



Astrodienst Ephemeris Tables for the year 2219

tropical geocentric 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

ASTRODIENST EPHEMERIS for the year 2219

geocentric

JANUARY 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|---------|----------|-----------|-----------|-----------|----------|------|
| F 1 | 6 39 44 | 9°34'27" | 0°8' 8 | 23°13' 23 | 29°13' 3 | 11°42' 2 | 2°12' 27 | 10°14' 44 | 27°56' 56 | 5°37' 3 | 3°14' 14 | 0°R31 | 29°25' 25 | 24°18' 18 | 3°56' 56 | F 1 |
| S 2 | 6 43 41 | 10°43'34" | 13°14' 13 | 24°47' 0 | 0°15' 15 | 12° 9' 12 | 2°35' 2 | 10°49' 10 | 27°56' 56 | 5°36' 5 | 3°14' 14 | 0°19' 19 | 29°22' 29 | 24°25' 24 | 3°57' 3 | S 2 |
| S 3 | 6 47 37 | 11°44'41" | 26° 6' 26 | 26°21' 1 | 1°27' 12 | 12°35' 2 | 2°43' 2 | 10°54' 10 | 27°56' 56 | 5°34' 3 | 3°14' 14 | 0° 6' 0 | 29°19' 29 | 24°32' 24 | 3°58' 3 | S 3 |
| M 4 | 6 51 34 | 12°45'48" | 8°42' 8 | 27°54' 2 | 2°39' 13 | 13° 2' 2 | 2°51' 2 | 10°58' 10 | 27°56' 56 | 5°33' 3 | 3°14' 14 | 29°53' 29 | 29°16' 29 | 24°38' 24 | 3°59' 3 | M 4 |
| T 5 | 6 55 30 | 13°46'55" | 21° 4' 21 | 29°27' 3 | 3°51' 13 | 13°28' 2 | 2°59' 2 | 11° 3' 11 | 27°56' 56 | 5°32' 3 | 3°14' 14 | 29°41' 29 | 29°12' 29 | 24°45' 24 | 4° 0' 4 | T 5 |
| W 6 | 6 59 27 | 14°48'03" | 3°12' 12 | 0°58' 5 | 5° 3' 13 | 13°53' 3 | 3° 7' 11 | 11° 7' 11 | 27°55' 5 | 5°31' 3 | 3°14' 14 | 29°32' 29 | 29° 9' 29 | 24°52' 24 | 4° 2' 4 | W 6 |
| T 7 | 7 3 23 | 15°49'11" | 15° 9' 15 | 2°28' 6 | 6°15' 14 | 14°19' 3 | 3°14' 11 | 11°12' 11 | 27°55' 5 | 5°29' 3 | 3°14' 14 | 29°25' 29 | 29° 6' 29 | 24°58' 24 | 4° 3' 4 | T 7 |
| F 8 | 7 7 20 | 16°50'19" | 26°59' 2 | 3°57' 7 | 7°27' 14 | 14°44' 3 | 3°22' 11 | 11°16' 11 | 27°55' 5 | 5°28' 3 | 3°14' 14 | 29°21' 29 | 29° 3' 29 | 25° 5' 2 | 4° 4' 4 | F 8 |
| S 9 | 7 11 16 | 17°51'27" | 8°47' 5 | 5°23' 8 | 8°40' 15 | 15° 9' 15 | 3°29' 11 | 11°20' 11 | 27°55' 5 | 5°27' 3 | 3°14' 14 | 29°20' 29 | 29° 0' 29 | 25°12' 2 | 4° 5' 4 | S 9 |
| S 10 | 7 15 13 | 18°52'36" | 20°38' 6 | 6°48' 8 | 9°52' 15 | 15°34' 3 | 3°36' 11 | 11°24' 11 | 27°54' 5 | 5°26' 3 | 3°14' 14 | 29°D19 | 28°56' 28 | 25°18' 2 | 4° 7' 4 | S 10 |
| M 11 | 7 19 10 | 19°53'45" | 2°13' 8 | 8°10' 11 | 11° 5' 15 | 15°59' 3 | 3°43' 11 | 11°29' 11 | 27°54' 5 | 5°25' 3 | 3°14' 14 | 29°R19 | 28°53' 28 | 25°25' 2 | 4° 8' 4 | M 11 |
| T 12 | 7 23 6 | 20°54'54" | 14°52' 9 | 9°29' 12 | 12°17' 16 | 16°23' 3 | 3°50' 11 | 11°33' 11 | 27°53' 5 | 5°24' 3 | 3°14' 14 | 29°18' 29 | 28°50' 28 | 25°32' 2 | 4°10' 4 | T 12 |
| W 13 | 7 27 3 | 21°56'03" | 27°25' 10 | 10°44' 13 | 13°30' 16 | 16°47' 3 | 3°57' 11 | 11°36' 11 | 27°53' 5 | 5°23' 3 | 3°13' 13 | 29°16' 29 | 28°47' 28 | 25°38' 2 | 4°11' 4 | W 13 |
| T 14 | 7 30 59 | 22°57'12" | 10°21' 11 | 11°54' 14 | 14°43' 17 | 17°11' 4 | 4° 3' 11 | 11°40' 11 | 27°52' 5 | 5°21' 3 | 3°13' 13 | 29°10' 29 | 28°44' 28 | 25°45' 2 | 4°13' 4 | T 14 |
| F 15 | 7 34 56 | 23°58'21" | 23°42' 13 | 13° 0' 15 | 15°55' 17 | 17°34' 4 | 4°10' 11 | 11°44' 11 | 27°52' 5 | 5°20' 3 | 3°13' 13 | 29° 2' 29 | 28°41' 28 | 25°52' 2 | 4°14' 4 | F 15 |
| S 16 | 7 38 52 | 24°59'30" | 7°29' 14 | 14° 0' 17 | 17° 8' 17 | 17°57' 4 | 4°16' 11 | 11°48' 11 | 27°51' 5 | 5°20' 3 | 3°12' 12 | 28°52' 28 | 28°37' 28 | 25°58' 2 | 4°16' 4 | S 16 |
| S 17 | 7 42 49 | 26° 0'39" | 21°40' 14 | 14°53' 18 | 18°21' 18 | 18°20' 4 | 4°22' 11 | 11°51' 11 | 27°50' 5 | 5°19' 3 | 3°12' 12 | 28°39' 28 | 28°34' 28 | 26° 5' 2 | 4°18' 4 | S 17 |
| M 18 | 7 46 45 | 27° 1'48" | 6° 8' 15 | 15°38' 19 | 19°34' 18 | 18°42' 4 | 4°28' 11 | 11°55' 11 | 27°49' 5 | 5°18' 3 | 3°12' 12 | 28°27' 28 | 28°31' 28 | 26°12' 2 | 4°20' 4 | M 18 |
| T 19 | 7 50 42 | 28° 2'56" | 20°47' 16 | 16°16' 20 | 20°47' 19 | 19° 5' 4 | 4°34' 11 | 11°58' 11 | 27°48' 5 | 5°17' 3 | 3°11' 11 | 28°15' 28 | 28°28' 28 | 26°18' 2 | 4°21' 4 | T 19 |
| W 20 | 7 54 39 | 29° 5'10" | 5°30' 16 | 16°43' 22 | 22° 0' 19 | 19°26' 4 | 4°40' 12 | 12° 1' 12 | 27°48' 5 | 5°16' 3 | 3°11' 11 | 28° 6' 28 | 28°25' 28 | 26°25' 2 | 4°23' 4 | W 20 |
| T 21 | 7 58 35 | 0° 4'03" | 20° 7' 17 | 17° 1' 23 | 23°13' 19 | 19°48' 4 | 4°45' 12 | 12° 5' 12 | 27°47' 5 | 5°15' 3 | 3°10' 10 | 27°59' 28 | 28°22' 28 | 26°32' 2 | 4°25' 4 | T 21 |
| F 22 | 8 2 32 | 1° 6'16" | 4°35' 17 | 17°R 8 | 24°26' 20 | 20° 9' 4 | 4°50' 12 | 12° 8' 12 | 27°46' 5 | 5°14' 3 | 3°10' 10 | 27°56' 28 | 28°18' 28 | 26°38' 2 | 4°27' 4 | F 22 |
| S 23 | 8 6 28 | 2° 7'21" | 18°49' 17 | 17° 3' 25 | 25°39' 20 | 20°30' 4 | 4°56' 12 | 12°11' 12 | 27°44' 5 | 5°13' 3 | 3° 9' 9 | 27°54' 28 | 28°15' 28 | 26°45' 2 | 4°29' 4 | S 23 |
| S 24 | 8 10 25 | 3° 8'25" | 2°49' 16 | 16°47' 26 | 26°52' 20 | 20°50' 5 | 5° 1' 12 | 12°14' 12 | 27°43' 5 | 5°13' 3 | 3° 9' 9 | 27°54' 28 | 28°12' 28 | 26°52' 2 | 4°31' 4 | S 24 |
| M 25 | 8 14 21 | 4° 9'29" | 16°34' 16 | 16°20' 28 | 28° 5' 21 | 21°10' 5 | 5° 6' 12 | 12°16' 12 | 27°42' 5 | 5°12' 3 | 3° 8' 8 | 27°54' 28 | 28° 9' 28 | 26°58' 2 | 4°33' 4 | M 25 |
| T 26 | 8 18 18 | 5°10'31" | 0°11' 5 | 15°41' 29 | 29°18' 21 | 21°30' 5 | 5°10' 12 | 12°19' 12 | 27°41' 5 | 5°11' 3 | 3° 7' 7 | 27°52' 28 | 28° 6' 28 | 27° 5' 2 | 4°35' 4 | T 26 |
| W 27 | 8 22 14 | 6°11'33" | 13°23' 14 | 14°51' 0 | 32' 21 | 21°49' 5 | 5°15' 12 | 12°22' 12 | 27°40' 5 | 5°11' 3 | 3° 7' 7 | 27°47' 28 | 28° 2' 28 | 27°12' 2 | 4°38' 4 | W 27 |
| T 28 | 8 26 11 | 7°12'33" | 26°30' 13 | 13°53' 1 | 1°45' 22 | 22° 8' 5 | 5°19' 12 | 12°24' 12 | 27°38' 5 | 5°10' 3 | 3° 6' 6 | 27°40' 28 | 27°59' 28 | 27°18' 2 | 4°40' 4 | T 28 |
| F 29 | 8 30 8 | 8°13'33" | 9°26' 12 | 12°46' 2 | 2°58' 22 | 22°27' 5 | 5°23' 12 | 12°27' 12 | 27°37' 5 | 5° 9' 3 | 3° 5' 5 | 27°30' 28 | 27°56' 28 | 27°25' 2 | 4°42' 4 | F 29 |
| S 30 | 8 34 4 | 9°14'32" | 22°11' 11 | 11°35' 4 | 12' 22 | 22°45' 5 | 5°27' 12 | 12°29' 12 | 27°36' 5 | 5° 9' 3 | 3° 4' 4 | 27°17' 28 | 27°53' 28 | 27°32' 2 | 4°44' 4 | S 30 |
| S 31 | 8 38 1 | 10°15'30" | 4°42' 10 | 10°20' 5 | 5°25' 23 | 23° 3' 5 | 5°13' 12 | 12°13' 12 | 27°34' 5 | 5° 8' 8 | 3° 4' 4 | 27° 3' 28 | 27°50' 28 | 27°38' 2 | 4°47' 4 | S 31 |

