Nihon University

Team 1 : SAROS

Member

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- Hybrid System, Fly Back & Rover -

Team 2 : CBC-03

Member

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- Many Sensors Data & Fly Back-

ARLISS2005

This year
we've designed a

new concept

Cansat…

SAROS

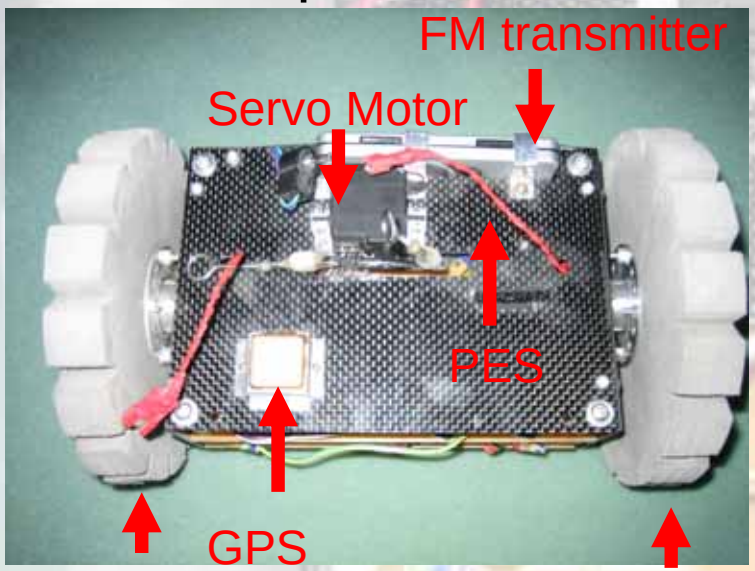
What's new

Introduction

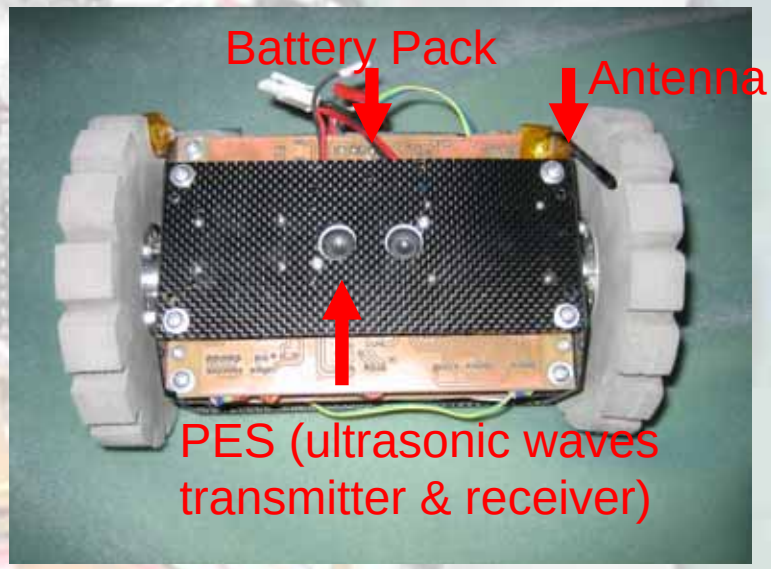
- "SAROS" stands for Satellite And ROver System.
- SAROS has "Hybrid" Comeback System .
  - Flise by Parafoil & Runs by Rover
- SAROS has Main OBC, Sensor Board, Comm. System, and PES
  - PES is Parafoil rElease System.
- CFRP is use to lose its weight.

