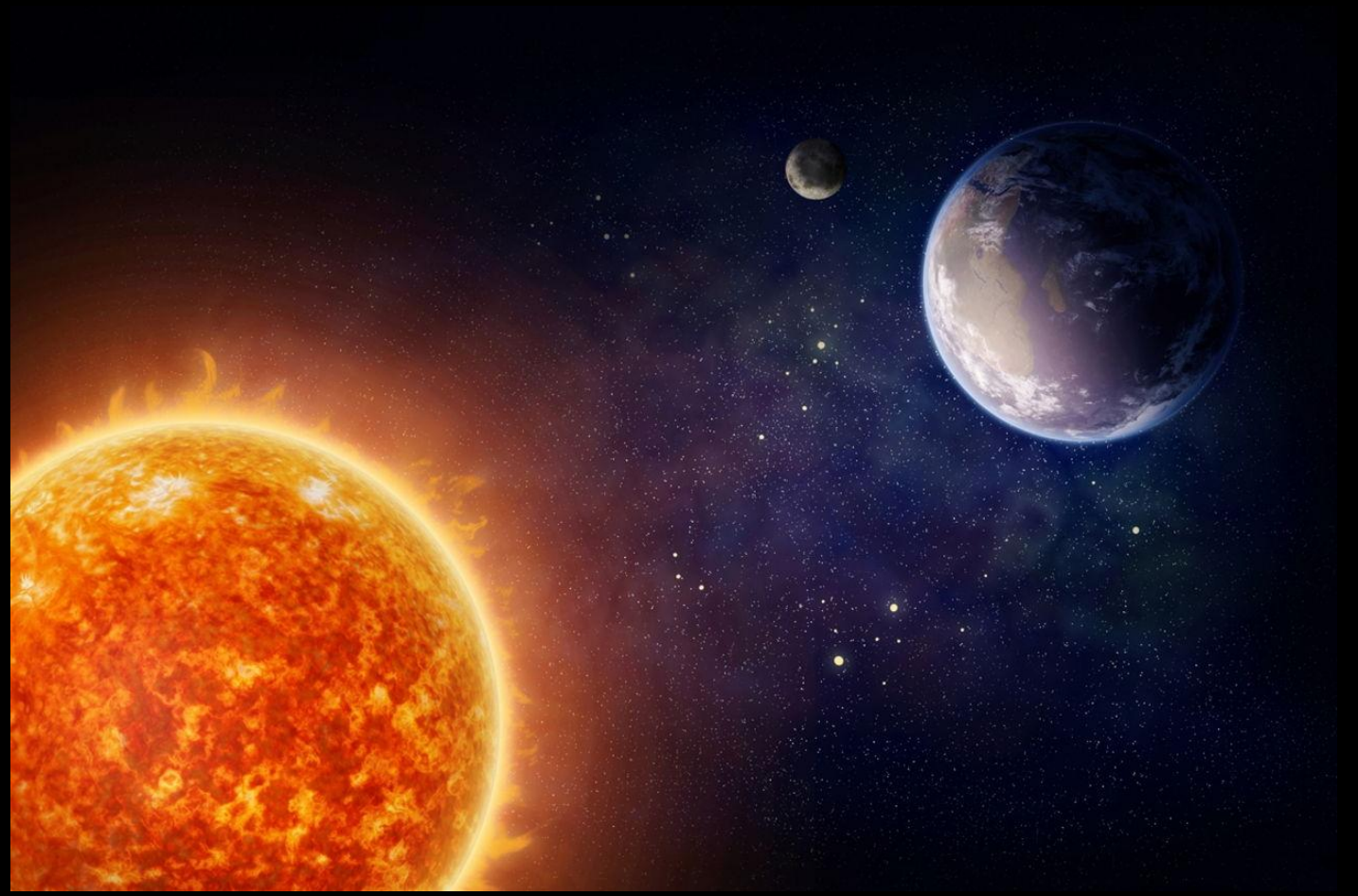
SPACE WEATHER

Samuel Amrich

WHAT IS Vesmírne počasie?

Vesmírne počasie

- Skúmanie stavu Heliosféry
- Zaoberá sa interakciou Slnka, slnečného vetra, magnetosféry a atmosféry

