

SWISS EPHEMERIS for the year 1989  
heliocentric

JANUARY 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
S 1	6 42 30	10 <sup>h</sup> 32'59	10 <sup>h</sup> 42'	17 <sup>h</sup> 56'	16 <sup>m</sup> 5	0 <sup>h</sup> 33'	4 <sup>h</sup> 30'	5 <sup>h</sup> 7	1 <sup>h</sup> 19'	9 <sup>h</sup> 54'	12 <sup>m</sup> 55	4 <sup>h</sup> 24'
M 2	6 46 26	11 <sup>h</sup> 34'08	11 <sup>h</sup> 43'	22 <sup>h</sup> 24'	17 <sup>m</sup> 41	1 <sup>h</sup> 5	4 <sup>h</sup> 35'	5 <sup>h</sup> 9	1 <sup>h</sup> 20'	9 <sup>h</sup> 55'	12 <sup>m</sup> 56	4 <sup>h</sup> 26'
T 3	6 50 23	12 <sup>h</sup> 35'18	12 <sup>h</sup> 43'	27 <sup>h</sup> 1	19 <sup>m</sup> 17	1 <sup>h</sup> 37'	4 <sup>h</sup> 41'	5 <sup>h</sup> 10'	1 <sup>h</sup> 20'	9 <sup>h</sup> 55'	12 <sup>m</sup> 56	4 <sup>h</sup> 27'
W 4	6 54 19	13 <sup>h</sup> 36'29	13 <sup>h</sup> 43'	1 <sup>h</sup> 45'	20 <sup>m</sup> 53	2 <sup>h</sup> 10'	4 <sup>h</sup> 46'	5 <sup>h</sup> 12'	1 <sup>h</sup> 21'	9 <sup>h</sup> 55'	12 <sup>m</sup> 57	4 <sup>h</sup> 29'
T 5	6 58 16	14 <sup>h</sup> 37'39	14 <sup>h</sup> 43'	6 <sup>h</sup> 39'	22 <sup>m</sup> 28	2 <sup>h</sup> 42'	4 <sup>h</sup> 51'	5 <sup>h</sup> 14'	1 <sup>h</sup> 22'	9 <sup>h</sup> 56'	12 <sup>m</sup> 57	4 <sup>h</sup> 30'
F 6	7 2 13	15 <sup>h</sup> 38'50	15 <sup>h</sup> 42'	11 <sup>h</sup> 42'	24 <sup>m</sup> 4	3 <sup>h</sup> 14'	4 <sup>h</sup> 57'	5 <sup>h</sup> 16'	1 <sup>h</sup> 22'	9 <sup>h</sup> 56'	12 <sup>m</sup> 57	4 <sup>h</sup> 31'
S 7	7 6 9	16 <sup>h</sup> 40'01	16 <sup>h</sup> 42'	16 <sup>h</sup> 54'	25 <sup>m</sup> 40	3 <sup>h</sup> 46'	5 <sup>h</sup> 2	5 <sup>h</sup> 18'	1 <sup>h</sup> 23'	9 <sup>h</sup> 57'	12 <sup>m</sup> 58	4 <sup>h</sup> 33'
S 8	7 10 6	17 <sup>h</sup> 41'11	17 <sup>h</sup> 41'	22 <sup>h</sup> 15'	27 <sup>m</sup> 16	4 <sup>h</sup> 18'	5 <sup>h</sup> 7	5 <sup>h</sup> 20'	1 <sup>h</sup> 24'	9 <sup>h</sup> 57'	12 <sup>m</sup> 58	4 <sup>h</sup> 34'
M 9	7 14 2	18 <sup>h</sup> 42'22	18 <sup>h</sup> 40'	27 <sup>h</sup> 45'	28 <sup>m</sup> 51	4 <sup>h</sup> 50'	5 <sup>h</sup> 13'	5 <sup>h</sup> 21'	1 <sup>h</sup> 24'	9 <sup>h</sup> 57'	12 <sup>m</sup> 59	4 <sup>h</sup> 36'
T 10	7 17 59	19 <sup>h</sup> 43'32	19 <sup>h</sup> 39'	3 <sup>h</sup> 24'	0 <sup>m</sup> 27	5 <sup>h</sup> 22'	5 <sup>h</sup> 18'	5 <sup>h</sup> 23'	1 <sup>h</sup> 25'	9 <sup>h</sup> 58'	12 <sup>m</sup> 59	4 <sup>h</sup> 37'
W 11	7 21 55	20 <sup>h</sup> 44'41	20 <sup>h</sup> 39'	9 <sup>h</sup> 11'	2 <sup>m</sup> 2	5 <sup>h</sup> 54'	5 <sup>h</sup> 23'	5 <sup>h</sup> 25'	1 <sup>h</sup> 26'	9 <sup>h</sup> 58'	13 <sup>m</sup> 0	4 <sup>h</sup> 38'
T 12	7 25 52	21 <sup>h</sup> 45'50	21 <sup>h</sup> 39'	15 <sup>h</sup> 6	3 <sup>m</sup> 38	6 <sup>h</sup> 26'	5 <sup>h</sup> 29'	5 <sup>h</sup> 27'	1 <sup>h</sup> 26'	9 <sup>h</sup> 58'	13 <sup>m</sup> 0	4 <sup>h</sup> 40'
F 13	7 29 48	22 <sup>h</sup> 46'59	22 <sup>h</sup> 39'	21 <sup>h</sup> 7	5 <sup>m</sup> 13	6 <sup>h</sup> 58'	5 <sup>h</sup> 34'	5 <sup>h</sup> 29'	1 <sup>h</sup> 27'	9 <sup>h</sup> 59'	13 <sup>m</sup> 0	4 <sup>h</sup> 41'
S 14	7 33 45	23 <sup>h</sup> 48'06	23 <sup>h</sup> 40'	27 <sup>h</sup> 15'	6 <sup>m</sup> 49	7 <sup>h</sup> 29'	5 <sup>h</sup> 39'	5 <sup>h</sup> 30'	1 <sup>h</sup> 28'	9 <sup>h</sup> 59'	13 <sup>m</sup> 1	4 <sup>h</sup> 43'
S 15	7 37 42	24 <sup>h</sup> 49'13	24 <sup>h</sup> 41'	3 <sup>h</sup> 28'	8 <sup>m</sup> 24	8 <sup>h</sup> 1	5 <sup>h</sup> 45'	5 <sup>h</sup> 32'	1 <sup>h</sup> 29'	9 <sup>h</sup> 59'	13 <sup>m</sup> 1	4 <sup>h</sup> 44'
M 16	7 41 38	25 <sup>h</sup> 50'20	25 <sup>h</sup> 42'	9 <sup>h</sup> 44'	10 <sup>m</sup> 0	8 <sup>h</sup> 32'	5 <sup>h</sup> 50'	5 <sup>h</sup> 34'	1 <sup>h</sup> 29'	10 <sup>m</sup> 0	13 <sup>m</sup> 2	4 <sup>h</sup> 46'
T 17	7 45 35	26 <sup>h</sup> 51'25	26 <sup>h</sup> 44'	16 <sup>h</sup> 3	11 <sup>m</sup> 35	9 <sup>h</sup> 4	5 <sup>h</sup> 55'	5 <sup>h</sup> 36'	1 <sup>h</sup> 30'	10 <sup>m</sup> 0	13 <sup>m</sup> 2	4 <sup>h</sup> 47'
W 18	7 49 31	27 <sup>h</sup> 52'30	27 <sup>h</sup> 46'	22 <sup>h</sup> 22'	13 <sup>m</sup> 10	9 <sup>h</sup> 36'	6 <sup>h</sup> 1	5 <sup>h</sup> 38'	1 <sup>h</sup> 31'	10 <sup>m</sup> 1	13 <sup>m</sup> 3	4 <sup>h</sup> 48'
T 19	7 53 28	28 <sup>h</sup> 53'34	28 <sup>h</sup> 49'	28 <sup>h</sup> 41'	14 <sup>m</sup> 46	10 <sup>h</sup> 7	6 <sup>h</sup> 6	5 <sup>h</sup> 39'	1 <sup>h</sup> 31'	10 <sup>m</sup> 1	13 <sup>m</sup> 3	4 <sup>h</sup> 50'
F 20	7 57 24	29 <sup>h</sup> 54'37	29 <sup>h</sup> 51'	4 <sup>h</sup> 57'	16 <sup>m</sup> 21	10 <sup>h</sup> 38'	6 <sup>h</sup> 11'	5 <sup>h</sup> 41'	1 <sup>h</sup> 32'	10 <sup>m</sup> 1	13 <sup>m</sup> 3	4 <sup>h</sup> 51'
S 21	8 1 21	0 <sup>h</sup> 55'40	0 <sup>h</sup> 54'	11 <sup>h</sup> 10'	17 <sup>m</sup> 56	11 <sup>h</sup> 10'	6 <sup>h</sup> 16'	5 <sup>h</sup> 43'	1 <sup>h</sup> 33'	10 <sup>m</sup> 2	13 <sup>m</sup> 4	4 <sup>h</sup> 53'
S 22	8 5 18	1 <sup>h</sup> 56'41	1 <sup>h</sup> 57'	17 <sup>h</sup> 17'	19 <sup>m</sup> 31	11 <sup>h</sup> 41'	6 <sup>h</sup> 22'	5 <sup>h</sup> 45'	1 <sup>h</sup> 33'	10 <sup>m</sup> 2	13 <sup>m</sup> 4	4 <sup>h</sup> 54'
M 23	8 9 14	2 <sup>h</sup> 57'42	3 <sup>m</sup> 0	23 <sup>h</sup> 19'	21 <sup>m</sup> 6	12 <sup>h</sup> 12'	6 <sup>h</sup> 27'	5 <sup>h</sup> 47'	1 <sup>h</sup> 34'	10 <sup>m</sup> 2	13 <sup>m</sup> 5	4 <sup>h</sup> 56'
T 24	8 13 11	3 <sup>h</sup> 58'42	4 <sup>m</sup> 2	29 <sup>h</sup> 13'	22 <sup>m</sup> 42	12 <sup>h</sup> 43'	6 <sup>h</sup> 32'	5 <sup>h</sup> 48'	1 <sup>h</sup> 35'	10 <sup>m</sup> 3	13 <sup>m</sup> 5	4 <sup>h</sup> 57'
W 25	8 17 7	4 <sup>h</sup> 59'42	5 <sup>m</sup> 5	4 <sup>h</sup> 59'	24 <sup>m</sup> 17	13 <sup>h</sup> 14'	6 <sup>h</sup> 38'	5 <sup>h</sup> 50'	1 <sup>h</sup> 36'	10 <sup>m</sup> 3	13 <sup>m</sup> 6	4 <sup>h</sup> 58'
T 26	8 21 4	6 <sup>h</sup> 0'41	6 <sup>m</sup> 7	10 <sup>h</sup> 36'	25 <sup>m</sup> 52	13 <sup>h</sup> 46'	6 <sup>h</sup> 43'	5 <sup>h</sup> 52'	1 <sup>h</sup> 36'	10 <sup>m</sup> 3	13 <sup>m</sup> 6	5 <sup>h</sup> 0
F 27	8 25 0	7 <sup>h</sup> 1'39	7 <sup>m</sup> 9	16 <sup>h</sup> 4	27 <sup>m</sup> 27	14 <sup>h</sup> 17'	6 <sup>h</sup> 48'	5 <sup>h</sup> 54'	1 <sup>h</sup> 37'	10 <sup>m</sup> 4	13 <sup>m</sup> 6	5 <sup>h</sup> 1
S 28	8 28 57	8 <sup>h</sup> 2'36	8 <sup>m</sup> 11	21 <sup>h</sup> 22'	29 <sup>m</sup> 2	14 <sup>h</sup> 47'	6 <sup>h</sup> 54'	5 <sup>h</sup> 56'	1 <sup>h</sup> 38'	10 <sup>m</sup> 4	13 <sup>m</sup> 7	5 <sup>h</sup> 3
S 29	8 32 53	9 <sup>h</sup> 3'33	9 <sup>m</sup> 13	26 <sup>h</sup> 31'	0 <sup>m</sup> 37	15 <sup>h</sup> 18'	6 <sup>h</sup> 59'	5 <sup>h</sup> 58'	1 <sup>h</sup> 38'	10 <sup>m</sup> 4	13 <sup>m</sup> 7	5 <sup>h</sup> 4
M 30	8 36 50	10 <sup>h</sup> 4'30	10 <sup>m</sup> 14	1 <sup>h</sup> 30'	2 <sup>m</sup> 12	15 <sup>h</sup> 49'	7 <sup>h</sup> 4	5 <sup>h</sup> 59'	1 <sup>h</sup> 39'	10 <sup>m</sup> 5	13 <sup>m</sup> 8	5 <sup>h</sup> 5
T 31	8 40 47	11 <sup>h</sup> 5'25	11 <sup>m</sup> 14	6 <sup>h</sup> 19'	3 <sup>m</sup> 47	16 <sup>h</sup> 20'	7 <sup>h</sup> 10'	6 <sup>h</sup> 1	1 <sup>h</sup> 40'	10 <sup>m</sup> 5	13 <sup>m</sup> 8	5 <sup>h</sup> 7

