° 8  | 18°R55         | 24°38          | 26°34          | 16°39          | 17° 2          | 14°43  | 15°53          | T 25 |
| F 26 | 22 16 54 | 2°45'43          | 17°32          | 29°57         | 17°27          | 3°16          | 7°27          | 21° 4  | 18°55          | 24°37          | 26°33          | 16°26          | 16°59          | 14°50  | 15°51          | F 26 |
| S 27 | 22 20 51 | 3°43'38          | 29°47          | 0 <b>≏</b> 58 | 18°41          | 3°49          | 7°21          | 20°59  | 18°55          | 24°35          | 26°32          | 16°13          | 16°56          | 14°57  | 15°49          | S 27 |
| S 28 | 22 24 47 | 4°41'35          | 12 <b>m</b> 13 | 1°55          | 19°55          | 4°23          | 7°16          | 20°55  | 18°55          | 24°34          | 26°31          | 16° 1          | 16°53          | 15° 3  | 15°47          | S 28 |
| M29  | 22 28 44 | 5°39'33          | 24°50          | 2°50          | 21° 9          | 4°56          | 7°10          | 20°51  | 18°55          | 24°32          | 26°29          | 15°51          | 16°49          | 15°10  | 15°46          | M29  |
| T 30 | 22 32 40 | 6°37'32          | 7 <u>₽</u> 37  | 3°42          | 22°23          | 5°29          | 7° 5          | 20°47  | 18°55          | 24°31          | 26°28          | 15°43          | 16°46          | 15°17  | 15°44          | T 30 |
| W31  | 22 36 37 | 7 <b>m</b> 35'33 | 20 <b>≏</b> 35 | 4 <b>≏</b> 31 | 23 <b>Ω</b> 37 | 6 <b>I</b> 1  | 6 <b>Ƴ</b> 59 | 20≈42  | 18 <b>8</b> 54 | 24 <b>米</b> 29 | 26 <b>궁</b> 27 | 15 <b>8</b> 37 | 16 <b>8</b> 43 | 15923  | 15 <b>Ƴ</b> 42 | W31  |

Delta T = 70.83 sec

SEPTEMBER 2022 00:00 UT

| Day  | Sid.t    | 0                | D              | ğ              | ·             | ď              | 4             | ħ      | )f(            | ¥               | В              | U              | v             | Ç      | ę,             | Day  |
|------|----------|------------------|----------------|----------------|---------------|----------------|---------------|--------|----------------|-----------------|----------------|----------------|---------------|--------|----------------|------|
| T 1  | 22 40 33 | 8 Mg 33'35       | 3 <b>M</b> .46 | 5 <b>≙</b> 17  | 24€51         | 6 <b>Ⅱ</b> 34  | 6°R53         | 20°R38 | 18°R54         | 24°R28          | 26°R26         | 15°R35         | 16840         | 15930  | 15°R40         | T 1  |
| F 2  | 22 44 30 | 9°31'39          | 17° 9          | 5°59           | 26° 5         | 7° 6           | 6 <b>Υ</b> 46 | 20≈34  | 18 <b>8</b> 53 | 24 <b>)</b> (26 | 26 <b>ප</b> 25 | 15°D34         | 16°37         | 15°37  | 15 <b>Y</b> 38 | F 2  |
| S 3  | 22 48 27 | 10°29'44         | 0 <b>.</b> 746 | 6°37           | 27°19         | 7°37           | 6°40          | 20°30  | 18°53          | 24°24           | 26°25          | 15 <b>8</b> 35 | 16°33         | 15°43  | 15°36          | S 3  |
| S 4  | 22 52 23 | 11°27'51         | 14°39          | 7°11           | 28°33         | 8° 9           | 6°33          | 20°26  | 18°53          | 24°23           | 26°24          | 15°R35         | 16°30         | 15°50  | 15°33          | S 4  |
| M 5  | 22 56 20 | 12°25'59         | 28°47          | 7°41           | 29°47         | 8°40           | 6°27          | 20°22  | 18°52          | 24°21           | 26°23          | 15°34          | 16°27         | 15°57  | 15°31          | M 5  |
| T 6  | 23 0 16  | 13°24'08         | 13 <b>る</b> 10 | 8° 6           | 1 Mp 2        | 9°11           | 6°20          | 20°18  | 18°51          | 24°20           | 26°22          | 15°31          | 16°24         | 16° 4  | 15°29          | T 6  |
| W 7  | 23 4 13  | 14°22'19         | 27°45          | 8°27           | 2°16          | 9°42           | 6°13          | 20°14  | 18°51          | 24°18           | 26°21          | 15°25          | 16°21         | 16°10  | 15°27          | W 7  |
| T 8  | 23 8 9   | 15°20'32         | 12≈26          | 8°42           | 3°30          | 10°12          | 6° 6          | 20°10  | 18°50          | 24°16           | 26°20          | 15°18          | 16°18         | 16°17  | 15°25          | T 8  |
