

Supplementary Table S1

Amount (mm), δD and $\delta^{18}O$ (‰) and d-value of precipitation collected monthly as well as the sum of amount and the annual means of δD and $\delta^{18}O$ and d-value at Akita and other 4 localities in Japan.

Akita (39°43'N, 140°05'E)

Year	Month	Prec.	δD	$\delta^{18}O$	d	Year	Month	Prec.	δD	$\delta^{18}O$	d	Year	Month	Prec.	δD	$\delta^{18}O$	d
1981	1	-	-	-	-	1982	1	150	-54	-10.3	28	1983	1	90	-60	-10.9	27
	2	-	-	-	-		2	80	-59	-11.0	29		2	70	-72	-12.1	25
	3	-	-	-	-		3	120	-59	-9.2	15		3	90	-96	-13.9	15
	4	-	-	-	-		4	180	-78	-11.3	12		4	150	-49	-7.4	10
	5	-	-	-	-		5	250	-55	-7.8	7		5	100	-67	-9.2	7
	6	220	-72	-10.0	8		6	100	-78	-10.8	8		6	110	-58	-8.3	8
	7	360	-54	-7.7	8		7	120	-67	-9.1	6		7	190	-64	-9.1	9
	8	380	-53	-7.8	9		8	120	-57	-7.6	4		8	150	-59	-8.4	8
	9	100	-69	-9.6	8		9	170	-52	-7.2	6		9	170	-65	-9.3	9
	10	240	-48	-8.4	19		10	150	-43	-7.6	18		10	150	-42	-7.4	17
	11	200	-42	-8.4	25		11	140	-48	-8.4	19		11	180	-48	-9.1	25
	12	290	-39	-7.8	23		12	240	-44	-8.8	26		12	180	-51	-9.7	27
	Sum, Mean						Sum, Mean	1820	-57	-8.9	14		Sum, Mean	1630	-59	-9.3	15
1984	1	120	-59	-10.8	27	1985	1	90	-41	-9.1	32	1986	1	100	-45	-9.4	30
	2	100	-69	-11.3	21		2	100	-59	-9.2	15		2	110	-65	-11.1	24
	3	100	-63	-10.0	17		3	110	-60	-9.5	16		3	100	-61	-9.6	16
	4	120	-81	-11.0	7		4	120	-66	-9.3	8		4	180	-49	-7.2	9
	5	100	-65	-9.0	7		5	140	-48	-7.4	11		5	150	-43	-6.5	9
	6	100	-56	-7.8	6		6	100	-104	-13.8	6		6	70	-72	-9.8	6
	7	170	-58	-7.9	5		7	260	-67	-9.2	7		7	230	-64	-9.0	8
	8	110	-57	-8.1	8		8	90	-72	-10.2	10		8	160	-68	-9.4	7
	9	220	-54	-8.0	10		9	290	-58	-9.2	16		9	220	-54	-8.0	10
	10	210	-39	-7.4	20		10	220	-43	-7.2	15		10	140	-29	-6.0	19
	11	110	-32	-6.8	22		11	320	-52	-9.8	26		11	260	-36	-7.6	25
	12	110	-52	-9.7	26		12	140	-50	-9.7	28		12	120	-36	-7.4	23
	Sum, Mean	1570	-56	-8.8	14		Sum, Mean	1980	-58	-9.3	16		Sum, Mean	1840	-51	-8.2	15
1987	1	180	-58	-10.2	24	1988	1	160	-38	-8.1	27	1989	1	140	-71	-10.7	15
	2	120	-31	-6.5	21		2	100	-45	-9.1	28		2	100	-77	-11.9	18
	3	150	-63	-9.7	15		3	70	-62	-10.1	19		3	140	-51	-8.3	15
	4	70	-42	-6.7	12		4	190	-53	-8.2	13		4	250	-71	-10.3	11
	5	170	-58	-8.0	6		5	100	-73	-10.3	9		5	60	-45	-6.4	6
	6	60	-85	-11.1	4		6	100	-64	-8.4	3		6	100	-68	-9.0	4
	7	350	-58	-8.2	8		7	80	-60	-7.8	2		7	60	-70	-9.8	8
	8	620	-51	-7.2	7		8	190	-63	-9.1	10		8	190	-54	-7.6	7
	9	170	-34	-5.9	13		9	150	-69	-9.5	7		9	460	-65	-9.3	9
	10	90	-43	-7.4	16		10	190	-49	-8.1	16		10	140	-57	-9.2	17
	11	220	-35	-7.1	22		11	190	-47	-9.1	26		11	290	-35	-7.0	21
