

Plazma IV

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29. června 2013



PROGRAM
CEZHRANIČNEJ
SPOLUPRÁCE
SLOVENSKÁ REPUBLIKA
ČESKÁ REPUBLIKA

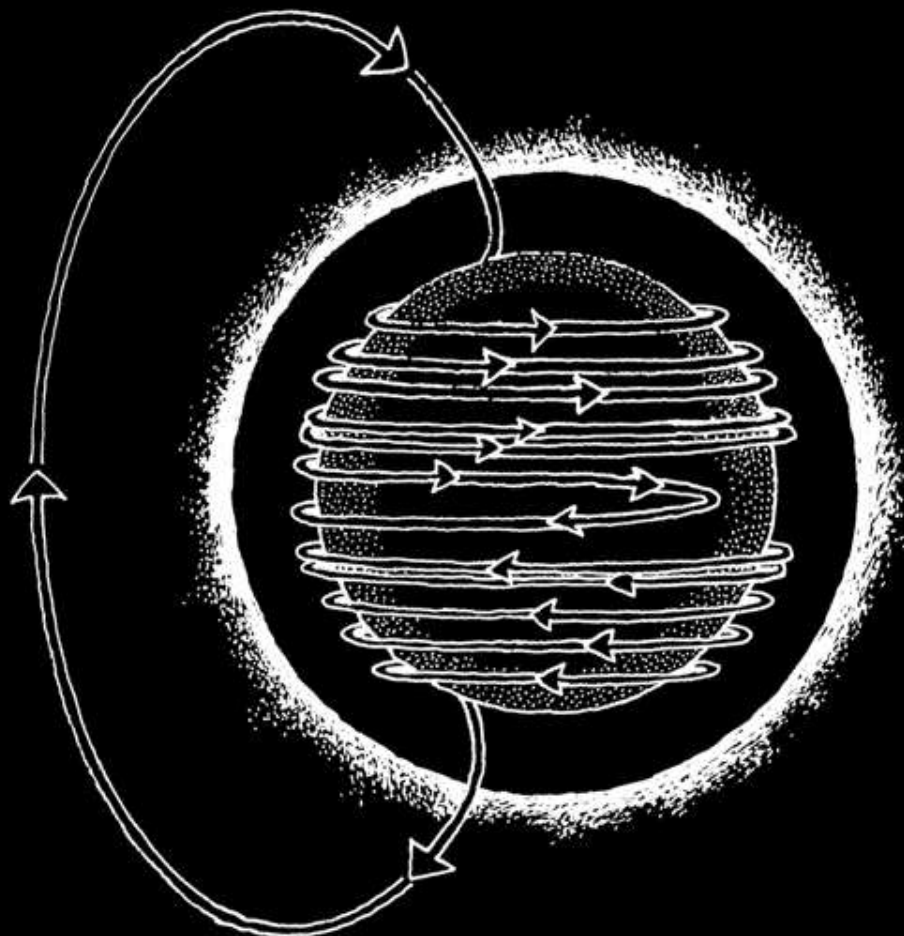


EURÓPSKA ÚNIA
EURÓPSKY FOND
REGIONÁLNEHO ROZVOJA
SPOLOČNE BEZ HRANÍC



FOND MIKROPROJEKTŮ





OMEGA EFEKT



FOTOSFÉRA
TACHOVRSIVA

ALFA EFEKT

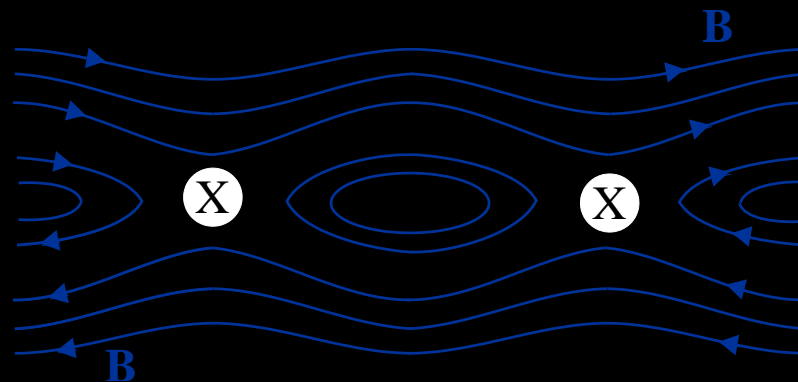
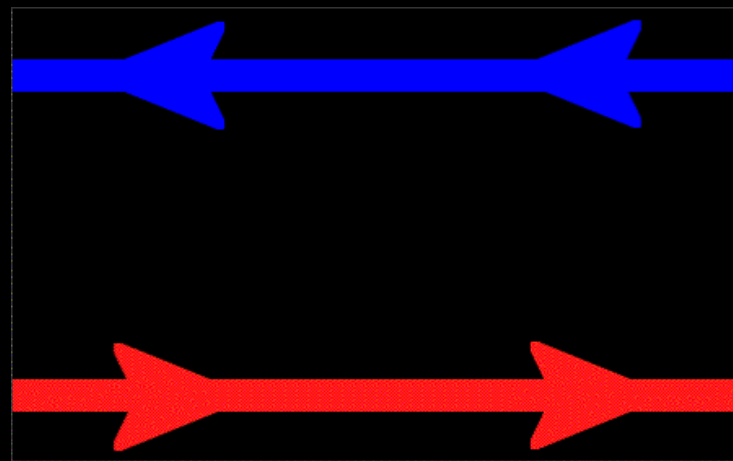
Rekonekce

$$\tau_R \propto L^2 \sigma \mu_0$$

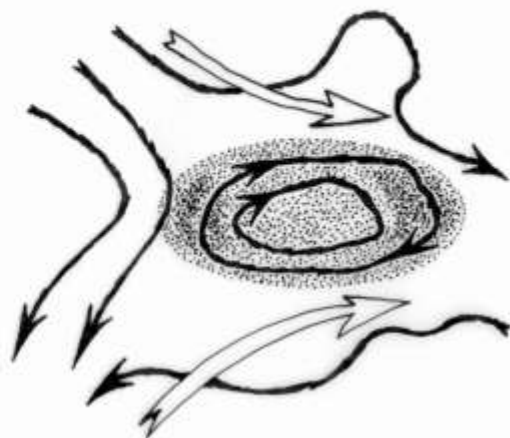
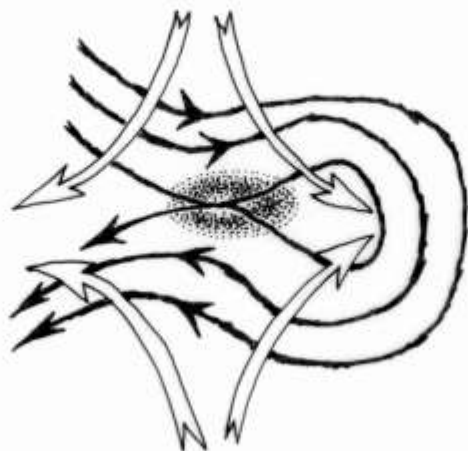
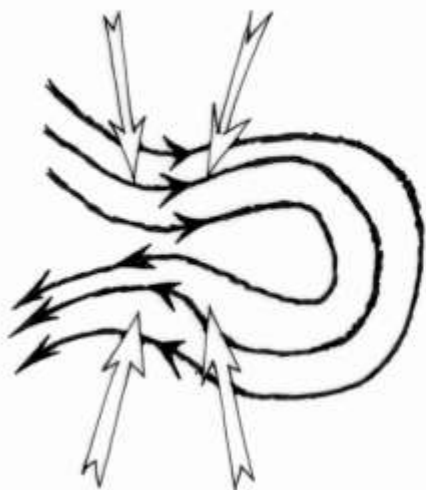
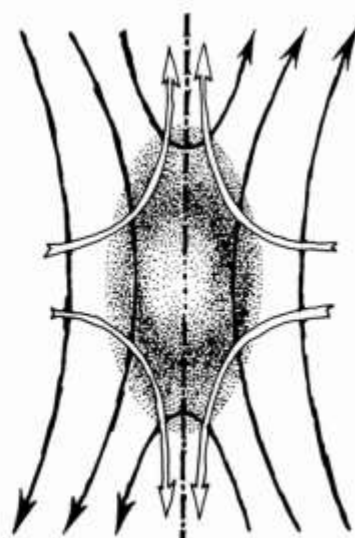
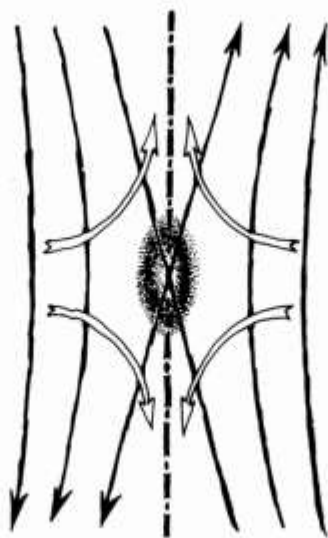
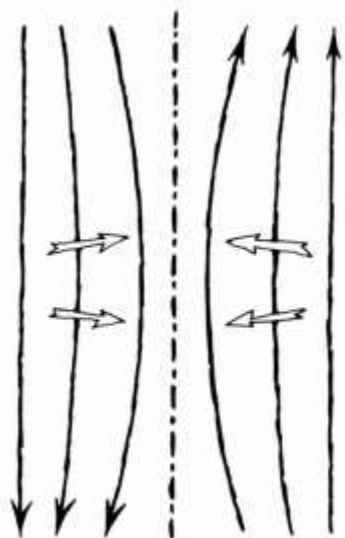
$$\tau_A \propto \frac{L}{v_A} = \frac{L \sqrt{\mu_0 \rho}}{B_0}$$

