LATE REPORT FOR MAY 1949

TABLE 1

Standard pressure surface (mb.)	Swan Island, W. I. (1,012.4 mb.) Number of observations	Dynamic height	Temperature	Relative humidity	Standard pressure surface (mb.)	Swan Island, W. I. (1,012.4 mb.) Number of observations	Dynamic height	Temperature	Relative humidity
Surface	28	10	26.1	82	450	26	6,697	−11.5	----
1,000	28	118	25.5	81	400	25	7,584	−17.6	----
950	28	577	22.7	82	350	25	8,570	−24.6	----
900	28	1,040	19.9	77	300	25	9,674	−32.6	----
850	28	1,531	17.2	70	250	24	10,934	−42.1	----
800	28	2,047	14.5	61	200	24	12,406	−53.7	----
750	28	2,596	11.7	58	175	23	13,249	−60.0	----
700	28	3,166	8.8	50	150	20	14,201	−66.0	----
650	28	3,779	5.4	48	125	18	15,283	−71.1	----
600	28	4,426	1.9	40	100	9	16,614	−75.7	----
550	27	5,123	−2.1	36	80	6	17,911	−75.8	----
500	27	5,874	−6.5	34					

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T. during June 1949. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Abilene Tex. (534 m.)			Alberquerque, N. Mex. (1,627 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (505 m.)			Boise, Idaho (868 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	162	4.8	30	265	2.1	30	262	0.5	29	333	1.9	30	241	2.2	30	315	5.0
500	---	---	---	---	---	---	30	276	.3	---	---	---	---	---	---	---	---	---
1,000	30	169	5.9	---	---	---	30	349	.3	---	---	---	30	259	2.4	30	314	5.1
1,500	30	178	6.9	---	---	---	27	319	1.3	29	316	2.0	29	253	3.3	30	313	4.7
2,000	30	268	6.8	30	242	3.5	27	327	1.7	29	279	2.1	28	249	5.0	30	301	4.1
2,500	30	195	6.1	30	240	3.3	22	1	2.2	26	257	4.0	26	257	6.6	30	280	4.2
3,000	30	211	2.9	30	248	3.7	20	359	2.2	25	252	5.6	25	256	9.4	30	275	4.7
4,000	30	236	4.8	29	250	6.6	16	295	2.5	21	257	11.0	23	266	12.7	30	263	5.4
5,000	27	268	5.1	24	249	8.2	13	311	4.1	17	264	11.2	20	258	13.4	29	261	8.1
6,000	24	276	5.5	23	241	9.2	---	---	---	13	251	10.7	15	255	16.2	22	272	9.6
8,000	17	267	3.7	18	246	12.0	---	---	---	10	253	13.8	---	---	---	16	267	14.9
10,000	---	---	---	14	249	16.7	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (273 m.)			Denver, Colo. (1,618 m.)			El Paso, Tex. (1,198 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	131	7.2	30	233	3.9	30	230	2.2	29	218	1.0	29	226	1.5	30	100	1.1	30	242	2.7
500	30	141	7.7	30	238	5.3	30	231	4.8	29	182	1.6	29	224	1.8	---	---	---	---	---	---
1,000	29	155	6.4	29	240	5.5	30	240	5.3	24	246	1.8	28	223	2.5	---	---	---	---	---	---
1,500	27	165	4.6	28	242	6.3	30	259	6.3	23	267	2.6	28	217	3.0	---	---	---	30	255	4.1
2,000	23	170	4.2	27	249	6.5	28	262	7.9	21	267	2.8	25	223	2.6	30	104	1.5	30	258	3.6
2,500	18	182	3.4	24	261	6.2	26	266	8.3	21	281	2.9	22	234	2.5	29	157	1.1	30	248	3.5
