

Hourly Astronomical Tide Level at Kashima-ko, Ibaraki Pref. in 2011 (unit: centimeter) Issued by JMA

Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Jun	W	25	37	46	47	37	18	-7	-34	-58	-74	-77	-68	-48	-23	2	23	35	38	33	24	13	5	3	9	
2-Jun	Th	New Moon	20	33	45	51	47	32	8	-20	-48	-71	-82	-80	-65	-42	-15	11	30	39	39	31	21	10	4	6
3-Jun	F	14	27	41	51	53	44	24	-3	-33	-60	-79	-86	-78	-59	-33	-5	19	34	40	37	28	17	8	5	
4-Jun	Sa	9	20	34	47	54	52	38	15	-14	-43	-68	-83	-84	-71	-49	-23	4	25	37	39	34	24	13	6	
5-Jun	Su	6	13	25	39	49	53	47	31	6	-22	-50	-71	-81	-77	-62	-39	-12	12	29	38	37	30	19	10	
6-Jun	M	5	7	15	28	40	48	49	40	23	-2	-28	-52	-68	-73	-66	-50	-27	-3	18	32	37	34	25	15	
7-Jun	Tu	6	3	6	15	26	36	42	42	32	15	-6	-29	-48	-60	-62	-53	-36	-15	7	24	34	36	31	21	
8-Jun	W	11	2	-1	2	10	19	28	33	33	25	11	-7	-25	-40	-48	-47	-38	-22	-3	15	29	36	35	28	
9-Jun	Th	First Quarter	17	6	-3	-7	-6	0	8	17	22	23	19	9	-3	-17	-28	-33	-32	-23	-9	8	23	34	38	35
10-Jun	F	26	13	1	-10	-17	-18	-14	-6	3	11	16	12	4	-5	-14	-18	-17	-9	3	17	30	38	40		
11-Jun	Sa	35	24	9	-6	-20	-30	-33	-30	-21	-10	2	11	17	18	14	7	0	-4	-4	2	13	26	36	43	
12-Jun	Su	43	36	23	5	-15	-32	-45	-49	-46	-35	-20	-4	11	21	25	24	18	11	6	6	11	21	32	42	
13-Jun	M	48	47	38	21	-1	-25	-45	-60	-65	-59	-46	-27	-6	13	27	33	32	27	19	13	12	17	27	38	
14-Jun	Tu	48	53	50	38	18	-8	-35	-58	-73	-76	-68	-51	-28	-3	18	33	39	38	31	22	16	15	21	31	
15-Jun	W	44	54	58	53	37	13	-16	-45	-69	-83	-83	-72	-51	-24	2	25	39	43	40	31	22	15	16	23	
16-Jun	Th	Full Moon	35	48	58	61	53	34	7	-24	-54	-77	-87	-84	-69	-45	-17	10	31	42	44	38	28	18	13	15
17-Jun	F	25	38	52	61	61	50	28	-1	-32	-61	-80	-86	-79	-60	-35	-7	18	36	43	42	34	23	13	10	
18-Jun	Sa	15	27	41	54	61	58	44	20	-9	-39	-64	-79	-80	-68	-47	-22	5	26	39	42	38	28	16	8	
19-Jun	Su	7	15	28	42	54	58	52	35	11	-17	-44	-64	-73	-69	-54	-32	-7	16	33	40	39	32	20	9	
20-Jun	M	3	5	15	28	41	50	52	43	25	2	-23	-45	-59	-62	-54	-37	-15	7	26	37	40	35	25	13	
21-Jun	Tu	4	0	4	13	26	37	43	42	32	15	-5	-26	-42	-50	-48	-37	-19	0	19	33	40	38	30	19	
22-Jun	W	7	-1	-3	1	10	21	30	34	31	22	7	-9	-24	-35	-37	-32	-20	-3	14	29	38	40	35	26	
23-Jun	Th	Last Quarter	14	2	-5	-7	-3	4	13	20	24	21	14	3	-9	-19	-24	-23	-16	-5	10	24	35	40	39	32
24-Jun	F	22	9	-2	-10	-12	-10	-4	3	10	14	14	10	3	-4	-9	-12	-10	-3	8	20	31	38	40	37	
25-Jun	Sa	30	18	5	-7	-16	-20	-20	-14	-7	1	7	10	10	8	4	1	0	2	8	16	26	34	40	41	
26-Jun	Su	36	28	15	0	-14	-25	-31	-31	-25	-16	-5	4	11	15	15	14	11	10	10	15	22	30	37	41	
27-Jun	M	41	36	26	11	-7	-23	-36	-43	-42	-34	-21	-7	6	17	22	24	22	19	16	15	18	25	32	39	
