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SOLAR OBSERVATIONS

SOLAR RADIATION OBSERVATIONS DURING APRIL 1936

By IRVING F. HAND, *Assistant in Solar Radiation Investigations*

For a description of instruments employed and their exposures, the reader is referred to the January 1935, REVIEW, page 24.

Table 1 shows that solar radiation intensities averaged above normal at all three Weather Bureau stations.

Table 2 shows an excess in the amount of total solar and sky radiation at all stations with the exception of Washington, Madison, New York, Blue Hill, and Friday Harbor.

Polarization measurements made at Washington on 3 days give a mean of 61 percent with a maximum of 64 percent on the 16th. At Madison, observations obtained on three days give a mean of 63 percent with a maximum of 71 percent on the 22d. All of these values are slightly above the April normals for the two stations.

TABLE 1.—*Solar radiation intensities during April 1936*

[Gram-calories per minute per square centimeter of normal surface]

WASHINGTON, D. C.

Date	Sun's zenith distance										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass									Local mean solar time
		A. M.					P. M.				
	e	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Apr. 4	1.96	------	1.04	1.13	1.27	1.45	------	------	------	------	1.60
Apr. 8	1.37	0.93	1.03	1.11	1.32	1.54	------	------	------	------	2.06
Apr. 16	4.37	.70	.81	.91	1.29	1.56	------	------	------	------	3.35
Apr. 20	4.57	------	------	------	------	------	0.99	0.72	------	------	4.75
Apr. 23	3.63	.62	.78	.88	1.08	1.39	1.01	.79	------	------	3.81
Apr. 24	3.81	.42	.53	.63	1.02	1.46	1.10	.94	------	------	2.74
Apr. 25	2.74	------	------	------	------	------	.88	.70	------	------	3.15
Apr. 27	3.63	.71	.84	.96	------	------	------	------	------	------	3.63
Means	------	.68	.84	.94	1.20	1.48	1.00	.79	------	------	------
Departures	------	−.01	+.05	+.05	+.12	+.12	−.09	−.10	------	------	------

TABLE 1.—*Solar radiation intensities during April 1936*—Con.

MADISON, WIS.

Date	Sun's zenith distance										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.0°	75.7°	78.7°	Noon
	75th mer. time	Air mass									Local mean solar time
		A. M.					P. M.				
	e	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Apr. 6	1.68	------	1.18	1.28	1.45	1.63	------	------	------	------	1.68
Apr. 11	6.50	------	------	------	------	1.56	------	------	------	------	5.36
Apr. 14	8.18	------	------	------	------	1.54	------	------	------	------	5.79
Apr. 16	3.63	------	------	1.20	------	------	------	------	------	------	3.63
Apr. 17	3.30	------	------	1.14	------	------	------	------	------	------	3.45
Apr. 18	3.00	------	------	------	1.29	------	------	------	------	------	3.15
Apr. 22	2.87	------	------	1.16	1.39	1.56	1.00	------	------	------	2.87
Apr. 23	3.15	------	------	------	1.06	------	------	------	------	------	3.45
Apr. 29	11.38	------	------	------	------	1.47	------	------	------	------	8.48
Means	------	------	(1.18)	1.20	1.30	1.55	(1.00)	------	------	------	------
Departures	------	------	+.27	+.17	+.08	.11	−.19	------	------	------	------

LINCOLN, NEBR.

Apr. 3	1.32	------	1.05	1.24	1.38	1.58	------	------	------	------	1.88
Apr. 6	1.88	------	1.14	1.25	1.43	------	------	------	------	------	1.68
Apr. 7	1.37	------	------	------	------	------	1.29	1.03	0.89	0.78	1.12
Apr. 10	4.95	------	------	.91	1.15	1.54	------	------	------	------	3.99
Apr. 14	5.56	.71	.85	1.00	1.18	1.47	1.14	.93	.77	.67	4.37
Apr. 16	2.74	.87	.99	1.13	1.39	1.60	------	------	------	------	2.16
Apr. 17	2.36	------	.94	1.06	1.27	1.57	1.24	1.00	.87	.74	2.36
Apr. 18	2.26	.84	.94	1.07	1.31	1.57	------	------	------	------	2.62
Apr. 20	6.76	.26	.42	.64	.96	1.20	------	------	------	------	7.04
Means	------	.67	.90	1.04	1.26	1.50	1.22	.97	.84	.73	------
Departures	------	−.04	+.08	+.07	+.07	+.05	+.06	+.01	+.02	+.04	------

BLUE HILL, MASS.

