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## Working at NASA Marshall Space Flight Center

- **Solar Physicist** - Physics of the magnetic atmosphere of the sun.
- **Rocket Scientist** - Telescope payloads that fly on sub-orbital sounding rockets
- **Teams** - team lead and team member for multiple projects at a time.

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## Part 1

All about THE SUN

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## Quiz

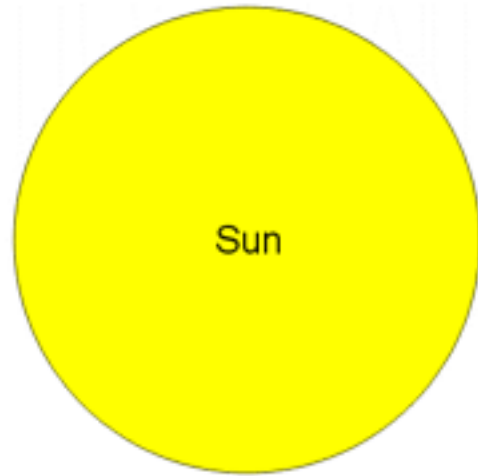
How many Earths across is the Sun?

		
10	100	1000

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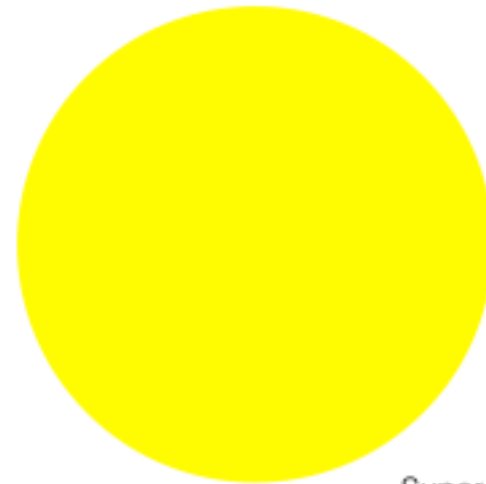
Answer: 100

Earth



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Our Sun



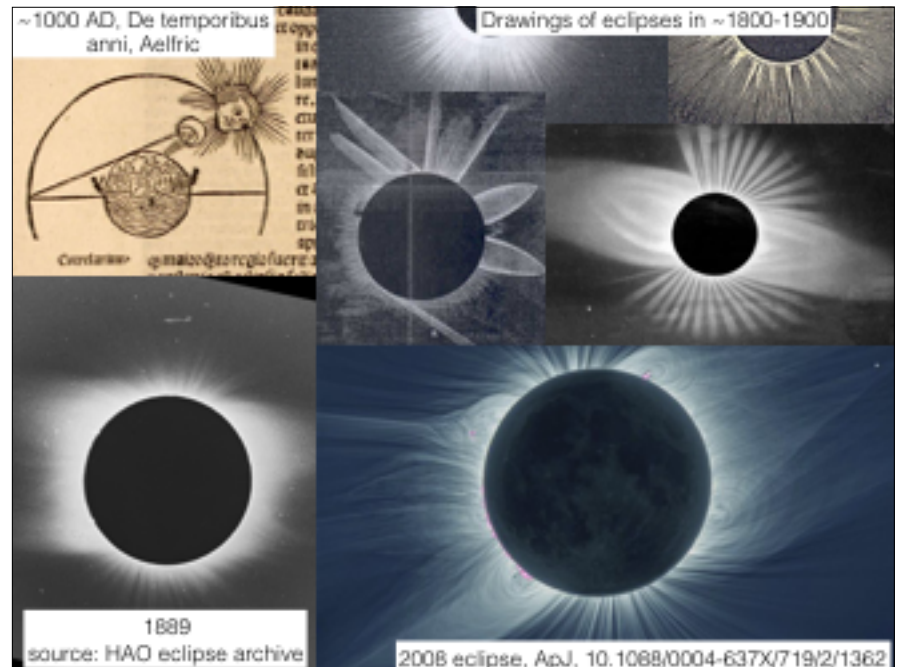
Super exciting right?

