

MONTHLY WEATHER REVIEW

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. Little, in charge]

By L. T. SAMUELS

Mean free-air temperatures and relative humidities for August are shown in table 1. From the few departures available, it is seen that temperatures averaged considerably above normal in the central part of the country. Free-air temperatures over the western plateau averaged higher than over adjacent low-lying regions up to at least 5,000 meters. Free-air relative humidities averaged lowest over the middle Pacific coast and highest over the southeastern part of the country.

Resultant free-air winds for the month contained a preponderance of southerly components over the southern part of the country. Elsewhere the resultant directions were close to normal. The largest deviations from the normal resultant free-air velocities occurred in the north central and northeastern sections of the country where they were greatly in excess of the normals.

TABLE 1.—Free-air temperatures and relative humidities obtained by airplanes during August 1934

Station	Altitude (meters) m.s.l.																		
	Surface		500		1,000		1,500		2,000		2,500		3,000		4,000		5,000		
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	
TEMPERATURE (°C.)																			
Billings, Mont. ¹ (1090 m).....	16.8						19.9		17.5		13.8		9.8		1.3		-7.2		
Cheyenne, Wyo. ¹ (1873 m).....	14.3							15.7		17.1		14.4		6.8			6.8		-1.7
Fargo, N. Dak. ¹ (274 m).....	13.9		16.5		16.6		14.3		11.4		8.6		5.6		-0.2				-6.5
Fort Crockett (Galveston), Tex. ^{2,3} (3 m).....	27.0		25.4		22.9		20.6		18.0		15.1		12.2		6.1				-1.3
Kelly Field (San Antonio), Tex. ² (211 m).....	24.2		23.8		22.1		20.4		17.5		14.7		11.8		5.7				-0.8
Maxwell Field (Montgomery), Ala. ² (52 m).....	23.8		24.5		22.5		19.5		16.7		13.8		10.9		5.2				-0.5
Mitchell Field (Hempstead, L. I.), N. Y. ² (39 m).....	17.3		18.9		16.4		14.0		11.2		8.7		6.2		0.6				-5.7
Murfreesboro, Tenn. ¹ (174 m).....	22.1		23.1		21.9		19.1		16.6		13.3		10.4		3.8				-2.4
Norfolk, Va. ⁴ (3 m).....	23.0	-1.2	23.4	-0.6	20.3	-0.5	17.2	-0.4	14.2	-0.2	11.7	0.0	9.2	+0.2	4.3	+0.2			-1.0
Oklahoma City, Okla. ¹ (391 m).....	25.3		26.1		25.8		22.6		19.0		15.7		12.4		5.6				-0.8
Omaha, Nebr. ¹ (300 m).....	19.5	(6)	21.9	(9)	23.4	+3.1	21.4	+3.6	18.6	+3.8	15.3	+3.7	11.7	+3.5	4.5	+2.9			-2.2
Pearl Harbor, Territory of Hawaii (5 m).....	24.1	-4.3	22.0	-1.0	18.2	-0.5	15.3	-0.7	13.7	+0.2	11.5	+0.4	8.7	-0.2	2.7	-4.8			-2.6
San Diego, Calif. ⁴ (10 m).....	18.8	-2.4	16.8	-2.3	22.2	-0.8	22.8	+0.5	20.1	-0.5	16.7	-0.5	13.2	-0.6	6.6	-0.5			0.6
Scott Field (Belleville), Ill. ² (135 m).....	20.3		24.0		22.6		19.8		17.0		13.6		9.8		2.5				-4.3
Seattle, Wash. ⁴ (8 m).....																			
Selfridge Field (Mount Clemens), Mich. ² (177 m).....	16.4		19.0		16.9		14.3		11.5		9.2		6.7		1.7				-4.6
Spokane, Wash. ² (596 m).....	14.5				20.9		18.1		13.9		9.4		5.4		-1.0				-7.7
Sunnyvale, Calif. ⁴ (6 m).....	15.8		13.3		18.2		22.1		20.4		17.5		13.8		5.1				
Washington, D. C. ² (2 m).....																			
Wright Field (Dayton), Ohio ¹ (244 m).....	17.8		19.8		19.5		16.7		14.0		11.4		8.6		2.7				-3.5
RELATIVE HUMIDITY (PERCENT)																			
Billings, Mont. ¹ (1,090 m).....	50						30		34		36		40		48		56		
Cheyenne, Wyo. ¹ (1,873 m).....	66							61		49		46		47			53		
Fargo, N. Dak. ¹ (274 m).....	78		63		55		51		51		50		48		46		44		
Fort Crockett (Galveston), Tex. ^{2,3} (3 m).....	84		83		64		53		50		49		47		49		59		
Kelly Field (San Antonio), Tex. ² (211 m).....	90		92		79		62		61		58		55		53		59		
Maxwell Field (Montgomery), Ala. ² (52 m).....	93		76		70		71		69		67		67		61		62		
Mitchell Field (Hempstead, L. I.), N. Y. ² (39 m).....	90		69		66		64		61		53		48		40		38		
Murfreesboro, Tenn. ¹ (174 m).....	90		77		73		74		68		68		64		64		58		
Norfolk, Va. ⁴ (3 m).....	86	+7	77	+7	72	+7	73	+8	76	+10	72	+8	66	+6	50	+6	43	+6	
Oklahoma City, Okla. ¹ (391 m).....	65		59		51		52		53		55		56		52		56		
Omaha, Nebr. ¹ (300 m).....	72	(9)	62	(9)	48	-12	46	-12	46	-12	48	-9	51	-6	58	+6	58	+5	
Pearl Harbor, Hawaii ⁴ (5 m).....	84	+22	82	+9	86	+4	79	+1	63	-7	49	-10	44	-4	45	+35	41		
San Diego, Calif. ⁴ (10 m).....	85	+8	90	+12	48	+6	35	+2	39	+8	45	+12	51	+16	56	+18	54	+18	
Scott Field (Belleville), Ill. ² (135 m).....	91		64		62		61		56		49		49		49		48		
Seattle, Wash. ⁴ (8 m).....																			
Selfridge Field (Mount Clemens), Mich. ² (177 m).....	83		62		57		54		53		48		44		39		35		
Spokane, Wash. ² (596 m).....	58				37		35		36		40		42		38		34		
Sunnyvale, Calif. ⁴ (6 m).....	80		88		60		34		25		20		18		18				
Washington, D. C. ² (2 m).....																			
Wright Field (Dayton), Ohio ¹ (244 m).....	86		71		62		63		59		55		53		47		41		