Delta T = 182.76 sec

FEBRUARY 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|----------|-------|-------|-------|-------|--------|--------|--------|-------|--------|-------|-------|-------|------|
| M 1 | 8 41 57 | 11°16'27 | 17°18' 8 | 9°R 4 | 6°38 | 23°20 | 5°13 | 12°33 | 27°R33 | 5°R 8 | 3°R 3 | 26°R49 | 27°47 | 27°45 | 4°Y49 | M 1 |
| T 2 | 8 45 54 | 12°17'23 | 29°20 | 7°49 | 7°52 | 23°37 | 5°38 | 12°35 | 27°31 | 5°II 7 | 3°2 | 26°37 | 27°43 | 27°52 | 4°52 | T 2 |
| W 3 | 8 49 50 | 13°18'18 | 11°11'22 | 6°38 | 9° 5 | 23°54 | 5°42 | 12°37 | 27°29 | 5° 7 | 3° 1 | 26°26 | 27°40 | 27°58 | 4°54 | W 3 |
| T 4 | 8 53 47 | 14°19'12 | 23°16 | 5°31 | 10°19 | 24°10 | 5°45 | 12°39 | 27°28 | 5° 7 | 3° 0 | 26°19 | 27°37 | 28° 5 | 4°57 | T 4 |
| F 5 | 8 57 43 | 15°20'06 | 5°44 | 4°31 | 11°33 | 24°25 | 5°48 | 12°41 | 27°26 | 5° 6 | 2°59 | 26°14 | 27°34 | 28°12 | 4°59 | F 5 |
| S 6 | 9 1 40 | 16°20'59 | 16°51 | 3°38 | 12°46 | 24°41 | 5°51 | 12°42 | 27°24 | 5° 6 | 2°58 | 26°12 | 27°31 | 28°18 | 5° 2 | S 6 |
| S 7 | 9 5 37 | 17°21'50 | 28°41 | 2°53 | 14° 0 | 24°55 | 5°53 | 12°44 | 27°23 | 5° 6 | 2°57 | 26°D11 | 27°27 | 28°25 | 5° 4 | S 7 |
| M 8 | 9 9 33 | 18°22'42 | 10°13'38 | 2°17 | 15°13 | 25° 9 | 5°56 | 12°45 | 27°21 | 5° 5 | 2°56 | 26°12 | 27°24 | 28°32 | 5° 7 | M 8 |
| T 9 | 9 13 30 | 19°23'32 | 22°49 | 1°49 | 16°27 | 25°23 | 5°58 | 12°47 | 27°19 | 5° 5 | 2°55 | 26°R12 | 27°21 | 28°38 | 5°10 | T 9 |
| W10 | 9 17 26 | 20°24'21 | 5°18 | 1°30 | 17°41 | 25°36 | 6° 0 | 12°48 | 27°17 | 5° 5 | 2°54 | 26°11 | 27°18 | 28°45 | 5°13 | W10 |
| T 11 | 9 21 23 | 21°25'10 | 18°12 | 1°19 | 18°54 | 25°49 | 6° 2 | 12°49 | 27°15 | 5° 5 | 2°53 | 26° 7 | 27°15 | 28°52 | 5°15 | T 11 |
| F 12 | 9 25 19 | 22°25'58 | 1°32 | 1°D15 | 20° 8 | 26° 1 | 6° 3 | 12°50 | 27°13 | 5° 5 | 2°52 | 26° 2 | 27°12 | 28°58 | 5°18 | F 12 |
| S 13 | 9 29 16 | 23°26'44 | 15°22 | 1°20 | 21°22 | 26°13 | 6° 5 | 12°51 | 27°11 | 5° 5 | 2°51 | 25°54 | 27° 8 | 29° 5 | 5°21 | S 13 |
| S 14 | 9 33 12 | 24°27'30 | 29°39 | 1°31 | 22°36 | 26°24 | 6° 6 | 12°52 | 27° 9 | 5° 5 | 2°49 | 25°44 | 27° 5 | 29°12 | 5°24 | S 14 |
| M15 | 9 37 9 | 25°28'14 | 14°21 | 1°48 | 23°50 | 26°34 | 6° 7 | 12°52 | 27° 7 | 5°D 5 | 2°48 | 25°34 | 27° 2 | 29°18 | 5°27 | M15 |
| T 16 | 9 41 6 | 26°28'57 | 29°18 | 2°11 | 25° 3 | 26°44 | 6° 8 | 12°53 | 27° 5 | 5° 5 | 2°47 | 25°25 | 26°59 | 29°25 | 5°30 | T 16 |
| W17 | 9 45 2 | 27°29'39 | 14°23 | 2°40 | 26°17 | 26°53 | 6° 9 | 12°53 | 27° 3 | 5° 5 | 2°46 | 25°17 | 26°56 | 29°32 | 5°33 | W17 |
| T 18 | 9 48 59 | 28°30'19 | 29°25 | 3°14 | 27°31 | 27° 2 | 6°10 | 12°54 | 27° 1 | 5° 5 | 2°45 | 25°12 | 26°53 | 29°38 | 5°36 | T 18 |
| F 19 | 9 52 55 | 29°30'58 | 14°Y16 | 3°52 | 28°45 | 27°10 | 6°10 | 12°54 | 26°58 | 5° 5 | 2°43 | 25°10 | 26°49 | 29°45 | 5°39 | F 19 |
| S 20 | 9 56 52 | 0°31'35 | 28°49 | 4°35 | 29°59 | 27°17 | 6°R10 | 12°54 | 26°56 | 5° 5 | 2°42 | 25°D 9 | 26°46 | 29°52 | 5°42 | S 20 |
| S 21 | 10 0 48 | 1°32'10 | 13° 2 | 5°22 | 1°13 | 27°24 | 6°10 | 12°R54 | 26°54 | 5° 5 | 2°41 | 25°10 | 26°43 | 29°58 | 5°45 | S 21 |
| M22 | 10 4 45 | 2°32'43 | 26°52 | 6°12 | 2°26 | 27°30 | 6°10 | 12°54 | 26°52 | 5° 5 | 2°39 | 25°R11 | 26°40 | 0°12 | 5°48 | M22 |
| T 23 | 10 8 41 | 3°33'15 | 10°II22 | 7° 6 | 3°40 | 27°36 | 6° 9 | 12°54 | 26°49 | 5° 6 | 2°38 | 25°11 | 26°37 | 0°12 | 5°51 | T 23 |
| W24 | 10 12 38 | 4°33'45 | 23°33 | 8° 2 | 4°54 | 27°41 | 6° 9 | 12°54 | 26°47 | 5° 6 | 2°36 | 25° 9 | 26°33 | 0°18 | 5°54 | W24 |
| T 25 | 10 16 35 | 5°34'13 | 6°27 | 9° 2 | 6° 8 | 27°45 | 6° 8 | 12°54 | 26°45 | 5° 6 | 2°35 | 25° 5 | 26°30 | 0°25 | 5°57 | T 25 |
| F 26 | 10 20 31 | 6°34'39 | 19° 7 | 10° 4 | 7°22 | 27°48 | 6° 7 | 12°53 | 26°42 | 5° 7 | 2°34 | 24°58 | 26°27 | 0°32 | 6° 1 | F 26 |
| S 27 | 10 24 28 | 7°35'04 | 1°13 | 11° 8 | 8°36 | 27°51 | 6° 6 | 12°53 | 26°40 | 5° 7 | 2°32 | 24°51 | 26°24 | 0°38 | 6° 4 | S 27 |
| S 28 | 10 28 24 | 8°35'26 | 13°15 | 12°15 | 9°15 | 27°53 | 6° 5 | 12°15 | 26°37 | 5°II 8 | 2°31 | 24°42 | 26°21 | 0°45 | 6°Y 7 | S 28 |

ASTRODIENST EPHEMERIS for the year 2219

geocentric

MARCH 2219

00:00 UT

| Day | Sid.t | ☉ | ☾ | ♂ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|-------|-------|--------|-------|--------|--------|--------|-------|--------|-------|------|-------|------|
| M 1 | 10 32 21 | 9♂35'47 | 26♂1 | 13♂24 | 11♂4 | 27♂55 | 6♂R 3 | 12♂R51 | 26♂R35 | 5♂II 8 | 2♂R29 | 24♂R33 | 26♂18 | 0♂51 | 6♂Y11 | M 1 |
| T 2 | 10 36 17 | 10♂36'06 | 8♂2 | 14♂35 | 12♂18 | 27♂R55 | 6♂1 | 12♂150 | 26♂33 | 5♂ 9 | 2♂28 | 24♂25 | 26♂14 | 0♂58 | 6♂14 | T 2 |
| W 3 | 10 40 14 | 11♂36'23 | 19♂56 | 15♂48 | 13♂32 | 27♂55 | 5♂59 | 12♂49 | 26♂30 | 5♂ 9 | 2♂26 | 24♂18 | 26♂11 | 1♂ 5 | 6♂17 | W 3 |
| T 4 | 10 44 10 | 12♂36'39 | 1♂46 | 17♂ 3 | 14♂46 | 27♂55 | 5♂57 | 12♂48 | 26♂28 | 5♂10 | 2♂25 | 24♂13 | 26♂ 8 | 1♂11 | 6♂20 | T 4 |
| F 5 | 10 48 7 | 13♂36'53 | 13♂34 | 18♂19 | 16♂ 0 | 27♂53 | 5♂55 | 12♂47 | 26♂25 | 5♂10 | 2♂23 | 24♂11 | 26♂ 5 | 1♂18 | 6♂24 | F 5 |
| S 6 | 10 52 3 | 14♂37'05 | 25♂22 | 19♂37 | 17♂14 | 27♂51 | 5♂53 | 12♂46 | 26♂22 | 5♂11 | 2♂22 | 24♂D10 | 26♂ 2 | 1♂25 | 6♂27 | S 6 |
| S 7 | 10 56 0 | 15♂37'16 | 7♂13 | 20♂56 | 18♂28 | 27♂48 | 5♂50 | 12♂44 | 26♂20 | 5♂12 | 2♂20 | 24♂11 | 25♂59 | 1♂31 | 6♂31 | S 7 |
| M 8 | 10 59 57 | 16♂37'25 | 19♂12 | 22♂17 | 19♂42 | 27♂44 | 5♂47 | 12♂43 | 26♂17 | 5♂12 | 2♂19 | 24♂12 | 25♂55 | 1♂38 | 6♂34 | M 8 |
| T 9 | 11 3 53 | 17♂37'33 | 1♂23 | 23♂40 | 20♂56 | 27♂40 | 5♂44 | 12♂41 | 26♂15 | 5♂13 | 2♂17 | 24♂14 | 25♂52 | 1♂45 | 6♂37 | T 9 |
| W10 | 11 7 50 | 18♂37'39 | 13♂50 | 25♂ 3 | 22♂10 | 27♂34 | 5♂41 | 12♂40 | 26♂12 | 5♂14 | 2♂16 | 24♂R15 | 25♂49 | 1♂51 | 6♂41 | W10 |
| T 11 | 11 11 46 | 19♂37'44 | 26♂38 | 26♂29 | 23♂24 | 27♂28 | 5♂38 | 12♂38 | 26♂10 | 5♂15 | 2♂14 | 24♂15 | 25♂46 | 1♂58 | 6♂44 | T 11 |
| F 12 | 11 15 43 | 20♂37'47 | 9♂52 | 27♂55 | 24♂38 | 27♂21 | 5♂34 | 12♂36 | 26♂ 7 | 5♂15 | 2♂12 | 24♂13 | 25♂43 | 2♂ 5 | 6♂48 | F 12 |
| S 13 | 11 19 39 | 21♂37'48 | 23♂34 | 29♂23 | 25♂52 | 27♂14 | 5♂31 | 12♂34 | 26♂ 4 | 5♂16 | 2♂11 | 24♂10 | 25♂39 | 2♂11 | 6♂51 | S 13 |
| S 14 | 11 23 36 | 22♂37'48 | 7♂44 | 0♂52 | 27♂ 6 | 27♂ 5 | 5♂27 | 12♂32 | 26♂ 2 | 5♂17 | 2♂ 9 | 24♂ 6 | 25♂36 | 2♂18 | 6♂55 | S 14 |
| M15 | 11 27 32 | 23♂37'47 | 22♂21 | 2♂22 | 28♂20 | 26♂56 | 5♂23 | 12♂30 | 25♂59 | 5♂18 | 2♂ 8 | 24♂ 2 | 25♂33 | 2♂25 | 6♂58 | M15 |
| T 16 | 11 31 29 | 24♂37'43 | 7♂20 | 3♂54 | 29♂34 | 26♂46 | 5♂18 | 12♂28 | 25♂57 | 5♂19 | 2♂ 6 | 23♂57 | 25♂30 | 2♂31 | 7♂ 2 | T 16 |
| W17 | 11 35 26 | 25♂37'37 | 22♂31 | 5♂26 | 0♂48 | 26♂35 | 5♂14 | 12♂25 | 25♂54 | 5♂20 | 2♂ 4 | 23♂54 | 25♂27 | 2♂38 | 7♂ 5 | W17 |
| T 18 | 11 39 22 | 26♂37'30 | 7♂45 | 7♂ 0 | 2♂ 2 | 26♂24 | 5♂10 | 12♂23 | 25♂51 | 5♂21 | 2♂ 3 | 23♂52 | 25♂24 | 2♂45 | 7♂ 9 | T 18 |
| F 19 | 11 43 19 | 27♂37'21 | 22♂52 | 8♂35 | 3♂16 | 26♂11 | 5♂ 5 | 12♂20 | 25♂49 | 5♂22 | 2♂ 1 | 23♂D51 | 25♂20 | 2♂51 | 7♂13 | F 19 |
| S 20 | 11 47 15 | 28♂37'09 | 7♂44 | 10♂12 | 4♂30 | 25♂58 | 5♂ 0 | 12♂18 | 25♂46 | 5♂23 | 1♂59 | 23♂51 | 25♂17 | 2♂58 | 7♂16 | S 20 |
| S 21 | 11 51 12 | 29♂36'56 | 22♂13 | 11♂49 | 5♂44 | 25♂44 | 4♂55 | 12♂15 | 25♂43 | 5♂24 | 1♂58 | 23♂53 | 25♂14 | 3♂ 5 | 7♂20 | S 21 |
| M22 | 11 55 8 | 0♂Y36'40 | 6♂18 | 13♂28 | 6♂58 | 25♂30 | 4♂50 | 12♂12 | 25♂41 | 5♂26 | 1♂56 | 23♂54 | 25♂11 | 3♂11 | 7♂23 | M22 |
| T 23 | 11 59 5 | 1♂36'22 | 19♂57 | 15♂ 8 | 8♂13 | 25♂15 | 4♂45 | 12♂10 | 25♂38 | 5♂27 | 1♂55 | 23♂55 | 25♂ 8 | 3♂18 | 7♂27 | T 23 |
| W24 | 12 3 1 | 2♂36'02 | 3♂51 | 16♂49 | 9♂27 | 24♂59 | 4♂39 | 12♂ 7 | 25♂36 | 5♂28 | 1♂53 | 23♂R56 | 25♂ 4 | 3♂25 | 7♂30 | W24 |
| T 25 | 12 6 58 | 3♂35'39 | 16♂ 3 | 18♂31 | 10♂41 | 24♂42 | 4♂34 | 12♂ 4 | 25♂33 | 5♂29 | 1♂51 | 23♂55 | 25♂ 1 | 3♂31 | 7♂34 | T 25 |
| F 26 | 12 10 55 | 4♂35'14 | 28♂37 | 20♂15 | 11♂55 | 24♂25 | 4♂28 | 12♂ 1 | 25♂30 | 5♂30 | 1♂50 | 23♂54 | 24♂58 | 3♂38 | 7♂38 | F 26 |
| S 27 | 12 14 51 | 5♂34'47 | 10♂56 | 22♂ 0 | 13♂ 9 | 24♂ 7 | 4♂22 | 11♂57 | 25♂28 | 5♂32 | 1♂48 | 23♂51 | 24♂55 | 3♂45 | 7♂41 | S 27 |
| S 28 | 12 18 48 | 6♂34'18 | 23♂ 3 | 23♂46 | 14♂23 | 23♂49 | 4♂16 | 11♂54 | 25♂25 | 5♂33 | 1♂46 | 23♂49 | 24♂52 | 3♂51 | 7♂45 | S 28 |
| M29 | 12 22 44 | 7♂33'44 | 5♂2 | 25♂34 | 15♂37 | 23♂30 | 4♂10 | 11♂51 | 25♂23 | 5♂34 | 1♂45 | 23♂46 | 24♂49 | 3♂58 | 7♂48 | M29 |
| T 30 | 12 26 41 | 8♂33'13 | 16♂55 | 27♂23 | 16♂51 | 23♂11 | 4♂ 4 | 11♂48 | 25♂20 | 5♂36 | 1♂43 | 23♂44 | 24♂45 | 4♂ 4 | 7♂52 | T 30 |
| W31 | 12 30 37 | 9♂Y32'37 | 28♂44 | 29♂13 | 18♂5 | 22♂51 | 3♂157 | 11♂144 | 25♂18 | 5♂II37 | 1♂41 | 23♂42 | 24♂42 | 4♂11 | 7♂Y56 | W31 |

