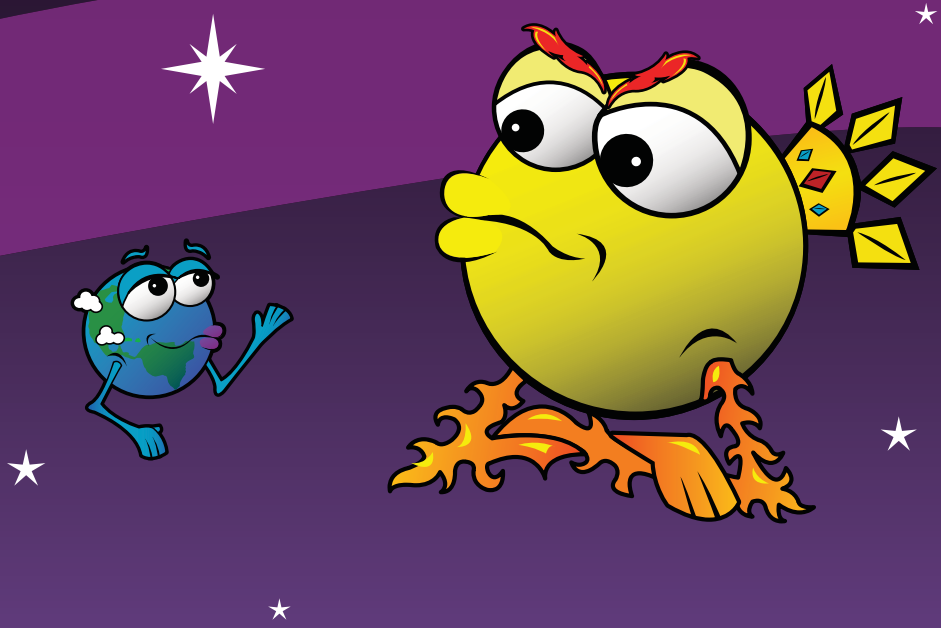
National Aeronautics and Space Administration

Super Star Meets The Plucky Planet

Or, how Earth and Sun come to mutual understanding and respect



Story by Diane K. Fisher
Illustrations by Alexander Novati

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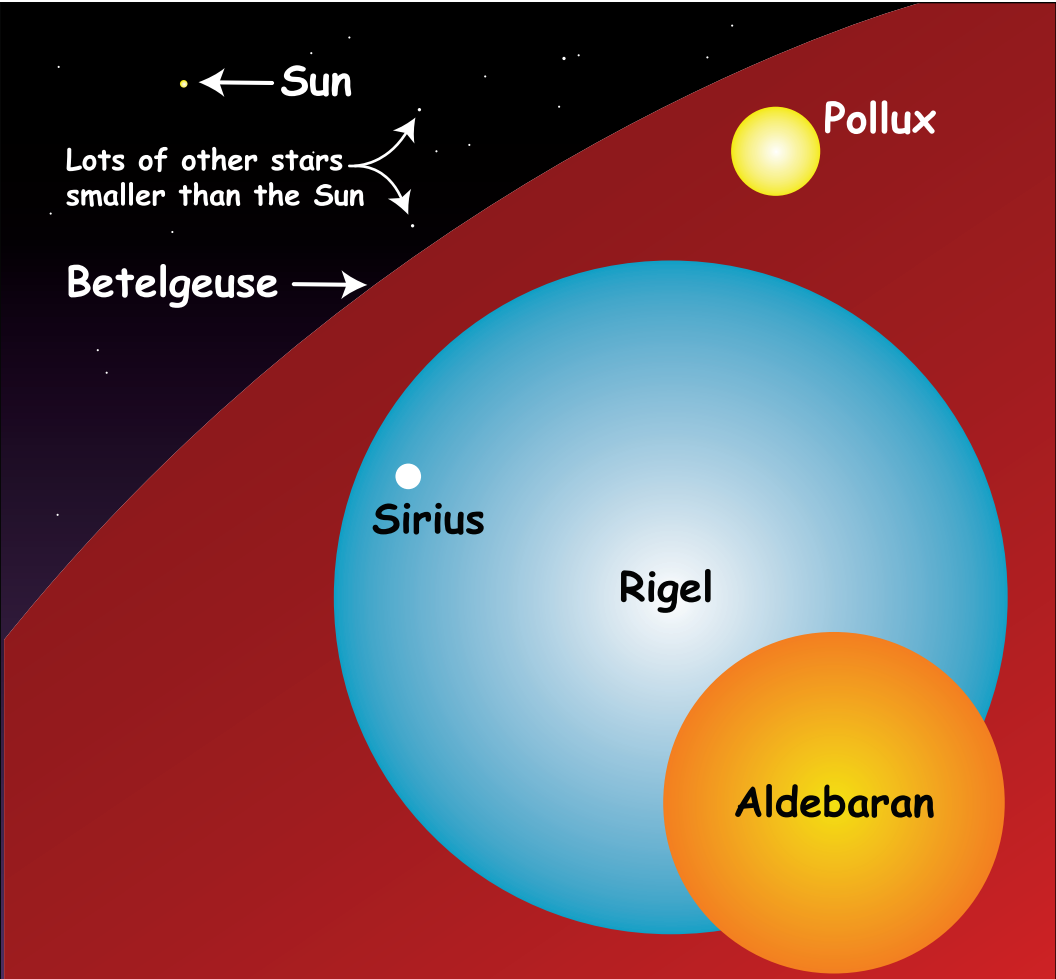
"Wake up!" crowed the Sun,
"I've arrived! I'm the star!
I'm the biggest, the hottest,
The baddest by far!