| F 9  | 23 12 6  | 16°18'45         | 27° 8          | 8°51           | 4°44          | 10°42          | 5°59          | 20° 6  | 18°49          | 24°15           | 26°19          | 15° 9          | 16°14         | 16°24  | 15°22          | F 9  |
| S 10 | 23 16 2  | 17°17'01         | 11 <b>)</b> 42 | 8°R55          | 5°59          | 11°11          | 5°52          | 20° 3  | 18°49          | 24°13           | 26°19          | 15° 0          | 16°11         | 16°30  | 15°20          | S 10 |
| S 11 | 23 19 59 | 18°15'18         | 26° 1          | 8°53           | 7°13          | 11°41          | 5°45          | 19°59  | 18°48          | 24°11           | 26°18          | 14°51          | 16° 8         | 16°37  | 15°18          | S 11 |
| M12  | 23 23 56 | 19°13'37         | 9 <b>Y</b> 59  | 8°45           | 8°27          | 12°10          | 5°38          | 19°55  | 18°47          | 24°10           | 26°17          | 14°45          | 16° 5         | 16°44  | 15°15          | M12  |
| T 13 | 23 27 52 | 20°11'58         | 23°34          | 8°30           | 9°42          | 12°38          | 5°30          | 19°52  | 18°46          | 24° 8           | 26°16          | 14°41          | 16° 2         | 16°51  | 15°13          | T 13 |
| W14  | 23 31 49 | 21°10'21         | 6 <b>8</b> 43  | 8° 8           | 10°56         | 13° 7          | 5°23          | 19°48  | 18°45          | 24° 7           | 26°16          | 14°38          | 15°59         | 16°57  | 15°11          | W14  |
| T 15 | 23 35 45 | 22° 8'46         | 19°29          | 7°39           | 12°11         | 13°35          | 5°15          | 19°45  | 18°44          | 24° 5           | 26°15          | 14°D38         | 15°55         | 17° 4  | 15° 8          | T 15 |
| F 16 | 23 39 42 | 23° 7'13         | 1 <b>Ⅱ</b> 55  | 7° 4           | 13°25         | 14° 2          | 5° 7          | 19°41  | 18°43          | 24° 3           | 26°14          | 14°39          | 15°52         | 17°11  | 15° 6          | F 16 |
| S 17 | 23 43 38 | 24° 5'42         | 14° 4          | 6°22           | 14°40         | 14°29          | 5° 0          | 19°38  | 18°42          | 24° 2           | 26°14          | 14°40          | 15°49         | 17°17  | 15° 3          | S 17 |
| S 18 | 23 47 35 | 25° 4'14         | 26° 3          | 5°34           | 15°54         | 14°56          | 4°52          | 19°35  | 18°41          | 24° 0           | 26°13          | 14°R41         | 15°46         | 17°24  | 15° 1          | S 18 |
| M19  | 23 51 31 | 26° 2'48         | 7955           | 4°41           | 17° 9         | 15°22          | 4°44          | 19°32  | 18°39          | 23°58           | 26°13          | 14°40          | 15°43         | 17°31  | 14°58          | M19  |
| T 20 | 23 55 28 | 27° 1'24         | 19°46          | 3°43           | 18°23         | 15°48          | 4°36          | 19°29  | 18°38          | 23°57           | 26°12          | 14°37          | 15°39         | 17°37  | 14°56          | T 20 |
| W21  | 23 59 25 | 28° 0'02         | 1 <b>Ω</b> 41  | 2°42           | 19°38         | 16°14          | 4°28          | 19°26  | 18°37          | 23°55           | 26°12          | 14°32          | 15°36         | 17°44  | 14°53          | W21  |
| T 22 | 0 3 21   | 28°58'42         | 13°43          | 1°38           | 20°52         | 16°39          | 4°20          | 19°23  | 18°36          | 23°53           | 26°11          | 14°26          | 15°33         | 17°51  | 14°51          | T 22 |
| F 23 | 0 7 18   | 29°57'24         | 25°56          | 0°33           | 22° 7         | 17° 4          | 4°12          | 19°20  | 18°34          | 23°52           | 26°11          | 14°18          | 15°30         | 17°58  | 14°48          | F 23 |
| S 24 | 0 11 14  | 0 <b>₽</b> 56'09 | 8 <b>m</b> 22  | 29 <b>m</b> 28 | 23°22         | 17°28          | 4° 4          | 19°17  | 18°33          | 23°50           | 26°10          | 14°10          | 15°27         | 18° 4  | 14°45          | S 24 |
| S 25 | 0 15 11  | 1°54'55          | 21° 2          | 28°26          | 24°37         | 17°52          | 3°56          | 19°14  | 18°31          | 23°48           | 26°10          | 14° 3          | 15°24         | 18°11  | 14°43          | S 25 |
| M26  | 0 19 7   | 2°53'43          | 3 <b>≙</b> 57  | 27°28          | 25°51         | 18°15          | 3°48          | 19°12  | 18°30          | 23°47           | 26° 9          | 13°56          | 15°20         | 18°18  | 14°40          | M26  |