	12	160	-40	-8.9	31		12	160	-38	-8.1	27		12	120	-44	-8.7	26
	Sum, Mean	2360	-50	-7.9	13		Sum, Mean	1680	-54	-8.7	17		Sum, Mean	2050	-58	-9.0	14
1990	1	150	-55	-10.5	29	1991	1	90	-60	-10.7	26	1992	1	140	-47	-9.3	27
	2	70	-57	-8.2	9		2	150	-74	-12.0	22		2	120	-47	-9.3	27
	3	100	-64	-10.3	18		3	70	-56	-9.2	18		3	120	-98	-14.0	14
	4	140	-56	-8.1	9		4	120	-50	-7.5	10		4	170	-63	-9.4	12
	5	80	-55	-7.8	7		5	170	-43	-6.3	7		5	240	-43	-6.9	12
	6	350	-78	-10.5	6		6	280	-53	-7.5	7		6	70	-62	-8.4	5
	7	340	-44	-6.3	6		7	470	-61	-8.6	8		7	110	-57	-7.8	5
	8	190	-43	-6.3	7		8	210	-58	-8.5	10		8	280	-52	-7.6	9
	9	320	-55	-7.9	8		9	190	-64	-9.4	11		9	170	-46	-7.1	11
	10	180	-62	-9.3	12		10	280	-48	-8.2	18		10	160	-48	-8.2	18
	11	240	-48	-8.2	18		11	300	-39	-8.0	25		11	200	-32	-6.6	21
	12	200	-30	-6.8	24		12	150	-42	-8.5	26		12	180	-48	-9.0	24
	Sum, Mean	2360	-54	-8.3	12		Sum, Mean	2480	-54	-8.5	14		Sum, Mean	1960	-51	-8.4	16
1993	1	120	-45	-8.7	25	1994	1	170	-43	-9.1	29	1995	1	140	-54	-10.7	32
	2	190	-69	-11.3	21		2	130	-72	-11.1	17		2	60	-50	-9.1	23
	3	110	-64	-10.4	19		3	110	-54	-9.2	20		3	160	-70	-10.9	17
	4	80	-52	-8.4	15		4	60	-55	-7.8	7		4	190	-37	-6.4	14
	5	180	-39	-6.6	14		5	140	-49	-7.0	7		5	170	-51	-7.5	9
	6	190	-64	-9.2	10		6	220	-58	-8.3	8		6	120	-77	-10.4	6
	7	350	-76	-10.3	6		7	60	-41	-6.4	10		7	240	-55	-7.8	7
	8	220	-74	-10.0	6		8	190	-40	-6.2	10		8	540	-52	-7.9	11
	9	230	-62	-8.7	8		9	270	-43	-7.2	15		9	260	-48	-7.7	14
	10	220	-36	-6.7	18		10	110	-29	-6.4	22		10	270	-36	-7.2	22
	11	270	-42	-7.9	21		11	130	-35	-7.2	23		11	190	-50	-9.3	24
	12	220	-42	-8.4	25		12	120	-51	-9.8	27		12	200	-56	-10.2	26
	Sum, Mean	2380	-57	-8.9	14		Sum, Mean	1710	-47	-7.9	16		Sum, Mean	2540	-52	-8.4	15
1996	1	80	-55	-9.7	23	1997	1	110	-59	-10.6	26	1998	1	120	-69	-12.2	29
	2	140	-39	-8.4	28		2	140	-43	-8.1	22		2	70	-56	-10.0	24
	3	190	-64	-10.0	16		3	40	-46	-7.8	16		3	110	-72	-11.3	18
	4	110	-76	-11.0	12		4	120	-45	-7.3	13		4	120	-55	-8.0	9
	5	160	-67	-9.8	11		5	260	-50	-7.4	9		5	230	-52	-8.0	12
	6	290	-55	-8.1	10		6	160	-76	-10.4	7		6	340	-56	-8.3	10
	7	180	-71	-10.1	10		7	140	-56	-7.7	6		7	160	-44	-6.7	10
	8	90	-47	-7.3	11		8	170	-44	-6.4	7		8	470	-81	-11.8	13
	9	50	-54	-7.9	9		9	240	-53	-7.9	10		9	340	-63	-9.2	11
	10	210	-45	-7.9	18		10	340	-41	-8.0	23		10	280	-49	-8.5	19
	11	300	-51	-9.3	23		11	180	-53	-8.6	16		11	270	-42	-8.8	28
	12	290	-49	-10.2	33		12	270	-53	-9.9	26		12	210	-41	-8.9	30
	Sum, Mean	2090	-55	-9.2	19		Sum, Mean	2170	-51	-8.3	15		Sum, Mean	2720	-58	-9.3	16