Delta T = 56.30 sec.

FEBRUARY 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
W 1	8 44 43	12 <sup>h</sup> 0'20	12 <sup>h</sup> 15'	11 <sup>h</sup> 0	5 <sup>m</sup> 22	16 <sup>h</sup> 51'	7 <sup>h</sup> 15'	6 <sup>h</sup> 3	1 <sup>h</sup> 40'	10 <sup>m</sup> 6	13 <sup>m</sup> 9	5 <sup>h</sup> 8
T 2	8 48 40	13 <sup>h</sup> 7'14	13 <sup>h</sup> 15'	15 <sup>h</sup> 31'	6 <sup>m</sup> 57	17 <sup>h</sup> 22'	7 <sup>h</sup> 20'	6 <sup>h</sup> 5	1 <sup>h</sup> 41'	10 <sup>m</sup> 6	13 <sup>m</sup> 9	5 <sup>h</sup> 10'
F 3	8 52 36	14 <sup>h</sup> 8'07	14 <sup>h</sup> 14'	19 <sup>h</sup> 53'	8 <sup>m</sup> 32	17 <sup>h</sup> 52'	7 <sup>h</sup> 26'	6 <sup>h</sup> 7	1 <sup>h</sup> 42'	10 <sup>m</sup> 6	13 <sup>m</sup> 9	5 <sup>h</sup> 11'
S 4	8 56 33	15 <sup>h</sup> 9'00	15 <sup>h</sup> 13'	24 <sup>h</sup> 8	10 <sup>m</sup> 7	18 <sup>h</sup> 23'	7 <sup>h</sup> 31'	6 <sup>h</sup> 8	1 <sup>h</sup> 42'	10 <sup>m</sup> 7	13 <sup>m</sup> 10	5 <sup>h</sup> 13'
S 5	9 0 29	16 <sup>h</sup> 9'51	16 <sup>h</sup> 12'	28 <sup>h</sup> 14'	11 <sup>m</sup> 42	18 <sup>h</sup> 53'	7 <sup>h</sup> 36'	6 <sup>h</sup> 10'	1 <sup>h</sup> 43'	10 <sup>m</sup> 7	13 <sup>m</sup> 10	5 <sup>h</sup> 14'
M 6	9 4 26	17 <sup>h</sup> 10'41	17 <sup>h</sup> 11'	2 <sup>h</sup> 13'	13 <sup>m</sup> 16	19 <sup>h</sup> 24'	7 <sup>h</sup> 41'	6 <sup>h</sup> 12'	1 <sup>h</sup> 44'	10 <sup>m</sup> 7	13 <sup>m</sup> 11	5 <sup>h</sup> 15'
T 7	9 8 22	18 <sup>h</sup> 11'31	18 <sup>h</sup> 10'	6 <sup>h</sup> 5	14 <sup>m</sup> 51	19 <sup>h</sup> 54'	7 <sup>h</sup> 47'	6 <sup>h</sup> 14'	1 <sup>h</sup> 45'	10 <sup>m</sup> 8	13 <sup>m</sup> 11	5 <sup>h</sup> 17'
W 8	9 12 19	19 <sup>h</sup> 12'18	19 <sup>h</sup> 9	9 <sup>h</sup> 50'	16 <sup>m</sup> 26	20 <sup>h</sup> 25'	7 <sup>h</sup> 52'	6 <sup>h</sup> 16'	1 <sup>h</sup> 45'	10 <sup>m</sup> 8	13 <sup>m</sup> 11	5 <sup>h</sup> 18'
T 9	9 16 16	20 <sup>h</sup> 13'04	20 <sup>h</sup> 8	13 <sup>h</sup> 30'	18 <sup>m</sup> 1	20 <sup>h</sup> 55'	7 <sup>h</sup> 57'	6 <sup>h</sup> 17'	1 <sup>h</sup> 46'	10 <sup>m</sup> 8	13 <sup>m</sup> 12	5 <sup>h</sup> 20'
F 10	9 20 12	21 <sup>h</sup> 13'49	21 <sup>h</sup> 7	17 <sup>h</sup> 3	19 <sup>m</sup> 36	21 <sup>h</sup> 25'	8 <sup>h</sup> 3	6 <sup>h</sup> 19'	1 <sup>h</sup> 47'	10 <sup>m</sup> 9	13 <sup>m</sup> 12	5 <sup>h</sup> 21'
S 11	9 24 9	22 <sup>h</sup> 14'32	22 <sup>h</sup> 7	20 <sup>h</sup> 31'	21 <sup>m</sup> 11	21 <sup>h</sup> 56'	8 <sup>h</sup> 8	6 <sup>h</sup> 21'	1 <sup>h</sup> 47'	10 <sup>m</sup> 9	13 <sup>m</sup> 13	5 <sup>h</sup> 23'
S 12	9 28 5	23 <sup>h</sup> 15'14	23 <sup>h</sup> 7	23 <sup>h</sup> 54'	22 <sup>m</sup> 46	22 <sup>h</sup> 26'	8 <sup>h</sup> 13'	6 <sup>h</sup> 23'	1 <sup>h</sup> 48'	10 <sup>m</sup> 9	13 <sup>m</sup> 13	5 <sup>h</sup> 24'
M 13	9 32 2	24 <sup>h</sup> 15'54	24 <sup>h</sup> 7	27 <sup>h</sup> 13'	24 <sup>m</sup> 21	22 <sup>h</sup> 56'	8 <sup>h</sup> 19'	6 <sup>h</sup> 25'	1 <sup>h</sup> 49'	10 <sup>m</sup> 10	13 <sup>m</sup> 14	5 <sup>h</sup> 25'
T 14	9 35 58	25 <sup>h</sup> 16'32	25 <sup>h</sup> 8	0 <sup>h</sup> 28'	25 <sup>m</sup> 55	23 <sup>h</sup> 26'	8 <sup>h</sup> 24'	6 <sup>h</sup> 26'	1 <sup>h</sup> 49'	10 <sup>m</sup> 10	13 <sup>m</sup> 14	5 <sup>h</sup> 27'
W 15	9 39 55	26 <sup>h</sup> 17'09	26 <sup>h</sup> 9	3 <sup>h</sup> 38'	27 <sup>m</sup> 30	23 <sup>h</sup> 56'	8 <sup>h</sup> 29'	6 <sup>h</sup> 28'	1 <sup>h</sup> 50'	10 <sup>m</sup> 11	13 <sup>m</sup> 14	5 <sup>h</sup> 28'
T 16	9 43 51	27 <sup>h</sup> 17'44	27 <sup>h</sup> 11	6 <sup>h</sup> 45'	29 <sup>m</sup> 5	24 <sup>h</sup> 26'	8 <sup>h</sup> 34'	6 <sup>h</sup> 30'	1 <sup>h</sup> 51'	10 <sup>m</sup> 11	13 <sup>m</sup> 15	5 <sup>h</sup> 30'
F 17	9 47 48	28 <sup>h</sup> 18'17	28 <sup>h</sup> 12	9 <sup>h</sup> 49'	0 <sup>m</sup> 40	24 <sup>h</sup> 56'	8 <sup>h</sup> 40'	6 <sup>h</sup> 32'	1 <sup>h</sup> 52'	10 <sup>m</sup> 11	13 <sup>m</sup> 15	5 <sup>h</sup> 31'
S 18	9 51 45	29 <sup>h</sup> 18'48	29 <sup>h</sup> 14	12 <sup>h</sup> 50'	2 <sup>m</sup> 15	25 <sup>h</sup> 26'	8 <sup>h</sup> 45'	6 <sup>h</sup> 34'	1 <sup>h</sup> 52'	10 <sup>m</sup> 12	13 <sup>m</sup> 16	5 <sup>h</sup> 33'
S 19	9 55 41	0 <sup>h</sup> 19'18	0 <sup>h</sup> 16	15 <sup>h</sup> 48'	3 <sup>m</sup> 50	25 <sup>h</sup> 56'	8 <sup>h</sup> 50'	6 <sup>h</sup> 35'	1 <sup>h</sup> 53'	10 <sup>m</sup> 12	13 <sup>m</sup> 16	5 <sup>h</sup> 34'
M 20	9 59 38	1 <sup>h</sup> 19'46	1 <sup>m</sup> 19	18 <sup>h</sup> 43'	5 <sup>m</sup> 25	26 <sup>h</sup> 26'	8 <sup>h</sup> 56'	6 <sup>h</sup> 37'	1 <sup>h</sup> 54'	10 <sup>m</sup> 12	13 <sup>m</sup> 17	5 <sup>h</sup> 36'
T 21	10 3 34	2 <sup>h</sup> 20'12	2 <sup>m</sup> 21	21 <sup>h</sup> 37'	6 <sup>m</sup> 59	26 <sup>h</sup> 55'	9 <sup>h</sup> 1	6 <sup>h</sup> 39'	1 <sup>h</sup> 54'	10 <sup>m</sup> 13	13 <sup>m</sup> 17	5 <sup>h</sup> 37'
W 22	10 7 31	3 <sup>h</sup> 20'37	3 <sup>m</sup> 23	24 <sup>h</sup> 29'	8 <sup>m</sup> 34	27 <sup>h</sup> 25'	9 <sup>h</sup> 6	6 <sup>h</sup> 41'	1 <sup>h</sup> 55'	10 <sup>m</sup> 13	13 <sup>m</sup> 17	5 <sup>h</sup> 38'
T 23	10 11 27	4 <sup>h</sup> 21'00	4 <sup>m</sup> 25	27 <sup>h</sup> 19'	10 <sup>m</sup> 9	27 <sup>h</sup> 55'	9 <sup>h</sup> 12'	6 <sup>h</sup> 43'	1 <sup>h</sup> 56'	10 <sup>m</sup> 13	13 <sup>m</sup> 18	5 <sup>h</sup> 40'
F 24	10 15 24	5 <sup>h</sup> 21'22	5 <sup>m</sup> 27	0 <sup>h</sup> 7'	11 <sup>m</sup> 44	28 <sup>h</sup> 25'	9 <sup>h</sup> 17'	6 <sup>h</sup> 45'	1 <sup>h</sup> 56'	10 <sup>m</sup> 14	13 <sup>m</sup> 18	5 <sup>h</sup> 41'
S 25	10 19 20	6 <sup>h</sup> 21'42	6 <sup>m</sup> 29	2 <sup>h</sup> 55'	13 <sup>m</sup> 19	28 <sup>h</sup> 54'	9 <sup>h</sup> 22'	6 <sup>h</sup> 46'	1 <sup>h</sup> 57'	10 <sup>m</sup> 14	13 <sup>m</sup> 19	5 <sup>h</sup> 43'
S 26	10 23 17	7 <sup>h</sup> 22'01	7 <sup>m</sup> 30	5 <sup>h</sup> 41'	14 <sup>m</sup> 54	29 <sup>h</sup> 24'	9 <sup>h</sup> 27'	6 <sup>h</sup> 48'	1 <sup>h</sup> 58'	10 <sup>m</sup> 14	13 <sup>m</sup> 19	5 <sup>h</sup> 44'
M 27	10 27 14	8 <sup>h</sup> 22'18	8 <sup>m</sup> 31	8 <sup>h</sup> 27'	16 <sup>m</sup> 29	29 <sup>h</sup> 53'	9 <sup>h</sup> 33'	6 <sup>h</sup> 50'	1 <sup>h</sup> 58'	10 <sup>m</sup> 15	13 <sup>m</sup> 20	5 <sup>h</sup> 46'
T 28	10 31 10	9 <sup>h</sup> 22'34	9 <sup>m</sup> 32	11 <sup>h</sup> 12'	18 <sup>m</sup> 4	0 <sup>h</sup> 23'	9 <sup>h</sup> 38'	6 <sup>h</sup> 52'	1 <sup>h</sup> 59'	10 <sup>m</sup> 15	13 <sup>m</sup> 20	5 <sup>h</sup> 47'

Delta T = 56.34 sec.

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SWISS EPHEMERIS for the year 1989  
heliocentric