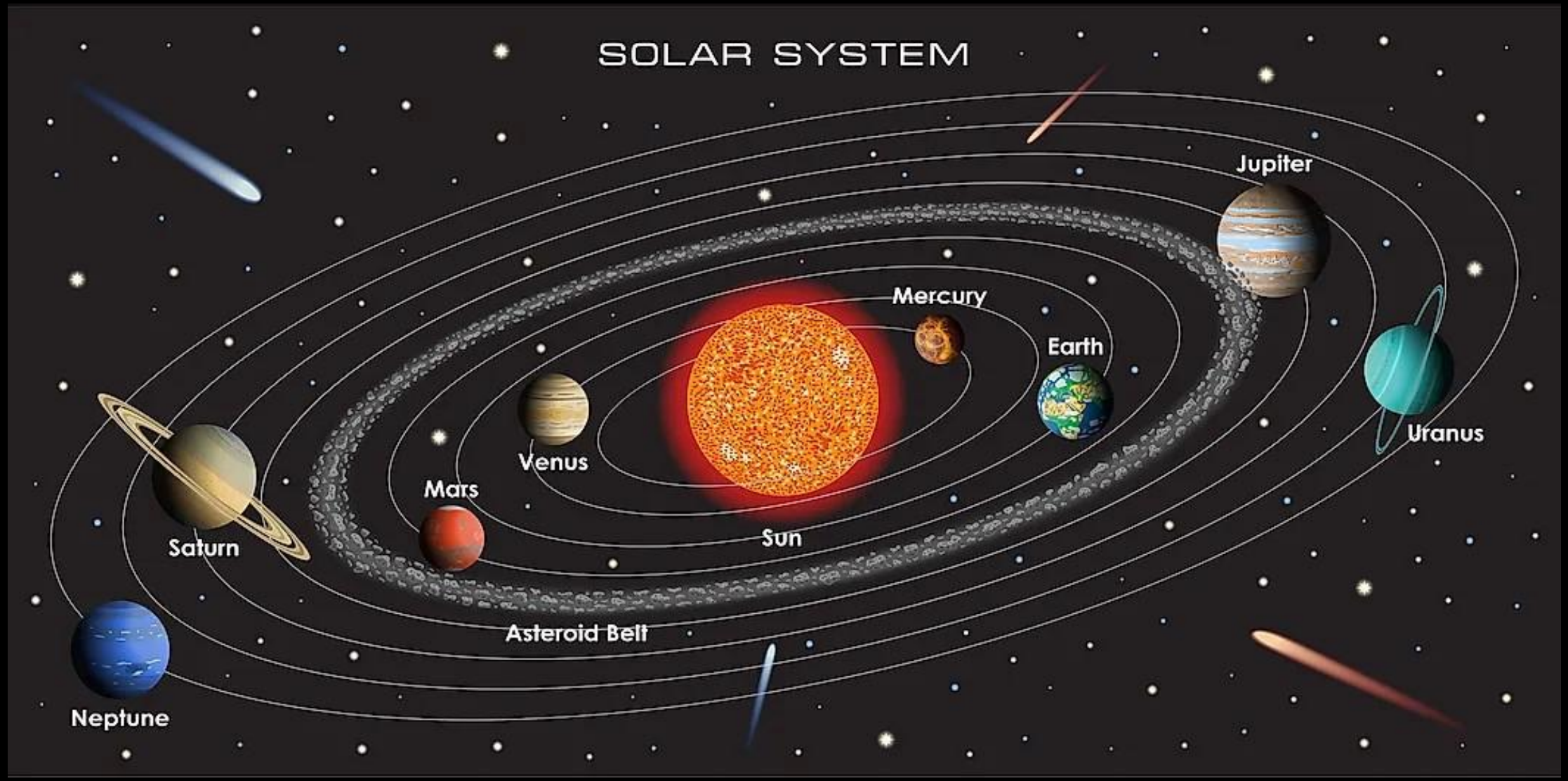


Udalosti vesmírneho počasia - SWE

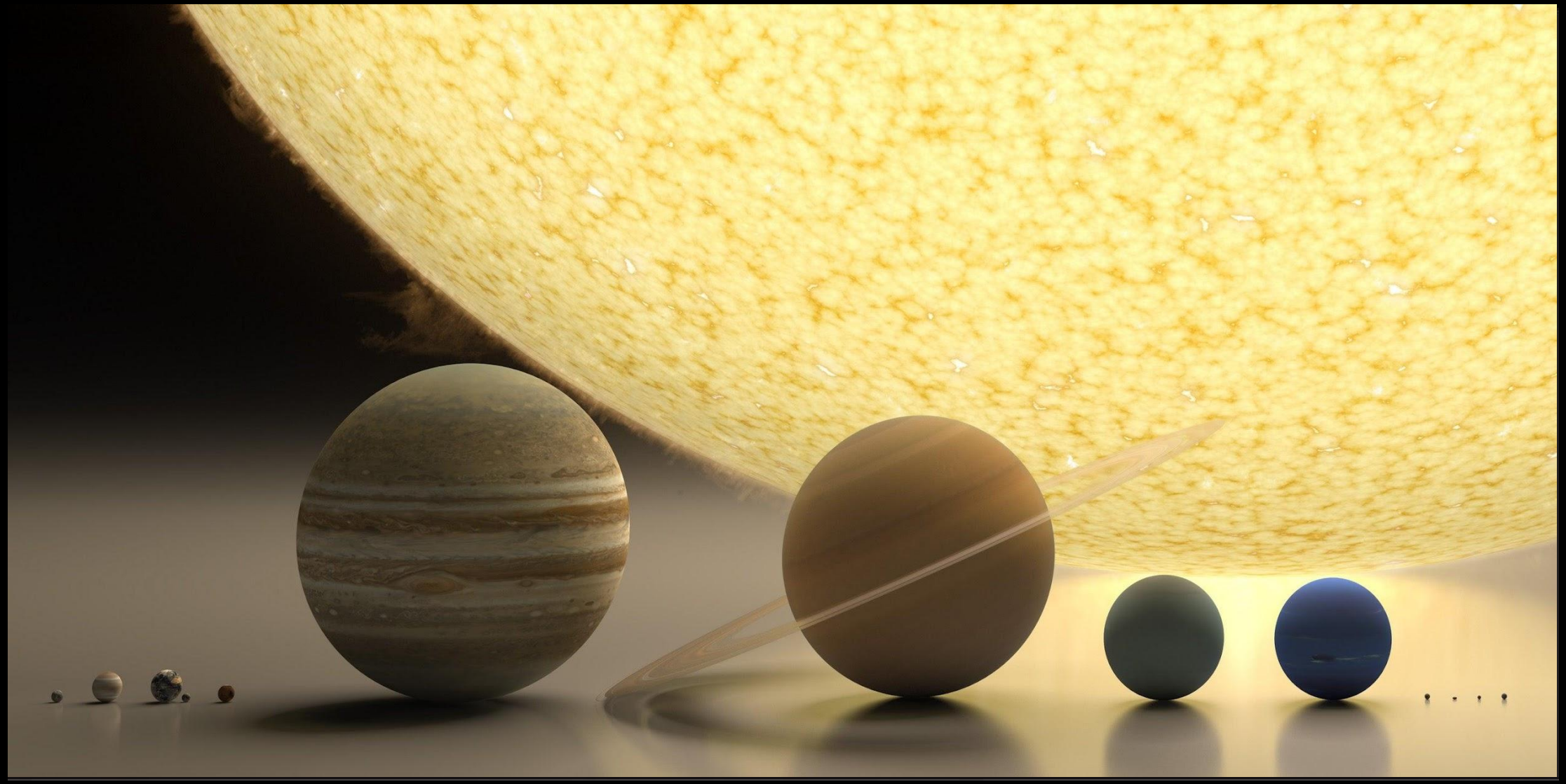
- Náhle poruchy stavu
- Typicky vyvolané javmi na Slnku
- Majú za následok:
  - Ohrozenie elektroniky
  - Ohrozenie zdravia

SLNKO

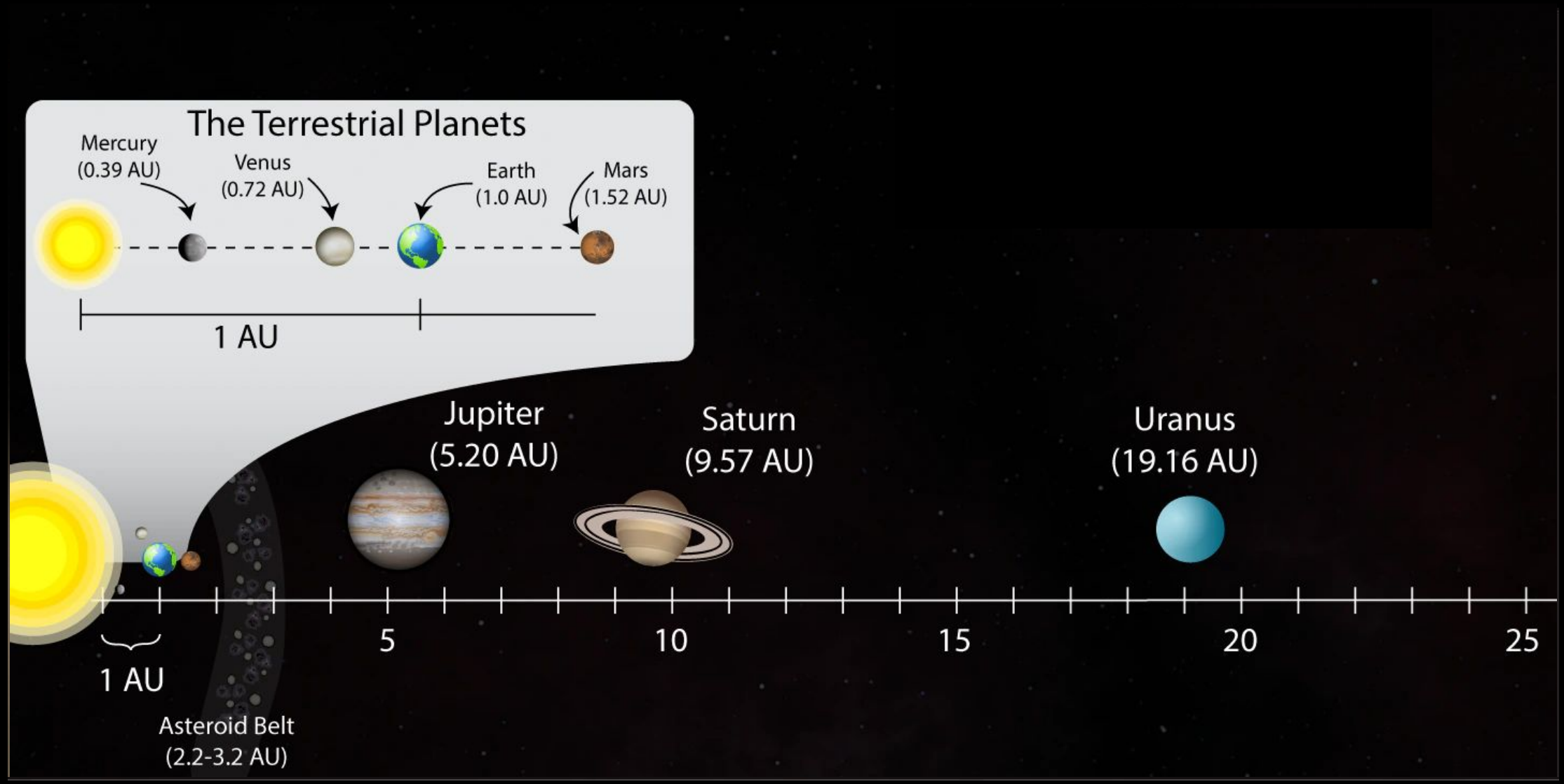
Mierky


SOLAR SYSTEM
Jupiter
Mercury
Earth
Uranus
Venus
Mars
Saturn
Sun
Asteroid Belt
Neptune