Apr. 1	2.2	------	------	------	------	1.20	1.03	0.94	------	------	2.3
Apr. 4	2.2	------	------	------	1.02	1.18	1.13	1.08	1.03	------	2.2
Apr. 8	2.8	------	------	1.10	1.27	1.40	1.15	.94	------	------	2.9
Apr. 9	3.3	------	------	1.08	1.16	------	------	------	------	------	2.8
Apr. 14	3.6	------	------	------	1.17	1.46	1.26	------	------	------	3.2
Apr. 18	4.0	0.88	0.98	1.11	1.25	1.40	------	------	------	------	4.4
Apr. 19	4.8	.88	.99	1.11	1.27	1.43	------	------	------	------	4.0
Apr. 20	3.8	.82	.91	1.00	1.19	1.29	------	------	------	------	3.0
Apr. 22	2.9	------	------	1.17	1.31	1.51	------	------	------	------	2.4
Apr. 23	2.9	------	1.03	1.14	1.27	1.44	1.49	1.23	1.06	------	2.8
Apr. 24	3.6	------	------	------	1.19	1.47	1.27	1.06	------	------	2.1
Apr. 25	2.6	------	------	------	1.27	------	1.09	------	------	------	2.6
Apr. 27	2.9	------	------	------	1.21	1.32	1.12	.95	------	------	3.8
Apr. 29	9.6	------	------	------	------	1.07	.80	------	------	------	11.1
Means	------	.86	.98	1.10	1.22	1.35	1.15	1.03	.98	------	------

*Extrapolated.

TABLE 2.—*Average daily totals of solar radiation (direct + diffuse) received on a horizontal surface*

Week beginning—	Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Miami	New Orleans	Riverside	Blue Hill	Friday Harbor	Ithaca
	Gram-calories per square centimeter															
	cal.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Apr. 1	240	351	394	280	250	483	204	330	480	578	488	353	485	283	407	222
Apr. 8	360	386	527	342	252	628	231	399	605	408	535	507	555	296	299	249
Apr. 15	488	391	564	388	390	558	286	410	522	383	474	546	473	287	483	191
Apr. 22	517	435	313	368	514	652	454	388	534	441	465	428	509	570	478	464
	Departures from weekly normals															
Apr. 1	−131	−21	−19	−18	−79	−28	--------	−4	+46	--------	+17	−5	+10	−94	−3	−43
Apr. 8	−33	−14	+92	+6	−64	+51	--------	+19	+125	--------	−53	+139	+59	−74	−111	−10
Apr. 15	+63	−8	+117	+54	+26	+31	--------	+12	+58	--------	+4	+142	−28	−76	+38	−137
Apr. 22	+67	−4	−137	+11	+103	+79	--------	−4	+23	--------	−13	+48	−5	+134	−6	+91
	Accumulated departures on April 28															
	−2135	+672	−287	+2170	+651	+1764	--------	+252	+1568	--------	−1589	+4347	−826	−917	+805	−476

TABLE 3.—*Total, I_m, and screened, I_y, I_r, solar radiation intensity measurements, obtained during April 1936, and determinations of the atmospheric turbidity factor, β, and water-vapor content, w = depth in millimeters, if precipitated*

AMERICAN UNIVERSITY, WASHINGTON, D. C.

