Local Circumstances for the Transit of Venus, June 5-6, 2012

Region/Place	June 05 UT				June 06 UT				June Potential Sunshine (%)
	Contact 1		Contact 2		Contact 3		Contact 4		
	UT (22h+)	Sun Alt. (°)	UT (22h+)	Sun Alt. (°)	UT (04h+)	Sun Alt. (°)	UT (04h+)	Sun Alt. (°)	
Geocentric	09.5m	---	27.4m	---	31.5m	---	49.4m	---	---
United States									
Albany, NY	03.6	+24	21.3	+21	---	---	---	---	59
Albuquerque, NM	05.5	+49	23.1	+45	---	---	---	---	84
Anchorage, AK	06.3	+51	23.9	+51	30.7	+15	48.4	+13	46
Atlanta, GA	04.3	+31	21.9	+27	---	---	---	---	67
Baltimore, MD	03.8	+26	21.4	+22	---	---	---	---	62
Birmingham, AL	04.4	+33	22.1	+29	---	---	---	---	66
Boise, ID	05.7	+54	23.3	+51	---	---	---	---	76
Boston, MA	03.5	+22	21.2	+19	---	---	---	---	63
Buffalo, NY	03.8	+28	21.4	+25	---	---	---	---	68
Charleston, SC	04.1	+27	21.8	+24	---	---	---	---	62
Chicago, IL	04.2	+34	21.8	+31	---	---	---	---	67
Cincinnati, OH	04.1	+32	21.8	+28	---	---	---	---	62
Cleveland, OH	03.9	+30	21.6	+27	---	---	---	---	65
Columbus, OH	04.1	+31	21.7	+28	---	---	---	---	66
Dallas/Fort Worth, TX	05.0	+41	22.6	+37	---	---	---	---	72
Dayton, OH	04.1	+31	21.7	+28	---	---	---	---	68
Denver, CO	05.2	+47	22.8	+44	---	---	---	---	70
Des Moines, IA	04.5	+39	22.1	+35	---	---	---	---	66
Detroit, MI	04.0	+31	21.6	+28	---	---	---	---	67
El Paso, TX	05.6	+49	23.3	+45	---	---	---	---	88
Fairbanks, AK	06.1	+48	23.6	+47	31.1	+16	48.8	+14	49
Grand Rapids, MI	04.1	+33	21.7	+29	---	---	---	---	61
Harrisburg, PA	03.8	+26	21.4	+23	---	---	---	---	64
Hartford, CT	03.6	+23	21.2	+20	---	---	---	---	60
Honolulu, HI	10.0	+85	27.6	+89	26.5	+9	44.5	+5	74
Houston, TX	05.0	+40	22.7	+36	---	---	---	---	73
Indianapolis, IN	04.2	+33	21.8	+30	---	---	---	---	66
Jackson, MS	04.6	+35	22.3	+32	---	---	---	---	70
Jacksonville, FL	04.3	+28	21.9	+24	---	---	---	---	59
Juneau, AK	05.9	+52	23.5	+51	30.7	+8	48.5	+5	34
Kansas City, MO	04.6	+39	22.2	+36	---	---	---	---	68
Knoxville, TN	04.2	+31	21.8	+27	---	---	---	---	64
Little Rock, AR	04.7	+37	22.3	+34	---	---	---	---	73
Los Angeles, CA	06.3	+58	23.9	+55	---	---	---	---	65
Louisville, KY	04.2	+32	21.8	+29	---	---	---	---	66
Madison, WI	04.2	+35	21.9	+32	---	---	---	---	64
Memphis, TN	04.5	+36	22.2	+32	---	---	---	---	74
Miami, FL	04.4	+26	22.1	+22	---	---	---	---	62
Milwaukee, WI	04.2	+34	21.8	+31	---	---	---	---	64
Minneapolis/St.Paul, MN	04.4	+38	22.0	+35	---	---	---	---	64
Nashville, TN	04.3	+33	22.0	+30	---	---	---	---	68
New Orleans, LA	04.7	+35	22.4	+31	---	---	---	---	70
New York, NY	03.6	+24	21.3	+21	---	---	---	---	64
Norfolk, VA	03.8	+25	21.5	+21	---	---	---	---	68
Oklahoma City, OK	04.9	+42	22.6	+38	---	---	---	---	73