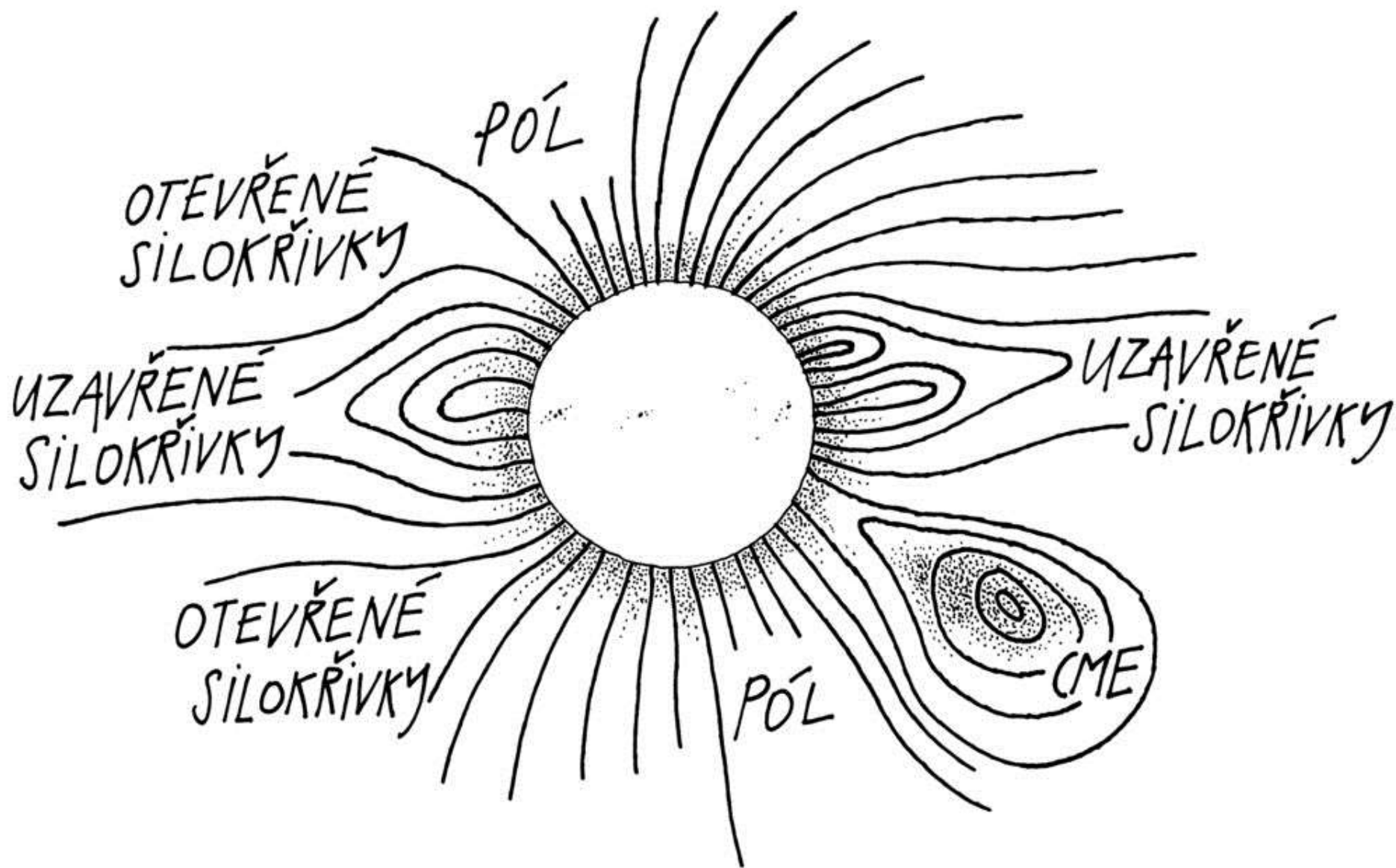
$$\tau_{\text{REC}} = \sqrt{\tau_R \tau_A}$$

Plazma	$t_{\text{rez}} \text{ (s)}$	$t_{\text{Alf}} \text{ (s)}$
oblouk	10^{-3}	10^{-3}
tokamak	1	10^{-8}
jádro Země	10^{12}	10^5
sluneční skvrna	10^{14}	10^5
sluneční koróna	10^{18}	10^6



Sweetův-Parkerův model, Petschekův model, 3D rekonekce





Sluneční vzplanutí

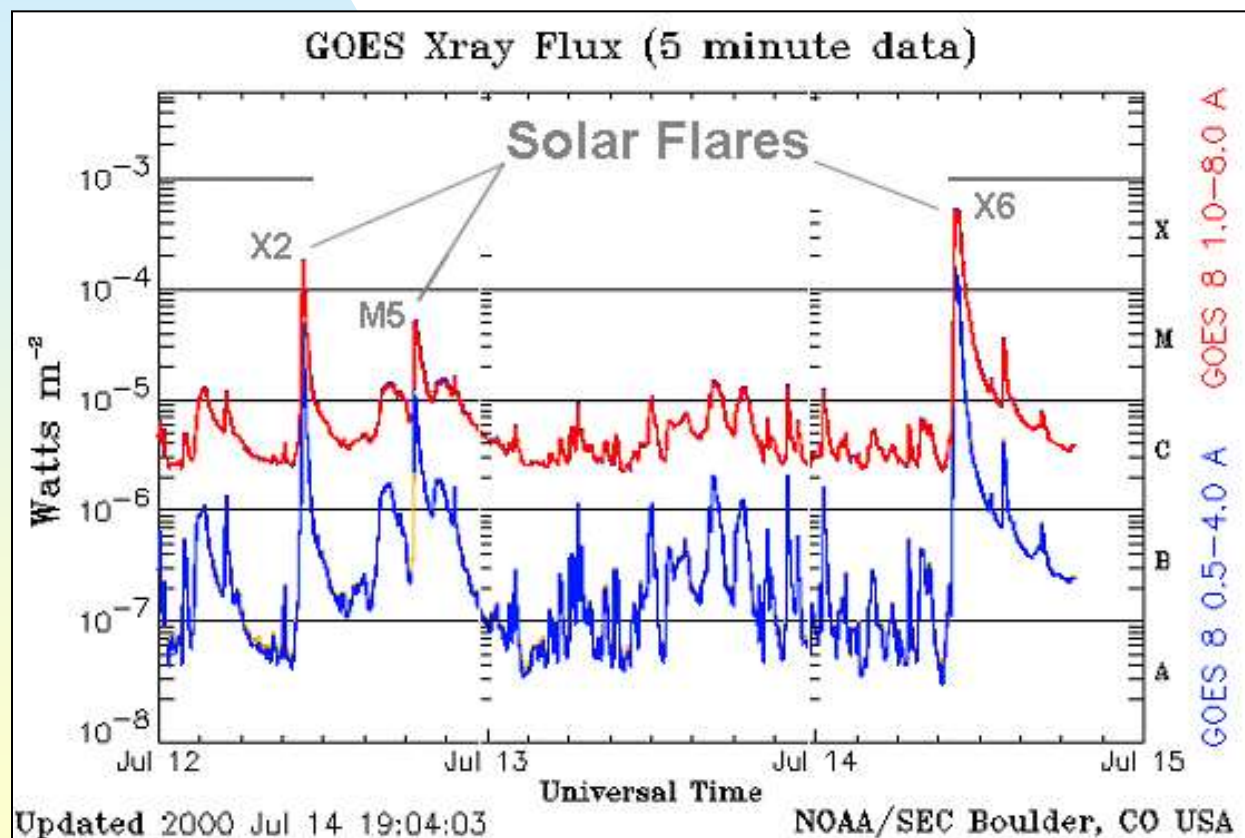
Klasifikace (0.1÷0.8 nm):

