

## The Sun - Our Star



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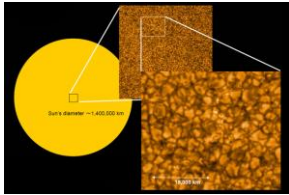
## The Atmosphere

\_\_\_\_\_ "surface"

Visible layer  
6000 K (10,000 F)

\_\_\_\_\_ - bumps

Cause?  
\_\_\_\_\_



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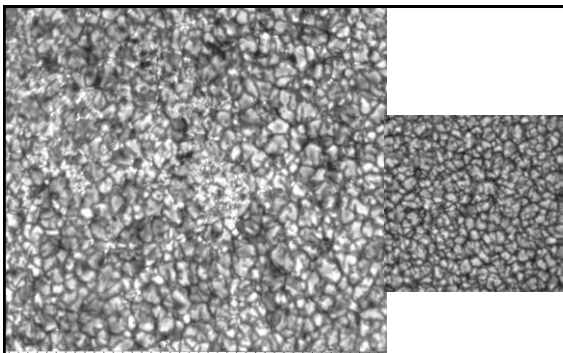
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30 40 50 60

Photospheric granulation, G. Scharmer  
Swedish Vacuum Solar Telescope  
10 July 1997

Distance in units of  
1000 kilometers

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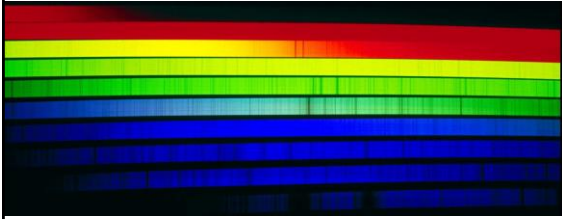
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## Solar Spectrum



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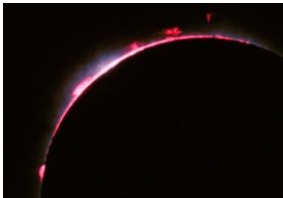
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## Other Atmosphere Layers

\_\_\_\_\_ - above the photosphere

~10,000 K and rising  
Pinkish



Photosphere



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## Corona

Outermost layer

1 to 2 million K

Solar Winds - particles from Sun, aurorae



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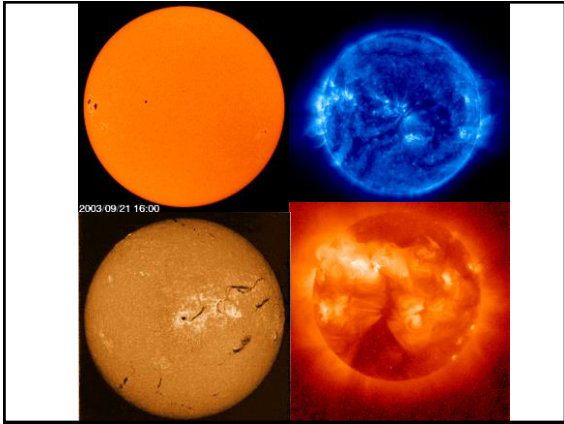
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## Sunspots



Cooler than photosphere  
 Weeks or months  
 > Earth in size

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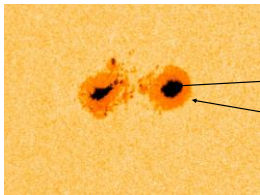
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Solar rotation - equator vs poles

