TABLE 6.—*Showing the maximum amounts of precipitation recorded by hours at Kansas City, Mo., for the period 1911 to 1940, inclusive. The maximum precipitation for any hour within the period was 2.94 inches in September 1914. The maximum precipitation for any hour of record at Kansas City was 4.79 inches in August 1906*

Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	0.16	0.14	0.13	0.15	0.24	0.15	0.13	0.15	0.20	0.15	0.24	0.20	0.26	0.11	0.08	0.32	0.17	0.19	0.26	0.48	0.15	0.12	0.15	0.15
February	.17	.20	.13	.11	.18	.20	.16	.11	.11	.10	.24	.30	.18	.13	.19	.16	.20	.60	.45	.31	.23	.27	.39	.13
March	.38	.27	.31	.52	.17	.32	.28	.32	.20	.16	.33	.24	.24	.31	.22	.35	.15	1.15	.21	.50	.31	.31	.37	.22
April	.58	.99	.60	.42	.93	.42	.34	.32	.27	.17	.21	.23	.18	.25	.25	.25	.88	.56	.56	.41	.77	.86	.86	.72
May	1.47	.50	.33	.83	1.38	.67	1.12	1.12	1.57	.36	.53	1.00	.50	.64	.39	.67	.77	1.10	.63	1.12	.43	.53	.54	.80
June	1.35	1.15	.43	.46	.56	1.79	1.48	.65	.87	2.28	.86	.89	.93	.61	1.00	.98	.79	1.48	1.42	1.14	.74	.36	.89	.96
July	.40	1.01	.52	1.15	1.90	1.24	.55	.24	.23	.46	.15	.25	.36	.20	.23	.58	.93	.64	.67	.70	.39	.99	2.62	1.92
August	.84	1.75	1.08	1.26	1.00	.70	1.45	.40	.49	.94	1.50	.62	.75	.56	.38	.53	.46	.76	.94	1.03	1.06	.56	1.07	.67
September	.84	.82	1.33	1.36	.58	.84	1.86	2.57	1.11	1.04	.35	.57	.46	.35	.66	.48	.93	.25	.78	.52	.63	.40	1.17	.40
October	.21	.55	.61	.27	.62	.35	.33	.72	.58	.52	.35	.63	.39	.33	.25	.43	54.	.57	.40	.38	1.67	1.65	.62	.79
November	.28	.30	.47	.41	.34	.80	.46	.28	.23	.26	.32	.31	.34	.37	.67	.50	.31	.25	.20	.54	.40	.36	.67	.42
December	.10	.09	.20	.22	.34	.37	.17	.33	.17	.45	.21	.15	.18	.10	.24	.19	.16	.26	.33	.19	.15	.20	.35	.16
Year	1.47	1.75	1.33	1.36	1.90	1.79	1.86	2.57	1.57	2.28	1.50	1.00	.93	.64	1.00	.98	.93	1.48	1.42	1.14	1.67	1.65	2.62	1.92

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR JULY 1942

[Climate and Crop Weather Division, J. B. KINCER, in charge]

AEROLOGICAL OBSERVATIONS

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during July 1942*

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level																							
	Albuquerque, N. Mex. (1,620 m.)				Atlanta, Ga. (300 m.)				Bismarck, N. Dak. (505 m.)				Boise, Idaho (864 m.)				Brownsville, Tex. (6 m.)				Buffalo, N. Y. (221 m.)				Caribou, Maine (191 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	29	840	26.1	32	31	984	24.2	83	31	955	20.2	78	31	914	25.6	32	30	1,016	26.6	87	31	990	19.4	79	29	991	15.1	83
500	----	------	------	----	31	962	24.8	76	----	------	------	----	----	------	------	----	30	961	24.8	84	31	958	19.4	73	29	955	16.6	68
1,000	----	------	------	----	31	909	22.6	72	31	902	19.5	65	31	900	27.7	29	30	908	22.4	66	31	904	16.9	70	29	901	14.1	65
1,500	----	------	------	----	31	858	19.3	74	31	851	16.5	65	31	850	25.5	27	30	857	20.0	60	31	853	13.8	73	29	849	10.8	67
2,000	29	805	24.7	33	31	809	16.0	73	31	801	13.6	62	31	803	21.5	27	30	808	17.0	57	31	803	10.7	67	29	799	7.6	70
2,500	29	760	21.0	34	31	763	12.9	72	31	756	10.7	59	31	757	17.2	28	30	762	14.1	56	31	756	8.2	56	28	752	4.9	67
3,000	29	717	17.1	35	31	719	10.0	72	31	711	7.5	56	31	714	13.0	30	30	718	11.4	54	31	712	5.7	53	28	707	2.4	63
4,000	29	637	8.7	42	31	637	4.5	68	31	630	1.3	51	31	632	5.3	34	30	636	5.9	50	30	629	.7	49	28	624	−2.4	52
5,000	29	564	.8	51	31	563	−1.0	64	31	555	−5.3	47	31	559	−2.2	37	30	563	.4	47	29	555	−5.0	45	28	550	−8.2	49
6,000	29	497	−6.6	57	31	496	−6.7	62	31	488	−11.7	43	31	492	−9.5	38	30	496	−5.7	45	29	488	−11.3	40	27	483	−14.3	45
7,000	29	437	−12.9	56	31	436	−13.2	60	31	428	−18.9	40	31	431	−16.9	37	28	436	−11.8	43	28	428	−17.8	39	27	422	−21.4	43
8,000	29	382	−19.8	53	31	381	−19.8	58	31	372	−26.3	39	28	377	−24.5	36	27	382	−18.9	43	28	373	−24.7	38	27	368	−28.8	42
9,000	28	333	−26.8	51	31	332	−26.7	57	28	324	−33.7	39	28	328	−32.1	36	27	332	−26.0	42	27	324	−31.5	38	27	319	−36.1	42
10,000	28	290	−34.3	50	31	289	−34.1	55	28	280	−41.0	----	27	284	−39.2	35	25	289	−33.7	42	25	282	−38.6	36	27	276	−42.8	----
11,000	28	251	−42.1	----	30	250	−42.0	----	28	241	−47.7	----	25	245	−45.8	----	25	250	−41.8	----	22	243	−45.8	----	26	238	−48.0	----
12,000	28	216	−49.3	----	30	215	−49.6	----	28	207	−52.2	----	23	210	−51.0	----	24	215	−50.0	----	21	209	−51.9	----	26	204	−51.4	----
13,000	28	185	−55.8	----	30	184	−57.1	----	28	177	−54.9	----	22	180	−54.2	----	23	184	−57.8	----	21	179	−55.9	----	25	175	−53.4	----
14,000	25	158	−61.8	----	29	157	−63.2	----	28	151	−56.8	----	20	154	−56.7	----	22	157	−64.8	----	20	152	−58.4	----	24	150	−54.5	----
15,000	23	134	−66.0	----	28	133	−66.5	----	26	129	−58.5	----	17	131	−59.7	----	22	133	−69.7	----	18	130	−60.2	----	23	128	−55.8	----
16,000	21	114	−68.6	----	28	113	−67.9	----	22	110	−58.8	----	16	112	−61.8	----	21	112	−72.5	----	17	111	−61.1	----	22	110	−56.2	----
17,000	20	96	−69.1	----	26	96	−66.8	----	18	94	−58.6	----	14	95	−61.4	----	17	94	−73.1	----	14	94	−60.6	----	16	94	−55.8	----
18,000	19	81	−66.7	----	25	81	−64.9	----	14	80	−58.0	----	14	81	−59.3	----	16	80	−71.4	----	12	80	−59.1	----	10	80	−55.0	----
19,000	16	69	−63.5	----	21	69	−62.3	----	6	68	−55.9	----	11	69	−57.2	----	13	67	−68.6	----	5	68	−57.8	----	----	------	------	----
20,000	12	59	−60.8	----	8	59	−59.3	----	----	------	------	----	7	59	−55.5	----	10	56	−64.4	----	----	------	------	----	----	------	------	----
21,000	7	50	−57.5	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----	----	------	------	----