Mierky

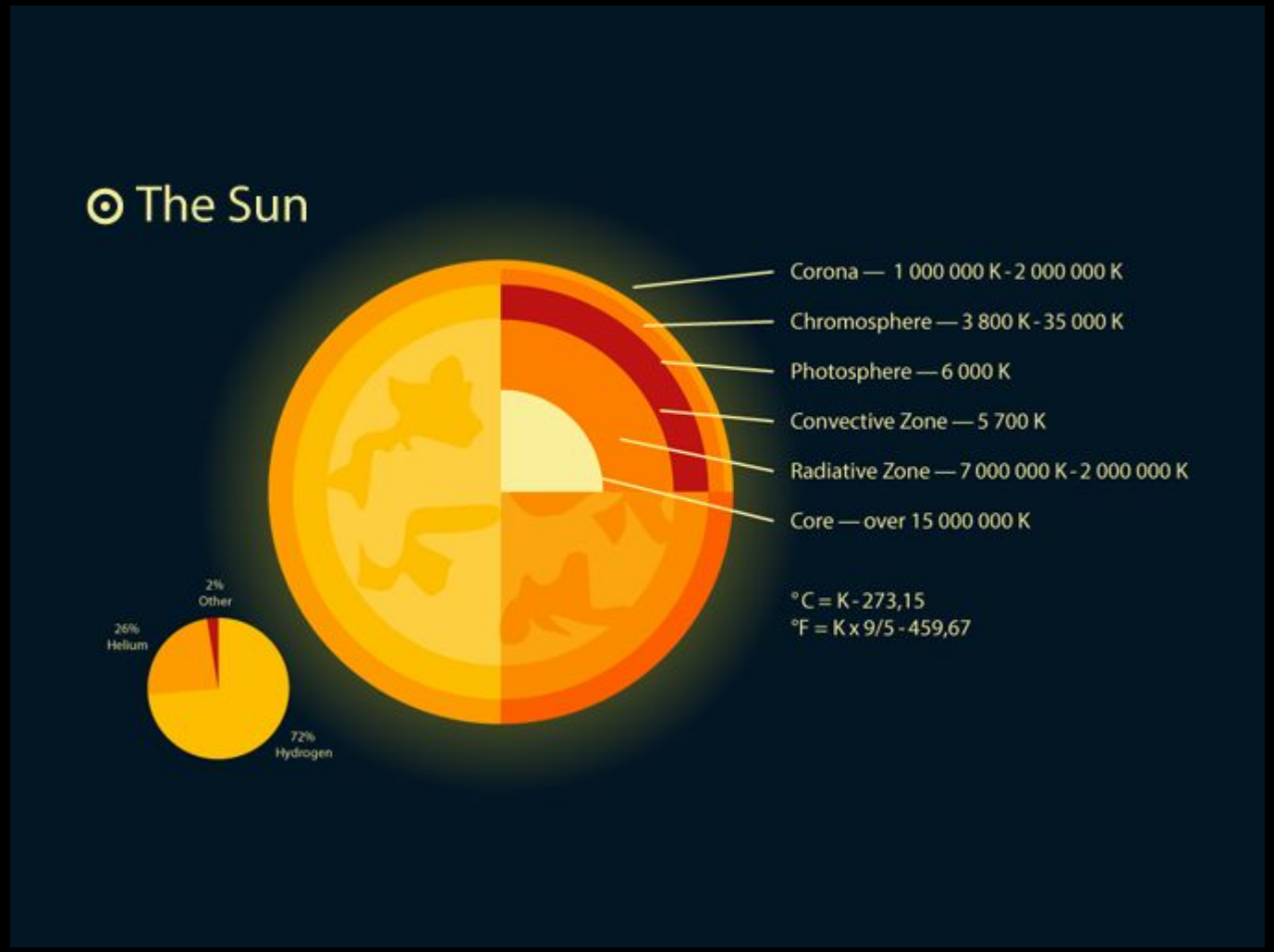


Mierky


The Terrestrial Planets
Mercury
(0.39 AU)
Venus
(0.72 AU)
Earth
(1.0 AU)
Mars
(1.52 AU)
1 AU
Jupiter
(5.20 AU)
Saturn
(9.57 AU)
Uranus
(19.16 AU)
1 AU
5
10
15
20
25
Asteroid Belt
(2.2-3.2 AU)