"I'm the center of all.
I call all the tunes
For asteroids and planets
And comets and moons."

"But you're only the center
Of things around here,
Your reach only as far
As your helio-sphere.

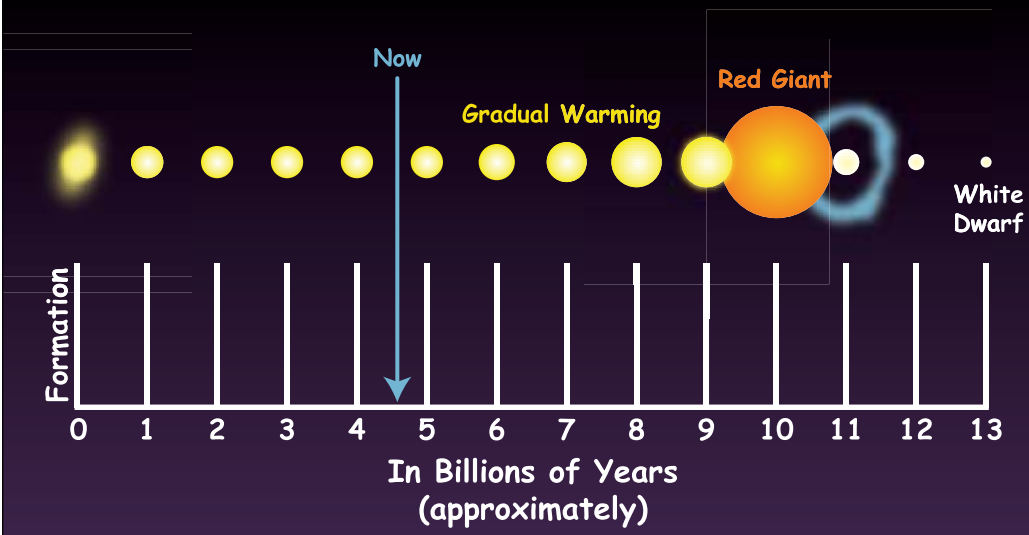
"There are billions like you,
And some much more mass-y,"
Yawned the pretty blue planet,
With a tone more than sassy.



"Harumph!" fumed the Sun.
"My size is just right.
Were I very much bigger
Your crust would ignite

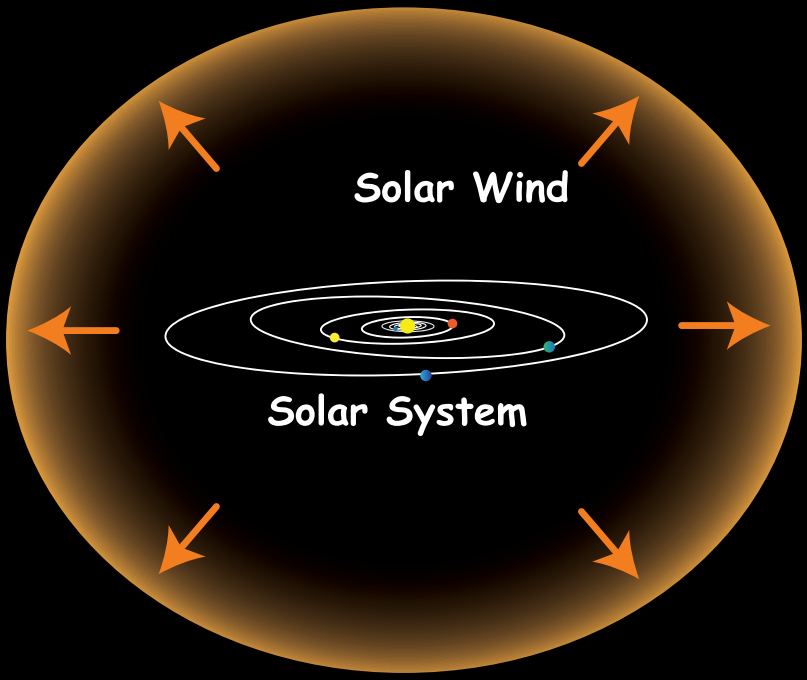
"And your ocean would dry
And your mountains would fry.
Plus, I'd burn myself out
In the blink of an eye."

Life Cycle of the Sun



"Yes, of course. Well, we're glad
That you are what you are,
The right size, the right age,
Not too close, not too far.