| T 27 | 0 23 4   | 3°52'34          | 17° 5          | 26°35          | 27° 6         | 18°38          | 3°40          | 19° 9  | 18°28          | 23°45           | 26° 9          | 13°51          | 15°17         | 18°24  | 14°37          | T 27 |
| W28  | 0 27 0   | 4°51'26          | 0 <b>M</b> 25  | 25°48          | 28°21         | 19° 1          | 3°32          | 19° 7  | 18°27          | 23°43           | 26° 9          | 13°49          | 15°14         | 18°31  | 14°35          | W28  |
| T 29 | 0 30 57  | 5°50'20          | 13°58          | 25°10          | 29°36         | 19°23          | 3°24          | 19° 4  | 18°25          | 23°42           | 26° 8          | 13°D48         | 15°11         | 18°38  | 14°32          | T 29 |
| F 30 | 0 34 53  | 6 <b>º</b> 49'17 | 27 <b>M</b> 40 | 24 Mp 41       | 0 <b>ჲ</b> 50 | 19 <b>Ⅱ</b> 44 | 3 <b>Υ</b> 16 | 19≈ 2  | 18 <b>8</b> 24 | 23 <b>)</b> (40 | 26중 8          | 13 <b>8</b> 49 | 15 <b>8</b> 8 | 189945 | 14 <b>Υ</b> 29 | F 30 |

Delta T = 70.86 sec

OCTOBER 2022 00:00 UT

| Day  | Sid.t   | 0                | D              | ğ            | Ф              | o <sup>7</sup> | 4              | ħ              | )∤(            | <del>1,</del>  | В              | U              | v              | Ç      | Š.             | Day  |
|------|---------|------------------|----------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|----------------|------|
| S 1  | 0 38 50 | 7 <b>≏</b> 48'15 | 11 <b>×</b> 32 | 24°R22       | 2 <b>º</b> 5   | 20耳 5          | 3°R 8          | 19°R 0         | 18°R22         | 23°R39         | 26°R 8         | 13 <b>8</b> 50 | 15 <b>8</b> 4  | 18951  | 14°R27         | S 1  |
| S 2  | 0 42 47 | 8°47'14          | 25°32          | 24°D13       | 3°20           | 20°25          | <b>3Υ</b> 0    | 18≈58          | 18820          | 23 <b>)</b> 37 | 26중 8          | 13°51          | 15° 1          | 18°58  | 14 <b>Y</b> 24 | S 2  |
| M 3  | 0 46 43 | 9°46'16          | 9 <b>궁</b> 39  | 24 Mp 14     | 4°35           | 20°45          | 2°52           | 18°56          | 18°18          | 23°35          | 26° 7          | 13°R52         | 14°58          | 19° 5  | 14°21          | M 3  |
| T 4  | 0 50 40 | 10°45'19         | 23°51          | 24°26        | 5°50           | 21° 4          | 2°44           | 18°54          | 18°17          | 23°34          | 26° 7          | 13°51          | 14°55          | 19°11  | 14°19          | T 4  |
| W 5  | 0 54 36 | 11°44'24         | 8≈ 8           | 24°47        | 7° 5           | 21°23          | 2°36           | 18°52          | 18°15          | 23°32          | 26° 7          | 13°49          | 14°52          | 19°18  | 14°16          | W 5  |
| T 6  | 0 58 33 | 12°43'30         | 22°25          | 25°19        | 8°20           | 21°41          | 2°29           | 18°50          | 18°13          | 23°31          | 26° 7          | 13°46          | 14°49          | 19°25  | 14°13          | T 6  |
| F 7  | 1 2 29  | 13°42'39         | 6 <b>∺</b> 38  | 26° 0        | 9°35           | 21°59          | 2°21           | 18°48          | 18°11          | 23°29          | 26° 7          | 13°41          | 14°45          | 19°31  | 14°11          | F 7  |
| S 8  | 1 6 26  | 14°41'49         | 20°44          | 26°49        | 10°50          | 22°16          | 2°13           | 18°47          | 18° 9          | 23°28          | 26° 7          | 13°37          | 14°42          | 19°38  | 14° 8          | S 8  |
| S 9  | 1 10 22 | 15°41'01         | <b>4</b> Υ38   | 27°46        | 12° 4          | 22°32          | 2° 6           | 18°45          | 18° 7          | 23°26          | 26°D 7         | 13°33          | 14°39          | 19°45  | 14° 5          | S 9  |
| M10  | 1 14 19 | 16°40'15         | 18°17          | 28°50        | 13°19          | 22°48          | 1°58           | 18°44          | 18° 5          | 23°25          | 26° 7          | 13°30          | 14°36          | 19°52  | 14° 2          | M10  |
| T 11 | 1 18 16 | 17°39'31         | 1 <b>8</b> 37  | 0 <b>亚</b> 0 | 14°34          | 23° 3          | 1°51           | 18°43          | 18° 3          | 23°23          | 26° 7          | 13°28          | 14°33          | 19°58  | 14° 0          | T 11 |