B: $< 10^{-6} \text{ W/m}^2$

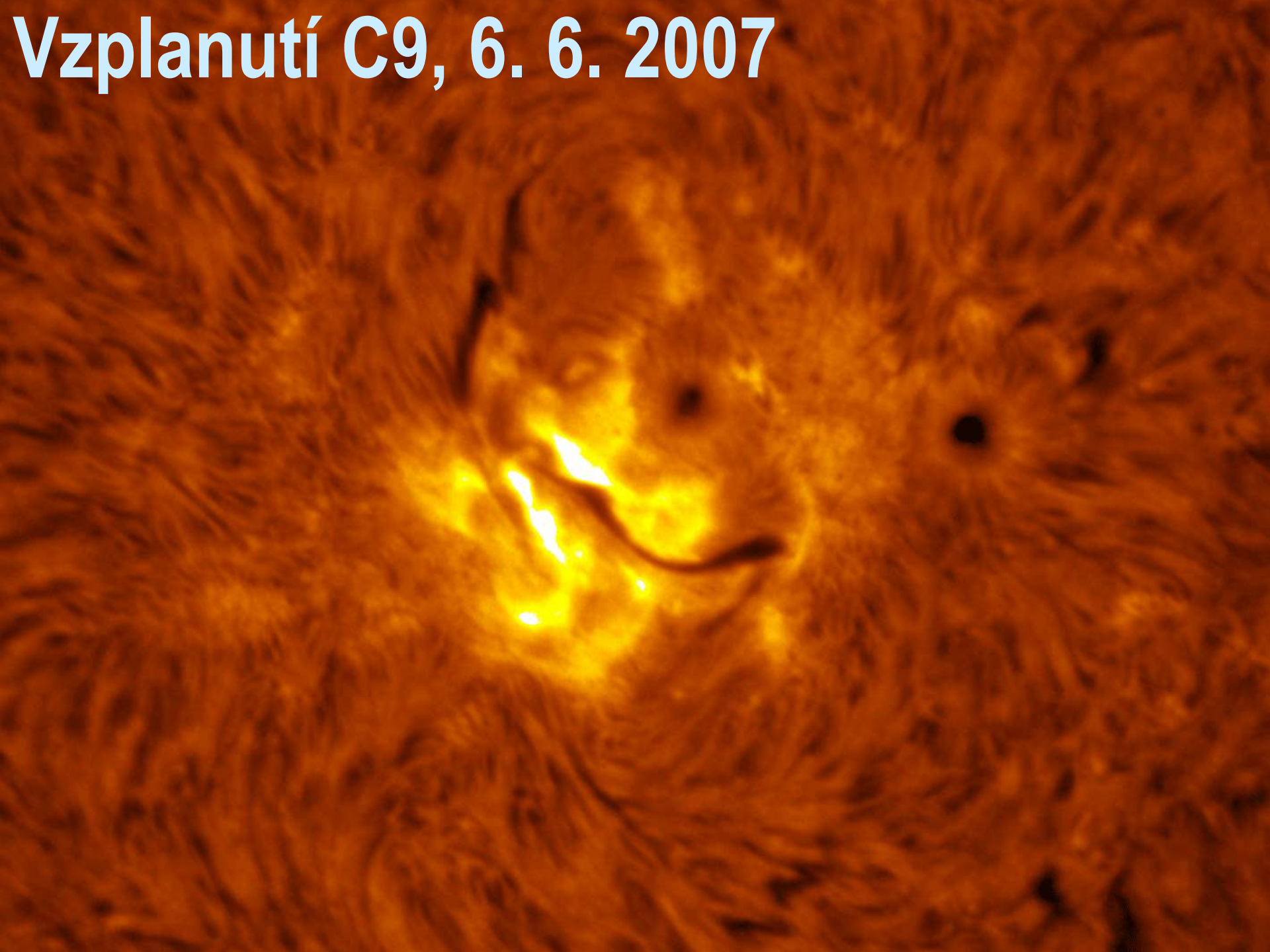
C: $10^{-6} \div 10^{-5} \text{ W/m}^2$

M: $10^{-5} \div 10^{-4} \text{ W/m}^2$

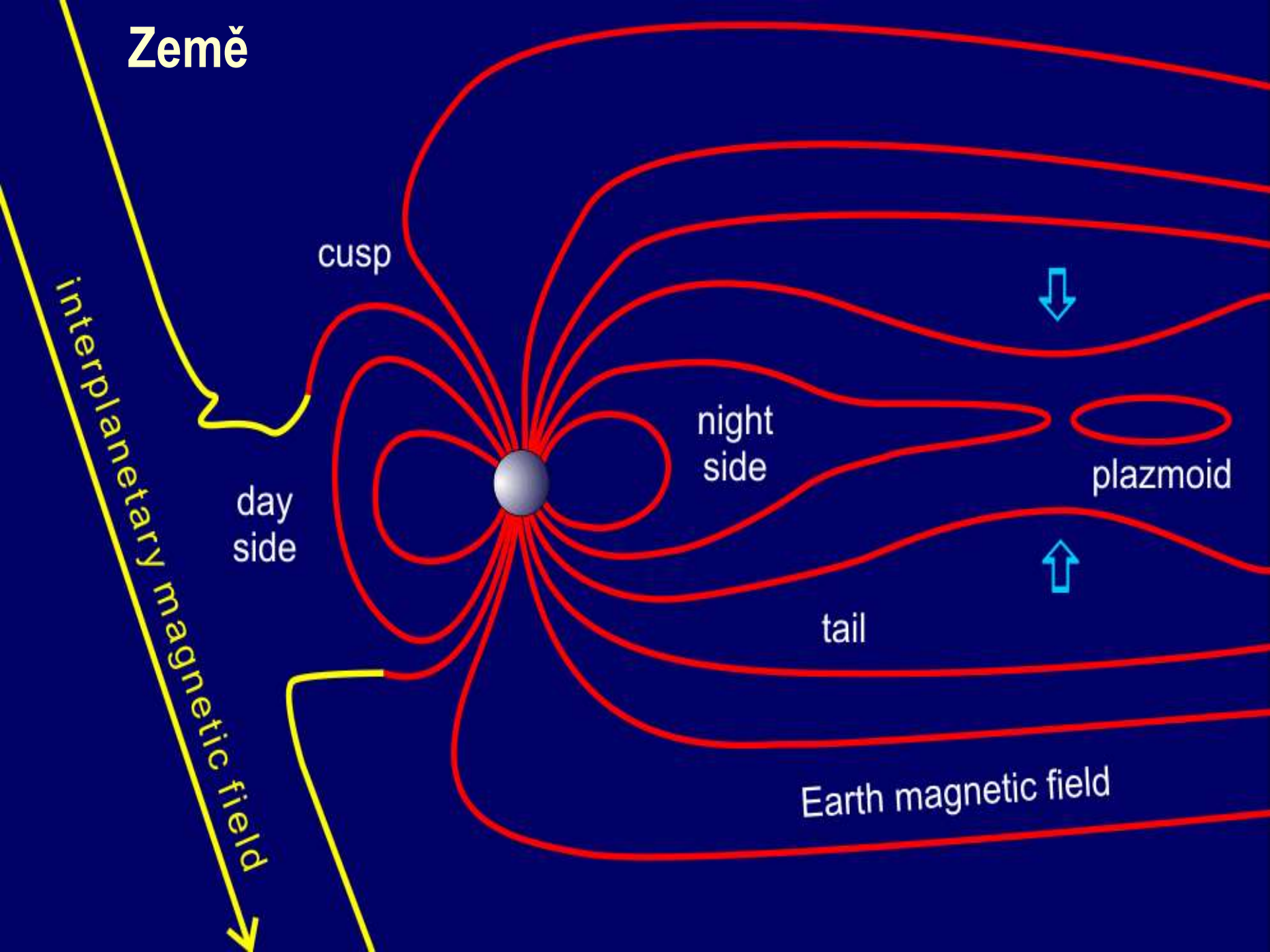
X: $> 10^{-4} \text{ W/m}^2$



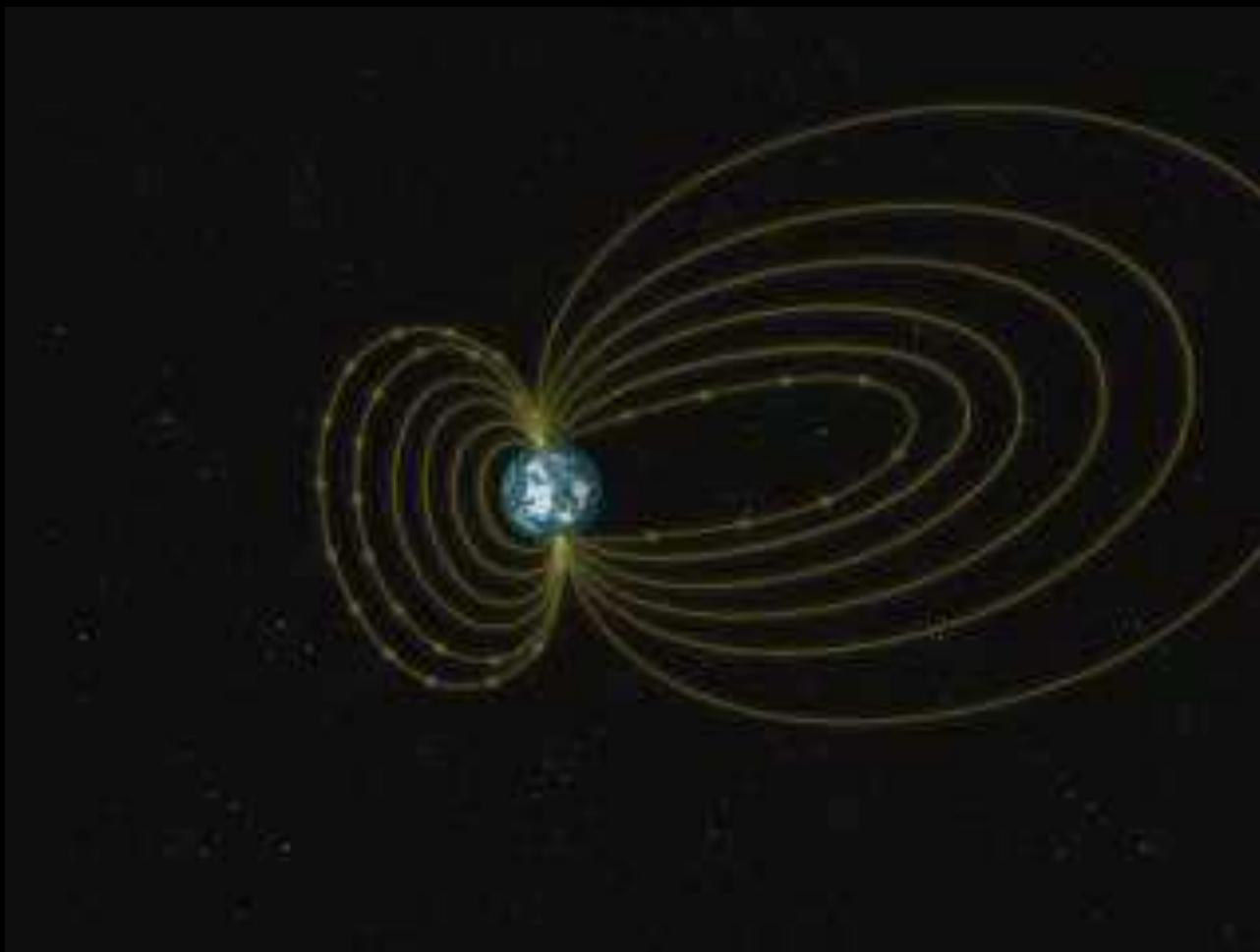
Vzplanutí C9, 6. 6. 2007



Země

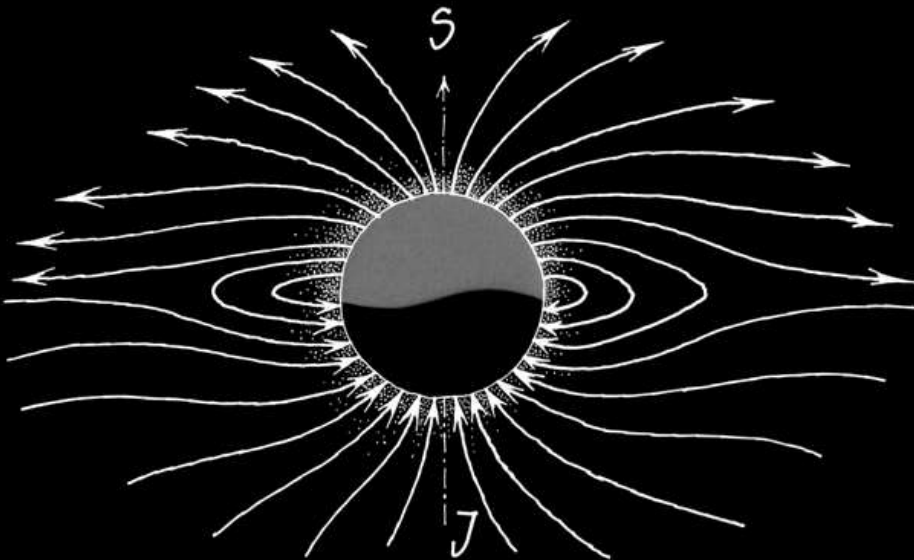


Země

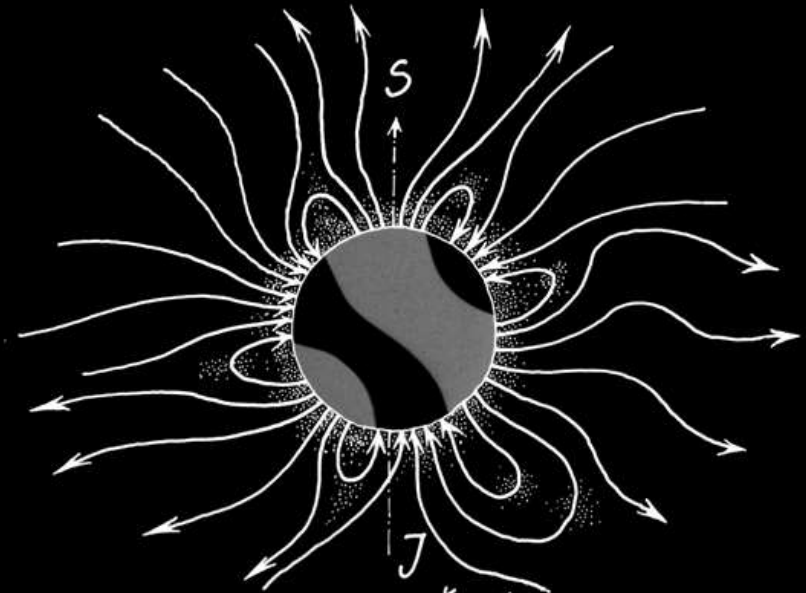




Slunce