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during July 1942*

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	Charleston, S. C. (14 m.)				Denver, Colo. (1,616 m.)				Detroit, Mich. (194 m.)				El Paso, Tex. (1193 m.)				Ely, Nev. (1,908 m.)				Great Falls, Mont. (1129 m.)				Huntington, W. Va. (172 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,016	25.5	91	31	842	20.2	54	31	990	19.6	84	31	883	26.8	39	31	811	22.9	22	31	888	20.4	49	31	997	22.0	91
500	31	962	25.8	69					31	957	20.9	71													31	960	23.2	76
1,000	31	909	22.9	67					31	903	18.2	68													31	906	20.7	71
1,500	31	858	19.6	70					31	852	14.9	68	31	853	27.1	36					31	851	19.9	45	31	856	17.4	71
2,000	31	809	16.1	72	31	805	20.9	47	31	802	11.8	66	31	805	23.9	35	31	803	24.0	22	31	803	16.9	44	31	806	14.1	68
2,500	31	763	12.9	69	31	759	17.8	45	31	756	9.3	55	31	760	19.5	38	31	758	22.1	22	31	757	13.1	46	31	760	11.1	65
3,000	31	718	10.0	66	31	716	14.0	46	31	712	6.5	51	31	717	15.1	42	31	715	17.8	22	31	713	9.1	50	31	715	8.1	61
4,000	31	637	4.2	64	31	635	6.3	55	31	629	1.2	45	31	636	6.7	54	31	635	8.8	25	31	631	1.9	56	31	634	3.2	50
5,000	30	562	−1.3	59	31	562	−1.2	67	31	556	−4.7	44	31	562	−.8	65	31	562	0.0	31	30	556	−5.1	55	31	559	−2.4	44
6,000	30	496	−6.9	53	31	495	−8.3	68	29	488	−10.6	40	30	496	−7.7	69	31	495	−9.0	40	30	489	−12.0	53	31	492	−8.5	40
7,000	28	436	−13.1	51	30	434	−15.1	61	28	428	−17.3	38	27	435	−13.8	63	31	434	−15.7	41	30	429	−19.2	51	31	432	−14.6	38
8,000	27	381	−19.8	49	30	379	−22.2	57	28	374	−24.6	38	27	381	−20.4	57	31	379	−22.3	38	30	374	−26.7	50	31	378	−21.6	38
9,000	27	332	−27.1	48	30	330	−29.7	56	27	325	−31.6	38	26	332	−27.6	54	31	330	−29.7	36	30	325	−34.3	49	31	329	−28.8	38
10,000	27	289	−34.5	46	30	286	−37.2	53	27	282	−39.0		25	288	−35.4	53	31	287	−37.0	35	30	281	−42.2		31	286	−36.4	37
11,000	26	250	−42.4		30	247	−45.0		26	243	−46.1		25	249	−43.3		29	247	−43.9		30	242	−49.0		31	247	−43.9	
12,000	26	215	−50.3		30	212	−52.0		25	208	−51.2		25	214	−51.2		25	213	−50.1		30	207	−52.8		31	212	−51.2	
13,000	26	184	−58.1		30	182	−57.7		25	178	−55.0		24	183	−58.2		25	183	−55.9		30	177	−54.2		31	181	−57.7	
14,000	24	157	−64.8		29	155	−61.8		23	152	−57.4		24	156	−63.8		24	156	−60.5		30	152	−55.3		31	154	−62.1	
15,000	22	133	−69.3		27	131	−65.6		22	130	−59.6		23	132	−67.5		23	132	−64.0		30	130	−57.2		31	131	−65.0	
16,000	21	113	−68.9		27	111	−67.0		22	111	−60.9		21	112	−70.1		20	112	−65.9		29	111	−58.1		28	112	−65.6	
17,000	19	95	−67.1		21	94	−66.6		18	94	−60.1		21	95	−69.2		19	95	−65.6		26	94	−58.2		25	94	−64.2	
18,000	13	81	−64.5		20	80	−64.0		13	80	−58.0		15	80	−66.9		16	81	−63.6		24	81	−57.3		18	80	−62.5	
19,000	10	68	−61.4		13	68	−61.3		7	68	−56.4		9	68	−64.3		12	69	−61.0		20	69	−55.8		16	68	−60.6	
20,000					7	57	−58.5						5	58	−61.6		8	58	−58.5		16	59	−54.1		7	57	−58.8	
21,000																					12	50	−53.2					
22,000																					7	43	−52.1					