What's SAROS part 1

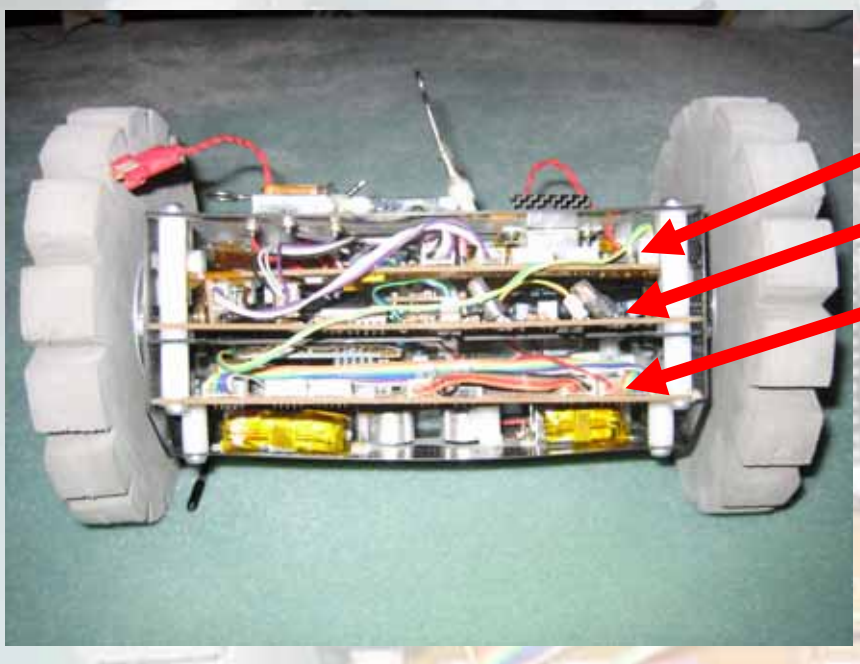
Top View



Bottom View



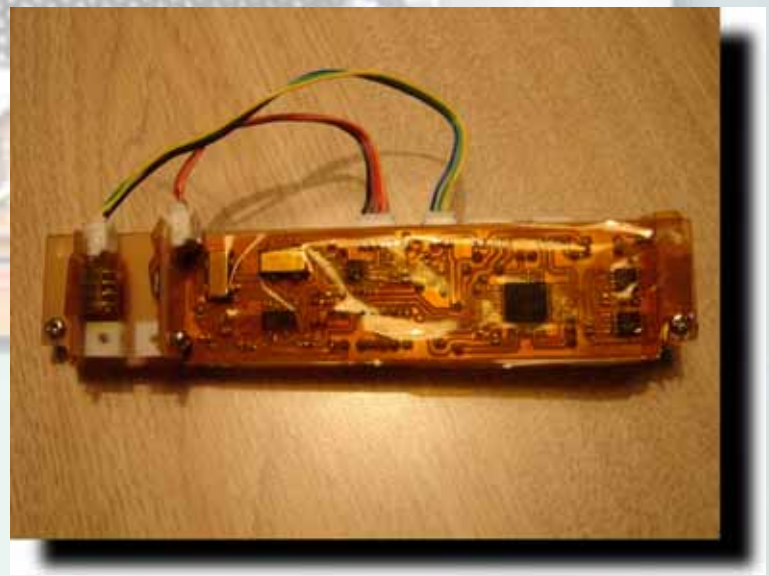
What's SAROS part 2



1st board : sensor board and TNC

2ndboard : Motor control board & PES

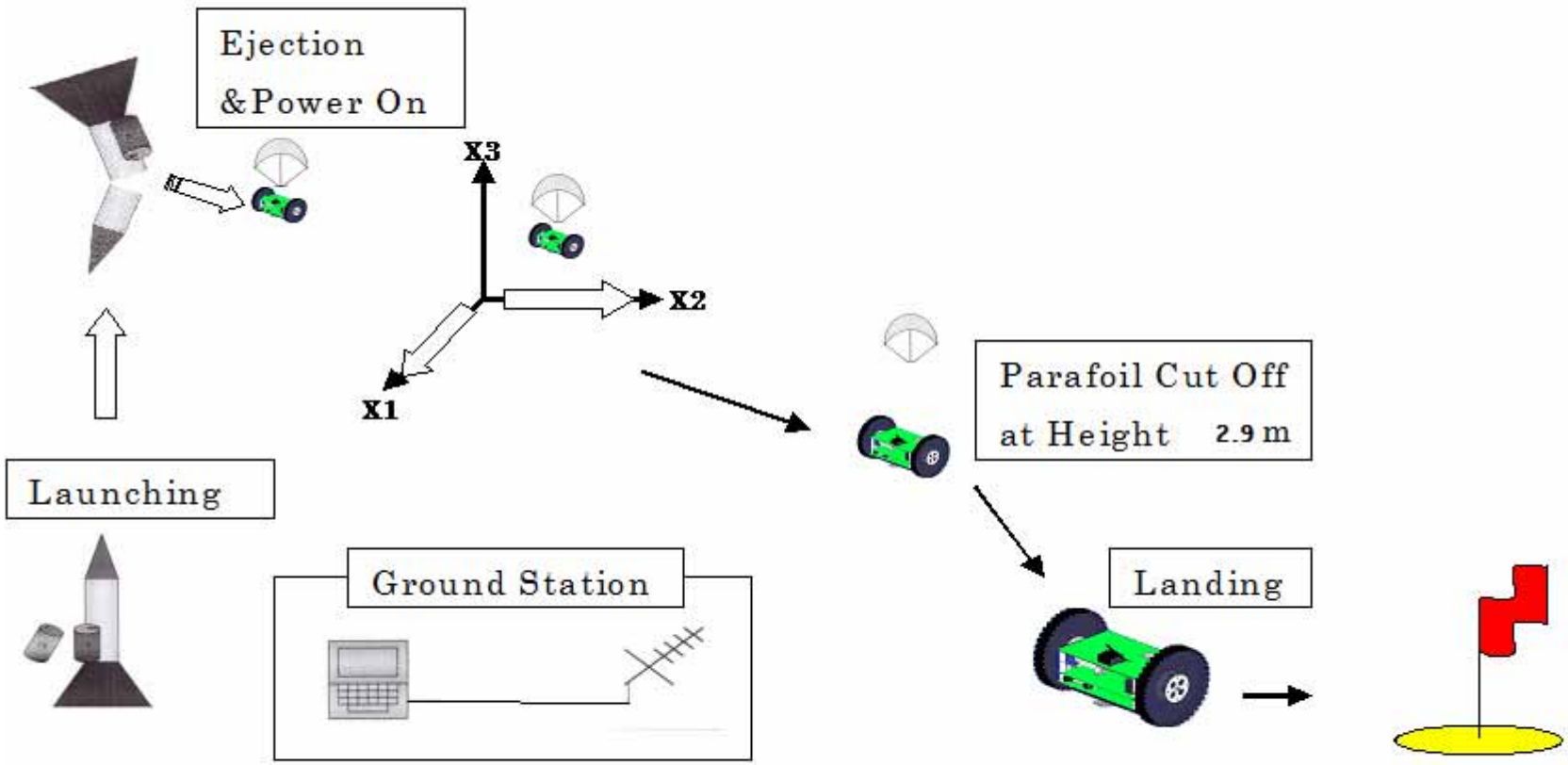
3rdboard : Main board