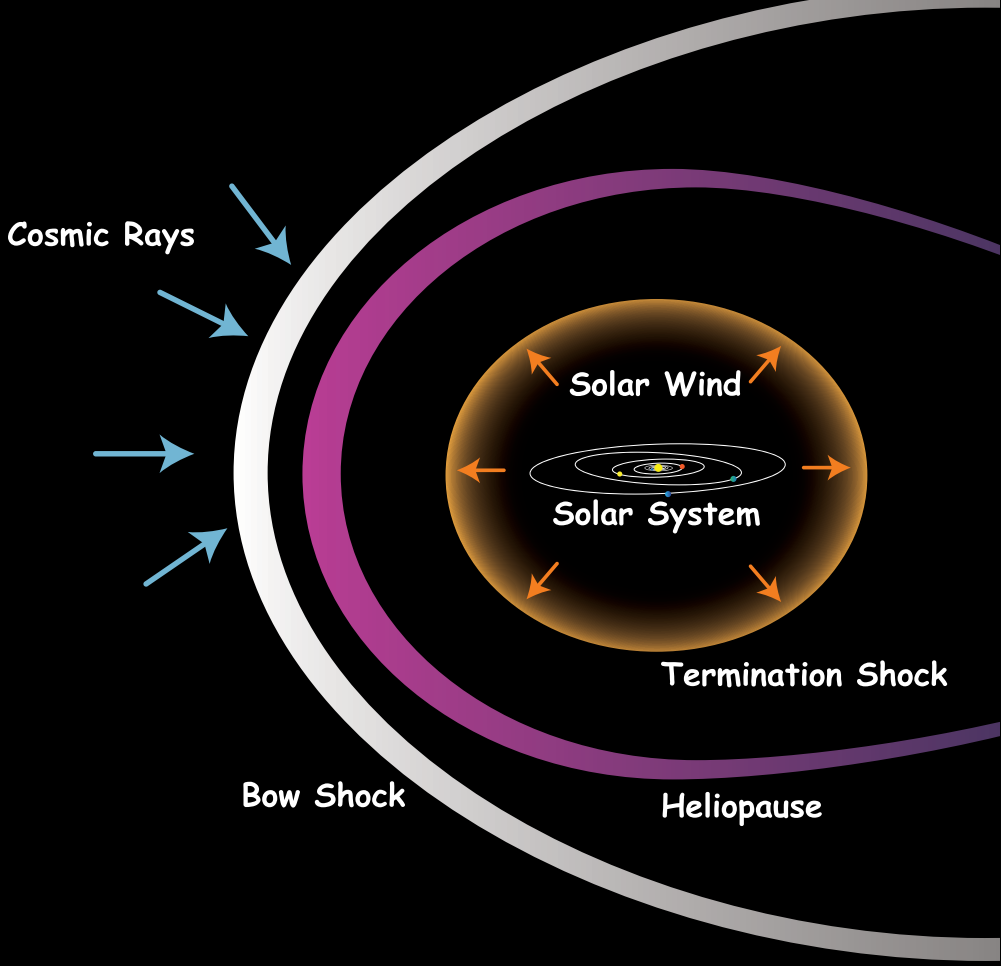
"And with four or five billion
Years left to shine,
You've got hot gas aplenty
Before you decline."



Termination Shock

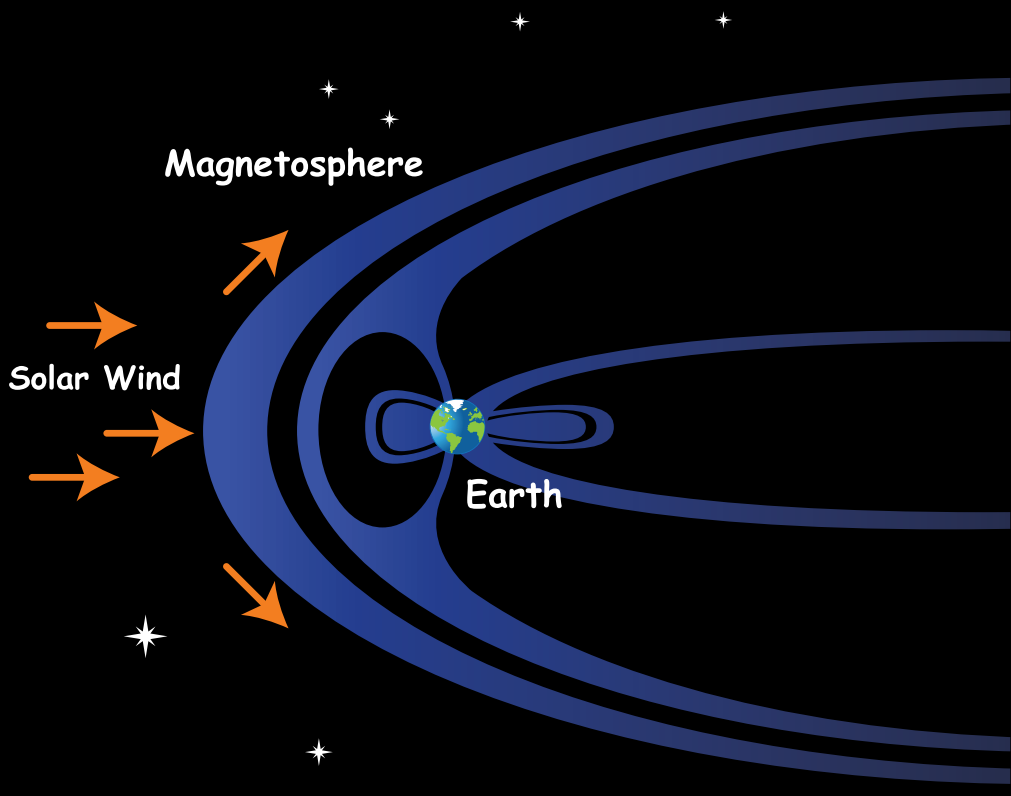
"My nuclear fires," snorts the Sun
"Are still blazing.
My hot gas gusts out
To lengths quite amazing."

He puffs on, "And my wind!
It blows way out past Mars!
And Jupiter and Neptune,
And out to the stars . . ."