Peoria, IL	04.3	+36	22.0	+32	---	---	---	---	66
Philadelphia, PA	03.7	+25	21.4	+21	---	---	---	---	62
Phoenix, AZ	05.9	+54	23.5	+50	---	---	---	---	94
Pittsburgh, PA	03.9	+29	21.5	+25	---	---	---	---	57
Portland, OR	05.9	+57	23.5	+54	---	---	---	---	48
Providence, RI	03.5	+22	21.2	+19	---	---	---	---	60
Raleigh, NC	03.9	+27	21.6	+23	---	---	---	---	61
Richmond, VA	03.8	+26	21.5	+22	---	---	---	---	68
Rochester, NY	03.7	+27	21.4	+24	---	---	---	---	66
St. Louis, MO	04.4	+36	22.0	+33	---	---	---	---	69
Salt Lake City, UT	05.5	+52	23.1	+49	---	---	---	---	78
San Francisco, CA	06.4	+61	23.9	+57	---	---	---	---	73
San Juan, PR	04.1	+11	21.9	+7	---	---	---	---	57
Savannah, GA	04.2	+28	21.8	+24	---	---	---	---	65
Scranton/Wilkes-Barre, PA	03.7	+25	21.4	+22	---	---	---	---	60
Seattle, WA	05.8	+56	23.4	+53	---	---	---	---	54
Shreveport, LA	04.8	+39	22.5	+35	---	---	---	---	71
Syracuse, NY	03.7	+26	21.3	+23	---	---	---	---	59
Tampa, FL	04.4	+28	22.1	+24	---	---	---	---	67
Toledo, OH	04.0	+31	21.7	+28	---	---	---	---	64
Tucson, AZ	05.9	+53	23.5	+49	---	---	---	---	93
Tulsa, OK	04.8	+40	22.4	+37	---	---	---	---	65
Washington, DC	03.8	+26	21.5	+23	---	---	---	---	66
Wichita, KS	04.8	+42	22.4	+38	---	---	---	---	69
Canada									
Edmonton, AB	05.2	+48	22.7	+46	---	---	---	---	49
Montreal, PQ	03.6	+25	21.2	+21	---	---	---	---	47
Toronto, ON	03.8	+28	21.5	+25	---	---	---	---	56
Vancouver, BC	05.8	+55	23.4	+53	---	---	---	---	43
Whitehorse, YT	05.8	+50	23.4	+49	30.9	+9	48.7	+7	51
Winnipeg, MB	04.5	+40	22.1	+37	---	---	---	---	51
Mexico									
Mazatlan, Sinaloa	06.1	+48	23.8	+44	---	---	---	---	62
Merida, Yucatan	05.2	+33	22.8	+29	---	---	---	---	52
Mexico City, D.F.	05.9	+41	23.5	+37	---	---	---	---	43
Central America–Caribbean									
Kindley AFB, Bermuda	03.5	+15	21.2	+11	---	---	---	---	60
San Jose, Costa Rica	05.5	+24	23.3	+20	---	---	---	---	31
Willemstad, Curaçao	04.6	+11	22.4	+7	---	---	---	---	64
Sto. Domingo, Dominican Rep.	04.2	+15	22.0	+11	---	---	---	---	47
San Salvador, El Salvador	05.6	+30	23.3	+26	---	---	---	---	47
Kingston, Jamaica	04.6	+20	22.4	+16	---	---	---	---	59
Fort-de-France, Martinique	04.2	+5	22.0	+1	---	---	---	---	57
South America									
Bogota, Colombia	05.4	+13	23.2	+19	---	---	---	---	29
Quito, Ecuador	05.9	+15	23.8	+11	---	---	---	---	52
Lima, Peru	06.9	+9	24.8	+5	---	---	---	---	12
Caracas, Venezuela	04.6	+9	22.4	+5	---	---	---	---	53
Europe									
Vienna, Austria	---	---	---	---	37.5	+14	55.1	+17	52
Brussels, Belgium	---	---	---	---	37.3	+8	54.9	+10	43
Prague, Czech Rep.	---	---	---	---	37.4	+14	55.0	+16	50