Date and hour angle	Solar altitude	Air mass	I_m	I_y	I_r	$\beta_{I_{m-r}}$	$\beta_{I_{y-r}}$	β_{mean}	$\frac{I_{w=0}}{1.94}$ (Percentage of solar constant)	$\frac{I_{w=0}-I_m}{1.94}$ (Percentage of solar constant)	w	Air-mass type
Apr. 8, 1936	° ′	*m*	*gr. cal.*	*gr. cal.*	*gr. cal.*						*mm*	
0:28 p. m.	57 49	1.18	1.430	0.958	0.768	0.052	0.066	0.059	81.2	7.3	3.7	Pc
0:32 p. m.	57 38	1.18	1.322	.960	.768	.052	.066	.059	81.2	7.3	3.7	
Apr. 16, 1936												
1:00 a. m.	58 22	1.18	1.494	1.016	.802	.036	.032	.034	84.8	7.3	3.7	Pp
0:56 a. m.	58 51	1.17	1.494	1.016	.802	.036	.032	.034	84.8	7.3	3.7	
Apr. 25, 1936												
3:52 p. m.	33 04	1.83	.953	.701	.590	.170	.170	.170	57.1	6.1	2.2	Np
3:56 p. m.	32 17	1.87	.948	.700	.586	.164	.168	.166	57.3	6.6	2.3	

Meteorological conditions during turbidity measurements

Apr. 8. Temperature 5° C; wind, S. 12; visibility, 30 miles; polarization, 61.4 percent; blueness of sky, 5.
Apr. 16. Temperature 10° C; wind, NW. 20; visibility, 50 miles; polarization, 63.6 percent; blueness of sky, 6.
Apr. 25. Temperature 8° C; wind, S. 12; visibility, 20 miles; polarization, 57.8 percent; blueness of sky, 5.

BLUE HILL METEOROLOGICAL OBSERVATORY OF HARVARD UNIVERSITY

Apr. 1, 1936												
2:35 p. m.	34 30	1.76	1.058	0.712	0.584	0.098	0.098	0.098	67.9	13.4	7.8	Pc
4:56 p. m.	14 47	3.86	.708	.529	.455	.100	.122	.111	47.8	1.4	.7	
Apr. 4, 1936												
3:06 a. m.	35 01	1.74	1.111	.804	.670	.143	.146	.144	66.5	9.0	8.1	Pc
1:12 a. m.	50 00	1.30	1.367	.927	.766	.084	.129	.106	73.6	3.1	2.8	
0:10 p. m.	52 16	1.26	1.360	.919	.751	.081	.105	.093	75.0	4.4	3.0	
2:54 p. m.	36 51	1.67	1.341	.915	.705	.021	.005	.013	85.5	16.3	11.3	
Apr. 8, 1936												
4:07 a. m.	23 15	2.53	1.167	.832	.708	.092	.112	.102	67.6	7.3	4.7	Pc: NPP aloft
Apr. 9, 1936												
4:19 a. m.	23 36	2.49	1.131	.782	.663	.122	.117	.120	73.0	14.6	9.2	NPC
Apr. 14, 1936												
3:46 a. m.	30 45	1.95	1.186	.835	.692	.075	.103	.089	66.0	4.5	3.2	NPP
1:10 a. m.	53 38	1.24	1.424	.934	.768	.100	.118	.109	75.2	1.8	1.6	
1:38 p. m.	50 28	1.29	1.400	.949	.760	.061	.062	.062	79.5	6.9	6.1	
Apr. 18, 1936												
4:40 a. m.	21 55	2.66	1.155	.815	.663	.033	.029	.031	73.3	13.2	7.8	PP+PA
Apr. 19, 1936												
3:11 a. m.	38 07	1.62	1.330	.891	.710	.037	.061	.049	78.0	8.8	6.9	PP+PA
Apr. 22, 1936												
4:51 a. m.	20 49	2.80	1.200	.847	.701	.039	.061	.050	67.0	4.5	2.9	Pc: PP aloft
1:58 a. m.	50 26	1.29	1.414	.959	.737	--------	--------	--------	--------	--------	--------	
Apr. 23, 1936												
4:02 a. m.	30 02	2.00	1.267	.851	.703	--------	--------	--------	--------	--------	--------	
2:49 a. m.	51 56	1.27	1.371	.901	.741	.066	.126	.096	75.0	3.5	2.8	Pc+PA
12:28 p. m.	59 39	1.16	1.416	.946	.755	.063	.073	.068	80.0	6.1	5.4	
1:51 p. m.	51 40	1.27	1.424	.948	.749	.034	.038	.036	79.9	5.6	4.7	
4:24 p. m.	25 16	2.33	1.153	.801	.615	.029	.014	.022	77.7	17.5	10.3	
Apr. 24, 1936												
1:38 a. m.	59 24	1.16	1.403	.948	.756	.058	.056	.057	80.0	6.8	6.1	NPC
1:53 p. m.	59 40	1.16	1.442	.952	.776	.051	.096	.074	79.0	3.8	3.3	
3:53 p. m.	32 45	1.88	1.300	.890	.731	.047	.078	.062	72.3	4.5	2.9	
Apr. 25, 1936												
3:26 a. m.	36 57	1.66	1.322	.900	.726	.041	.049	.045	79.6	10.6	7.2	NP
4:12 p. m.	28 39	2.08	1.080	.755	.620	.074	.100	.087	63.6	7.5	5.0	
Apr. 27, 1936												
4:04 a. m.	30 21	1.96	1.218	.793	.682	.055	.166	.110	65.0	1.3	1.0	NPC
0:16 a. m.	61 18	1.14	1.308	.859	.686	.139	.110	.124	74.3	5.9	5.3	
2:31 p. m.	46 45	1.37	1.277	.863	.686	.059	.073	.066	78.6	11.9	9.9	
5:03 p. m.	19 40	2.95	.946	.678	.550	.062	.071	.066	62.2	12.8	7.4	
Apr. 29, 1936												
0:20 a. m.	61 47	1.13	1.030	.701	.566	.145	.044	.094	75.6	21.7	20.2	TG

