

TABLE 2.8
LOCAL CIRCUMSTANCES FOR AFRICA: MADAGASCAR TO ZIMBABWE
ANNULAR SOLAR ECLIPSE OF 2010 JANUARY 15

Location Name	Latitude	Longitude	Elev. m	First Contact			Second Contact			Third Contact			Fourth Contact			Maximum Eclipse				Eclip. Mag.	Eclip. Obs.	Umbral Depth	Umbral Durat.
				U.T. h m s	P °	V Alt °	U.T. h m s	P °	V °	U.T. h m s	P °	V °	U.T. h m s	P °	V Alt °	U.T. h m s	P °	V Alt °	Azm °				
MADAGASCAR																							
Antananarivo	18°55'S	047°31'E	—	04:23:50.7	288	30 26	—	—	—	—	—	07:20:54.8	44 133 67	05:44:53.3	347	83 44 101	0.497	0.377					
Fianarantsoa	21°26'S	047°05'E	—	04:28:19.9	294	37 27	—	—	—	—	—	07:13:07.1	40 135 65	05:44:23.3	347	87 44 99	0.423	0.300					
MALAWI																							
Blantyre	15°47'S	035°00'E	—	04:15:13.8	290	33 12	—	—	—	—	—	06:52:44.4	52 142 48	05:26:58.0	351	88 28 106	0.517	0.398					
Lilongwe	13°59'S	033°44'E	—	04:12:53.0	288	29 9	—	—	—	—	—	06:52:23.3	55 143 46	05:25:17.9	352	87 26 107	0.558	0.442					
MAYOTTE																							
Dzaoudzi	12°47'S	045°17'E	—	04:14:29.4	279	15 20	—	—	—	—	—	07:27:23.7	56 131 65	05:41:02.5	348	77 40 107	0.664	0.562					
MOZAMBIQUE																							
Beira	19°49'S	034°52'E	9	04:22:07.5	298	44 14	—	—	—	—	—	06:45:03.4	44 140 47	05:28:03.9	351	93 29 104	0.403	0.280					
Maputo	25°58'S	032°35'E	59	04:38:25.6	313	64 18	—	—	—	—	—	06:25:05.3	29 135 41	05:28:57.0	351	100 29 101	0.216	0.114					
NAMIBIA																							
Windhoek	22°34'S	017°06'E	1728	04:38:53.9	318	71 3	—	—	—	—	—	06:04:07.6	29 135 22	05:19:45.1	353	103 12 108	0.179	0.086					
NIGER																							
Niamey	13°31'N	002°07'E	216	—	—	—	06:19:44.1	—	06:19:44.1	—	—	06:32:00.6	86 161 2	06:20 Rise	—	—	0 112	0.156	0.070				
NIGERIA																							
Ibadan	07°17'N	003°30'E	—	—	—	—	—	—	—	—	—	06:28:09.3	77 158 5	06:04 Rise	—	—	0 111	0.303	0.186				
Kano	12°00'N	008°30'E	—	—	—	—	—	—	—	—	—	06:34:10.8	87 161 9	05:52 Rise	—	—	0 112	0.521	0.402				
Lagos	06°27'N	003°24'E	3	—	—	—	—	—	—	—	—	06:27:28.1	76 157 5	06:03 Rise	—	—	0 111	0.306	0.188				
Ogbomoshos	08°08'N	004°15'E	—	—	—	—	—	—	—	—	—	06:29:09.8	79 158 6	06:03 Rise	—	—	0 111	0.337	0.216				
RWANDA																							
Kigali	01°57'S	030°04'E	—	04:05:29.0	270	2 0	—	—	—	—	—	06:56:23.8	75 149 39	05:21:53.7	353	78 18 112	0.857	0.783					
SOMALIA																							
Kismaayo	00°22'S	042°32'E	—	04:09:38.6	260	345 12	05:36:51.6	205 282	05:42:09.2	134 210	—	07:34:28.5	77 131 57	05:39:30.6	169 245 33 115	0.914	0.835	0.187	05m18s				
Moqadisho	02°04'N	045°22'E	12	04:13:17.9	254	336 15	—	—	—	—	—	07:46:58.4	79 122 60	05:47:00.8	168 239 36 118	0.845	0.771						
SOUTH AFRICA																							
Bloemfontein	29°12'S	026°07'E	—	04:56:07.4	329	84 17	—	—	—	—	—	05:59:22.8	15 127 30	05:26:54.1	352 105 23 102	0.080	0.026						
