

Space Weather Today

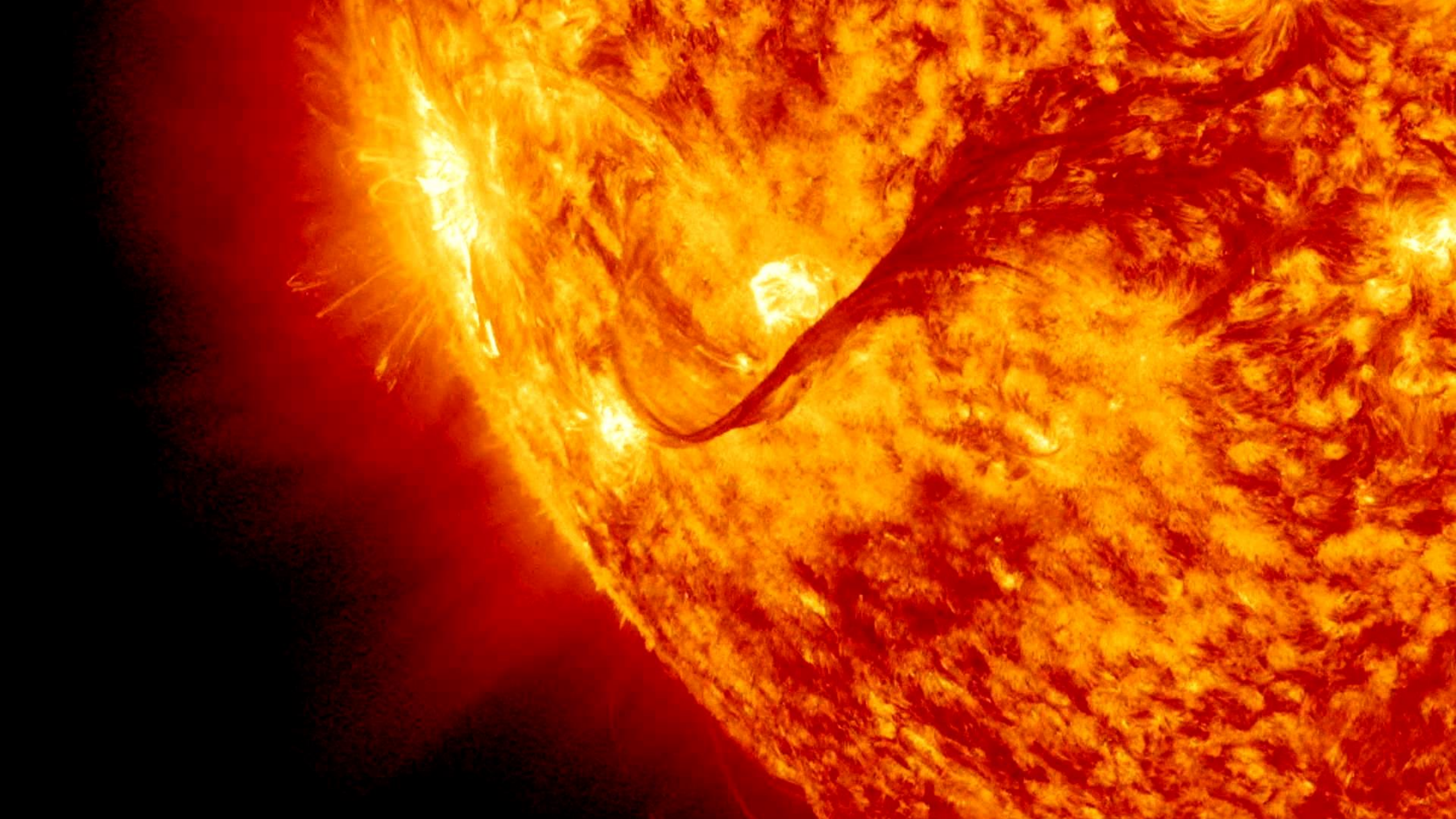
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Eruptions start at the Sun

