



## Venus 2021

Datum	$\alpha$	$\delta$	b	$\Delta$ (AE)	E	mv	$\varphi$	$\emptyset$	k	q (")	$\Delta\alpha$ (h:m)	$\Delta\delta$ (°)	l	r
1.01.	17:18	-22.4	0.7	1.560	20 W	-3.9	28.2	10.69	0.941	0.63	-1:28	0.6	232.2	0.724
4.01.	17:34	-22.8	0.5	1.570	20 W	-3.9	27.2	10.62	0.945	0.59	-1:25	-0.1	237.0	0.725
7.01.	17:51	-23.0	0.4	1.581	19 W	-3.9	26.2	10.55	0.949	0.54	-1:22	-0.7	241.8	0.725
10.01.	18:07	-23.1	0.3	1.590	18 W	-3.9	25.1	10.49	0.953	0.50	-1:19	-1.2	246.6	0.725
13.01.	18:23	-23.2	0.1	1.600	18 W	-3.9	24.1	10.43	0.956	0.46	-1:16	-1.7	251.3	0.726
16.01.	18:40	-23.1	0.0	1.609	17 W	-3.9	23.1	10.37	0.960	0.42	-1:12	-2.2	256.1	0.726
19.01.	18:56	-22.9	-0.1	1.618	16 W	-3.9	22.1	10.31	0.963	0.38	-1:09	-2.6	260.9	0.726
22.01.	19:12	-22.6	-0.2	1.626	15 W	-3.9	21.1	10.26	0.966	0.35	-1:05	-3.0	265.6	0.727
25.01.	19:28	-22.2	-0.4	1.635	15 W	-3.9	20.1	10.20	0.969	0.31	-1:01	-3.3	270.4	0.727
28.01.	19:45	-21.7	-0.5	1.642	14 W	-3.9	19.2	10.16	0.972	0.28	-0:58	-3.5	275.1	0.727
31.01.	20:00	-21.1	-0.6	1.650	13 W	-3.9	18.2	10.11	0.975	0.25	-0:54	-3.8	279.9	0.727
3.02.	20:16	-20.4	-0.7	1.657	13 W	-3.9	17.2	10.07	0.978	0.23	-0:51	-3.9	284.6	0.728
6.02.	20:32	-19.7	-0.8	1.664	12 W	-3.9	16.2	10.03	0.980	0.20	-0:47	-4.0	289.3	0.728
9.02.	20:47	-18.8	-0.9	1.670	11 W	-3.9	15.3	9.99	0.982	0.18	-0:43	-4.1	294.1	0.728
12.02.	21:03	-17.8	-1.0	1.676	10 W	-3.9	14.3	9.95	0.985	0.15	-0:40	-4.2	298.8	0.728
15.02.	21:18	-16.8	-1.1	1.682	10 W	-3.9	13.3	9.92	0.987	0.13	-0:37	-4.1	303.6	0.728
18.02.	21:33	-15.7	-1.1	1.687	9 W	-3.9	12.3	9.89	0.988	0.11	-0:33	-4.1	308.3	0.728
21.02.	21:48	-14.6	-1.2	1.692	8 W	-3.9	11.4	9.86	0.990	0.10	-0:30	-4.0	313.1	0.728