MINIMUM SLUNEČNÍ AKTIVITY



MAXIMUM SLUNEČNÍ AKTIVITY

globální pole: 10 až 300 μT

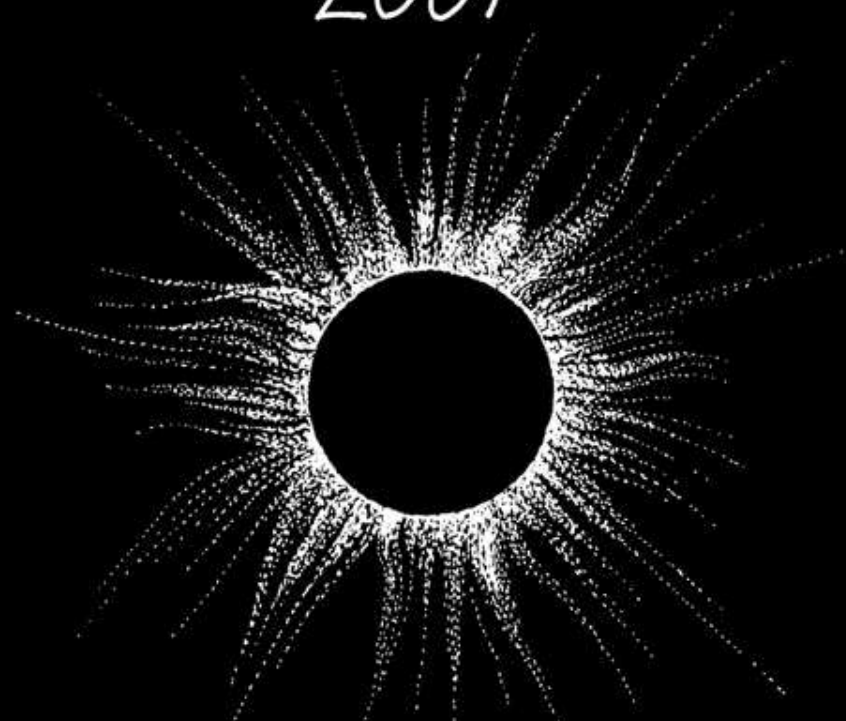
lokální pole: 0,3 T

2006

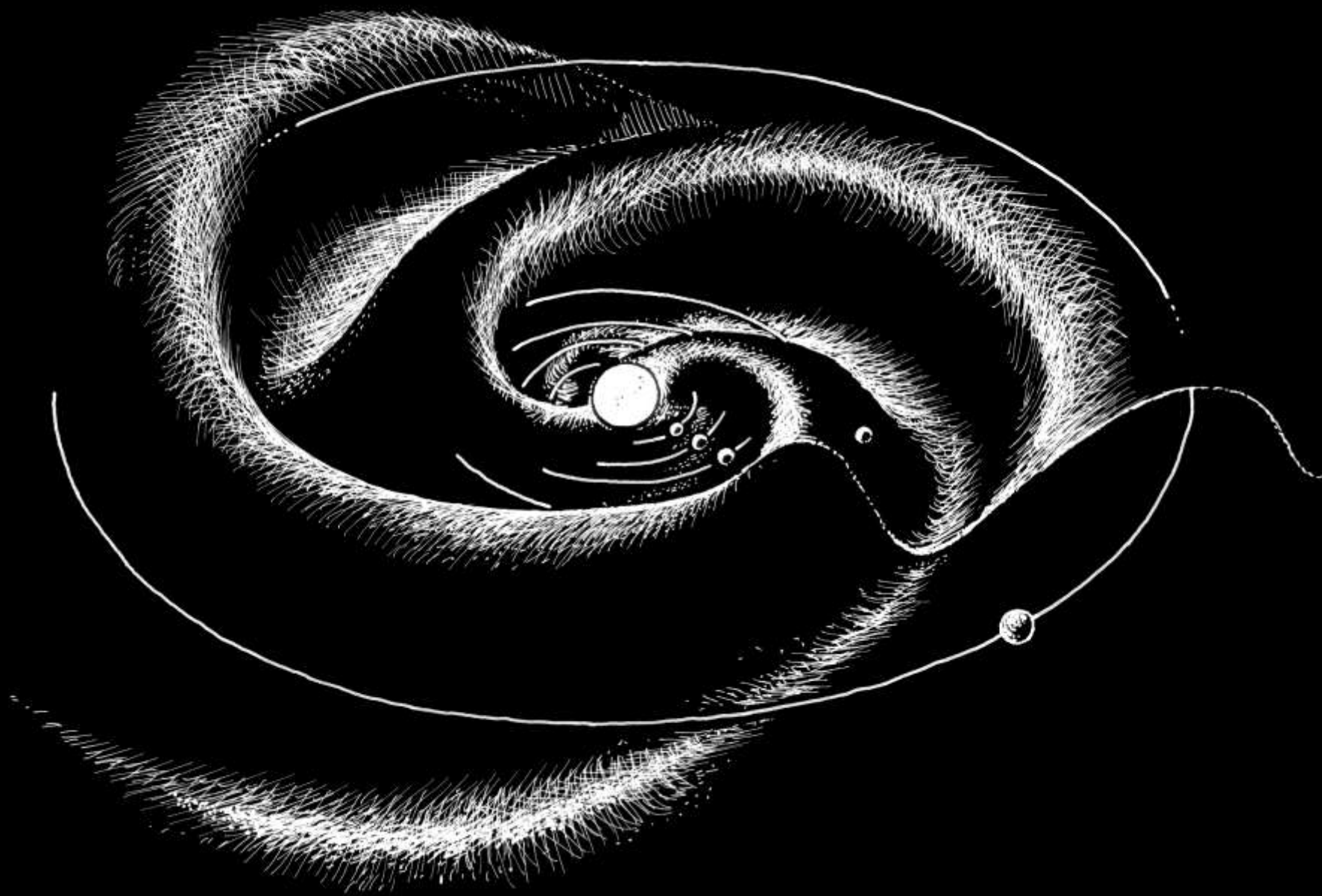


MINIMUM AKTIVITY

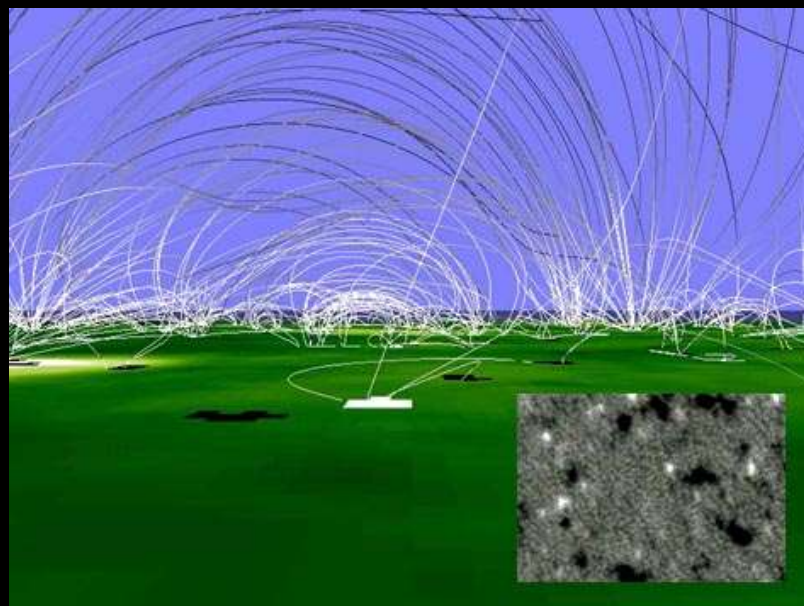
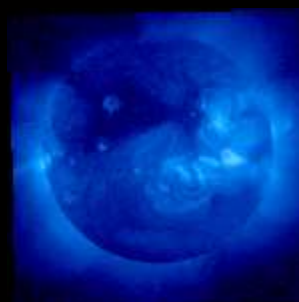
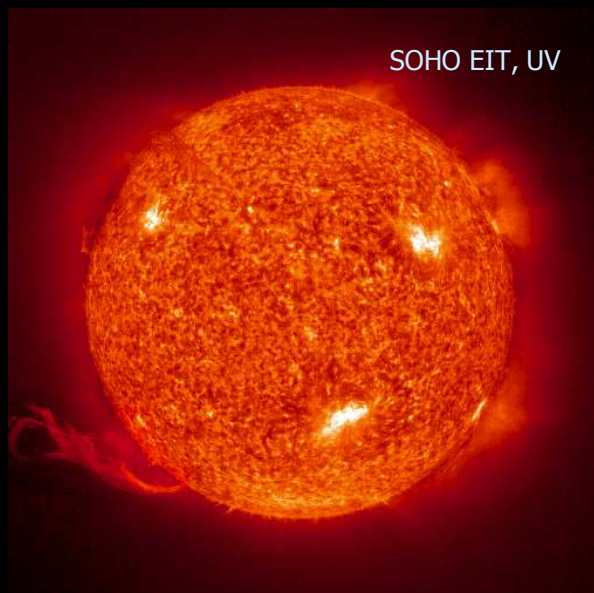
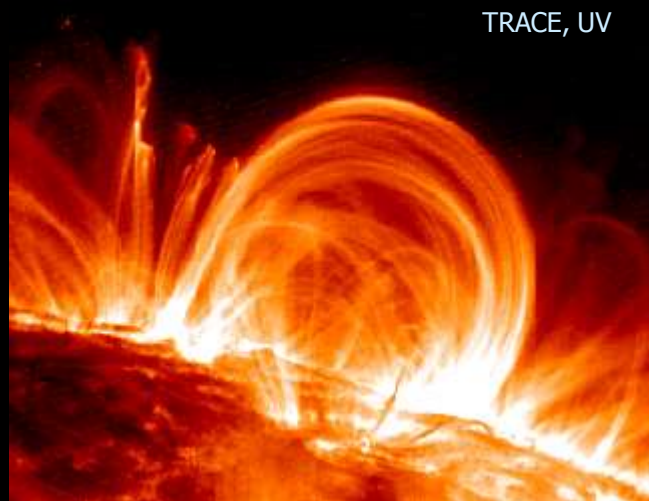
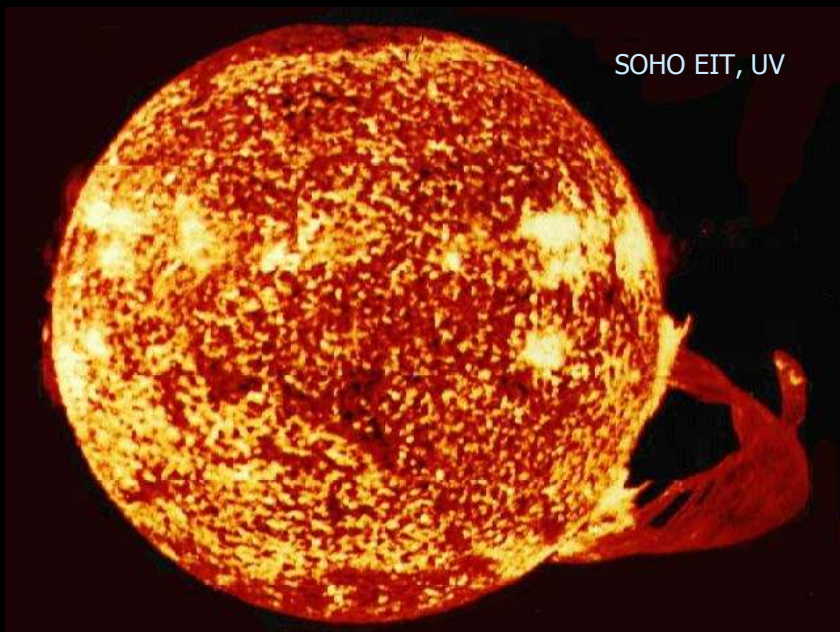
2001