| W12  | 1 22 12 | 18°38'49         | 14°38          | 1°17         | 15°49          | 23°18          | 1°43           | 18°42          | 18° 1          | 23°22          | 26° 7          | 13°D27         | 14°30          | 20° 5  | 13°57          | W12  |
| T 13 | 1 26 9  | 19°38'10         | 27°19          | 2°37         | 17° 4          | 23°32          | 1°36           | 18°41          | 17°59          | 23°20          | 26° 7          | 13°28          | 14°26          | 20°12  | 13°54          | T 13 |
| F 14 | 1 30 5  | 20°37'32         | 9∏44           | 4° 3         | 18°19          | 23°45          | 1°29           | 18°40          | 17°57          | 23°19          | 26° 7          | 13°29          | 14°23          | 20°18  | 13°52          | F 14 |
| S 15 | 1 34 2  | 21°36'57         | 21°54          | 5°31         | 19°35          | 23°58          | 1°22           | 18°39          | 17°55          | 23°18          | 26° 8          | 13°31          | 14°20          | 20°25  | 13°49          | S 15 |
| S 16 | 1 37 58 | 22°36'24         | 3954           | 7° 3         | 20°50          | 24°10          | 1°15           | 18°38          | 17°53          | 23°16          | 26° 8          | 13°33          | 14°17          | 20°32  | 13°46          | S 16 |
| M17  | 1 41 55 | 23°35'54         | 15°47          | 8°37         | 22° 5          | 24°21          | 1° 8           | 18°37          | 17°50          | 23°15          | 26° 8          | 13°34          | 14°14          | 20°39  | 13°44          | M17  |
| T 18 | 1 45 51 | 24°35'26         | 27°39          | 10°13        | 23°20          | 24°31          | 1° 1           | 18°37          | 17°48          | 23°13          | 26° 8          | 13°R34         | 14°10          | 20°45  | 13°41          | T 18 |
| W19  | 1 49 48 | 25°35'00         | 9 <b>Ω</b> 35  | 11°51        | 24°35          | 24°41          | 0°55           | 18°36          | 17°46          | 23°12          | 26° 8          | 13°33          | 14° 7          | 20°52  | 13°38          | W19  |
| T 20 | 1 53 45 | 26°34'36         | 21°38          | 13°30        | 25°50          | 24°50          | 0°48           | 18°36          | 17°44          | 23°11          | 26° 9          | 13°32          | 14° 4          | 20°59  | 13°36          | T 20 |
| F 21 | 1 57 41 | 27°34'14         | 3 <b>m</b> 54  | 15° 9        | 27° 5          | 24°59          | 0°42           | 18°36          | 17°41          | 23° 9          | 26° 9          | 13°30          | 14° 1          | 21° 5  | 13°33          | F 21 |
| S 22 | 2 1 38  | 28°33'55         | 16°25          | 16°50        | 28°20          | 25° 6          | 0°35           | 18°35          | 17°39          | 23° 8          | 26° 9          | 13°27          | 13°58          | 21°12  | 13°30          | S 22 |
| S 23 | 2 5 34  | 29°33'38         | 29°15          | 18°31        | 29°35          | 25°13          | 0°29           | 18°D35         | 17°37          | 23° 7          | 26°10          | 13°25          | 13°55          | 21°19  | 13°28          | S 23 |
| M24  | 2 9 31  | 0 <b>M</b> 33'23 | 12 <b>≏</b> 23 | 20°12        | 0 <b>M</b> .51 | 25°19          | 0°23           | 18°35          | 17°34          | 23° 6          | 26°10          | 13°23          | 13°51          | 21°26  | 13°25          | M24  |
| T 25 | 2 13 27 | 1°33'10          | 25°51          | 21°54        | 2° 6           | 25°24          | 0°18           | 18°35          | 17°32          | 23° 4          | 26°11          | 13°22          | 13°48          | 21°32  | 13°23          | T 25 |
| W26  | 2 17 24 | 2°32'59          | 9 <b>M</b> .35 | 23°35        | 3°21           | 25°28          | 0°12           | 18°36          | 17°30          | 23° 3          | 26°11          | 13°D22         | 13°45          | 21°39  | 13°20          | W26  |
| T 27 | 2 21 20 | 3°32'50          | 23°35          | 25°17        | 4°36           | 25°31          | 0° 6           | 18°36          | 17°27          | 23° 2          | 26°12          | 13°22          | 13°42          | 21°46  | 13°18          | T 27 |
