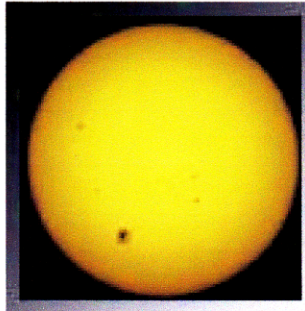


Is Sunspot Activity Predictable?



Today, solar scientists have powerful space telescopes and sophisticated scientific equipment to study the Sun. Before such tools were invented, scientists had only their daily observations of sunspots. What did they think that is different from today with our sophisticated telescopes?

We know that Galileo meticulously recorded the location of the sunspots he saw over time. Others did something even more basic and fundamental- they began counting them. It took years of data collection before the value of the sunspot counts was discovered. The counts continue today, and scientists are still analyzing the data and making new discoveries about sunspot activity.

Investigation One: Yearly sunspot counts

There are sunspot counts for every month of the year since 1700. For this activity, you are going to use the yearly average number of sunspots. Work with a partner to record the data.

Materials:

- * sunspot count [data record](#)

(Data source: <http://image.gsfc.nasa.gov/poetry/workbook/p6.html>)

- * Sunspots Over Time Graph [PDF](#)
- * pencil
- * clear tape

Procedure:

1. Divide the data into fifteen year blocks and assign each to a team.
(It helps to have one team member read the data for each year while the other plots each point.)
2. Label the years you are assigned to the graph along the X (horizontal) axis
3. Connect the data points.
4. Find the teams that have the blocks before and/or after your assigned block.
5. Align your papers and tape them together to make a continuous graph.
6. Analyze the information.

Questions:

- *What is the solar cycle?
- *What is the average time between the high points (periods of maximum sunspot activity)?
- *What is the average time between the low points (periods of minimum sunspot activity)?

Learn more about the [solar cycle](#).

Investigation Two: Predicting sunspot activity

Use the information on the Sunspots Over Time Graph to predict solar weather in the future.

Materials:

- * completed Sunspots Over Time Graph [PDF](#)
- * pencil

Procedure:

1. Use the data from Investigaton One to make predictions on the sunspot activity in the next week, month, year.
2. Compare your predictions to astronomers predications.

YEAR	N	YEAR	N	YEAR	N	YEAR	N	YEAR	N	YEAR	N	YEAR	N
1700	5	1746	22	1792	60	1838	103	1884	84	1930	36	1976	13
1701	11	1747	40	1793	47	1839	88	1885	52	1931	21	1977	27
1702	16	1748	60	1794	41	1840	65	1886	25	1932	11	1978	92
1703	23	1749	61	1795	21	1841	37	1887	13	1933	6	1979	155
1704	36	1750	83	1796	16	1842	24	1888	7	1934	9	1980	154
1705	58	1751	48	1797	6	1843	11	1889	6	1935	38	1981	140
1706	29	1752	48	1798	4	1844	15	1890	7	1936	60	1982	116
1707	20	1753	31	1799	7	1845	40	1891	36	1937	114	1983	67
1708	10	1754	12	1800	14	1846	61	1892	73	1938	110	1984	46
1709	8	1755	10	1801	34	1847	98	1893	85	1939	89	1985	18
1710	3	1756	10	1802	45	1848	125	1894	78	1940	68	1986	14
1711	0	1757	32	1803	43	1849	96	1895	64	1941	47	1987	32
1712	0	1758	48	1804	48	1850	67	1896	42	1942	31	1988	98
1713	2	1759	54	1805	42	1851	64	1897	26	1943	16	1989	154
1714	11	1760	63	1806	28	1852	54	1898	27	1944	10	1990	146
1715	27	1761	86	1807	10	1853	39	1899	12	1945	33	1991	144
1716	47	1762	61	1808	8	1854	20	1900	9	1946	93	1992	94
1717	63	1763	45	1809	3	1855	7	1901	3	1947	162	1993	56
1718	60	1764	36	1810	0	1856	4	1902	5	1948	136	1994	30
1719	39	1765	21	1811	1	1857	22	1903	24	1949	135	1995	17
1720	28	1766	11	1812	5	1858	59	1904	42	1950	84	1996	9
1721	26	1767	37	1813	12	1859	94	1905	63	1951	69		
1722	22	1768	70	1814	14	1860	96	1906	54	1952	31		
1723	11	1769	106	1815	35	1861	77	1907	62	1953	14		
1724	21	1770	101	1816	46	1862	59	1908	48	1954	4		
1725	40	1771	82	1817	41	1863	44	1909	44	1955	38		
1726	78	1772	67	1818	30	1864	47	1910	19	1956	142		
1727	122	1773	35	1819	24	1865	31	1911	8	1957	190		
1728	103	1774	31	1820	16	1866	16	1912	4	1958	185		
1729	73	1775	7	1821	7	1867	7	1913	1	1959	159		
1730	47	1776	20	1822	4	1868	38	1914	10	1960	112		
1731	35	1777	93	1823	2	1869	74	1915	47	1961	54		
1732	11	1778	154	1824	9	1870	139	1916	57	1962	38		
1733	5	1779	126	1825	17	1871	111	1917	104	1963	28		
1734	16	1780	65	1826	36	1872	102	1918	81	1964	10		
1735	34	1781	68	1827	50	1873	66	1919	64	1965	15		
1736	70	1782	38	1828	64	1874	45	1920	38	1966	47		
1737	81	1783	23	1829	67	1875	17	1921	26	1967	94		
1738	111	1784	10	1830	71	1876	11	1922	14	1968	106		
1739	101	1785	24	1831	48	1877	12	1923	6	1969	106		
1740	73	1786	83	1832	28	1878	3	1924	17	1970	104		
1741	40	1787	132	1833	9	1879	6	1925	44	1971	67		
1742	20	1788	131	1834	13	1880	32	1926	64	1972	69		
1743	16	1789	118	1835	57	1881	54	1927	69	1973	38		
1744	5	1790	90	1836	121	1882	60	1928	78	1974	34		
1745	11	1791	67	1837	138	1883	64	1929	65	1975	16		

Solar Sunspots Overtime Graph

Scientist _____