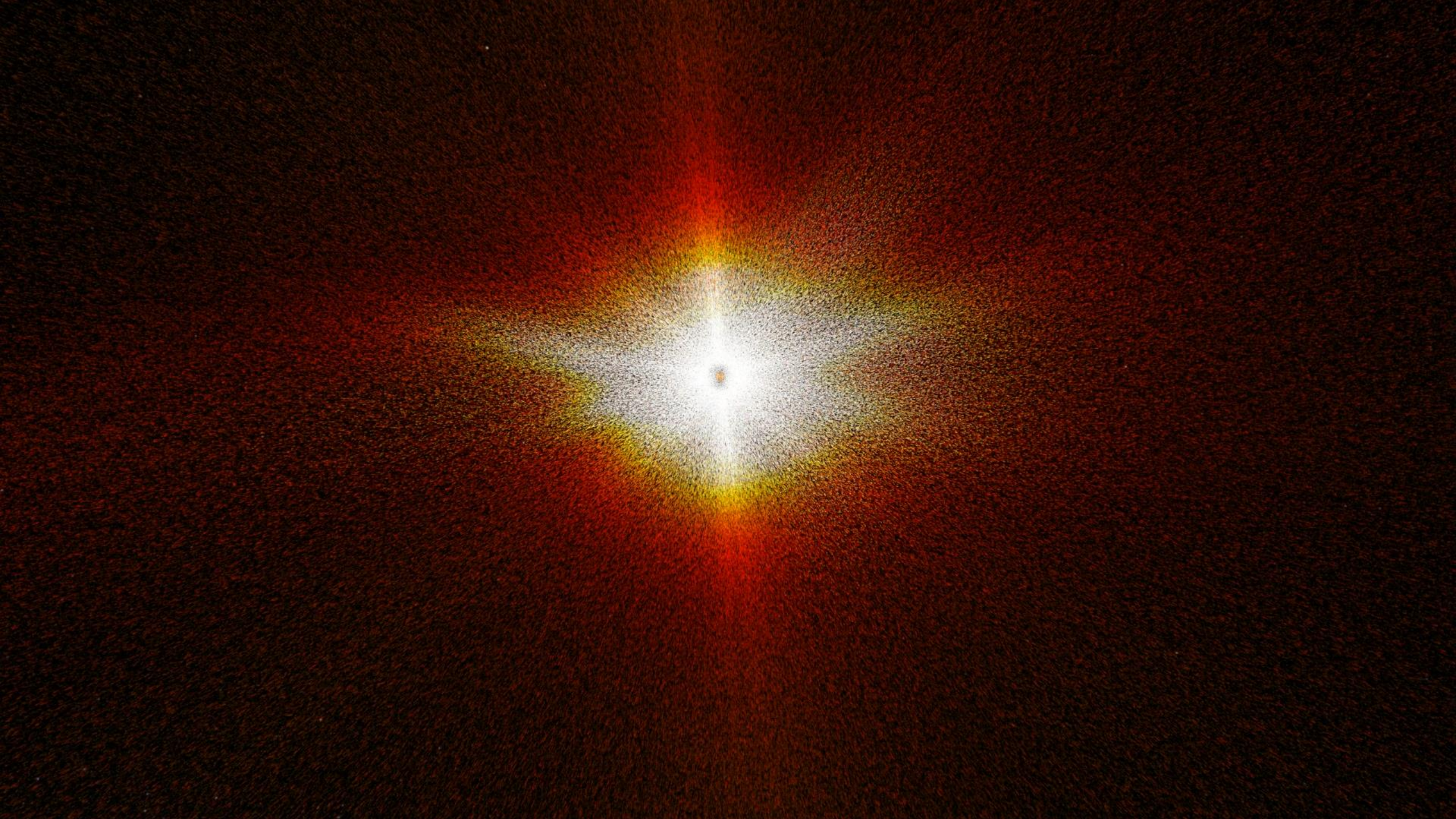
Billions of tons of sun stuff

Traveling at millions of mile per hour



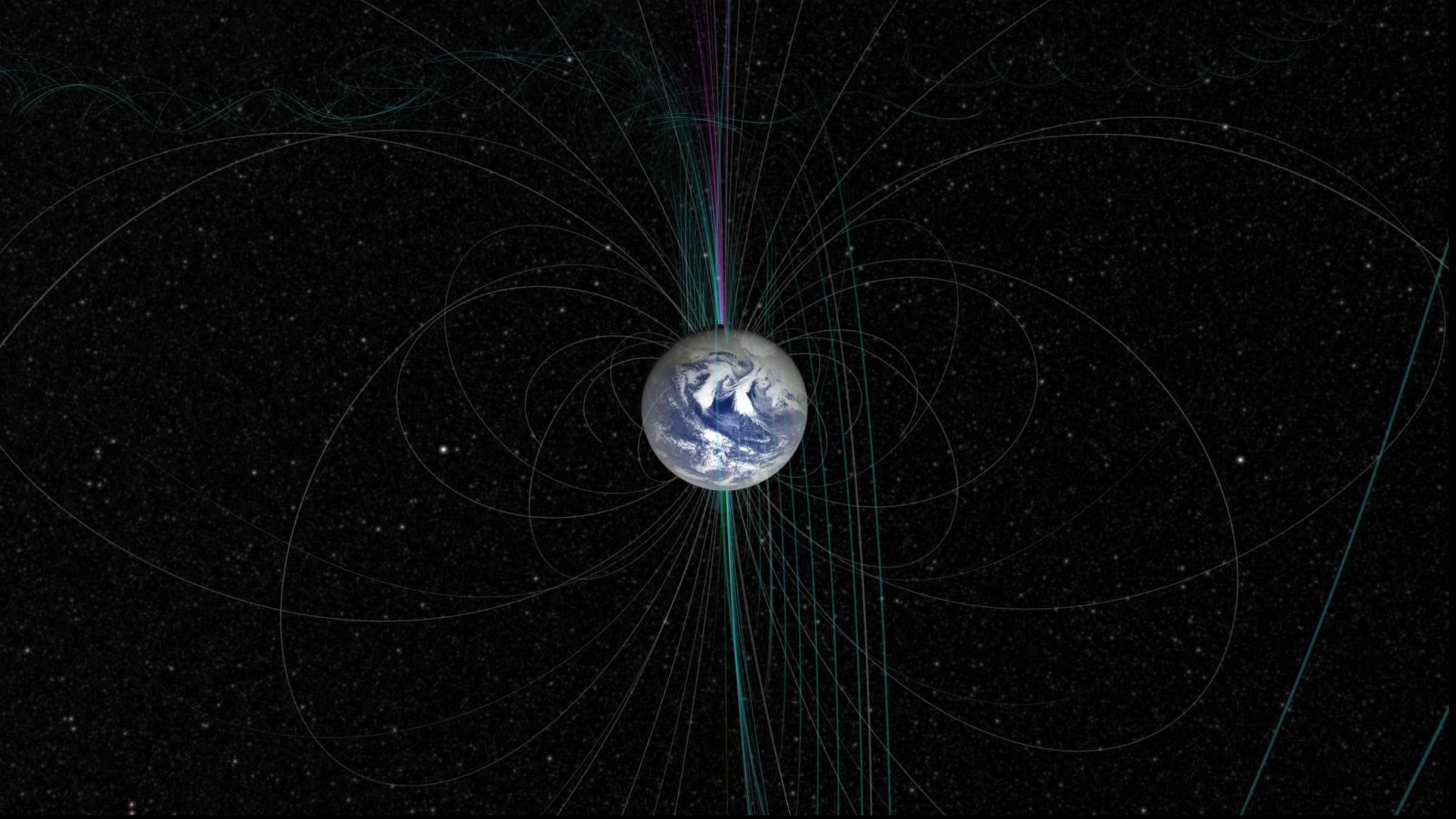
They quickly expand

Interacting with everything
in the solar system



Our planet is rattled.

The results can be
beautiful.



But most results,

Disrupt our society!