Observations taken at 5 a. m., 75th meridian time, except along the Pacific coast and Hawaii, where they are taken at 5 a. m. local standard time.

¹ Weather Bureau.
² Army.
³ June to November, inclusive, only.
⁴ Navy.
⁵ National Guard.
⁶ Surface and 500-meter level departures omitted because of difference in time of day between airplane observations and those of kites upon which the normals are based.

TABLE 2.—Free-air resultant winds (meters per second) based on pilot-balloon observations made near 7 a. m. (E. S. T.) during August 1934
[Wind from N=360°, E=90°, etc.]

Altitude (m) m. s. l.	Albuquerque, N. Mex. (1,554 m)		Atlanta, Ga. (309 m)		Bismark, N. Dak. (518 m)		Brownsville, Tex. (7 m)		Burlington, Vt. (132 m)		Cheyenne, Wyo. (1,873 m)		Chicago, Ill. (192 m)		Cleveland, Ohio (245 m)		Dallas, Tex. (154 m)		Havre, Mont. (762 m)		Jacksonville, Fla. (14 m)		Key West, Fla. (11 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface	356	1.4	292	0.7	69	1.2	150	1.5	188	1.9	295	2.6	86	0.1	177	1.3	184	3.0	47	0.7	200	0.6	107	2.7
500	383	1.4	283	0.7	202	2.5	168	8.9	226	4.2	3	0.8	223	2.1	210	9.0	210	9.0	270	0.1	213	4.3	109	5.4
1,000	369	3.3	275	3.2	271	4.0	167	8.8	279	4.7	300	1.9	283	2.5	208	9.0	195	6.2	278	2.6	214	3.6	117	6.0
1,500	375	3.2	275	3.2	271	4.0	162	7.8	288	7.0	281	4.7	288	5.4	195	6.2	181	4.4	286	4.5	205	2.5	119	4.9
2,000	57	1.1	275	3.6	202	6.0	158	5.6	283	8.6	292	3.5	284	6.6	280	7.1	164	3.5	294	5.2	180	1.8	110	4.2
2,500	201	0.7	284	3.7	206	7.9	139	3.9	288	9.0	278	2.8	292	10.2	279	8.3	164	3.5	294	5.2	177	1.8	110	3.7
3,000	238	1.4	277	2.9	295	9.1	114	3.3	262	10.3	262	4.2	283	12.6	282	11.0	149	3.5	285	7.0	166	2.0	115	2.8
4,000	190	1.9	263	2.6	288	10.1	80	3.4	272	8.0	272	6.5	291	18.3	277	11.5	133	2.4	278	8.6	156	1.8	175	1.1
5,000	158	3.3	238	0.8	287	10.0	79	4.4	268	6.6	268	6.6	268	6.6	286	10.0	74	1.8	290	9.1	48	0.6	231	4.1