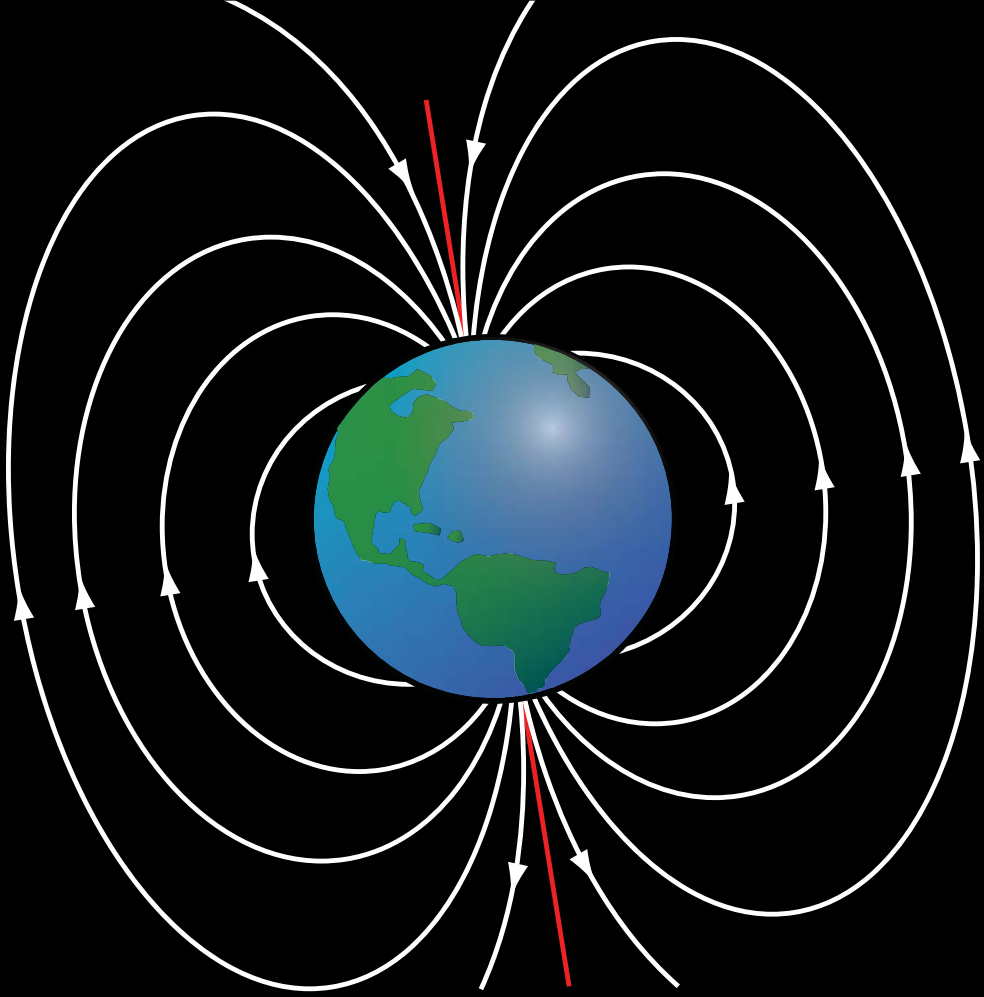
"Well, just 'til it slams
Into inter-star stuff
And runs out of oomph
And the going gets tough . . .

"But, even though I am
Right in the blast
Of all your charged atoms
And dust blowing past,



"I don't feel it much.
I've got such great protection.
I've got a magnetosphere!
It's force field perfection!"

"Well, hot dog for you!"
The Sun glared right back.
"What's the deal? How's it work?
What's so great about that?"

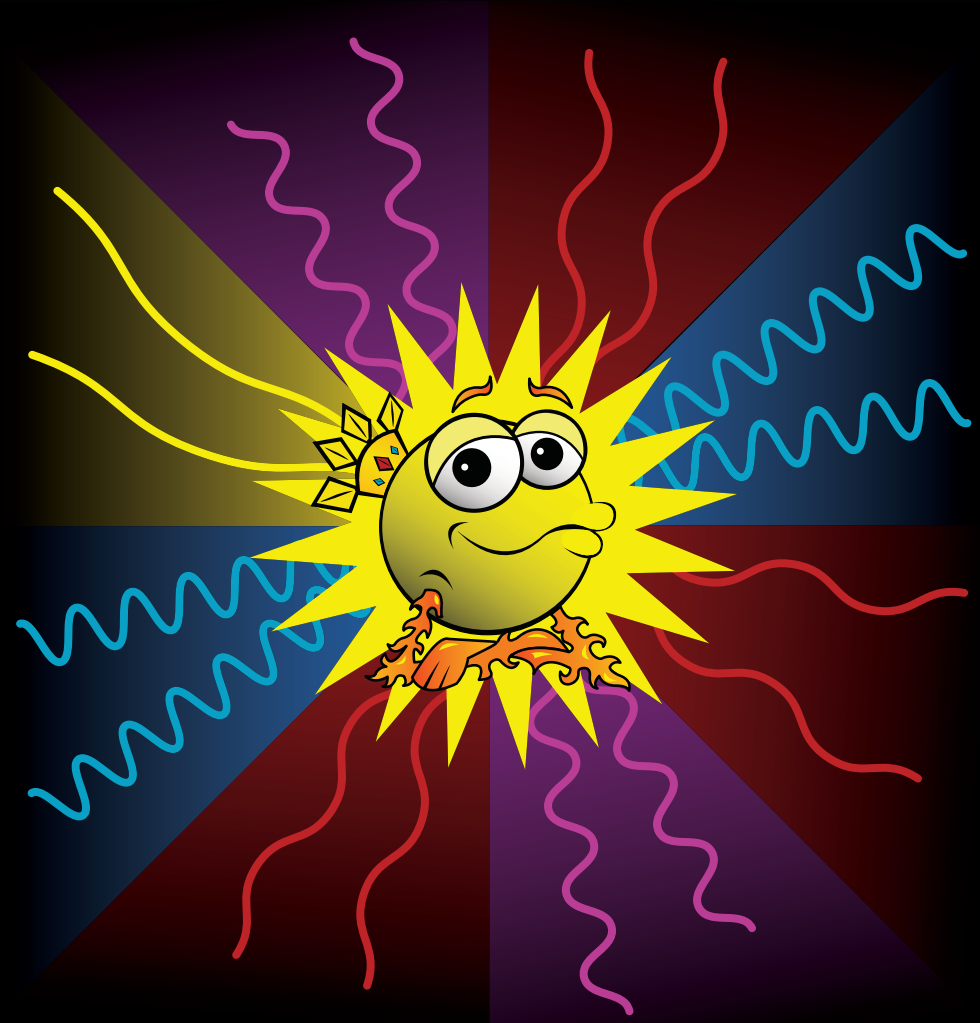


"Well, my core's spinning metal.
It's electro-magnetic.
That sets up a force field
That's quite energetic.