(continued)

Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d
1999	1	140	-46	-9.2	28	2000	1	210	-47	-9.3	27	2001	1	130	-72	-12.0	24
	2	170	-49	-9.3	25		2	170	-59	-11.2	30		2	100	-51	-9.3	24
	3	170	-57	-9.1	16		3	160	-58	-9.0	14		3	130	-45	-8.3	21
	4	160	-75	-11.0	13		4	220	-65	-9.8	13		4	70	-42	-7.0	14
	5	70	-65	-9.1	8		5	130	-49	-7.8	13		5	160	-51	-7.5	9
	6	130	-66	-8.9	5		6	180	-73	-10.4	10		6	190	-70	-9.0	2
	7	190	-55	-7.7	7		7	140	-72	-9.7	6		7	310	-45	-6.7	9
	8	340	-67	-9.7	11		8	70	-42	-6.3	9		8	110	-40	-5.8	7
	9	240	-57	-8.7	13		9	290	-71	-10.5	13		9	220	-60	-8.1	5
	10	200	-47	-8.3	19		10	180	-65	-10.6	20		10	140	-57	-8.5	11
	11	220	-40	-8.4	27		11	190	-32	-6.8	22		11	180	-34	-7.6	26
	12	280	-38	-8.5	30		12	150	-42	-8.1	23		12	130	-58	-10.7	28
Sum, Mean		2310	-54	-9.0	18	Sum, Mean		2090	-58	-9.4	17	Sum, Mean		1870	-53	-8.2	13
2002	1	160	-65	-11.0	23	2003	1	190	-50	-9.6	27	2004	1	210	-51	-9.8	27
	2	90	-42	-7.6	19		2	120	-51	-9.0	21		2	110	-45	-7.9	18
	3	180	-73	-11.0	15		3	90	-70	-10.8	16		3	90	-43	-7.6	18
	4	180	-30	-5.1	11		4	210	-39	-6.4	12		4	240	-48	-7.4	11
	5	110	-57	-7.8	5		5	50	-42	-6.6	11		5	210	-63	-8.6	6
	6	130	-72	-9.8	6		6	130	-66	-8.9	5		6	190	-55	-7.5	5
	7	390	-68	-9.4	7		7	220	-61	-8.7	9		7	190	-40	-5.8	6
	8	360	-67	-9.7	11		8	230	-59	-7.8	3		8	290	-45	-6.6	8
	9	70	-53	-8.3	13		9	200	-40	-6.4	11		9	290	-47	-6.9	8
	10	300	-46	-7.9	17		10	170	-35	-7.0	21		10	160	-67	-10.0	13
	11	340	-46	-8.8	24		11	150	-33	-8.1	32		11	160	-36	-7.0	20
	12	150	-42	-8.9	29		12	210	-53	-9.5	23		12	250	-58	-9.9	21
Sum, Mean		2460	-56	-8.9	15	Sum, Mean		1970	-50	-8.2	16	Sum, Mean		2390	-50	-7.9	13

