**Study Suggests Sun Less Active than Similar Stars**

**研究显示太阳不如其他恒星活跃**

A new study suggests the sun appears to experience far fewer changes in brightness and intensity than other stars like it.

一项新的研究表明，太阳的亮度和强度变化与其他跟它类似的恒星相比似乎要少得多。

Researchers reported last week on their examination of 369 stars. They compared each one to the sun in terms of surface temperature, size and rotation. They found that on average, the other stars had five times more brightness variability than our sun.

上周研究人员发布了一项针对369颗恒星的研究报告。他们将这些恒星的表面温度、大小和旋转情况等与太阳进行了比较。结果发现，其他恒星的亮度可变性平均是太阳的五倍。

A report on the study and its findings was published in Science magazine.

这项研究报告发表于《科学》杂志。

The lead author was Timo Reinhold, an astronomer with the Max Planck Institute for Solar System Research in Germany. He told the Reuters news agency that the variability in brightness results from dark spots on the surface of the star moving in and out of view.

该研究的首席作者是德国马克斯·普朗克太阳能系统研究所的天文学家蒂莫·莱因霍尔德。他告诉路透社，亮度的变化是由于恒星表面上的黑点移入和移出引起的。

“A direct measure of solar activity is the number of sunspots on the surface,” Reinhold said. “Finding such stars with very similar parameters as our sun but being five times more variable was surprising.”

莱因霍尔德表示：“对太阳活动最直接的观测就是其表面的太阳黑子的数量。研究发现与太阳拥有非常相似的参数的恒星其可变性性竟然是太阳的五倍之多，这还是很令人惊讶的。”

The sun – made up mainly of hydrogen and helium - is an average-sized star that formed more than 4.5 billion years ago. It stretches about 1.4 million kilometers across and has a surface temperature of 5,500 degrees Celsius.

太阳形成于45亿年前主要由氢和氦组成，其大小处于恒星界的平均水平。它直径约140万公里，表面温度为5500摄氏度。

The researchers compared scientific data on the similar stars to historical records of the sun’s activity. The records included about 400 years of observational data on sunspots. The researchers also studied about 9,000 years of data based on chemical element variants in tree rings and ice buildup tied to solar activity. These records show the sun has not been much more active than it is now.

研究人员将与太阳相似的恒星的科学数据与太阳活动的历史记录数据进行了比较。这些活动记录包含了大约400年的太阳黑子的观测数据。研究人员还研究了约9000年的太阳活动引发的年轮和冰聚积带来的化学元素变异数据。这些记录表明，太阳一直以来都不怎么活跃。

The researchers said increased magnetic activity related to sunspots can lead to electromagnetic events that affect Earth. For example, large releases of plasma - a collection of charged particles - from outer areas of the sun’s atmosphere could cause problems for satellites and other communications equipment. Other electromagnetic activities could also result in such difficulties.

研究人员表示，与太阳黑子相关的磁活动的增强会引起一些电磁活动，而这些电磁活动会影响地球。例如，来自太阳大气层外围的等离子体(带电粒子集合) 的大量释放可能会导致卫星和其他通信设备出现问题。其他电磁活动也可能导致此类问题。

The discovery that the sun does not experience as many changes as other stars may be good news for life on Earth.

太阳不像其他恒星那样多变这一发现可能对地球上的生命来说是个好消息。

A much more active sun might have had more major effects on Earth’s geology and ancient climate. “A ‘too active’ star would definitively change the conditions for life on the planet, so living with a quite boring star is not the worst option,” Reinhold said.

较为活跃的太阳可能对地球的地质和古代气候产生更大的影响。莱因霍尔德说：“一颗'过于活跃'的恒星势必会改变地球上的生存条件，因此与一颗不活跃的恒星共生并非是件坏事。”

The findings, he noted, do not rule out the possibility that the sun may be in a quiet period and could become more variable in the future.

他指出，这些发现并不排除太阳正处于平静期以及它将来或会更多变的可能性。

However, the researchers say there are no signs that solar activity will be increasing any time soon.

但是，研究人员也表示没有迹象表明太阳活动会在短时间内变多。

“For the last decade, the sun has been showing itself to be rather weakly active, even by its own low standards,” they said in a statement. “Predictions of activity for the next 11 years indicate that this will not change soon.”

他们在一份声明中称：“过去十年，即使按照其自身的低标准，太阳也一直表现得很不活跃。对未来11年太阳活动的预测表明，这种情况不会在短期内发生变化。”

I’m Bryan Lynn.

布莱恩·林恩报道。

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