MARCH 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
W 1	10 35 7	10♐22'48	10♐32	13♌57	19♋39	0♉52	9♈43	6♄54	2♃0	10♌16	13♍20	5♄48
T 2	10 39 3	11°23'01	11°32	16°41	21°14	1°21	9°49	6°55	2° 1	10°16	13°21	5°50
F 3	10 43 0	12°23'12	12°31	19°26	22°49	1°51	9°54	6°57	2° 1	10°16	13°21	5°51
S 4	10 46 56	13°23'22	13°30	22°11	24°24	2°20	9°59	6°59	2° 2	10°17	13°22	5°53
S 5	10 50 53	14°23'30	14°29	24°56	25°58	2°49	10° 4	7° 1	2° 3	10°17	13°22	5°54
M 6	10 54 49	15°23'37	15°27	27°43	27°34	3°18	10°10	7° 3	2° 3	10°17	13°23	5°56
T 7	10 58 46	16°23'42	16°25	0♉30	29° 9	3°48	10°15	7° 4	2° 4	10°18	13°23	5°57
W 8	11 2 43	17°23'45	17°23	3°18	0♈44	4°17	10°20	7° 6	2° 5	10°18	13°23	5°59
T 9	11 6 39	18°23'46	18°21	6° 7	2°19	4°46	10°26	7° 8	2° 5	10°18	13°24	6° 0
F 10	11 10 36	19°23'45	19°19	8°58	3°54	5°15	10°31	7°10	2° 6	10°19	13°24	6° 1
S 11	11 14 32	20°23'42	20°18	11°51	5°29	5°44	10°36	7°12	2° 7	10°19	13°25	6° 3
S 12	11 18 29	21°23'36	21°16	14°46	7° 4	6°13	10°41	7°13	2° 7	10°19	13°25	6° 4
M13	11 22 25	22°23'29	22°15	17°42	8°39	6°42	10°47	7°15	2° 8	10°20	13°25	6° 6
T 14	11 26 22	23°23'20	23°15	20°42	10°14	7°11	10°52	7°17	2° 9	10°20	13°26	6° 7
W15	11 30 18	24°23'08	24°14	23°44	11°49	7°39	10°57	7°19	2°10	10°21	13°26	6° 9
T 16	11 34 15	25°22'54	25°14	26°49	13°25	8° 8	11° 3	7°21	2°10	10°21	13°27	6°10
F 17	11 38 12	26°22'38	26°15	29°57	15° 0	8°37	11° 8	7°22	2°11	10°21	13°27	6°12
S 18	11 42 8	27°22'19	27°15	3♋ 9	16°35	9° 6	11°13	7°24	2°12	10°22	13°28	6°13
S 19	11 46 5	28°21'58	28°16	6°25	18°10	9°34	11°18	7°26	2°12	10°22	13°28	6°14
M20	11 50 1	29°21'35	29°17	9°45	19°45	10° 3	11°24	7°28	2°13	10°22	13°28	6°16
T 21	11 53 58	0♉21'10	0♉19	13° 9	21°21	10°31	11°29	7°30	2°14	10°23	13°29	6°17
W22	11 57 54	1°20'43	1°20	16°38	22°56	11° 0	11°34	7°31	2°14	10°23	13°29	6°19
T 23	12 1 51	2°20'14	2°21	20°12	24°31	11°29	11°39	7°33	2°15	10°23	13°30	6°20
F 24	12 5 47	3°19'42	3°22	23°52	26° 7	11°57	11°45	7°35	2°16	10°24	13°30	6°22
S 25	12 9 44	4°19'09	4°24	27°37	27°42	12°25	11°50	7°37	2°17	10°24	13°31	6°23
S 26	12 13 40	5°18'34	5°24	1♈29	29°18	12°54	11°55	7°39	2°17	10°24	13°31	6°25
M27	12 17 37	6°17'57	6°25	5°27	0♈53	13°22	12° 1	7°41	2°18	10°25	13°31	6°26
T 28	12 21 34	7°17'19	7°25	9°32	2°28	13°51	12° 6	7°42	2°19	10°25	13°32	6°27
W29	12 25 30	8°16'38	8°25	13°45	4° 4	14°19	12°11	7°44	2°19	10°26	13°32	6°29
T 30	12 29 27	9°15'56	9°25	18° 5	5°39	14°47	12°16	7°46	2°20	10°26	13°33	6°30
F 31	12 33 23	10♌15'12	10♌24	22♈33	7♈15	15♉15	12♈22	7♄48	2♃21	10♌26	13♍33	6♄32

Delta T = 56.38 sec.

APRIL 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
S 1	12 37 20	11♌14'26	11♌23	27♈ 9	8♈50	15♉43	12♈27	7♄50	2♃21	10♌27	13♍34	6♄33
S 2	12 41 16	12°13'39	12°21	1°05	10°26	16°12	12°32	7°51	2°22	10°27	13°34	6°35
M 3	12 45 13	13°12'49	13°19	6°49	12° 2	16°40	12°37	7°53	2°23	10°27	13°34	6°36
T 4	12 49 9	14°11'58	14°16	11°52	13°37	17° 8	12°43	7°55	2°23	10°28	13°35	6°38
W 5	12 53 6	15°11'05	15°13	17° 4	15°13	17°36	12°48	7°57	2°24	10°28	13°35	6°39
T 6	12 57 3	16°10'10	16°10	22°25	16°48	18° 4	12°53	7°59	2°25	10°28	13°36	6°41
F 7	13 0 59	17° 9'13	17° 8	27°56	18°24	18°32	12°59	8° 0	2°26	10°29	13°36	6°42
S 8	13 4 56	18° 8'14	18° 5	3♉35	20° 0	19° 0	13° 4	8° 2	2°26	10°29	13°36	6°43
S 9	13 8 52	19° 7'13	19° 2	9°22	21°36	19°28	13° 9	8° 4	2°27	10°29	13°37	6°45
M10	13 12 49	20° 6'10	19°59	15°17	23°11	19°56	13°14	8° 6	2°28	10°30	13°37	6°46
T 11	13 16 45	21° 5'04	20°57	21°19	24°47	20°23	13°20	8° 8	2°28	10°30	13°38	6°48
W12	13 20 42	22° 3'56	21°55	27°27	26°23	20°51	13°25	8° 9	2°29	10°30	13°38	6°49
T 13	13 24 38	23° 2'46	22°54	3♈40	27°59	21°19	13°30	8°11	2°30	10°31	13°39	6°51
F 14	13 28 35	24° 1'34	23°53	9°56	29°35	21°47	13°35	8°13	2°30	10°31	13°39	6°52
S 15	13 32 32	25° 0'19	24°52	16°15	1♉10	22°15	13°41	8°15	2°31	10°32	13°39	6°54
S 16	13 36 28	25°59'02	25°51	22°34	2°46	22°42	13°46	8°17	2°32	10°32	13°40	6°55
M17	13 40 25	26°57'43	26°51	28°52	4°22	23°10	13°51	8°18	2°32	10°32	13°40	6°57
T 18	13 44 21	27°56'21	27°51	5♉ 9	5°58	23°37	13°56	8°20	2°33	10°33	13°41	6°58
W19	13 48 18	28°54'58	28°51	11°21	7°34	24° 5	14° 2	8°22	2°34	10°33	13°41	7° 0
T 20	13 52 14	29°53'32	29°52	17°29	9°10	24°33	14° 7	8°24	2°35	10°33	13°42	7° 1
F 21	13 56 11	0♍52'05	0♍52	23°30	10°46	25° 0	14°12	8°26	2°35	10°34	13°42	7° 2
S 22	14 0 7	1°50'35	1°52	29°24	12°22	25°28	14°17	8°28	2°36	10°34	13°42	7° 4
S 23	14 4 4	2°49'04	2°52	5♌ 9	13°59	25°55	14°23	8°29	2°37	10°34	13°43	7° 5
M24	14 8 1	3°47'31	3°52	10°46	15°35	26°23	14°28	8°31	2°37	10°35	13°43	7° 7
T 25	14 11 57	4°45'57	4°52	16°14	17°11	26°50	14°33	8°33	2°38	10°35	13°44	7° 8
W26	14 15 54	5°44'21	5°52	21°32	18°47	27°17	14°38	8°35	2°39	10°35	13°44	7°10
T 27	14 19 50	6°42'43	6°51	26°40	20°23	27°45	14°44	8°37	2°39	10°36	13°45	7°11
F 28	14 23 47	7°41'04	7°50	1♐39	21°59	28°12	14°49	8°38	2°40	10°36	13°45	7°13
S 29	14 27 43	8°39'23	8°48	6°28	23°36	28°40	14°54	8°40	2°41	10°37	13°45	7°14
S 30	14 31 40	9♍37'40	9♍46	11♐ 8	25♉12	29♉ 7	15♈ 0	8♄42	2♃41	10♌37	13♍46	7♄16

Delta T = 56.43 sec.

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SWISS EPHEMERIS for the year 1989  
heliocentric