Durban	29°55'S	030°56'E	5	04:55:22.8	326	81 21	—	—	—	—	—	06:07:15.8	16 128 36	05:30:11.9	351 104 28 99	0.096	0.034						
Johannesburg	26°15'S	028°00'E	—	04:41:42.8	317	70 14	—	—	—	—	—	06:14:27.2	26 134 35	05:25:59.6	352 102 24 103	0.174	0.083						
Pretoria	25°45'S	028°10'E	1369	04:39:50.7	316	68 14	—	—	—	—	—	06:16:15.6	27 135 35	05:25:45.9	352 101 24 103	0.189	0.093						
SUDAN																							
Khartoum	15°36'N	032°32'E	390	—	—	—	—	—	—	—	—	07:09:06.7	102 154 34	05:35:30.8	171 238 16 118	0.585	0.472						
SWAZILAND																							
Mbabane	26°18'S	031°06'E	—	04:40:09.6	315	67 17	—	—	—	—	—	06:20:52.4	27 135 39	05:28:01.9	351 101 27 101	0.196	0.099						
TANZANIA																							
Dar-es-Salaam	06°48'S	039°17'E	14	04:07:54.9	272	5 11	—	—	—	—	—	07:17:11.9	67 138 54	05:31:51.0	351 76 30 111	0.798	0.717						
Mwanza	02°31'S	032°54'E	—	04:05:37.9	269	1 3	—	—	—	—	—	07:02:57.9	74 146 44	05:24:31.7	352 77 21 112	0.866	0.793						
TOGO																							
Lome	06°08'N	001°13'E	22	—	—	—	—	—	—	—	—	06:26:12.5	74 156 3	06:12 Rise	—	—	0 111	0.187	0.092				
TUNISIA																							
Tunis	36°48'N	010°11'E	66	—	—	—	—	—	—	—	—	06:46:12.9	123 172 2	06:33 Rise	—	—	0 116	0.111	0.042				
UGANDA																							
Jinja	00°26'N	033°12'E	—	04:05:54.6	264	353 2	05:21:40.9	272 354	05:29:46.6	72 153	—	07:05:51.4	79 147 43	05:25:43.1	352 73 21 113	0.911	0.830	0.823	08m06s				
Kampala	00°19'N	032°25'E	1312	04:05:44.0	265	354 2	05:21:02.1	285 7	05:28:33.2	59 141	—	07:03:42.6	79 148 42	05:24:47.1	352 74 20 113	0.911	0.830	0.612	07m31s				
Masaka	00°20'S	031°44'E	—	04:05:34.7	266	356 1	05:22:10.2	327 50	05:25:36.0	17 100	—	07:01:34.3	77 148 41	05:23:53.5	353 75 19 112	0.911	0.829	0.094	03m26s				
Mbale	01°05'N	034°10'E	—	04:06:17.5	262	350 3	05:23:16.4	239 320	05:30:56.4	105 184	—	07:08:53.0	80 146 44	05:27:05.9	172 252 22 113	0.911	0.830	0.612	07m40s				
VENDA																							
Thohoyandou	23°00'S	030°29'E	—	04:30:29.5	307	57 13	—	—	—	—	—	06:28:17.7	35 138 40	05:25:47.2	352 98 25 103	0.282	0.168						
ZAMBIA																							
Kitwe	12°49'S	028°13'E	—	04:12:29.5	289	31 4	—	—	—	—	—	06:41:20.4	56 145 38	05:20:30.2	353 89 19 108	0.544	0.427						
Lusaka	15°25'S	028°17'E	1277	04:15:56.6	294	38 6	—	—	—	—	—	06:37:49.0	51 144 38	05:21:10.7	353 92 20 107	0.473	0.351						
Ndola	12°58'S	028°38'E	—	04:12:33.0	289	31 4	—	—	—	—	—	06:42:01.7	55 145 39	05:20:49.3	353 89 20 108	0.544	0.427						
ZIMBABWE																							
Bulawayo	20°09'S	028°36'E	1343	04:24:25.0	303	51 9	—	—	—	—	—	06:30:23.7	41 141 38	05:23:07.7	352 96 22 105	0.346	0.225						
Harare	17°50'S	031°03'E	1472	04:19:03.3	296	42 10	—	—	—	—	—	06:39:54.0	47 142 42	05:23:58.0	352 93 24 106	0.429	0.306						