"It pops out my South Pole
Or close thereabouts,
Loops 'round to my North Pole
By so many routes

"That I'm wholly surrounded,
Walled off from your blast.
Your harsh wind can't get me,
No matter how fast."

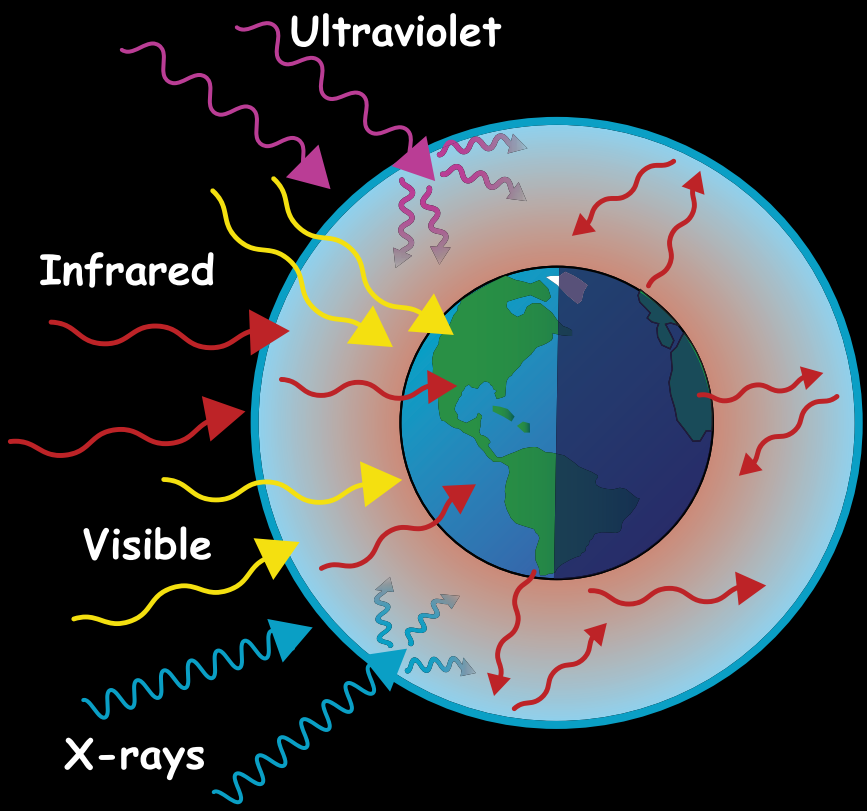
"That may be the sly trick
Of why you're so green,
Why your creatures so hearty,
So healthy and keen,"



"But what of my light rays?
My X-rays? U-V*?
I can still fry your fish,
Scorch your grass, burn your trees."

"Ha-ho! So you wish!
But I've one more defense.
My atmosphere keeps out
Your rays most intense.

*UV stands for ultraviolet

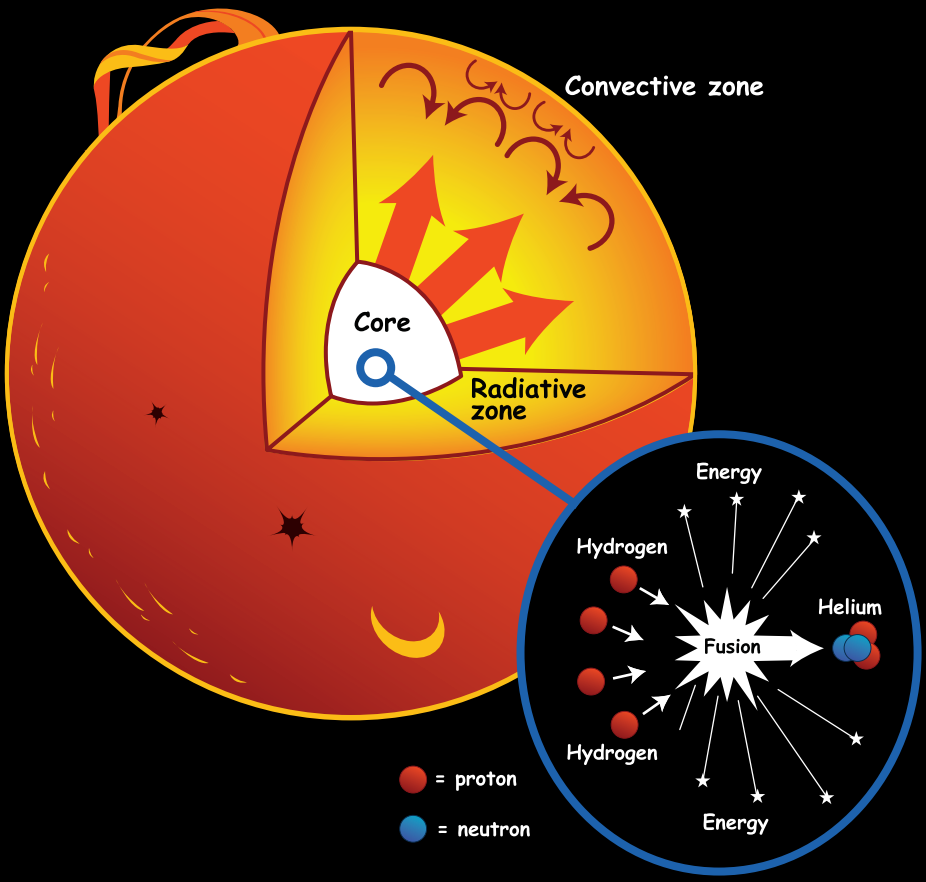


"It soaks up your X-rays,
Ultraviolet? It scatters.
What shines through my air
Is the light that most matters.

