

CANSAT - FRANCE

Proposed missions for the 2010 competition

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1 **Preamble:**

This document provides complementary informations to the Cansat French competition Design Guide. This document is dedicated to the 2010 Cansat French competition and includes:

- The proposed scientific missions. At least one from these missions should be chosen by the team.
- The detailed planning
- The notation system

2 **Definitions:**

Cansat: a mini « space probe », with a volume between 33cl and 1 litter and having a « Can » shape.

Organisation: composed from CNES and Planète Sciences members. Management of the competition.

Technical committee: composed from CNES and Planète Science Experts. In charge of the Cansat projects follow on. Managed by a Planète Sciences member.

Board: examiners, from CNES, Space industry and Planète Sciences. Present during the competition itself.

3 **Proposed missions:**

The 2010 teams must choose a mission among the following proposed missions.

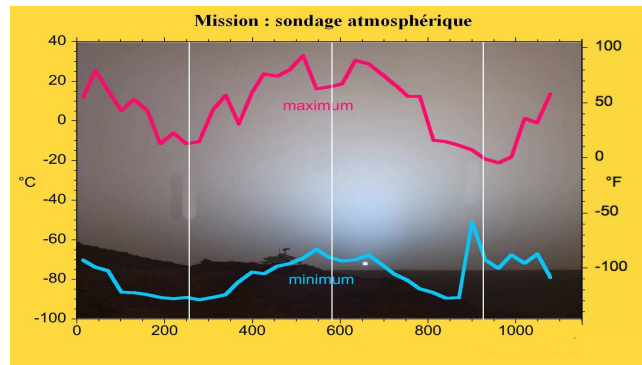
Atmospheric sounding:

During the descent phase, the Cansat will measure and transfer to the ground station via telemetry:

- The air temperature
- The altitude

This should be done, at least every 5 seconds

The average descent velocity will be estimated from the release altitude of the Cansat (known by the organisation) and the total descent time. This value will be compared to the average velocity provided by the teams at 0.2Hz minimum.



Deployment of a RF antenna on ground:

After it's landing, the Cansat should be able to deploy a RF antenna.

Demonstration of telemetry transmission from this antenna is not mandatory (i.e. this is not required that the antenna should be a functional model) but will be appreciated by the jury!

The Antenna will not be composed of a simple flexible wire.

Photo/ Video:

The Cansat should provide a photo from the surround of the launch area and transmit it by telemetry. This photo could either be taken during the descent phase or after landing. However, the quality of the photo will be taken into account for the team notation:



Cansat position without GPS:

On a planet (other than the earth) there are no GPS satellites. A Lander will have to know its position on the planet in order to orientate it's antenna toward the earth.

The aim of this mission is to find the cansat landing point (latitude and longitude in WGS84) **without using a GPS.**

The team will get the initial Cansat position, before release from the balloon.

The Cansat will transmit (by telemetry) the landing position, within a maximum 5 minutes delay after landing... The exact position will be measured by the organisation and compared to the team's provided position.

4 **Technical steps:**

| Calendar | Events | Deliveries | Remark |
|--------------------------------|--|--|---|
| Before the competition | | | |
| 31 st December 2009 | Deadline for registration (T0 step) | Registration form | Electronic file to be found on the web site |
| 15 th February 2010 | Conception phase | Intermediate Report PowerPoint , 10 slides | <i>Projects selection</i> |
| 30 th April 2010 | Conception phase | Final Report PowerPoint, 10 slides | |
| During the competition | | | |
| J0 | Presentation of the projects (T3 step) | PowerPoint presentation | |
| J0 | Cansat controls (T4 step) | | Check list to be delivered to the team, by the organisation |
| J0+1 | Cansat flight demonstration | | |
| J0+2 | Lesson learned from the flight demonstration | PowerPoint presentation | |

J0 and the location of the competition will be given by the organisation before end of 2009. The competition will probably take place in Biscarosse (south west of Bordeaux) end of august 2010.

5 **Notation:**

| Project presentation | Quotation /5 |
|---|---------------------|
| General presentation | |
| Organisation of the project (tasks, management,) | |
| Cansat (technical issues) | |
| Free mission (innovation, technical...) | |
| Total | / 20 |
| Implementation of the cansat | |
| Controls / chronology | |
| Team organisation | |
| Imposed mission success | |
| Free mission success | |
| Total | / 20 |
| | |
| Come back mission success (option) | / 20 |
| | |
| Flight analysis and conclusion | |
| General presentation | |
| Conclusion on the realisation of the imposed and free missions | |
| Conclusion on the realisation of the come back mission (option) | |
| Conclusion on the project organisation | |
| Total | / 20 |
| | |
| SYNTHESE | |
| Project presentation | |
| Implementation | |
| Come Back mission (Option) | |
| Flight analysis and conclusion | |
| | |
| Final quotation | / 80 |