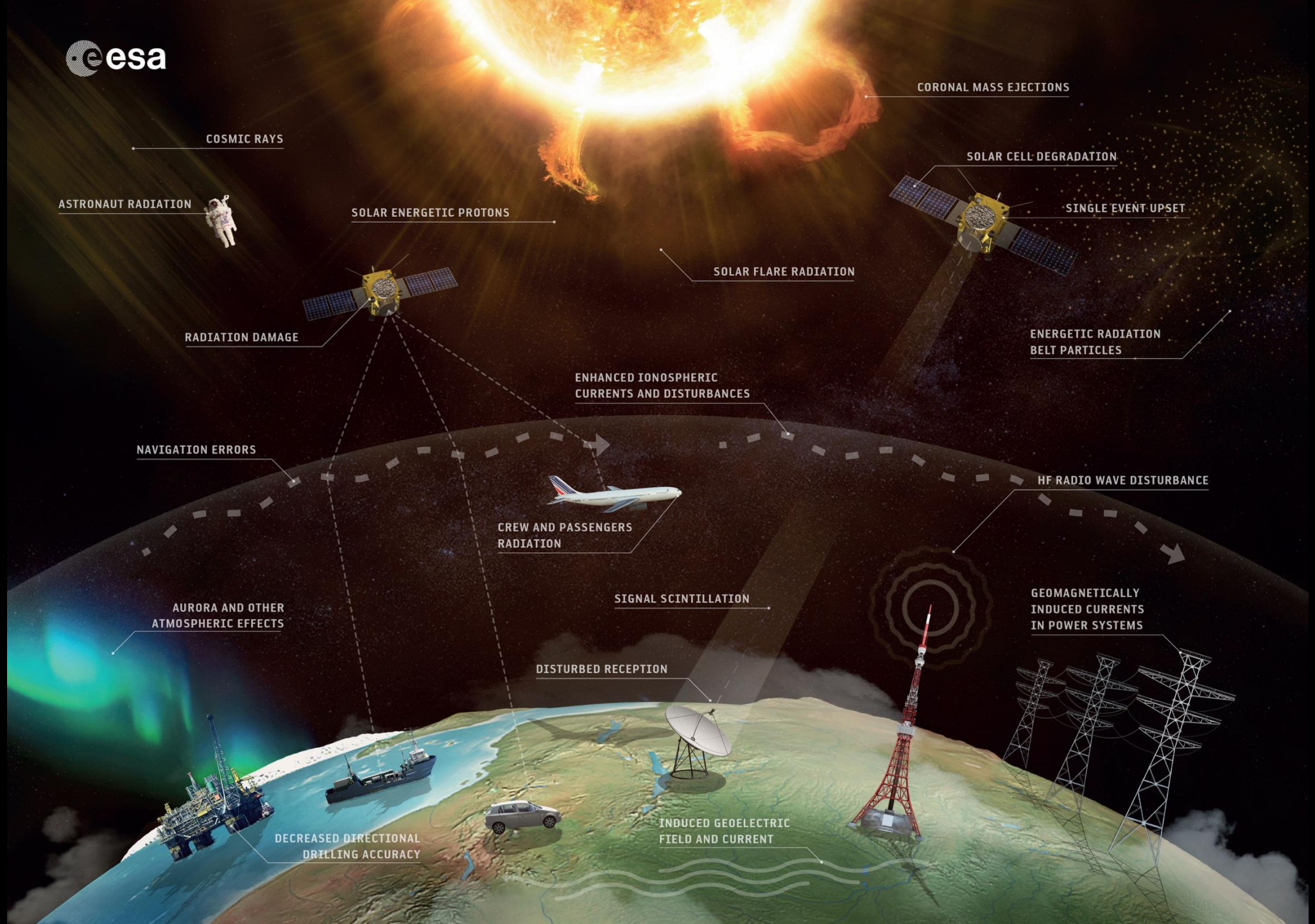


Disrupt GPS, radio, internet, aviation,
power grids

Endanger astronauts and space assets

Drive billion-dollar losses from
infrastructure failures





COSMIC RAYS

ASTRONAUT RADIATION

SOLAR ENERGETIC PROTONS

RADIATION DAMAGE

SOLAR FLARE RADIATION

CORONAL MASS EJECTIONS

SOLAR CELL DEGRADATION

SINGLE EVENT UPSET

ENERGETIC RADIATION BELT PARTICLES

ENHANCED IONOSPHERIC CURRENTS AND DISTURBANCES

NAVIGATION ERRORS

CREW AND PASSENGERS RADIATION

HF RADIO WAVE DISTURBANCE

AURORA AND OTHER ATMOSPHERIC EFFECTS

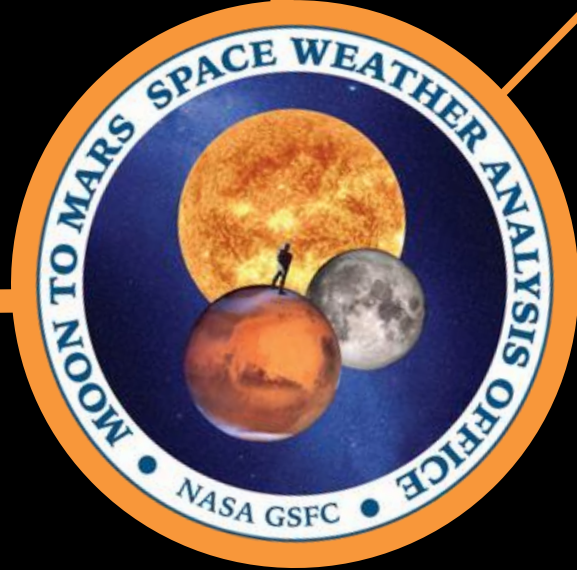
SIGNAL SCINTILLATION

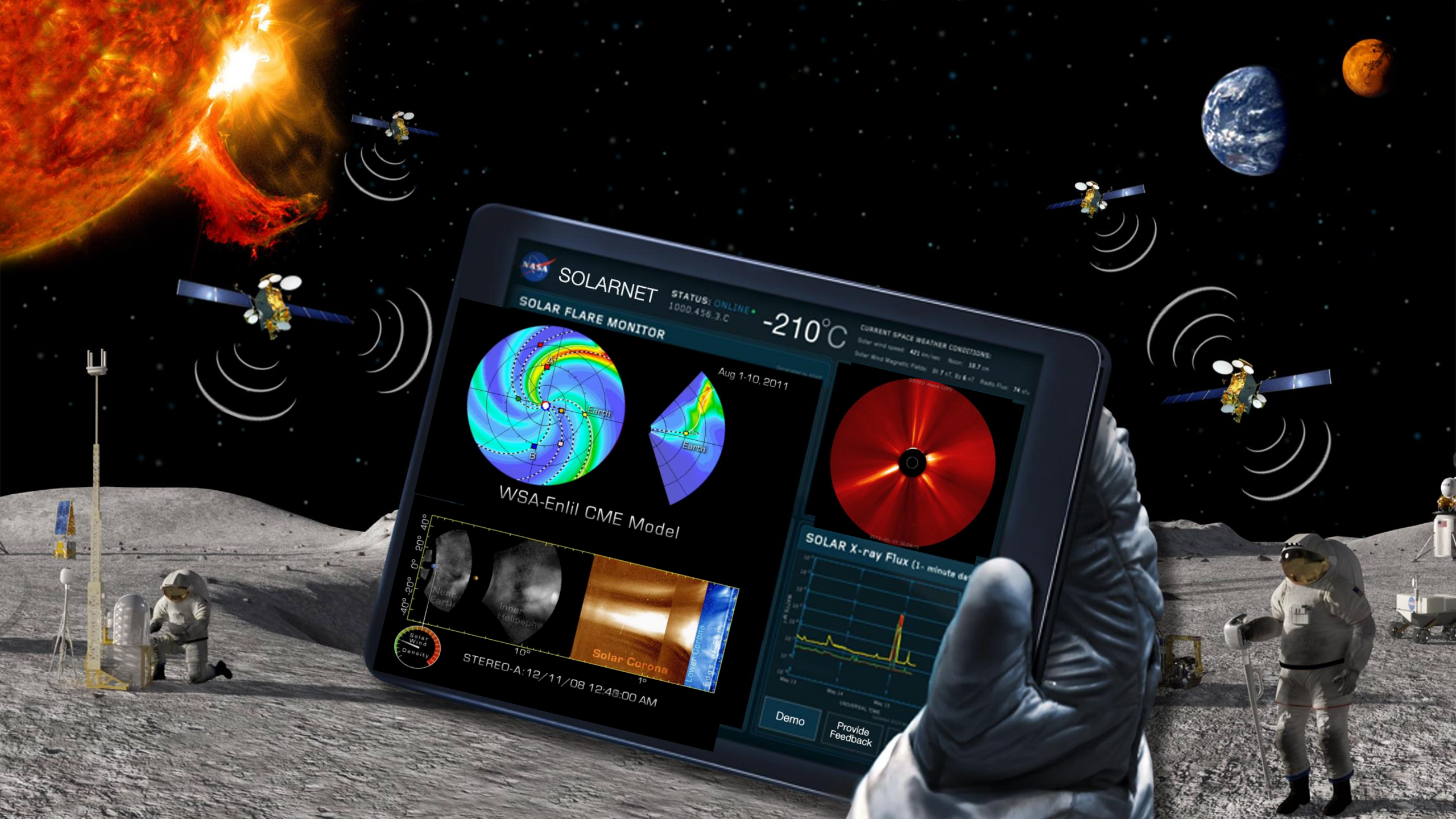
GEOMAGNETICALLY INDUCED CURRENTS IN POWER SYSTEMS

