

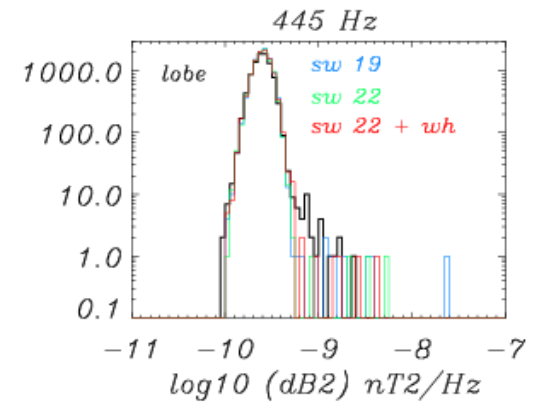
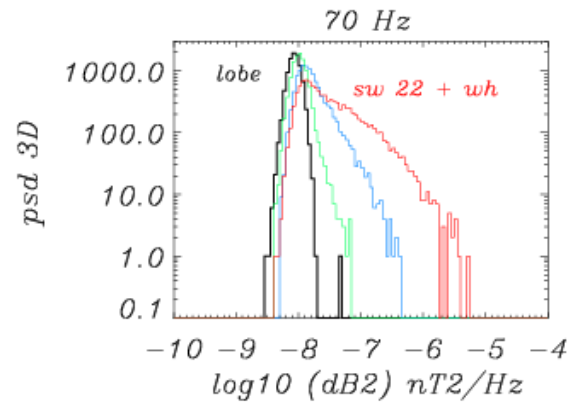
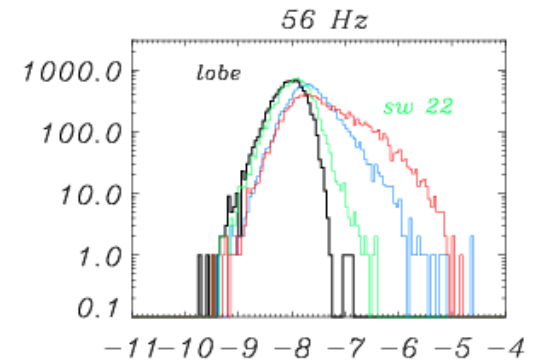
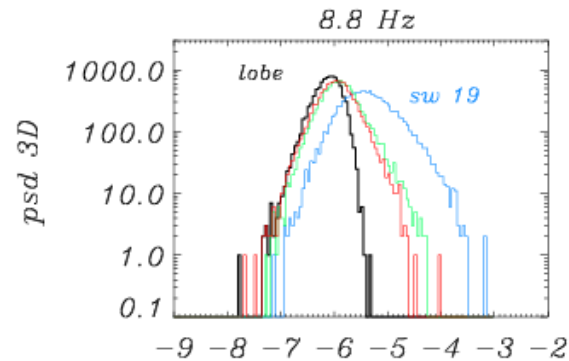
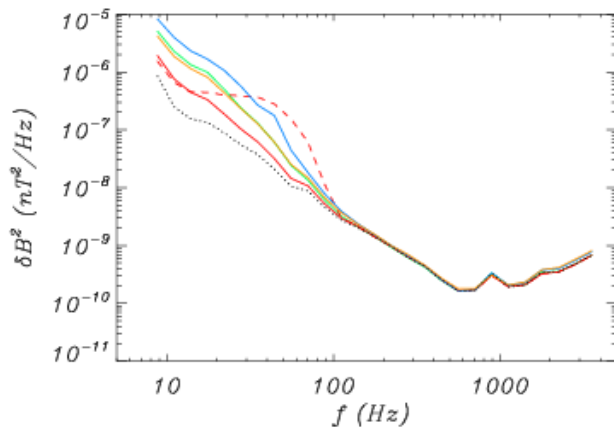
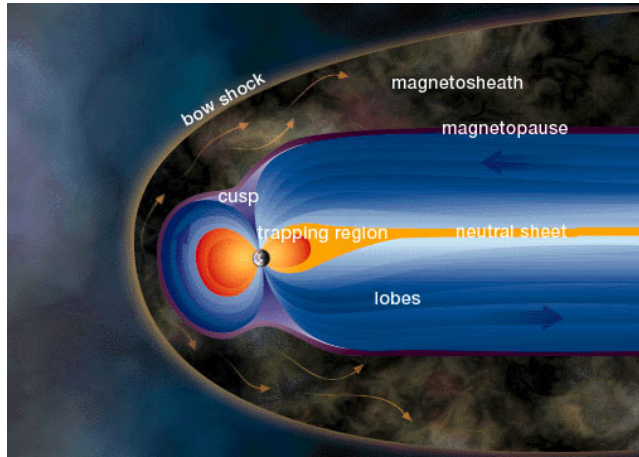
SCM noise in-flight estimations

