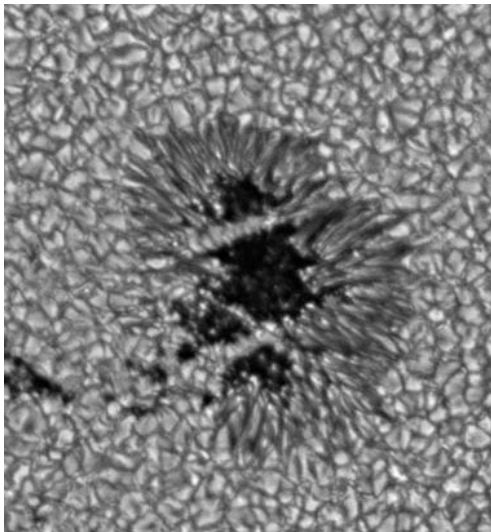


Sun spotting

The Sun gets spots!

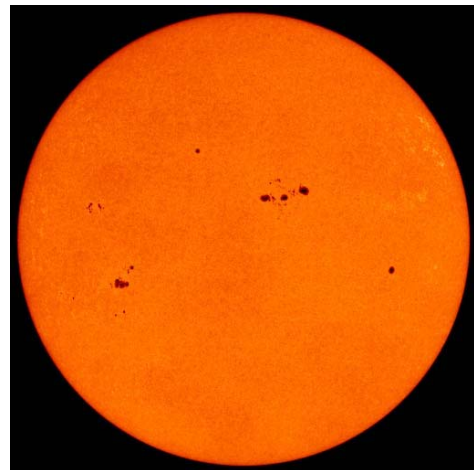


The number of sunspots on the Sun changes over time. New sunspots form, and old ones disappear. Sometimes there may be 100 spots, and sometimes none at all.

They are usually found in pairs and are associated with strong magnetic fields.

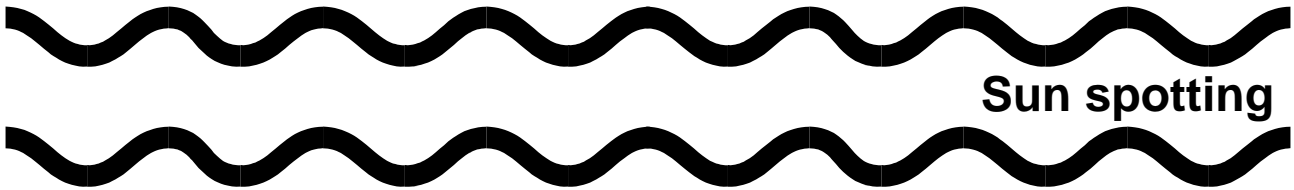
Sunspots are huge dark areas on the Sun. They are typically the size of a planet! They are cooler than the surrounding Sun.

They have been observed for thousands of years and recorded since 1610!



Warning

**Never look directly at the Sun.
This can result in permanent
damage to your eyes**



Sun spotting

Things to do

- Make a large graph showing the number of sunspots counted every year since 1700.
 - Give each person or pair a set of sunspot numbers and graph paper.
 - Plot the number of sunspots counted each year.
- Label the peaks, the maxima, P1, P2 etc
- Label the troughs, the minima, T1, T2 etc
- Measure the length of time between two neighbouring peaks (M-M) several times.
- Measure the length of time between two neighbouring troughs (T-T) several times.

Peak-to-peak (P – P)		Trough-to-trough (T – T)	
P1 – P2	_____ years	T1 – T2	_____ years
P2 – P3	_____ years	T2 – T3	_____ years
Average		Average	

What is the average length of time of the sunspot cycle?



Sun spotting

Sunspot numbers by year

1700	5
1701	11
1702	16
1703	23
1704	36
1705	58
1706	29
1707	20
1708	10
1709	8
1710	3
1711	0
1712	0
1713	2
1714	11
1715	27
1716	47
1717	63
1718	60
1719	39

Sunspot numbers by year

1720	28
1721	26
1722	22
1723	11
1724	21
1725	40
1726	78
1727	122
1728	103
1729	73
1730	47
1731	35
1732	11
1733	5
1734	16
1735	34
1736	70
1737	81
1738	111
1739	101

Sunspot numbers by year

1740	73
1741	40
1742	20
1743	16
1744	5
1745	11
1746	22
1747	40
1748	60
1749	80.9
1750	83.4
1751	47.7
1752	47.8
1753	30.7
1754	12.2
1755	9.6
1756	10.2
1757	32.4
1758	47.6
1759	54