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	Joliet, Ill. (178 m.)				Lake Charles, La. (5 m.)				Lakehurst, N. J.[1] (39 m.)				Medford, Oreg. (401 m.)				Miami, Fla. (4 m.)				Nashville, Tenn. (180 m.)				Norfolk, Va.[1] (4 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	994	21.1	82	31	1017	25.7	89	31	1011	21.7	81	31	967	26.2	38	30	1019	26.0	85	30	996	25.5	76	30	1016	26.0	79
500	31	959	23.0	70	31	961	24.6	73	31	959	22.1	62	31	956	25.8	39	30	963	24.6	81	30	961	25.6	69	30	961	24.4	69
1,000	31	905	20.0	68	31	908	22.1	69	31	906	19.4	56	31	903	22.4	43	30	910	21.8	73	30	908	22.8	67	30	908	22.0	65
1,500	31	854	16.6	69	31	857	19.5	62	31	854	16.2	56	31	852	18.6	49	30	859	18.9	68	30	857	19.4	71	30	857	18.8	67
2,000	31	805	13.7	68	31	808	16.7	59	31	805	12.9	58	31	803	15.1	56	30	810	16.2	63	30	808	16.0	72	30	808	15.6	65
2,500	31	758	10.7	66	31	762	13.8	56	31	759	10.4	57	31	757	12.2	61	30	764	13.4	56	30	762	12.9	72	30	762	12.6	64
3,000	31	714	7.9	64	31	718	11.1	54	31	714	7.7	54	31	713	9.8	52	30	720	10.3	53	30	718	9.9	67	30	717	10.0	62
4,000	31	632	2.1	61	31	637	5.6	50	31	632	2.3	47	31	632	3.6	40	30	637	4.3	52	29	636	4.4	57	30	634	4.4	53
5,000	31	558	−3.8	54	31	563	−.2	52	31	558	−2.9	46	31	558	−2.7	39	30	563	−1.7	53	29	562	−1.4	54	29	560	−1.4	50
6,000	31	491	−10.4	52	31	496	−6.1	52	30	491	−8.9	47	31	491	−9.2	38	30	496	−7.4	48	29	495	−7.5	47	25	494	−7.6	50
7,000	31	431	−17.1	49	31	436	−12.5	50	30	431	−15.0	48	31	431	−16.7	35	30	436	−13.6	45	29	435	−13.9	42	23	434	−13.7	48
8,000	31	376	−24.1	48	30	382	−19.4	49	29	376	−21.8	44	31	376	−24.5	34	30	381	−20.3	44	29	380	−20.8	40				
9,000	31	327	−31.3	46	30	333	−26.5	48	28	328	−28.9	45	31	327	−32.2	33	30	332	−27.2	42	29	331	−28.0	40				
10,000	31	284	−38.8		30	290	−34.0	48	28	285	−36.5		31	283	−39.4	33	30	289	−34.5	41	29	288	−35.4	38				
11,000	31	245	−46.1		29	250	−42.0		28	246	−44.2		31	244	−45.8		30	250	−42.2		29	249	−43.0					
12,000	31	210	−52.3		29	215	−49.9		26	212	−51.4		31	210	−50.9		30	215	−50.0		29	214	−50.7					
13,000	30	180	−56.4		27	184	−57.5		26	181	−57.8		31	180	−53.6		30	184	−57.6		29	183	−57.6					
14,000	30	153	−59.4		26	157	−63.8		23	155	−62.0		31	154	−55.6		29	156	−64.2		28	156	−63.0					
15,000	30	130	−62.0		26	133	−68.8		21	133	−63.4		30	132	−58.0		28	133	−68.8		24	132	−66.0					
16,000	29	111	−62.9		22	112	−71.0		16	114	−63.1		29	112	−59.3		28	112	−69.1		22	112	−67.2					
17,000	26	94	−62.6		19	95	−71.5		12	96	−62.2		27	96	−59.8		26	95	−68.4		19	95	−66.9					
18,000	19	80	−60.8		17	80	−69.6		10	82	−61.2		27	82	−58.9		24	80	−67.1		14	80	−64.6					
19,000	11	68	−58.6		16	68	−66.6		5	69	−59.8		23	70	−57.5		24	68	−64.5		8	68	−62.6					
20,000					7	58	−63.3						16	59	−55.8		11	58	−61.4									
21,000													10	50	−53.9													

Footnote at end of table.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during July 1942*—Continued

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	Oakland, Calif. (2 m.)				Oklahoma City, Okla. (391 m.)				Omaha, Nebr. (301 m.)				Pensacola, Fla.[1] (24 m.)				Phoenix, Ariz. (339 m.)				Portland, Maine (20 m.)				St. Louis, Mo. (171 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,014	16.6	80	29	970	25.4	69	31	979	24.2	75	17	1,016	27.2	79	31	969	34.0	33	31	1,012	16.4	90	31	996	25.2	77
500	31	958	17.3	70	29	959	26.3	65	31	958	25.2	65	17	961	24.8	69	31	952	35.8	27	31	957	18.2	70	31	959	25.6	65
1,000	31	903	22.4	40	29	906	24.7	59	31	905	23.7	59	17	908	22.2	63	31	901	33.3	25	31	903	15.7	70	31	906	22.4	65
1,500	31	853	21.4	31	29	855	21.4	61	31	854	21.3	56	16	857	19.2	58	31	852	29.8	25	31	851	12.6	75	31	855	19.4	65
2,000	31	804	19.1	27	29	807	18.3	60	31	805	18.4	51	16	808	16.2	53	31	805	25.8	27	31	802	9.5	75	31	806	16.2	63
2,500	31	758	16.4	26	29	761	15.0	57	30	760	15.2	49	16	762	13.1	51	30	760	21.5	30	31	754	6.9	66	31	760	13.1	56
3,000	31	715	13.3	25	29	717	12.0	53	30	716	11.9	48	16	718	10.2	50	30	717	17.6	32	30	710	4.4	56	31	716	10.2	52
4,000	31	634	6.4	25	29	636	5.8	48	30	634	4.8	50	16	636	4.4	48	30	637	9.3	38	29	627	−.3	47	31	635	4.2	53
5,000	31	560	−.5	25	29	562	−.3	45	29	560	−2.1	50	15	562	−1.4	49	30	564	1.7	47	26	553	−6.4	40	30	561	−1.9	52
6,000	31	494	−7.6	25	29	496	−6.6	39	28	494	−8.5	45	13	496	−7.4	51	30	498	−5.5	52	25	486	−12.8	37	29	494	−7.9	47
7,000	31	433	−14.9	24	28	436	−13.1	37	28	434	−15.1	41	11	436	−13.3	50	30	438	−11.8	48	25	426	−19.4	37	29	434	−14.4	42
8,000	31	379	−22.4	24	28	381	−20.4	37	28	379	−22.5	37	7	380	−20.0	----	30	383	−18.4	44	25	371	−26.1	34	29	379	−21.4	40
9,000	31	330	−30.0	24	28	332	−27.8	36	27	329	−29.8	36	7	331	−27.1	----	30	334	−25.5	44	24	322	−33.5	35	29	330	−28.7	38
10,000	29	286	−37.5	24	28	288	−35.5	36	27	286	−37.5	36	6	289	−34.4	----	30	291	−33.0	43	24	279	−40.9	----	29	286	−36.5	36
11,000	29	247	−44.4	----	28	249	−43.2	----	26	247	−45.1	----	5	250	−42.1	----	29	252	−40.6	----	21	240	−47.0	----	29	247	−44.4	----
12,000	29	212	−50.7	----	28	214	−50.3	----	26	212	−51.7	----	5	216	−50.6	----	29	217	−48.4	----	18	207	−50.7	----	29	213	−51.0	--
13,000	29	182	−56.1	----	27	184	−56.4	----	25	181	−55.9	----	----	----	----	----	29	186	−55.7	----	17	176	−54.1	----	27	182	−55.8	----
14,000	28	155	−60.7	----	26	156	−61.9	----	25	155	−58.7	----	----	----	----	----	29	159	−62.6	----	14	151	−55.1	----	24	155	−59.6	----
15,000	28	132	−64.1	----	26	133	−65.6	----	24	132	−61.6	----	----	----	----	----	29	135	−67.9	----	11	128	−55.5	----	24	132	−61.9	----
16,000	24	112	−65.4	----	25	112	−68.0	----	24	112	−63.2	----	----	----	----	----	29	114	−70.0	----	10	110	−55.6	----	22	113	−63.9	----
17,000	23	95	−64.9	----	1	95	−68.7	----	20	95	−62.4	----	----	----	----	----	28	96	−69.8	----	8	94	−54.5	----	16	95	−63.0	----
18,000	14	80	−63.6	----	16	80	−67.1	----	18	81	−60.5	----	----	----	----	----	27	82	−67.8	----	5	79	−52.5	----	13	81	−60.7	----
19,000	7	69	−61.3	----	11	69	−64.6	----	16	68	−58.1	----	----	----	----	----	23	69	−64.8	----	----	----	----	----	11	69	−58.5	----
20,000	----	----	----	----	6	58	−61.6	----	10	58	−55.6	----	----	----	----	----	19	59	−61.6	----	----	----	----	----	9	58	−56.2	----
21,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10	50	−59.0	----	----	----	----	----	6	50	−54.0	----
22,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6	43	−57.0	----	----	----	----	----	----	----	----	----