Olga Alexandrova, Xavier Bonnin, Milan Maksimovic (LESIA)

With participation of
Catherine Lacombe (LESIA), Alexandra Alexandrova (LPP) and
Nikolai Tsyganenko (Saint Petersburg University, SPBU)

SCM noise: Cluster measurements in the lobes

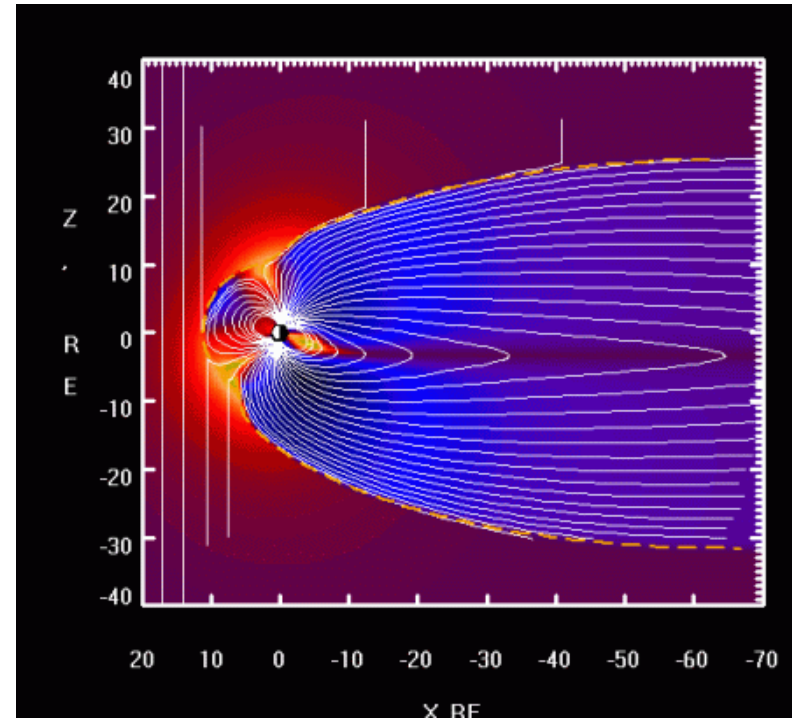
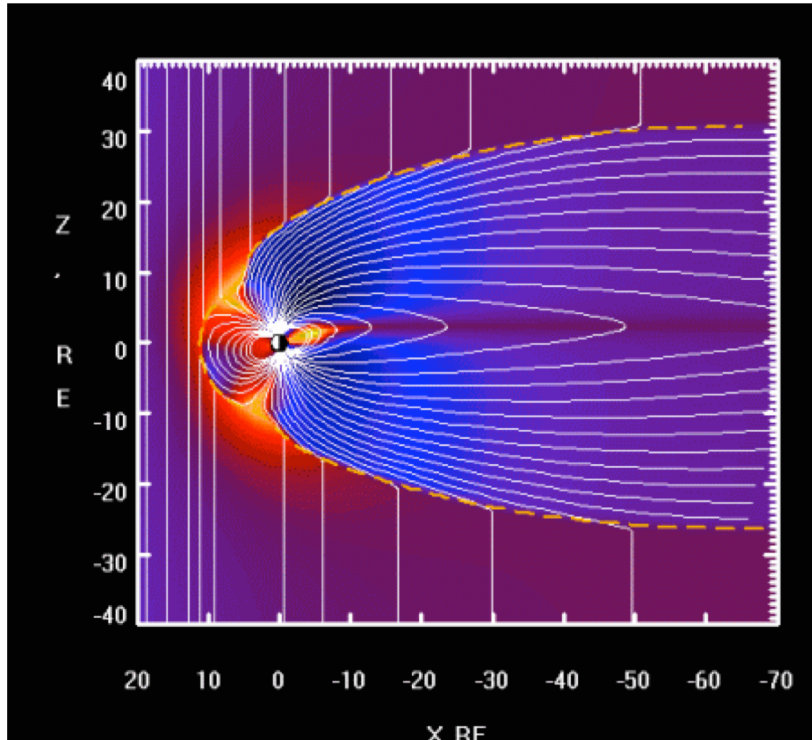
Magnetospheric lobes are 'empty' ($n \sim 0.1 \text{ cm}^{-3}$) => instrument measures itself