	Los Angeles, Calif. (217 m)		Medford, Oreg. (410 m)		Memphis, Tenn. (83 m)		New Orleans, La. (19 m)		Oakland, Calif. (8 m)		Oklahoma City, Okla. (402 m)		Omaha, Nebr. (306 m)		Phoenix, Ariz. (338 m)		Salt Lake City, Utah (1,294 m)		Sault Ste. Marie, Mich. (198 m)		Seattle, Wash. (14 m)		Washington, D. C. (10 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface	111	0.7	199	0.6	182	1.7	198	0.6	263	1.2	181	4.1	100	0.9	104	1.7	151	3.5	18	0.3	139	0.7	313	0.5
500	111	1.1	254	0.9	242	7.8	234	2.9	250	1.9	194	7.5	144	2.2	138	1.4	210	3.5	287	1.5	11	1.6	307	2.3
1,000	63	0.3	287	1.4	254	7.9	191	3.3	327	3.7	217	13.3	213	4.4	215	0.8	279	4.4	279	4.4	351	2.6	295	3.5
1,500	313	2.1	54	0.8	260	6.2	172	3.3	313	3.3	221	7.7	259	5.7	276	1.6	153	4.8	290	5.3	342	2.5	295	5.1
2,000	280	2.4	137	0.6	273	3.7	156	3.8	274	3.2	216	3.9	268	6.3	286	1.5	180	3.3	294	7.2	297	1.8	292	7.2
2,500	217	2.7	219	3.6	262	2.6	121	3.0	276	4.7	202	1.9	276	7.3	298	1.2	209	3.5	294	9.0	264	2.2	288	8.4
3,000	160	3.5	216	5.0	219	1.0	94	3.2	147	1.2	147	1.2	283	9.0	158	0.4	246	3.8	298	10.0	261	3.5	281	10.1
4,000	140	4.4	222	7.1	46	1.3	74	3.7	114	2.3	114	2.3	266	9.1	150	3.6	205	4.8	295	10.6	262	6.1	278	10.8
5,000	122	2.5	240	8.9			59	2.8							131	4.5	289	7.6	299	8.9				

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes, in charge]

The floods which occurred at gage stations, on rivers where flood service is maintained by the Weather Bureau, were of minor consequence, as shown in the accompanying table of flood stages. However, more noteworthy floods occurred on several small streams where no flood service is maintained, as follows:

Heavy rains fell in portions of northeastern Kentucky and adjoining portions of West Virginia on August 10, and caused the creeks there to overflow. Damage to the extent of \$250,000 and the loss of two lives resulted from these overflows.

Three floods occurred in Colorado, viz, in the Bear Creek Canyon, in the Mount Vernon Canyon, and in small streams near South Fork, Colo., causing the loss of six lives and more than \$50,000 damage.

There were 3 floods in Arizona, 1 near Duncan, Ariz., 1 at Miami, Ariz., and another near Wickenburg, Ariz. The total damage was about \$12,000. The flood near Duncan drove more than 25 families from their homes, and the one near Wickenburg caused the loss of one life.

Most rivers in the United States were very low. Many low-water records were broken; a table of previous records that were exceeded in either July or August 1934 is herewith.

Besides the stations which broke their all-time low-water records, Sioux City (Iowa), Boonville, Hermann

and St. Charles (Mo.), on the Missouri River, and Dubuque (Iowa), Hannibal and St. Louis (Mo.), and Grafton, Alton, and Chester (Ill.), on the Mississippi River, had lower stages than had previously been recorded in the month of August. Cairo, Ill., on the Ohio River, had the lowest August stage since 1894.

Table of flood stages in August 1934

[All dates in August unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Tar: Rocky Mount, N. C.-----	Feet 9	27	27	10.0	27
Greenville, N. C.-----	14	30	Sept. 1	14.8	31
		9	10	12.3	9
Santee: Rimini, S. C.-----	12	17	17	12.4	17
		22	25	12.7	24
		30	31	13.6	31
MISSISSIPPI SYSTEM					
Ohio Basin					
Gauley: Summersville, W. Va.-----	10	17	17	11.0	17
Arkansas Basin					
North Canadian: Yukon, Okla.-----	7	27	28	8.4	28