28-Jun	Tu	44	43	37	23	5	-16	-35	-49	-54	-51	-40	-23	-5	12	24	31	32	28	23	19	17	20	27	35	
29-Jun	W	43	48	46	36	19	-3	-27	-48	-62	-65	-57	-41	-20	1	20	33	38	37	31	24	18	17	21	30	
30-Jun	Th	40	49	52	48	35	13	-13	-40	-61	-72	-72	-60	-39	-14	10	29	41	43	39	30	22	16	17	23	

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Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Jul	F	New Moon	34	46	55	57	49	31	5	-24	-52	-72	-80	-74	-57	-32	-5	20	38	46	45	37	27	18	13	16
2-Jul	Sa		25	39	51	60	59	48	26	-4	-34	-61	-79	-82	-71	-50	-22	6	30	45	49	44	33	21	12	10
3-Jul	Su		15	28	43	56	63	59	44	18	-12	-43	-67	-80	-78	-63	-38	-9	18	39	49	48	39	27	14	6
4-Jul	M		6	15	29	45	57	62	55	37	11	-19	-47	-67	-75	-68	-49	-23	5	29	45	50	45	33	18	5
5-Jul	Tu		-1	2	14	29	44	55	57	48	30	4	-23	-47	-62	-64	-52	-32	-6	19	39	49	49	39	24	9
6-Jul	W		-3	-7	-2	10	25	39	48	49	40	22	0	-23	-41	-50	-47	-33	-13	11	32	47	51	45	32	16
7-Jul	Th		0	-11	-13	-8	3	17	30	38	38	30	16	-1	-18	-30	-33	-27	-13	6	26	42	51	50	40	25
8-Jul	F	First Quarter	8	-7	-17	-20	-15	-6	6	18	25	27	23	14	2	-8	-15	-15	-7	6	22	38	49	52	48	36
9-Jul	Sa		20	2	-13	-24	-28	-25	-17	-7	5	13	18	15	9	4	1	3	10	21	34	45	52	52	46	
10-Jul	Su		33	16	-1	-18	-30	-36	-36	-30	-20	-8	3	12	18	20	19	17	22	30	40	48	53	52		
11-Jul	M		45	33	16	-4	-22	-37	-46	-48	-42	-31	-17	-2	12	22	28	29	28	26	25	28	34	42	49	53
12-Jul	Tu		53	47	34	16	-6	-27	-45	-56	-59	-53	-39	-22	-3	15	29	36	38	35	31	28	29	33	41	49
13-Jul	W		54	55	50	36	16	-9	-33	-53	-65	-67	-59	-42	-21	2	22	37	43	43	37	30	26	25	30	39
14-Jul	Th		49	57	59	53	37	14	-13	-40	-61	-72	-71	-59	-39	-14	11	32	44	48	44	35	26	20	20	28
15-Jul	F	Full Moon	39	51	60	62	54	35	9	-20	-47	-67	-75	-70	-54	-30	-3	22	40	49	48	40	29	18	13	16
16-Jul	Sa		26	41	54	63	63	52	30	2	-28	-53	-70	-73	-62	-42	-16	11	33	47	50	45	33	19	9	6
17-Jul	Su		13	27	43	57	64	61	46	22	-7	-35	-57	-68	-64	-49	-26	0	25	43	51	48	38	23	9	1
18-Jul	M		2	12	28	45	57	62	55	37	12	-15	-40	-56	-60	-51	-32	-7	17	38	50	51	42	28	13	0
19-Jul	Tu		-5	0	13	29	45	55	56	45	26	2	-22	-40	-50	-47	-33	-12	11	33	47	52	47	34	18	2
20-Jul	W		-8	-9	-1	13	29	42	49	46	34	15	-5	-24	-36	-38	-30	-13	7	28	44	52	50	40	25	8
21-Jul	Th		-6	-13	-11	-2	12	26	36	40	35	23	8	-8	-21	-27	-23	-11	5	24	40	50	52	45	32	16
22-Jul	F		1	-11	-16	-13	-4	8	20	28	30	25	15	4	-7	-13	-14	-7	6	21	36	47	52	49	39	25
23-Jul	Sa	Last Quarter	9	-5	-15	-18	-15	-8	3	12	19	20	17	12	5	0	-2	1	8	19	32	43	49	50	44	33
24-Jul	Su		19	5	-8	-18	-22	-20	-14	-5	4	10	14	14	13	10	9	10	13	20	29	38	45	48	46	40