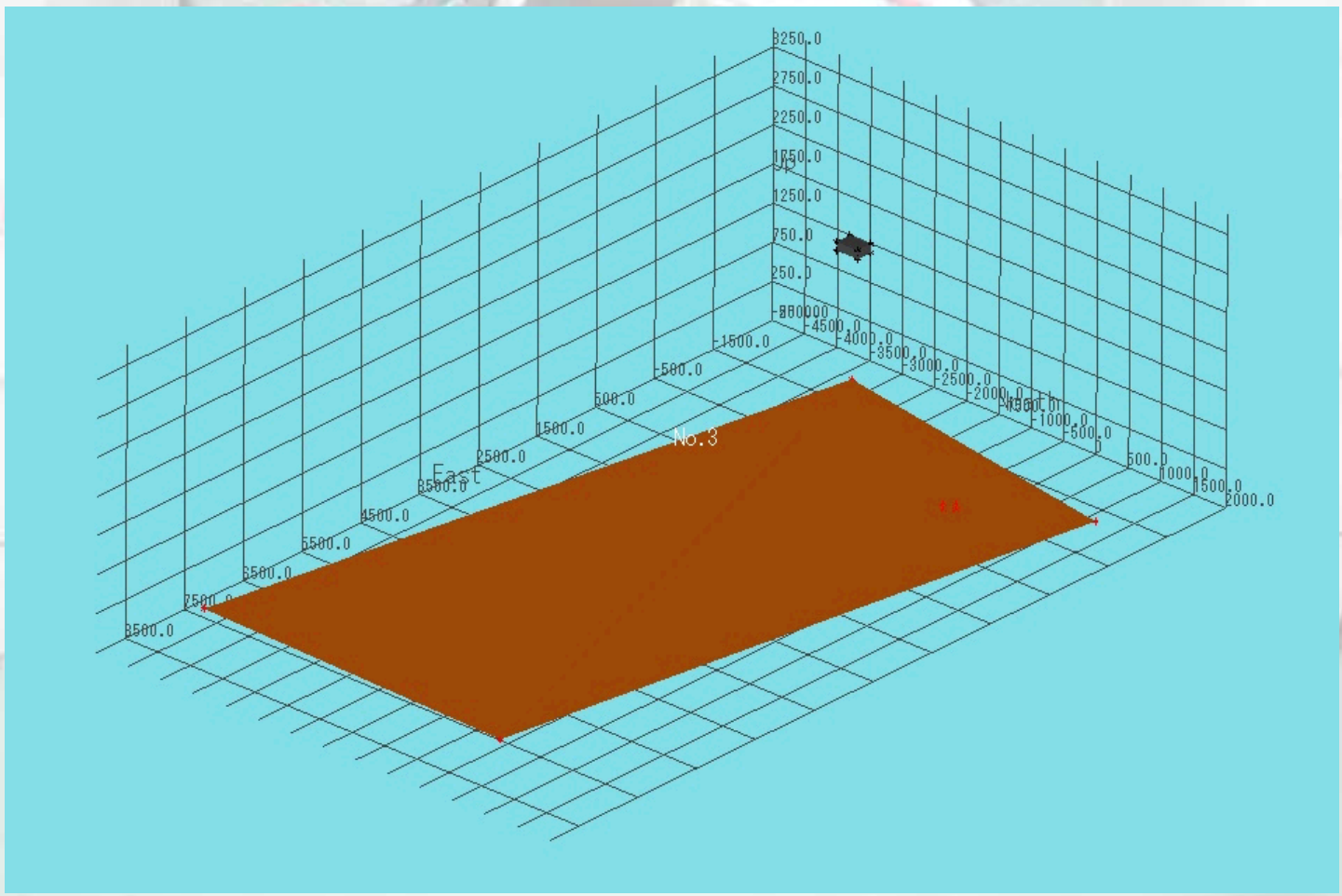
Sensor Board

- Sensor Board consists of
  - 3-axis gyro sensor
  - 3-axis accelerometer sensor
- Data is saved every 0.2 sec.
- Micro computer (PIC with A/D converter) and EEPROM
- Analyzed gotten data can be animated by analysis software

