

## CNES development and experiments on ESD

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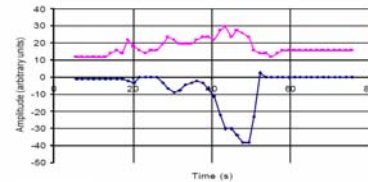
### Sensor developed or funded by CNES

- CESR sensors
- SILLAGE potential measurement in the ram and the wake of the SPOT4 satellite (in orbit since 24 mars 1998)
- AMBER sensor positive and negative particles measurements

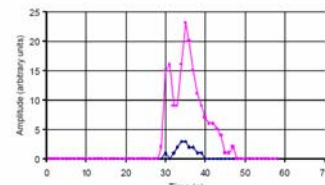
## SILLAGE experiment on board SPOT4



Two voltage probes were aboard SPOT-4, one on the wake wall, the second one on the opposite face, on the ram side. Each sensor is an electrostatic voltmeter monitoring the positive or negative voltage of an insulated aluminum electrode with respect to the spacecraft main frame. The first objective of this experiment was appreciating the charging hazards on LEO orbits, especially when crossing the auroral zones.



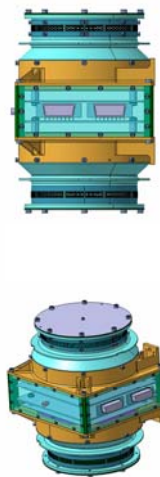
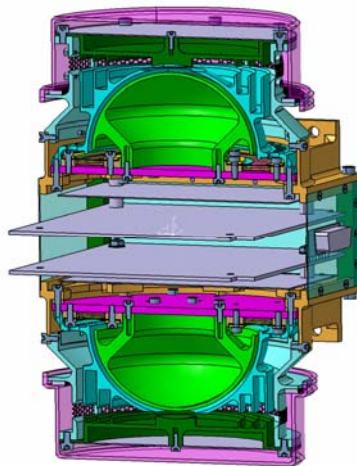
May 2, 1998 event, North auroral zone.



April 25, 1998 event, South auroral zone.

## AMBER sensor

Analyse and Measurement on Board of Electrostatic Risk



- Study done, realisation to be done
- Angle of visibility 180°
- Electrons and Ions measurement on LOG scale
- Flux from some pA/cm<sup>2</sup> to some nA/cm<sup>2</sup>. Energy from 80eV up to 35keV.
- Sphere Radius internal 36 mm, external 37.8mm.
- Consumption 1W
- Input Voltages +12V +5V from interface
- Weight below 1.5kg.
- Spacecraft interface : ICARE