25-Jul	M		29	16	2	-11	-22	-27	-27	-22	-14	-5	4	11	16	18	19	20	21	23	27	33	40	44	46	44
26-Jul	Tu		38	28	15	0	-16	-28	-36	-37	-32	-22	-10	2	13	22	27	29	29	28	28	30	34	39	43	46
27-Jul	W		45	40	29	14	-4	-22	-37	-46	-47	-41	-28	-12	5	20	30	36	37	35	31	29	29	32	38	44
28-Jul	Th		48	49	43	31	13	-9	-31	-48	-58	-57	-47	-29	-9	12	29	40	44	42	36	30	26	25	30	38
29-Jul	F		46	53	54	48	32	9	-17	-41	-60	-67	-63	-48	-26	-1	22	40	48	48	42	33	24	19	20	28
30-Jul	Sa		40	51	60	61	51	31	4	-25	-51	-69	-73	-64	-44	-17	10	34	49	53	49	38	25	15	11	16
31-Jul	Su	New Moon	27	43	57	66	65	52	28	-3	-33	-59	-73	-72	-58	-33	-4	24	46	56	54	44	29	14	4	3

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Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Aug	M	12	27	45	61	69	65	49	22	-9	-39	-61	-70	-64	-44	-17	13	38	55	58	51	35	17	1	-7	
2-Aug	Tu	-5	8	27	46	62	68	62	43	16	-14	-40	-58	-60	-48	-25	3	30	51	60	57	43	23	3	-12	
3-Aug	W	-17	-11	5	25	45	59	63	54	35	10	-16	-37	-47	-43	-27	-3	23	46	60	61	51	32	10	-10	
4-Aug	Th	-23	-25	-15	1	21	39	51	53	44	27	7	-13	-27	-31	-22	-4	18	40	57	63	58	42	21	-1	
5-Aug	F	-20	-30	-29	-19	-3	14	30	40	41	34	21	6	-7	-14	-11	0	17	36	53	63	62	52	34	12	
6-Aug	Sa	First Quarter	-9	-25	-33	-32	-23	-10	5	19	27	29	25	18	10	4	2	8	19	34	49	60	63	58	45	27
7-Aug	Su		7	-12	-27	-34	-34	-28	-18	-5	6	15	19	20	19	17	16	18	23	33	44	54	60	60	53	41
8-Aug	M		24	6	-11	-25	-34	-37	-34	-27	-16	-5	6	14	21	25	26	27	29	33	39	46	52	56	55	49
9-Aug	Tu		39	26	9	-8	-24	-35	-41	-41	-35	-25	-12	2	15	26	33	35	36	35	36	38	42	47	50	52
10-Aug	W		49	42	30	13	-5	-24	-39	-47	-49	-42	-30	-13	5	22	34	41	42	39	35	32	32	35	40	47
11-Aug	Th		51	52	47	35	16	-5	-27	-44	-54	-54	-45	-29	-9	13	31	43	47	45	37	29	24	23	27	36
12-Aug	F		46	54	57	51	37	16	-9	-32	-50	-58	-55	-42	-22	2	25	42	50	50	42	30	19	13	14	22
13-Aug	Sa		35	49	59	61	54	36	11	-15	-39	-55	-59	-51	-33	-9	16	38	51	54	47	34	19	7	3	8
14-Aug	Su	Full Moon	21	37	53	63	63	52	30	4	-23	-45	-56	-54	-40	-18	8	32	49	56	52	39	22	6	-5	-5
15-Aug	M		6	23	41	57	65	61	45	22	-5	-29	-47	-51	-43	-24	1	26	46	57	56	45	27	8	-7	-14
16-Aug	Tu		-8	7	26	45	59	63	55	36	12	-12	-33	-43	-40	-26	-4	20	42	56	59	50	34	14	-5	-18
17-Aug	W		-19	-8	9	30	47	58	57	45	26	3	-17	-31	-34	-25	-6	16	37	54	60	55	40	21	0	-17
18-Aug	Th		-24	-20	-6	13	32	47	53	48	34	16	-3	-17	-24	-20	-6	13	33	50	60	59	47	29	8	-11
19-Aug	F		-24	-27	-19	-4	14	31	42	44	38	25	9	-4	-12	-12	-3	12	30	46	58	60	52	37	17	-3
20-Aug	Sa		-19	-27	-26	-16	-2	14	28	35	35	28	18	7	-1	-3	2	13	27	42	54	58	55	43	26	8