Atmospheric conditions during solar radiation measurements. Blue Hill Observatory of Harvard University, April 1936

Date and time from apparent noon	Air temperature	Wind, Beaufort scale	Visibility (scale 0–10)	Sky blueness	Cloudiness and remarks
	° C.				
4; 0.15 a. m.	+2.4	WNW 5	9	8	1 Frcu, wind gusty.
22; 2.13 a. m.	+4.6	W 5	9	8	2 Ci, few Cu.
23; 3.03 a. m.	+5.7	NW 4	8	8	5 Ci, light haze.
23; 1.34 p. m.	+12.6	W 3	9	7	1 Ci, few Cu; light haze.
24; 3.38 p. m.	+6.7	NW 5	10	8	Few Cu, light haze N.
25; 3.13 a. m.	+3.5	NW 2	9	8	Few Ci, mod. haze NE.
27; 3.56 a. m.	+4.3	NW 4	9	8	Zero clouds, light haze.
27; 0.08 a. m.	+8.7	NW 3	9	8	Zero clouds, light haze.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy (Ret.), Superintendent U. S. Naval Observatory. Data furnished by the U. S. Naval Observatory in cooperation with Harvard and Mount Wilson Observatories. The difference in longitude is measured from the central meridian, positive west. The north latitude is positive. Areas are corrected for foreshortening and are expressed in millionths of the sun's visible hemisphere. The total area for each day includes spots and groups]

