

Astronomical Applications Dept.  
U.S. Naval Observatory  
Washington, DC 20392-5420

CARLSBAD, CALIFORNIA

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W117 20, N33 10

Altitude and Azimuth of the Sun  
Nov 18, 2015

Pacific Standard Time

| Altitude |       | Azimuth  |
|----------|-------|----------|
|          |       | (E of N) |
| h m      | o     | o        |
| 05:30    | -11.3 | 105.7    |
| 05:40    | -9.3  | 107.0    |
| 05:50    | -7.3  | 108.2    |
| 06:00    | -5.3  | 109.5    |
| 06:10    | -3.3  | 110.9    |
| 06:20    | -1.4  | 112.2    |
| 06:30    | 0.9   | 113.6    |
| 06:40    | 2.7   | 114.9    |
| 06:50    | 4.5   | 116.4    |
| 07:00    | 6.3   | 117.8    |
| 07:10    | 8.1   | 119.3    |
| 07:20    | 9.9   | 120.9    |
| 07:30    | 11.7  | 122.4    |
| 07:40    | 13.4  | 124.1    |
| 07:50    | 15.1  | 125.7    |
| 08:00    | 16.8  | 127.4    |
| 08:10    | 18.4  | 129.2    |
| 08:20    | 20.0  | 131.1    |
| 08:30    | 21.6  | 133.0    |
| 08:40    | 23.1  | 134.9    |
| 08:50    | 24.5  | 137.0    |
| 09:00    | 25.9  | 139.1    |
| 09:10    | 27.3  | 141.2    |
| 09:20    | 28.6  | 143.5    |
| 09:30    | 29.8  | 145.8    |
| 09:40    | 30.9  | 148.2    |
| 09:50    | 32.0  | 150.7    |
| 10:00    | 32.9  | 153.2    |
| 10:10    | 33.8  | 155.8    |
| 10:20    | 34.7  | 158.5    |
| 10:30    | 35.4  | 161.2    |
| 10:40    | 36.0  | 164.0    |
| 10:50    | 36.5  | 166.9    |
| 11:00    | 36.9  | 169.8    |

|       |       |       |
|-------|-------|-------|
| 11:10 | 37.3  | 172.7 |
| 11:20 | 37.5  | 175.7 |
| 11:30 | 37.6  | 178.6 |
| 11:40 | 37.6  | 181.6 |
| 11:50 | 37.4  | 184.6 |
| 12:00 | 37.2  | 187.5 |
| 12:10 | 36.9  | 190.5 |
| 12:20 | 36.5  | 193.4 |
| 12:30 | 35.9  | 196.2 |
| 12:40 | 35.3  | 199.0 |
| 12:50 | 34.6  | 201.7 |
| 13:00 | 33.7  | 204.4 |
| 13:10 | 32.8  | 207.0 |
| 13:20 | 31.8  | 209.5 |
| 13:30 | 30.8  | 212.0 |
| 13:40 | 29.6  | 214.4 |
| 13:50 | 28.4  | 216.7 |
| 14:00 | 27.1  | 218.9 |
| 14:10 | 25.8  | 221.1 |
| 14:20 | 24.4  | 223.2 |
| 14:30 | 22.9  | 225.2 |
| 14:40 | 21.4  | 227.2 |
| 14:50 | 19.9  | 229.1 |
| 15:00 | 18.3  | 230.9 |
| 15:10 | 16.6  | 232.7 |
| 15:20 | 14.9  | 234.4 |
| 15:30 | 13.2  | 236.0 |
| 15:40 | 11.5  | 237.7 |
| 15:50 | 9.7   | 239.2 |
| 16:00 | 7.9   | 240.8 |
| 16:10 | 6.1   | 242.2 |
| 16:20 | 4.3   | 243.7 |
| 16:30 | 2.5   | 245.1 |
| 16:40 | 0.7   | 246.5 |
| 16:50 | -1.6  | 247.8 |
| 17:00 | -3.6  | 249.2 |
| 17:10 | -5.5  | 250.5 |
| 17:20 | -7.5  | 251.8 |
| 17:30 | -9.5  | 253.0 |
| 17:40 | -11.5 | 254.3 |