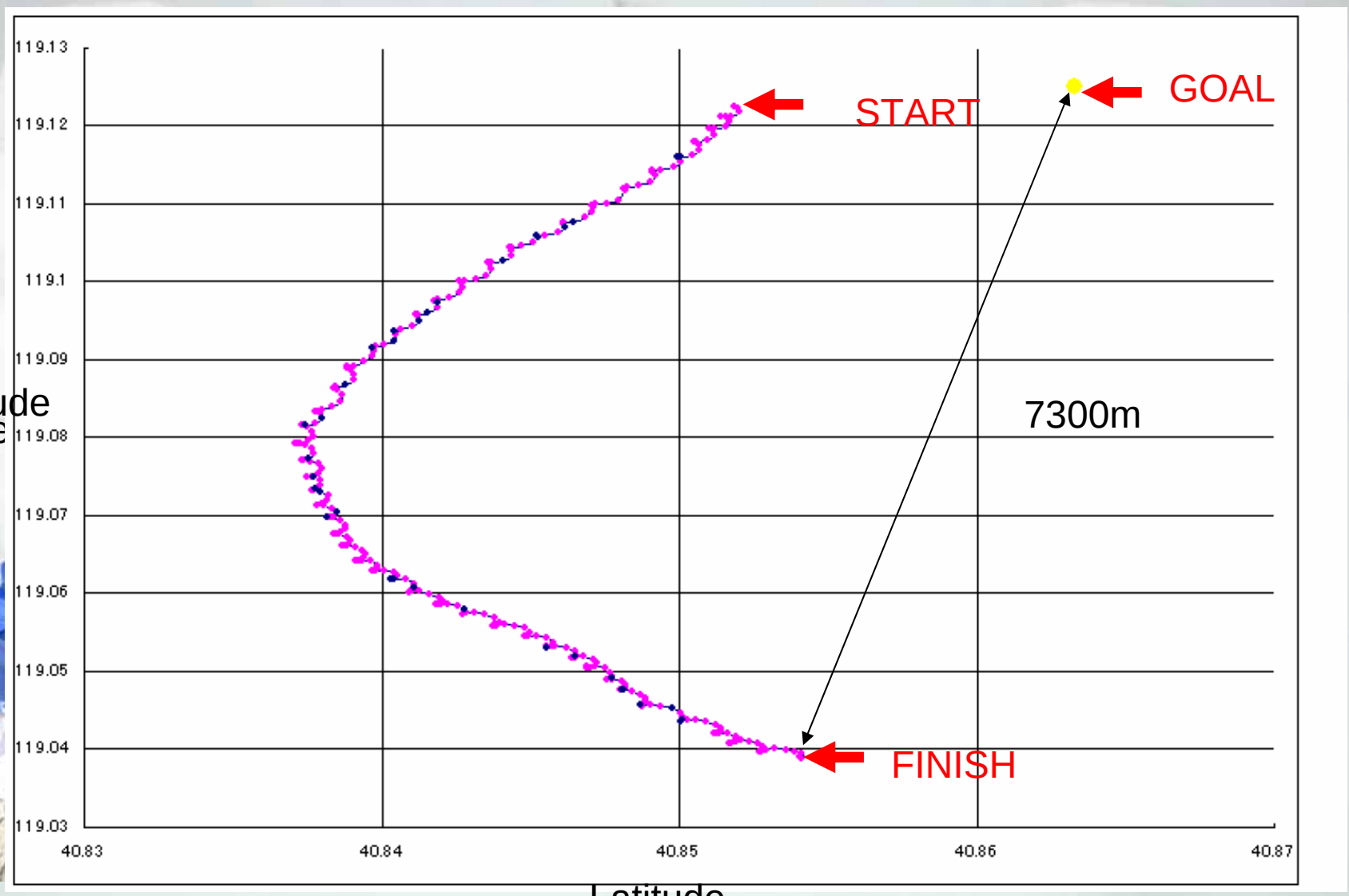
Mission Sequence of SAROS



Result of 1st launch



Result of 1st launch



Result of 2nd launch

Crashed

- Communication system was down
- SAROS was found about 1.5 miles away from the target
- One of the Servo Horn was broken
- We've lost blue parafoil with yellow strings
- We assume that the para had been blown, and SAROS had free fall from high altitude

Thank you for looking for SAROS together !

Conclusion

- FLY BACK PHASE

  -Estimate shocks and vibrations carefully before design, and test enough what we built

  -Ponder control patterns of parafoils

  -Develop new algorithms to guide CanSats to the target which merit even in unexpected wind

- ROVER PHASE

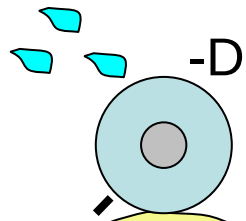
  -More stable cruising and improvement of energy efficiency are required

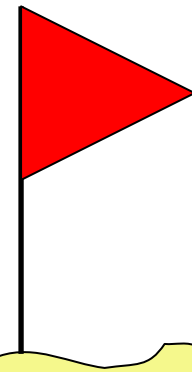
  -Develop the system which can get out of the ruts or evade them

The popularity of ‘rover’ would finish soon !?

In the future, “airplane” CanSats might be the first class !??