\_\_\_\_\_ Rotation




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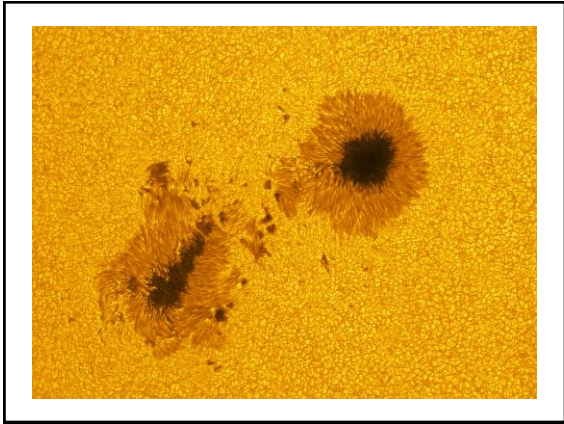
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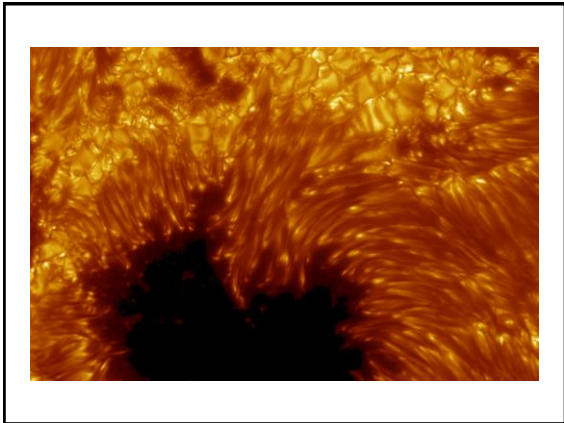
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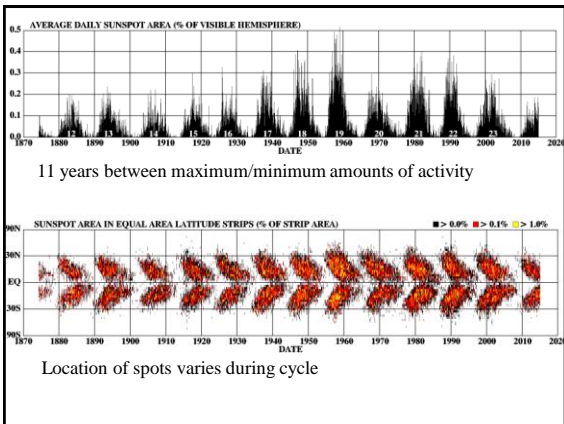
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Magnetic Nature of Spots

Sunspot polarity lasts for \_\_\_\_ years in each hemisphere

\_\_\_\_ years later

Actual sunspot cycle is \_\_\_\_ years!

What's the deal with sunspots?

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N

magnetic field line

differential rotation

equator

S

time

S

time

S

Copyright © Addison Wesley

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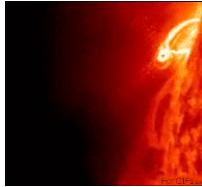
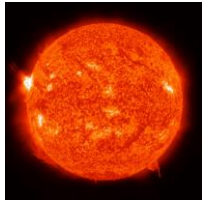
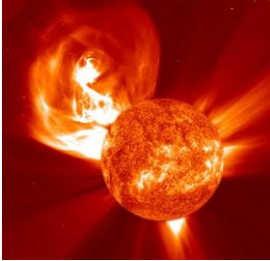
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# Solar Eruptions

Flares and Prominences



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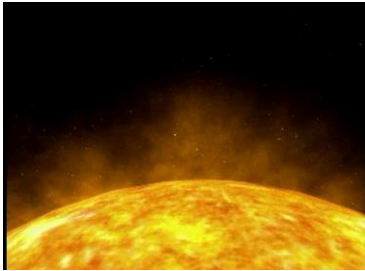
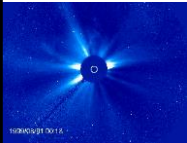
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# Coronal Mass Ejections (CME) - the Biggest eruptions

What if one of these heads towards us?????



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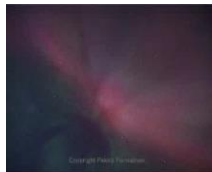
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# Aurorae!!!



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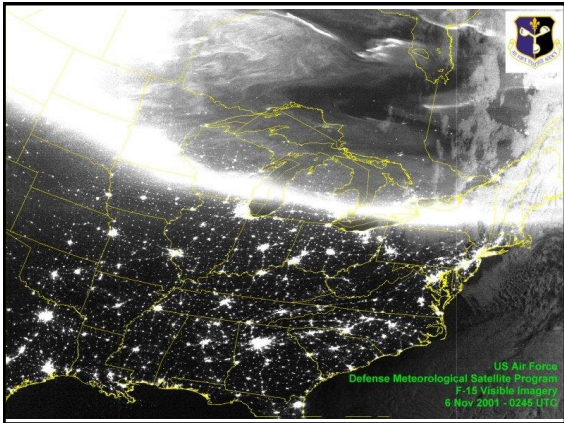
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