Delta T = 182.94 sec

APRIL 2219

00:00 UT

| Day | Sid.t | ☉ | ☾ | ♂ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-----------|--------|-------|--------|--------|-------|--------|--------|--------|-------|--------|-------|------|-------|------|
| T 1 | 12 34 34 | 10♂Y31'59 | 10♂32 | 1♂Y 4 | 19♂19 | 22♂R30 | 3♂R51 | 11♂R41 | 25♂R15 | 5♂II39 | 1♂R40 | 23♂R41 | 24♂39 | 4♂18 | 7♂Y59 | T 1 |
| F 2 | 12 38 30 | 11♂31'19 | 22♂21 | 2♂57 | 20♂33 | 22♂ 9 | 3♂145 | 11♂37 | 25♂13 | 5♂40 | 1♂38 | 23♂D40 | 24♂36 | 4♂24 | 8♂ 3 | F 2 |
| S 3 | 12 42 27 | 12♂30'37 | 4♂14 | 4♂51 | 21♂47 | 21♂48 | 3♂38 | 11♂33 | 25♂10 | 5♂42 | 1♂37 | 23♂D40 | 24♂33 | 4♂31 | 8♂ 6 | S 3 |
| S 4 | 12 46 23 | 13♂29'53 | 16♂11 | 6♂47 | 23♂ 1 | 21♂26 | 3♂31 | 11♂30 | 25♂ 8 | 5♂43 | 1♂35 | 23♂41 | 24♂30 | 4♂38 | 8♂10 | S 4 |
| M 5 | 12 50 20 | 14♂29'07 | 28♂17 | 8♂43 | 24♂15 | 21♂ 4 | 3♂24 | 11♂26 | 25♂ 5 | 5♂45 | 1♂33 | 23♂42 | 24♂26 | 4♂44 | 8♂14 | M 5 |
| T 6 | 12 54 17 | 15♂28'19 | 10♂134 | 10♂41 | 25♂29 | 20♂42 | 3♂17 | 11♂22 | 25♂ 3 | 5♂46 | 1♂32 | 23♂43 | 24♂23 | 4♂51 | 8♂17 | T 6 |
| W 7 | 12 58 13 | 16♂27'30 | 23♂ 6 | 12♂41 | 26♂43 | 20♂20 | 3♂10 | 11♂18 | 25♂ 1 | 5♂48 | 1♂30 | 23♂44 | 24♂20 | 4♂58 | 8♂21 | W 7 |
| T 8 | 13 2 10 | 17♂26'39 | 5♂55 | 14♂41 | 27♂57 | 19♂57 | 3♂ 3 | 11♂14 | 24♂58 | 5♂49 | 1♂29 | 23♂44 | 24♂17 | 5♂ 4 | 8♂24 | T 8 |
| F 9 | 13 6 6 | 18♂25'46 | 19♂ 5 | 16♂43 | 29♂11 | 19♂34 | 2♂56 | 11♂10 | 24♂56 | 5♂51 | 1♂27 | 23♂R44 | 24♂14 | 5♂11 | 8♂28 | F 9 |
| S 10 | 13 10 3 | 19♂24'51 | 2♂38 | 18♂45 | 0♂Y25 | 19♂11 | 2♂49 | 11♂ 6 | 24♂54 | 5♂53 | 1♂26 | 23♂44 | 24♂10 | 5♂18 | 8♂31 | S 10 |
| S 11 | 13 13 59 | 20♂23'55 | 16♂36 | 20♂49 | 1♂39 | 18♂48 | 2♂42 | 11♂ 2 | 24♂51 | 5♂54 | 1♂24 | 23♂44 | 24♂ 7 | 5♂24 | 8♂35 | S 11 |
| M12 | 13 17 56 | 21♂22'57 | 0♂59 | 22♂53 | 2♂53 | 18♂25 | 2♂34 | 10♂58 | 24♂49 | 5♂56 | 1♂23 | 23♂44 | 24♂ 4 | 5♂31 | 8♂38 | M12 |
| T 13 | 13 21 52 | 22♂21'57 | 15♂42 | 24♂58 | 4♂ 7 | 18♂ 1 | 2♂27 | 10♂54 | 24♂47 | 5♂58 | 1♂21 | 23♂43 | 24♂ 1 | 5♂38 | 8♂42 | T 13 |
| W14 | 13 25 49 | 23♂20'55 | 0♂Y42 | 27♂ 3 | 5♂21 | 17♂38 | 2♂19 | 10♂50 | 24♂45 | 5♂59 | 1♂19 | 23♂D43 | 23♂58 | 5♂44 | 8♂46 | W14 |
| T 15 | 13 29 46 | 24♂19'51 | 15♂50 | 29♂ 9 | 6♂35 | 17♂15 | 2♂12 | 10♂46 | 24♂42 | 6♂ 1 | 1♂18 | 23♂R43 | 23♂55 | 5♂51 | 8♂49 | T 15 |
| F 16 | 13 33 42 | 25♂18'46 | 0♂57 | 1♂15 | 7♂49 | 16♂52 | 2♂ 4 | 10♂41 | 24♂40 | 6♂ 3 | 1♂17 | 23♂43 | 23♂51 | 5♂58 | 8♂53 | F 16 |
| S 17 | 13 37 39 | 26♂17'38 | 15♂54 | 3♂20 | 9♂ 3 | 16♂30 | 1♂57 | 10♂37 | 24♂38 | 6♂ 5 | 1♂15 | 23♂43 | 23♂48 | 6♂ 4 | 8♂56 | S 17 |
| S 18 | 13 41 35 | 27♂16'29 | 0♂II34 | 5♂25 | 10♂17 | 16♂ 7 | 1♂49 | 10♂33 | 24♂36 | 6♂ 7 | 1♂14 | 23♂43 | 23♂45 | 6♂11 | 8♂59 | S 18 |
| M19 | 13 45 32 | 28♂15'17 | 14♂50 | 7♂29 | 11♂31 | 15♂45 | 1♂41 | 10♂28 | 24♂34 | 6♂ 8 | 1♂12 | 23♂42 | 23♂42 | 6♂18 | 9♂ 3 | M19 |
| T 20 | 13 49 28 | 29♂14'03 | 28♂40 | 9♂31 | 12♂44 | 15♂23 | 1♂34 | 10♂24 | 24♂32 | 6♂10 | 1♂11 | 23♂42 | 23♂39 | 6♂24 | 9♂ 6 | T 20 |
| W21 | 13 53 25 | 0♂II247 | 12♂3 | 11♂32 | 13♂58 | 15♂ 2 | 1♂26 | 10♂19 | 24♂30 | 6♂12 | 1♂ 9 | 23♂41 | 23♂36 | 6♂31 | 9♂10 | W21 |
| T 22 | 13 57 21 | 1♂11'29 | 25♂ 0 | 13♂32 | 15♂12 | 14♂41 | 1♂18 | 10♂15 | 24♂28 | 6♂14 | 1♂ 8 | 23♂41 | 23♂32 | 6♂37 | 9♂13 | T 22 |
| F 23 | 14 1 18 | 2♂10'08 | 7♂35 | 15♂29 | 16♂26 | 14♂21 | 1♂11 | 10♂10 | 24♂26 | 6♂16 | 1♂ 7 | 23♂D41 | 23♂29 | 6♂44 | 9♂17 | F 23 |
| S 24 | 14 5 15 | 3♂ 8'45 | 19♂53 | 17♂23 | 17♂40 | 14♂ 0 | 1♂ 3 | 10♂ 6 | 24♂24 | 6♂18 | 1♂ 5 | 23♂41 | 23♂26 | 6♂51 | 9♂20 | S 24 |
| S 25 | 14 9 11 | 4♂ 7'20 | 1♂56 | 19♂14 | 18♂54 | 13♂41 | 0♂55 | 10♂ 1 | 24♂22 | 6♂20 | 1♂ 4 | 23♂42 | 23♂23 | 6♂57 | 9♂23 | S 25 |
| M26 | 14 13 8 | 5♂ 5'53 | 13♂50 | 21♂ 3 | 20♂ 8 | 13♂22 | 0♂48 | 9♂57 | 24♂21 | 6♂22 | 1♂ 3 | 23♂43 | 23♂20 | 7♂ 4 | 9♂27 | M26 |
| T 27 | 14 17 4 | 6♂ 4'23 | 25♂39 | 22♂48 | 21♂22 | 13♂ 3 | 0♂40 | 9♂52 | 24♂19 | 6♂24 | 1♂ 1 | 23♂45 | 23♂16 | 7♂11 | 9♂30 | T 27 |
| W28 | 14 21 1 | 7♂ 2'52 | 7♂26 | 24♂29 | 22♂36 | 12♂46 | 0♂32 | 9♂48 | 24♂17 | 6♂26 | 1♂ 0 | 23♂45 | 23♂13 | 7♂17 | 9♂33 | W28 |
| T 29 | 14 24 57 | 8♂ 1'18 | 19♂15 | 26♂ 7 | 23♂49 | 12♂28 | 0♂25 | 9♂43 | 24♂16 | 6♂28 | 0♂59 | 23♂R46 | 23♂10 | 7♂24 | 9♂36 | T 29 |
| F 30 | 14 28 54 | 8♂59'43 | 1♂1 | 27♂40 | 25♂Y 3 | 12♂12 | 0♂17 | 9♂139 | 24♂14 | 6♂II30 | 0♂58 | 23♂46 | 23♂ 7 | 7♂31 | 9♂Y40 | F 30 |