Stations and elevations in meters above sea level

Altitude (meters) m. s. l.	St. Paul, Minn. (225 m.)				San Antonio, Tex. (242 m.)				San Diego, Calif.[1] (19 m.)				S. S. Marie, Mich. (221 m.)				Seattle, Wash.[1] (27 m.)				Spokane, Wash. (598 m.)				Washington D. C. (25 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	30	988	20.7	78	31	992	25.6	80	30	1,010	18.7	84	31	988	14.9	86	31	1,014	20.5	70	31	944	23.2	48	30	1,013	24.2	77
500	30	957	20.6	71	31	961	24.8	78	30	957	21.0	61	31	957	16.6	72	31	960	18.3	66	----	----	----	----	30	959	23.7	65
1,000	30	903	17.9	68	31	908	22.3	75	30	904	24.9	29	31	902	14.9	65	31	905	15.3	62	31	901	22.2	46	30	906	20.6	65
1,500	30	852	15.1	66	31	857	19.7	72	30	853	24.4	24	31	850	11.6	68	31	853	12.8	60	31	851	18.6	48	30	855	17.2	72
2,000	30	803	12.7	60	31	808	17.1	66	30	806	22.0	24	31	800	8.7	69	31	803	9.8	54	31	802	14.7	50	30	806	13.9	77
2,500	30	756	10.2	55	31	762	14.6	57	30	759	18.6	26	31	753	6.7	62	31	756	6.8	51	31	755	10.7	54	30	759	10.8	76
3,000	30	712	7.3	55	31	718	11.8	54	30	716	14.9	29	31	708	3.9	58	31	711	3.4	49	31	711	6.8	58	30	715	8.1	67
4,000	30	630	2.0	52	31	637	6.1	53	30	635	7.3	34	31	626	−1.6	49	31	628	−2.6	39	31	629	.3	59	29	633	3.3	58
5,000	30	556	−3.9	50	31	563	.6	52	29	561	−.3	40	29	551	−7.4	42	31	553	−9.4	40	31	555	−6.0	56	29	559	−1.9	54
6,000	30	489	−10.7	49	31	496	−5.4	48	28	495	−6.6	39	27	484	−14.0	40	31	485	−16.3	42	31	487	−12.9	51	29	493	−7.7	51
7,000	30	429	−17.6	47	31	436	−11.9	46	28	435	−13.2	27	26	424	−20.8	37	30	424	−23.4	43	28	427	−20.2	50	27	433	−13.9	46
8,000	30	374	−24.7	44	31	382	−18.9	46	13	381	−20.6	----	24	368	−28.4	34	28	368	−31.1	45	28	372	−27.5	48	24	378	−20.7	45
9,000	29	325	−32.0	41	31	333	−26.2	45	13	332	−27.8	----	21	320	−35.4	28	28	319	−38.2	52	28	322	−35.2	47	24	329	−28.0	46
10,000	29	282	−39.4	40	31	290	−33.7	43	12	289	−35.2	----	20	277	−41.7	----	27	276	−45.4	----	28	279	−42.9	----	19	286	−35.6	43
11,000	29	243	−46.1	----	30	250	−41.5	----	12	250	−42.6	----	18	239	−46.2	----	27	236	−51.6	----	27	240	−49.3	----	15	248	−43.4	----
12,000	27	209	−51.5	----	30	216	−49.3	----	11	216	−50.3	----	17	205	−48.0	----	24	202	−54.3	----	26	206	−52.0	----	13	212	−51.7	----
13,000	25	179	−54.5	----	29	185	−56.6	----	7	184	−57.5	----	16	176	−48.5	----	23	173	−54.4	----	26	176	−52.7	----	10	182	−58.4	----
14,000	23	153	−56.2	----	26	158	−62.8	----	7	157	−64.2	----	15	151	−49.9	----	18	148	−55.1	----	26	151	−53.5	----	8	155	−62.7	----
15,000	21	131	−58.1	----	26	134	−67.4	----	----	----	----	----	13	130	−51.6	----	17	126	−56.3	----	24	129	−55.0	----	6	132	−64.9	----
16,000	21	112	−58.9	----	25	113	−70.4	----	----	----	----	----	9	112	−52.2	----	11	108	−57.1	----	21	111	−56.2	----	6	112	−65.5	----
17,000	19	95	−58.4	----	21	96	−70.6	----	----	----	----	----	----	----	----	----	8	91	−56.9	----	16	94	−56.9	----	----	----	----	----
18,000	10	81	−57.2	----	18	81	−68.2	----	----	----	----	----	----	----	----	----	5	78	−56.3	----	11	81	−56.8	----	----	----	----	----
19,000	6	69	−54.8	----	10	69	−65.5	----	----	----	----	----	----	----	----	----	----	----	----	----	8	69	−56.2	----	----	----	----	----
20,000	5	59	−52.8	----	6	58	−61.7	----	----	----	----	----	----	----	----	----	----	----	----	----	6	59	−54.9	----	----	----	----	----

Footnote at end of table.