24.02.	22:02	-13.3	-1.3	1.697	8 W	-3.9	10.4	9.83	0.992	0.08	-0:27	-3.9	317.8	0.728
27.02.	22:17	-12.1	-1.3	1.701	7 W	-3.9	9.4	9.80	0.993	0.07	-0:24	-3.7	322.6	0.728
2.03.	22:31	-10.7	-1.4	1.705	6 W	-3.9	8.5	9.78	0.995	0.05	-0:21	-3.5	327.3	0.728
5.03.	22:45	-9.4	-1.4	1.709	5 W	-3.9	7.5	9.76	0.996	0.04	-0:18	-3.3	332.1	0.728
8.03.	22:59	-8.0	-1.4	1.712	5 W	-3.9	6.5	9.74	0.997	0.03	-0:15	-3.1	336.8	0.728
11.03.	23:13	-6.5	-1.4	1.715	4 W	-3.9	5.6	9.73	0.998	0.02	-0:12	-2.8	341.6	0.728
14.03.	23:27	-5.1	-1.4	1.717	3 W	-3.9	4.7	9.71	0.998	0.02	-0:09	-2.5	346.3	0.727
17.03.	23:41	-3.6	-1.4	1.719	3 W	-3.9	3.7	9.70	0.999	0.01	-0:06	-2.2	351.1	0.727
20.03.	23:55	-2.1	-1.4	1.721	2 W	-3.9	2.9	9.69	0.999	0.01	-0:04	-1.9	355.9	0.727
23.03.	0:08	-0.6	-1.4	1.722	2 W	-3.9	2.2	9.69	1.000	0.00	-0:01	-1.6	0.6	0.727
26.03.	0:22	0.9	-1.4	1.723	1 W	-3.9	1.9	9.68	1.000	0.00	0:02	-1.3	5.4	0.726
29.03.	0:35	2.4	-1.3	1.723	1 O	-3.9	2.0	9.68	1.000	0.00	0:05	-0.9	10.2	0.726
1.04.	0:49	4.0	-1.3	1.723	2 O	-3.9	2.7	9.68	0.999	0.01	0:07	-0.6	15.0	0.726
4.04.	1:03	5.4	-1.2	1.723	3 O	-3.9	3.5	9.68	0.999	0.01	0:10	-0.3	19.7	0.725
7.04.	1:17	6.9	-1.1	1.722	3 O	-3.9	4.4	9.69	0.999	0.01	0:13	0.1	24.5	0.725
10.04.	1:30	8.4	-1.1	1.721	4 O	-3.9	5.4	9.69	0.998	0.02	0:16	0.4	29.3	0.724
13.04.	1:44	9.8	-1.0	1.719	5 O	-3.9	6.4	9.70	0.997	0.03	0:19	0.7	34.1	0.724
16.04.	1:58	11.2	-0.9	1.716	5 O	-3.9	7.5	9.72	0.996	0.04	0:21	1.1	38.9	0.724
19.04.	2:12	12.5	-0.8	1.714	6 O	-3.9	8.5	9.73	0.994	0.05	0:24	1.4	43.7	0.723
22.04.	2:27	13.8	-0.7	1.710	7 O	-3.9	9.6	9.75	0.993	0.07	0:27	1.6	48.5	0.723
25.04.	2:41	15.1	-0.6	1.707	8 O	-3.9	10.7	9.77	0.991	0.08	0:31	1.9	53.3	0.722
28.04.	2:56	16.3	-0.5	1.702	8 O	-3.9	11.8	9.80	0.989	0.10	0:34	2.1	58.2	0.722