Sun spotting

Sunspot numbers by year

1760	62.9
1761	85.9
1762	61.2
1763	45.1
1764	36.4
1765	20.9
1766	11.4
1767	37.8
1768	69.8
1769	106.1
1770	100.8
1771	81.6
1772	66.5
1773	34.8
1774	30.6
1775	7
1776	19.8
1777	92.5
1778	154.4
1779	125.9

Sunspot numbers by year

1780	84.8
1781	68.1
1782	38.5
1783	22.8
1784	10.2
1785	24.1
1786	82.9
1787	132
1788	130.9
1789	118.1
1790	89.9
1791	66.6
1792	60
1793	46.9
1794	41
1795	21.3
1796	16
1797	6.4
1798	4.1
1799	6.8

Sunspot numbers by year

1800	14.5
1801	34
1802	45
1803	43.1
1804	47.5
1805	42.2
1806	28.1
1807	10.1
1808	8.1
1809	2.5
1810	0
1811	1.4
1812	5
1813	12.2
1814	13.9
1815	35.4
1816	45.8
1817	41
1818	30.1
1819	23.9



Sun spotting

Sunspot numbers by year

1820	15.6
1821	6.6
1822	4
1823	1.8
1824	8.5
1825	16.6
1826	36.3
1827	49.6
1828	64.2
1829	67
1830	70.9
1831	47.8
1832	27.5
1833	8.5
1834	13.2
1835	56.9
1836	121.5
1837	138.3
1838	103.2
1839	85.7

Sunspot numbers by year

1840	64.6
1841	36.7
1842	24.2
1843	10.7
1844	15
1845	40.1
1846	61.5
1847	98.5
1848	124.7
1849	96.3
1850	66.6
1851	64.5
1852	54.1
1853	39
1854	20.6
1855	6.7
1856	4.3
1857	22.7
1858	54.8
1859	93.8

Sunspot numbers by year

1860	95.8
1861	77.2
1862	59.1
1863	44
1864	47
1865	30.5
1866	16.3
1867	7.3
1868	37.6
1869	74
1870	139
1871	111.2
1872	101.6
1873	66.2
1874	44.7
1875	17
1876	11.3
1877	12.4
1878	3.4
1879	6



Sun spotting

Sunspot numbers by year

1880	32.3
1881	54.3
1882	59.7
1883	63.7
1884	63.5
1885	52.2
1886	25.4
1887	13.1
1888	6.8
1889	6.3
1890	7.1
1891	35.6
1892	73
1893	85.1
1894	78
1895	64
1896	41.8
1897	26.2
1898	26.7
1899	12.1

Sunspot numbers by year

1900	9.5
1901	2.7
1902	5
1903	24.4
1904	42
1905	63.5
1906	53.8
1907	62
1908	48.5
1909	43.9
1910	18.6
1911	5.7
1912	3.6
1913	1.4
1914	9.6
1915	47.4
1916	57.1
1917	103.9
1918	80.6
1919	63.6

Sunspot numbers by year

1920	37.6
1921	26.1
1922	14.2
1923	5.8
1924	16.7
1925	44.3
1926	63.9
1927	69
1928	77.8
1929	64.9
1930	35.7
1931	21.2
1932	11.1
1933	5.7
1934	8.7
1935	36.1
1936	79.7
1937	114.4
1938	109.6
1939	88.8



Sun spotting

Sunspot numbers by year

1940	67.8
1941	47.5
1942	30.6
1943	16.3
1944	9.6
1945	33.2
1946	92.6
1947	151.6
1948	136.3
1949	134.7
1950	83.9
1951	69.4
1952	31.5
1953	13.9
1954	4.4
1955	38
1956	141.7
1957	190.2
1958	184.8
1959	159

Sunspot numbers by year

1960	112.3
1961	53.9
1962	37.6
1963	27.9
1964	10.2
1965	15.1
1966	47
1967	93.7
1968	105.9
1969	105.5
1970	104.5
1971	66.6
1972	68.9
1973	38
1974	34.5
1975	15.5
1976	12.6
1977	27.5
1978	92.5
1979	155.4

Sunspot numbers by year

1980	154.6
1981	140.5
1982	115.9
1983	66.6
1984	45.9
1985	17.9
1986	13.4
1987	29.2
1988	100.2
1989	157.6
1990	142.6
1991	145.7
1992	94.3
1993	54.6
1994	29.9
1995	17.5
1996	8.6
1997	21.5
1998	64.3
1999	93.3
2000	119.6
2001	111
2002	104
2003	63.7
2004	40.4
2005	29.8
2006	15.2