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during July 1942*—Continued

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level																			
	Anchorage, Alaska (42 m.)				Barrow, Alaska (6 m.)				Bethel, Alaska (7 m.)				Juneau, Alaska (49 m.)				Ketchikan, Alaska (26 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,011	16.7	67	31	1,011	6.1	87	31	1,013	15.4	70	31	1,011	16.6	70	31	1,014	18.7	63
500	31	957	13.3	71	31	952	7.1	77	31	955	11.4	75	31	959	13.8	71	31	959	14.9	69
1,000	31	902	10.0	77	31	896	5.8	75	31	900	7.9	81	31	904	10.3	78	31	904	11.1	75
1,500	31	849	6.7	83	31	842	3.4	77	31	847	5.2	85	31	851	7.1	81	31	852	7.9	81
2,000	31	798	3.6	87	31	791	1.3	75	31	796	3.1	81	31	800	4.2	83	31	801	5.5	76
2,500	31	751	1.1	86	31	744	−.8	74	31	748	1.3	75	30	753	1.7	81	31	753	2.8	73
3,000	30	705	−1.4	83	31	698	−3.2	69	30	703	−.8	67	30	707	−.8	77	31	708	.1	69
4,000	30	622	−6.7	73	29	615	−8.3	64	29	620	−5.4	60	27	624	−5.9	66	31	625	−5.1	63
5,000	30	546	−12.6	67	29	540	−14.4	62	29	545	−11.3	54	26	548	−12.0	61	31	549	−11.4	59
6,000	30	479	−19.5	63	28	472	−20.9	59	29	478	−17.9	49	26	480	−18.9	61	27	481	−18.3	59
7,000	30	418	−26.6	60	28	412	−27.8	58	29	417	−24.8	47	25	419	−26.0	61	26	420	−25.2	59
8,000	29	363	−34.1	57	28	358	−35.2	57	29	363	−31.6	45	25	364	−33.7	60	25	366	−32.6	57
9,000	28	314	−41.3	-------	28	309	−42.3	-------	28	314	−38.7	45	24	315	−41.4	-------	25	316	−39.9	57
10,000	28	270	−47.5	-------	28	266	−46.9	-------	28	271	−45.1	-------	24	272	−47.8	-------	24	273	−46.1	-------
11,000	28	232	−49.3	-------	27	229	−47.8	-------	28	233	−48.8	-------	24	233	−51.0	-------	24	235	−50.2	-------
12,000	28	200	−48.3	-------	27	197	−46.1	-------	28	200	−48.8	-------	24	200	−50.4	-------	22	201	−50.9	-------
13,000	27	171	−47.6	-------	26	170	−44.5	-------	28	172	−48.1	-------	24	172	−49.5	-------	20	172	−49.4	-------
14,000	27	147	−47.6	-------	21	146	−44.5	-------	28	148	−47.9	-------	24	147	−49.1	-------	17	149	−48.8	-------
15,000	24	126	−47.8	-------	20	126	−44.7	-------	27	127	−47.9	-------	23	126	−49.1	-------	16	127	−49.2	-------
16,000	23	109	−47.9	-------	17	109	−44.4	-------	27	109	−48.0	-------	21	109	−49.1	-------	15	110	−49.4	-------
17,000	23	94	−47.8	-------	14	94	−43.9	-------	27	94	−47.8	-------	21	93	−48.7	-------	12	94	−49.6	-------
18,000	20	81	−47.3	-------	9	80	−42.7	-------	26	80	−47.3	-------	18	80	−48.2	-------	8	81	−49.3	-------
19,000	18	70	−46.6	-------	6	69	−42.0	-------	20	69	−46.7	-------	18	69	−47.7	-------	6	70	−48.7	-------
20,000	12	60	−45.8	-------	-------	-------	-------	-------	14	59	−46.0	-------	13	59	−47.2	-------	-------	-------	-------	-------
21,000	10	52	−45.2	-------	-------	-------	-------	-------	7	51	−45.4	-------	7	51	−46.8	-------	-------	-------	-------	-------

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level															
	McGrath, Alaska (100 m.)				Nome, Alaska (14 m.)				San Juan, P. R. (15 m.)				Swan Island, W. I. (10 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of obersvations	Pressure	Temperature	Relative humidity
Surface	30	1000	17.8	59	29	1010	10.6	84	31	1016	26.2	86	31	1014	27.0	85
500	30	954	14.4	61	29	953	8.7	84	31	962	23.5	89	31	960	23.2	89
1,000	30	899	10.4	68	29	897	6.6	84	31	909	20.5	88	31	906	20.2	85
1,500	30	846	6.8	75	29	844	4.5	85	31	858	17.7	83	31	855	17.6	77
2,000	30	796	3.5	80	29	793	2.6	82	31	808	15.3	73	31	806	14.9	71
2,500	30	748	.6	85	29	745	.5	75	31	762	13.4	63	31	760	12.5	65
3,000	30	703	−1.9	84	29	700	−1.6	70	31	718	11.0	56	31	716	9.8	60
4,000	30	619	−7.0	74	29	617	−6.7	65	29	637	5.0	52	31	634	4.1	57
5,000	30	544	−12.8	62	28	542	−12.9	60	28	563	−.7	51	30	560	−1.6	57
6,000	30	476	−19.4	56	28	475	−19.7	56	28	496	−6.2	48	29	493	−7.6	56
7,000	30	416	−26.4	53	28	414	−26.8	53	28	436	−11.9	46	27	433	−13.9	55
8,000	30	361	−33.3	52	28	359	−33.3	51	28	382	−18.6	41	24	379	−20.5	53
9,000	30	312	−40.4	----------	25	311	−39.3	50	28	333	−25.9	40	24	330	−27.6	52
10,000	29	270	−45.9	----------	25	268	−43.3	----------	28	290	−33.3	39	24	287	−35.5	----------
11,000	29	232	−47.4	----------	24	232	−45.8	----------	27	251	−41.3	----------	23	248	−43.9	----------
12,000	29	199	−47.4	----------	23	199	−46.1	----------	27	216	−49.4	----------	17	213	−52.7	----------
13,000	29	171	−46.5	----------	23	171	−45.2	----------	24	185	−57.1	----------	13	182	−61.6	----------
14,000	29	147	−46.5	----------	22	147	−45.1	----------	24	158	−63.7	----------	12	154	−70.8	----------
15,000	28	126	−46.9	----------	22	127	−45.1	----------	23	134	−68.6	----------	10	130	−79.4	----------
16,000	28	109	−46.9	----------	20	109	−44.9	----------	23	113	−71.7	----------	10	109	−83.0	----------
17,000	27	94	−46.7	----------	18	94	−44.6	----------	21	95	−74.1	----------	10	91	−84.0	----------
18,000	24	81	−46.1	----------	16	81	−44.1	----------	19	80	−72.7	----------	6	76	−79.9	----------
19,000	22	70	−45.5	----------	7	70	−43.1	----------	16	68	−69.7	----------	5	64	−75.0	----------
20,000	15	60	−45.0	----------	----------	----------	----------	----------	10	57	−65.8	----------	----------	----------	----------	----------
21,000	12	52	−44.6	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

All observations taken at 11 p. m., 75th meridian time.

None of the means included in this table are based on less than 15 surface or 5 standard level observations.

Number of observations refers to pressure only, as temperature and humidity are missing for some observations at certain levels, also, the humidity data are not used in daily observations when the temperature is below −40° C.

Stations marked with the superior figure one [1] are Navy stations.