Delta T = 183.03 sec

ASTRODIENST EPHEMERIS for the year 2219

geocentric

MAY 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|--------|-------|--------|-------|-------|--------|------|-------|--------|-------|-------|-------|------|
| S 1 | 14 32 50 | 9♂58'06 | 13♂ 9 | 29♂10 | 26♂17 | 11°R56 | 0°R10 | 9°R34 | 24°R12 | 6♂32 | 0°R57 | 23°R45 | 23♂ 4 | 7♂37 | 9♂43 | S 1 |
| S 2 | 14 36 47 | 10°56'27 | 25°18 | 0♂35 | 27°31 | 11♂41 | 0♂ 2 | 9♂30 | 24♂11 | 6°34 | 0♂55 | 23♂43 | 23° 1 | 7°44 | 9°46 | S 2 |
| M 3 | 14 40 44 | 11°54'46 | 7♂37 | 1°56 | 28°45 | 11°26 | 29♂55 | 9°25 | 24° 9 | 6°36 | 0°54 | 23°41 | 22°57 | 7°51 | 9°49 | M 3 |
| T 4 | 14 44 40 | 12°53'04 | 20° 8 | 3°12 | 29°59 | 11°12 | 29°47 | 9°20 | 24° 8 | 6°38 | 0°53 | 23°38 | 22°54 | 7°57 | 9°52 | T 4 |
| W 5 | 14 48 37 | 13°51'20 | 2♂53 | 4°24 | 1♂13 | 10°59 | 29°40 | 9°16 | 24° 6 | 6°40 | 0°52 | 23°35 | 22°51 | 8° 4 | 9°55 | W 5 |
| T 6 | 14 52 33 | 14°49'34 | 15°51 | 5°30 | 2°26 | 10°47 | 29°33 | 9°11 | 24° 5 | 6°42 | 0°51 | 23°33 | 22°48 | 8°11 | 9°59 | T 6 |
| F 7 | 14 56 30 | 15°47'47 | 29° 6 | 6°33 | 3°40 | 10°36 | 29°26 | 9° 7 | 24° 4 | 6°45 | 0°50 | 23°31 | 22°45 | 8°17 | 10° 2 | F 7 |
| S 8 | 15 0 26 | 16°45'59 | 12♂38 | 7°30 | 4°54 | 10°25 | 29°19 | 9° 2 | 24° 2 | 6°47 | 0°49 | 23°D30 | 22°41 | 8°24 | 10° 5 | S 8 |
| S 9 | 15 4 23 | 17°44'09 | 26°28 | 8°23 | 6° 8 | 10°15 | 29°12 | 8°58 | 24° 1 | 6°49 | 0°48 | 23°30 | 22°38 | 8°31 | 10° 8 | S 9 |
| M10 | 15 8 19 | 18°42'18 | 10♂36 | 9°10 | 7°22 | 10° 6 | 29° 5 | 8°53 | 24° 0 | 6°51 | 0°47 | 23°31 | 22°35 | 8°37 | 10°11 | M10 |
| T 11 | 15 12 16 | 19°40'25 | 25° 1 | 9°53 | 8°35 | 9°57 | 28°58 | 8°49 | 23°59 | 6°53 | 0°46 | 23°32 | 22°32 | 8°44 | 10°14 | T 11 |
| W12 | 15 16 13 | 20°38'31 | 9♂40 | 10°30 | 9°49 | 9°49 | 28°51 | 8°45 | 23°58 | 6°55 | 0°45 | 23°34 | 22°29 | 8°50 | 10°17 | W12 |
| T 13 | 15 20 9 | 21°36'35 | 24°28 | 11° 3 | 11° 3 | 9°43 | 28°45 | 8°40 | 23°57 | 6°57 | 0°44 | 23°R34 | 22°26 | 8°57 | 10°19 | T 13 |
| F 14 | 15 24 6 | 22°34'38 | 9♂19 | 11°30 | 12°17 | 9°37 | 28°38 | 8°36 | 23°56 | 7° 0 | 0°43 | 23°33 | 22°22 | 9° 4 | 10°22 | F 14 |
| S 15 | 15 28 2 | 23°32'39 | 24° 5 | 11°52 | 13°31 | 9°31 | 28°32 | 8°31 | 23°55 | 7° 2 | 0°42 | 23°31 | 22°19 | 9°10 | 10°25 | S 15 |
| S 16 | 15 31 59 | 24°30'39 | 8♂40 | 12° 9 | 14°44 | 9°27 | 28°25 | 8°27 | 23°54 | 7° 4 | 0°41 | 23°28 | 22°16 | 9°17 | 10°28 | S 16 |
| M17 | 15 35 55 | 25°28'38 | 22°56 | 12°21 | 15°58 | 9°23 | 28°19 | 8°23 | 23°53 | 7° 6 | 0°41 | 23°23 | 22°13 | 9°24 | 10°31 | M17 |
| T 18 | 15 39 52 | 26°26'34 | 6♂49 | 12°28 | 17°12 | 9°21 | 28°13 | 8°19 | 23°52 | 7° 8 | 0°40 | 23°18 | 22°10 | 9°30 | 10°33 | T 18 |
| W19 | 15 43 48 | 27°24'29 | 20°17 | 12°R30 | 18°26 | 9°19 | 28° 7 | 8°15 | 23°52 | 7°11 | 0°39 | 23°13 | 22° 7 | 9°37 | 10°36 | W19 |
| T 20 | 15 47 45 | 28°22'23 | 3♂19 | 12°27 | 19°39 | 9°17 | 28° 1 | 8°10 | 23°51 | 7°13 | 0°38 | 23°10 | 22° 3 | 9°44 | 10°39 | T 20 |
| F 21 | 15 51 42 | 29°20'14 | 15°58 | 12°19 | 20°53 | 9°D17 | 27°56 | 8° 6 | 23°50 | 7°15 | 0°38 | 23° 7 | 22° 0 | 9°50 | 10°41 | F 21 |
| S 22 | 15 55 38 | 0♂18'04 | 28°17 | 12° 7 | 22° 7 | 9°17 | 27°50 | 8° 2 | 23°50 | 7°17 | 0°37 | 23°D 6 | 21°57 | 9°57 | 10°44 | S 22 |
| S 23 | 15 59 35 | 1°15'52 | 10♂20 | 11°51 | 23°21 | 9°18 | 27°45 | 7°58 | 23°49 | 7°20 | 0°37 | 23° 7 | 21°54 | 10° 4 | 10°47 | S 23 |
| M24 | 16 3 31 | 2°13'38 | 22°14 | 11°31 | 24°34 | 9°20 | 27°39 | 7°54 | 23°49 | 7°22 | 0°36 | 23° 8 | 21°51 | 10°10 | 10°49 | M24 |
| T 25 | 16 7 28 | 3°11'23 | 4♂ 2 | 11° 7 | 25°48 | 9°23 | 27°34 | 7°50 | 23°48 | 7°24 | 0°35 | 23° 9 | 21°47 | 10°17 | 10°52 | T 25 |
| W26 | 16 11 24 | 4° 9'06 | 15°50 | 10°41 | 27° 2 | 9°26 | 27°29 | 7°47 | 23°48 | 7°26 | 0°35 | 23°11 | 21°44 | 10°24 | 10°54 | W26 |
| T 27 | 16 15 21 | 5° 6'47 | 27°42 | 10°11 | 28°16 | 9°30 | 27°24 | 7°43 | 23°48 | 7°29 | 0°34 | 23°R11 | 21°41 | 10°30 | 10°57 | T 27 |
| F 28 | 16 19 17 | 6° 4'28 | 9♂42 | 9°40 | 29°29 | 9°35 | 27°19 | 7°39 | 23°47 | 7°31 | 0°34 | 23° 9 | 21°38 | 10°37 | 10°59 | F 28 |
| S 29 | 16 23 14 | 7° 2'06 | 21°52 | 9° 7 | 0♂43 | 9°41 | 27°15 | 7°35 | 23°47 | 7°33 | 0°33 | 23° 6 | 21°35 | 10°43 | 11° 1 | S 29 |
| S 30 | 16 27 11 | 7°59'44 | 4♂15 | 8°34 | 1°57 | 9°47 | 27°11 | 7°32 | 23°47 | 7°35 | 0°33 | 23° 1 | 21°32 | 10°50 | 11° 3 | S 30 |
| M31 | 16 31 7 | 8♂57'20 | 16♂51 | 8♂ 0 | 3♂10 | 9♂54 | 27♂ 6 | 7♂28 | 23♂47 | 7♂38 | 0♂33 | 22♂54 | 21♂28 | 10♂57 | 11♂ 6 | M31 |

Delta T = 183.12 sec

JUNE 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|-------|-------|-------|--------|-------|--------|------|-------|--------|-------|-------|-------|------|
| T 1 | 16 35 4 | 9♂54'55 | 29♂42 | 7°R26 | 4♂24 | 10♂ 1 | 27°R 2 | 7°R25 | 23°D47 | 7♂40 | 0°R32 | 22°R46 | 21♂25 | 11♂ 3 | 11° 8 | T 1 |
| W 2 | 16 39 0 | 10°52'29 | 12♂46 | 6♂53 | 5°38 | 10° 9 | 26♂58 | 7♂21 | 23♂47 | 7°42 | 0♂32 | 22♂38 | 21°22 | 11°10 | 11°10 | W 2 |
| T 3 | 16 42 57 | 11°50'03 | 26° 3 | 6°21 | 6°52 | 10°18 | 26°55 | 7°18 | 23°47 | 7°44 | 0°32 | 22°30 | 21°19 | 11°17 | 11°12 | T 3 |
| F 4 | 16 46 53 | 12°47'35 | 9♂33 | 5°51 | 8° 5 | 10°28 | 26°51 | 7°15 | 23°47 | 7°47 | 0°31 | 22°24 | 21°16 | 11°23 | 11°14 | F 4 |
| S 5 | 16 50 50 | 13°45'06 | 23°14 | 5°24 | 9°19 | 10°38 | 26°48 | 7°11 | 23°47 | 7°49 | 0°31 | 22°20 | 21°13 | 11°30 | 11°16 | S 5 |
| S 6 | 16 54 46 | 14°42'36 | 7♂ 5 | 5° 0 | 10°33 | 10°48 | 26°44 | 7° 8 | 23°47 | 7°51 | 0°31 | 22°18 | 21° 9 | 11°37 | 11°18 | S 6 |
| M 7 | 16 58 43 | 15°40'06 | 21° 7 | 4°39 | 11°46 | 11° 0 | 26°41 | 7° 5 | 23°48 | 7°53 | 0°31 | 22°D18 | 21° 6 | 11°43 | 11°20 | M 7 |
| T 8 | 17 2 40 | 16°37'35 | 5♂18 | 4°21 | 13° 0 | 11°12 | 26°38 | 7° 2 | 23°48 | 7°55 | 0°31 | 22°19 | 21° 3 | 11°50 | 11°22 | T 8 |
| W 9 | 17 6 36 | 17°35'03 | 19°37 | 4° 7 | 14°14 | 11°24 | 26°36 | 6°59 | 23°48 | 7°58 | 0°31 | 22°R20 | 21° 0 | 11°57 | 11°24 | W 9 |
| T 10 | 17 10 33 | 18°32'31 | 4♂ 2 | 3°58 | 15°27 | 11°37 | 26°33 | 6°56 | 23°49 | 8° 0 | 0°31 | 22°19 | 20°57 | 12° 3 | 11°26 | T 10 |
| F 11 | 17 14 29 | 19°29'58 | 18°29 | 3°52 | 16°41 | 11°51 | 26°31 | 6°54 | 23°49 | 8° 2 | 0°D31 | 22°17 | 20°53 | 12°10 | 11°28 | F 11 |
| S 12 | 17 18 26 | 20°27'24 | 2♂53 | 3°D51 | 17°55 | 12° 5 | 26°28 | 6°51 | 23°50 | 8° 4 | 0°31 | 22°12 | 20°50 | 12°17 | 11°29 | S 12 |
| S 13 | 17 22 22 | 21°24'50 | 17° 9 | 3°55 | 19° 9 | 12°20 | 26°26 | 6°48 | 23°50 | 8° 7 | 0°31 | 22° 4 | 20°47 | 12°23 | 11°31 | S 13 |
| M14 | 17 26 19 | 22°22'15 | 1♂12 | 4° 3 | 20°22 | 12°35 | 26°24 | 6°46 | 23°51 | 8° 9 | 0°31 | 22°55 | 20°44 | 12°30 | 11°33 | M14 |
| T 15 | 17 30 15 | 23°19'39 | 14°56 | 4°15 | 21°36 | 12°51 | 26°23 | 6°43 | 23°52 | 8°11 | 0°31 | 21°45 | 20°41 | 12°36 | 11°34 | T 15 |
| W16 | 17 34 12 | 24°17'02 | 28°19 | 4°32 | 22°50 | 13° 7 | 26°21 | 6°41 | 23°53 | 8°13 | 0°31 | 21°36 | 20°38 | 12°43 | 11°36 | W16 |
| T 17 | 17 38 9 | 25°14'24 | 11♂20 | 4°53 | 24° 3 | 13°24 | 26°20 | 6°39 | 23°53 | 8°15 | 0°31 | 21°27 | 20°34 | 12°50 | 11°37 | T 17 |
| F 18 | 17 42 5 | 26°11'45 | 23°59 | 5°19 | 25°17 | 13°42 | 26°19 | 6°37 | 23°54 | 8°17 | 0°31 | 21°21 | 20°31 | 12°56 | 11°39 | F 18 |
| S 19 | 17 46 2 | 27° 9'06 | 6♂18 | 5°50 | 26°31 | 13°59 | 26°18 | 6°35 | 23°55 | 8°20 | 0°32 | 21°16 | 20°28 | 13° 3 | 11°40 | S 19 |
| S 20 | 17 49 58 | 28° 6'25 | 18°22 | 6°24 | 27°45 | 14°18 | 26°17 | 6°33 | 23°56 | 8°22 | 0°32 | 21°14 | 20°25 | 13°10 | 11°42 | S 20 |
| M21 | 17 53 55 | 29° 3'43 | 0♂16 | 7° 3 | 28°58 | 14°37 | 26°16 | 6°31 | 23°57 | 8°24 | 0°32 | 21°D14 | 20°22 | 13°16 | 11°43 | M21 |
| T 22 | 17 57 51 | 0♂ 1'01 | 12° 5 | 7°46 | 0♂12 | 14°56 | 26°16 | 6°29 | 23°58 | 8°26 | 0°32 | 21°14 | 20°19 | 13°23 | 11°44 | T 22 |
| W23 | 18 1 48 | 0°58'18 | 23°54 | 8°33 | 1°26 | 15°16 | 26°16 | 6°27 | 23°59 | 8°28 | 0°33 | 21°R14 | 20°15 | 13°30 | 11°45 | W23 |
| T 24 | 18 5 44 | 1°55'34 | 5♂49 | 9°24 | 2°39 | 15°36 | 26°D16 | 6°26 | 24° 0 | 8°30 | 0°33 | 21°13 | 20°12 | 13°36 | 11°47 | T 24 |
| F 25 | 18 9 41 | 2°52'49 | 17°54 | 10°19 | 3°53 | 15°56 | 26°16 | 6°24 | 24° 2 | 8°32 | 0°34 | 21°10 | 20° 9 | 13°43 | 11°48 | F 25 |
| S 26 | 18 13 38 | 3°50'04 | 0♂13 | 11°18 | 5° 7 | 16°17 | 26°16 | 6°23 | 24° 3 | 8°34 | 0°34 | 21° 5 | 20° 6 | 13°50 | 11°49 | S 26 |
| S 27 | 18 17 34 | 4°47'18 | 12°48 | 12°21 | 6°21 | 16°39 | 26°17 | 6°21 | 24° 4 | 8°37 | 0°35 | 20°57 | 20° 3 | 13°56 | 11°50 | S 27 |
| M28 | 18 21 31 | 5°44'32 | 25°42 | 13°27 | 7°34 | 17° 1 | 26°17 | 6°20 | 24° 6 | 8°39 | 0°35 | 20°47 | 19°59 | 14° 3 | 11°51 | M28 |
| T 29 | 18 25 27 | 6°41'45 | 8♂53 | 14°38 | 8°48 | 17°23 | 26°18 | 6°19 | 24° 7 | 8°41 | 0°36 | 20°35 | 19°56 | 14°10 | 11°52 | T 29 |
| W30 | 18 29 24 | 7°38'58 | 22♂21 | 15♂52 | 10♂ 2 | 17♂46 | 26♂19 | 6♂18 | 24♂ 8 | 8♂43 | 0♂36 | 20♂24 | 19♂53 | 14♂16 | 11♂52 | W30 |