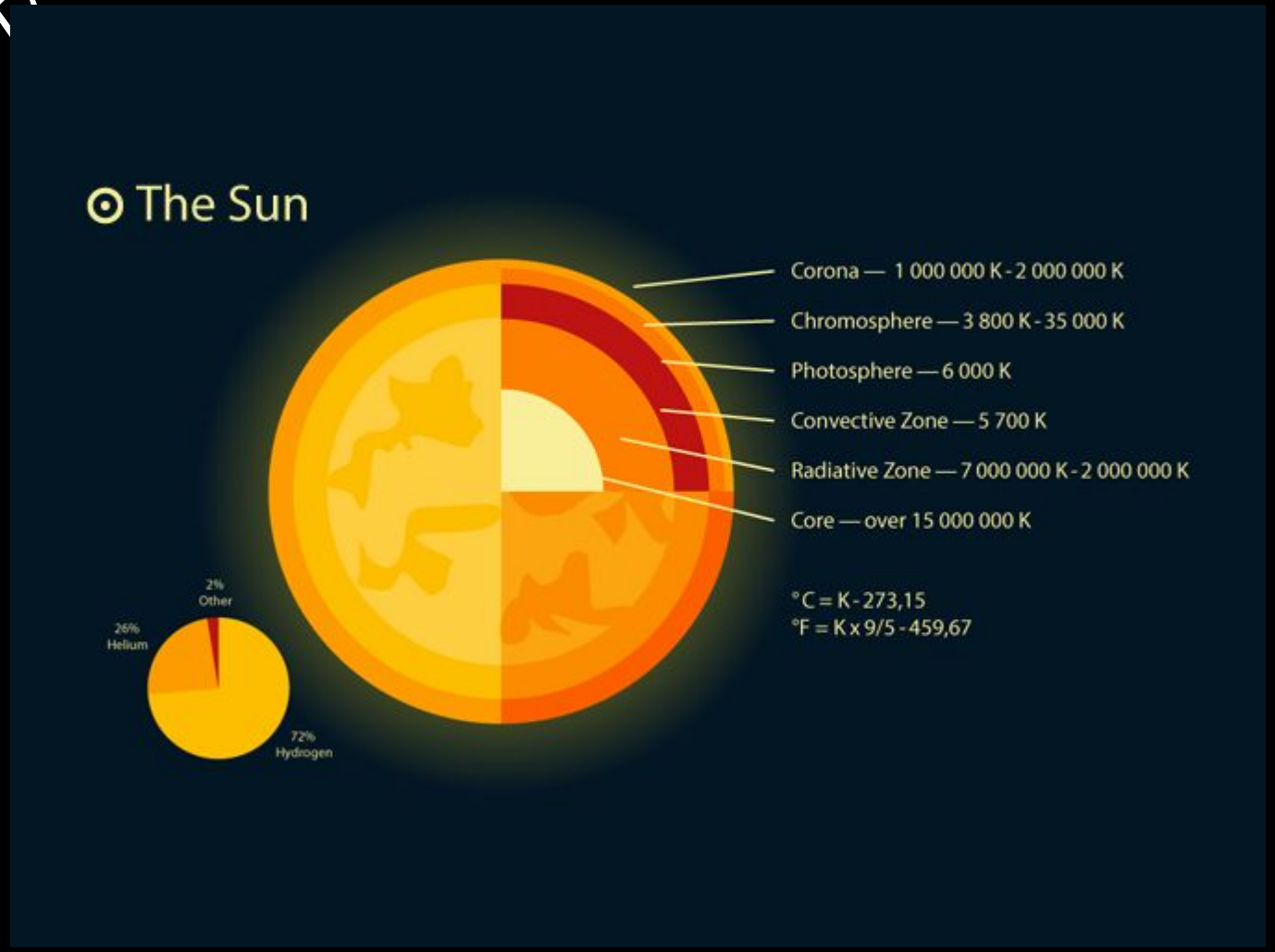
Vnútro Slnka

- Jadro – Fúzia
- Radiačná vrstva
- Konvektívna vrstva
- Atmosféra



Atmosféra Slnka

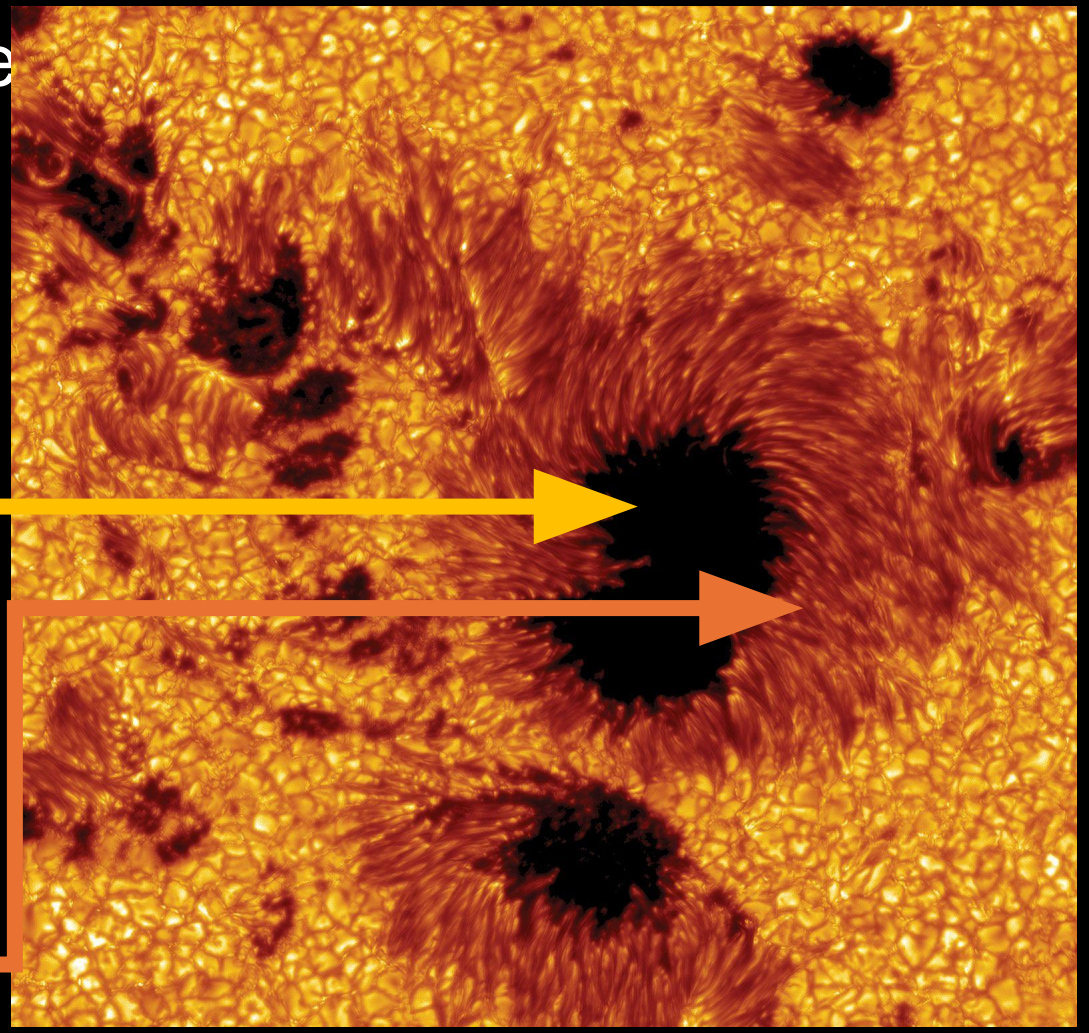
- Fotosféra – Viditeľná (5770K`
- Chromosféra
- Prechodová vrstva
- Korona



Javy na Slnku

Slnečné škvrny

- Javia sa čierne kvôli nižšej teplote
- Prejav magnetizmu Slnka
- Indikujú aktivitu Slnka
- Umbra
- Penumbra

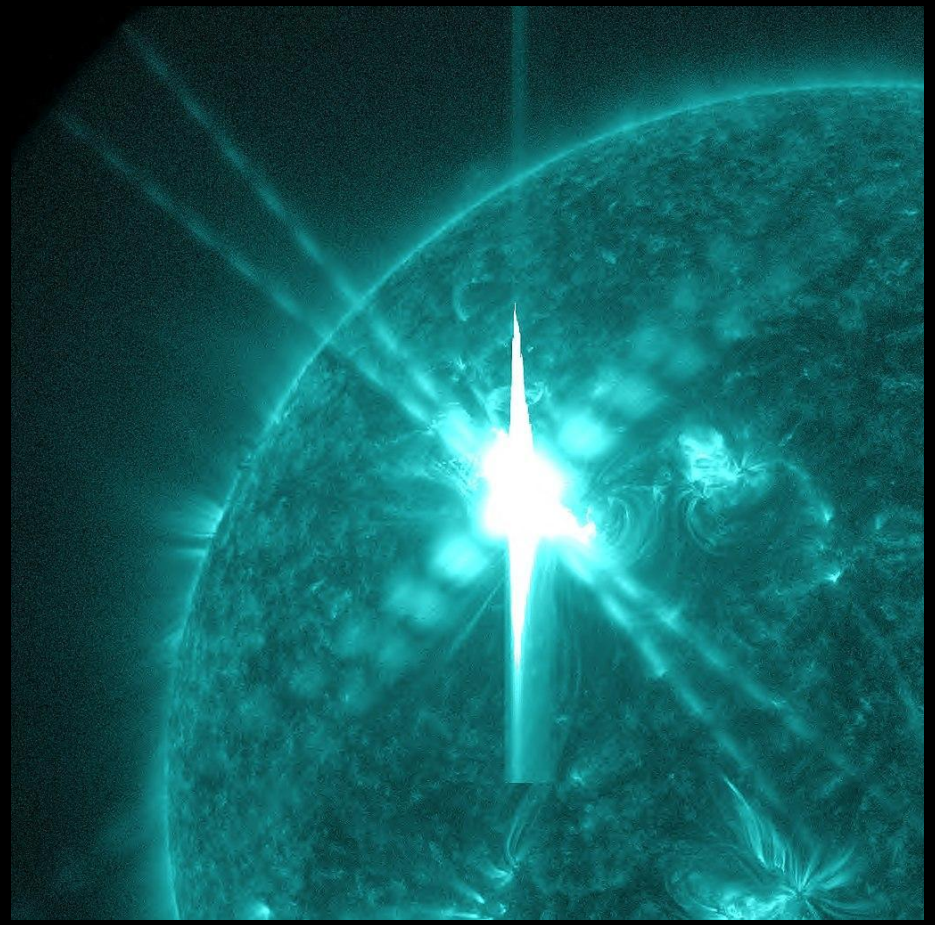


Filamenty/ Protuberancie

- Chromosférická hmota v Korone
- Na okraji disku – Protuberanicia
- Na ploche disku – Filament
- Môže a nemusí končiť erupciou