DECREASED DIRECTIONAL DRILLING ACCURACY

DISTURBED RECEPTION

INDUCED GEOELECTRIC FIELD AND CURRENT





NASA SOLARNET STATUS: ONLINE 1000.456.3.C **-210°C** CURRENT SPACE WEATHER CONDITIONS:
Solar wind speed: 422 km/sec Alt: 18.7 cm
Solar Wind Magnetic Field: Bz 7 nT, By 6 nT Radio Flux: 74 sf/s

SOLAR FLARE MONITOR Aug 1-10, 2011

WSA-Enlil CME Model

SOLAR X-ray Flux (1- minute data)

STEREO-A: 12/11/08 12:48:00 AM

Demo Provide Feedback

The tablet screen displays several data visualizations: a large solar flare on the left, a central CME model with a color-coded path, a red circular solar corona image on the right, and a line graph of solar X-ray flux at the bottom right. A 'Solar Wind Density' gauge is visible in the bottom left corner of the screen.



Solar Nat Flare Monitor

Time Report To

-210°C

Chilling



2113C

2113C

Save

Ground Level Radiation

Solar Level Radiation



50%

Ground Level Radiation

Solar Level Radiation



25211C

Solar X-ray Flux

Solar X-ray Flux



Solar X-ray Flux

Solar X-ray Flux

2740%

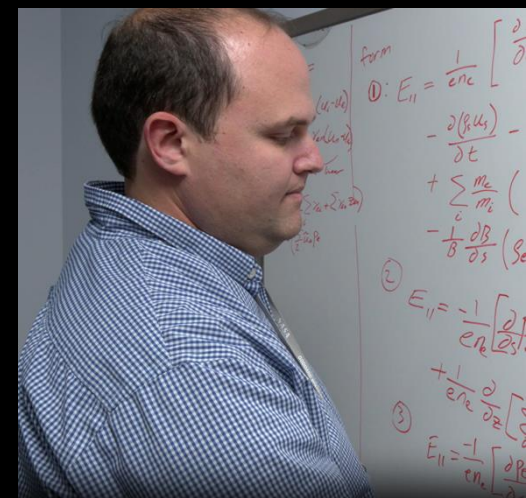
111.7

607

50%



NASA Heliophysics is focused on
high priority
science investigations and technologies
relevant to planned missions.



NASA Goddard Heliophysics enables
America's line of defense against solar
storms.

Its science and technology underpin national
security, safeguards infrastructure,
and drives safe space exploration to Moon
and Mars missions.