MEAN DAILY AREA FOR 30 DAYS, 944

Date	Eastern standard time		Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
1936	*h*	*m*	°	°	°				
Mar. 1	13	5	−30.0	273.0	+24.0		187		Harvard.
			−21.0	282.0	−15.5		143		
			+16.0	319.0	+11.5	158			
			+79.5	22.5	−35.0	119		607	
Mar. 2	12	45	−55.0	234.9	+17.0		85		Mt. Wilson.
			−21.0	268.9	+21.0		109		
			−10.0	279.9	−18.0		122		
			+26.0	315.9	+12.0	97			
			+27.0	316.9	+18.0	52		465	
Mar. 3	13	3	−39.5	237.1	+19.5		123		U. S. Naval.
			−8.0	268.6	+21.0		123		
			+3.0	279.6	−18.0		108		
			+39.5	316.1	+11.5	123			
			+41.0	317.6	+16.5	31		508	
Mar. 4	11	8	−27.0	237.5	+19.5		123		Do.
			+4.5	269.0	+21.5		123		
			+14.5	279.0	−18.0		123		
			+40.0	304.5	+24.0		31		
			+51.5	316.0	+12.0	123			
			+55.0	319.5	+16.5	15		538	
Mar. 5	11	30	−87.0	164.1	−24.0	53			Mt. Wilson.
			−15.0	236.1	+18.0		90		
			−8.0	243.1	+32.0		95		
			+9.0	260.1	+17.0		12		
			+14.0	265.1	+21.0		65		
			+27.0	278.1	−18.0		121		
			+64.0	315.1	+11.5	69		515	
			+68.0	319.1	+17.5	10			
Mar. 6	11	2	−74.0	164.2	−22.0	77			U. S. Naval.
			+1.0	239.2	+18.0	31			
			+8.0	246.2	+33.0		432		
			+29.0	267.2	+21.0	31			
			+29.5	267.7	+18.5		46		
			+40.5	278.7	−18.0		62		
			+79.0	317.2	+11.0	46		725	
Mar. 7	11	30	−60.0	164.7	−22.0	123			Do.
			+15.0	239.7	+17.5	31			
			+22.0	246.7	+32.5		494		
			+27.0	251.7	−21.5		154		
			+31.5	256.2	+18.0	15			
			+42.0	266.7	+21.0	31			
			+42.5	267.2	+18.5		154		
			+50.5	275.2	−19.5	31			
			+58.0	282.7	−17.0	15		1,048	
Mar. 8	12	50	−79.0	131.9	−22.0	15			Mt. Wilson.
			−60.0	150.9	−25.0		15		
			−47.0	163.9	−23.0	119			
			+30.0	240.9	+18.0	21			
			+32.0	242.9	+32.0		614		
			+40.0	250.9	−22.0		466		
			+57.0	267.9	+18.0		393		
			+59.0	269.9	+21.0	22			
			+64.0	274.9	−19.0	14		1,679	
Mar. 9	11	10	−68.0	130.6	−21.0	31			U. S. Naval.
			−35.0	163.6	−22.5	123			
			−18.5	180.1	+20.0		46		
			+41.0	239.6	+18.0	15			
			+47.0	245.6	+32.5		556		
			+53.0	251.6	−21.0		494		
			+67.0	265.6	+18.0		154	1,419	
Mar. 10	11	1	−79.0	106.5	−30.5		123		Do.
			−75.0	110.5	−21.0	31			
			−55.0	130.5	−21.0	15			
			−21.0	164.5	−23.0	108			
			−3.0	182.5	+20.0		108		
			+59.0	244.5	+32.5		494		
			+66.0	251.5	−22.0		617	1,496	
Mar. 11	11	40	−65.0	106.9	−33.0		168		Mt. Wilson.
			−64.0	107.9	−22.0		25		
			−61.0	110.9	−30.0		88		
			−37.0	134.9	−23.0		18		
			−9.0	162.9	−24.0	157			
			−2.0	169.9	+24.0		24		
			+12.0	183.9	+20.0		145		
			+13.0	184.9	−16.0		5		
			+68.0	239.9	+32.0		433		
			+76.0	247.9	−22.0		733	1,796	

