

Nuclear Fusion: How does the sun produce its radiant energy?

Reminder the sun produces energy that travels to earth in the form of waves. Today we will find out how the sun creates that energy!

Details about our sun

- The sun is made primarily of the gases :
 - **Hydrogen and Helium**

Periodic Table of the Elements																																		
1A	1	H	2A	2	He																													
	3	Li	4	Be																														
	11	Na	12	Mg	III B	IV B	V B	VI B	VII B	— VII —		IB	IB	5	6	7	8	9	10															
	19	K	20	Ca	21	Sc	22	Ti	23	V	24	Cr	25	Mn	26	Fe	27	Co	28	Ni	29	Cu	30	Zn	31	32	33	34	35	36				
	37	Rb	38	Sr	39	Y	40	Zr	41	Nb	42	Mo	43	Tc	44	Ru	45	Rh	46	Pd	47	Ag	48	Cd	49	50	51	52	53	54				
	55	Cs	56	Ba	57	*La	72	Hf	73	Ta	74	W	75	Re	76	Os	77	Ir	78	Pt	79	Au	80	Hg	81	82	83	84	85	86				
	87	Fr	88	Ra	89	+Ac	104	Rf	105	Ha	106	106	107	107	108	108	109	109	110	110	111	111	112	112										

Naming conventions of new elements

* Lanthanide
Series

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

+ Actinide
Series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

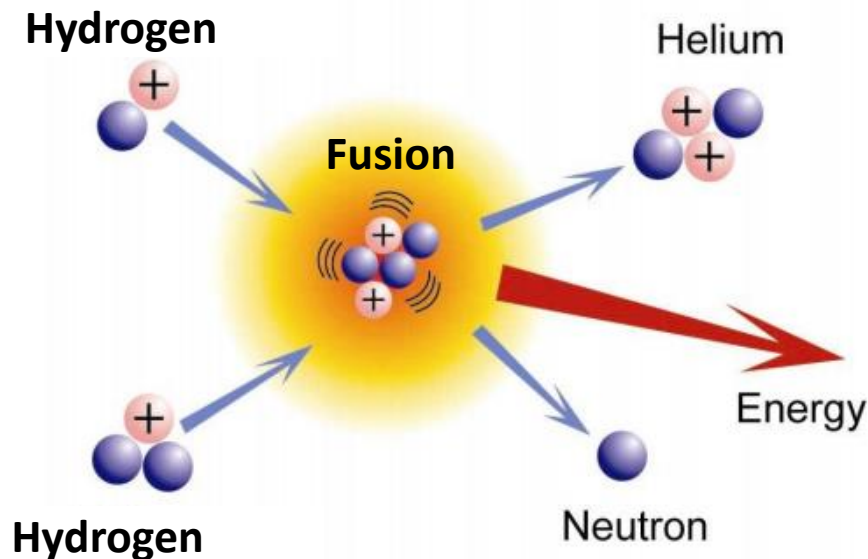
Details about our Sun

- The sun's surface is approximately 10,000 F° (5,600 C°)
- Within the **core** of the **sun**, gravity creates intense pressure and temperature of more than 27 million degrees F ° (15 million C°).

How does that happen? Hydrogen atoms are compressed and fuse together, creating helium. This process is called nuclear fusion

Nuclear Fusion

Is the **combination** of two lighter hydrogen atoms into one helium atom. The leftover components are released as **energy**.