| F 28 | 2 25 17 | 4°32'43          | 7 <b>.₹</b> 45 | 26°58        | 5°51           | 25°34          | 0° 1           | 18°37          | 17°25          | 23° 1          | 26°12          | 13°22          | 13°39          | 21°52  | 13°15          | F 28 |
| S 29 | 2 29 14 | 5°32'37          | 22° 2          | 28°39        | 7° 6           | 25°36          | 29 <b>米</b> 56 | 18°37          | 17°23          | 23° 0          | 26°13          | 13°23          | 13°36          | 21°59  | 13°13          | S 29 |
| S 30 | 2 33 10 | 6°32'34          | 6 <b>ප</b> 21  | OM 19        | 8°22           | 25°37          | 29°51          | 18°38          | 17°20          | 22°59          | 26°14          | 13°24          | 13°32          | 22° 6  | 13°10          | S 30 |
| M31  | 2 37 7  | 7 <b>M</b> 32'32 | 20 <b>る</b> 40 | 2M 0         | 9 <b>M</b> .37 | 25°R37         | 29 <b>米</b> 46 | 18 <b>≈</b> 38 | 17 <b>8</b> 18 | 22 <b>米</b> 58 | 26 <b>ට</b> 14 | 13 <b>8</b> 24 | 13 <b>8</b> 29 | 229513 | 13 <b>°</b> 8  | M31  |

Delta T = 70.89 sec

NOVEMBER 2022 00:00 UT

| Day  | Sid.t   | 0                 | D               | ğ              | φ              | ♂      | 4              | ħ              | )ф(           | <del>1,</del>  | В              | U              | ß              | Ç      | o<br>k         | Day  |
|------|---------|-------------------|-----------------|----------------|----------------|--------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|--------|----------------|------|
| T 1  | 2 41 3  | 8M32'32           | 4≈54            | 3 <b>M</b> .40 | 10ML52         | 25°R36 | 29°R42         | 18 <b>≈</b> 39 | 17°R15        | 22°R57         | 26 <b>궁</b> 15 | 13°R25         | 13826          | 229519 | 13°R 5         | T 1  |
| W 2  | 2 45 0  | 9°32'33           | 19° 3           | 5°19           | 12° 7          | 25耳34  | 29 <b>)</b> 37 | 18°40          | 17813         | 22 <b>米</b> 56 | 26°15          | 13 <b>8</b> 25 | 13°23          | 22°26  | 13 <b>°</b> 3  | W 2  |
| T 3  | 2 48 56 | 10°32'36          | 3 <b>∺</b> 2    | 6°58           | 13°23          | 25°32  | 29°33          | 18°41          | 17°10         | 22°55          | 26°16          | 13°24          | 13°20          | 22°33  | 13° 1          | T 3  |
| F 4  | 2 52 53 | 11°32'40          | 16°52           | 8°37           | 14°38          | 25°28  | 29°29          | 18°43          | 17° 8         | 22°54          | 26°17          | 13°24          | 13°16          | 22°39  | 12°58          | F 4  |
| S 5  | 2 56 49 | 12°32'45          | 0 <b>Υ</b> 30   | 10°15          | 15°53          | 25°24  | 29°25          | 18°44          | 17° 5         | 22°53          | 26°18          | 13°24          | 13°13          | 22°46  | 12°56          | S 5  |
| S 6  | 3 0 46  | 13°32'53          | 13°56           | 11°53          | 17° 8          | 25°19  | 29°21          | 18°45          | 17° 3         | 22°52          | 26°19          | 13°D24         | 13°10          | 22°53  | 12°54          | S 6  |
| M 7  | 3 4 43  | 14°33'02          | 27° 9           | 13°31          | 18°23          | 25°13  | 29°18          | 18°47          | 17° 0         | 22°51          | 26°19          | 13°24          | 13° 7          | 23° 0  | 12°52          | M 7  |
| T 8  | 3 8 39  | 15°33'13          | 10 <b>8</b> 7   | 15° 8          | 19°39          | 25° 6  | 29°14          | 18°48          | 16°58         | 22°50          | 26°20          | 13°R24         | 13° 4          | 23° 6  | 12°49          | T 8  |
| W 9  | 3 12 36 | 16°33'25          | 22°52           | 16°44          | 20°54          | 24°58  | 29°11          | 18°50          | 16°55         | 22°49          | 26°21          | 13°24          | 13° 1          | 23°13  | 12°47          | W 9  |
| T 10 | 3 16 32 | 17°33'39          | 5 <b>Ⅱ</b> 23   | 18°21          | 22° 9          | 24°49  | 29° 8          | 18°52          | 16°53         | 22°48          | 26°22          | 13°24          | 12°57          | 23°20  | 12°45          | T 10 |
| F 11 | 3 20 29 | 18°33'56          | 17°42           | 19°57          | 23°24          | 24°40  | 29° 5          | 18°54          | 16°50         | 22°48          | 26°23          | 13°23          | 12°54          | 23°26  | 12°43          | F 11 |