Copenhagen, Denmark	---	---	---	---	37.0	+14	54.6	+17	47
Helsinki, Finland	---	---	---	---	36.6	+22	54.2	+24	52
Marseilles, France	---	---	---	---	37.7	+5	55.4	+8	70
Paris, France	---	---	---	---	37.4	+6	55.0	+9	47
Berlin, Germany	---	---	---	---	37.2	+14	54.8	+16	48
Munich, Germany	---	---	---	---	37.5	+11	55.1	+14	42
Athens, Greece	---	---	---	---	37.8	+16	55.4	+20	73
Budapest, Hungary	---	---	---	---	37.5	+16	55.1	+19	57
Reykjavik, Iceland	03.4	+5	21.1	+4	35.4	+4	53.6	+6	30
Dublin, Ireland	---	---	---	---	37.0	+4	54.7	+6	39
Milan, Italy	---	---	---	---	37.6	+9	55.3	+12	53
Rome, Italy	---	---	---	---	37.8	+9	55.4	+12	60
Den Helder, Netherlands	---	---	---	---	37.2	+9	54.8	+12	46
Oslo, Norway	---	---	---	---	36.7	+15	54.3	+17	43
Warsaw, Poland	---	---	---	---	37.2	+18	54.8	+21	39
Bucharest, Romania	---	---	---	---	37.6	+19	55.2	+22	58
Astrakhan, Russia	---	---	---	---	36.7	+35	54.2	+38	65
Moscow, Russia	---	---	---	---	36.6	+28	54.2	+31	49
St. Petersburg, Russia	---	---	---	---	36.5	+24	54.1	+27	55
Belgrade, Serbia	---	---	---	---	37.6	+16	55.2	+19	58
Madrid, Spain	---	---	---	---	---	---	55.4	+1	74
Stockholm, Sweden	---	---	---	---	36.7	+18	54.3	+20	57
Zurich, Switzerland	---	---	---	---	37.5	+9	55.2	+12	46
Kiev, Ukraine	---	---	---	---	37.1	+24	54.7	+26	55
Kew, United Kingdom	---	---	---	---	37.2	+6	54.9	+8	43
Southwest Asia									
Kabul, Afghanistan	---	---	---	---	35.6	+52	53.1	+55	80
Nicosia, Cyprus	---	---	---	---	37.7	+23	55.2	+27	86
Shiraz, Iran	---	---	---	---	36.8	+38	54.3	+42	87
Tehran, Iran	---	---	---	---	36.8	+38	54.3	+41	80
Baghdad, Iraq	---	---	---	---	37.2	+32	54.8	+35	81
Jerusalem, Israel	---	---	---	---	37.7	+24	55.2	+28	97
Amman, Jordan	---	---	---	---	37.6	+25	55.2	+28	92
Shuwaikh, Kuwait	---	---	---	---	37.1	+34	54.6	+38	71
Beirut, Lebanon	---	---	---	---	37.6	+25	55.2	+28	84
Damascus, Syria	---	---	---	---	37.6	+25	55.1	+29	86
Istanbul, Turkey	---	---	---	---	37.6	+21	55.2	+24	70
Urfa, Turkey	---	---	---	---	37.4	+28	54.9	+31	88
South and East Asia									
Rangoon, Burma	---	---	---	---	32.8	+74	50.3	+78	27
Phom Penh, Cambodia	---	---	---	---	31.7	+77	49.2	+79	51
Beijing, China	09.9	+14	27.7	+17	31.9	+72	49.3	+71	58
Hong Kong, China	11.7	+6	29.6	+10	31.2	+88	48.7	+84	39
Shanghai, China	11.0	+15	28.8	+19	31.0	+78	48.5	+75	33
Urumchi, China	---	---	---	---	34.3	+61	51.7	+64	58
Bombay, India	---	---	---	---	35.2	+54	52.7	+58	41
Calcutta, India	---	---	---	---	33.8	+69	51.3	+73	36
New Delhi, India	---	---	---	---	35.0	+59	52.4	+63	46
Jakarta, Indonesia	---	---	---	---	30.7	+61	48.4	+61	62
Osaka, Japan	10.8	+27	28.5	+31	30.0	+66	47.6	+63	42
Tokyo, Japan	10.7	+31	28.4	+35	29.8	+63	47.4	+59	34
Vientiane, Laos	---	---	---	---	32.2	+80	49.7	+84	38
Kuala Lumpur, Malaya	---	---	---	---	31.7	+68	49.3	+70	54
Karachi, Pakistan	---	---	---	---	35.8	+50	53.2	+54	57
Manilla, Philippines	12.7	+10	30.6	+14	30.2	+78	47.7	+75	42