"Your infrared light
Keeps me cozy and warm.
With your visible light,
I am one big, green farm.

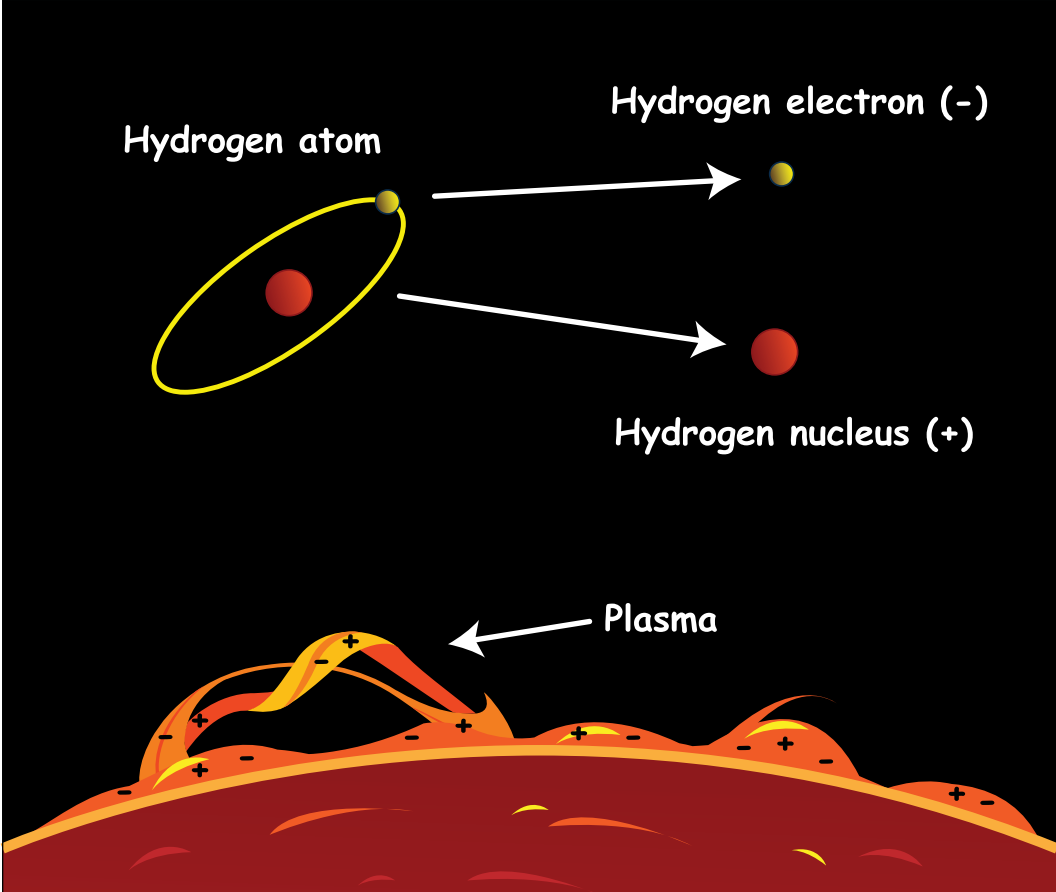
"To say nothing of how,
Without you, I'd be blind.
So I thank you, dear Sun,
For your stardom, so kind."

"Not so fast!" flared the Sun.
"I'm not done with you yet.
I don't want to be kind.
I can still be a threat!



"Don't forget, tiny Earth,
It's tough to be me!
I've the worst case of heart burn
You ever will see.

"I've nuclear bombs
Going off in my core.
Near my surface, electrons
Are stripped off. It's war!