Delta T = 183.22 sec

ASTRODIENST EPHEMERIS for the year 2219

geocentric

JULY 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|-----------|---------|---------|--------|-------|-------|--------|-------|---------|------|--------|-------|-------|---------|------|
| T 1 | 18 33 20 | 8°36'11 | 6°22 | 17°11 | 11°15 | 18°15 | 26°20 | 6°R17 | 24°10 | 8°II45 | 0°37 | 20°R13 | 19°15 | 14°23 | 11°V53 | T 1 |
| F 2 | 18 37 17 | 9°33'23 | 19°55 | 18°30 | 12°29 | 18°32 | 26°22 | 6°R16 | 24°12 | 8°47 | 0°38 | 20°14 | 19°47 | 14°29 | 11°54 | F 2 |
| S 3 | 18 41 13 | 10°30'36 | 3°54 | 19°55 | 13°43 | 18°56 | 26°23 | 6°15 | 24°13 | 8°49 | 0°38 | 19°58 | 19°44 | 14°36 | 11°55 | S 3 |
| S 4 | 18 45 10 | 11°27'48 | 17°58 | 21°23 | 14°57 | 19°20 | 26°25 | 6°14 | 24°15 | 8°51 | 0°39 | 19°54 | 19°40 | 14°43 | 11°55 | S 4 |
| M 5 | 18 49 7 | 12°25'01 | 2°Y 4 | 22°55 | 16°10 | 19°44 | 26°27 | 6°14 | 24°17 | 8°53 | 0°40 | 19°52 | 19°37 | 14°49 | 11°56 | M 5 |
| T 6 | 18 53 3 | 13°22'13 | 16°12 | 24°30 | 17°24 | 20° 9 | 26°29 | 6°13 | 24°18 | 8°54 | 0°40 | 19°52 | 19°34 | 14°56 | 11°56 | T 6 |
| W 7 | 18 57 0 | 14°19'26 | 0°B 19 | 26° 9 | 18°38 | 20°34 | 26°31 | 6°13 | 24°20 | 8°56 | 0°41 | 19°52 | 19°31 | 15° 3 | 11°57 | W 7 |
| T 8 | 19 0 56 | 15°16'39 | 14°26 | 27°50 | 19°52 | 21° 0 | 26°34 | 6°13 | 24°22 | 8°58 | 0°42 | 19°51 | 19°28 | 15° 9 | 11°57 | T 8 |
| F 9 | 19 4 53 | 16°13'53 | 28°30 | 29°35 | 21° 5 | 21°25 | 26°36 | 6°13 | 24°24 | 9° 0 | 0°43 | 19°47 | 19°25 | 15°16 | 11°58 | F 9 |
| S 10 | 19 8 49 | 17°11'07 | 12°II29 | 19°24 | 22°19 | 21°52 | 26°39 | 6°D12 | 24°26 | 9° 2 | 0°44 | 19°41 | 19°21 | 15°23 | 11°58 | S 10 |
| S 11 | 19 12 46 | 18° 8'21 | 26°21 | 3°15 | 23°33 | 22°18 | 26°42 | 6°12 | 24°28 | 9° 4 | 0°45 | 19°31 | 19°18 | 15°29 | 11°58 | S 11 |
| M12 | 19 16 42 | 19° 5'35 | 10°B 1 | 5° 8 | 24°47 | 22°45 | 26°45 | 6°13 | 24°30 | 9° 6 | 0°46 | 19°20 | 19°15 | 15°36 | 11°59 | M12 |
| T 13 | 19 20 39 | 20° 2'49 | 23°27 | 7° 5 | 26° 1 | 23°12 | 26°48 | 6°13 | 24°32 | 9° 8 | 0°47 | 19° 8 | 19°12 | 15°43 | 11°59 | T 13 |
| W14 | 19 24 36 | 21° 0'03 | 6°J 36 | 9° 4 | 27°14 | 23°39 | 26°52 | 6°13 | 24°34 | 9° 9 | 0°48 | 18°56 | 19° 9 | 15°49 | 11°59 | W14 |
| T 15 | 19 28 32 | 21°57'17 | 19°27 | 11° 5 | 28°28 | 24° 7 | 26°55 | 6°13 | 24°36 | 9°11 | 0°49 | 18°45 | 19° 5 | 15°56 | 11°59 | T 15 |
| F 16 | 19 32 29 | 22°54'32 | 1°19 59 | 13° 8 | 29°42 | 24°35 | 26°59 | 6°14 | 24°38 | 9°13 | 0°50 | 18°36 | 19° 2 | 16° 3 | 11°R59 | F 16 |
| S 17 | 19 36 25 | 23°51'46 | 14°15 | 15°13 | 0°J 56 | 25° 3 | 27° 3 | 6°15 | 24°41 | 9°15 | 0°51 | 18°29 | 18°59 | 16° 9 | 11°59 | S 17 |
| S 18 | 19 40 22 | 24°49'00 | 26°18 | 17°19 | 2°10 | 25°32 | 27° 7 | 6°15 | 24°43 | 9°16 | 0°52 | 18°26 | 18°56 | 16°16 | 11°59 | S 18 |
| M19 | 19 44 18 | 25°46'15 | 8°B 11 | 19°26 | 3°23 | 26° 1 | 27°11 | 6°16 | 24°45 | 9°18 | 0°53 | 18°24 | 18°53 | 16°22 | 11°59 | M19 |
| T 20 | 19 48 15 | 26°43'29 | 19°59 | 21°34 | 4°37 | 26°30 | 27°16 | 6°17 | 24°48 | 9°20 | 0°54 | 18°24 | 18°50 | 16°29 | 11°58 | T 20 |
| W21 | 19 52 11 | 27°40'44 | 1°14 49 | 23°43 | 5°51 | 26°59 | 27°20 | 6°18 | 24°50 | 9°21 | 0°56 | 18°24 | 18°46 | 16°36 | 11°58 | W21 |
| T 22 | 19 56 8 | 28°37'58 | 13°44 | 25°52 | 7° 5 | 27°29 | 27°25 | 6°19 | 24°52 | 9°23 | 0°57 | 18°23 | 18°43 | 16°42 | 11°58 | T 22 |
| F 23 | 20 0 5 | 29°35'13 | 25°51 | 28° 0 | 8°19 | 27°59 | 27°30 | 6°20 | 24°55 | 9°24 | 0°58 | 18°21 | 18°40 | 16°49 | 11°58 | F 23 |
| S 24 | 20 4 1 | 0°J 32'28 | 8°J 15 | 0°J 8 | 9°32 | 28°29 | 27°35 | 6°22 | 24°58 | 9°26 | 0°59 | 18°16 | 18°37 | 16°56 | 11°57 | S 24 |
| S 25 | 20 7 58 | 1°29'44 | 20°58 | 2°16 | 10°46 | 28°59 | 27°40 | 6°23 | 25° 0 | 9°28 | 1° 1 | 18° 9 | 18°34 | 17° 2 | 11°57 | S 25 |
| M26 | 20 11 54 | 2°26'59 | 4°B 4 | 4°23 | 12° 0 | 29°30 | 27°45 | 6°24 | 25° 3 | 9°29 | 1° 2 | 17°59 | 18°31 | 17° 9 | 11°56 | M26 |
| T 27 | 20 15 51 | 3°24'15 | 17°32 | 6°29 | 13°14 | 0°M 1 | 27°51 | 6°26 | 25° 5 | 9°31 | 1° 4 | 17°48 | 18°27 | 17°16 | 11°56 | T 27 |
| W28 | 20 19 47 | 4°21'32 | 1°B 20 | 8°33 | 14°28 | 0°32 | 27°56 | 6°28 | 25° 8 | 9°32 | 1° 5 | 17°37 | 18°24 | 17°22 | 11°55 | W28 |
| T 29 | 20 23 44 | 5°18'49 | 15°26 | 10°37 | 15°42 | 1° 4 | 28° 2 | 6°29 | 25°11 | 9°34 | 1° 6 | 17°27 | 18°21 | 17°29 | 11°54 | T 29 |
| F 30 | 20 27 40 | 6°16'07 | 29°43 | 12°39 | 16°55 | 1°35 | 28° 8 | 6°31 | 25°14 | 9°35 | 1° 8 | 17°18 | 18°18 | 17°36 | 11°54 | F 30 |
| S 31 | 20 31 37 | 7°J 13'25 | 14°B 7 | 14°J 40 | 18°J 9 | 2°M 7 | 28°14 | 6°M 33 | 25°16 | 9°II 36 | 1° 9 | 17°12 | 18°15 | 17°42 | 11°V 53 | S 31 |