3,000	18	182	1.7	23	271	7.7	26	278	8.9	20	288	2.8	20	272	3.3	28	212	1.6	30	254	4.0
4,000	17	203	1.8	17	291	10.6	22	285	9.6	19	264	3.0	18	278	5.5	24	256	6.1	29	246	4.6
5,000	17	267	1.1	15	292	12.5	20	283	11.2	17	265	2.8	16	269	5.3	21	250	7.8	29	251	4.8
6,000	16	249	2.5	10	309	12.7	13	303	11.5	14	270	3.8	13	262	6.8	16	255	11.2	27	242	5.2
8,000	11	282	5.8	---	---	---	---	---	---	12	239	6.4	---	---	---	11	258	10.9	22	249	8.3
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12	266	14.0

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	246	3.2	30	254	1.7	29	90	1.5	30	266	3.1	28	108	1.2	30	195	1.8
500	---	---	---	---	---	---	29	98	1.5	---	---	---	28	157	.9	30	205	2.0
1,000	---	---	---	---	---	---	29	115	1.4	30	260	4.4	28	253	1.0	28	216	3.6
1,500	---	---	---	30	271	1.8	27	86	.5	30	266	4.9	26	288	2.1	26	244	4.1
2,000	30	252	3.3	30	252	3.9	27	319	.7	30	274	5.5	26	298	3.1	25	265	4.9
2,500	30	243	3.4	30	244	4.2	25	328	2.0	28	267	6.3	24	304	3.3	20	271	4.4
3,000	29	240	3.7	28	243	4.6	23	332	3.0	24	268	8.5	21	307	2.8	19	277	5.1
4,000	26	251	3.8	24	235	5.4	19	352	3.9	15	278	8.9	13	321	3.3	16	289	7.9
5,000	19	259	7.6	21	252	8.2	16	344	4.2	11	274	11.3	10	309	3.6	---	---	---
6,000	15	273	11.1	18	247	11.3	15	324	3.8	---	---	---	---	---	---	---	---	---
8,000	10	254	14.8	11	257	17.2	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Las Vegas, Nev. (663 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (182 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	207	2.6	28	139	0.8	30	304	2.8	29	127	3.2	29	194	1.5	30	259	1.3	30	177	3.3
500	---	---	---	28	197	1.9	30	308	3.0	29	142	3.4	29	199	1.6	30	246	1.6	30	194	4.5
1,000	30	200	3.2	28	270	2.2	30	323	3.1	29	161	2.3	26	261	1.5	30	243	2.0	29	229	3.7
1,500	30	212	3.1	26	249	2.7	30	323	2.0	29	184	1.6	21	303	1.8	28	245	2.2	27	265	4.0
2,000	30	223	3.2	24	269	2.6	30	306	.6	28	224	1.1	18	323	2.4	27	253	1.8	25	271	5.4
2,500	30	226	4.4	23	286	3.3	30	296	1.1	24	254	1.5	14	345	3.3	26	251	1.5	25	282	5.6
3,000	30	240	6.1	20	307	3.9	30	302	2.7	23	247	2.1	10	333	3.5	25	274	2.7	22	280	5.4
4,000	28	250	7.2	14	343	4.6	29	291	5.9	22	237	2.6	---	---	---	22	277	4.2	20	299	5.9
5,000	27	258	7.6	10	5	3.3	29	292	8.2	17	258	2.5	---	---	---	16	281	6.1	18	292	7.5
6,000	25	255	8.7	---	---	---	28	288	10.5	13	247	2.6	---	---	---	12	265	7.4	13	300	6.7
8,000	22	260	10.3	---	---	---	21	279	14.8	---	---	---	---	---	---	---	---	---	---	---	---
10,000	17	262	18.3	---	---	---	11	277	16.5	---	---	---	---	---	---	---	---	---	---	---	---
12,000	10	251	17.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Cloud, Minn. (318 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	280	5.6	30	184	5.2	30	160	2.7	30	251	1.3	30	249	0.5	30	225	1.7