MAY 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
M 1	14 35 36	10M35'56	10M43	15M39	26R48	29E34	15II 5	8R44	2R42	10R37	13M46	7E17
T 2	14 39 33	11°34'11	11°40	20° 1	28°25	0R 1	15°10	8°46	2°43	10°38	13°47	7°19
W 3	14 43 30	12°32'24	12°37	24°15	0II 1	0°29	15°15	8°47	2°44	10°38	13°47	7°20
T 4	14 47 26	13°30'35	13°34	28°22	1°38	0°56	15°21	8°49	2°44	10°38	13°48	7°21
F 5	14 51 23	14°28'45	14°30	2A20	3°14	1°23	15°26	8°51	2°45	10°39	13°48	7°23
S 6	14 55 19	15°26'53	15°26	6°12	4°50	1°50	15°31	8°53	2°46	10°39	13°48	7°24
S 7	14 59 16	16°25'00	16°22	9°57	6°27	2°17	15°36	8°55	2°46	10°39	13°49	7°26
M 8	15 3 12	17°23'05	17°18	13°36	8° 4	2°44	15°42	8°56	2°47	10°40	13°49	7°27
T 9	15 7 9	18°21'08	18°15	17°10	9°40	3°11	15°47	8°58	2°48	10°40	13°50	7°29
W10	15 11 5	19°19'10	19°12	20°38	11°17	3°38	15°52	9° 0	2°48	10°40	13°50	7°30
T 11	15 15 2	20°17'09	20° 9	24° 1	12°53	4° 5	15°57	9° 2	2°49	10°41	13°50	7°32
F 12	15 18 59	21°15'07	21° 6	27°19	14°30	4°32	16° 2	9° 4	2°50	10°41	13°51	7°33
S 13	15 22 55	22°13'02	22° 4	0M34	16° 7	4°59	16° 8	9° 6	2°51	10°42	13°51	7°35
S 14	15 26 52	23°10'56	23° 2	3°44	17°43	5°26	16°13	9° 7	2°51	10°42	13°52	7°36
M15	15 30 48	24° 8'48	24° 1	6°51	19°20	5°53	16°18	9° 9	2°52	10°42	13°52	7°38
T 16	15 34 45	25° 6'39	24°59	9°55	20°57	6°20	16°23	9°11	2°53	10°43	13°53	7°39
W17	15 38 41	26° 4'27	25°58	12°55	22°34	6°47	16°29	9°13	2°53	10°43	13°53	7°41
T 18	15 42 38	27° 2'14	26°58	15°53	24°11	7°14	16°34	9°15	2°54	10°43	13°53	7°42
F 19	15 46 34	28° 0'00	27°57	18°49	25°47	7°41	16°39	9°16	2°55	10°44	13°54	7°44
S 20	15 50 31	28°57'44	28°56	21°42	27°24	8° 8	16°44	9°18	2°55	10°44	13°54	7°45
S 21	15 54 28	29°55'27	29°56	24°34	29° 1	8°34	16°50	9°20	2°56	10°44	13°55	7°47
M22	15 58 24	0A53'09	0A55	27°24	0E38	9° 1	16°55	9°22	2°57	10°45	13°55	7°48
T 23	16 2 21	1°50'49	1°55	0A12	2°15	9°28	17° 0	9°24	2°57	10°45	13°56	7°50
W24	16 6 17	2°48'28	2°54	3° 0	3°52	9°55	17° 5	9°25	2°58	10°45	13°56	7°51
T 25	16 10 14	3°46'06	3°53	5°46	5°29	10°22	17°11	9°27	2°59	10°46	13°56	7°52
F 26	16 14 10	4°43'43	4°51	8°32	7° 6	10°48	17°16	9°29	3° 0	10°46	13°57	7°54
S 27	16 18 7	5°41'19	5°50	11°17	8°43	11°15	17°21	9°31	3° 0	10°47	13°57	7°55
S 28	16 22 3	6°38'54	6°47	14° 2	10°21	11°42	17°26	9°33	3° 1	10°47	13°58	7°57
M29	16 26 0	7°36'29	7°45	16°46	11°58	12° 8	17°32	9°34	3° 2	10°47	13°58	7°58
T 30	16 29 57	8°34'02	8°42	19°31	13°35	12°35	17°37	9°36	3° 2	10°48	13°59	8° 0
W31	16 33 53	9A31'35	9A38	22A16	15E12	13R 2	17II42	9R38	3R 3	10R48	13M59	8E 1

Delta T = 56.47 sec.

JUNE 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
T 1	16 37 50	10A29'06	10A34	25A 2	16E49	13R28	17II47	9R40	3R 4	10R48	13M59	8E 3
F 2	16 41 46	11°26'37	11°30	27°48	18°27	13°55	17°52	9°42	3° 4	10°49	14° 0	8° 4
S 3	16 45 43	12°24'08	12°26	0R35	20° 4	14°21	17°58	9°43	3° 5	10°49	14° 0	8° 6
S 4	16 49 39	13°21'37	13°21	3°23	21°41	14°48	18° 3	9°45	3° 6	10°49	14° 1	8° 7
M 5	16 53 36	14°19'05	14°17	6°13	23°19	15°15	18° 8	9°47	3° 6	10°50	14° 1	8° 9
T 6	16 57 32	15°16'33	15°12	9° 4	24°56	15°41	18°13	9°49	3° 7	10°50	14° 2	8°10
W 7	17 1 29	16°13'59	16° 8	11°56	26°33	16° 8	18°19	9°51	3° 8	10°51	14° 2	8°12
T 8	17 5 26	17°11'24	17° 4	14°51	28°11	16°34	18°24	9°53	3° 9	10°51	14° 2	8°13
F 9	17 9 22	18° 8'48	18° 1	17°48	29°48	17° 1	18°29	9°54	3° 9	10°51	14° 3	8°15
S 10	17 13 19	19° 6'11	18°57	20°48	1R25	17°27	18°34	9°56	3°10	10°52	14° 3	8°16
S 11	17 17 15	20° 3'33	19°54	23°50	3° 3	17°54	18°40	9°58	3°11	10°52	14° 4	8°18
M12	17 21 12	21° 0'54	20°52	26°55	4°40	18°20	18°45	10° 0	3°11	10°52	14° 4	8°19
T 13	17 25 8	21°58'14	21°50	0R 3	6°18	18°46	18°50	10° 2	3°12	10°53	14° 5	8°21
W14	17 29 5	22°55'33	22°48	3°15	7°55	19°13	18°55	10° 3	3°13	10°53	14° 5	8°22
T 15	17 33 1	23°52'51	23°46	6°31	9°33	19°39	19° 0	10° 5	3°13	10°53	14° 5	8°24