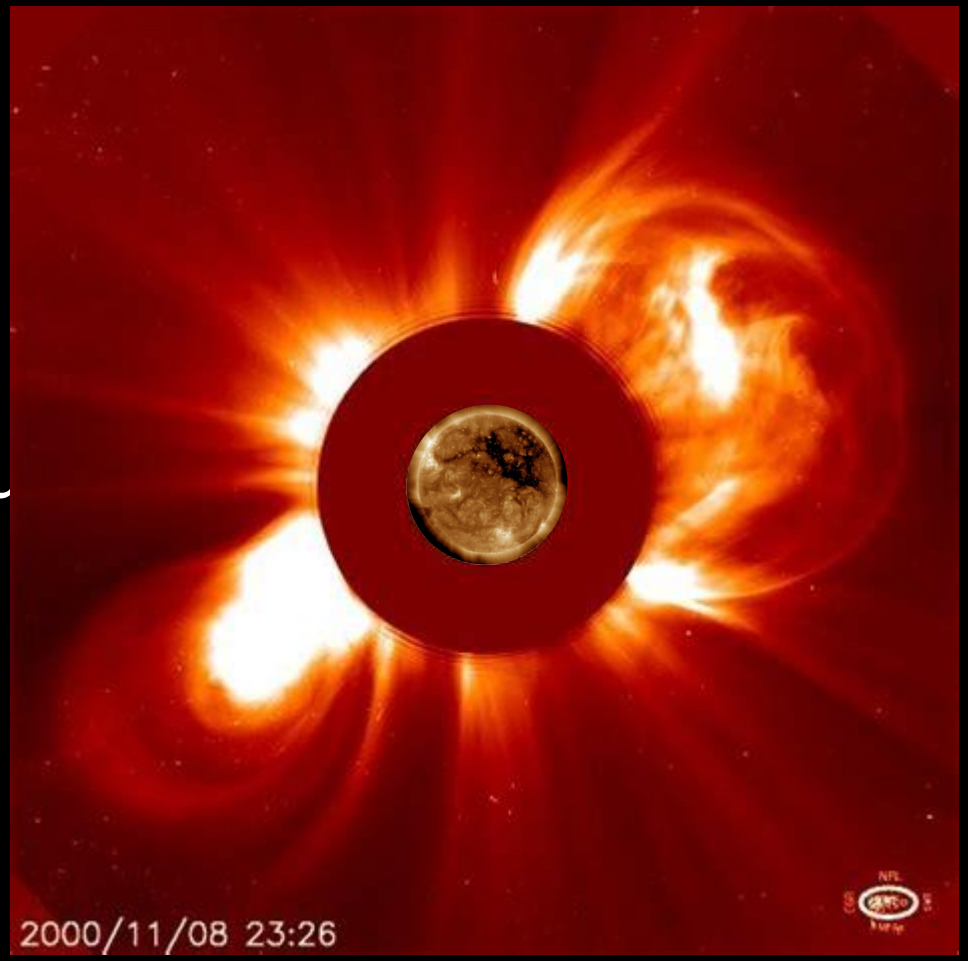
Slnečná erupcia - Flare

- Erupcia žiarenia a hmoty v chromosfére
- Klasifikované množstvom Röntgenu
- Vyvolané magnetickou rekonexiou
- Zvykne byť nasledované CME

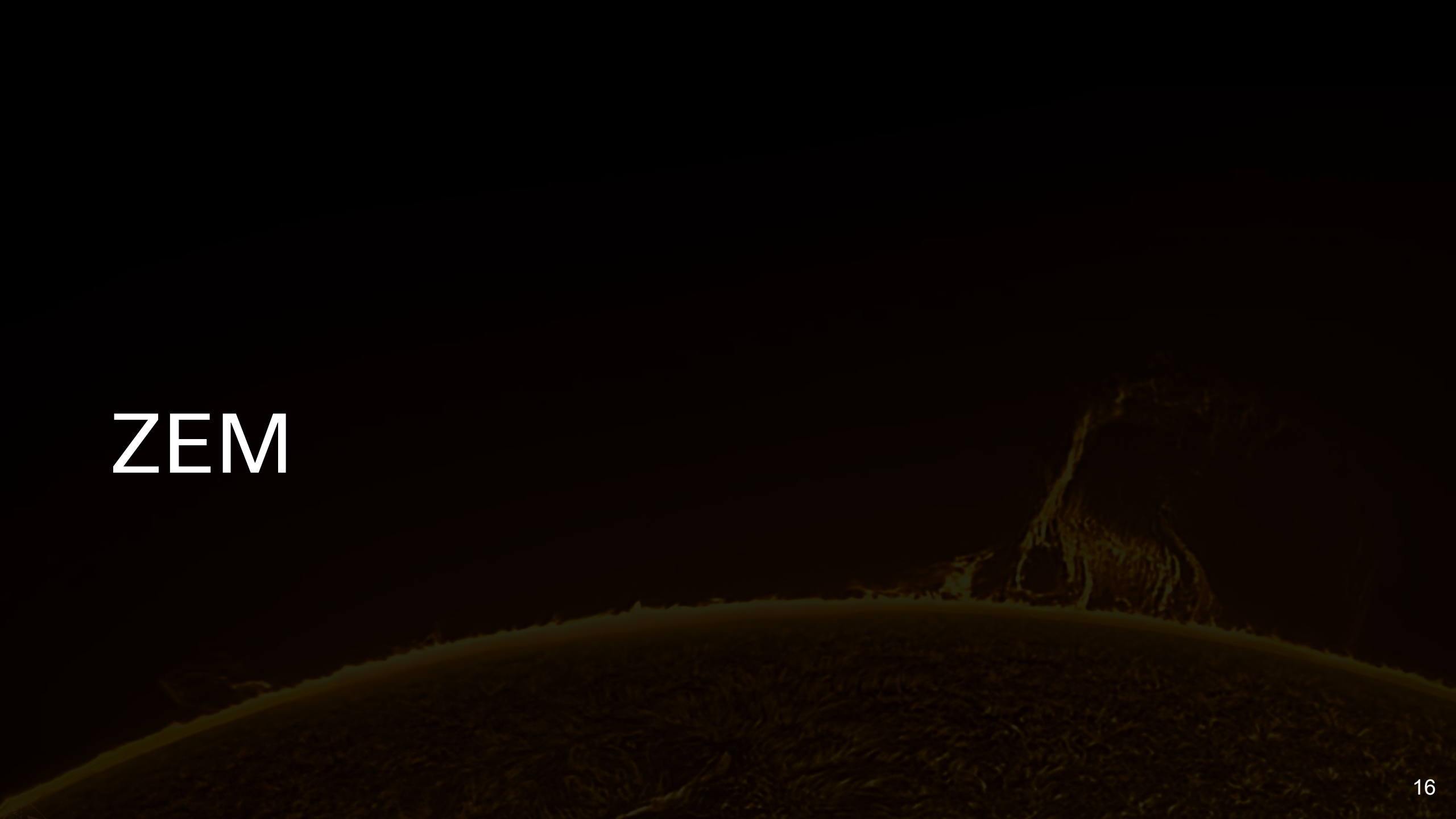


Koronálna diera/ výron koronálnej hmoty CME

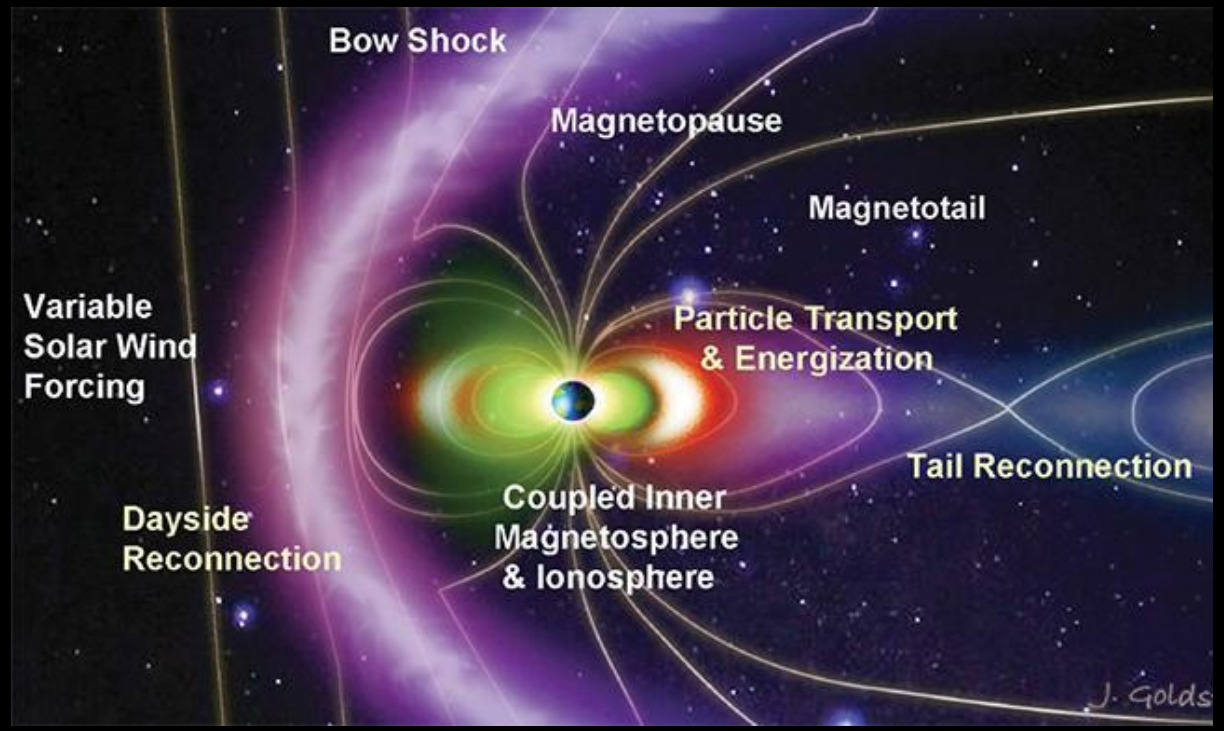
- Tmavé miesto v Korone – mag. pole
- Výron hmoty z korony do okolia
- Uvoľnené častice s vysokou rýchlosťou
- Nesú magnetické pole