Background noise level is not a fix value of energy at a given frequency but a random variable within a broad range of energies.

Localisation of the lobes in space ?

Modeling the Earth's Magnetosphere by Tsyganenko



<http://geo.phys.spbu.ru/~tsyganenko/modeling.html>

Magnetosphere is very variable:

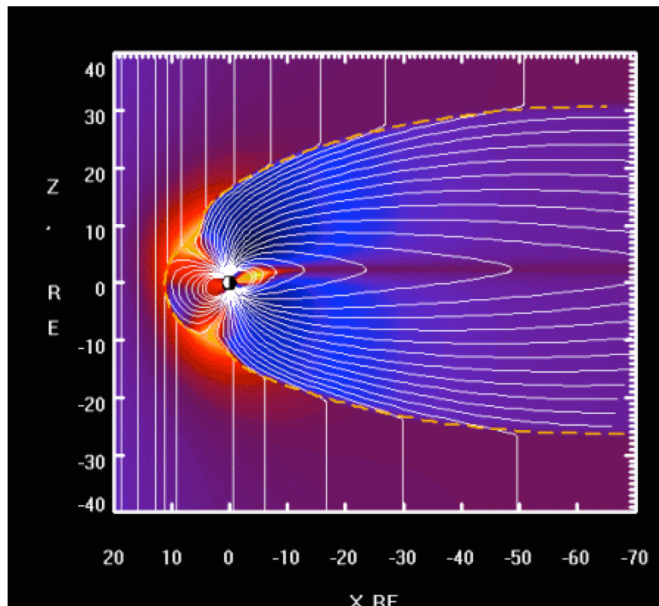
- Dependence on a season
- Dependence on the solar wind dynamical pressure and B-orientation

Localisation of the lobes in space...

Magnetosphere is very variable:

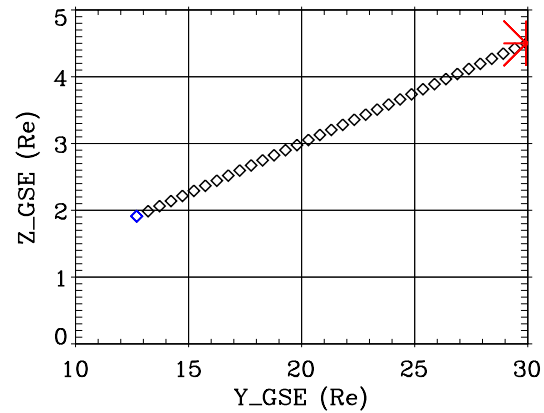
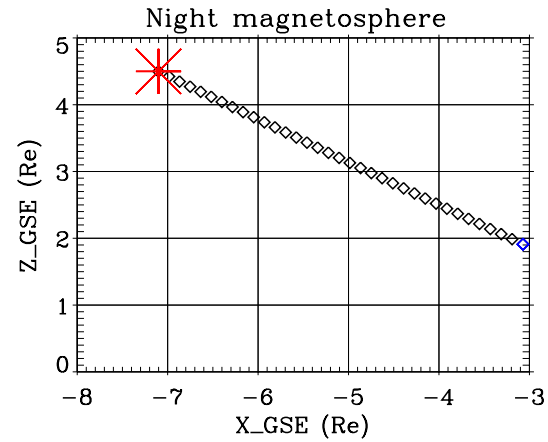
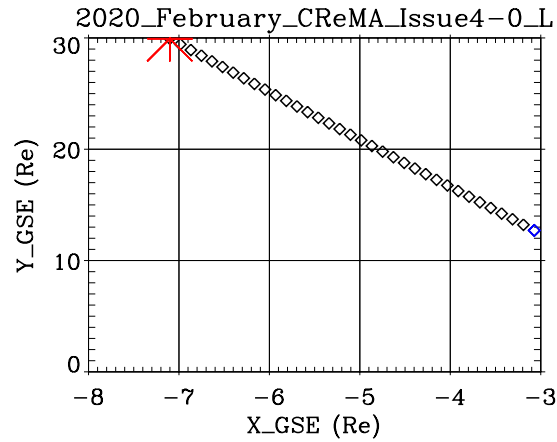
- Dependence on a season
- Dependence on the solar wind dynamical pressure and B-orientation => plasma sheet thickness varies a lot, positions of the lobes as well...