We are 開拓者！！





What's CBC-03

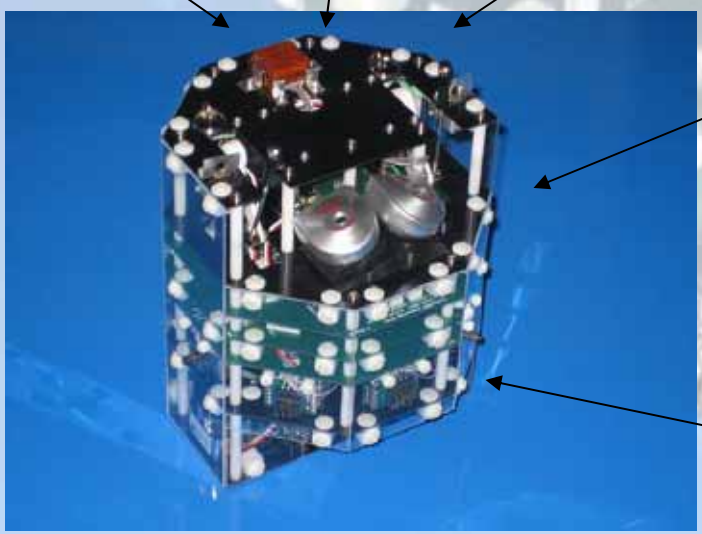
CBC-03S : To give the sensing precedence, this mode makes CanSat keep just neutral.

CBC-03 : This mode makes CanSat return the target.