MAXIMUM AKTIVITY

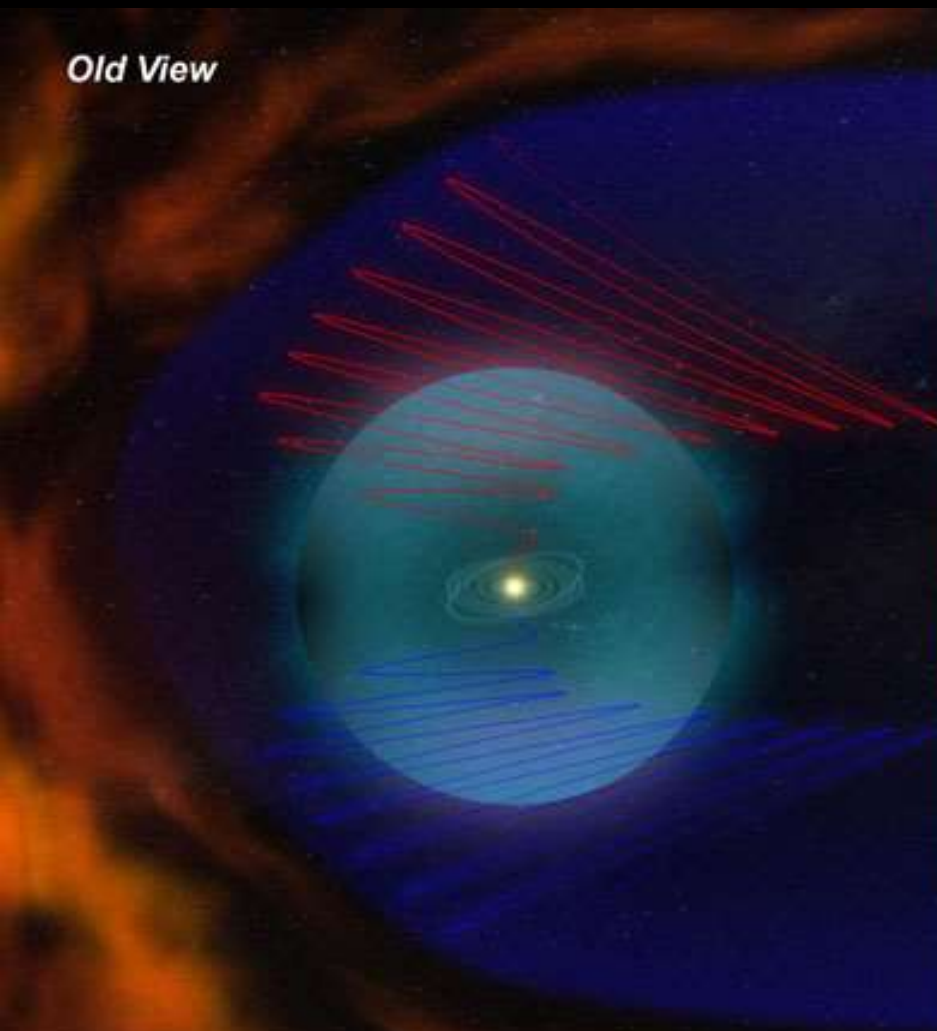


Hvězdy hlavní posloupnosti

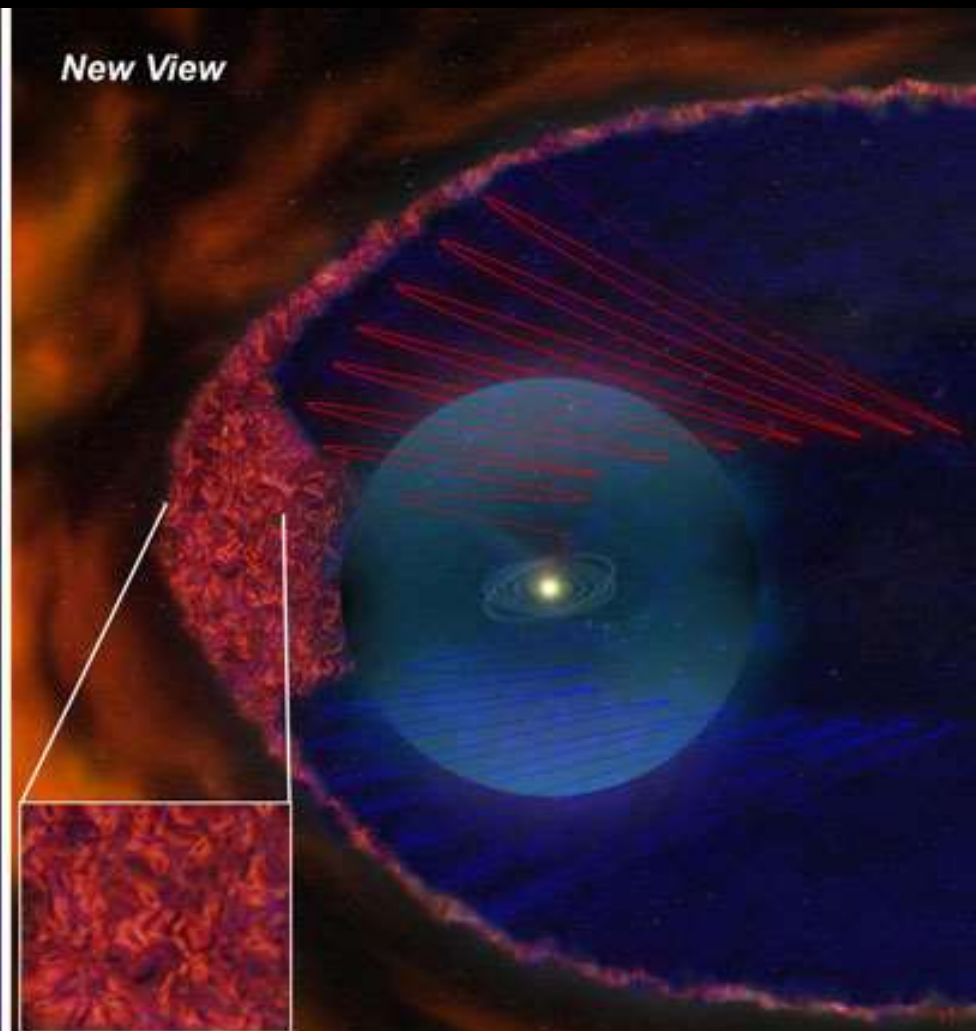


Magnetická pěna na hranici sluneční soustavy