500	30	286	3.9	30	187	5.3	30	169	3.5	30	257	2.3	---	---	---	30	221	2.6
1,000	28	282	2.2	30	195	5.7	29	176	4.7	30	257	3.4	30	253	.5	30	224	3.7
1,500	28	287	1.5	29	207	6.4	27	206	5.1	30	248	3.9	30	286	1.4	28	229	4.9
2,000	27	302	2.3	28	216	6.7	23	234	5.3	30	240	4.3	29	278	2.1	25	243	6.4
2,500	27	310	2.2	28	216	6.7	23	242	5.9	30	238	5.0	28	257	4.2	22	256	7.0
3,000	27	301	2.7	26	224	6.1	23	244	6.3	29	241	5.6	25	257	6.4	20	259	8.6
4,000	27	288	4.5	23	268	3.1	20	257	8.1	28	238	6.5	19	258	10.4	16	259	12.3
5,000	27	290	6.2	21	255	5.3	19	264	8.9	25	235	7.1	17	246	10.5	10	261	13.7
6,000	27	290	7.9	19	270	3.9	19	260	10.5	21	250	6.2	14	243	13.0	---	---	---
8,000	26	288	10.3	15	272	5.0	12	262	16.0	15	253	9.4	---	---	---	---	---	---
10,000	22	282	12.4	---	---	---	10	259	17.2	11	260	11.8	---	---	---	---	---	---
12,000	12	263	15.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	St. Louis, Mo. (181 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (221 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	178	1.1	29	128	3.7	28	262	3.7	29	291	2.0	30	277	2.6	30	238	3.9	27	153	2.2
500	30	194	1.6	29	142	4.7	28	264	2.3	29	279	3.0	30	263	2.9	---	---	---	27	175	2.9
1,000	29	225	2.6	29	147	5.0	25	318	1.6	27	259	4.4	29	261	2.4	30	239	5.0	26	201	2.9
1,500	29	247	2.6	27	155	5.0	24	297	1.2	25	256	5.1	25	254	2.3	30	240	4.9	26	229	2.8
2,000	27	276	3.1	26	169	4.2	24	249	1.5	23	266	6.3	25	260	2.2	29	242	5.9	24	256	2.2
2,500	23	297	3.7	22	186	2.9	22	237	2.2	21	277	7.6	21	256	4.1	28	245	5.7	21	269	2.6
3,000	21	305	3.9	22	28	1.1	21	235	2.9	18	285	9.5	18	268	5.0	25	247	5.1	20	298	3.6
4,000	16	300	6.4	21	290	2.7	21	255	4.3	17	290	11.3	15	280	8.1	22	254	7.4	17	291	4.9
5,000	---	---	---	16	269	3.3	19	259	5.3	15	296	12.3	13	275	10.8	18	262	10.8	16	282	5.1
6,000	---	---	---	12	266	4.9	19	262	7.5	---	---	---	11	289	13.9	17	255	12.4	16	293	6.1
8,000	---	---	---	---	---	---	11	280	11.1	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during June 1949. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (191 m.)			Charleston, S. C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N. C. (275 m.)			Hatteras, N. C. (3 m.)			International Falls, Minn. (358 m.)			Little Rock, Ark. (80 m.)			Medford, Oreg. (401 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	99	1.1	30	143	5.2	30	93	1.9	29	131	4.5	30	221	2.0	30	168	0.8	30	133	1.6	30	188	0.2	30	145	1.1	30	160	2.3	30	193	0.8	30	142	0.8	30	328	4.5
500	---	---	---	---	---	---	---	---	---	29	97	9.6	30	251	5.2	30	208	1.6	30	173	4.3	---	---	---	30	153	2.2	30	180	3.7	30	221	2.5	29	179	4.7	30	328	5.2