Delta T = 183.31 sec

AUGUST 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|------------|----------|---------|---------|---------|--------|--------|-------|---------|------|--------|-------|-------|--------|------|
| S 1 | 20 35 34 | 8°J 10'44 | 28°B 32 | 16°J 39 | 19°J 23 | 2°M 39 | 28°15 | 6°M 35 | 25°19 | 9°II 38 | 1°11 | 17°R 8 | 18°11 | 17°49 | 11°R52 | S 1 |
| M 2 | 20 39 30 | 9° 8'04 | 12°Y 54 | 18°36 | 20°37 | 3°11 | 28°27 | 6°37 | 25°22 | 9°39 | 1°12 | 17°D 7 | 18° 8 | 17°55 | 11°V51 | M 2 |
| T 3 | 20 43 27 | 10° 5'26 | 27° 9 | 20°32 | 21°51 | 3°44 | 28°33 | 6°40 | 25°25 | 9°40 | 1°14 | 17°14 | 18° 5 | 18° 2 | 11°50 | T 3 |
| W 4 | 20 47 23 | 11° 2'48 | 11°B 17 | 22°27 | 23° 4 | 4°16 | 28°40 | 6°42 | 25°28 | 9°42 | 1°15 | 17°R 8 | 18° 2 | 18° 9 | 11°49 | W 4 |
| T 5 | 20 51 20 | 12° 0'12 | 25°15 | 24°19 | 24°18 | 4°49 | 28°47 | 6°44 | 25°31 | 9°43 | 1°17 | 17° 7 | 17°59 | 18°15 | 11°48 | T 5 |
| F 6 | 20 55 16 | 12°57'36 | 9°II 4 | 26°11 | 25°32 | 5°22 | 28°54 | 6°47 | 25°34 | 9°44 | 1°19 | 17° 4 | 17°56 | 18°22 | 11°47 | F 6 |
| S 7 | 20 59 13 | 13°55'02 | 22°43 | 28° 0 | 26°46 | 5°56 | 29° 1 | 6°49 | 25°37 | 9°45 | 1°20 | 16°59 | 17°52 | 18°29 | 11°46 | S 7 |
| S 8 | 21 3 9 | 14°52'29 | 6°B 11 | 29°48 | 28° 0 | 6°29 | 29° 8 | 6°52 | 25°40 | 9°47 | 1°22 | 16°52 | 17°49 | 18°35 | 11°45 | S 8 |
| M 9 | 21 7 6 | 15°49'57 | 19°27 | 1°19 34 | 29°14 | 7° 3 | 29°15 | 6°55 | 25°43 | 9°48 | 1°24 | 16°43 | 17°46 | 18°42 | 11°44 | M 9 |
| T 10 | 21 11 3 | 16°47'26 | 2°J 30 | 3°19 | 0°19 28 | 7°37 | 29°22 | 6°58 | 25°46 | 9°49 | 1°25 | 16°32 | 17°43 | 18°49 | 11°42 | T 10 |
| W11 | 21 14 59 | 17°44'57 | 15°20 | 5° 2 | 1°41 | 8°11 | 29°30 | 7° 1 | 25°49 | 9°50 | 1°27 | 16°22 | 17°40 | 18°55 | 11°41 | W11 |
| T 12 | 21 18 56 | 18°42'28 | 27°55 | 6°43 | 2°55 | 8°45 | 29°38 | 7° 4 | 25°52 | 9°51 | 1°29 | 16°13 | 17°36 | 19° 2 | 11°40 | T 12 |
| F 13 | 21 22 52 | 19°40'00 | 10°19 16 | 8°23 | 4° 9 | 9°20 | 29°45 | 7° 7 | 25°56 | 9°52 | 1°31 | 16° 5 | 17°33 | 19° 9 | 11°38 | F 13 |
| S 14 | 21 26 49 | 20°37'33 | 22°25 | 10° 1 | 5°23 | 9°55 | 29°53 | 7°10 | 25°59 | 9°53 | 1°32 | 16° 0 | 17°30 | 19°15 | 11°37 | S 14 |
| S 15 | 21 30 45 | 21°35'07 | 4°B 23 | 11°38 | 6°37 | 10°30 | 0°M 1 | 7°13 | 26° 2 | 9°54 | 1°34 | 15°58 | 17°27 | 19°22 | 11°35 | S 15 |
| M16 | 21 34 42 | 22°32'42 | 16°13 | 13°13 | 7°51 | 11° 5 | 0°10 | 7°17 | 26° 5 | 9°55 | 1°36 | 15°D57 | 17°24 | 19°28 | 11°34 | M16 |
| T 17 | 21 38 38 | 23°30'17 | 28° 0 | 14°47 | 9° 4 | 11°40 | 0°18 | 7°20 | 26° 9 | 9°56 | 1°38 | 15°57 | 17°21 | 19°35 | 11°32 | T 17 |
| W18 | 21 42 35 | 24°27'54 | 9°M 49 | 16°19 | 10°18 | 12°15 | 0°26 | 7°24 | 26°12 | 9°57 | 1°40 | 15°59 | 17°17 | 19°42 | 11°31 | W18 |
| T 19 | 21 46 32 | 25°25'32 | 21°44 | 17°49 | 11°32 | 12°51 | 0°35 | 7°27 | 26°15 | 9°58 | 1°42 | 15°R59 | 17°14 | 19°48 | 11°29 | T 19 |
| F 20 | 21 50 28 | 26°23'11 | 3°J 50 | 19°18 | 12°46 | 13°27 | 0°43 | 7°31 | 26°19 | 9°58 | 1°44 | 15°59 | 17°11 | 19°55 | 11°27 | F 20 |
| S 21 | 21 54 25 | 27°20'51 | 16°14 | 20°45 | 14° 0 | 14° 3 | 0°52 | 7°35 | 26°22 | 9°59 | 1°46 | 15°57 | 17° 8 | 20° 2 | 11°25 | S 21 |
| S 22 | 21 58 21 | 28°18'32 | 28°58 | 22°11 | 15°14 | 14°39 | 1° 1 | 7°39 | 26°26 | 10° 0 | 1°47 | 15°53 | 17° 5 | 20° 8 | 11°24 | S 22 |
| M23 | 22 2 18 | 29°16'13 | 12°B 7 | 23°35 | 16°27 | 15°15 | 1°10 | 7°43 | 26°29 | 10° 1 | 1°49 | 15°48 | 17° 2 | 20°15 | 11°22 | M23 |
| T 24 | 22 6 14 | 0°19 13'56 | 25°43 | 24°57 | 17°41 | 15°52 | 1°19 | 7°47 | 26°33 | 10° 1 | 1°51 | 15°41 | 16°58 | 20°22 | 11°20 | T 24 |
| W25 | 22 10 11 | 1°11'41 | 9°B 43 | 26°18 | 18°55 | 16°28 | 1°28 | 7°51 | 26°36 | 10° 2 | 1°53 | 15°34 | 16°55 | 20°28 | 11°18 | W25 |
| T 26 | 22 14 7 | 2° 9'26 | 24° 5 | 27°37 | 20° 9 | 17° 5 | 1°37 | 7°55 | 26°40 | 10° 3 | 1°55 | 15°27 | 16°52 | 20°35 | 11°16 | T 26 |
| F 27 | 22 18 4 | 3° 7'13 | 8°B 43 | 28°54 | 21°22 | 17°42 | 1°47 | 7°59 | 26°43 | 10° 3 | 1°57 | 15°22 | 16°49 | 20°42 | 11°14 | F 27 |
| S 28 | 22 22 1 | 4° 5'01 | 23°31 | 0°B 9 | 22°36 | 18°19 | 1°56 | 8° 4 | 26°47 | 10° 4 | 1°59 | 15°18 | 16°46 | 20°48 | 11°12 | S 28 |
| S 29 | 22 25 57 | 5° 2'50 | 8°Y 20 | 1°22 | 23°50 | 18°56 | 2° 6 | 8° 8 | 26°50 | 10° 4 | 2° 2 | 15°D17 | 16°42 | 20°55 | 11°10 | S 29 |
| M30 | 22 29 54 | 6° 0'42 | 23° 4 | 2°34 | 25° 4 | 19°34 | 2°15 | 8°13 | 26°54 | 10° 5 | 2° 4 | 15°17 | 16°39 | 21° 1 | 11° 8 | M30 |
| T 31 | 22 33 50 | 6°19 58'35 | 7°B 36 | 3°B 43 | 26°18 | 20°M 11 | 2°M 25 | 8°M 17 | 26°58 | 10°II 5 | 2° 6 | 15°18 | 16°43 | 21° 8 | 11°V 6 | T 31 |

Delta T = 183.40 sec

ASTRODIENST EPHEMERIS for the year 2219

geocentric

SEPTEMBER 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|----------|----------|-------|--------|-------|-------|------|-------|-------|--------|------|--------|-------|-------|--------|------|
| W 1 | 22 37 47 | 7♎56'30 | 21♎54 | 4♎50 | 27♎31 | 20♎49 | 2♎35 | 8♎22 | 27♎1 | 10♎6 | 2♎8 | 15♎19 | 16♎33 | 21♎15 | 11°R 4 | W 1 |
| T 2 | 22 41 43 | 8°54'26 | 5♎55 | 5°56 | 28°45 | 21°27 | 2°45 | 8°26 | 27° 5 | 10° 6 | 2°10 | 15°R20 | 16°30 | 21°21 | 11°Y 1 | T 2 |
| F 3 | 22 45 40 | 9°52'25 | 19°40 | 6°58 | 29°59 | 22° 5 | 2°55 | 8°31 | 27° 8 | 10° 6 | 2°12 | 15°20 | 16°27 | 21°28 | 10°59 | F 3 |
| S 4 | 22 49 36 | 10°50'26 | 3♎7 | 7°58 | 1♎13 | 22°43 | 3° 5 | 8°36 | 27°12 | 10° 7 | 2°14 | 15°18 | 16°23 | 21°35 | 10°57 | S 4 |
| S 5 | 22 53 33 | 11°48'28 | 16°18 | 8°56 | 2°26 | 23°21 | 3°15 | 8°41 | 27°16 | 10° 7 | 2°16 | 15°14 | 16°20 | 21°41 | 10°55 | S 5 |
| M 6 | 22 57 30 | 12°46'33 | 29°15 | 9°51 | 3°40 | 23°59 | 3°26 | 8°46 | 27°19 | 10° 7 | 2°18 | 15°10 | 16°17 | 21°48 | 10°52 | M 6 |
| T 7 | 23 1 26 | 13°44'39 | 11♎58 | 10°43 | 4°54 | 24°38 | 3°36 | 8°51 | 27°23 | 10° 8 | 2°21 | 15° 5 | 16°14 | 21°55 | 10°50 | T 7 |
| W 8 | 23 5 23 | 14°42'47 | 24°28 | 11°32 | 6° 7 | 25°17 | 3°47 | 8°56 | 27°27 | 10° 8 | 2°23 | 14°59 | 16°11 | 22° 1 | 10°48 | W 8 |
| T 9 | 23 9 19 | 15°40'56 | 6♎47 | 12°17 | 7°21 | 25°55 | 3°57 | 9° 1 | 27°31 | 10° 8 | 2°25 | 14°55 | 16° 8 | 22° 8 | 10°45 | T 9 |
| F 10 | 23 13 16 | 16°39'07 | 18°55 | 12°59 | 8°35 | 26°34 | 4° 8 | 9° 7 | 27°34 | 10° 8 | 2°27 | 14°51 | 16° 4 | 22°15 | 10°43 | F 10 |
| S 11 | 23 17 12 | 17°37'20 | 0♎55 | 13°37 | 9°49 | 27°13 | 4°18 | 9°12 | 27°38 | 10° 8 | 2°29 | 14°49 | 16° 1 | 22°21 | 10°40 | S 11 |
| S 12 | 23 21 9 | 18°35'35 | 12°47 | 14°11 | 11° 2 | 27°53 | 4°29 | 9°17 | 27°42 | 10° 8 | 2°31 | 14°D48 | 15°58 | 22°28 | 10°38 | S 12 |
| M13 | 23 25 5 | 19°33'52 | 24°35 | 14°41 | 12°16 | 28°32 | 4°40 | 9°23 | 27°46 | 10° 8 | 2°34 | 14°48 | 15°55 | 22°35 | 10°35 | M13 |
| T 14 | 23 29 2 | 20°32'10 | 6♎21 | 15° 6 | 13°30 | 29°12 | 4°51 | 9°28 | 27°49 | 10°R 8 | 2°36 | 14°50 | 15°52 | 22°41 | 10°33 | T 14 |
| W15 | 23 32 58 | 21°30'29 | 18° 9 | 15°26 | 14°43 | 29°51 | 5° 2 | 9°34 | 27°53 | 10° 8 | 2°38 | 14°51 | 15°48 | 22°48 | 10°30 | W15 |
| T 16 | 23 36 55 | 22°28'50 | 0♎4 | 15°41 | 15°57 | 0♎31 | 5°13 | 9°39 | 27°57 | 10° 8 | 2°40 | 14°53 | 15°45 | 22°54 | 10°28 | T 16 |
| F 17 | 23 40 52 | 23°27'13 | 12°10 | 15°50 | 17°11 | 1°11 | 5°25 | 9°45 | 28° 1 | 10° 8 | 2°43 | 14°54 | 15°42 | 23° 1 | 10°25 | F 17 |
| S 18 | 23 44 48 | 24°25'38 | 24°31 | 15°R53 | 18°24 | 1°51 | 5°36 | 9°51 | 28° 4 | 10° 8 | 2°45 | 14°R55 | 15°39 | 23° 8 | 10°22 | S 18 |
| S 19 | 23 48 45 | 25°24'04 | 7♎12 | 15°50 | 19°38 | 2°31 | 5°47 | 9°56 | 28° 8 | 10° 8 | 2°47 | 14°54 | 15°36 | 23°14 | 10°20 | S 19 |
| M20 | 23 52 41 | 26°22'31 | 20°17 | 15°41 | 20°51 | 3°11 | 5°59 | 10° 2 | 28°12 | 10° 8 | 2°49 | 14°53 | 15°33 | 23°21 | 10°17 | M20 |
| T 21 | 23 56 38 | 27°21'01 | 3♎49 | 15°24 | 22° 5 | 3°52 | 6°10 | 10° 8 | 28°16 | 10° 7 | 2°52 | 14°51 | 15°29 | 23°28 | 10°14 | T 21 |
| W22 | 0 0 34 | 28°19'31 | 17°48 | 15° 1 | 23°19 | 4°32 | 6°22 | 10°14 | 28°20 | 10° 7 | 2°54 | 14°49 | 15°26 | 23°34 | 10°12 | W22 |
| T 23 | 0 4 31 | 29°18'04 | 2♎14 | 14°31 | 24°32 | 5°13 | 6°33 | 10°20 | 28°23 | 10° 7 | 2°56 | 14°47 | 15°23 | 23°41 | 10° 9 | T 23 |
| F 24 | 0 8 27 | 0♎16'38 | 17° 0 | 13°54 | 25°46 | 5°53 | 6°45 | 10°26 | 28°27 | 10° 7 | 2°58 | 14°45 | 15°20 | 23°48 | 10° 6 | F 24 |
| S 25 | 0 12 24 | 1°15'14 | 2°Y 2 | 13°10 | 26°59 | 6°34 | 6°57 | 10°32 | 28°31 | 10° 6 | 3° 1 | 14°44 | 15°17 | 23°54 | 10° 4 | S 25 |
| S 26 | 0 16 21 | 2°13'52 | 17°10 | 12°20 | 28°13 | 7°15 | 7° 8 | 10°38 | 28°35 | 10° 6 | 3° 3 | 14°D44 | 15°13 | 24° 1 | 10° 1 | S 26 |
| M27 | 0 20 17 | 3°12'32 | 2♎14 | 11°25 | 29°26 | 7°56 | 7°20 | 10°44 | 28°38 | 10° 5 | 3° 5 | 14°44 | 15°10 | 24° 8 | 9°58 | M27 |
| T 28 | 0 24 14 | 4°11'14 | 17° 7 | 10°24 | 0♎40 | 8°37 | 7°32 | 10°51 | 28°42 | 10° 5 | 3° 7 | 14°45 | 15° 7 | 24°14 | 9°56 | T 28 |
| W29 | 0 28 10 | 5° 9'59 | 1♎43 | 9°21 | 1°53 | 9°19 | 7°44 | 10°57 | 28°46 | 10° 4 | 3°10 | 14°46 | 15° 4 | 24°21 | 9°53 | W29 |
| T 30 | 0 32 7 | 6♎8'45 | 15♎56 | 8♎15 | 3♎7 | 10♎0 | 7♎56 | 11♎3 | 28°50 | 10♎4 | 3♎12 | 14♎47 | 15♎1 | 24♎27 | 9°Y50 | T 30 |