LATE REPORTS FOR JUNE 1942

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during June 1942*

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level											
	Pearl Harbor, T. H. (12 m.)				San Juan, P. R. (15 m.)				Swan Island, W.I. (10 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	29	1016	24.5	72	26	1014	25.8	87	30	1011	27.2	85
500	29	960	20.9	71	26	961	23.3	88	30	957	23.9	88
1,000	29	906	17.3	74	26	907	20.3	88	30	904	21.0	82
1,500	29	855	14.6	70	26	856	17.3	86	30	853	18.4	77
2,000	29	805	12.7	58	26	807	14.9	80	30	804	15.9	72
2,500	29	758	10.7	45	26	760	12.3	74	30	758	13.5	66
3,000	29	714	8.8	36	26	716	9.6	68	30	714	10.9	61
4,000	29	632	3.4	24	26	634	4.0	68	28	633	4.9	62
5,000	29	558	−2.2	26	25	561	−1.3	71	28	559	−1.1	64
6,000	29	491	−8.7	----	25	495	−6.9	66	28	493	−7.0	59
7,000	28	431	−15.6	----	24	435	−13.1	64	27	433	−13.1	56
8,000	----	----	----	----	24	381	−19.8	63	27	380	−19.5	54
9,000	----	----	----	----	24	331	−26.9	62	27	331	−26.6	53
10,000	----	----	----	----	24	288	−34.4	60	27	288	−34.6	----
11,000	----	----	----	----	24	249	−42.3	----	25	249	−43.0	----
12,000	----	----	----	----	24	215	−50.4	----	15	214	−51.4	----
13,000	----	----	----	----	24	183	−58.2	----	8	183	−60.3	----
14,000	----	----	----	----	24	156	−65.2	----	5	155	−70.1	----
15,000	----	----	----	----	23	133	−70.9	----	----	----	----	----
16,000	----	----	----	----	22	112	−75.0	----	----	----	----	----
17,000	----	----	----	----	22	94	−75.8	----	----	----	----	----
18,000	----	----	----	----	21	79	−73.8	----	----	----	----	----
19,000	----	----	----	----	18	67	−69.2	----	----	----	----	----
20,000	----	----	----	----	16	57	−65.0	----	----	----	----	----
21,000	----	----	----	----	9	48	−61.4	----	----	----	----	----

LATE REPORTS FOR MAY 1942

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during May 1942*

Altitude (meters) m. s. l.	Stations and elevations in meters above sea level											
	Bethel, Alaska (7 m.)				Pearl Harbor, T. H.[1] (12 m.)				Swan Island, W. I. (10 m.)			
	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity	Number of observations	Pressure	Temperature	Relative humidity
Surface	31	1,010	10.2	58	31	1,015	24.0	71	31	1,011	26.3	84
500	31	952	6.2	61	31	960	20.4	71	31	956	23.1	89
1,000	31	895	2.7	63	31	906	16.9	72	31	903	20.1	84
1,500	31	841	−.5	67	31	854	14.0	70	31	852	17.3	79
2,000	31	790	−3.3	71	31	805	12.5	58	31	803	14.6	75
2,500	31	741	−5.9	70	31	758	10.3	44	31	757	12.0	72
3,000	31	695	−8.1	64	31	714	8.4	30	31	712	9.3	67
4,000	31	610	−13.7	60	31	631	3.4	21	31	631	4.0	64
5,000	31	534	−19.7	56	31	557	−2.9	22	31	558	−0.8	62
6,000	31	467	−26.0	54	31	490	−9.7	34	31	492	−6.1	54
7,000	31	405	−32.8	53	30	430	−16.5	42	30	432	−12.4	48
8,000	31	351	−40.2	51	----	----	----	----	30	379	−19.5	46
9,000	31	302	−46.0	----	----	----	----	----	30	330	−26.6	43
10,000	31	260	−50.3	----	----	----	----	----	29	287	−34.3	----
11,000	30	223	−52.0	----	----	----	----	----	29	248	−42.5	----
12,000	29	191	−50.7	----	----	----	----	----	26	214	−50.7	----
13,000	29	164	−49.9	----	----	----	----	----	23	183	−59.6	----
14,000	26	141	−49.1	----	----	----	----	----	20	156	−69.0	----
15,000	26	120	−48.6	----	----	----	----	----	18	131	−78.4	----
16,000	24	104	−48.5	----	----	----	----	----	17	110	−87.0	----
17,000	23	89	−48.5	----	----	----	----	----	16	91	−90.5	----
18,000	17	76	−48.4	----	----	----	----	----	13	76	−86.8	----
19,000	12	66	−48.1	----	----	----	----	----	9	63	−81.9	----
20,000	----	----	----	----	----	----	----	----	5	53	−75.8	----

Station marked with the superior figure one [1] is Navy station.

LATE REPORT FOR JULY 1941

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during July 1941*

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level			
	Joliet, Ill. (178 m.)			
	Number of observations	Pressure	Temperature	Relative humidity
Surface	30	994	19.4	82
500	30	957	21.9	73
1,000	30	904	20.7	67
1,500	30	853	17.4	67
2,000	30	804	14.4	63
2,500	30	758	11.4	59
3,000	30	713	8.8	54
4,000	30	632	3.2	51
5,000	28	558	−3.1	48
6,000	28	491	−9.2	42
7,000	28	431	−15.5	41
8,000	27	376	−22.6	40
9,000	27	328	−29.8	40
10,000	27	284	−37.4	38
11,000	26	245	−44.8	----
12,000	26	211	−51.6	----
13,000	26	181	−55.8	----
14,000	26	154	−58.7	----
15,000	24	132	−60.0	----
16,000	23	112	−60.0	----
17,000	20	96	−59.3	----
18,000	17	82	−58.7	----
19,000	6	70	−56.8	----

LATE REPORT FOR JUNE 1941

TABLE 1.—*Mean free-air barometric pressure in millibars, temperature in degrees Centigrade, and relative humidities in percent, obtained by airplanes and radiosondes during June 1941*

Altitude (meters) m. s. l.	Stations with elevations in meters above sea level			
	Joliet, Ill. (178 m.)			
	Number of observations	Pressure	Temperature	Relative humidity
Surface	30	993	17.5	83
500	30	956	19.3	70
1,000	30	902	17.6	63
1,500	30	851	14.6	68
2,000	30	801	11.4	74
2,500	30	755	8.4	82
3,000	30	710	5.8	65
4,000	30	628	0.6	58
5,000	30	554	−5.0	52
6,000	30	487	−11.3	50
7,000	30	427	−18.3	47
8,000	29	372	−25.4	44
9,000	29	323	−32.9	44
10,000	29	280	−40.7	----
11,000	28	241	−47.7	----
12,000	28	207	−52.9	----
13,000	26	177	−56.9	----
14,000	25	151	−58.9	----
15,000	24	129	−58.9	----
16,000	19	110	−58.9	----
17,000	16	93	−59.1	----
18,000	12	79	−58.3	----
19,000	6	67	−56.8	----