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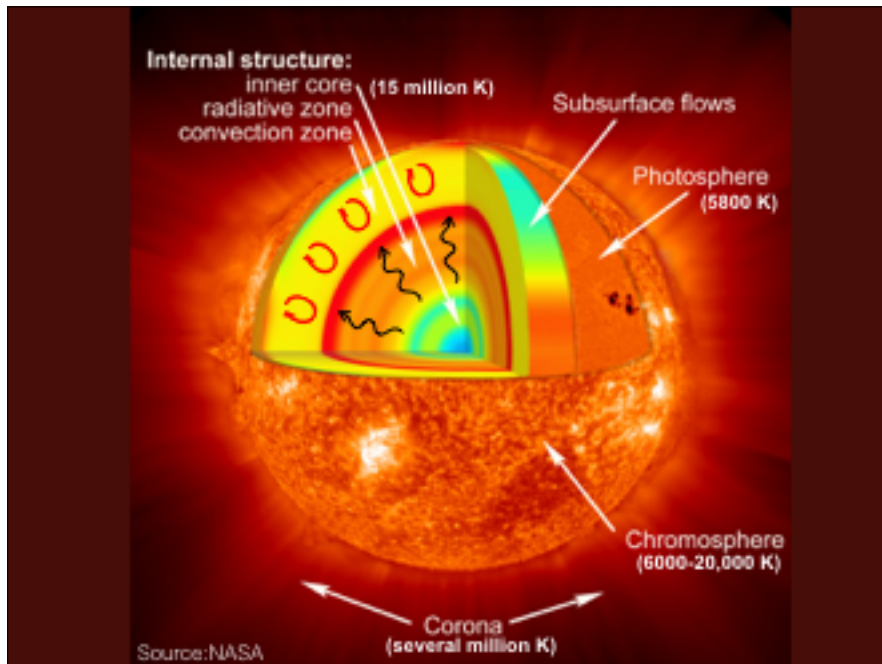
Sunset in Bangladesh, 2004

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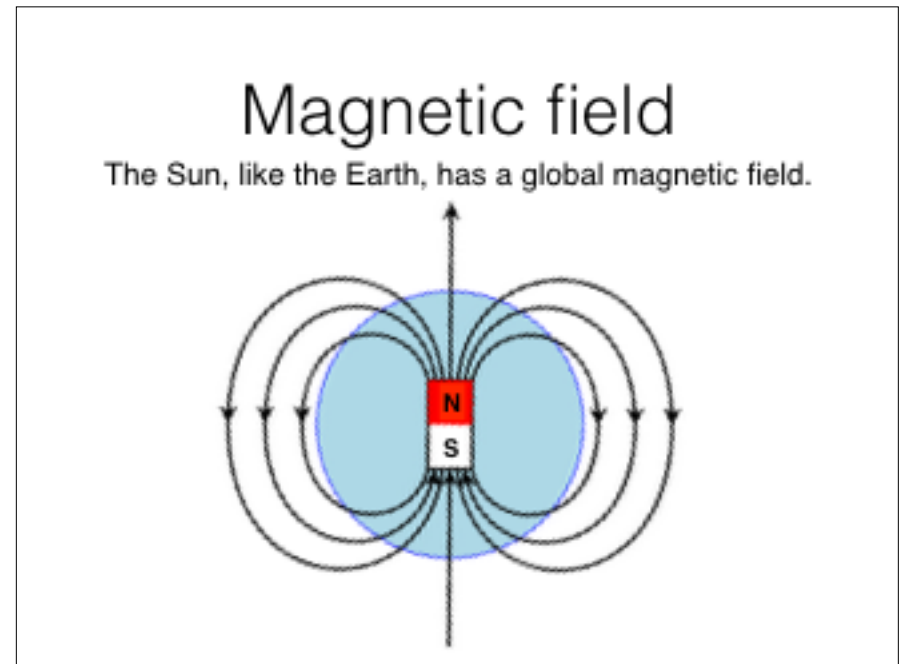