Delta T = 183.50 sec

OCTOBER 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|--------|-------|-------|-------|-------|-------|-------|---------|------|--------|-------|-------|-------|------|
| F 1 | 0 36 3 | 7♎7'34 | 29♎46 | 7°R 8 | 4♎20 | 10♎41 | 8♎8 | 11♎10 | 28°54 | 10°R 3 | 3♎14 | 14♎47 | 14♎58 | 24♎34 | 9°R47 | F 1 |
| S 2 | 0 40 0 | 8° 6'26 | 13♎12 | 6♎3 | 5°34 | 11°23 | 8°20 | 11°16 | 28°57 | 10°II 3 | 3°16 | 14°R47 | 14°54 | 24°41 | 9°Y45 | S 2 |
| S 3 | 0 43 56 | 9° 5'19 | 26°17 | 5° 0 | 6°47 | 12° 5 | 8°32 | 11°22 | 29° 1 | 10° 2 | 3°19 | 14°47 | 14°51 | 24°47 | 9°42 | S 3 |
| M 4 | 0 47 53 | 10° 4'15 | 9♎2 | 4° 2 | 8° 0 | 12°47 | 8°45 | 11°29 | 29° 5 | 10° 2 | 3°21 | 14°46 | 14°48 | 24°54 | 9°39 | M 4 |
| T 5 | 0 51 50 | 11° 3'13 | 21°31 | 3°10 | 9°14 | 13°29 | 8°57 | 11°35 | 29° 9 | 10° 1 | 3°23 | 14°46 | 14°45 | 25° 1 | 9°36 | T 5 |
| W 6 | 0 55 46 | 12° 2'13 | 3♎47 | 2°25 | 10°27 | 14°11 | 9° 9 | 11°42 | 29°12 | 10° 0 | 3°25 | 14°45 | 14°42 | 25° 7 | 9°34 | W 6 |
| T 7 | 0 59 43 | 13° 1'15 | 15°52 | 1°49 | 11°41 | 14°53 | 9°22 | 11°48 | 29°16 | 9°59 | 3°28 | 14°45 | 14°39 | 25°14 | 9°31 | T 7 |
| F 8 | 1 3 39 | 14° 0'20 | 27°49 | 1°22 | 12°54 | 15°35 | 9°34 | 11°55 | 29°20 | 9°59 | 3°30 | 14°45 | 14°35 | 25°21 | 9°28 | F 8 |
| S 9 | 1 7 36 | 14°59'27 | 9♎41 | 1° 6 | 14° 7 | 16°17 | 9°47 | 12° 2 | 29°23 | 9°58 | 3°32 | 14°45 | 14°32 | 25°27 | 9°25 | S 9 |
| S 10 | 1 11 32 | 15°58'35 | 21°29 | 1°D 0 | 15°21 | 17° 0 | 9°59 | 12° 8 | 29°27 | 9°57 | 3°34 | 14°45 | 14°29 | 25°34 | 9°23 | S 10 |
| M11 | 1 15 29 | 16°57'46 | 3♎16 | 1° 5 | 16°34 | 17°42 | 10°12 | 12°15 | 29°31 | 9°56 | 3°37 | 14°45 | 14°26 | 25°41 | 9°20 | M11 |
| T 12 | 1 19 25 | 17°56'59 | 15° 4 | 1°20 | 17°47 | 18°25 | 10°24 | 12°22 | 29°34 | 9°55 | 3°39 | 14°45 | 14°23 | 25°47 | 9°17 | T 12 |
| W13 | 1 23 22 | 18°56'13 | 26°56 | 1°45 | 19° 1 | 19° 8 | 10°37 | 12°29 | 29°38 | 9°54 | 3°41 | 14°44 | 14°19 | 25°54 | 9°14 | W13 |
| T 14 | 1 27 18 | 19°55'30 | 8♎54 | 2°20 | 20°14 | 19°50 | 10°49 | 12°36 | 29°42 | 9°53 | 3°43 | 14°43 | 14°16 | 26° 1 | 9°12 | T 14 |
| F 15 | 1 31 15 | 20°54'48 | 21° 2 | 3° 4 | 21°27 | 20°33 | 11° 2 | 12°42 | 29°45 | 9°52 | 3°45 | 14°43 | 14°13 | 26° 7 | 9° 9 | F 15 |
| S 16 | 1 35 12 | 21°54'08 | 3♎23 | 3°56 | 22°40 | 21°16 | 11°15 | 12°49 | 29°49 | 9°51 | 3°48 | 14°42 | 14°10 | 26°14 | 9° 6 | S 16 |
| S 17 | 1 39 8 | 22°53'30 | 16° 2 | 4°56 | 23°54 | 21°59 | 11°28 | 12°56 | 29°52 | 9°50 | 3°50 | 14°42 | 14° 7 | 26°20 | 9° 4 | S 17 |
| M18 | 1 43 5 | 23°52'54 | 29° 1 | 6° 2 | 25° 7 | 22°43 | 11°40 | 13° 3 | 29°56 | 9°49 | 3°52 | 14°D42 | 14° 4 | 26°27 | 9° 1 | M18 |
| T 19 | 1 47 1 | 24°52'19 | 12♎23 | 7°14 | 26°20 | 23°26 | 11°53 | 13°10 | 29°59 | 9°48 | 3°54 | 14°42 | 14° 0 | 26°34 | 8°58 | T 19 |
| W20 | 1 50 58 | 25°51'47 | 26°12 | 8°32 | 27°33 | 24° 9 | 12° 6 | 13°17 | 0♎3 | 9°47 | 3°56 | 14°43 | 13°57 | 26°40 | 8°56 | W20 |
| T 21 | 1 54 54 | 26°51'15 | 10♎27 | 9°54 | 28°46 | 24°53 | 12°19 | 13°24 | 0° 7 | 9°46 | 3°58 | 14°44 | 13°54 | 26°47 | 8°53 | T 21 |
| F 22 | 1 58 51 | 27°50'46 | 25° 6 | 11°19 | 29°59 | 25°36 | 12°32 | 13°31 | 0°10 | 9°45 | 4° 0 | 14°45 | 13°51 | 26°54 | 8°51 | F 22 |
| S 23 | 2 2 47 | 28°50'18 | 10°Y 5 | 12°48 | 1♎13 | 26°20 | 12°45 | 13°38 | 0°13 | 9°44 | 4° 3 | 14°R45 | 13°48 | 27° 0 | 8°48 | S 23 |
| S 24 | 2 6 44 | 29°49'53 | 25°17 | 14°20 | 2°26 | 27° 3 | 12°58 | 13°45 | 0°17 | 9°43 | 4° 5 | 14°45 | 13°44 | 27° 7 | 8°46 | S 24 |
| M25 | 2 10 41 | 0♎49'29 | 10♎31 | 15°54 | 3°39 | 27°47 | 13°11 | 13°52 | 0°20 | 9°41 | 4° 7 | 14°44 | 13°41 | 27°14 | 8°43 | M25 |
| T 26 | 2 14 37 | 1°49'08 | 25°39 | 17°30 | 4°52 | 28°31 | 13°24 | 13°59 | 0°24 | 9°40 | 4° 9 | 14°42 | 13°38 | 27°20 | 8°41 | T 26 |
| W27 | 2 18 34 | 2°48'48 | 10♎30 | 19° 7 | 6° 5 | 29°15 | 13°37 | 14° 6 | 0°27 | 9°39 | 4°11 | 14°40 | 13°35 | 27°27 | 8°38 | W27 |
| T 28 | 2 22 30 | 3°48'31 | 24°59 | 20°45 | 7°18 | 29°59 | 13°50 | 14°13 | 0°30 | 9°38 | 4°13 | 14°38 | 13°32 | 27°34 | 8°36 | T 28 |
| F 29 | 2 26 27 | 4°48'16 | 9♎0 | 22°24 | 8°31 | 0♎43 | 14° 3 | 14°21 | 0°34 | 9°36 | 4°15 | 14°35 | 13°29 | 27°40 | 8°33 | F 29 |
| S 30 | 2 30 23 | 5°48'03 | 22°34 | 24° 3 | 9°44 | 1°27 | 14°16 | 14°28 | 0°37 | 9°35 | 4°17 | 14°34 | 13°25 | 27°47 | 8°31 | S 30 |
| S 31 | 2 34 20 | 6♎47'53 | 5♎40 | 25♎43 | 10♎57 | 2♎11 | 14♎29 | 14♎35 | 0♎40 | 9♎34 | 4♎19 | 14°D33 | 13♎22 | 27♎54 | 8°Y29 | S 31 |