21-Aug	Su		-9	-22	-27	-24	-15	-2	11	21	26	26	21	15	9	7	8	15	26	38	49	55	55	47	35	19
22-Aug	M	Last Quarter	3	-12	-22	-26	-24	-16	-6	5	13	18	20	19	17	16	17	20	27	35	43	50	52	49	41	29
23-Aug	Tu		15	1	-12	-21	-26	-26	-21	-13	-3	6	13	18	21	23	25	27	30	34	39	44	47	47	44	38
24-Aug	W		28	16	3	-11	-22	-30	-32	-29	-21	-10	1	12	21	28	32	34	34	35	35	37	40	42	43	43
25-Aug	Th		39	32	20	5	-11	-26	-37	-41	-38	-29	-15	1	16	29	38	41	41	37	34	31	31	34	38	43
26-Aug	F		46	45	38	25	7	-14	-32	-46	-51	-46	-33	-14	6	25	39	47	47	42	34	27	22	23	28	37
27-Aug	Sa		46	52	53	45	29	6	-18	-40	-54	-58	-49	-31	-8	16	37	50	53	48	37	25	15	10	13	24
28-Aug	Su		37	51	61	61	51	30	4	-24	-47	-60	-59	-45	-22	4	30	49	58	55	43	27	10	-1	-3	5
29-Aug	M	New Moon	21	40	57	68	67	53	29	0	-29	-50	-59	-53	-34	-7	21	45	60	61	50	32	11	-7	-17	-15
30-Aug	Tu		-1	20	43	62	72	68	51	25	-4	-31	-48	-51	-39	-16	12	39	58	65	58	40	17	-7	-25	-31
31-Aug	W		-23	-4	20	44	63	71	64	46	21	-6	-28	-39	-35	-18	6	33	55	67	66	50	27	0	-24	-39

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Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Sep	Th	-40	-28	-6	19	43	60	64	56	39	17	-5	-21	-24	-15	5	28	51	67	70	60	39	13	-15	-36	
2-Sep	F	-47	-44	-29	-7	17	38	51	54	46	31	14	-1	-9	-6	7	26	47	64	72	68	52	28	1	-24	
3-Sep	Sa	-42	-49	-43	-28	-8	12	30	40	42	36	26	15	6	5	12	26	43	58	69	70	60	42	18	-7	
4-Sep	Su	-28	-42	-45	-40	-27	-11	6	20	28	30	28	23	18	16	19	27	39	52	62	67	63	52	34	13	
5-Sep	M	First Quarter	-8	-25	-36	-39	-36	-27	-15	-2	9	18	22	25	25	25	26	30	37	45	53	59	60	55	44	30
6-Sep	Tu		13	-3	-18	-28	-34	-33	-29	-20	-9	1	11	20	26	30	32	34	36	39	43	47	50	50	47	40
7-Sep	W		31	18	4	-10	-22	-31	-34	-32	-25	-15	-2	11	23	32	37	39	38	36	35	35	37	40	42	43
8-Sep	Th		41	35	25	11	-5	-19	-31	-37	-36	-28	-15	1	17	31	41	44	41	36	29	24	23	26	32	38
9-Sep	F		44	46	42	32	16	-3	-21	-34	-40	-37	-27	-10	9	28	42	48	47	39	28	18	11	11	17	27
10-Sep	Sa		39	48	52	48	35	16	-5	-25	-38	-41	-35	-20	0	22	40	51	52	44	31	16	3	-2	1	12
11-Sep	Su		28	43	55	58	50	34	12	-10	-29	-40	-39	-27	-7	15	37	51	56	50	36	18	0	-11	-13	-4
12-Sep	M	Full Moon	13	32	50	60	60	49	29	6	-16	-32	-37	-30	-13	9	32	50	59	55	42	23	2	-16	-24	-19
13-Sep	Tu		-4	17	38	56	63	59	43	22	-1	-20	-31	-29	-16	4	27	47	59	60	49	29	6	-15	-29	-31
14-Sep	W		-20	0	23	45	59	62	53	35	14	-6	-21	-25	-16	1	23	43	58	63	55	37	14	-10	-29	-38
15-Sep	Th		-33	-17	6	29	49	59	57	45	27	7	-9	-17	-13	0	19	39	56	64	60	45	22	-2	-25	-39
16-Sep	F		-41	-30	-11	12	34	49	54	49	35	19	3	-7	-8	1	17	35	52	62	62	51	32	8	-16	-34