2008 eclipse, ApJ, 10.1088/0004-637X/719/2/1362

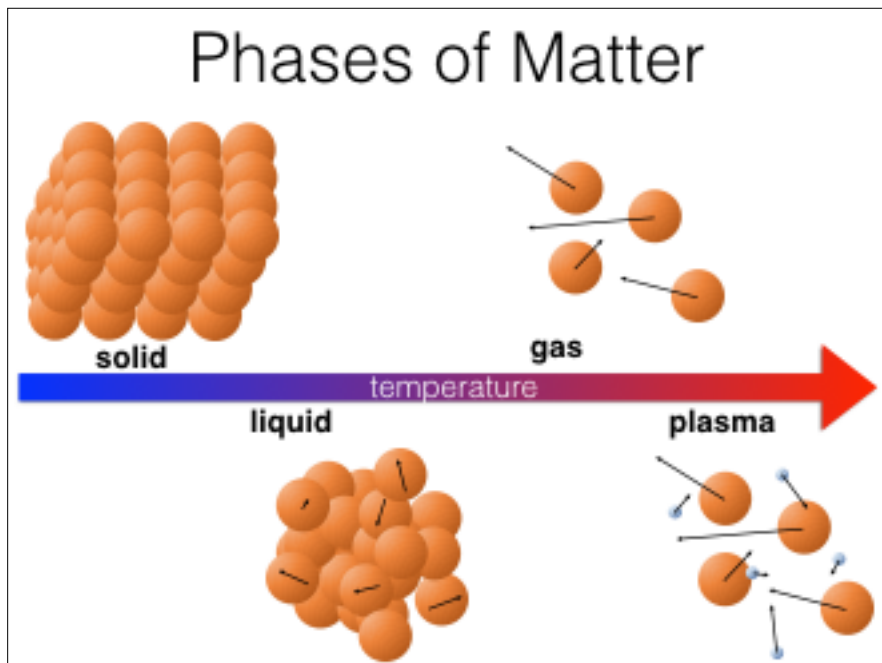
8



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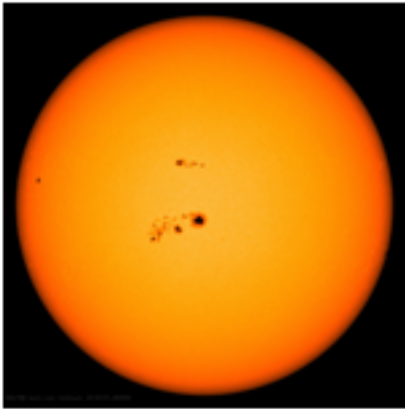
10



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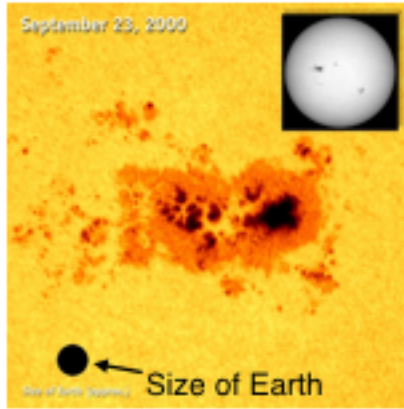


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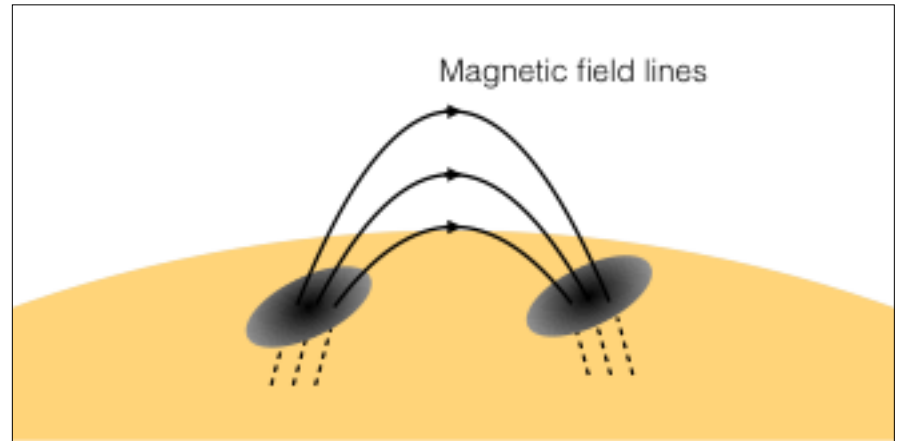
source: NASA SDO/HMI image, January 2014

# Sunspots



source: SOHO (NASA/ESA)

Sunspots form where concentrated magnetic field emerges through the photosphere.



# Sunspots

Strong magnetic field threads through sunspots.