Servo

GPS

Camera



Pressure Sensor

Gyro Sensor

Acceleration Sensor

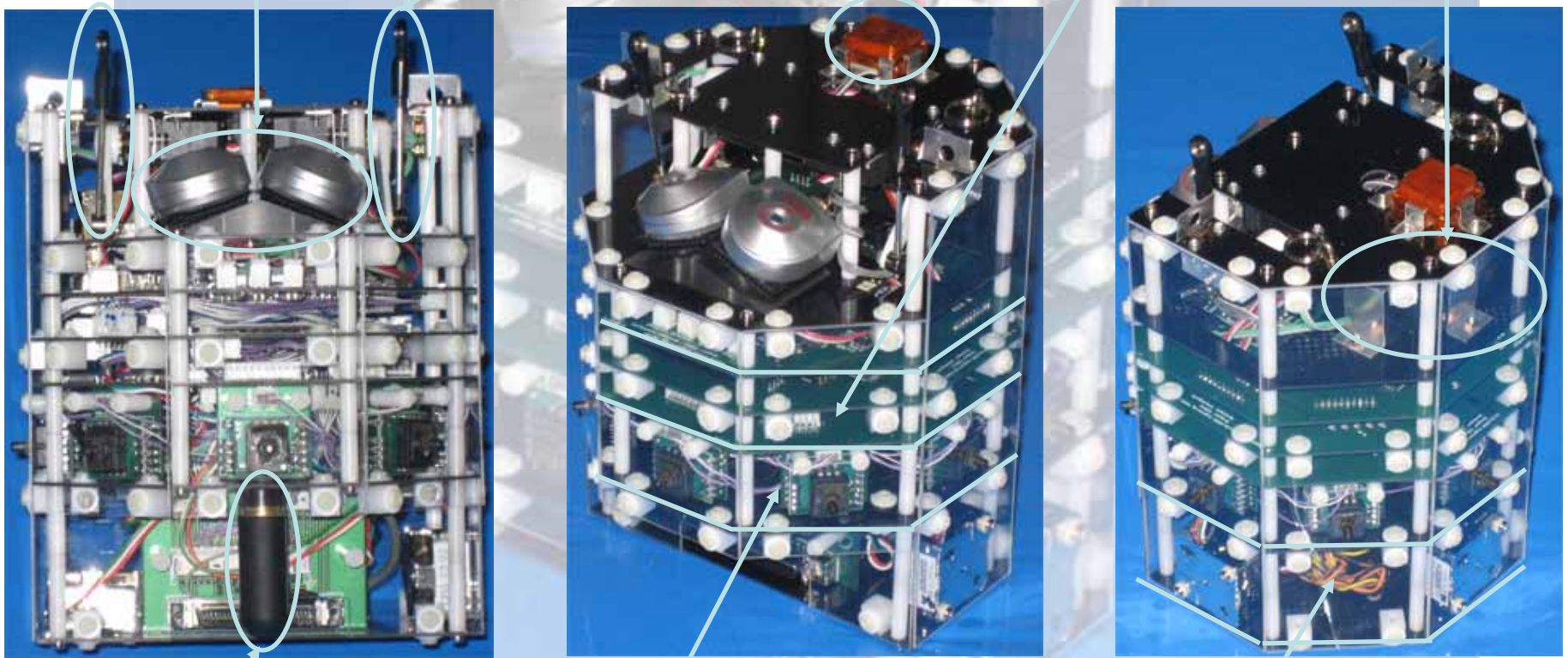
Magnetic Sensor

Thermal Sensor

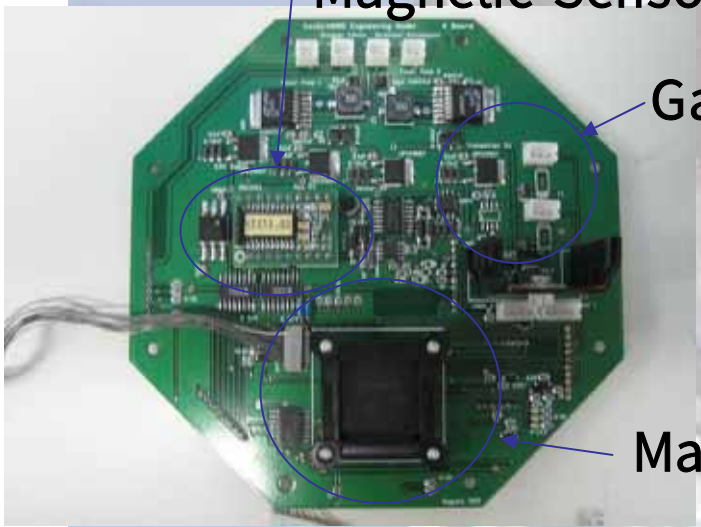
Galvanometer

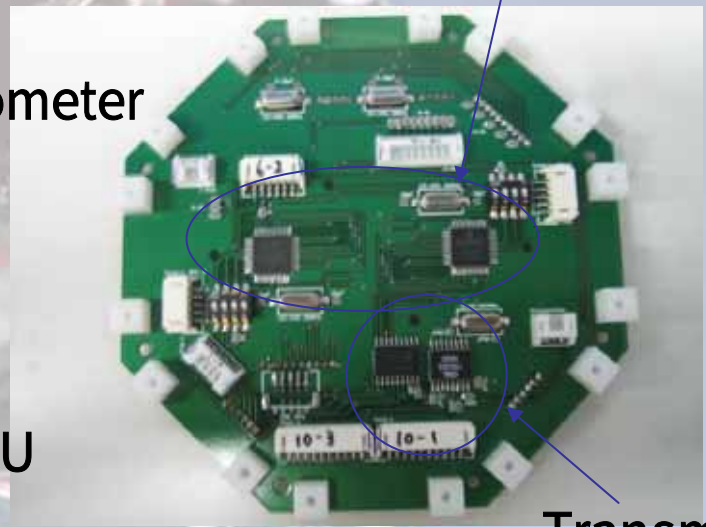
Transmitter

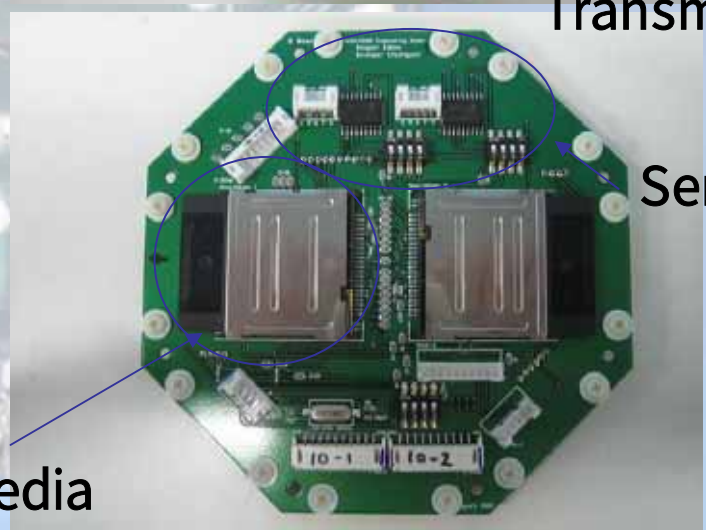
Structure of CBC-03



System - A and B Board



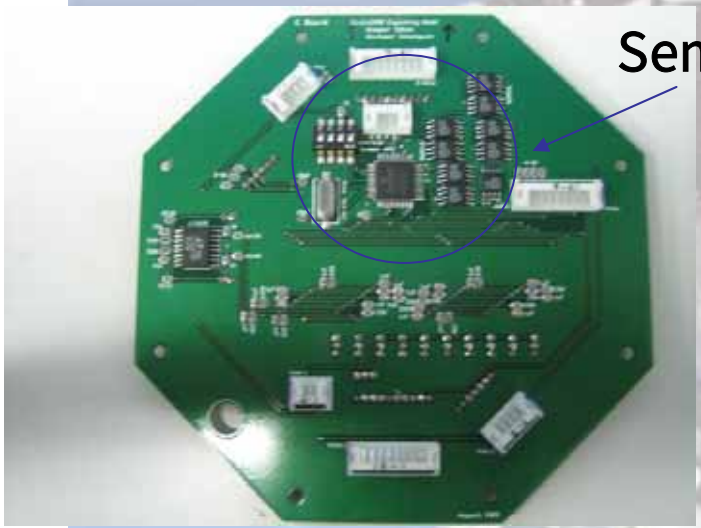




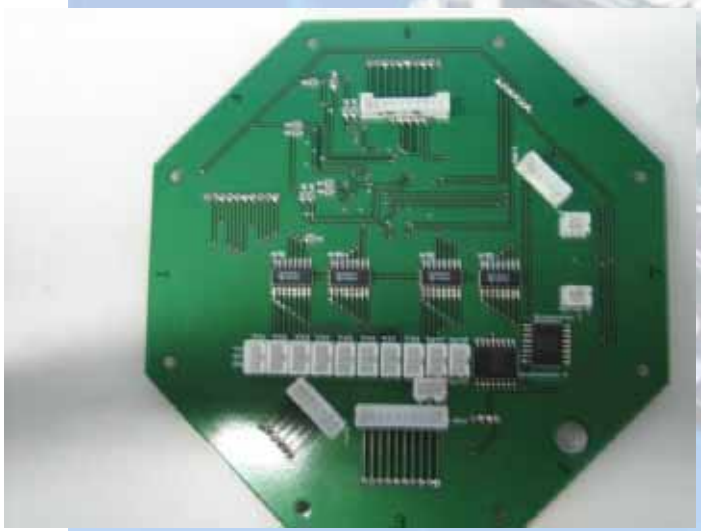
A Board

B Board