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 5 p. m. (75th meridian time) during July 1942. Directions given in degrees from North (N=360°, E=90, S=180°, W=270°)—Velocities in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (538 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (866 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (17 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,627 m.)			El Paso, Tex. (1,196 m)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	160	4.3	31	245	1.1	31	271	2.6	31	71	1.4	31	220	0.9	31	326	4.0	31	122	5.8	31	243	3.7	30	231	0.9	31	211	2.2	31	249	1.6	31	60	1.5	31	138	1.6
500							31	269	3.1										31	132	6.8	31	252	5.3	30	236	2.4	31	222	3.8	31	254	3.5						
1,000	31	161	4.8				31	272	3.8				31	309	1.0	31	325	3.8	29	141	5.5	31	259	6.2	30	254	3.1	31	250	4.0	31	258	4.6						
1,500	31	165	4.8				31	284	3.7	31	49	0.7	30	296	2.0	31	316	2.9	29	141	4.9	26	261	7.2	29	268	4.6	30	268	5.1	30	273	5.6				31	139	2.4
2,000	30	173	4.4	31	250	1.5	30	289	4.1	31	286	0.6	27	284	4.9	31	288	2.8	26	144	3.4	26	268	8.4	26	267	6.5	26	276	5.1	27	285	6.0	31	51	1.4	31	135	1.9
2,500	29	183	3.8	31	231	1.1	26	290	4.5	31	284	2.9	25	291	6.0	31	268	5.1	26	146	4.4	22	266	9.0	19	273	7.5	26	279	5.2	24	293	6.7	31	44	1.6	31	118	1.3
3,000	29	199	3.0	31	277	1.0	25	292	4.9	30	278	5.7	20	278	7.9	31	249	7.0	23	138	4.3	14	279	9.8				22	284	4.5	21	297	7.2	30	29	1.6	31	72	1.4
4,000	20	269	1.1	29	310	2.3	23	288	4.3	28	265	10.8	16	285	12.9	30	244	9.9	21	143	4.3	11	294	14.4				19	274	4.6	14	291	9.4	28	299	2.9	30	57	3.6
5,000	17	24	1.4	27	323	3.4	18	278	4.9	28	271	14.5	13	295	14.8	28	242	12.2	20	140	3.6							17	271	2.6	10	287	10.4	25	289	6.6	27	55	2.8
6,000	14	28	1.0	24	311	2.5	14	278	6.1	25	272	16.1	10	285	15.9	26	246	13.0	18	124	3.8							15	260	3.2				20	293	8.7	22	42	3.5
8,000	13	18	0.9	18	322	4.3	11	256	7.4	20	271	18.3				24	248	16.8	12	107	2.5							13	255	1.6				14	309	10.1	17	53	4.4
10,000	11	162	3.4	13	301	5.4				12	278	22.5				14	264	20.2																11	295	9.5	15	43	4.4
12,000	11	180	3.7																															10	301	13.3	15	35	4.6
14,000	10	138	8.9																																				

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (570 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (10 m.)[1]			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	209	4.1	31	321	1.7	30	246	1.2	29	307	2.5	29	145	1.8	31	252	2.2	31	184	3.1	30	208	2.0	31	311	2.9	31	101	3.7	31	203	1.9	31	269	1.4	27	207	1.6
500							30	250	2.2				29	204	2.9	31	248	2.6				30	208	3.0	31	307	3.4	31	105	4.9	31	215	3.2	31	253	2.0	27	250	3.2
1,000							30	248	3.2	29	295	3.5	27	228	3.4	31	246	4.2	31	189	5.6	30	215	3.2	31	303	2.5	30	99	4.0	31	236	2.1	31	266	2.5	27	274	4.7
1,500							28	272	3.5	28	281	4.1	27	258	3.5	31	253	6.1	31	200	5.0	30	236	3.1	31	271	1.6	29	85	3.9	31	269	2.2	30	277	3.0	26	289	5.9
2,000	31	213	3.9	31	309	3.0	28	282	4.7	28	266	5.8	26	271	4.2	29	262	7.4	31	205	5.8	27	257	3.4	31	227	3.2	29	88	3.7	28	270	2.6	29	280	3.6	21	291	7.0
2,500	31	216	4.5	31	305	3.1	25	293	5.9	27	269	7.4	26	273	4.1	24	280	8.6	31	212	5.0	24	260	3.8	31	206	4.6	28	90	3.5	24	255	2.6	28	278	5.1	18	301	7.1
3,000	31	216	4.5	31	289	3.2	22	301	6.9	26	270	9.8	25	269	4.2	22	286	10.3	31	218	5.4	21	265	4.4	31	209	6.0	27	92	3.7	19	259	1.9	24	276	5.2	12	288	7.0
4,000	31	230	5.6	29	274	4.2	21	292	7.2	20	273	12.8	22	252	3.7	11	291	12.0	31	224	6.2	14	269	4.3	29	222	9.2	23	106	3.0	14	277	2.4	19	287	5.3			
5,000	26	228	7.2	29	274	5.7	20	295	7.9	17	274	14.6	18	248	2.1				30	226	5.5				28	228	10.1	22	102	3.2				15	300	5.1			
6,000	22	229	8.6	27	270	5.6	19	284	8.0	13	267	15.0	13	212	1.8				27	224	6.4				26	231	11.0	21	106	3.1				10	282	7.1			
8,000	13	244	10.6	15	282	6.2	15	277	10.1				10	142	2.2				24	248	8.4				26	236	14.7	17	100	5.1									
10,000							11	282	7.3										24	258	12.4				26	240	19.6	12	94	4.2									
12,000																			21	257	13.9				17	242	24.3												
14,000																			19	253	8.7				13	248	18.7												
16,000																			15	209	4.9																		

Altitude (meters) m. s. l.	Oakland Calif. (8 m.)			Oklahoma City, Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Paul, Minn. (225 m.)			San Antonio, (240 m.)[2]			San Diego, Calif. (15 m.)			Sault St. Marie, Mich. (230 m.)			Seattle, Wash. (12 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	280	5.9	31	180	6.2	31	171	1.9	31	277	1.6	31	41	1.5	31	226	2.5	31	238	1.4	29	139	3.2	30	275	3.7	31	288	3.1	30	255	1.3	31	227	1.1	31	241	1.3
500	31	270	3.7	31	180	6.3	31	170	2.8	31	266	2.6				31	226	3.0	31	249	1.7	29	136	4.4	30	280	2.6	31	292	4.5	30	224	2.9				31	257	2.7
1,000	31	267	3.8	31	192	6.2	31	198	3.7	31	263	2.9	31	39	1.5	30	242	3.7	30	249	3.4	28	145	3.6	30	304	2.0	31	279	5.6	28	219	3.1	31	216	2.0	30	280	3.9
1,500	31	265	3.7	31	203	6.1	31	226	4.7	31	256	3.3	31	17	1.5	29	255	5.0	26	265	5.5	27	153	4.0	30	302	1.1	25	273	6.9	26	211	2.4	31	227	2.2	30	284	5.8
2,000	31	240	3.8	31	208	4.8	29	250	6.0	31	259	2.7	31	306	1.7	28	262	6.2	25	276	6.8	26	153	4.0	30	218	1.5	20	289	8.4	23	205	2.6	30	223	3.9	26	293	8.2
2,500	31	227	4.9	30	226	4.1	27	263	6.1	31	264	1.7	30	291	4.0	26	269	6.4	16	299	7.6	25	158	3.5	29	188	3.4	16	286	8.7	21	202	2.3	30	229	5.2	25	292	9.5
3,000	30	222	5.5	28	235	3.5	27	273	7.1	31	292	.8	28	289	6.4	25	269	7.0	10	291	11.1	23	161	3.2	28	188	4.7	10	297	10.4	19	209	2.4	27	236	6.4	22	284	10.7
4,000	29	213	7.8	23	256	2.0	25	285	8.7	31	59	.3	21	283	10.1	21	285	6.6				20	98	1.0	25	185	6.4				17	227	3.5	22	249	9.5	18	287	10.6
5,000	28	202	8.2	19	312	2.1	21	294	9.7	30	135	2.1	18	281	12.3	18	288	7.0				17	28	.2	24	185	6.6				16	245	6.6	19	246	11.0	14	288	12.4
6,000	28	211	8.7	19	311	3.0	20	284	11.4	28	106	1.8	17	288	13.3	16	291	8.3				14	312	1.3	22	192	5.1				15	229	8.4	17	244	13.5	12	282	14.0
8,000	25	219	10.3	14	278	2.3	15	284	13.0	25	38	0.9	13	277	18.9	11	266	8.7													10	241	10.5	16	252	18.8			
10,000	22	228	14.1	12	122	0.6	13	268	13.7	24	299	3.0																						13	252	23.3			
12,000	18	234	18.3	10	255	2.7				23	295	7.1																											
14,000	15	242	19.9							21	300	7.7																											
16,000	12	236	14.1							14	241	.9																											

[1] Elevation, Miami changed from 10 to 15 m. July 31.
[2] Elevation, San Antonio changed from 180 to 240 m. July 14.