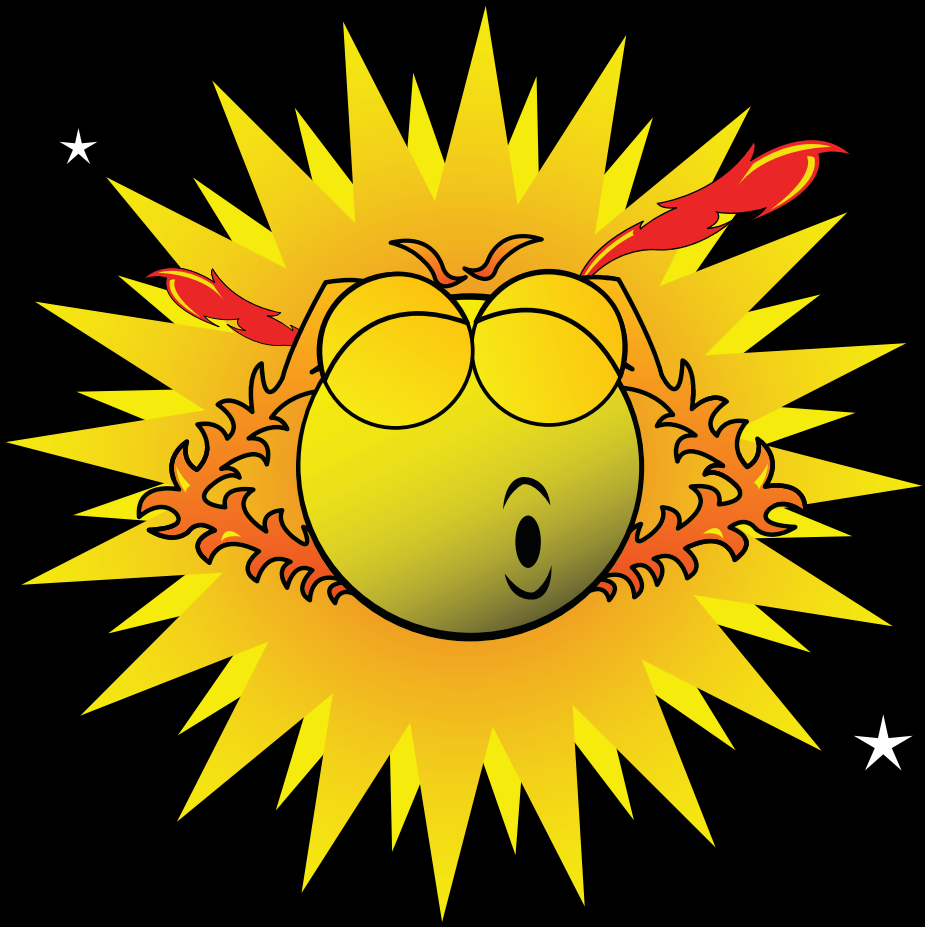


"These parts of my atoms
Get charged from this split,
They're positive and negative.
They've all come un-knit!

"It's hot plasma they form,
A most wicked soup.
It's electric, magnetic,
And stretched out in loops.

"My nuclear insides
Make energy too.
That light that you love
To my surface breaks through.

"At times the magnetic loops
Twist and get tight.
They jam up the surface.
They cause quite a plight.

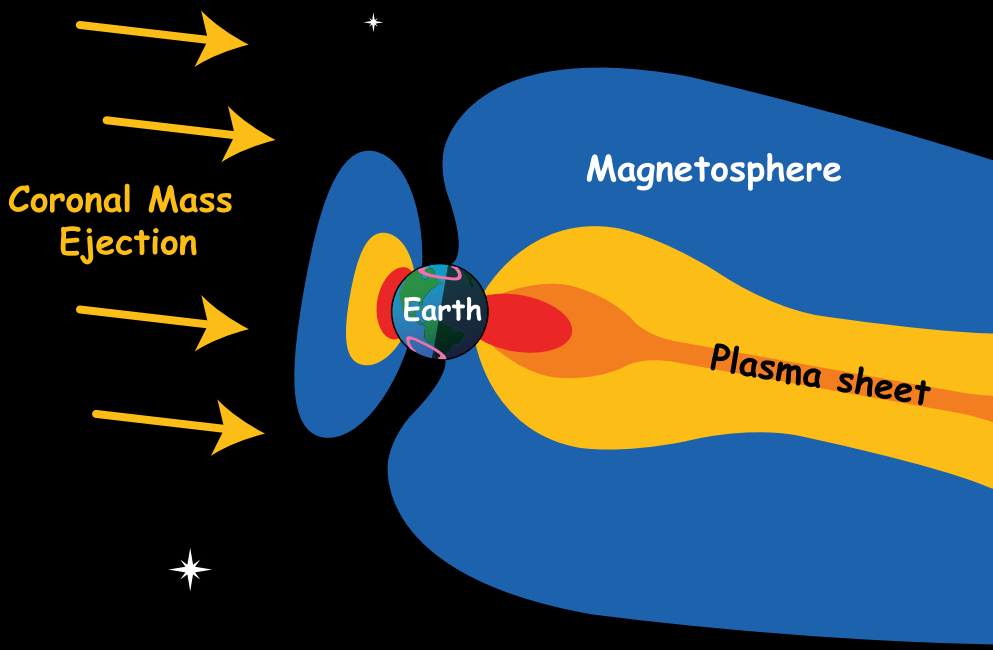


"The energy swells.
The tension keeps growing!
And my nuclear factory
Shows no sign of slowing!

"More plasma is boiling
And building, but lo!
It just can't get through.
THIS THING'S GONNA BLOW!