Singapore, Singapore	---	---	---	---	31.4	+67	49.0	+68	50
Seoul, Rep. of Korea	10.4	+21	28.1	+25	30.9	+70	48.4	+68	50
Colombo, Sri Lanka	---	---	---	---	34.1	+56	51.7	+60	43
Taipei, Taiwan	11.6	+13	29.5	+17	30.6	+81	48.2	+77	41
Bangkok, Thailand	---	---	---	---	32.2	+76	49.8	+79	46
Ho Chi Minh, Vietnam	---	---	---	---	31.5	+77	49.0	+78	27
Africa									
Algiers, Algeria	---	---	---	---	37.9	+1	55.6	+4	70
Cairo, Egypt	---	---	---	---	37.8	+21	55.4	+24	84
Addis Ababa, Ethiopia	---	---	---	---	37.4	+20	55.0	+24	47
Nairobi, Kenya	---	---	---	---	37.2	+15	54.9	+19	48
Tripoli, Libya	---	---	---	---	38.1	+7	55.8	+10	66
Tananarive, Madagascar	---	---	---	---	35.6	+16	53.3	+19	62
Pretoria, South Africa	---	---	---	---	---	---	53.8	+0	86
Khartoum, Sudan	---	---	---	---	37.8	+17	55.5	+21	75
Dar-es-Salaam, Tanzania	---	---	---	---	36.8	+14	54.5	+18	64
Entebbe, Uganda	---	---	---	---	37.4	+11	55.1	+15	51
Salisbury, Zimbabwe	---	---	---	---	36.5	+2	54.3	+6	76
Oceania									
Alice Springs, Australia	15.6	+6	33.7	+10	27.5	+39	45.3	+37	81
Darwin, Australia	15.0	+9	33.0	+13	28.0	+51	45.8	+48	86
Melbourne, Australia	16.1	+7	34.2	+10	26.6	+22	44.6	+20	33
Perth, Australia	---	---	---	---	28.9	+35	46.8	+35	55
Sydney, Australia	15.9	+13	34.0	+16	26.2	+23	44.2	+21	53
Yap, Caroline Islands	13.4	+24	31.3	+28	28.3	+62	45.9	+58	52
Roratonga, Cook Islands	13.4	+46	31.3	+46	---	---	---	---	51
Suva, Fiji	14.5	+41	32.4	+43	24.9	+15	42.9	+11	41
Johnston Island	11.1	+73	28.8	+77	26.1	+18	44.0	+14	74
Guam, Mariana Islands	13.0	+31	30.8	+35	27.9	+58	45.6	+54	61
Noumea, New Caledonia	15.2	+31	33.2	+34	25.3	+22	43.3	+18	52
Port Moresby, New Guinea	14.9	+24	32.8	+28	26.7	+44	44.5	+40	62
Auckland, New Zealand	15.4	+24	33.5	+25	25.1	+7	43.3	+4	42
Apia, Samoa	13.7	+49	31.6	+51	24.7	+8	42.8	+4	67

Sources: Contact times computed by J. Westfall for apparent (cloud-top) semidiameter of Venus using algorithms given in Jean Meeus (1989), *Transits* (Richmond, VA: Willmann–Bell, Inc.). Sunshine data are from Willy Rudloff (1981), *World-Climates: With Tables of Climatic Data and Practical Suggestions* (Stuttgart: Wissenschaftliche Verlagsgesellschaft) and James A. Ruffner and Frank E. Bair, eds. (1987), *The Weather Almanac*, 5th ed. (Detroit: Gale Research).

Notes: --- = Sun below horizon at time of contact; UT = Universal Time, rounded to 0.1 minute; Sun Alt. = Unrefracted altitude of center of Sun above the horizon in degrees; June Potential Sunshine = Long-term percentage of June daylight hours with sunshine.

Contact Position Angles: The geocentric position angles (measured counterclockwise from celestial north) of the four contacts are: Contact 1, 040.7°; Contact 2, 038.2°; Contact 3, 292.7°; Contact 4, 290.1°. The contact position angles for all stations are within ±1.7° of the geocentric position angles.

Precise Times: For event times to 0.1-second precision for your exact location (by city or by latitude and longitude) consult the website: http://aa.usno.navy.mil/data/docs/Transit.php . (These predictions are based on Venus's solid-body semidiameter.)