17-Sep	Sa		-42	-39	-24	-4	18	36	46	47	39	27	14	3	-1	4	16	32	47	59	63	56	40	18	-5	-25
18-Sep	Su		-38	-41	-33	-18	1	20	34	40	39	31	21	13	7	9	16	29	43	54	60	57	46	28	7	-13
19-Sep	M		-29	-37	-36	-27	-13	3	18	29	33	31	26	20	15	15	19	28	39	49	55	56	49	36	19	1
20-Sep	Tu	Last Quarter	-16	-28	-33	-32	-24	-12	2	14	22	26	26	25	23	22	24	29	36	43	49	51	49	41	29	15
21-Sep	W		0	-14	-24	-29	-29	-24	-14	-3	8	16	23	26	28	29	30	31	34	38	42	44	45	42	36	27
22-Sep	Th		16	4	-9	-20	-27	-30	-27	-20	-9	3	14	24	31	35	36	36	35	34	34	35	36	37	37	35
23-Sep	F		31	23	11	-3	-17	-28	-34	-33	-26	-14	1	16	29	38	43	42	38	32	27	24	24	27	32	37
24-Sep	Sa		40	39	32	19	2	-16	-30	-39	-38	-29	-14	5	24	39	47	48	42	33	22	13	9	11	19	30
25-Sep	Su		41	49	50	42	25	4	-17	-34	-42	-40	-27	-7	15	36	50	54	49	37	20	5	-6	-8	-1	13
26-Sep	M		31	47	58	59	49	29	5	-18	-35	-42	-35	-18	6	30	49	59	57	44	24	3	-16	-26	-24	-10
27-Sep	Tu	New Moon	11	34	54	66	66	53	31	5	-18	-33	-35	-23	-2	23	46	62	64	54	33	7	-18	-37	-43	-35
28-Sep	W		-16	10	37	59	70	67	52	29	5	-16	-26	-22	-6	17	41	61	70	64	45	18	-12	-38	-54	-55
29-Sep	Th		-42	-17	12	40	61	69	64	48	27	5	-10	-14	-5	14	37	58	72	72	58	33	2	-29	-53	-65
30-Sep	F		-60	-42	-16	13	40	57	63	56	42	24	8	-2	1	14	33	53	69	76	68	48	19	-12	-41	-61

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Hourly Astronomical Tide Level at Kashima-ko, Ibaraki Pref. in 2011 (unit: centimeter) Issued by JMA

Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Oct	Sa	-67	-58	-39	-13	14	36	50	53	47	36	23	12	9	16	30	48	64	74	73	60	37	8	-21	-46	
2-Oct	Su	-60	-62	-52	-33	-10	12	30	41	43	39	31	23	18	20	29	42	56	67	71	65	49	27	1	-24	
3-Oct	M	-43	-53	-52	-43	-27	-9	9	23	31	34	33	29	25	24	28	37	47	57	63	63	55	39	20	-1	
4-Oct	Tu	First Quarter	-20	-34	-41	-41	-34	-23	-9	5	16	24	29	31	30	29	30	33	39	45	51	53	51	44	32	18
5-Oct	W		3	-12	-23	-30	-31	-28	-20	-10	2	13	22	29	33	34	33	32	33	34	37	39	41	40	36	30
6-Oct	Th		21	10	-2	-13	-21	-25	-24	-19	-10	1	14	25	33	38	38	35	31	26	24	24	26	29	32	33
7-Oct	F		32	27	18	7	-5	-16	-22	-23	-18	-8	5	19	32	40	43	40	33	23	15	10	10	14	21	29
8-Oct	Sa		35	38	34	25	12	-2	-14	-22	-22	-16	-3	12	28	41	47	46	38	25	11	0	-5	-3	6	18
9-Oct	Su		31	41	45	41	30	14	-2	-15	-22	-20	-10	6	24	40	50	52	44	30	12	-5	-16	-19	-11	3
10-Oct	M		20	37	48	51	44	31	13	-4	-16	-20	-13	1	19	37	51	56	51	36	16	-5	-23	-31	-28	-15
11-Oct	Tu		5	27	45	55	55	45	28	10	-6	-15	-14	-3	14	33	50	59	57	44	23	-1	-23	-38	-41	-31
12-Oct	W	Full Moon	-12	12	35	52	59	54	41	24	6	-7	-11	-5	10	29	47	59	61	51	32	7	-19	-40	-50	-46