POSITIONS AND AREAS OF SUN SPOTS—Continued

MEAN DAILY AREA FOR 30 DAYS, 944—Continued

Date	Eastern standard time		Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
1936	*h*	*m*	°	°	°				
Mar. 12	11	40	−54.0	104.7	−32.0		253		Mt. Wilson.
			−49.0	109.7	−29.0		359		
			−47.0	111.7	−21.0		36		
			+4.0	162.7	−24.0		171		
			+15.0	173.7	+24.0		4		
			+24.0	182.7	−16.0	12			
			+26.0	184.7	+20.0	69			
			+85.0	243.7	−23.0	293			
			+89.0	247.7	+32.0	111		1,308	
Mar. 13	11	15	−39.5	106.3	−31.5		432		U. S. Naval.
			−36.0	109.8	−20.5		93		
			+18.0	163.8	−23.0	123			
			+39.0	184.8	+21.0	39		687	
Mar. 14	11	50	−43.0	89.3	+16.5		93		Do.
			−25.0	107.3	−31.0		370		
			−20.0	112.3	−21.0		46		
			+30.0	162.3	−22.5	123			
			+51.0	183.3	+21.0	31		663	
Mar. 15	12	30	−54.0	64.8	+18.0		15		Mt. Wilson.
			−30.0	88.8	+16.0		134		
			−18.0	100.8	−32.0	137			
			−10.0	108.8	−29.0		230		
			−7.0	111.8	−21.0		24		
			+42.0	160.8	−24.0	191			
			+68.0	186.8	−16.0	8		739	
Mar. 16	11	40	−16.0	90.0	+16.0		154		U. S. Naval.
			−0.5	105.5	−31.0		309		
			+7.0	113.0	−20.0	23			
			+56.0	162.0	−22.5		123	609	
Mar. 17	12	8	+11.0	103.5	−29.0		421		Harvard.
			+70.0	162.5	−23.0	241		662	
Mar. 18	12	50	−27.0	52.1	−7.0		23		Mt. Wilson.
			+5.0	84.1	−25.0		9		
			+20.0	99.1	−32.0		111		
			+23.0	102.1	−16.0		192		
			+30.0	109.1	−29.0		234		
			+78.0	157.1	−19.0	15		639	
			+80.0	159.1	−24.0	55			
Mar. 19	15	18	−10.5	54.0	−7.5		230		Harvard.
			+18.5	83.0	−26.5		117		
			+39.5	104.0	−16.0		368		
			+42.0	106.5	−29.5		387	1,102	
Mar. 20	13	28	−71.0	341.3	−18.0		247		U. S. Naval.
			+1.0	53.3	−9.0	23			
			+28.0	80.3	−29.0		340		
			+40.0	92.3	+13.5		77		
			+50.0	102.3	−18.0		216		
			+52.5	104.8	−30.5		216	1,119	
Mar. 22	11	18	−44.0	343.1	−18.0		247		Do.
			+24.0	51.1	−8.5		154		
			+53.0	80.1	−29.0		309		
			+66.0	93.1	+15.0		123		
			+75.0	102.1	−29.5		154		
			+80.0	107.1	−16.0	62		1,051	
Mar. 23	14	51	−29.0	343.0	−17.0		247		Do.
			−40.0	332.0	−8.5		93		
			+68.0	80.0	−29.0		370		
			+86.0	98.0	−30.5	23		733	
Mar. 24	10	34	−13.5	348.0	−17.0	240			Harvard.
			−11.5	350.0	−12.5	39			
			+70.5	72.0	+19.0	38			
			+71.5	73.0	+12.5	43			
			+83.5	85.0	−30.0	856		1,216	
Mar. 25	11	45	−58.0	289.3	−24.0	7			Mt. Wilson.
			−31.0	316.3	−29.0		22		
			−11.0	336.3	−16.0		29		
			−3.0	344.3	−19.0		272		
			−1.0	346.3	−15.0		35		
			+2.0	349.3	−11.0		5		
			+80.0	67.3	−23.0		33	403	
Mar. 26	15	35	−76.5	255.5	−19.0	209			Harvard.
			−67.0	265.0	−12.0		104		
			−44.0	288.0	−22.0		341		
			−1.0	331.0	−12.5		26		
			+7.5	339.5	−13.5		19		
			+14.0	346.0	−17.0	240			
			+17.0	349.0	−14.0	26		965	
Mar. 27	12	50	−74.0	246.4	−23.0		505		Mt. Wilson.
			−56.0	264.4	−15.0		147		
			−35.0	285.4	−25.0		361		
			+7.0	327.4	−14.0		23		
			+18.0	338.4	−15.0	7			
			+25.0	345.4	−18.0		214		
			+27.0	347.4	−15.0	8		1,265	
Mar. 28	10	57	−70.0	238.2	−24.5	154			U. S. Naval.
			−58.0	250.2	−21.0		108		
			−45.0	263.2	−15.0		154		
			−22.0	286.2	−25.0		309		
			+21.0	329.2	−14.5		123		
			+36.0	344.2	−17.5		247	1,095	
Mar. 29	12	6	−58.0	236.4	−24.0	185			Do.
			−46.0	248.4	−21.0		93		
			−32.0	262.4	−15.0		154		
			−8.5	285.9	−25.0		309		
			+36.0	330.4	−14.5		123		
			+50.0	344.4	−17.5		185	1,049	