## Sunspots & Active regions

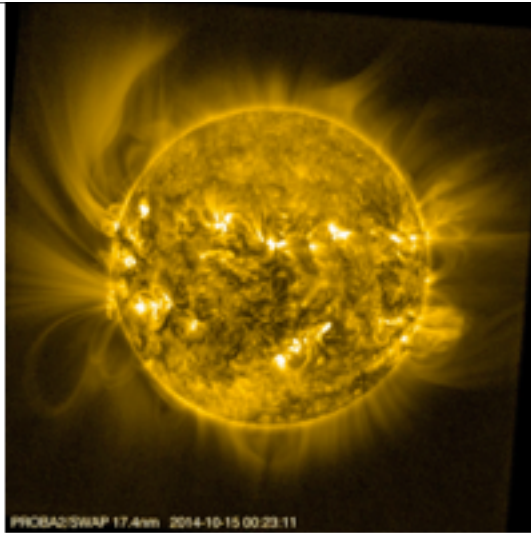
source: NASA Scientific Visualization Studio

	HMI Continuum Matches visible light Photosphere	AIA 1700 Å 4900 Kelvin Photosphere		
AIA 4500 Å 4000 Kelvin Photosphere	AIA 1600 Å 15,000 Kelvin Upper photosphere/ Transition region	AIA 304 Å 50,000 Kelvin Transition region/ Chromosphere	AIA 171 Å 600,000 Kelvin Upper transition Region/quiet corona	AIA 193 Å 1 million Kelvin Corona/flare plasma
AIA 211 Å 2 million Kelvin Active regions	AIA 335 Å 2.5 million Kelvin Active regions	AIA 094 Å 4 million Kelvin Flaring regions	AIA 131 Å 10 million Kelvin Flaring regions	

## Heliosphere

The bubble-like volume surrounding solar system caused by the *solar wind*. Outside the heliosphere is *interstellar space*.

source: <http://spaceplace.nasa.gov>



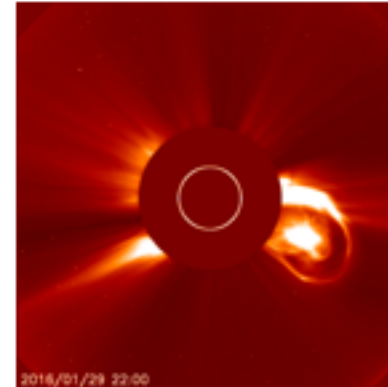
## The dynamic corona

PROBA2/SWAP movie of 3 solar rotations

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## Eruptions

Major disturbances in the heliosphere are caused by massive explosions in the Sun's atmosphere: **coronal mass ejections**.



NASA LASCO C2 movie

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## Part 2

All about ME

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## The Early Years

- Grew up in Africa
- Went to small American/Int'l schools
- I HATED math before algebra
- Average student in Elementary School
- Good student in High School
- No idea what I wanted to do with my life.

## Higher Education


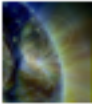




- Physics BA from Bryn Mawr College (liberal arts, 4 yrs)
- Astrophysics MS & PhD from Univ. of CO in Boulder (5 yrs)

## Work

- 2 yrs: National Center for Atmospheric Research
- 1 yr: St Andrews University in Scotland
- 3 yrs: Royal Observatory of Belgium
- 2.5 yrs: NASA Marshall Space Flight Center

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## My research: magnetic fields in the corona

- Computer models of eruptions. 
- Measurements of the coronal magnetic field. 
- Large-scale structure of the corona. 
- Sounding rockets, measurements of the magnetic field in the chromosphere.   

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## LASP Sounding Rocket



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## Random Facts about Laurel

- I have lived in 7 countries: Burkina Faso, Niger, Madagascar, Morocco, Scotland, Belgium, USA (GA, PA, WA, CO, AL).
- I would burst into tears every time I took a timed math test in elementary school. (I hate arithmetic!)
- I call my dog Nelly about a billion different names. When she has done something bad, she becomes "The Nellzabub".
- I make an absolutely fantastic chocolate cake.
- I failed my graduate school comprehensive exam the first time I took it.
- I didn't learn how to drive until I was 33 yrs old.



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Thank  
you!

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**MARSHALL**  
SPACE FLIGHT CENTER

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