

NAME: _____

DATE: _____

The “Freckles”



of the Sun Student Pre-Lab Worksheet

Vocabulary:

cyclic: _____

maxima: _____

minima: _____

interpolate: _____

extrapolate: _____

Questions (Answer in complete sentences):

1. In general, what is the main difference between a cyclic and non-cyclic change?

2. How is it possible for some changes to appear non-cyclic when they are actually cyclic?

3. List 3 examples of cyclic changes occurring in nature that we **HAVEN'T** talked about in class.
 - 1.
 - 2.
 - 3.

The “Freckles”



of the Sun

INTRODUCTION:

Sunspots are regions on the solar surface that appear dark because they are cooler than the surrounding photosphere (surface of the Sun), typically by about 1500 K (thus, they are still at a temperature of about 4500 K, but this is cool compared to the rest of the photosphere). They are only dark in a relative sense; a sunspot removed from the bright background of the Sun would glow quite brightly.

OBJECTIVE:

You will see how graphing a natural phenomenon can help with the prediction of future events.

PROCEDURE:

1. Using the data provided, graph the data for sunspot activity from 1957-2006.
2. Completely label the graph (label axes with units and make an appropriate title)

DATA

AVERAGE ANNUAL SUNSPOT NUMBERS

YEAR	# OF SUNSPOTS	YEAR	# OF SUNSPOTS
1957	176	1982	116
1958	185	1983	72
1959	158	1984	46
1960	112	1985	18
1961	54	1986	13
1962	38	1987	29
1963	28	1988	50
1964	10	1989	145
1965	15	1990	155
1966	47	1991	140
1967	94	1992	112
1968	106	1993	55
1969	105	1994	31
1970	105	1995	18
1971	67	1996	8
1972	69	1997	20
1973	38	1998	54
1974	34	1999	96
1975	16	2000	123
1976	13	2001	124
1977	27	2002	103
1978	93	2003	65
1979	155	2004	43
1980	146	2005	30
1981	134	2006	15

SUMMARY QUESTIONS: *(Answer in complete sentences)*

1. What kind of relationship does this graph illustrate between time and sunspot activity?
2. In which years did a sunspot maxima occur? (maxima is plural...)
3. What is the average time (to the nearest tenth of a year) between maxima?
(Show work.)
4. In which years did a sunspot minima occur? (minima is also plural...)
5. What is the average time (to the nearest tenth of a year) between minima?
(Show work.)
6. When was the most recent maximum?
7. Extrapolate this graph to predict what up coming year the next sunspot maximum will occur.
8. Using the data, make a logical estimate as how many sunspots would there be when you graduate high school? Explain how you came up with your answer.