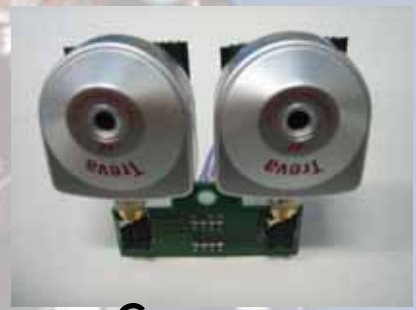
System - C and Other Board



Senor MPU



C Board



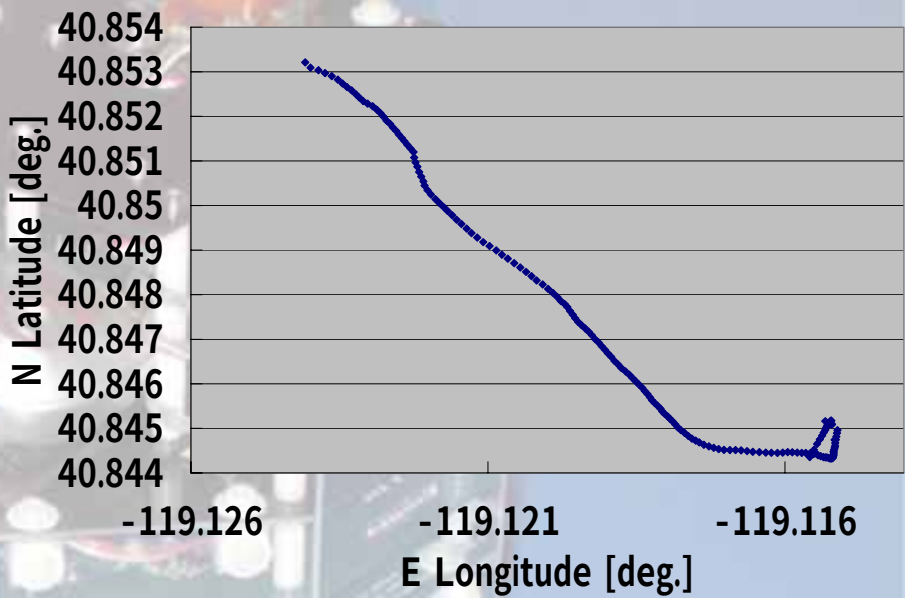
Camera

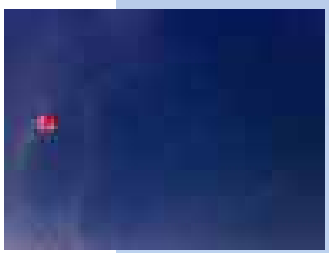
Pressure Sensor

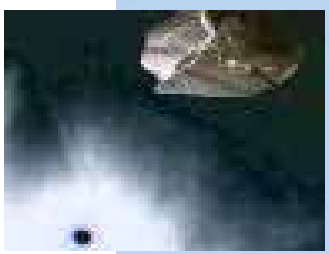
Data Port

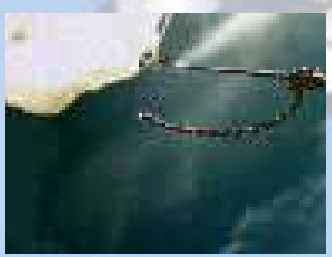
Result - Flight #1

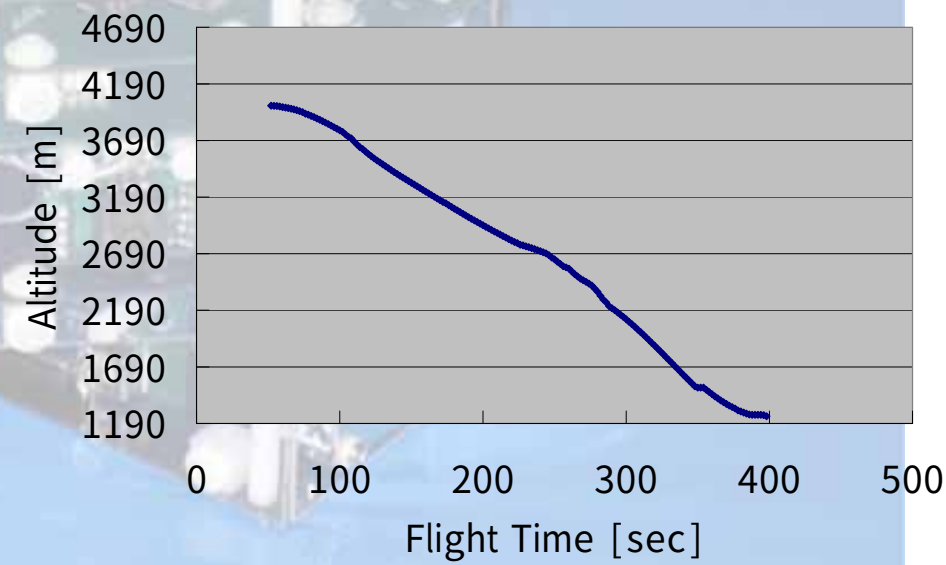
After our CanSat emitted, the ring which is attached the line of Para-Foil was damaged. And our CanSat descended with spin.