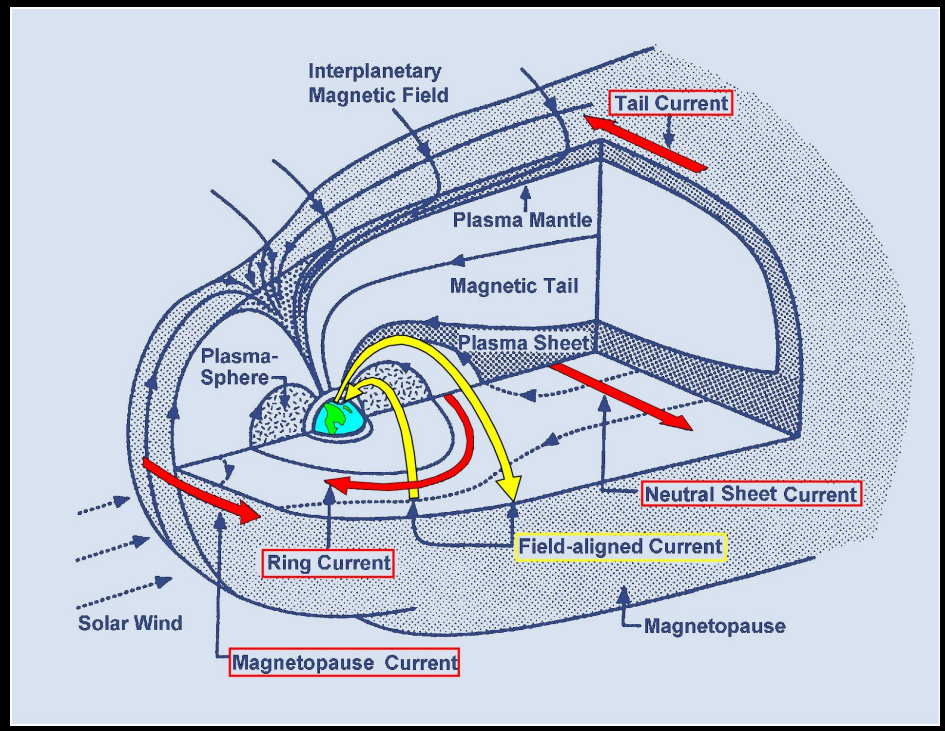


ZEM

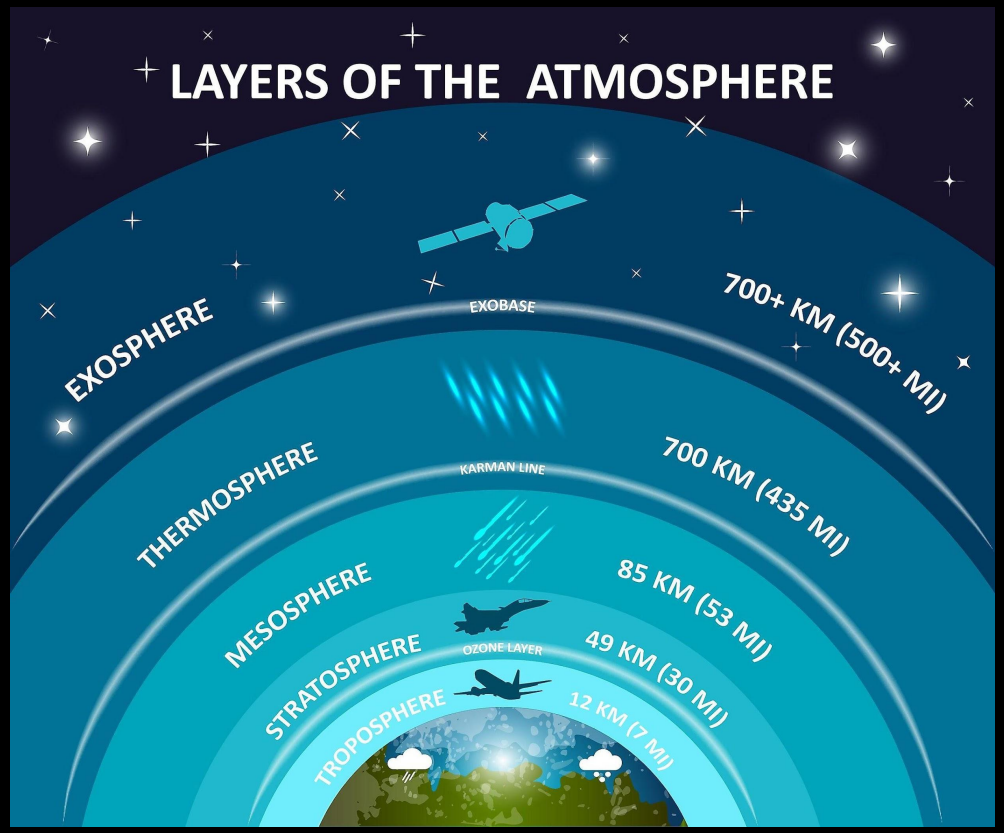


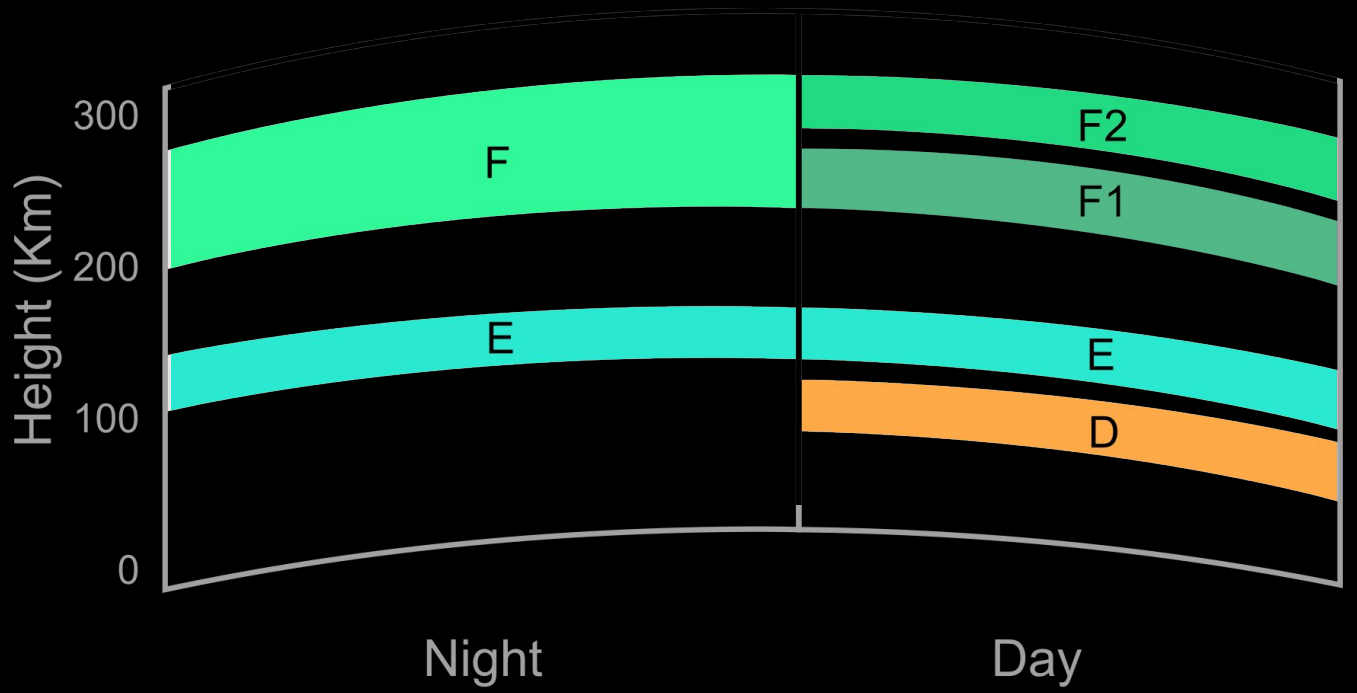
Magnetosféra





Atmosféra


LAYERS OF THE ATMOSPHERE
EXOSPHERE
EXOBASE
700+ KM (500+ MI)
THERMOSPHERE
KARMAN LINE
700 KM (435 MI)
MESOSPHERE
85 KM (53 MI)
STRATOSPHERE
OZONE LAYER
49 KM (30 MI)
TROPOSPHERE
12 KM (7 MI)


