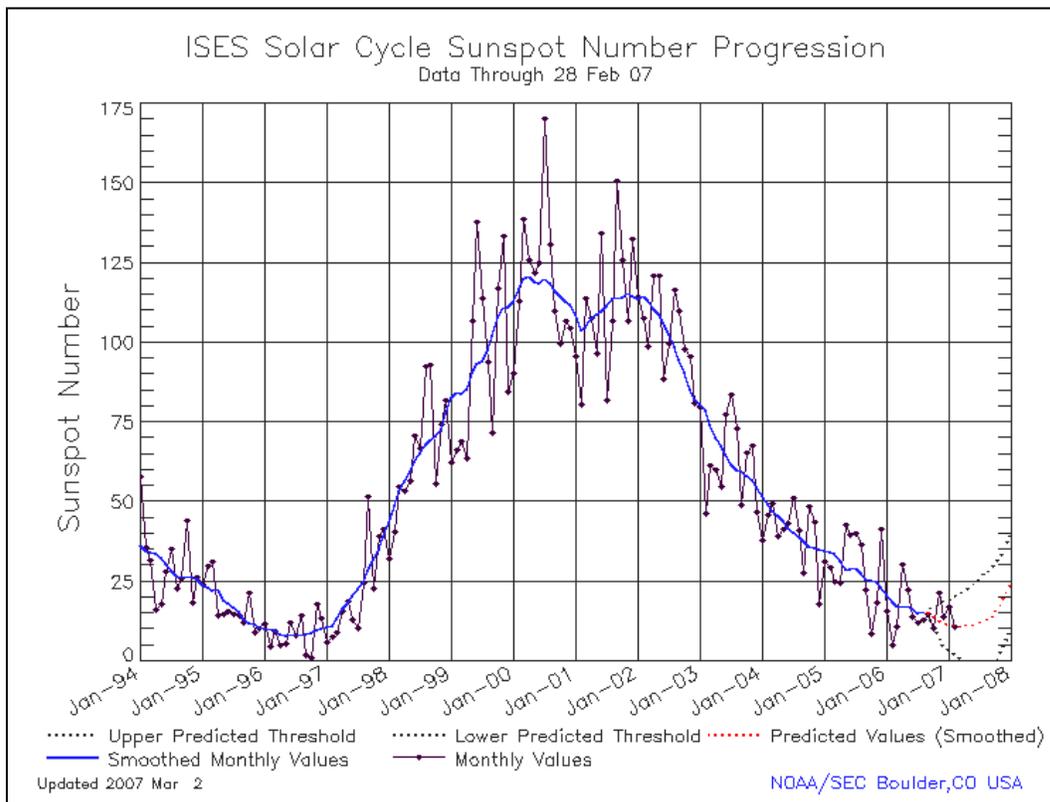


# The Sunspot Cycle - endings and beginnings



The above plot shows the current sunspot cycle (Number 23) based on the average monthly sunspot counts since January, 1994.

Problem 1 - About when (month and year) did Sunspot Cycle 23 begin?

Problem 2 - About when (month and year) did Sunspot Cycle 23 reach its maximum?

Problem 3 - A) What was the average minimum sunspot count during the years of the previous sunspot minimum? B) What do you think the average sunspot count will be during the current sunspot minimum?

Problem 4 - What is the number of years between sunspot minima to the nearest tenth of a year?

Problem 5 - How long did Cycle 23 take to reach sunspot maximum?

Problem 6 - When (year, month) do you predict we will reach sunspot maximum during the next cycle ( Cycle 24)?

Problem 7 - When (year, month) do you think the next sunspot minimum will occur?

Problem 8 - During which part of the sunspot cycle is there A) the greatest month-to-month variation in the number of sunspots counted? B) The least variation in the number counted?

**Answer Key:**

Problem 1 - When (month and year) did Sunspot Cycle 23 begin?

**Answer:** Around July, 1996

Problem 2 - When (month and year) did Sunspot Cycle 23 reach its maximum?

**Answer:** Around July, 2000 and a second maximum near September, 2001

Problem 3 - A) What was the average minimum sunspot count during the previous sunspot minimum?

**Answer:** From the graph the monthly numbers are 5,8,6,6,12,8,13,1,0,16,13,6 for an average of 8 sunspots during 1996.

B) What do you think the average sunspot count will be during the current sunspot minimum?

**Answer:** About 12.

Problem 4 - What is the number of years between sunspot minima to the nearest tenth of a year?

**Answer:** The first minimum was on July, 1996 and the current minimum seems to be around March ,2007 so the difference is  $2007.25 - 1996.58 = 10.7$  years.

Problem 5 - How long did Cycle 23 take to reach sunspot maximum?

**Answer:** The first maximum occurred on July 2000, the minimum was July 1996, so it took 4 years.

Problem 6 - When (year, month) do you predict we will reach sunspot maximum during the next cycle ( Cycle 24)?

**Answer:** If we add 4 years to the current minimum on March, 2007 we get March, 2011.

Problem 7 - When (year, month) do you think the next sunspot minimum will occur?

**Answer:** From our answer to Problem 4, if we add 10.7 years to March, 2007 we get  $2007.25 + 10.7 = 2017.95$  or December, 2017.

Problem 8 - During which part of the sunspot cycle is there A) the greatest month-to-month variation in the number of sunspots counted? B) The least variation in the number counted?

**Answer:** Looking at the graph, the largest variations from month to month occur near sunspot maximum, and the least variations occur near sunspot minimum.