Misasa (35°21'N, 133°51'E)

Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d
1975	1					1976	1	200	-52	-10.3	30	1977	1	80	-36	-8.3	27
	2						2	200	-41	-8.4	26		2	250	-52	-10.5	32
	3						3	220	-36	-7.4	23		3	90	-39	-7.8	23
	4						4	80	-44	-7.1	13		4	150	-42	-6.6	11
	5						5	160	-33	-5.5	11		5	60	-32	-4.9	7
	6	120	-63	-9.9	16		6	120	-60	-8.8	10		6	60		-6.0	6
	7	380	-63	-9.2	11		7	100	-51	-7.4	8		7	200		-9.9	8
	8	200	-76	-11.0	12		8	180	-51	-7.8	11		8	100		-8.6	6
	9	180	-74	-10.7	12		9	560	-66	-9.9	13		9	210		-7.0	8
	10	260	-48	-7.8	14		10	120	-55	-8.9	16		10	130		-7.6	8
	11	280	-33	-7.0	23		11	230	-32	-6.9	23		11	140		-7.8	28
	12	160	-35	-7.6	26		12	80	-31	-7.9	32		12	200		-7.6	21
Sum, Mean						Sum, Mean						Sum, Mean					

Shirahama (33°41'N, 135°21'E)

Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d
1973	1					1974	1					1975	1	80	-38	-7.3	20
	2						2	150	-32	-6.4	19		2	90	-59	-10.3	23
	3						3	100	-24	-5.6	21		3	130	-28	-4.5	8
	4						4	190	-30	-4.7	8		4	210	-39	-6.6	14
	5						5	100	-23	-3.6	6		5	90	-29	-4.8	9
	6						6	250	-47	-7.4	12		6	240	-59	-8.5	9
	7						7	450	-59	-8.4	8		7	70	-38	-6.0	10
	8						8	300	-53	-8.1	12		8				
	9	310	-70	-9.8	8		9	150	-30	-5.6	15		9				
	10	190	-36	-5.2	6		10	160	-39	-6.8	15		10				
	11	20	-25	-5.7	21		11	100	-31	-6.6	22		11				
	12	0					12	70	-26	-6.4	25		12				
Sum, Mean						Sum, Mean						Sum, Mean					

Ibusuki (31°14'N, 130°38'E)

Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d
1974	1					1975	1	130	-31	-6.1	18
	2						2	150	-24	-5.8	22
	3						3	220	-30	-5.1	11
	4						4	300	-45	-6.8	9
	5						5	360	-59	-8.7	11
	6						6	180	-59	-8.3	7
	7						7	180	-51	-7.6	10
	8	200	-35	-5.5	9		8				
	9	100	-57	-8.9	14		9				
	10	60	-49	-7.5	11		10				
	11	340	-30	-5.3	12		11				
	12	160	-35	-6.6	18		12				
Sum, Mean						Sum, Mean					

Satsuma-Iwojima (30°47'N, 130°18'E)

Year	Month	Prec.	δD	δ ¹⁸ O	d	Year	Month	Prec.	δD	δ ¹⁸ O	d
1974	1					1975	1	120	-26	-6.1	23
	2						2	120	-18	-4.5	18
	3						3	290	-31	-5.2	11
	4						4	160	-30	-4.8	8
	5						5	160	-54	-8.0	10
	6						6	240	-55	-8.1	10
	7						7	240	-58	-8.8	12
	8	60	-26	-4.0	6		8				
	9	280	-55	-8.5	13		9				
	10	160	-44	-6.3	6		10				
	11	190	-19	-4.6	18		11				
	12	200	-36	-7.5	24		12				
Sum, Mean						Sum, Mean					