F 16	17 36 58	24°50'08	24°45	9°51	11°10	20° 6	19° 6	10° 7	3°14	10°54	14° 6	8°25
S 17	17 40 55	25°47'25	25°43	13°15	12°48	20°32	19°11	10° 9	3°15	10°54	14° 6	8°27
S 18	17 44 51	26°44'41	26°42	16°45	14°25	20°58	19°16	10°11	3°15	10°54	14° 7	8°28
M19	17 48 48	27°41'56	27°41	20°19	16° 3	21°25	19°21	10°12	3°16	10°55	14° 7	8°30
T 20	17 52 44	28°39'11	28°40	23°59	17°40	21°51	19°27	10°14	3°17	10°55	14° 7	8°31
W21	17 56 41	29°36'26	29°39	27°44	19°18	22°18	19°32	10°16	3°18	10°56	14° 8	8°33
T 22	18 0 37	0R33'40	0R38	1R36	20°55	22°44	19°37	10°18	3°18	10°56	14° 8	8°34
F 23	18 4 34	1°30'54	1°37	5°35	22°33	23°10	19°42	10°20	3°19	10°56	14° 9	8°36
S 24	18 8 31	2°28'07	2°35	9°40	24°10	23°37	19°47	10°22	3°20	10°57	14° 9	8°37
S 25	18 12 27	3°25'21	3°33	13°53	25°48	24° 3	19°53	10°23	3°20	10°57	14°10	8°39
M26	18 16 24	4°22'34	4°31	18°13	27°26	24°29	19°58	10°25	3°21	10°57	14°10	8°40
T 27	18 20 20	5°19'47	5°28	22°41	29° 3	24°56	20° 3	10°27	3°22	10°58	14°10	8°42
W28	18 24 17	6°17'01	6°25	27°18	0M41	25°22	20° 8	10°29	3°22	10°58	14°11	8°43
T 29	18 28 13	7°14'14	7°21	2Y 4	2°18	25°48	20°13	10°31	3°23	10°58	14°11	8°45
F 30	18 32 10	8R11'28	8R17	6Y58	3M56	26R14	20II19	10R32	3R24	10R59	14M12	8E46

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SWISS EPHEMERIS for the year 1989  
heliocentric

JULY 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♂
S 1	18 36 6	9♁ 8'42	9♁13	12♃ 1	5♃33	26♁41	20♁24	10♁34	3♁25	10♁59	14♁12	8♁48
S 2	18 40 3	10° 5'56	10° 8	17°14	7°11	27° 7	20°29	10°36	3°25	10°59	14°13	8°49
M 3	18 44 0	11° 3'10	11° 4	22°36	8°48	27°33	20°34	10°38	3°26	11° 0	14°13	8°51
T 4	18 47 56	12° 0'24	11°59	28° 6	10°26	27°59	20°40	10°40	3°27	11° 0	14°13	8°52
W 5	18 51 53	12°57'38	12°54	3♁45	12° 3	28°26	20°45	10°41	3°27	11° 1	14°14	8°54
T 6	18 55 49	13°54'51	13°50	9°33	13°40	28°52	20°50	10°43	3°28	11° 1	14°14	8°55
F 7	18 59 46	14°52'05	14°46	15°28	15°18	29°18	20°55	10°45	3°29	11° 1	14°15	8°57
S 8	19 3 42	15°49'18	15°42	21°30	16°55	29°44	21° 0	10°47	3°29	11° 2	14°15	8°58
S 9	19 7 39	16°46'31	16°38	27°38	18°33	0♃11	21° 6	10°49	3°30	11° 2	14°16	9° 0
M10	19 11 35	17°43'44	17°35	3♁51	20°10	0°37	21°11	10°50	3°31	11° 2	14°16	9° 1
T 11	19 15 32	18°40'57	18°32	10° 8	21°47	1° 3	21°16	10°52	3°31	11° 3	14°16	9° 3
W12	19 19 29	19°38'10	19°29	16°26	23°24	1°29	21°21	10°54	3°32	11° 3	14°17	9° 4
T 13	19 23 25	20°35'22	20°27	22°46	25° 2	1°55	21°26	10°56	3°33	11° 3	14°17	9° 6
F 14	19 27 22	21°32'35	21°25	29° 4	26°39	2°22	21°32	10°58	3°34	11° 4	14°18	9° 7
S 15	19 31 18	22°29'48	22°23	5♁20	28°16	2°48	21°37	11° 0	3°34	11° 4	14°18	9° 9
S 16	19 35 15	23°27'02	23°22	11°33	29°53	3°14	21°42	11° 1	3°35	11° 4	14°19	9°10
M17	19 39 11	24°24'15	24°21	17°40	1♁31	3°40	21°47	11° 3	3°36	11° 5	14°19	9°12
T 18	19 43 8	25°21'29	25°20	23°41	3° 8	4° 7	21°52	11° 5	3°36	11° 5	14°19	9°13
W19	19 47 5	26°18'43	26°19	29°35	4°45	4°33	21°58	11° 7	3°37	11° 6	14°20	9°15
T 20	19 51 1	27°15'57	27°18	5♁20	6°22	4°59	22° 3	11° 9	3°38	11° 6	14°20	9°16
F 21	19 54 58	28°13'12	28°17	10°57	7°59	5°25	22° 8	11°10	3°38	11° 6	14°21	9°18
S 22	19 58 54	29°10'28	29°16	16°24	9°36	5°51	22°13	11°12	3°39	11° 7	14°21	9°19
S 23	20 2 51	0♁ 7'44	0♁15	21°42	11°13	6°18	22°18	11°14	3°40	11° 7	14°22	9°21
M24	20 6 47	1° 5'01	1°13	26°50	12°50	6°44	22°24	11°16	3°40	11° 7	14°22	9°22
T 25	20 10 44	2° 2'20	2°11	1♃48	14°26	7°10	22°29	11°18	3°41	11° 8	14°22	9°24
W26	20 14 40	2°59'39	3° 8	6°37	16° 3	7°36	22°34	11°19	3°42	11° 8	14°23	9°25
T 27	20 18 37	3°56'59	4° 5	11°17	17°40	8° 2	22°39	11°21	3°43	11° 8	14°23	9°27
F 28	20 22 34	4°54'20	5° 2	15°48	19°17	8°29	22°44	11°23	3°43	11° 9	14°24	9°28
S 29	20 26 30	5°51'42	5°58	20°10	20°53	8°55	22°50	11°25	3°44	11° 9	14°24	9°30
S 30	20 30 27	6°49'05	6°54	24°23	22°30	9°21	22°55	11°27	3°45	11° 9	14°24	9°31
M31	20 34 23	7♁46'30	7♁50	28♃29	24♁ 7	9♃47	23♁ 0	11♁28	3♁45	11♁10	14♁25	9♁33