Datum	$\alpha$	$\delta$	b	$\Delta$ (AE)	E	mv	$\varphi$	$\varnothing$	k	q (")	$\Delta\alpha$ (h:m)	$\Delta\delta$ (°)	l	r
1.05.	3:10	17.4	-0.3	1.698	9 O	-3.9	12.9	9.82	0.987	0.12	0:37	2.3	63.0	0.722
4.05.	3:25	18.5	-0.2	1.693	10 O	-3.9	14.0	9.85	0.985	0.15	0:41	2.5	67.8	0.721
7.05.	3:40	19.5	-0.1	1.687	11 O	-3.9	15.2	9.89	0.983	0.17	0:44	2.7	72.6	0.721
10.05.	3:56	20.4	0.0	1.681	12 O	-3.9	16.3	9.92	0.980	0.20	0:48	2.8	77.5	0.720
13.05.	4:11	21.2	0.1	1.674	12 O	-3.9	17.5	9.96	0.977	0.23	0:51	2.9	82.3	0.720
16.05.	4:26	22.0	0.3	1.667	13 O	-3.9	18.6	10.01	0.974	0.26	0:55	2.9	87.1	0.720
19.05.	4:42	22.6	0.4	1.659	14 O	-3.9	19.8	10.06	0.970	0.30	0:59	2.9	92.0	0.720
22.05.	4:58	23.2	0.5	1.651	15 O	-3.9	21.0	10.11	0.967	0.34	1:02	2.8	96.8	0.719
25.05.	5:14	23.6	0.6	1.642	16 O	-3.9	22.2	10.16	0.963	0.38	1:06	2.7	101.7	0.719
28.05.	5:30	24.0	0.7	1.632	16 O	-3.9	23.3	10.22	0.959	0.42	1:10	2.5	106.6	0.719
31.05.	5:46	24.3	0.9	1.623	17 O	-3.9	24.5	10.28	0.955	0.46	1:14	2.3	111.4	0.719
3.06.	6:02	24.4	1.0	1.612	18 O	-3.9	25.7	10.35	0.950	0.51	1:18	2.1	116.3	0.719
6.06.	6:18	24.4	1.1	1.602	19 O	-3.9	27.0	10.42	0.946	0.57	1:21	1.8	121.2	0.719
9.06.	6:34	24.4	1.2	1.590	20 O	-3.9	28.2	10.49	0.941	0.62	1:25	1.4	126.0	0.718
12.06.	6:50	24.2	1.3	1.578	20 O	-3.9	29.4	10.57	0.936	0.68	1:29	1.0	130.9	0.718
15.06.	7:06	23.9	1.3	1.566	21 O	-3.9	30.6	10.65	0.930	0.74	1:32	0.6	135.8	0.718
18.06.	7:22	23.5	1.4	1.553	22 O	-3.9	31.8	10.74	0.925	0.81	1:36	0.1	140.7	0.718
21.06.	7:38	23.0	1.5	1.540	23 O	-3.9	33.0	10.83	0.919	0.88	1:39	-0.4	145.5	0.719
24.06.	7:53	22.4	1.5	1.526	23 O	-3.9	34.3	10.93	0.913	0.95	1:42	-1.0	150.4	0.719
27.06.	8:09	21.7	1.6	1.512	24 O	-3.9	35.5	11.03	0.907	1.03	1:45	-1.6	155.3	0.719
30.06.	8:24	21.0	1.6	1.497	25 O	-3.9	36.7	11.14	0.901	1.11	1:48	-2.2	160.2	0.719
3.07.	8:39	20.1	1.6	1.482	26 O	-3.9	38.0	11.25	0.894	1.19	1:50	-2.9	165.0	0.719
6.07.	8:54	19.2	1.7	1.467	27 O	-3.9	39.2	11.37	0.887	1.28	1:53	-3.5	169.9	0.719
9.07.	9:09	18.1	1.7	1.451	27 O	-3.9	40.4	11.50	0.881	1.37	1:55	-4.2	174.8	0.720
12.07.	9:23	17.0	1.7	1.435	28 O	-3.9	41.7	11.63	0.873	1.47	1:58	-4.9	179.6	0.720
15.07.	9:37	15.9	1.6	1.418	29 O	-3.9	42.9	11.76	0.866	1.57	1:60	-5.7	184.5	0.720
18.07.	9:52	14.6	1.6	1.401	30 O	-3.9	44.1	11.91	0.859	1.68	2:02	-6.4	189.3	0.721
21.07.	10:05	13.4	1.6	1.383	30 O	-3.9	45.4	12.06	0.851	1.79	2:04	-7.1	194.2	0.721
24.07.	10:19	12.0	1.5	1.366	31 O	-3.9	46.6	12.21	0.843	1.91	2:05	-7.8	199.0	0.721
27.07.	10:33	10.7	1.5	1.347	32 O	-3.9	47.9	12.38	0.836	2.04	2:07	-8.5	203.8	0.722
30.07.	10:46	9.3	1.4	1.329	33 O	-3.9	49.1	12.55	0.827	2.17	2:09	-9.3	208.7	0.722
2.08.	10:59	7.8	1.3	1.310	33 O	-4.0	50.3	12.73	0.819	2.30	2:10	-9.9	213.5	0.723
5.08.	11:13	6.3	1.2	1.291	34 O	-4.0	51.6	12.92	0.811	2.44	2:12	-10.6	218.3	0.723
8.08.	11:26	4.8	1.1	1.272	35 O	-4.0	52.8	13.11	0.802	2.59	2:13	-11.3	223.1	0.723
11.08.	11:38	3.3	1.0	1.252	35 O	-4.0	54.0	13.32	0.794	2.75	2:15	-11.9	227.9	0.724
14.08.	11:51	1.8	0.8	1.232	36 O	-4.0	55.3	13.54	0.785	2.91	2:17	-12.6	232.7	0.724
17.08.	12:04	0.2	0.7	1.212	37 O	-4.0	56.5	13.76	0.776	3.08	2:18	-13.2	237.5	0.725
20.08.	12:17	-1.3	0.5	1.192	37 O	-4.0	57.8	14.00	0.767	3.26	2:20	-13.8	242.3	0.725
23.08.	12:30	-2.9	0.4	1.171	38 O	-4.0	59.0	14.24	0.758	3.45	2:21	-14.3	247.0	0.725
26.08.	12:42	-4.4	0.2	1.150	39 O	-4.0	60.2	14.50	0.748	3.65	2:23	-14.8	251.8	0.726
29.08.	12:55	-5.9	0.0	1.129	39 O	-4.0	61.5	14.77	0.739	3.86	2:25	-15.3	256.6	0.726