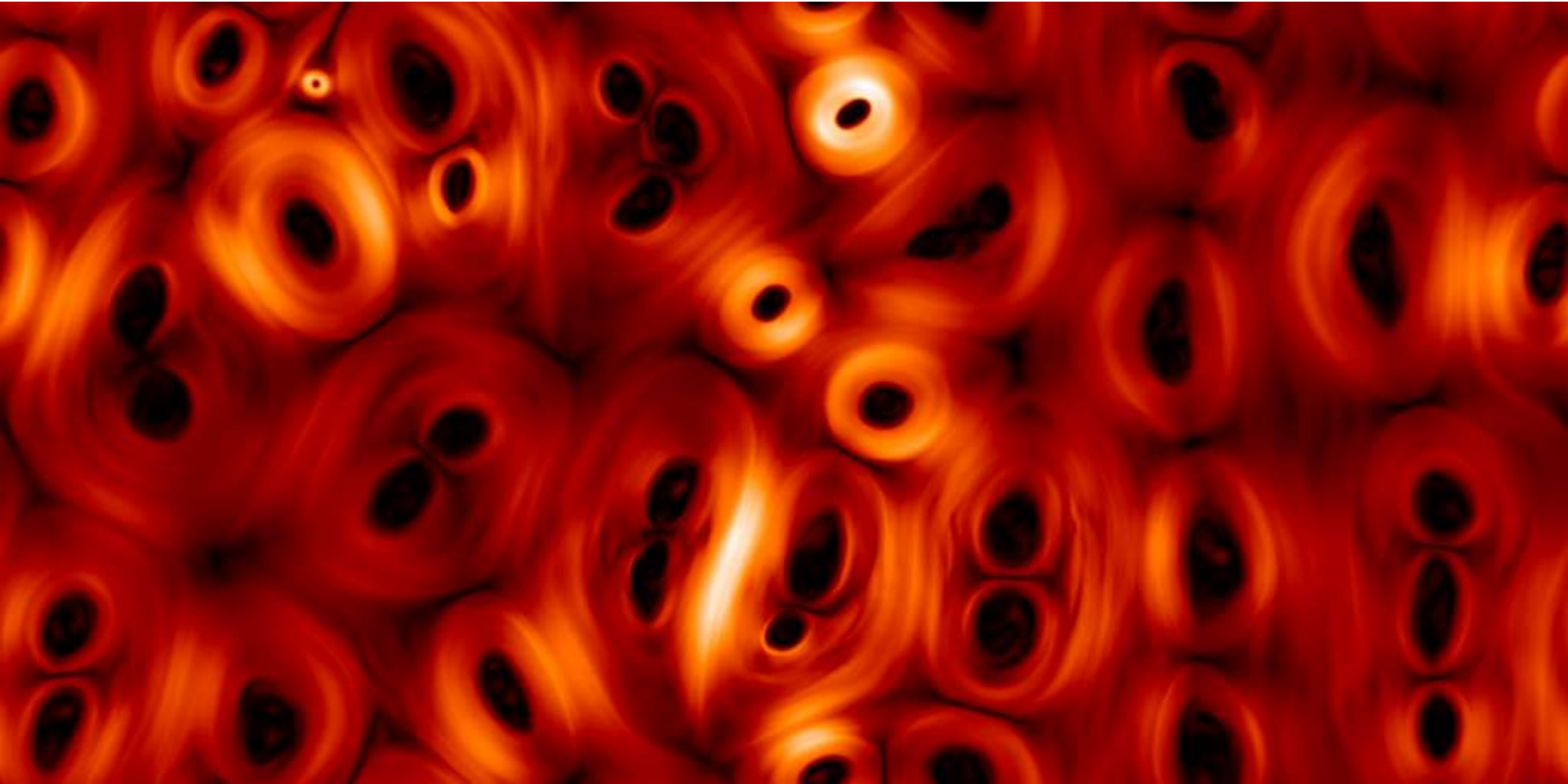
Old View



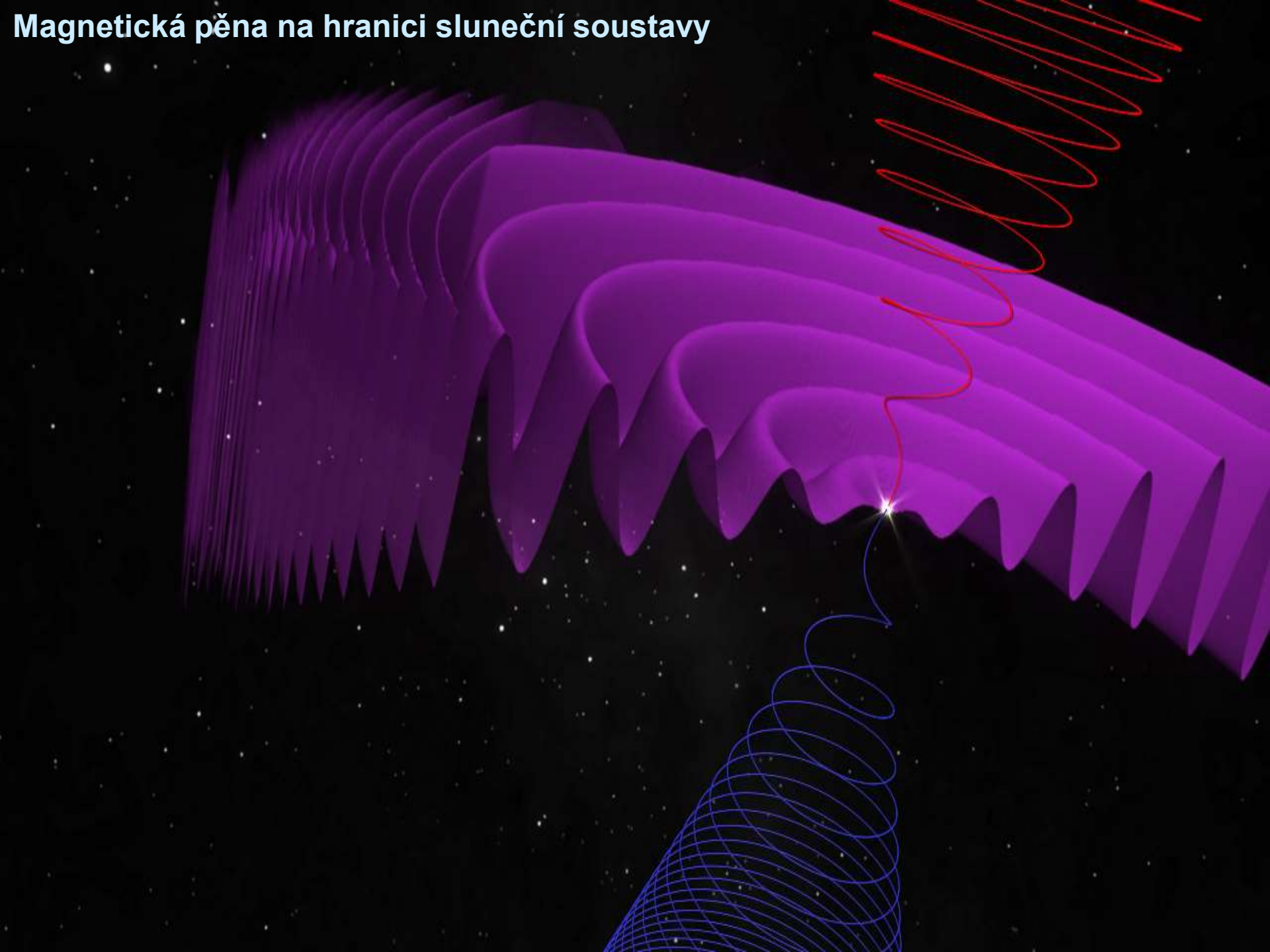
New View



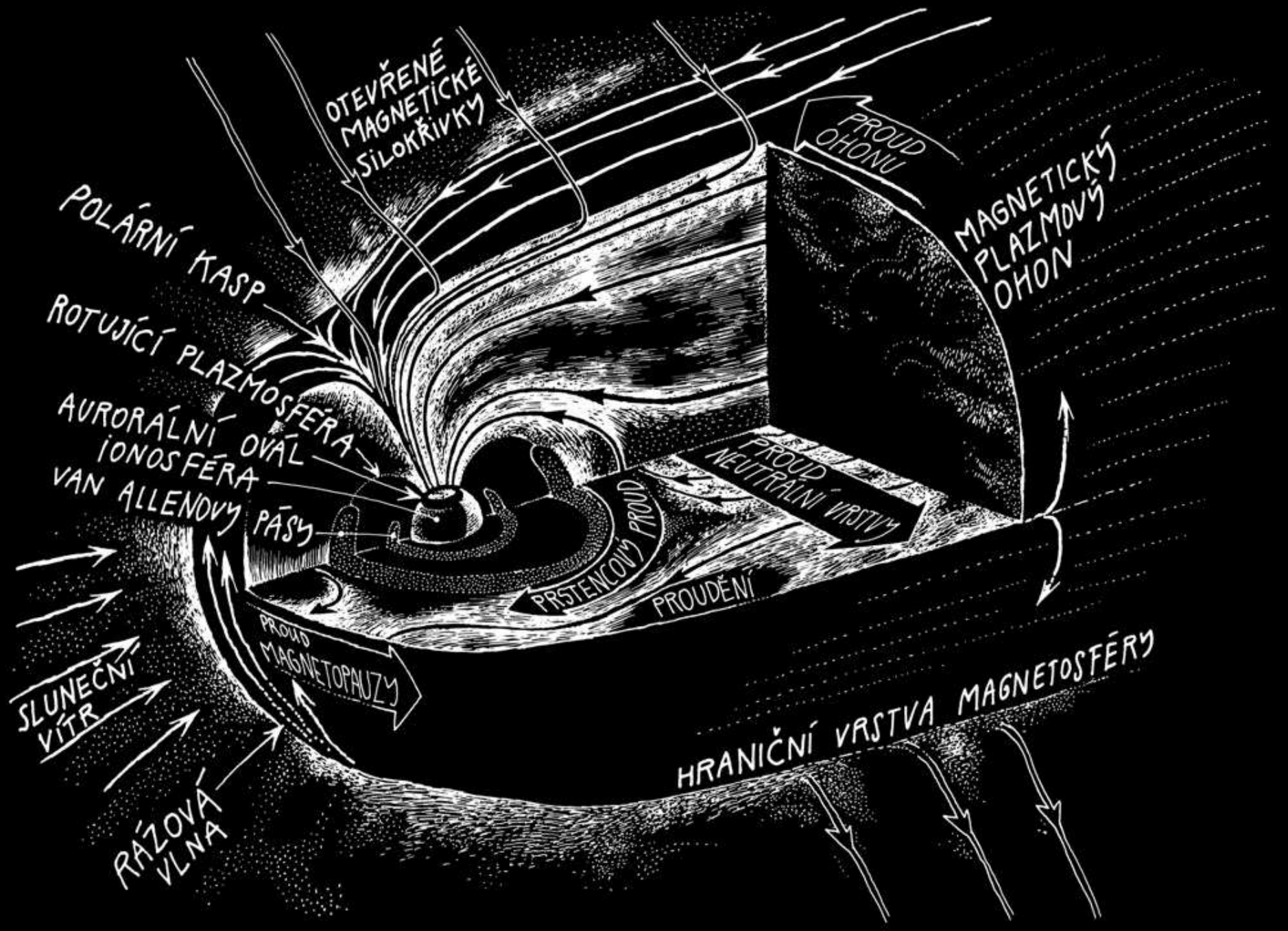
Magnetická pěna na hranici sluneční soustavy