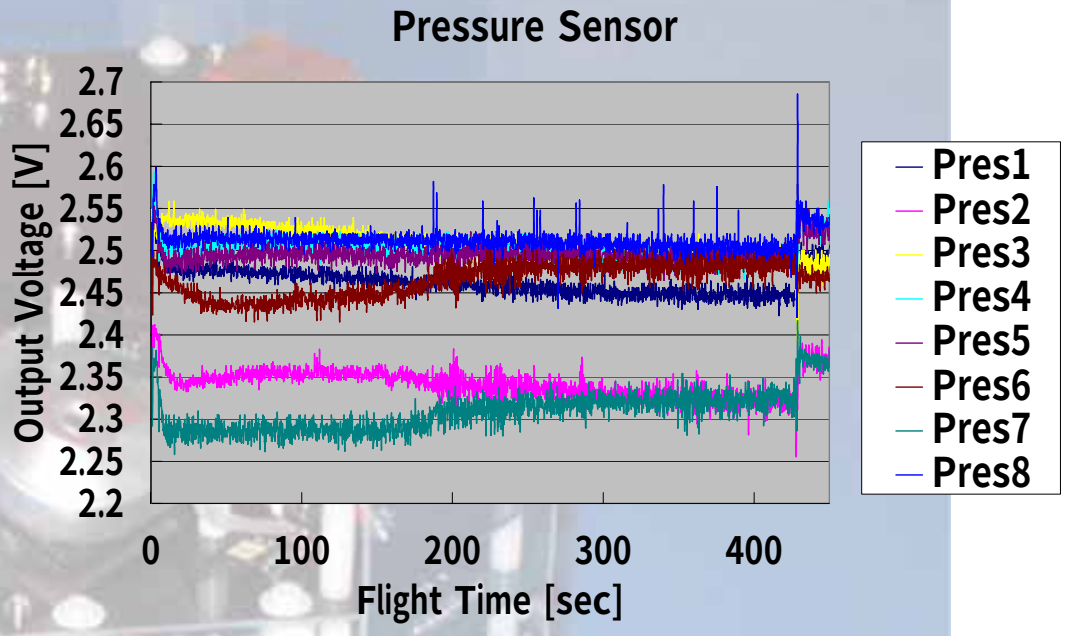


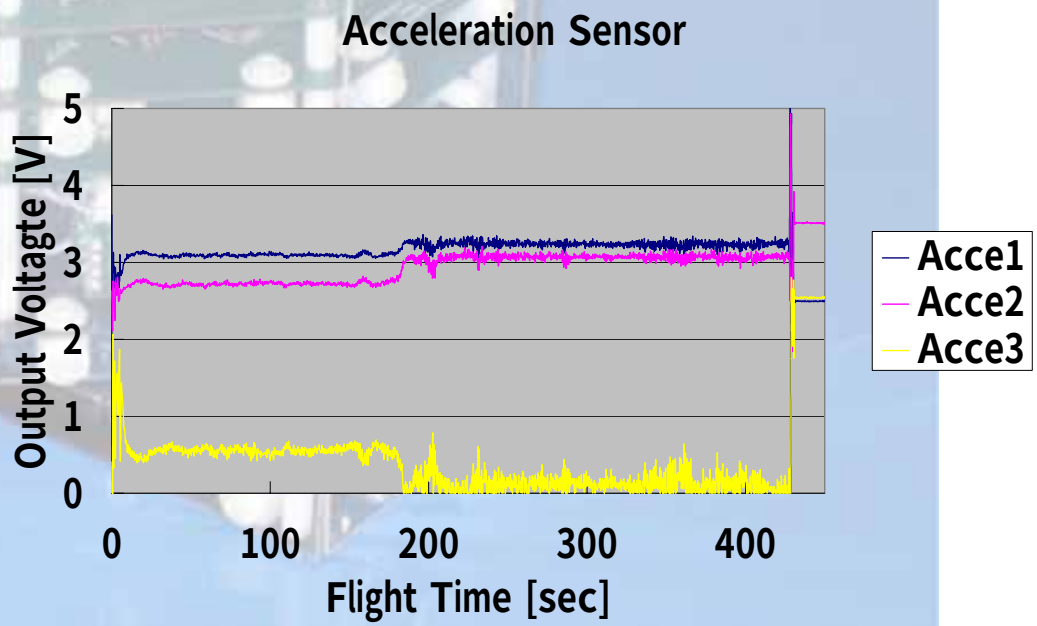


Result - Flight #2

After our CanSat emitted, it couldn't be steady flight, and CanSat can't control own Para-Foil.

But we success getting this un-steady flight data.





Thanks!

ED HACKETT

CBC-03S (1st Flight)

Thank you very much!

GEOFF HUBER

SAROS(1st Flight), CBC-03(1st Flight)

Thank you very much!

Chet Geyer

SAROS(2nd Flight)

Thank you very much!