| S 12 | 3 24 25 | 19°34'14          | 29°49           | 21°32          | 24°40          | 24°29  | 29° 3          | 18°56          | 16°48         | 22°47          | 26°24          | 13°22          | 12°51          | 23°33  | 12°41          | S 12 |
| S 13 | 3 28 22 | 20°34'34          | 119547          | 23° 8          | 25°55          | 24°18  | 29° 0          | 18°58          | 16°46         | 22°46          | 26°25          | 13°21          | 12°48          | 23°40  | 12°39          | S 13 |
| M14  | 3 32 18 | 21°34'56          | 23°41           | 24°43          | 27°10          | 24° 6  | 28°58          | 19° 0          | 16°43         | 22°45          | 26°26          | 13°20          | 12°45          | 23°47  | 12°37          | M14  |
| T 15 | 3 36 15 | 22°35'19          | 5 <b>Ω</b> 32   | 26°17          | 28°25          | 23°53  | 28°56          | 19° 2          | 16°41         | 22°45          | 26°27          | 13°20          | 12°42          | 23°53  | 12°35          | T 15 |
| W16  | 3 40 12 | 23°35'45          | 17°26           | 27°52          | 29°41          | 23°39  | 28°55          | 19° 4          | 16°38         | 22°44          | 26°28          | 13°19          | 12°38          | 24° 0  | 12°33          | W16  |
| T 17 | 3 44 8  | 24°36'12          | 29°28           | 29°26          | 0 <b>才</b> 56  | 23°25  | 28°53          | 19° 7          | 16°36         | 22°44          | 26°29          | 13°D19         | 12°35          | 24° 7  | 12°31          | T 17 |
| F 18 | 3 48 5  | 25°36'41          | 11 <b>m</b> p41 | 1 <b>√</b> 0   | 2°11           | 23° 9  | 28°52          | 19° 9          | 16°33         | 22°43          | 26°30          | 13°20          | 12°32          | 24°13  | 12°29          | F 18 |
| S 19 | 3 52 1  | 26°37'12          | 24°11           | 2°34           | 3°27           | 22°53  | 28°50          | 19°12          | 16°31         | 22°43          | 26°31          | 13°21          | 12°29          | 24°20  | 12°28          | S 19 |
| S 20 | 3 55 58 | 27°37'45          | 7 <b>요</b> 1    | 4° 7           | 4°42           | 22°36  | 28°50          | 19°15          | 16°28         | 22°42          | 26°33          | 13°22          | 12°26          | 24°27  | 12°26          | S 20 |
| M21  | 3 59 54 | 28°38'20          | 20°14           | 5°40           | 5°57           | 22°19  | 28°49          | 19°18          | 16°26         | 22°42          | 26°34          | 13°23          | 12°22          | 24°34  | 12°24          | M21  |
| T 22 | 4 3 51  | 29°38'56          | 3 <b>M</b> .52  | 7°13           | 7°12           | 22° 1  | 28°48          | 19°21          | 16°24         | 22°41          | 26°35          | 13°24          | 12°19          | 24°40  | 12°23          | T 22 |
| W23  | 4 7 47  | 0 <b>,</b> 739'34 | 17°53           | 8°46           | 8°28           | 21°42  | 28°48          | 19°24          | 16°21         | 22°41          | 26°36          | 13°R24         | 12°16          | 24°47  | 12°21          | W23  |
| T 24 | 4 11 44 | 1°40'13           | 2 <b>√</b> 16   | 10°19          | 9°43           | 21°22  | 28°D48         | 19°27          | 16°19         | 22°40          | 26°37          | 13°23          | 12°13          | 24°54  | 12°19          | T 24 |
| F 25 | 4 15 41 | 2°40'54           | 16°53           | 11°51          | 10°58          | 21° 2  | 28°48          | 19°30          | 16°16         | 22°40          | 26°39          | 13°22          | 12°10          | 25° 0  | 12°18          | F 25 |
| S 26 | 4 19 37 | 3°41'36           | 1 <b>る</b> 40   | 13°24          | 12°14          | 20°42  | 28°48          | 19°33          | 16°14         | 22°40          | 26°40          | 13°19          | 12° 7          | 25° 7  | 12°16          | S 26 |
| S 27 | 4 23 34 | 4°42'20           | 16°27           | 14°56          | 13°29          | 20°21  | 28°49          | 19°37          | 16°12         | 22°40          | 26°41          | 13°16          | 12° 3          | 25°14  | 12°15          | S 27 |
| M28  | 4 27 30 | 5°43'04           | 1≈ 9            | 16°28          | 14°44          | 19°59  | 28°50          | 19°40          | 16° 9         | 22°39          | 26°43          | 13°13          | 12° 0          | 25°21  | 12°14          | M28  |