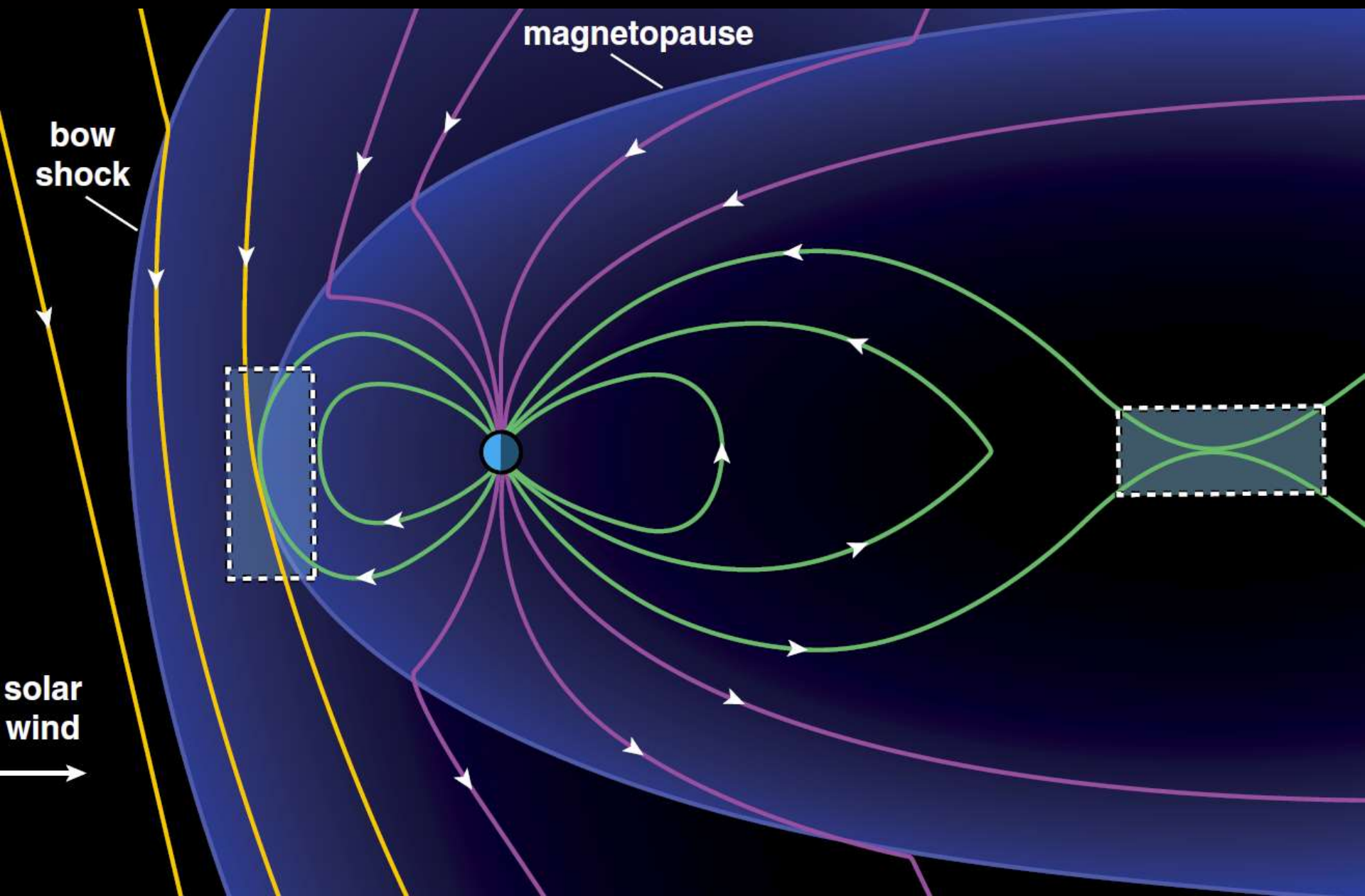
Magnetická pěna na hranici sluneční soustavy