Height (Km)
300
200
100
0
F
E
F2
F1
E
D
Night
Day

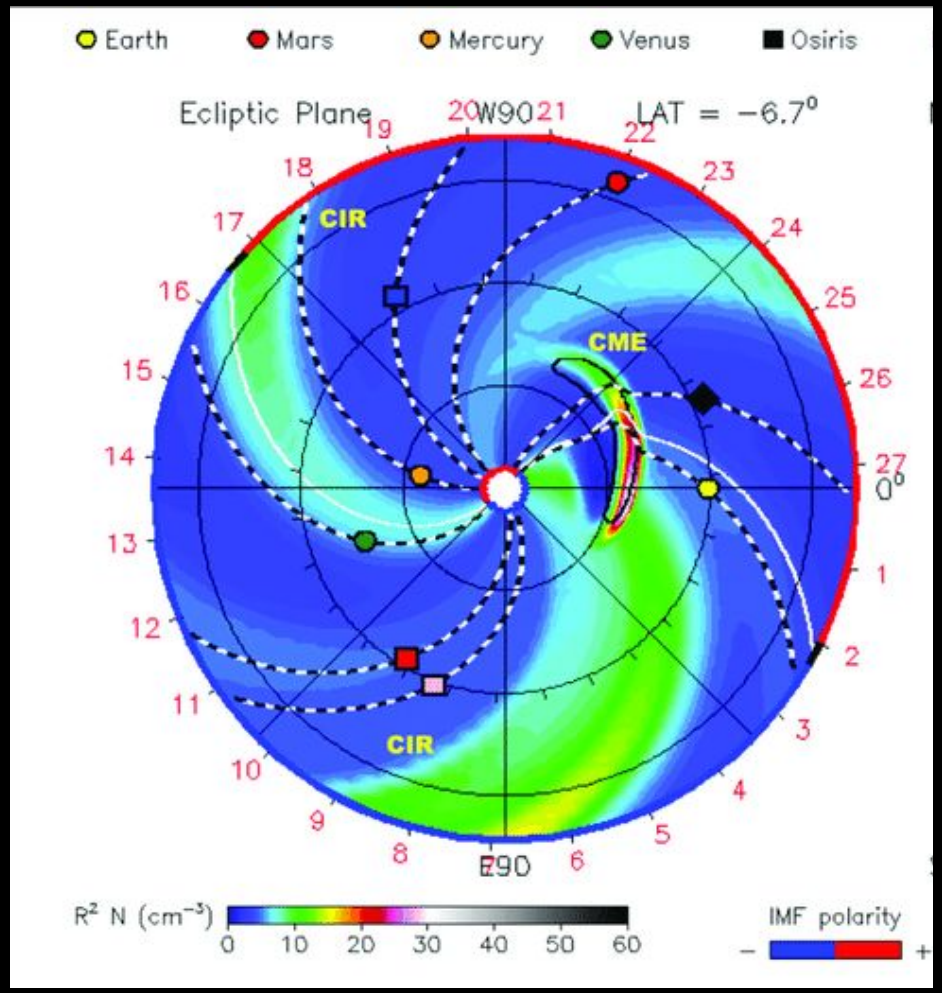
HELIOSFÉRA

Vzdialenosti

- Či častice letia na nás zistíme až pri prelete bodom L1

Čo nám to komplikuje?