Datum	$\alpha$	$\delta$	b	$\Delta$ (AE)	E	mv	$\varphi$	$\emptyset$	k	q (")	$\Delta\alpha$ (h:m)	$\Delta\delta$ (°)	l	r
1.09.	13:08	-7.4	-0.2	1.108	40 O	-4.0	62.8	15.05	0.729	4.08	2:27	-15.7	261.3	0.726
4.09.	13:21	-8.9	-0.4	1.087	40 O	-4.0	64.0	15.35	0.719	4.31	2:29	-16.1	266.1	0.727
7.09.	13:33	-10.4	-0.6	1.065	41 O	-4.1	65.3	15.66	0.709	4.56	2:31	-16.5	270.8	0.727
10.09.	13:46	-11.8	-0.8	1.043	42 O	-4.1	66.6	15.99	0.699	4.82	2:33	-16.8	275.6	0.727
13.09.	13:59	-13.2	-1.0	1.022	42 O	-4.1	67.9	16.33	0.688	5.09	2:35	-17.0	280.3	0.728
16.09.	14:12	-14.6	-1.2	1.000	43 O	-4.1	69.2	16.69	0.678	5.37	2:37	-17.2	285.1	0.728
19.09.	14:25	-15.9	-1.4	0.977	43 O	-4.1	70.5	17.07	0.667	5.68	2:40	-17.4	289.8	0.728
22.09.	14:39	-17.2	-1.6	0.955	44 O	-4.1	71.8	17.46	0.656	6.00	2:42	-17.5	294.6	0.728
25.09.	14:52	-18.4	-1.8	0.933	44 O	-4.2	73.1	17.88	0.645	6.35	2:45	-17.5	299.3	0.728
28.09.	15:05	-19.5	-2.0	0.910	44 O	-4.2	74.5	18.32	0.634	6.71	2:47	-17.5	304.1	0.728
1.10.	15:19	-20.6	-2.2	0.888	45 O	-4.2	75.9	18.79	0.622	7.10	2:50	-17.4	308.8	0.728
4.10.	15:33	-21.6	-2.4	0.865	45 O	-4.2	77.3	19.28	0.610	7.51	2:53	-17.3	313.5	0.728
7.10.	15:46	-22.6	-2.6	0.842	46 O	-4.2	78.7	19.80	0.598	7.96	2:55	-17.1	318.3	0.728
10.10.	16:00	-23.4	-2.8	0.819	46 O	-4.2	80.1	20.36	0.586	8.44	2:58	-16.8	323.0	0.728
13.10.	16:14	-24.2	-2.9	0.797	46 O	-4.3	81.6	20.94	0.573	8.95	3:01	-16.4	327.8	0.728
16.10.	16:28	-24.9	-3.1	0.774	46 O	-4.3	83.1	21.56	0.560	9.49	3:04	-16.0	332.5	0.728
19.10.	16:41	-25.5	-3.2	0.751	47 O	-4.3	84.7	22.22	0.546	10.08	3:06	-15.5	337.3	0.728
22.10.	16:55	-26.0	-3.4	0.728	47 O	-4.3	86.3	22.92	0.532	10.72	3:09	-15.0	342.1	0.728
25.10.	17:09	-26.4	-3.5	0.705	47 O	-4.4	87.9	23.67	0.518	11.41	3:11	-14.3	346.8	0.727
28.10.	17:22	-26.8	-3.6	0.682	47 O	-4.4	89.6	24.46	0.503	12.15	3:13	-13.7	351.6	0.727
31.10.	17:36	-27.0	-3.7	0.659	47 O	-4.4	91.4	25.32	0.488	12.97	3:15	-12.9	356.3	0.727
3.11.	17:49	-27.2	-3.8	0.636	47 O	-4.4	93.2	26.23	0.472	13.85	3:16	-12.1	1.1	0.727
6.11.	18:02	-27.2	-3.8	0.613	47 O	-4.5	95.1	27.20	0.455	14.81	3:17	-11.3	5.9	0.726
9.11.	18:14	-27.2	-3.8	0.590	47 O	-4.5	97.1	28.25	0.438	15.87	3:18	-10.4	10.7	0.726