| T 29 | 4 31 27 | 6°43'50           | 15°38           | 18° 0          | 16° 0          | 19°37  | 28°51          | 19°44          | 16° 7         | 22°39          | 26°44          | 13°11          | 11°57          | 25°27  | 12°12          | T 29 |
| W30  | 4 35 23 | 7 <b>.</b> ₹44'36 | 29≈51           | 19 <b>×</b> 32 | 17 <b>∡</b> 15 | 19∏15  | 28 <b>米</b> 52 | 19 <b>≈</b> 47 | 16 <b>8</b> 5 | 22 <b>)</b> 39 | 26 <b>궁</b> 45 | 13 <b>8</b> 10 | 11 <b>8</b> 54 | 25934  | 12 <b>Y</b> 11 | W30  |

Delta T = 70.93 sec

DECEMBER 2022 00:00 UT

| Day  | Sid.t   | 0                 | D               | ğ             | φ               | ♂              | 4              | ħ     | ℋ              | 卉              | Р              | ß              | Ω     | Ç      | , k            | Day  |
|------|---------|-------------------|-----------------|---------------|-----------------|----------------|----------------|-------|----------------|----------------|----------------|----------------|-------|--------|----------------|------|
| T 1  | 4 39 20 | 8 <b>∡</b> 745'24 | 13 <b>)</b> (46 | 21 🗷 3        | 18 <b>∡</b> ³30 | 18°R53         | 28 <b>米</b> 53 | 19≈51 | 16°R 3         | 22°R39         | 26 <b>궁</b> 47 | 13°D 9         | 11851 | 259541 | 12°R10         | T 1  |
| F 2  | 4 43 17 | 9°46'12           | 27°23           | 22°34         | 19°46           | 18 <b>Ⅲ</b> 30 | 28°55          | 19°55 | 16 <b>8</b> 0  | 22 <b>米</b> 39 | 26°48          | 13 <b>8</b> 10 | 11°48 | 25°47  | 12 <b>Y</b> 9  | F 2  |
| S 3  | 4 47 13 | 10°47'01          | 10 <b>Y</b> 42  | 24° 6         | 21° 1           | 18° 7          | 28°56          | 19°59 | 15°58          | 22°39          | 26°50          | 13°12          | 11°44 | 25°54  | 12° 8          | S 3  |
| S 4  | 4 51 10 | 11°47'51          | 23°45           | 25°36         | 22°16           | 17°44          | 28°58          | 20° 3 | 15°56          | 22°D39         | 26°51          | 13°14          | 11°41 | 26° 1  | 12° 6          | S 4  |
| M 5  | 4 55 6  | 12°48'41          | 6 <b>8</b> 35   | 27° 7         | 23°31           | 17°21          | 29° 1          | 20° 7 | 15°54          | 22°39          | 26°53          | 13°15          | 11°38 | 26° 8  | 12° 5          | M 5  |
| T 6  | 4 59 3  | 13°49'33          | 19°12           | 28°37         | 24°47           | 16°58          | 29° 3          | 20°11 | 15°52          | 22°39          | 26°54          | 13°R15         | 11°35 | 26°14  | 12° 4          | T 6  |
| W 7  | 5 2 59  | 14°50'26          | 1 <b>Ⅲ</b> 39   | 0중 7          | 26° 2           | 16°34          | 29° 6          | 20°15 | 15°50          | 22°39          | 26°56          | 13°13          | 11°32 | 26°21  | 12° 4          | W 7  |
| T 8  | 5 6 56  | 15°51'20          | 13°56           | 1°36          | 27°17           | 16°11          | 29° 8          | 20°20 | 15°48          | 22°39          | 26°57          | 13°10          | 11°28 | 26°28  | 12° 3          | T 8  |
| F 9  | 5 10 52 | 16°52'15          | 26° 4           | 3° 5          | 28°32           | 15°48          | 29°11          | 20°24 | 15°46          | 22°39          | 26°59          | 13° 5          | 11°25 | 26°35  | 12° 2          | F 9  |
| S 10 | 5 14 49 | 17°53'10          | 8 <b>9</b> 6    | 4°33          | 29°48           | 15°25          | 29°14          | 20°29 | 15°44          | 22°39          | 27° 1          | 12°59          | 11°22 | 26°41  | 12° 1          | S 10 |
| S 11 | 5 18 46 | 18°54'07          | 20° 2           | 6° 1          | 1る3             | 15° 3          | 29°18          | 20°33 | 15°42          | 22°40          | 27° 2          | 12°52          | 11°19 | 26°48  | 12° 0          | S 11 |
| M12  | 5 22 42 | 19°55'05          | 1 <b>Ω</b> 54   | 7°27          | 2°18            | 14°40          | 29°21          | 20°38 | 15°40          | 22°40          | 27° 4          | 12°45          | 11°16 | 26°55  | 12° 0          | M12  |
| T 13 | 5 26 39 | 20°56'04          | 13°45           | 8°53          | 3°34            | 14°18          | 29°25          | 20°42 | 15°38          | 22°40          | 27° 5          | 12°39          | 11°13 | 27° 1  | 11°59          | T 13 |