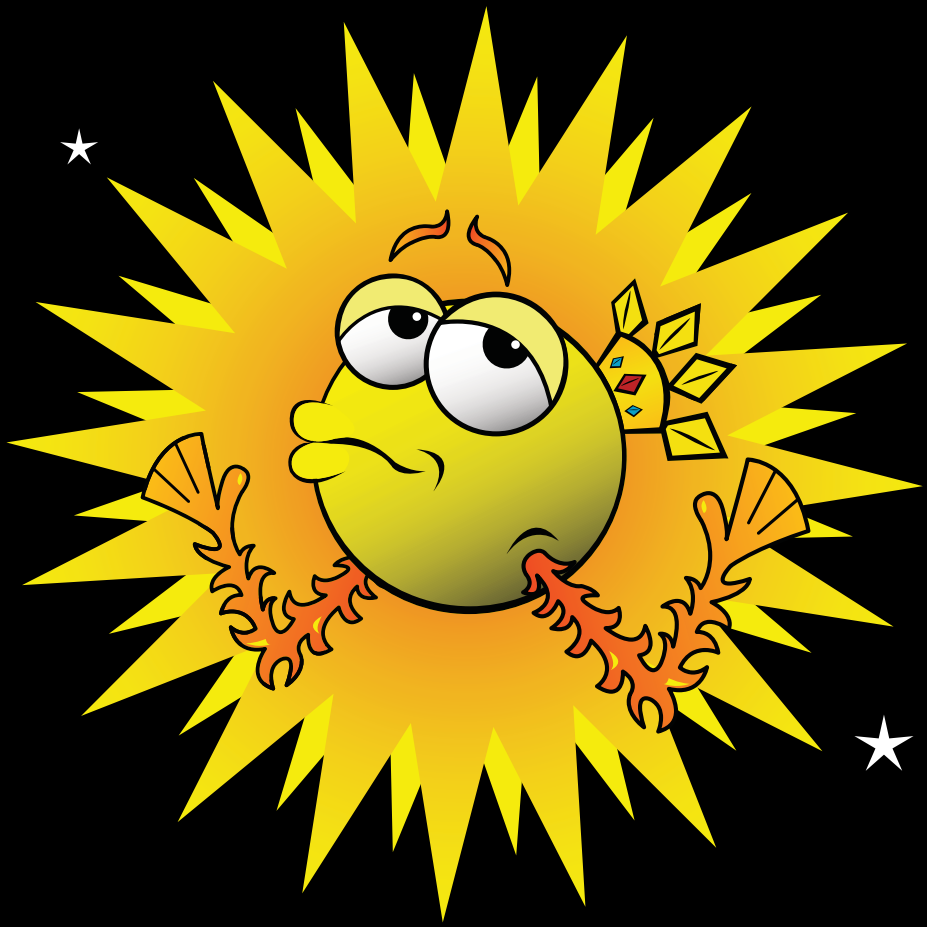
"Like stretched rubber bands,
The magnetic loops snap!
The plasma blasts out,
With a kick in the pants

"From the backlog of energy
Right on its tail.
Its speed far exceeds
A mere solar wind gale."



"Though you're fierce, I don't care.
Should I be overtaken,
My trusty magnetosphere
Will still save my bacon—

"Though flatter and longer
My shield will stretch out,
And your electrical dust
Make my Poles glow, no doubt."

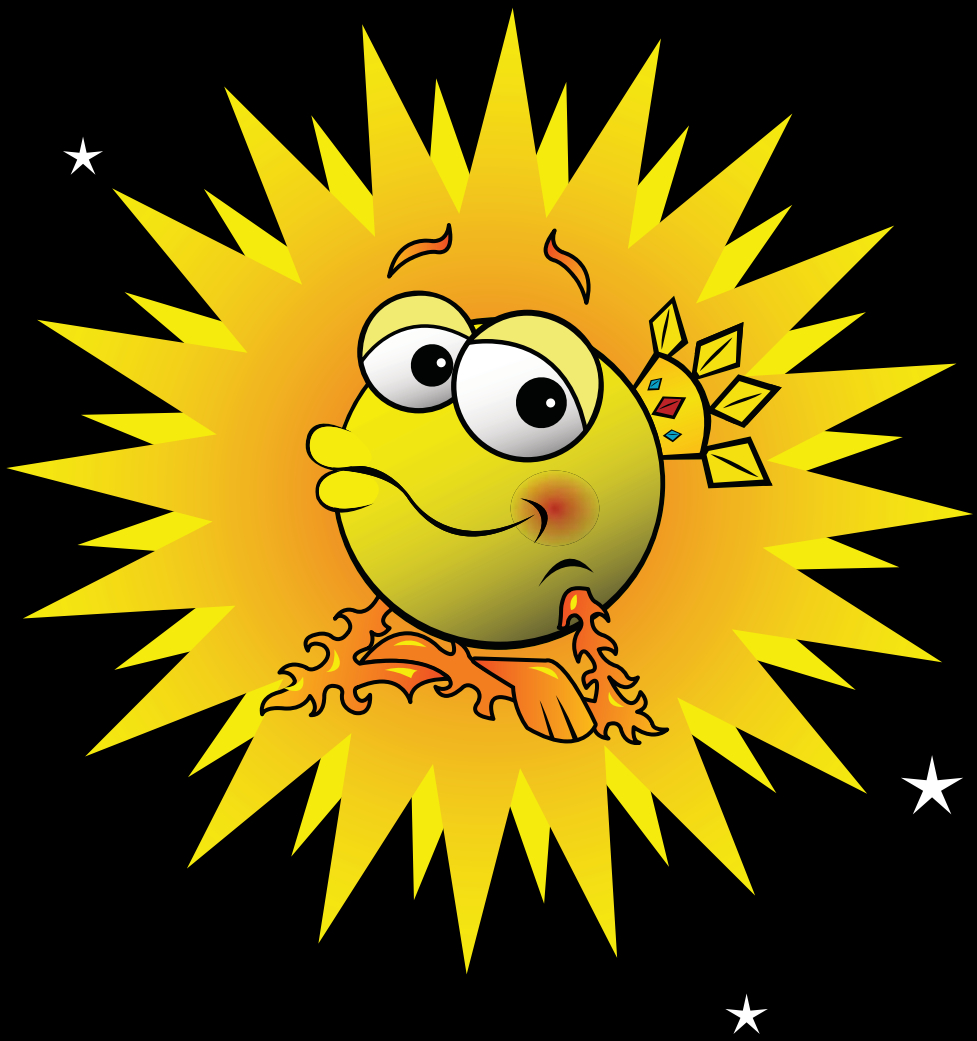


"Oh, enough! I give up!
You're amazingly tough.
As a place for the living,
You've got the right stuff.

"But please give me my due.
I'm a tireless sun.
I've worked hard all my life
And I'm not nearly done."

"You're NOT just a blowhard.
It IS tough to be you.
It's good that we talked.
I respect you anew!

"I know I am special.
For Life, I'm a dream.
But you must share the credit.
We make a great team!"



("Harrumph," sputtered the Sun, blushing.)

THE END

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