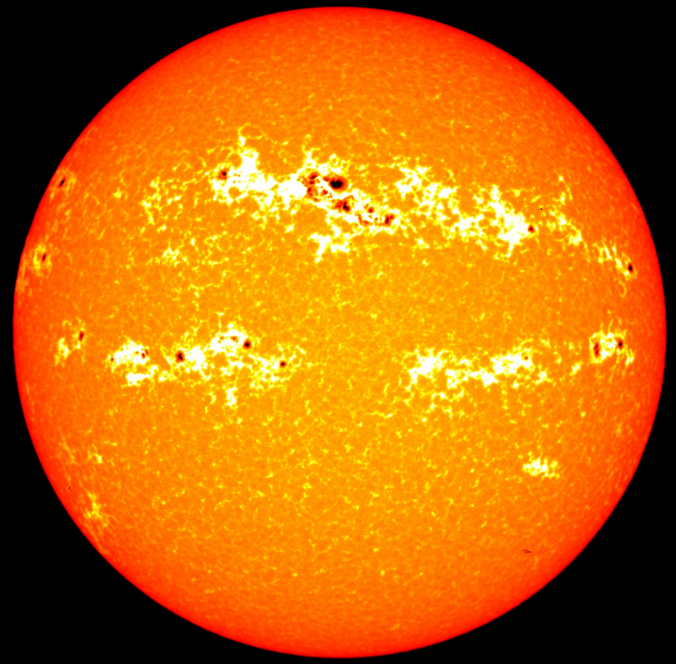
- Heliospheric current sheet

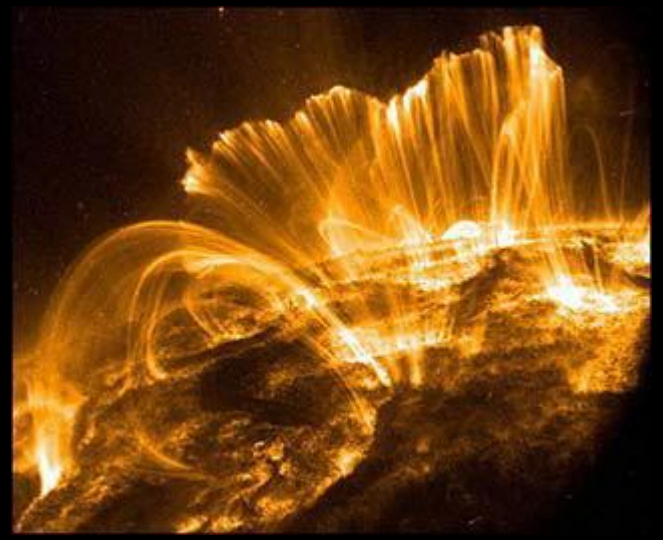


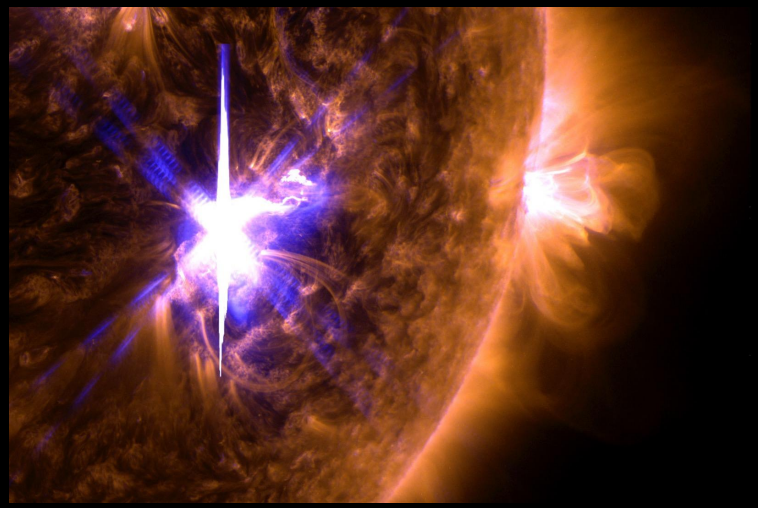
PARAMETRE SW

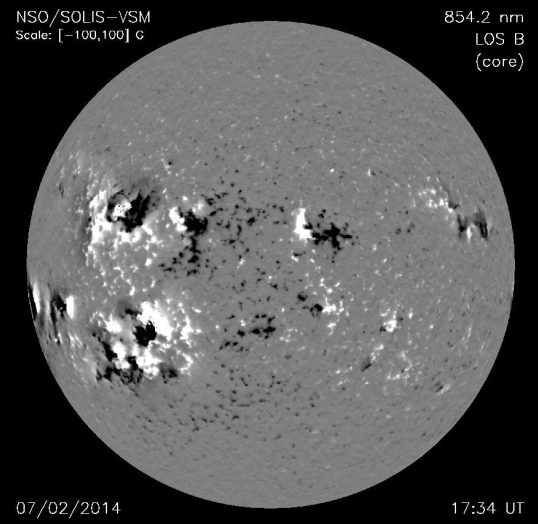
Remote

- Wolfovo číslo
- F10.7 cm rádio
- X-ray tok
  - A, B, C; M, X, X10
- Imaging



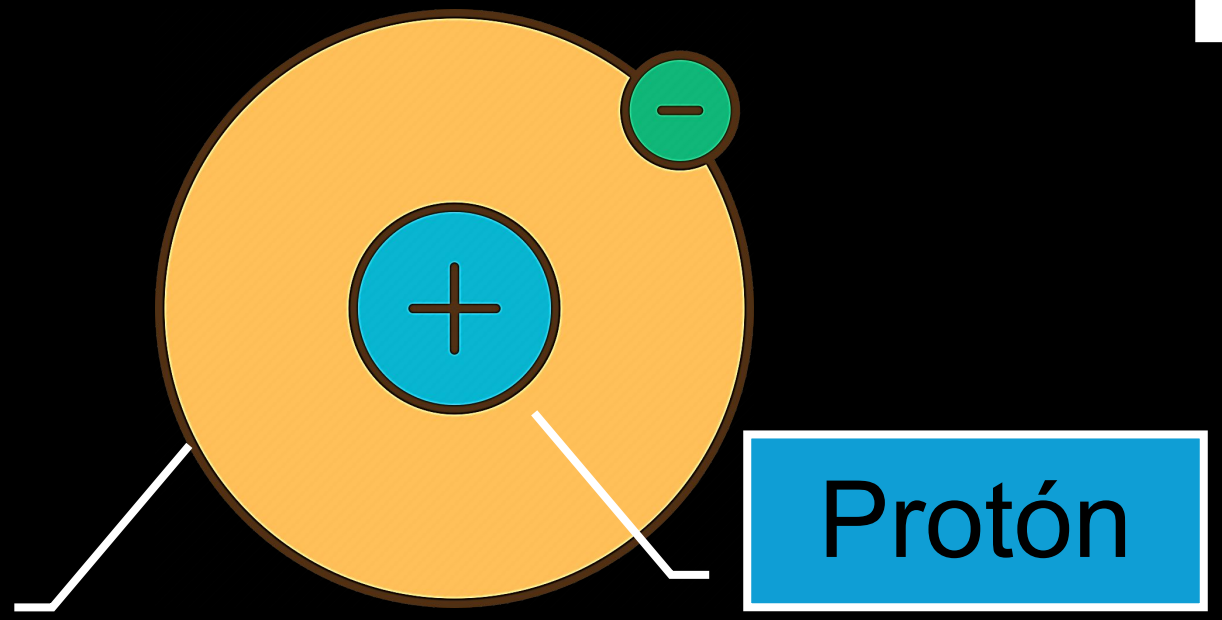


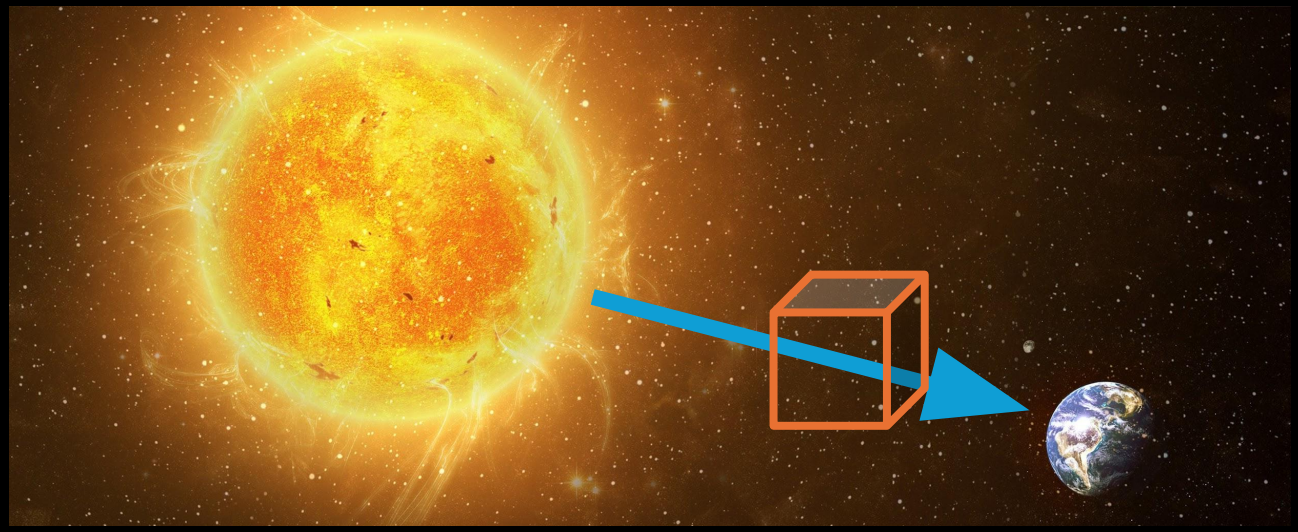




In situ

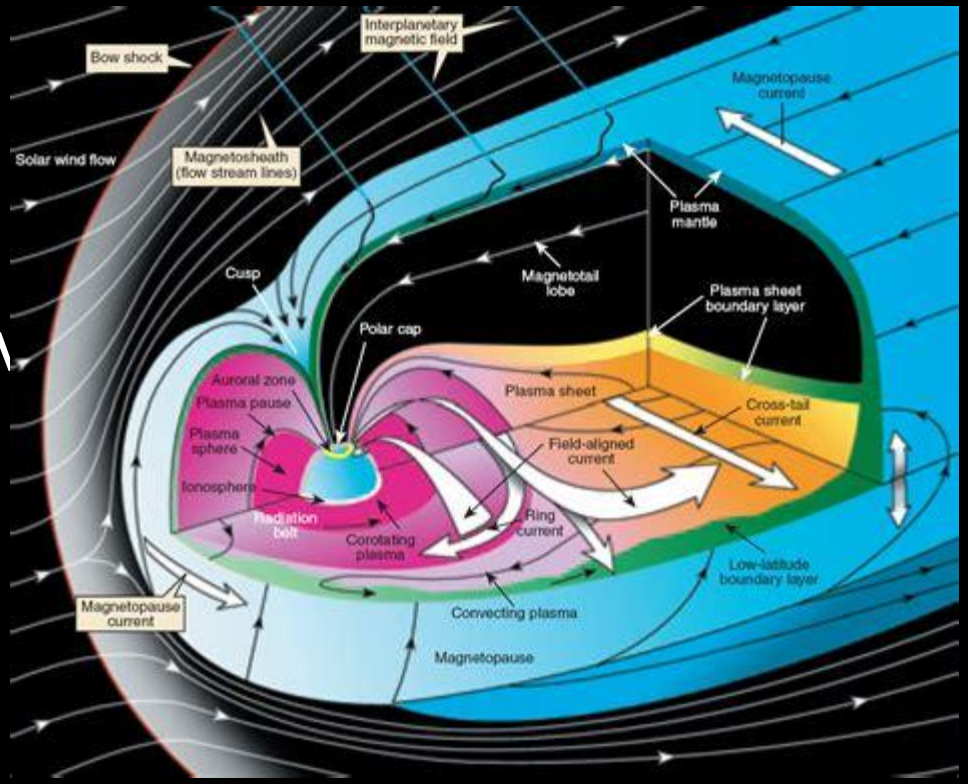
- Proton density
- Proton speed
- Proton temperature





Geo

- DsT – Sila prúdu okolo rovníka
  - V (nT), Záporné hodnoty
- Kp – Odvodené z meraní magnetogramov
  - Hodnoty 0-9, Log mierka
- Bz – Intenzita magnetického poľa



ĎAKUJEM ZA POZORNOSŤ