Strategy: measure the night-side magnetosphere everywhere we can do it and then we will surely get measurements in the lobes.



$$\begin{aligned}x &< -3 R_E \\y &\in (-30, 30) R_E \\z &\in (-30, 30) R_E\end{aligned}$$

Lancement 2020 : Earth's magnetosphere crossings

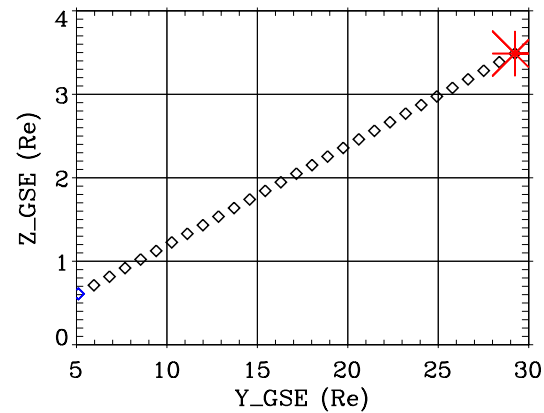
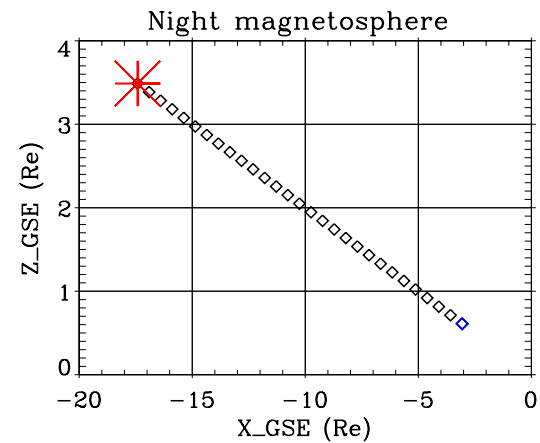
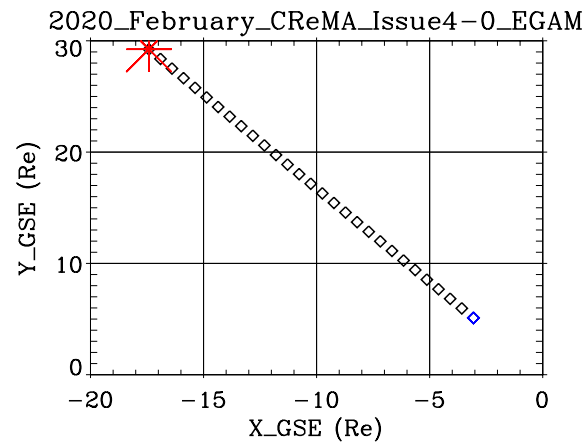


$X < -3\text{Re}$, $\text{abs}(Y) < 30\text{Re}$, $\text{abs}(Z) < 30\text{Re}$

$t_{\text{start}} = 2020 \text{ FEB } 07 \text{ 04:10:00.0}$

$t_{\text{fin}} = 2020 \text{ FEB } 07 \text{ 09:50:00.0}$

Earth's magnetosphere crossings: fly-by 2021



$-3\text{Re} > X, \text{abs}(Y) < 30\text{Re}, \text{abs}(Z) < 30\text{Re}$

$t_{\text{start}} = 2021 \text{ NOV } 26 \text{ 05:50:00.0}$

$t_{\text{fin}} = 2021 \text{ NOV } 26 \text{ 10:30:00.0}$