Delta T = 183.59 sec

ASTRODIENST EPHEMERIS for the year 2219

geocentric

NOVEMBER 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|-------|-------|-------|-------|-------|-------|------|------|------|--------|-------|-------|------|------|
| M 1 | 2 38 16 | 7♏47'45 | 18♏23 | 27♏23 | 12♏10 | 2♏56 | 14♏42 | 14♏42 | 0♏43 | 9♏32 | 4♏21 | 14♏34 | 13♏19 | 28♏0 | 8♏26 | M 1 |
| T 2 | 2 42 13 | 8°47'38 | 0♏47 | 29° 4 | 13°22 | 3°40 | 14°55 | 14°49 | 0°47 | 9♏31 | 4°23 | 14°35 | 13°16 | 28° 7 | 8♏24 | T 2 |
| W 3 | 2 46 10 | 9°47'34 | 12°55 | 0♏44 | 14°35 | 4°25 | 15° 9 | 14°56 | 0°50 | 9°29 | 4°25 | 14°37 | 13°13 | 28°13 | 8°22 | W 3 |
| T 4 | 2 50 6 | 10°47'33 | 24°52 | 2°24 | 15°48 | 5° 9 | 15°22 | 15° 4 | 0°53 | 9°28 | 4°27 | 14°38 | 13°10 | 28°20 | 8°19 | T 4 |
| F 5 | 2 54 3 | 11°47'33 | 6♏42 | 4° 4 | 17° 1 | 5°54 | 15°35 | 15°11 | 0°56 | 9°26 | 4°29 | 14°40 | 13° 6 | 28°27 | 8°17 | F 5 |
| S 6 | 2 57 59 | 12°47'35 | 18°29 | 5°44 | 18°14 | 6°38 | 15°48 | 15°18 | 0°59 | 9°25 | 4°30 | 14°R40 | 13° 3 | 28°33 | 8°15 | S 6 |
| S 7 | 3 1 56 | 13°47'39 | 0♏16 | 7°24 | 19°26 | 7°23 | 16° 1 | 15°25 | 1° 2 | 9°24 | 4°32 | 14°39 | 13° 0 | 28°40 | 8°13 | S 7 |
| M 8 | 3 5 52 | 14°47'45 | 12° 5 | 9° 3 | 20°39 | 8° 8 | 16°14 | 15°32 | 1° 5 | 9°22 | 4°34 | 14°36 | 12°57 | 28°47 | 8°11 | M 8 |
| T 9 | 3 9 49 | 15°47'54 | 23°59 | 10°42 | 21°52 | 8°53 | 16°28 | 15°40 | 1° 8 | 9°20 | 4°36 | 14°32 | 12°54 | 28°53 | 8° 9 | T 9 |
| W10 | 3 13 45 | 16°48'03 | 5♏59 | 12°21 | 23° 5 | 9°38 | 16°41 | 15°47 | 1°11 | 9°19 | 4°38 | 14°26 | 12°50 | 29° 0 | 8° 7 | W10 |
| T 11 | 3 17 42 | 17°48'15 | 18° 7 | 13°59 | 24°17 | 10°23 | 16°54 | 15°54 | 1°14 | 9°17 | 4°40 | 14°20 | 12°47 | 29° 7 | 8° 5 | T 11 |
| F 12 | 3 21 39 | 18°48'28 | 0♏24 | 15°37 | 25°30 | 11° 8 | 17° 7 | 16° 1 | 1°17 | 9°16 | 4°41 | 14°14 | 12°44 | 29°13 | 8° 3 | F 12 |
| S 13 | 3 25 35 | 19°48'43 | 12°52 | 17°14 | 26°42 | 11°53 | 17°20 | 16° 8 | 1°20 | 9°14 | 4°43 | 14° 8 | 12°41 | 29°20 | 8° 1 | S 13 |
| S 14 | 3 29 32 | 20°49'00 | 25°34 | 18°51 | 27°55 | 12°39 | 17°33 | 16°16 | 1°22 | 9°13 | 4°45 | 14° 4 | 12°38 | 29°27 | 7°59 | S 14 |
| M15 | 3 33 28 | 21°49'17 | 8♏32 | 20°28 | 29° 8 | 13°24 | 17°47 | 16°23 | 1°25 | 9°11 | 4°46 | 14° 1 | 12°35 | 29°33 | 7°57 | M15 |
| T 16 | 3 37 25 | 22°49'37 | 21°49 | 22° 5 | 0♏20 | 14° 9 | 18° 0 | 16°30 | 1°28 | 9° 9 | 4°48 | 14°D 0 | 12°31 | 29°40 | 7°56 | T 16 |
| W17 | 3 41 21 | 23°49'57 | 5♏26 | 23°41 | 1°32 | 14°55 | 18°13 | 16°37 | 1°31 | 9° 8 | 4°50 | 14° 1 | 12°28 | 29°47 | 7°54 | W17 |
| T 18 | 3 45 18 | 24°50'19 | 19°25 | 25°17 | 2°45 | 15°40 | 18°26 | 16°44 | 1°33 | 9° 6 | 4°51 | 14° 2 | 12°25 | 29°53 | 7°52 | T 18 |
| F 19 | 3 49 14 | 25°50'42 | 3♏47 | 26°52 | 3°57 | 16°26 | 18°39 | 16°51 | 1°36 | 9° 5 | 4°53 | 14° 4 | 12°22 | 29°59 | 7°51 | F 19 |
| S 20 | 3 53 11 | 26°51'07 | 18°29 | 28°27 | 5° 9 | 17°11 | 18°52 | 16°59 | 1°38 | 9° 3 | 4°55 | 14°R 4 | 12°19 | 0♏ 7 | 7°49 | S 20 |
| S 21 | 3 57 8 | 27°51'33 | 3♏26 | 0♏ 2 | 6°22 | 17°57 | 19° 6 | 17° 6 | 1°41 | 9° 1 | 4°56 | 14° 2 | 12°16 | 0°13 | 7°47 | S 21 |
| M22 | 4 1 4 | 28°52'00 | 18°32 | 1°37 | 7°34 | 18°42 | 19°19 | 17°13 | 1°43 | 9° 0 | 4°58 | 13°59 | 12°12 | 0°20 | 7°46 | M22 |
| T 23 | 4 5 1 | 29°52'30 | 3♏38 | 3°11 | 8°46 | 19°28 | 19°32 | 17°20 | 1°46 | 8°58 | 4°59 | 13°53 | 12° 9 | 0°27 | 7°45 | T 23 |
| W24 | 4 8 57 | 0♏53'00 | 18°33 | 4°46 | 9°58 | 20°14 | 19°45 | 17°27 | 1°48 | 8°56 | 5° 1 | 13°46 | 12° 6 | 0°33 | 7°43 | W24 |
| T 25 | 4 12 54 | 1°53'33 | 3♏ 9 | 6°20 | 11°10 | 21° 0 | 19°58 | 17°34 | 1°51 | 8°55 | 5° 2 | 13°38 | 12° 3 | 0°40 | 7°42 | T 25 |
| F 26 | 4 16 50 | 2°54'06 | 17°20 | 7°53 | 12°22 | 21°46 | 20°11 | 17°41 | 1°53 | 8°53 | 5° 4 | 13°31 | 12° 0 | 0°46 | 7°41 | F 26 |
| S 27 | 4 20 47 | 3°54'42 | 1♏ 2 | 9°27 | 13°34 | 22°32 | 20°24 | 17°48 | 1°55 | 8°51 | 5° 5 | 13°24 | 11°56 | 0°53 | 7°39 | S 27 |
| S 28 | 4 24 43 | 4°55'19 | 14°15 | 11° 0 | 14°46 | 23°18 | 20°37 | 17°55 | 1°57 | 8°50 | 5° 6 | 13°20 | 11°53 | 1° 0 | 7°38 | S 28 |
| M29 | 4 28 40 | 5°55'58 | 27° 2 | 12°34 | 15°58 | 24° 4 | 20°50 | 18° 2 | 2° 0 | 8°48 | 5° 8 | 13°18 | 11°50 | 1° 6 | 7°37 | M29 |
| T 30 | 4 32 37 | 6♏56'39 | 9♏27 | 14♏ 7 | 17♏10 | 24♏50 | 21♏ 3 | 18♏ 9 | 2♏ 2 | 8♏46 | 5♏ 9 | 13°D17 | 11♏47 | 1♏13 | 7♏36 | T 30 |

Delta T = 183.68 sec

DECEMBER 2219

00:00 UT

| Day | Sid.t | ☉ | ☽ | ♀ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | ♂ | Day |
|------|---------|----------|-------|-------|-------|-------|-------|-------|------|-------|------|--------|-------|------|-------|------|
| W 1 | 4 36 33 | 7♏57'21 | 21♏34 | 15♏40 | 18♏21 | 25♏36 | 21♏16 | 18♏16 | 2♏ 4 | 8°R44 | 5♏10 | 13♏18 | 11♏44 | 1♏20 | 7°R35 | W 1 |
| T 2 | 4 40 30 | 8°58'04 | 3♏29 | 17°13 | 19°33 | 26°22 | 21°29 | 18°23 | 2° 6 | 8♏43 | 5°11 | 13°19 | 11°41 | 1°26 | 7°Y34 | T 2 |
| F 3 | 4 44 26 | 9°58'49 | 15°17 | 18°46 | 20°45 | 27° 8 | 21°42 | 18°30 | 2° 8 | 8°41 | 5°13 | 13°R19 | 11°37 | 1°33 | 7°33 | F 3 |
| S 4 | 4 48 23 | 10°59'36 | 27° 3 | 20°18 | 21°56 | 27°54 | 21°55 | 18°37 | 2°10 | 8°39 | 5°14 | 13°18 | 11°34 | 1°40 | 7°32 | S 4 |
| S 5 | 4 52 19 | 12° 0'24 | 8♏51 | 21°51 | 23° 8 | 28°41 | 22° 7 | 18°43 | 2°12 | 8°38 | 5°15 | 13°15 | 11°31 | 1°46 | 7°31 | S 5 |
| M 6 | 4 56 16 | 13° 1'14 | 20°45 | 23°23 | 24°19 | 29°27 | 22°20 | 18°50 | 2°13 | 8°36 | 5°16 | 13° 9 | 11°28 | 1°53 | 7°30 | M 6 |
| T 7 | 5 0 12 | 14° 2'05 | 2♏47 | 24°56 | 25°30 | 0♏13 | 22°33 | 18°57 | 2°15 | 8°34 | 5°17 | 13° 0 | 11°25 | 2° 0 | 7°30 | T 7 |
| W 8 | 5 4 9 | 15° 2'57 | 14°58 | 26°28 | 26°42 | 1° 0 | 22°46 | 19° 4 | 2°17 | 8°33 | 5°18 | 12°49 | 11°22 | 2° 6 | 7°29 | W 8 |
| T 9 | 5 8 6 | 16° 3'50 | 27°20 | 28° 0 | 27°53 | 1°46 | 22°58 | 19°11 | 2°19 | 8°31 | 5°19 | 12°37 | 11°18 | 2°13 | 7°28 | T 9 |
| F 10 | 5 12 2 | 17° 4'44 | 9♏54 | 29°32 | 29° 4 | 2°33 | 23°11 | 19°17 | 2°20 | 8°29 | 5°20 | 12°24 | 11°15 | 2°20 | 7°28 | F 10 |
| S 11 | 5 15 59 | 18° 5'39 | 22°39 | 1♏ 4 | 0♏15 | 3°19 | 23°24 | 19°24 | 2°22 | 8°28 | 5°21 | 12°13 | 11°12 | 2°26 | 7°27 | S 11 |
| S 12 | 5 19 55 | 19° 6'35 | 5♏35 | 2°35 | 1°26 | 4° 6 | 23°36 | 19°30 | 2°23 | 8°26 | 5°22 | 12° 4 | 11° 9 | 2°33 | 7°27 | S 12 |
| M13 | 5 23 52 | 20° 7'32 | 18°42 | 4° 7 | 2°37 | 4°52 | 23°49 | 19°37 | 2°25 | 8°24 | 5°23 | 11°57 | 11° 6 | 2°40 | 7°26 | M13 |
| T 14 | 5 27 48 | 21° 8'29 | 2♏ 3 | 5°38 | 3°48 | 5°39 | 24° 1 | 19°43 | 2°26 | 8°23 | 5°24 | 11°53 | 11° 2 | 2°46 | 7°26 | T 14 |
| W15 | 5 31 45 | 22° 9'27 | 15°37 | 7° 8 | 4°58 | 6°26 | 24°14 | 19°50 | 2°28 | 8°21 | 5°25 | 11°51 | 10°59 | 2°53 | 7°26 | W15 |
| T 16 | 5 35 41 | 23°10'25 | 29°26 | 8°38 | 6° 9 | 7°12 | 24°26 | 19°56 | 2°29 | 8°19 | 5°26 | 11°D51 | 10°56 | 3° 0 | 7°26 | T 16 |
| F 17 | 5 39 38 | 24°11'24 | 13♏31 | 10° 8 | 7°19 | 7°59 | 24°39 | 20° 3 | 2°30 | 8°18 | 5°27 | 11°R51 | 10°53 | 3° 6 | 7°25 | F 17 |
| S 18 | 5 43 35 | 25°12'24 | 27°52 | 11°37 | 8°30 | 8°46 | 24°51 | 20° 9 | 2°31 | 8°16 | 5°27 | 11°51 | 10°50 | 3°13 | 7°25 | S 18 |
| S 19 | 5 47 31 | 26°13'24 | 12♏26 | 13° 5 | 9°40 | 9°32 | 25° 3 | 20°15 | 2°32 | 8°14 | 5°28 | 11°48 | 10°47 | 3°20 | 7°25 | S 19 |
| M20 | 5 51 28 | 27°14'25 | 27° 9 | 14°32 | 10°50 | 10°19 | 25°15 | 20°22 | 2°34 | 8°13 | 5°29 | 11°42 | 10°43 | 3°26 | 7°D25 | M20 |
| T 21 | 5 55 24 | 28°15'26 | 11♏54 | 15°59 | 12° 0 | 11° 6 | 25°27 | 20°28 | 2°35 | 8°11 | 5°29 | 11°33 | 10°40 | 3°33 | 7°25 | T 21 |
| W22 | 5 59 21 | 29°16'28 | 26°35 | 17°23 | 13°10 | 11°53 | 25°39 | 20°34 | 2°36 | 8°10 | 5°30 | 11°22 | 10°37 | 3°39 | 7°25 | W22 |
| T 23 | 6 3 17 | 0♏17'30 | 11♏ 3 | 18°47 | 14°19 | 12°40 | 25°51 | 20°40 | 2°36 | 8° 8 | 5°31 | 11°10 | 10°34 | 3°46 | 7°26 | T 23 |
| F 24 | 6 7 14 | 1°18'33 | 25°10 | 20° 8 | 15°29 | 13°26 | 26° 3 | 20°46 | 2°37 | 8° 7 | 5°31 | 10°58 | 10°31 | 3°53 | 7°26 | F 24 |
| S 25 | 6 11 10 | 2°19'37 | 8♏54 | 21°28 | 16°38 | 14°13 | 26°15 | 20°52 | 2°38 | 8° 5 | 5°32 | 10°47 | 10°28 | 3°59 | 7°26 | S 25 |
| S 26 | 6 15 7 | 3°20'41 | 22°10 | 22°44 | 17°48 | 15° 0 | 26°27 | 20°58 | 2°39 | 8° 4 | 5°32 | 10°39 | 10°24 | 4° 6 | 7°26 | S 26 |
| M27 | 6 19 4 | 4°21'46 | 5♏ 1 | 23°58 | 18°57 | 15°47 | 26°39 | 21° 4 | 2°40 | 8° 2 | 5°32 | 10°33 | 10°21 | 4°13 | 7°27 | M27 |
| T 28 | 6 23 0 | 5°22'52 | 17°29 | 25° 8 | 20° 6 | 16°34 | 26°51 | 21°10 | 2°40 | 8° 1 | 5°33 | 10°31 | 10°18 | 4°19 | 7°27 | T 28 |
| W29 | 6 26 57 | 6°23'59 | 29°39 | 26°14 | 21°15 | 17°21 | 27° 2 | 21°16 | 2°41 | 7°59 | 5°33 | 10°30 | 10°15 | 4°26 | 7°28 | W29 |
| T 30 | 6 30 53 | 7°25'06 | 11♏36 | 27°16 | 22°24 | 18° 8 | 27°14 | 21°21 | 2°41 | 7°58 | 5°34 | 10°30 | 10°12 | 4°33 | 7°28 | T 30 |
| F 31 | 6 34 50 | 8♏26'13 | 23♏25 | 28♏12 | 23♏32 | 18♏55 | 27♏25 | 21♏27 | 2♏42 | 7♏56 | 5♏34 | 10♏29 | 10♏ 8 | 4♏39 | 7♏29 | F 31 |

Delta T = 183.77 sec