13-Oct	Th		-29	-6	20	43	57	59	51	36	18	3	-6	-4	7	24	43	57	63	58	41	16	-11	-36	-52	-55
14-Oct	F		-44	-23	4	29	49	58	55	44	29	14	2	0	7	21	38	54	63	62	49	27	0	-27	-48	-58
15-Oct	Sa		-53	-37	-13	13	36	51	55	49	37	23	11	5	8	18	34	49	61	64	55	37	12	-15	-39	-54
16-Oct	Su		-57	-47	-28	-4	20	39	49	49	42	31	19	11	10	17	30	44	56	62	59	45	24	-1	-26	-45
17-Oct	M		-54	-52	-38	-19	4	24	39	44	42	35	26	18	15	18	27	39	50	58	58	50	33	12	-11	-31
18-Oct	Tu		-45	-49	-44	-30	-11	8	25	35	39	37	31	25	21	21	25	34	43	51	54	51	40	24	4	-15
19-Oct	W		-31	-41	-43	-36	-24	-8	9	22	31	35	34	31	27	25	26	31	37	43	47	47	42	32	18	2
20-Oct	Th	Last Quarter	-13	-26	-34	-35	-31	-20	-7	7	20	28	33	34	33	31	29	29	31	34	37	39	38	34	27	17
21-Oct	F		6	-7	-18	-26	-30	-27	-20	-8	6	18	28	35	38	37	34	30	26	24	24	25	28	30	30	28
22-Oct	Sa		23	14	3	-9	-20	-26	-26	-20	-8	6	21	33	41	43	40	33	25	17	11	9	11	17	24	30
23-Oct	Su		34	32	25	13	-1	-14	-23	-25	-18	-5	11	27	41	48	47	40	27	13	0	-9	-10	-4	8	21
24-Oct	M		34	43	44	36	22	6	-10	-20	-22	-13	2	20	38	50	55	49	34	15	-5	-22	-30	-28	-16	2
25-Oct	Tu		22	41	52	54	45	29	10	-6	-16	-15	-4	14	33	51	60	58	45	23	-2	-27	-44	-50	-43	-25
26-Oct	W		0	26	48	60	61	50	33	14	-2	-10	-5	9	29	48	63	67	58	37	8	-22	-48	-64	-65	-52
27-Oct	Th	New Moon	-28	1	30	53	65	63	52	34	16	2	-1	8	24	44	62	72	69	53	25	-8	-40	-65	-77	-73
28-Oct	F		-55	-27	4	34	55	64	61	49	33	17	8	10	21	39	57	71	76	66	44	12	-22	-53	-75	-82
29-Oct	Sa		-73	-51	-22	8	35	53	60	55	45	31	19	14	20	34	51	66	76	74	59	33	1	-32	-60	-77
30-Oct	Su		-78	-66	-44	-16	12	35	49	53	48	39	28	21	20	29	42	57	69	74	67	49	22	-8	-37	-59
31-Oct	M		-71	-69	-55	-34	-9	14	33	43	45	42	34	27	23	25	34	46	58	66	66	56	38	13	-12	-36

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Hourly Astronomical Tide Level at Kashima-ko, Ibaraki Pref. in 2011 (unit: centimeter) Issued by JMA

Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Nov	Tu	-53	-59	-55	-42	-24	-3	16	30	38	40	37	31	26	25	28	36	45	53	57	55	45	28	8	-12	
2-Nov	W	-30	-42	-45	-41	-30	-15	2	17	28	34	36	35	30	26	25	27	32	38	43	45	42	34	22	7	
3-Nov	Th	First Quarter	-8	-21	-29	-32	-28	-20	-8	6	18	28	34	36	35	31	26	23	22	24	27	30	32	31	27	19
4-Nov	F		10	-1	-10	-17	-20	-18	-12	-2	10	21	31	37	38	36	30	23	17	13	11	13	17	21	23	24
5-Nov	Sa		21	16	8	0	-7	-12	-11	-6	3	15	26	36	41	42	37	28	17	6	-1	-3	-1	5	13	21
6-Nov	Su		26	27	24	17	8	-1	-6	-6	-1	9	21	33	42	46	44	35	21	5	-8	-17	-18	-13	-2	11
7-Nov	M		23	32	35	31	23	13	3	-3	-2	5	16	29	41	49	50	42	28	9	-10	-25	-32	-30	-20	-4