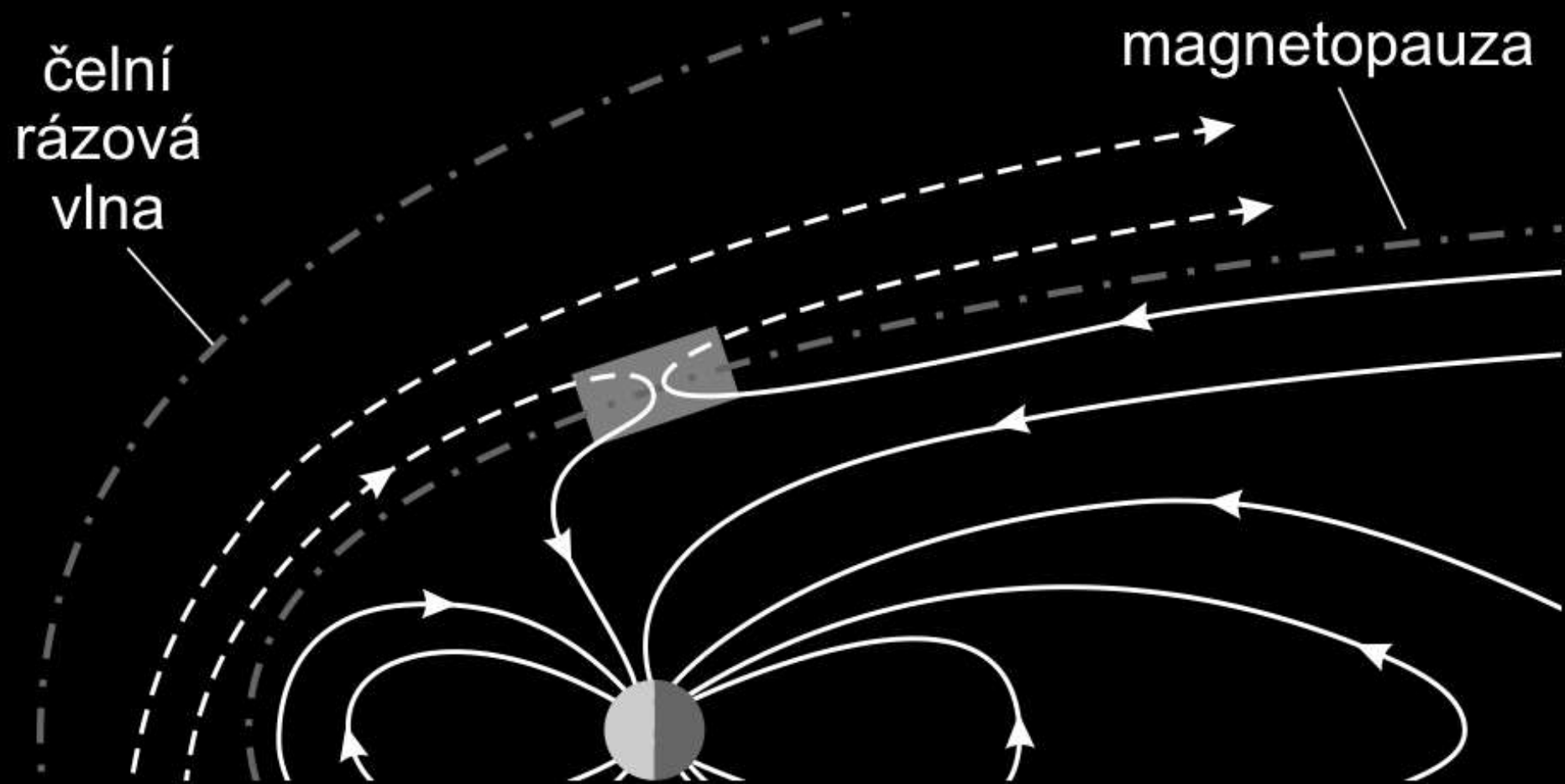
Země



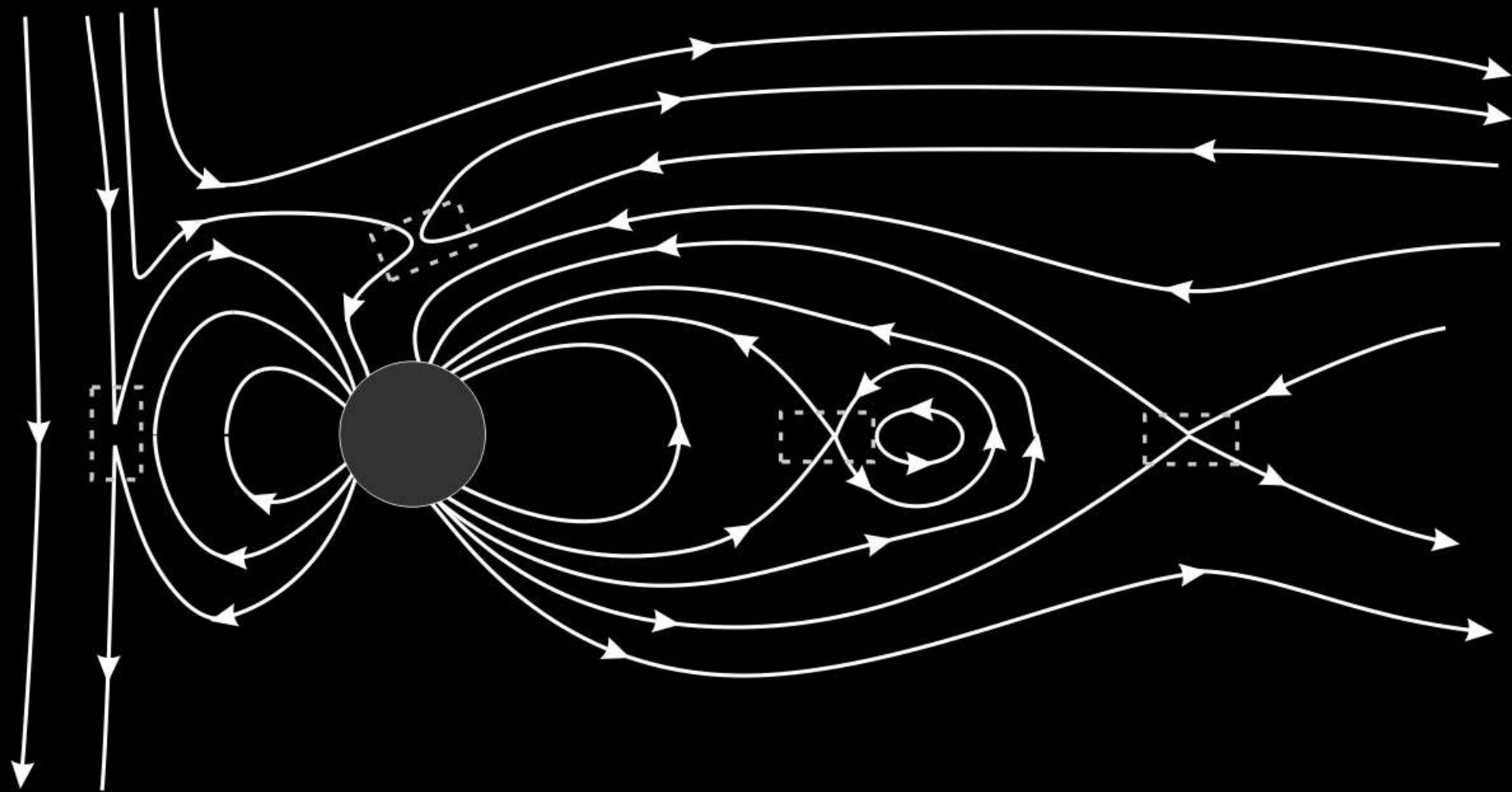
Země

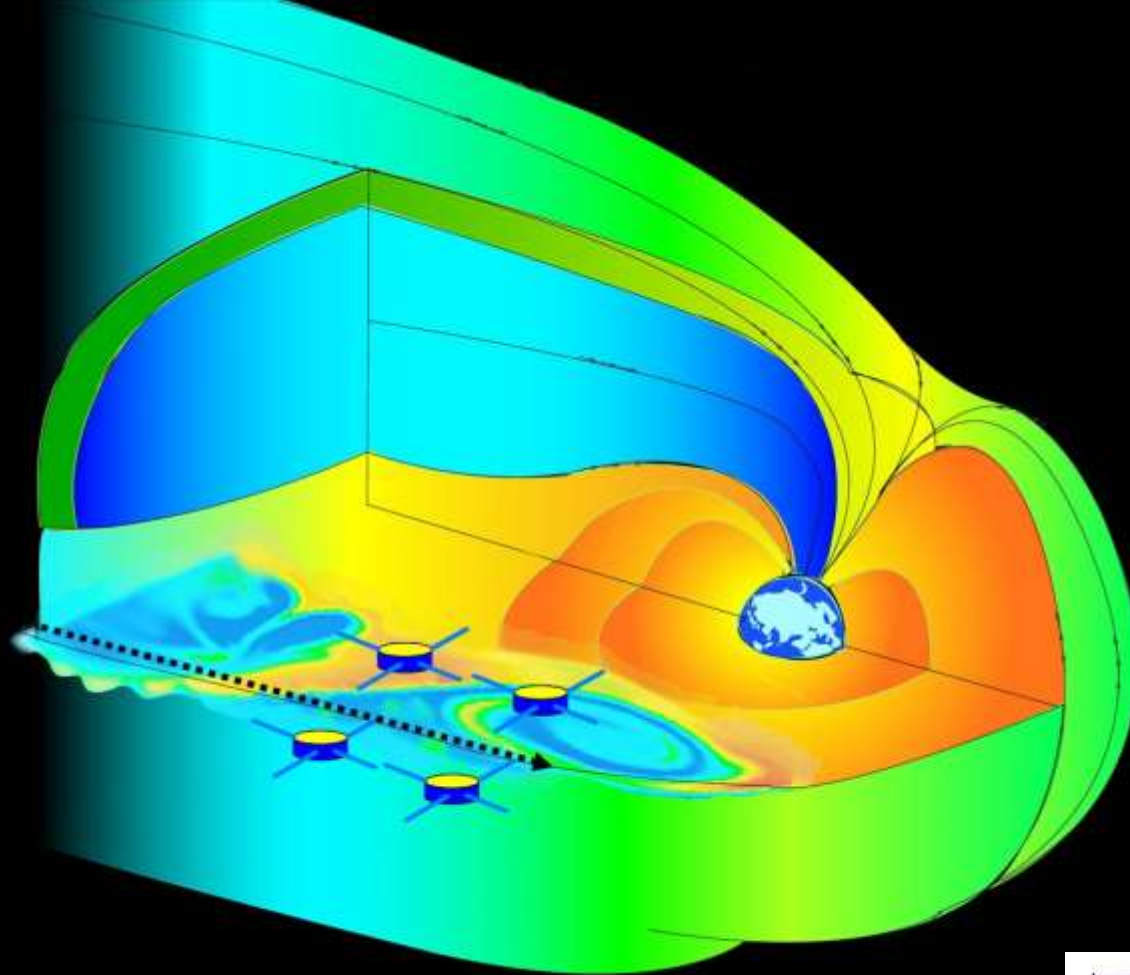


Země



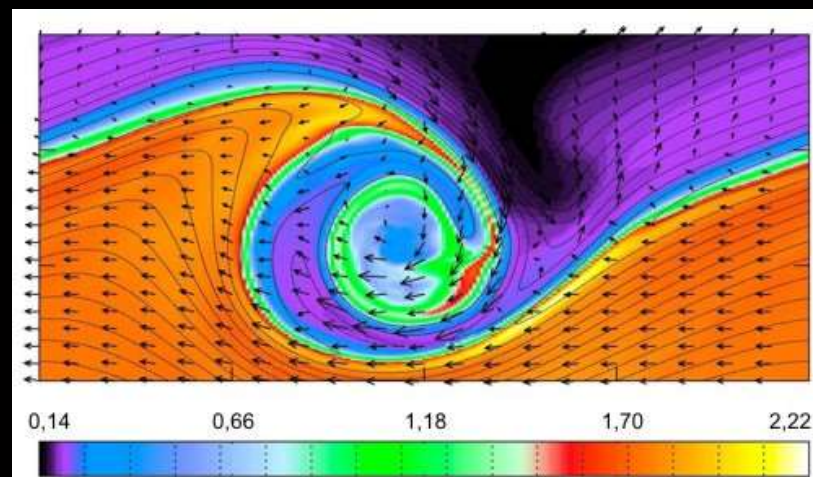
Země





d ~ 40 000 km až 55 000 km
Kelvinova Helmholtzova nestabilita

2001 – pořízení dat
2004 – zpracování
2006 – interpretace a pochopení



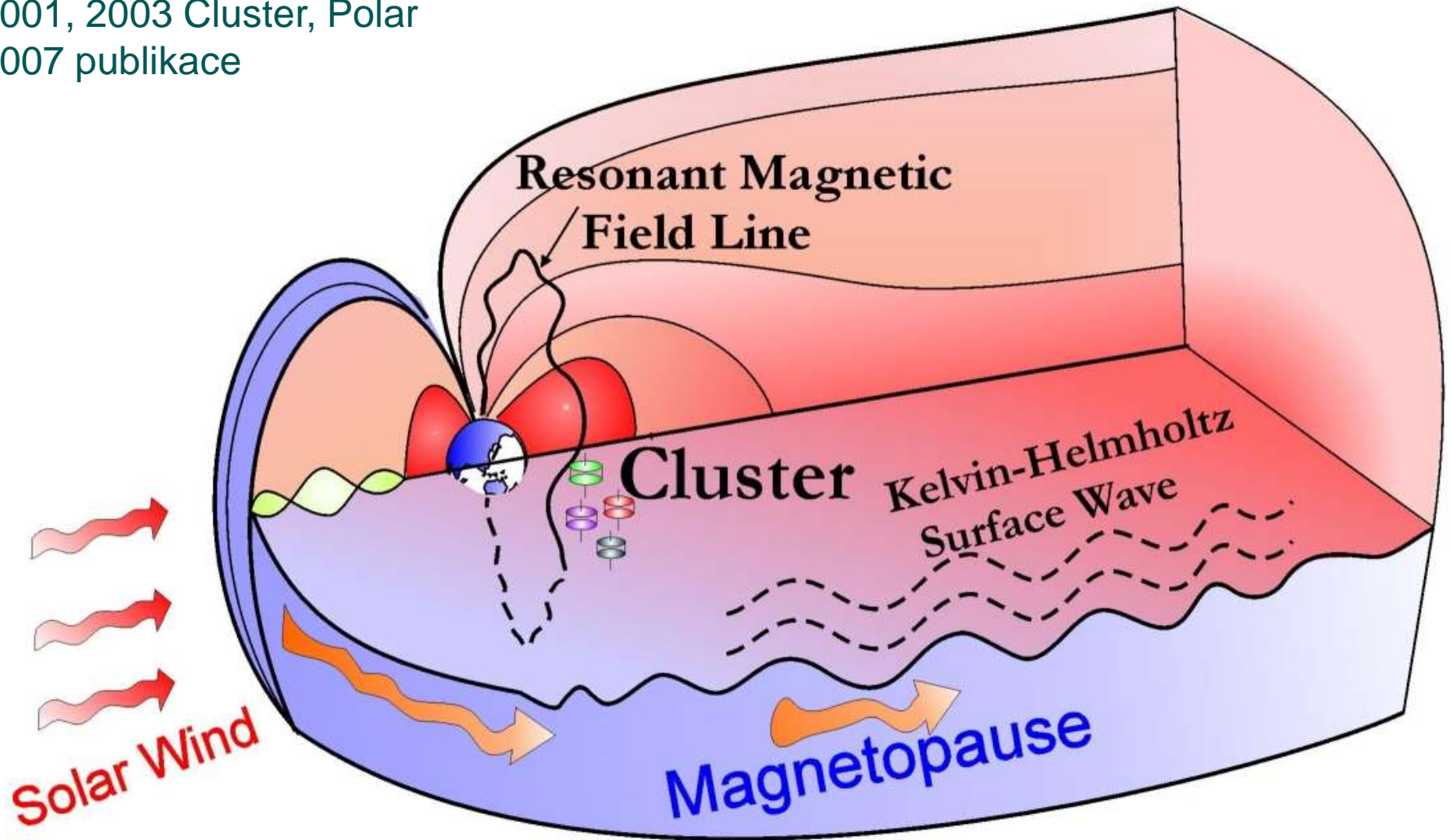
Cluster, víry na boku magnetosféry, prosinec 2006

Cluster, ULF vlny

1859 – první pozorování ULF vln

2001, 2003 Cluster, Polar

2007 publikace





Sluneční soustava



planeta	pole na rovníku [μT]	dipólový moment [$\text{T}\cdot\text{m}^3$]
Merkur	0,33	$4,8\times 10^{12}$
Venuše	0	0
Země	31	8×10^{15}
Mars	0	0
Jupiter	430	160×10^{18}
Saturn	21	$4,6\times 10^{18}$
Uran	23	$0,39\times 10^{18}$
Neptun	14	$0,21\times 10^{18}$