TABLE 3.—*Maximum free-air wind velocities, (m.p.s.), for different sections of the United States based on pilot-balloon observations during July 1942*

Section	Surface to 2,500 meters (m. s. l.)					Between 2,500 and 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station
Northeast [1]	28.2	W	1,360	6	Philadelphia, Pa.	36.4	WNW	4,270	14	Syracuse, N. Y.	68.8	NW	12,380	17	Caribou, Maine.
East-Central [2]	28.9	W	1,680	6	Cincinnati, Ohio	27.3	WSW	2,750	6	Washington, D. C.	38.6	SW	9,570	23	Knoxville, Tenn.
Southeast [3]	30.0	WSW	2,090	6	Charleston, S. C.	24.4	W	4,480	7	Spartanburg, S. C.	30.3	NE	9,830	14	Tallahassee, Fla.
North-Central [4]	30.9	WSW	2,150	12	Duluth, Minn.	44.5	WNW	4,270	7	Milwaukee, Wis.	46.5	NNW	9,460	9	Alpena, Mich.
Central [5]	30.0	WSW	1,420	9	Wichita, Kans.	30.9	NW	4,600	7	Moline, Ill.	38.4	NW	6,150	6	Des Moines, Iowa.
South-Central [6]	31.6	SE	1,660	29	Del Rio, Tex.	24.0 24.0	WNW WSW	3,000 4,430	9 3	Tulsa, Okla. New Orleans, La.	55.0	NE	19,730	31	Little Rock, Ark.
Northwest [7]	41.2	WSW	2,310	14	Butte, Mont.	42.0	W	3,920	11	Havre, Mont.	65.0	WSW	10,660	31	Billings, Mont.
West-Central [8]	27.0	SW	2,420	12	Casper, Wyo.	38.0	SW	5,000	11	Modena, Utah	60.8	SW	12,170	30	Winnemucca, Nev.
Southwest [9]	24.9	ESE	2,310	22	Tucson, Ariz.	37.0	NNW	4,350	24	El Paso, Tex.	39.0	SW	10,140	29	Bakersfield, Calif.

[1] Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.
[2] Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.
[3] South Carolina, Georgia, Florida, and Alabama.
[4] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[5] Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.
[6] Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.
[7] Montana, Idaho, Washington, and Oregon.
[8] Wyoming, Colorado, Utah, northern Nevada, and northern California.
[9] Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

The month was characterized by an uneven geographic distribution of rainfall. Excessive local rains occurred in many areas including parts of Texas, Minnesota, Iowa, northern Wisconsin, southwestern Illinois, Missouri, Pennsylvania, New York, and eastern Kentucky. These rains resulted in numerous localized but damaging floods. The highest stages of record were established in some cases notably in the upper Allegheny River Basin where phenomenal rates of rainfall occurred on July 17–18.

While parts of the Ohio Valley, the Northeastern States, the upper Mississippi Valley, southeastern Texas, and the far Northwest had above normal precipitation, most of the remainder of the country had a decidedly dry month.

Hudson Bay drainage.—A minor flood occurred in the Red River of the North from the 7th to the 12th of June. A stage of 6.4 feet was reached at Wahpeton, N. Dak. (flood stage 6 feet), on June 8 and a stage of 17.7 feet at Fargo, N. Dak. (flood stage 17 feet), on June 11. The flood was caused by locally heavy rains on the morning of June 5, followed by lighter amounts during the next 48 hours and heavy amounts again on the morning of the 8th; on the morning of the 5th, 2.76 inches of rain was recorded at Mobridge, S. Dak., and 2.15 inches at Oaks, N. Dak. (both 24-hour amounts). On the morning of the 8th, Ashley, N. Dak., reported 1.95 inches.

Light overflows took place in Moorhead, Minn., and Fargo, N. Dak., but the damage was slight.

Atlantic Slope drainage and Ohio River Basin.—On July 17–18, thunderstorms with excessive precipitation over the north-central counties of Pennsylvania and bordering counties of New York caused disastrous flooding in the upper Allegheny River Basin, and in the Sinnemahoning Creek Valley, a tributary of the West Branch of the Susquehanna River.

The flood damage area covered about 2,000 square miles in the headwaters of the Allegheny, and in the Clarion River and the Sinnemahoning Creek, in parts of Allegheny and Cattaraugus Counties in New York, and in Cameron, Elk, McKean, and Potter Counties in Pennsylvania. The following is a brief outline of the flood conditions in representative towns in the area most seriously affected:

Ridgway, Pa.—Most of the principal industries and about 10 percent of the residential section were flooded by the Clarion River and Elk Creek. The river rose 66 inches in 1⅔ hours and was above flood stage from 9:30 p. m. of the 18th to late night of the 19th. This flood was the maximum of record and was 26 inches higher than the flood of March 17, 1936.

Johnsonburg, Pa.—About 25 percent of the business section and 10 percent of the residential section were flooded. One life was lost. The flood waters rose so rapidly that the primary concern in the flood zone was evacuation so that little property was salvaged.

Flooding at this point is caused by the east and west branches of the Clarion River. The crest was 7.5 feet above the flood of March 17, 1936, and is the maximum of record. The river was out of its banks for about 12 to 18 hours.

Emporium, Pa.—The town was partially protected by dikes which had been erected following the 1936 flood, and it was not until the dikes were overtopped that the main part of the town was flooded. Most of the residents, north of the railroad tracks, did not remove their portable belongings before the dikes were overtopped and, therefore, were unable to save much of their property. This was the first time that the main business section of the town had been flooded. About 60 percent of the town was flooded. Three lives were lost.

Flooding at this point was caused by Sinnemahoning Creek. The creek was out of its banks for about 24 hours. This flood was about 34 inches higher than the flood of March 17, 1936, and about equal to the flood of June 1889.

Austin, Pa.—The principal industries and the business section and 80 percent of the residential area were flooded. The major damage was caused by failure of an earth dam 2 miles above the town. The water was about 4 to 5 feet deep on the main street.

Coudersport, Pa.—About 50 percent of the business and 25 percent of the residential sections were inundated. Flooding was caused by the overflowing of the Allegheny River. The river was out of bank about 18 hours. This is the maximum flood of record.

Port Allegany, Pa.—Six lives were lost. All major industrial plants, the entire business district, and about 50 percent of the residential areas were flooded. Fire also destroyed one home and a silk mill.