8-Nov	Tu		14	30	40	42	37	27	15	5	0	2	11	24	38	50	54	50	37	16	-6	-27	-42	-45	-37	-21
9-Nov	W		0	21	38	47	47	40	28	15	6	3	8	20	34	48	56	56	46	26	1	-24	-45	-55	-53	-39
10-Nov	Th		-17	8	31	46	53	49	39	26	14	6	7	16	29	44	56	60	54	36	12	-16	-41	-59	-63	-54
11-Nov	F	Full Moon	-35	-9	18	39	52	54	48	36	23	12	8	13	25	39	53	61	60	47	24	-4	-33	-56	-67	-65
12-Nov	Sa		-50	-26	2	27	46	55	53	44	31	19	12	12	21	34	49	60	63	55	36	9	-20	-46	-65	-70
13-Nov	Su		-62	-42	-15	12	35	50	53	49	38	26	17	13	18	29	43	55	62	60	46	23	-5	-33	-56	-68
14-Nov	M		-67	-54	-31	-4	21	40	50	50	43	33	23	16	17	24	36	49	58	61	53	35	11	-17	-42	-59
15-Nov	Tu		-66	-60	-43	-20	5	27	42	48	46	38	29	21	18	21	30	41	52	57	55	43	24	0	-24	-45
16-Nov	W		-58	-60	-50	-33	-11	12	30	41	45	41	34	26	21	20	24	33	42	49	51	46	34	15	-6	-27
17-Nov	Th		-43	-51	-50	-40	-23	-3	17	32	40	42	39	32	25	21	21	25	31	38	43	43	37	26	10	-7
18-Nov	F		-24	-36	-42	-40	-30	-15	3	20	33	40	41	37	31	24	20	18	20	24	28	32	33	29	21	10
19-Nov	Sa	Last Quarter	-3	-16	-26	-30	-29	-21	-7	8	23	35	41	42	38	30	22	14	10	8	10	15	20	23	24	22
20-Nov	Su		15	6	-4	-13	-19	-19	-12	-1	14	28	39	44	44	38	27	15	4	-4	-8	-7	-1	8	16	23
21-Nov	M		26	24	18	9	-1	-8	-9	-4	7	20	34	44	49	46	37	22	5	-12	-23	-29	-26	-16	-2	13
22-Nov	Tu		26	34	35	30	20	10	1	-1	4	15	29	42	52	54	48	33	13	-10	-31	-45	-49	-43	-28	-8
23-Nov	W		13	32	43	46	40	30	18	9	6	12	24	38	52	60	59	48	27	1	-27	-50	-64	-66	-55	-35
24-Nov	Th		-9	17	38	51	53	47	35	23	14	13	20	33	48	61	67	62	45	18	-13	-43	-67	-80	-77	-62
25-Nov	F	New Moon	-37	-7	22	44	56	57	49	37	25	17	18	28	42	58	69	71	61	39	8	-26	-57	-79	-88	-81
26-Nov	Sa		-61	-33	-2	27	47	57	56	48	36	24	19	23	35	50	64	73	71	57	31	-2	-36	-66	-85	-89
27-Nov	Su		-78	-55	-26	5	31	49	56	53	44	32	22	20	27	40	55	68	73	67	49	22	-11	-43	-69	-83
28-Nov	M		-83	-68	-44	-16	12	35	48	52	47	38	27	20	21	29	43	56	67	69	60	40	12	-18	-46	-67
29-Nov	Tu		-76	-71	-54	-31	-5	19	37	46	47	41	32	22	18	20	30	42	54	61	60	49	29	4	-22	-45
30-Nov	W		-60	-63	-55	-38	-17	6	25	39	44	42	35	26	18	15	19	28	38	47	52	49	37	19	-2	-23

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Hourly Astronomical Tide Level at Kashima-ko, Ibaraki Pref. in 2011 (unit: centimeter) Issued by JMA

Date	Moon	Time																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1-Dec	Th		-40	-49	-48	-38	-22	-3	16	31	40	42	38	31	22	15	12	15	22	31	37	40	36	26	12	-4
2-Dec	F	First Quarter	-19	-31	-35	-32	-22	-8	8	24	35	41	40	35	27	18	11	8	9	14	20	25	27	25	18	8
3-Dec	Sa		-2	-12	-19	-21	-17	-8	4	18	30	38	41	40	33	24	14	6	1	0	2	7	12	16	17	14