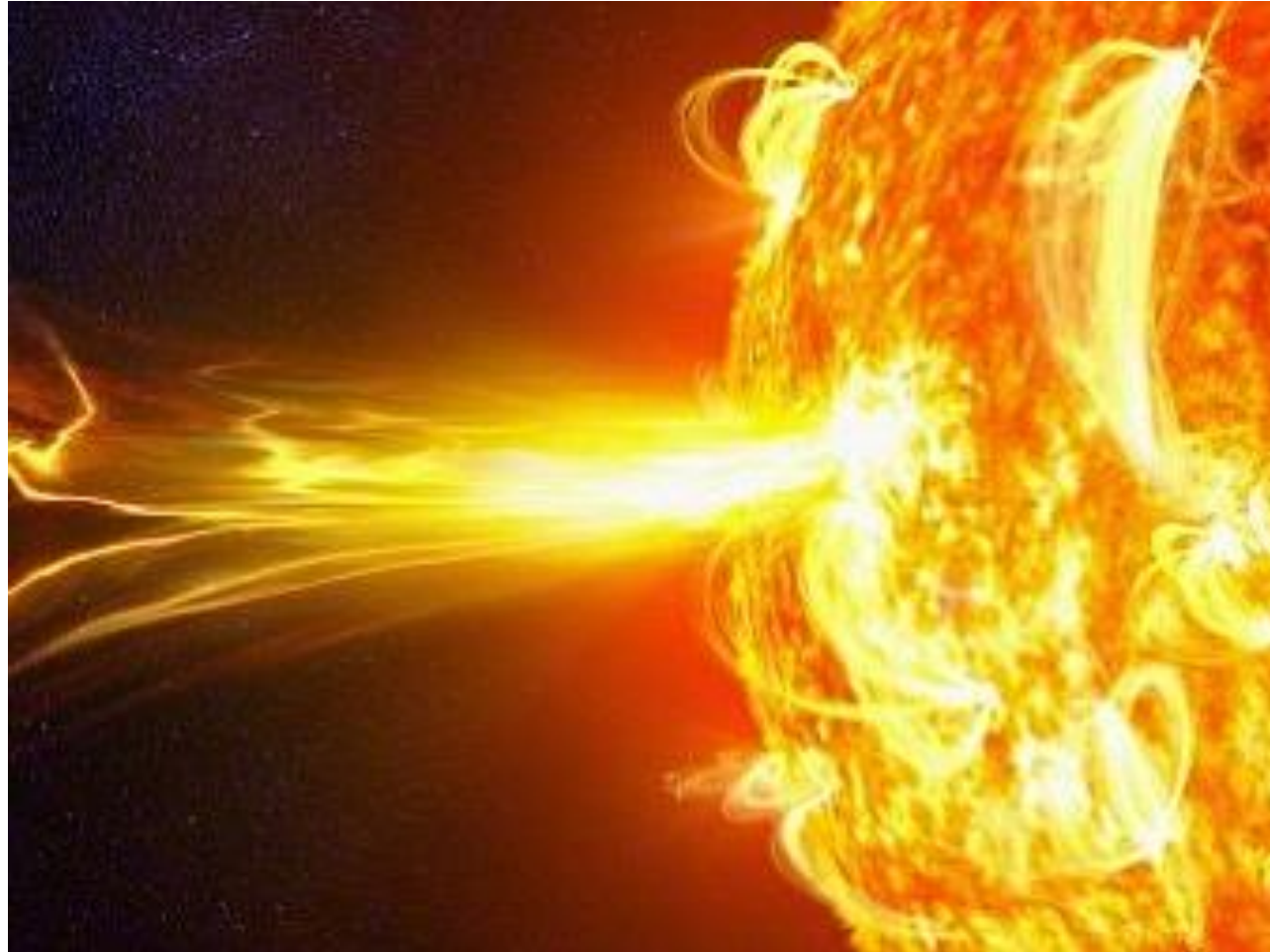


5 fact video summary on nuclear fusion

- Atoms, Cars, and the Big Bang

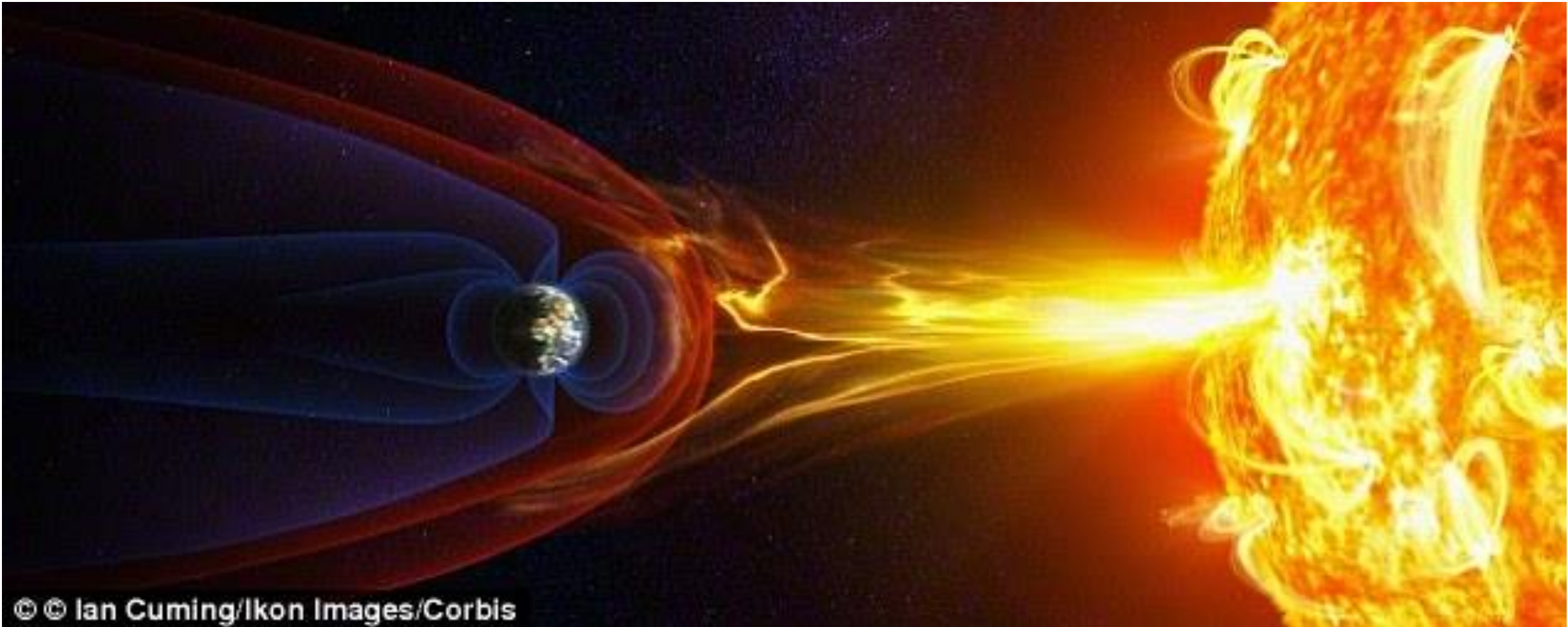
Solar Flares

- Sometimes a sudden outward eruption of electrically charged atomic particles are released from the sun.
- This can interfere with phone, TV, and radio reception on Earth, but luckily.....



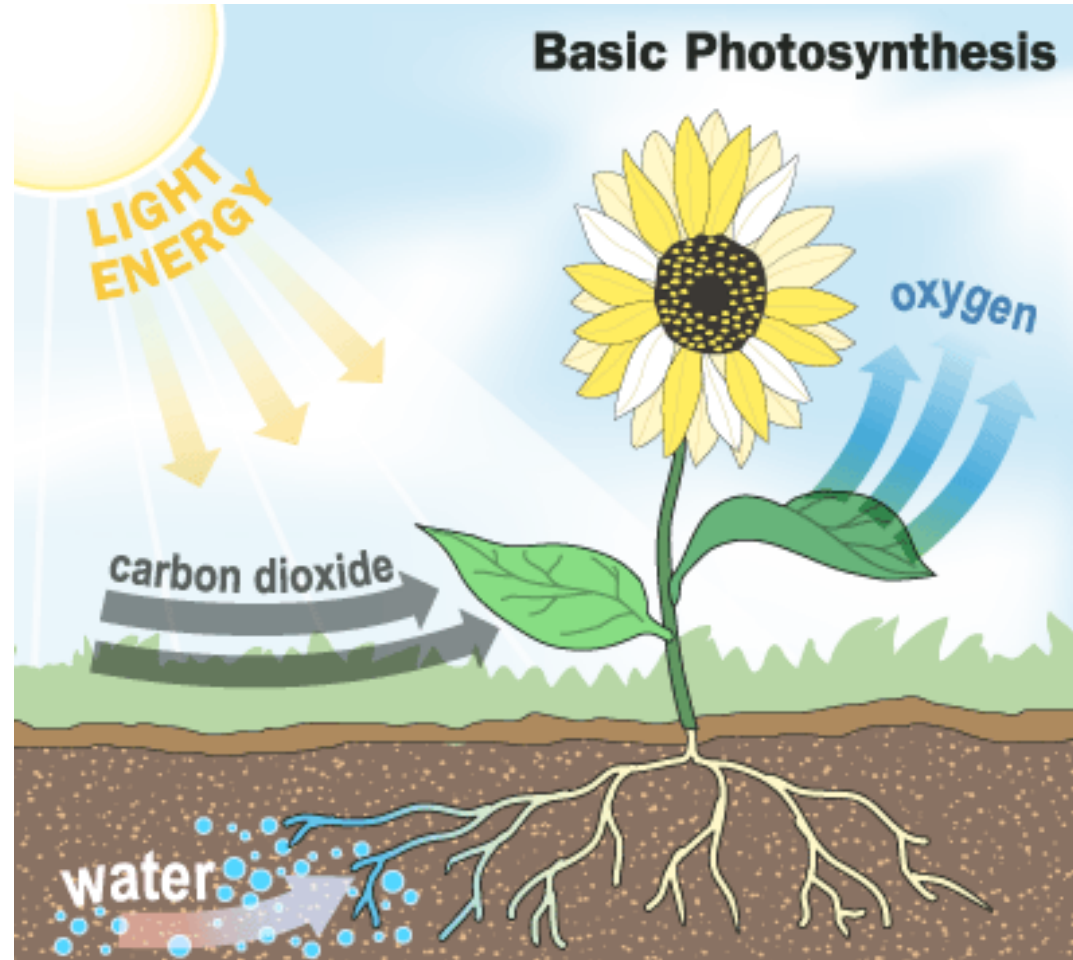
We have a protective magnetic shield!

- Earth's magnetic field protects the planet from the harmful effects of solar radiation that comes from 93 million miles away!



Solar Energy to Chemical Energy

- In the process of **photosynthesis**, plants convert radiant energy from the sun into chemical energy in the form of sugar (aka glucose).



sunlight (radiant energy) + carbon dioxide (6 CO_2) + Water ($6 \text{ H}_2\text{O}$) + = Sugar ($\text{C}_6\text{H}_{12}\text{O}_6$) + Oxygen (6 O_2).