12.11.	18:27	-27.1	-3.8	0.568	46 O	-4.5	99.2	29.37	0.420	17.02	3:18	-9.4	15.4	0.725
15.11.	18:38	-26.9	-3.8	0.545	46 O	-4.5	101.3	30.58	0.402	18.29	3:17	-8.4	20.2	0.725
18.11.	18:50	-26.7	-3.7	0.523	45 O	-4.6	103.6	31.88	0.382	19.69	3:16	-7.4	25.0	0.725
21.11.	19:00	-26.3	-3.6	0.501	45 O	-4.6	106.0	33.28	0.362	21.23	3:14	-6.4	29.8	0.724
24.11.	19:10	-25.9	-3.5	0.479	44 O	-4.6	108.6	34.79	0.341	22.93	3:11	-5.4	34.6	0.724
27.11.	19:19	-25.5	-3.3	0.458	43 O	-4.6	111.3	36.41	0.319	24.81	3:08	-4.3	39.4	0.724
30.11.	19:28	-25.0	-3.0	0.437	42 O	-4.7	114.2	38.15	0.295	26.88	3:03	-3.3	44.2	0.723
3.12.	19:35	-24.4	-2.8	0.417	41 O	-4.7	117.2	40.02	0.271	29.17	2:58	-2.3	49.0	0.723
6.12.	19:41	-23.8	-2.4	0.397	39 O	-4.7	120.6	42.02	0.246	31.69	2:51	-1.4	53.8	0.722
9.12.	19:46	-23.2	-2.0	0.378	37 O	-4.7	124.1	44.14	0.219	34.46	2:43	-0.4	58.6	0.722
12.12.	19:50	-22.6	-1.6	0.360	35 O	-4.7	128.0	46.37	0.192	37.46	2:34	0.5	63.5	0.722
15.12.	19:53	-22.0	-1.1	0.342	33 O	-4.6	132.2	48.70	0.164	40.69	2:23	1.3	68.3	0.721
18.12.	19:54	-21.3	-0.5	0.326	30 O	-4.6	136.7	51.10	0.136	44.13	2:11	2.0	73.1	0.721
21.12.	19:53	-20.7	0.1	0.312	27 O	-4.6	141.5	53.49	0.109	47.67	1:57	2.7	78.0	0.720
24.12.	19:51	-20.1	0.8	0.299	24 O	-4.5	146.7	55.82	0.082	51.23	1:41	3.3	82.8	0.720
27.12.	19:47	-19.5	1.6	0.288	20 O	-4.4	152.2	57.99	0.058	54.65	1:24	3.8	87.6	0.720
30.12.	19:42	-18.9	2.4	0.279	16 O	-4.3	158.0	59.88	0.036	57.70	1:06	4.2	92.5	0.720

Die Ephemeriden gelten für 0 Uhr Weltzeit.

Geozentrische Koordinaten:

$\alpha$  und  $\delta$ : Rektaszension und Deklination zum Äquinoktium des Datums. b: ekliptikale Breite;  $\Delta$ : Abstand von der Erde.  
E: Elongation (Winkel zwischen Planet und Sonnenmitte); mv: visuelle Helligkeit;  $\varphi$ : Phasenwinkel

Physische Ephemeriden (für Beobachtungen am Teleskop):

$\emptyset$ : scheinbarer Durchmesser;  
k: beleuchteter Teil; q: Phasendefekt (Beleuchtungsdefekt)

Koordinaten für Tagesbeobachtungen:

$\Delta\alpha$  und  $\Delta\delta$ : Rektaszensions- und Deklinationsdifferenzen (Venus minus Sonne)

Heliozentrische Koordinaten:

l: Länge zum Äquinoktium des Datums; r: Abstand von der Sonne.

14.09.2015