4-Dec	Su		10	3	-3	-7	-8	-4	3	13	24	34	41	43	40	32	21	9	-2	-10	-13	-11	-6	1	8	13
5-Dec	M		16	15	12	8	4	3	5	11	20	29	38	43	44	40	30	16	1	-13	-23	-27	-24	-16	-5	6
6-Dec	Tu		15	21	23	21	17	12	10	11	16	24	34	42	46	46	39	25	8	-11	-27	-38	-40	-34	-22	-7
7-Dec	W		9	22	30	32	29	24	18	14	15	20	28	38	46	50	47	36	18	-4	-25	-43	-52	-51	-41	-24
8-Dec	Th		-4	15	30	38	39	34	27	20	16	17	23	33	43	51	52	46	30	8	-17	-41	-57	-63	-57	-41
9-Dec	F		-20	4	25	39	45	43	36	27	19	16	19	28	39	49	55	54	42	21	-5	-33	-56	-69	-70	-58
10-Dec	Sa	Full Moon	-37	-11	14	34	46	48	43	34	24	17	16	22	33	45	55	59	52	35	9	-20	-47	-68	-76	-71
11-Dec	Su		-54	-29	-1	24	42	50	48	41	30	20	15	17	26	39	52	60	59	47	25	-3	-33	-59	-76	-78
12-Dec	M		-67	-45	-18	10	33	47	51	46	36	25	16	14	20	31	45	56	61	56	39	14	-16	-45	-67	-78
13-Dec	Tu		-75	-59	-34	-5	21	40	50	49	41	30	19	13	14	23	36	49	58	59	50	30	3	-26	-53	-70
14-Dec	W		-75	-67	-47	-21	6	30	45	50	46	36	24	15	11	15	25	38	50	56	54	41	20	-7	-33	-55
15-Dec	Th		-67	-67	-54	-33	-8	17	37	47	48	41	30	18	10	9	14	25	37	46	50	45	32	11	-13	-35
16-Dec	F		-52	-59	-54	-40	-18	5	27	42	48	45	36	24	13	6	5	11	20	30	38	40	35	23	6	-14
17-Dec	Sa		-31	-43	-45	-39	-24	-4	17	34	45	47	41	30	18	7	0	-1	3	11	20	27	29	26	17	4
18-Dec	Su	Last Quarter	-9	-22	-29	-29	-22	-8	9	26	40	46	45	38	26	12	0	-8	-11	-9	-2	6	13	18	19	15
19-Dec	M		8	-1	-9	-13	-13	-6	6	20	34	44	48	45	35	22	6	-8	-19	-24	-24	-19	-10	1	9	15
20-Dec	Tu		18	16	11	6	2	2	7	17	29	40	48	50	45	34	18	0	-18	-32	-41	-41	-35	-24	-10	4
21-Dec	W		16	23	26	24	19	15	14	17	25	35	45	51	53	47	34	15	-7	-29	-47	-57	-58	-50	-35	-16
22-Dec	Th		3	20	31	36	34	29	24	21	22	29	39	49	56	57	49	34	11	-16	-41	-61	-72	-72	-61	-41
23-Dec	F		-18	6	27	39	44	41	35	27	23	24	31	42	53	60	61	52	32	6	-24	-53	-74	-83	-80	-65
24-Dec	Sa		-42	-14	13	34	46	49	44	35	26	21	24	32	45	57	65	64	52	29	-1	-33	-62	-82	-89	-82
25-Dec	Su	New Moon	-63	-36	-6	21	40	50	49	42	31	21	18	22	33	48	61	68	64	49	23	-9	-42	-69	-86	-89
26-Dec	M		-77	-54	-25	4	29	45	50	46	36	24	15	13	21	34	50	62	67	61	43	15	-17	-48	-72	-84
27-Dec	Tu		-81	-65	-40	-12	16	37	48	48	40	28	15	8	10	20	35	50	61	63	54	33	5	-25	-52	-71
28-Dec	W		-76	-68	-49	-23	4	27	42	47	43	32	19	7	2	7	19	34	48	56	55	43	22	-4	-30	-52
29-Dec	Th		-64	-63	-50	-30	-5	18	36	45	45	36	23	10	0	-2	5	17	31	43	48	44	31	11	-12	-32
30-Dec	F		-47	-52	-46	-31	-10	11	30	42	45	40	29	15	2	-5	-5	2	14	25	34	37	32	19	2	-15
31-Dec	Sa		-30	-38	-37	-28	-12	7	25	39	45	44	35	23	9	-3	-9	-8	-2	7	16	23	24	19	9	-3

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