1,000	---	---	---	30	156	7.8	30	129	1.1	29	141	8.2	30	269	6.8	30	215	1.6	30	205	5.4	---	---	---	30	146	2.4	30	177	2.7	30	244	5.5	29	196	4.3	30	328	5.4
1,500	---	---	---	30	167	8.7	30	232	2.3	29	145	6.2	30	274	8.0	30	251	.8	30	211	5.1	30	200	.4	30	149	.9	29	200	1.3	30	257	6.3	28	262	3.1	28	315	4.1
2,000	29	267	1.9	30	183	6.4	30	264	5.1	29	154	5.3	30	278	8.4	30	261	.6	30	228	4.7	30	242	2.6	30	360	.1	29	226	1.4	30	264	6.9	28	232	3.0	28	304	2.5
2,500	29	269	4.2	30	203	4.3	30	271	7.7	29	156	3.9	30	286	8.7	30	320	.3	30	235	4.6	30	248	2.9	30	5	.4	29	200	1.7	30	267	8.7	28	251	2.6	28	282	2.4
3,000	29	277	4.5	30	238	2.5	30	271	8.2	29	142	2.5	30	286	9.6	30	257	.6	30	259	3.5	30	247	3.9	30	140	.3	28	200	2.4	30	267	10.1	28	270	2.6	29	285	3.0
4,000	29	261	5.9	30	271	4.1	30	271	10.7	29	167	1.7	29	284	12.1	30	8	.2	30	286	3.8	30	249	5.2	30	176	.5	28	188	1.7	30	267	12.5	28	301	3.7	30	291	5.2
5,000	29	253	7.2	29	272	5.1	30	273	12.8	29	148	.8	27	286	13.0	29	356	1.0	30	297	4.7	30	252	7.1	30	85	.7	27	171	1.2	28	258	14.4	28	290	5.0	30	293	8.7
6,000	29	263	8.6	28	266	4.8	30	267	13.9	29	239	.2	27	284	16.5	29	333	1.6	30	273	5.2	30	252	9.6	30	358	1.2	27	270	.5	28	259	16.8	29	289	5.0	29	293	11.4
8,000	28	256	9.2	28	270	6.6	29	260	18.2	29	286	2.9	25	293	20.4	29	317	3.3	30	267	7.3	26	251	11.4	30	312	2.2	26	280	3.0	27	259	21.1	25	265	3.6	24	278	13.5
10,000	24	262	9.0	27	240	11.4	26	253	19.7	28	304	7.9	18	285	22.6	29	303	4.9	30	252	10.9	23	248	12.7	29	293	6.6	25	299	6.8	22	253	23.5	23	268	4.6	21	283	15.1
12,000	18	264	10.8	25	243	16.2	19	256	17.8	24	310	11.3	10	287	14.7	26	315	7.7	28	265	10.6	12	267	9.4	27	279	10.5	22	294	7.4	14	249	24.3	22	246	8.3	16	278	18.2
14,000	10	286	5.3	22	247	15.6	13	256	14.2	16	316	11.2	---	---	---	22	314	7.3	19	286	12.0	11	258	8.7	25	313	8.2	21	314	7.2	---	---	---	19	278	12.5	---	---	---
16,000	---	---	---	14	255	4.3	11	265	6.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16	352	4.4	13	355	4.1	---	---	---	11	278	4.1	---	---	---

Altitude (meters) m. s. l.	Miami, Fla. (12 m.)			Nantucket, Mass. (14 m.)			Nashville, Tenn. (180 m.)			New Orleans, La. (6 m.)			Oakland, Calif. (8 m.)			Oklahoma City, Okla. (392 m.)			Rapid City, S. Dak. (980 m.)			San Antonio, Tex. (242 m.)			San Juan, P. R. (28 m.)			St. Cloud, Minn. (318 m.)			Santa Maria, Calif. (72 m.)			Sault Ste. Marie, Mich. (221 m.)			Spokane, Wash. (726 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	147	0.8	30	194	2.2	30	218	0.8	30	187	1.9	30	278	5.0	29	140	4.6	30	207	1.0	30	116	4.4	30	106	4.5	30	127	0.3	30	280	4.0	30	249	0.5	30	233	2.4
500	30	159	2.9	30	235	6.8	30	210	2.1	29	173	1.1	30	284	5.2	29	147	6.2	---	---	---	30	136	7.9	30	95	8.6	30	173	1.4	30	312	3.3	30	235	2.5	---	---	---