Delta T = 56.56 sec.

AUGUST 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♂
T 1	20 38 20	8♁43'55	8♁45	2♁28	25♁43	10♃13	23♁ 5	11♁30	3♁46	11♁10	14♁25	9♁34
W 2	20 42 16	9°41'20	9°41	6°19	27°20	10°40	23°10	11°32	3°47	11°11	14°26	9°36
T 3	20 46 13	10°38'47	10°36	10° 4	28°56	11° 6	23°15	11°34	3°47	11°11	14°26	9°37
F 4	20 50 9	11°36'15	11°32	13°43	0♁33	11°32	23°21	11°36	3°48	11°11	14°27	9°39
S 5	20 54 6	12°33'43	12°28	17°16	2° 9	11°58	23°26	11°38	3°49	11°12	14°27	9°40
S 6	20 58 3	13°31'12	13°24	20°44	3°45	12°24	23°31	11°39	3°49	11°12	14°27	9°42
M 7	21 1 59	14°28'42	14°21	24° 7	5°22	12°51	23°36	11°41	3°50	11°12	14°28	9°43
T 8	21 5 56	15°26'12	15°18	27°26	6°58	13°17	23°41	11°43	3°51	11°13	14°28	9°45
W 9	21 9 52	16°23'44	16°15	0♁40	8°34	13°43	23°47	11°45	3°52	11°13	14°29	9°46
T 10	21 13 49	17°21'16	17°12	3°50	10°10	14° 9	23°52	11°47	3°52	11°13	14°29	9°48
F 11	21 17 45	18°18'49	18°10	6°57	11°46	14°36	23°57	11°48	3°53	11°14	14°30	9°49
S 12	21 21 42	19°16'24	19° 8	10° 0	13°22	15° 2	24° 2	11°50	3°54	11°14	14°30	9°51
S 13	21 25 38	20°13'59	20° 7	13° 1	14°58	15°28	24° 7	11°52	3°54	11°14	14°30	9°52
M14	21 29 35	21°11'35	21° 6	15°59	16°34	15°54	24°13	11°54	3°55	11°15	14°31	9°54
T 15	21 33 32	22° 9'12	22° 5	18°54	18°10	16°21	24°18	11°56	3°56	11°15	14°31	9°56
W16	21 37 28	23° 6'50	23° 5	21°48	19°46	16°47	24°23	11°57	3°56	11°16	14°32	9°57
T 17	21 41 25	24° 4'29	24° 4	24°39	21°22	17°13	24°28	11°59	3°57	11°16	14°32	9°59
F 18	21 45 21	25° 2'10	25° 4	27°29	22°58	17°40	24°33	12° 1	3°58	11°16	14°33	10° 0
S 19	21 49 18	25°59'52	26° 3	0♁18	24°33	18° 6	24°38	12° 3	3°58	11°17	14°33	10° 2
S 20	21 53 14	26°57'35	27° 3	3° 5	26° 9	18°32	24°44	12° 5	3°59	11°17	14°33	10° 3
M21	21 57 11	27°55'20	28° 2	5°52	27°45	18°59	24°49	12° 6	4° 0	11°17	14°34	10° 5
T 22	22 1 7	28°53'07	29° 1	8°37	29°20	19°25	24°54	12° 8	4° 1	11°18	14°34	10° 6
W23	22 5 4	29°50'55	29°59	11°22	0♁56	19°51	24°59	12°10	4° 1	11°18	14°35	10° 8
T 24	22 9 1	0♁48'45	0♁57	14° 7	2°32	20°18	25° 4	12°12	4° 2	11°18	14°35	10° 9
F 25	22 12 57	1°46'37	1°55	16°52	4° 7	20°44	25° 9	12°14	4° 3	11°19	14°35	10°11
S 26	22 16 54	2°44'31	2°52	19°36	5°43	21°10	25°15	12°16	4° 3	11°19	14°36	10°12
S 27	22 20 50	3°42'27	3°49	22°21	7°18	21°37	25°20	12°17	4° 4	11°19	14°36	10°14
M28	22 24 47	4°40'24	4°46	25° 7	8°53	22° 3	25°25	12°19	4° 5	11°20	14°37	10°15
T 29	22 28 43	5°38'23	5°42	27°53	10°29	22°30	25°30	12°21	4° 5	11°20	14°37	10°17
W30	22 32 40	6°36'23	6°39	0♁40	12° 4	22°56	25°35	12°23	4° 6	11°21	14°38	10°18
T 31	22 36 36	7♁34'26	7♁35	3♁28	13♁39	23♃22	25♁40	12♁25	4♁ 7	11♁21	14♁38	10♁20

Delta T = 56.61 sec.

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SWISS EPHEMERIS for the year 1989  
heliocentric