| W14  | 5 30 35 | 21°57'03          | 25°39           | 10°17         | 4°49            | 13°57          | 29°29          | 20°47 | 15°36          | 22°40          | 27° 7          | 12°34          | 11° 9 | 27° 8  | 11°59          | W14  |
| T 15 | 5 34 32 | 22°58'04          | 7 <b>m</b> 38   | 11°40         | 6° 4            | 13°35          | 29°33          | 20°52 | 15°34          | 22°41          | 27° 9          | 12°30          | 11° 6 | 27°15  | 11°58          | T 15 |
| F 16 | 5 38 28 | 23°59'06          | 19°47           | 13° 1         | 7°19            | 13°14          | 29°38          | 20°57 | 15°32          | 22°41          | 27°11          | 12°D29         | 11° 3 | 27°22  | 11°58          | F 16 |
| S 17 | 5 42 25 | 25° 0'09          | 2 <b>≏</b> 11   | 14°20         | 8°35            | 12°54          | 29°42          | 21° 2 | 15°30          | 22°42          | 27°12          | 12°29          | 11° 0 | 27°28  | 11°57          | S 17 |
| S 18 | 5 46 21 | 26° 1'12          | 14°55           | 15°36         | 9°50            | 12°34          | 29°47          | 21° 7 | 15°29          | 22°42          | 27°14          | 12°30          | 10°57 | 27°35  | 11°57          | S 18 |
| M19  | 5 50 18 | 27° 2'17          | 28° 3           | 16°50         | 11° 5           | 12°14          | 29°52          | 21°12 | 15°27          | 22°43          | 27°16          | 12°32          | 10°54 | 27°42  | 11°57          | M19  |
| T 20 | 5 54 15 | 28° 3'22          | 11 <b>M</b> J38 | 18° 1         | 12°20           | 11°55          | 29°57          | 21°18 | 15°25          | 22°43          | 27°17          | 12°R32         | 10°50 | 27°48  | 11°56          | T 20 |
| W21  | 5 58 11 | 29° 4'29          | 25°41           | 19° 8         | 13°36           | 11°37          | 0 <b>Υ</b> 2   | 21°23 | 15°24          | 22°44          | 27°19          | 12°32          | 10°47 | 27°55  | 11°56          | W21  |
| T 22 | 6 2 8   | 0 <b>궁</b> 5'36   | 10 <b>×</b> 12  | 20°10         | 14°51           | 11°20          | 0° 8           | 21°28 | 15°22          | 22°44          | 27°21          | 12°29          | 10°44 | 28° 2  | 11°56          | T 22 |
| F 23 | 6 6 4   | 1° 6'44           | 25° 5           | 21° 8         | 16° 6           | 11° 3          | 0°13           | 21°34 | 15°21          | 22°45          | 27°23          | 12°23          | 10°41 | 28° 9  | 11°D56         | F 23 |
| S 24 | 6 10 1  | 2° 7'52           | 10 <b>궁</b> 13  | 21°59         | 17°21           | 10°46          | 0°19           | 21°39 | 15°19          | 22°46          | 27°25          | 12°16          | 10°38 | 28°15  | 11°56          | S 24 |
| S 25 | 6 13 57 | 3° 9'00           | 25°26           | 22°44         | 18°37           | 10°31          | 0°25           | 21°45 | 15°18          | 22°46          | 27°26          | 12° 8          | 10°34 | 28°22  | 11°56          | S 25 |
| M26  | 6 17 54 | 4°10'09           | 10≈32           | 23°22         | 19°52           | 10°16          | 0°31           | 21°50 | 15°16          | 22°47          | 27°28          | 12° 0          | 10°31 | 28°29  | 11°56          | M26  |
| T 27 | 6 21 51 | 5°11'18           | 25°24           | 23°51         | 21° 7           | 10° 2          | 0°37           | 21°56 | 15°15          | 22°48          | 27°30          | 11°53          | 10°28 | 28°35  | 11°56          | T 27 |
| W28  | 6 25 47 | 6°12'27           | 9 <b>∺</b> 52   | 24°11         | 22°22           | 9°49           | 0°44           | 22° 2 | 15°14          | 22°49          | 27°32          | 11°48          | 10°25 | 28°42  | 11°57          | W28  |
| T 29 | 6 29 44 | 7°13'36           | 23°56           | 24°R21        | 23°37           | 9°36           | 0°51           | 22° 7 | 15°12          | 22°50          | 27°34          | 11°45          | 10°22 | 28°49  | 11°57          | T 29 |
| F 30 | 6 33 40 | 8°14'45           | 7 <b>Υ</b> 33   | 24°19         | 24°53           | 9°25           | 0°57           | 22°13 | 15°11          | 22°50          | 27°36          | 11°D44         | 10°19 | 28°56  | 11°57          | F 30 |
| S 31 | 6 37 37 | 9 <b>ට</b> 15'53  | 20 <b>Υ</b> 46  | 24 <b>궁</b> 7 | 26 <b>궁</b> 8   | 9 <b>Ⅱ</b> 14  | 1 <b>Υ</b> 4   | 22≈19 | 15 <b>8</b> 10 | 22 <b>米</b> 51 | 27 <b>る</b> 38 | 11 <b>8</b> 44 | 10815 | 2995 2 | 11 <b>Y</b> 58 | S 31 |

Delta T = 70.96 sec