1,000	30	164	3.2	30	256	6.1	30	210	2.3	29	173	1.1	30	292	4.9	29	172	9.4	30	207	1.0	30	148	8.4	30	100	8.8	30	204	2.9	30	321	3.6	30	248	5.2	29	247	4.5
1,500	30	163	2.2	30	264	5.1	30	217	2.4	30	90	.9	30	304	3.7	29	187	8.2	30	210	1.0	30	148	6.0	30	101	8.2	29	227	4.0	30	337	3.3	30	254	6.4	29	254	5.8
2,000	30	160	2.0	30	277	5.0	30	216	2.4	30	44	1.1	30	313	3.2	29	194	5.8	30	231	2.2	30	165	4.7	30	98	7.6	28	239	4.5	30	330	2.4	30	259	6.9	30	257	5.8
2,500	30	171	1.7	30	270	5.2	30	218	1.8	29	16	1.0	30	313	2.6	29	216	4.5	30	249	3.5	30	170	3.7	30	99	6.8	28	248	5.5	30	208	2.6	30	271	7.6	28	257	5.1
3,000	30	163	1.4	30	271	5.3	30	241	2.1	30	21	.9	30	302	3.2	29	316	2.6	29	256	5.3	29	132	1.5	30	96	6.4	29	260	6.8	30	298	3.9	30	276	8.4	28	259	5.9
4,000	30	207	1.0	30	272	6.6	30	279	3.0	30	297	1.3	30	296	4.4	29	247	3.9	26	254	9.1	29	348	1.0	30	99	4.5	30	262	9.3	30	293	4.7	30	279	10.5	28	263	7.3
5,000	29	219	.7	28	275	8.5	30	280	3.5	30	302	2.9	30	302	7.3	29	250	3.9	25	258	9.9	29	298	2.0	29	87	4.1	30	258	11.3	30	290	7.5	29	277	11.4	27	271	9.4
6,000	29	272	.9	28	282	9.1	30	301	3.8	30	305	3.4	29	297	8.6	29	247	5.6	25	260	11.8	28	270	2.5	29	77	3.5	30	260	13.4	30	285	8.6	27	275	13.8	27	270	10.5
8,000	29	306	2.1	21	295	12.3	28	277	5.7	29	277	4.5	26	286	8.6	28	245	8.0	23	257	15.0	28	264	5.1	29	316	1.1	29	253	18.3	29	292	10.5	25	270	16.5	23	287	12.0
10,000	29	297	3.3	10	278	12.1	27	283	9.3	29	255	5.3	25	290	9.8	27	241	10.5	18	248	13.9	25	273	8.3	28	282	3.1	23	250	21.1	29	279	11.6	20	269	19.8	18	283	15.4
12,000	29	308	5.2	---	---	---	26	281	12.1	24	268	6.4	19	250	11.5	22	242	9.6	11	221	9.4	21	270	13.5	27	280	7.7	18	244	21.3	26	282	13.7	15	272	23.2	10	273	16.8
14,000	29	343	7.1	---	---	---	24	295	11.2	19	310	10.2	14	282	9.9	17	244	11.8	---	---	---	11	300	12.5	23	283	11.5	15	263	17.5	22	293	12.9	---	---	---	---	---	---
16,000	13	27	8.2	---	---	---	13	304	9.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	285	3.1	---	---	---	17	308	6.2	---	---	---	---	---	---

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
Surface	30	218	3.6
500	30	278	5.7
1,000	30	280	4.8
1,500	30	289	4.6
2,000	30	289	4.8
2,500	30	293	6.2
3,000	30	297	7.1

Altitude (meters) m. s. l.	Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed
4,000	29	300	9.2
5,000	27	297	10.4
6,000	25	299	12.0
8,000	25	303	17.0
10,000	14	299	19.1
12,000	11	274	19.0

NOTE.—Resultants prepared from rawins at high altitudes are biased toward lower wind speeds. Values appearing in this table should therefore be used with caution when the number of observations missing is greater than three. See note following Table III in the June 1948 issue of the MONTHLY WEATHER REVIEW.