SEPTEMBER 1989

00:00 UT

Day	Sid.t	Terra	☾	♁	♂	♄	♃	♅	♁	♆	♇	♈
F 1	22 40 33	8 <sup>h</sup> 32'29"	8 <sup>h</sup> 31'	6 <sup>h</sup> 18'	15 <sup>h</sup> 15'	23 <sup>h</sup> 49'	25 <sup>h</sup> 46'	12 <sup>h</sup> 26'	4 <sup>h</sup> 7'	11 <sup>h</sup> 21'	14 <sup>h</sup> 38'	10 <sup>h</sup> 21'
S 2	22 44 30	9°30'35"	9°28'	9°9'	16°50'	24°15'	25°51'	12°28'	4°8'	11°22'	14°39'	10°23'
S 3	22 48 26	10°28'42"	10°24'	12°2'	18°25'	24°42'	25°56'	12°30'	4°9'	11°22'	14°39'	10°25'
M 4	22 52 23	11°26'50"	11°21'	14°57'	20°0'	25°8'	26°1'	12°32'	4°10'	11°22'	14°40'	10°26'
T 5	22 56 19	12°25'00"	12°18'	17°54'	21°35'	25°35'	26°6'	12°34'	4°10'	11°23'	14°40'	10°28'
W 6	23 0 16	13°23'12"	13°15'	20°53'	23°11'	26°1'	26°11'	12°35'	4°11'	11°23'	14°41'	10°29'
T 7	23 4 12	14°21'25"	14°13'	23°56'	24°46'	26°28'	26°17'	12°37'	4°12'	11°23'	14°41'	10°31'
F 8	23 8 9	15°19'40"	15°11'	27°1'	26°21'	26°54'	26°22'	12°39'	4°12'	11°24'	14°41'	10°32'
S 9	23 12 5	16°17'56"	16°9'	0 <sup>h</sup> 32'	27°56'	27°21'	26°27'	12°41'	4°13'	11°24'	14°42'	10°34'
S 10	23 16 2	17°16'14"	17°8'	3°21'	29°31'	27°47'	26°32'	12°43'	4°14'	11°24'	14°42'	10°35'
M 11	23 19 58	18°14'33"	18°7'	6°37'	1 <sup>h</sup> 6'	28°14'	26°37'	12°44'	4°14'	11°25'	14°43'	10°37'
T 12	23 23 55	19°12'54"	19°7'	9°57'	2°41'	28°41'	26°42'	12°46'	4°15'	11°25'	14°43'	10°38'
W 13	23 27 52	20°11'16"	20°7'	13°22'	4°16'	29°7'	26°48'	12°48'	4°16'	11°26'	14°44'	10°40'
T 14	23 31 48	21°9'40"	21°7'	16°51'	5°51'	29°34'	26°53'	12°50'	4°16'	11°26'	14°44'	10°41'
F 15	23 35 45	22°8'06"	22°7'	20°26'	7°26'	0 <sup>h</sup> 1'	26°58'	12°52'	4°17'	11°26'	14°44'	10°43'
S 16	23 39 41	23°6'34"	23°8'	24°6'	9°1'	0°27'	27°3'	12°54'	4°18'	11°27'	14°45'	10°44'
S 17	23 43 38	24°5'03"	24°8'	27°51'	10°36'	0°54'	27°8'	12°55'	4°19'	11°27'	14°45'	10°46'
M 18	23 47 34	25°3'34"	25°8'	1 <sup>h</sup> 43'	12°10'	1°21'	27°13'	12°57'	4°19'	11°27'	14°46'	10°48'
T 19	23 51 31	26°2'08"	26°8'	5°42'	13°45'	1°47'	27°19'	12°59'	4°20'	11°28'	14°46'	10°49'
W 20	23 55 27	27°0'44"	27°8'	9°48'	15°20'	2°14'	27°24'	13°1'	4°21'	11°28'	14°47'	10°51'
T 21	23 59 24	27°59'22"	28°8'	14°1'	16°55'	2°41'	27°29'	13°3'	4°21'	11°28'	14°47'	10°52'
F 22	0 3 21	28°58'03"	29°7'	18°21'	18°30'	3°8'	27°34'	13°4'	4°22'	11°29'	14°47'	10°54'
S 23	0 7 17	29°56'45"	0 <sup>h</sup> 5'	22°50'	20°5'	3°34'	27°39'	13°6'	4°23'	11°29'	14°48'	10°55'
S 24	0 11 14	0 <sup>h</sup> 55'30"	1°4'	27°27'	21°40'	4°1'	27°44'	13°8'	4°23'	11°29'	14°48'	10°57'
M 25	0 15 10	1°54'17"	2°2'	2 <sup>h</sup> 13'	23°15'	4°28'	27°49'	13°10'	4°24'	11°30'	14°49'	10°58'
T 26	0 19 7	2°53'06"	2°59'	7°7'	24°49'	4°55'	27°55'	13°12'	4°25'	11°30'	14°49'	11°0'
W 27	0 23 3	3°51'58"	3°57'	12°11'	26°24'	5°22'	28°0'	13°13'	4°25'	11°31'	14°49'	11°1'
T 28	0 27 0	4°50'51"	4°54'	17°24'	27°59'	5°49'	28°5'	13°15'	4°26'	11°31'	14°50'	11°3'
F 29	0 30 56	5°49'47"	5°51'	22°45'	29°34'	6°16'	28°10'	13°17'	4°27'	11°31'	14°50'	11°4'
S 30	0 34 53	6°48'45"	6°49'	28°16'	1 <sup>h</sup> 39'	6°43'	28°15'	13°19'	4°28'	11°32'	14°51'	11°6'

Delta T = 56.66 sec.

OCTOBER 1989

00:00 UT

Day	Sid.t	Terra	☾	♁	♂	♄	♃	♅	♁	♆	♇	♈
S 1	0 38 50	7 <sup>h</sup> 47'44"	7 <sup>h</sup> 46'	3 <sup>h</sup> 56'	2 <sup>h</sup> 44'	7 <sup>h</sup> 10'	28°11'20"	13°21'	4°28'	11°32'	14°51'	11°58'8"
M 2	0 42 46	8°46'46"	8°43'	9°44'	4°19'	7°37'	28°25'	13°22'	4°29'	11°32'	14°52'	11°9'
T 3	0 46 43	9°45'50"	9°41'	15°39'	5°53'	8°4'	28°31'	13°24'	4°30'	11°33'	14°52'	11°11'
W 4	0 50 39	10°44'55"	10°38'	21°41'	7°28'	8°31'	28°36'	13°26'	4°30'	11°33'	14°52'	11°12'
T 5	0 54 36	11°44'03"	11°36'	27°50'	9°3'	8°58'	28°41'	13°28'	4°31'	11°33'	14°53'	11°14'
F 6	0 58 32	12°43'12"	12°35'	4 <sup>h</sup> 11'3"	10°38'	9°25'	28°46'	13°30'	4°32'	11°34'	14°53'	11°15'
S 7	1 2 29	13°42'23"	13°34'	10°19'	12°13'	9°52'	28°51'	13°32'	4°32'	11°34'	14°54'	11°17'
S 8	1 6 25	14°41'36"	14°33'	16°38'	13°48'	10°19'	28°56'	13°33'	4°33'	11°34'	14°54'	11°18'
M 9	1 10 22	15°40'51"	15°32'	22°57'	15°23'	10°46'	29°2'	13°35'	4°34'	11°35'	14°55'	11°20'
T 10	1 14 19	16°40'07"	16°32'	29°16'	16°58'	11°13'	29°7'	13°37'	4°34'	11°35'	14°55'	11°21'
W 11	1 18 15	17°39'25"	17°33'	5 <sup>h</sup> 32'32"	18°33'	11°40'	29°12'	13°39'	4°35'	11°36'	14°55'	11°23'
T 12	1 22 12	18°38'45"	18°33'	11°44'	20°8'	12°8'	29°17'	13°41'	4°36'	11°36'	14°56'	11°25'
F 13	1 26 8	19°38'06"	19°34'	17°51'	21°43'	12°35'	29°22'	13°42'	4°37'	11°36'	14°56'	11°26'
S 14	1 30 5	20°37'30"	20°36'	23°52'	23°18'	13°2'	29°27'	13°44'	4°37'	11°37'	14°57'	11°28'
S 15	1 34 1	21°36'55"	21°37'	29°45'	24°53'	13°29'	29°32'	13°46'	4°38'	11°37'	14°57'	11°29'
M 16	1 37 58	22°36'23"	22°39'	5 <sup>h</sup> 30'30"	26°28'	13°57'	29°37'	13°48'	4°39'	11°37'	14°58'	11°31'
T 17	1 41 54	23°35'53"	23°40'	11°7'	28°3'	14°24'	29°43'	13°50'	4°39'	11°38'	14°58'	11°32'
W 18	1 45 51	24°35'25"	24°41'	16°34'	29°38'	14°52'	29°48'	13°51'	4°40'	11°38'	14°58'	11°34'
T 19	1 49 48	25°34'59"	25°42'	21°51'	1 <sup>h</sup> 13'	15°19'	29°53'	13°53'	4°41'	11°38'	14°59'	11°35'
F 20	1 53 44	26°34'36"	26°43'	26°59'	2°48'	15°46'	29°58'	13°55'	4°41'	11°39'	14°59'	11°37'
S 21	1 57 41	27°34'14"	27°43'	1 <sup>h</sup> 57'57"	4°23'	16°14'	0 <sup>h</sup> 3'	13°57'	4°42'	11°39'	15°0'	11°39'
S 22	2 1 37	28°33'56"	28°43'	6°46'	5°58'	16°41'	0°8'	13°59'	4°43'	11°39'	15°0'	11°40'
M 23	2 5 34	29°33'39"	29°42'	11°25'	7°33'	17°9'	0°13'	14°1'	4°43'	11°40'	15°0'	11°42'
T 24	2 9 30	0 <sup>h</sup> 33'24"	0 <sup>h</sup> 42'	15°56'	9°8'	17°36'	0°19'	14°2'	4°44'	11°40'	15°1'	11°43'
W 25	2 13 27	1°33'12"	1°40'	20°18'	10°43'	18°4'	0°24'	14°4'	4°45'	11°41'	15°1'	11°45'
T 26	2 17 23	2°33'02"	2°39'	24°31'	12°18'	18°32'	0°29'	14°6'	4°45'	11°41'	15°2'	11°46'
F 27	2 21 20	3°32'54"	3°37'	28°37'	13°54'	18°59'	0°34'	14°8'	4°46'	11°41'	15°2'	11°48'
S 28	2 25 17	4°32'48"	4°36'	2 <sup>h</sup> 43'55"	15°29'	19°27'	0°39'	14°10'	4°47'	11°42'	15°3'	11°49'
S 29	2 29 13	5°32'44"	5°34'	6°27'	17°4'	19°55'	0°44'	14°11'	4°48'	11°42'	15°3'	11°51'
M 30	2 33 10	6°32'42"	6°32'	10°11'	18°39'	20°22'	0°49'	14°13'	4°48'	11°42'	15°3'	11°53'
T 31	2 37 6	7 <sup>h</sup> 32'42"	7 <sup>h</sup> 30'	13 <sup>h</sup> 45'50"	20 <sup>h</sup> 15'	20 <sup>h</sup> 50'	0 <sup>h</sup> 54'	14°15'	4°49'	11°43'	15 <sup>h</sup> 4'	11°54'

Delta T = 56.71 sec.

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SWISS EPHEMERIS for the year 1989  
heliocentric

NOVEMBER 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
W 1	2 41 3	8♃32'44	8♃29	17♂23	21♃50	21♂18	1♁0	14♃17	4♃50	11♃43	15♁4	11♁56
T 2	2 44 59	9°32'48	9°27	20°51	23°25	21°46	1°5	14°19	4°50	11°43	15°5	11°57
F 3	2 48 56	10°32'53	10°26	24°14	25°1	22°14	1°10	14°20	4°51	11°44	15°5	11°59
S 4	2 52 52	11°33'00	11°25	27°32	26°36	22°42	1°15	14°22	4°52	11°44	15°6	12°0
S 5	2 56 49	12°33'09	12°25	0♁46	28°11	23°9	1°20	14°24	4°52	11°44	15°6	12°2
M 6	3 0 46	13°33'19	13°24	3°56	29°47	23°37	1°25	14°26	4°53	11°45	15°6	12°4
T 7	3 4 42	14°33'31	14°25	7°3	1°V22	24°5	1°30	14°28	4°54	11°45	15°7	12°5
W 8	3 8 39	15°33'44	15°25	10°6	2°58	24°33	1°35	14°29	4°54	11°46	15°7	12°7
T 9	3 12 35	16°33'58	16°27	13°7	4°33	25°1	1°41	14°31	4°55	11°46	15°8	12°8
F 10	3 16 32	17°34'14	17°28	16°5	6°9	25°30	1°46	14°33	4°56	11°46	15°8	12°10
S 11	3 20 28	18°34'31	18°30	19°0	7°44	25°58	1°51	14°35	4°57	11°47	15°9	12°11
S 12	3 24 25	19°34'50	19°32	21°53	9°20	26°26	1°56	14°37	4°57	11°47	15°9	12°13
M13	3 28 21	20°35'11	20°35	24°45	10°55	26°54	2°1	14°39	4°58	11°47	15°9	12°14
T 14	3 32 18	21°35'33	21°37	27°35	12°31	27°22	2°6	14°40	4°59	11°48	15°10	12°16
W15	3 36 15	22°35'58	22°39	0♃23	14°6	27°51	2°11	14°42	4°59	11°48	15°10	12°18
T 16	3 40 11	23°36'23	23°42	3°11	15°42	28°19	2°16	14°44	5°0	11°48	15°11	12°19
F 17	3 44 8	24°36'51	24°44	5°57	17°18	28°47	2°21	14°46	5°1	11°49	15°11	12°21
S 18	3 48 4	25°37'21	25°45	8°43	18°53	29°16	2°27	14°48	5°1	11°49	15°12	12°22
S 19	3 52 1	26°37'52	26°47	11°28	20°29	29°44	2°32	14°49	5°2	11°49	15°12	12°24
M20	3 55 57	27°38'25	27°48	14°12	22°5	0♁13	2°37	14°51	5°3	11°50	15°12	12°25
T 21	3 59 54	28°38'59	28°48	16°57	23°41	0°41	2°42	14°53	5°3	11°50	15°13	12°27
W22	4 3 50	29°39'36	29°48	19°42	25°16	1°10	2°47	14°55	5°4	11°51	15°13	12°29
T 23	4 7 47	0♁40'14	0♁48	22°27	26°52	1°38	2°52	14°57	5°5	11°51	15°14	12°30
F 24	4 11 44	1°40'54	1°48	25°12	28°28	2°7	2°57	14°58	5°6	11°51	15°14	12°32
S 25	4 15 40	2°41'35	2°47	27°58	0♃4	2°35	3°2	15°0	5°6	11°52	15°14	12°33
S 26	4 19 37	3°42'18	3°47	0♃46	1°40	3°4	3°7	15°2	5°7	11°52	15°15	12°35
M27	4 23 33	4°43'02	4°46	3°34	3°16	3°33	3°13	15°4	5°8	11°52	15°15	12°36
T 28	4 27 30	5°43'48	5°45	6°23	4°52	4°2	3°18	15°6	5°8	11°53	15°16	12°38
W29	4 31 26	6°44'35	6°44	9°15	6°28	4°30	3°23	15°8	5°9	11°53	15°16	12°40
T 30	4 35 23	7♁45'24	7♁43	12♃7	8♃4	4♁59	3♁28	15♃9	5♃10	11♃53	15♁17	12♁41

Delta T = 56.76 sec.

DECEMBER 1989

00:00 UT

Day	Sid.t	Terra	☾	♃	♄	♅	♆	♁	♂	♆	♁	♄
F 1	4 39 19	8♁46'14	8♁42	15♃2	9♃40	5♁28	3♁33	15♃11	5♃10	11♃54	15♁17	12♁43
S 2	4 43 16	9°47'04	9°41	17°59	11°16	5°57	3°38	15°13	5°11	11°54	15°17	12°44
S 3	4 47 13	10°47'56	10°41	20°59	12°52	6°26	3°43	15°15	5°12	11°54	15°18	12°46
M 4	4 51 9	11°48'48	11°41	24°1	14°28	6°55	3°48	15°17	5°12	11°55	15°18	12°48
T 5	4 55 6	12°49'41	12°41	27°7	16°4	7°24	3°53	15°18	5°13	11°55	15°19	12°49
W 6	4 59 2	13°50'35	13°42	0♁15	17°40	7°53	3°59	15°20	5°14	11°56	15°19	12°51
T 7	5 2 59	14°51'30	14°43	3°28	19°17	8°22	4°4	15°22	5°15	11°56	15°20	12°52
F 8	5 6 55	15°52'25	15°45	6°44	20°53	8°51	4°9	15°24	5°15	11°56	15°20	12°54
S 9	5 10 52	16°53'21	16°47	10°4	22°29	9°21	4°14	15°26	5°16	11°57	15°20	12°55
S 10	5 14 48	17°54'18	17°49	13°28	24°5	9°50	4°19	15°27	5°17	11°57	15°21	12°57
M11	5 18 45	18°55'16	18°52	16°58	25°42	10°19	4°24	15°29	5°17	11°57	15°21	12°59
T 12	5 22 42	19°56'14	19°55	20°33	27°18	10°49	4°29	15°31	5°18	11°58	15°22	13°0
W13	5 26 38	20°57'13	20°58	24°13	28°54	11°18	4°34	15°33	5°19	11°58	15°22	13°2
T 14	5 30 35	21°58'13	22°1	27°59	0♁31	11°47	4°39	15°35	5°19	11°58	15°23	13°3
F 15	5 34 31	22°59'14	23°4	1♃51	2°7	12°17	4°44	15°37	5°20	11°59	15°23	13°5
S 16	5 38 28	24°0'15	24°6	5°50	3°44	12°46	4°50	15°38	5°21	11°59	15°23	13°7
S 17	5 42 24	25°1'18	25°9	9°55	5°20	13°16	4°55	15°40	5°21	11°59	15°24	13°8
M18	5 46 21	26°2'21	26°11	14°9	6°57	13°46	5°0	15°42	5°22	12°0	15°24	13°10
T 19	5 50 18	27°3'25	27°12	18°30	8°33	14°15	5°5	15°44	5°23	12°0	15°25	13°11
W20	5 54 14	28°4'30	28°14	22°58	10°10	14°45	5°10	15°46	5°24	12°1	15°25	13°13
T 21	5 58 11	29°5'36	29°15	27°36	11°46	15°15	5°15	15°47	5°24	12°1	15°26	13°14
F 22	6 2 7	0♁6'42	0♁15	2°V22	13°23	15°45	5°20	15°49	5°25	12°1	15°26	13°16
S 23	6 6 4	1°7'50	1°16	7°17	15°0	16°15	5°25	15°51	5°26	12°2	15°26	13°18
S 24	6 10 0	2°8'58	2°16	12°21	16°36	16°44	5°30	15°53	5°26	12°2	15°27	13°19
M25	6 13 57	3°10'06	3°16	17°34	18°13	17°14	5°35	15°55	5°27	12°2	15°27	13°21
T 26	6 17 53	4°11'15	4°15	22°56	19°50	17°44	5°40	15°56	5°28	12°3	15°28	13°22
W27	6 21 50	5°12'25	5°15	28°27	21°27	18°14	5°46	15°58	5°28	12°3	15°28	13°24
T 28	6 25 47	6°13'35	6°14	4♃7	23°4	18°45	5°51	16°0	5°29	12°3	15°28	13°26
F 29	6 29 43	7°14'45	7°13	9°55	24°40	19°15	5°56	16°2	5°30	12°4	15°29	13°27
S 30	6 33 40	8°15'56	8°13	15°50	26°17	19°45	6°1	16°4	5°30	12°4	15°29	13°29
S 31	6 37 36	9♁17'06	9♁12	21♃53	27♁54	20♁15	6♁6	16♃6	5♃31	12♃4	15♁30	13♁30

Delta T = 56.81 sec.

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