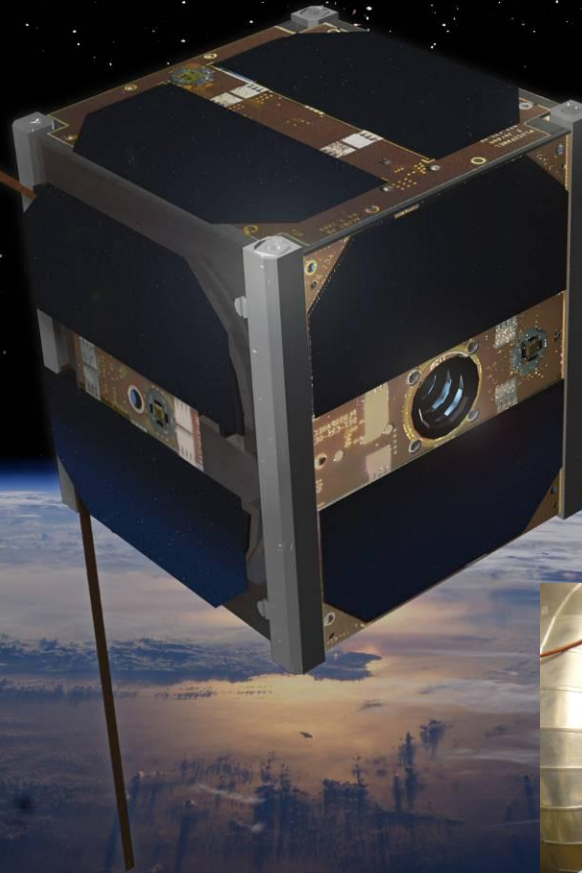


SwissCube Status

02 May 2010



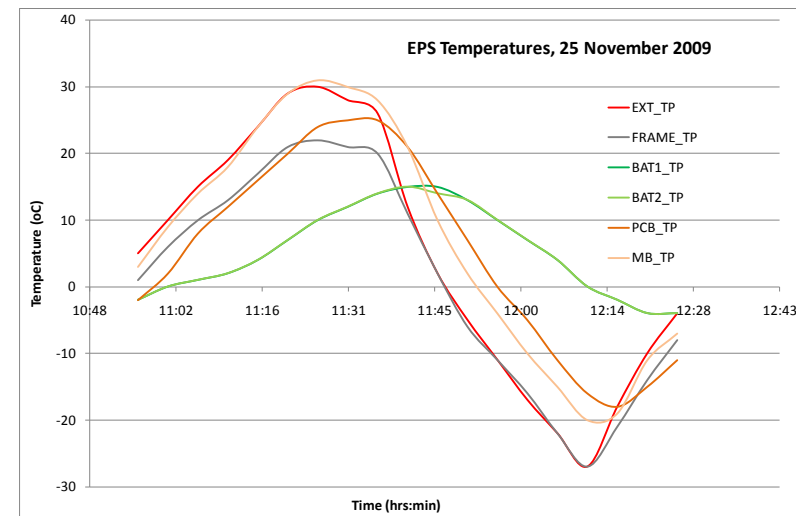
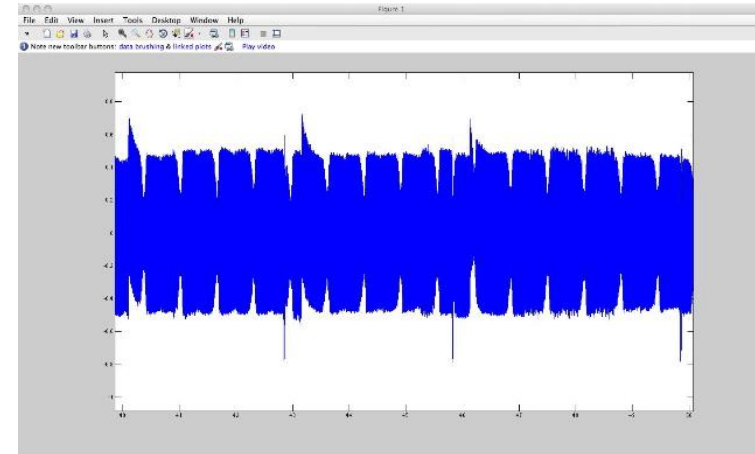
Muriel Noca
Space Center EPFL

Anton Ivanov
Space Center EPFL



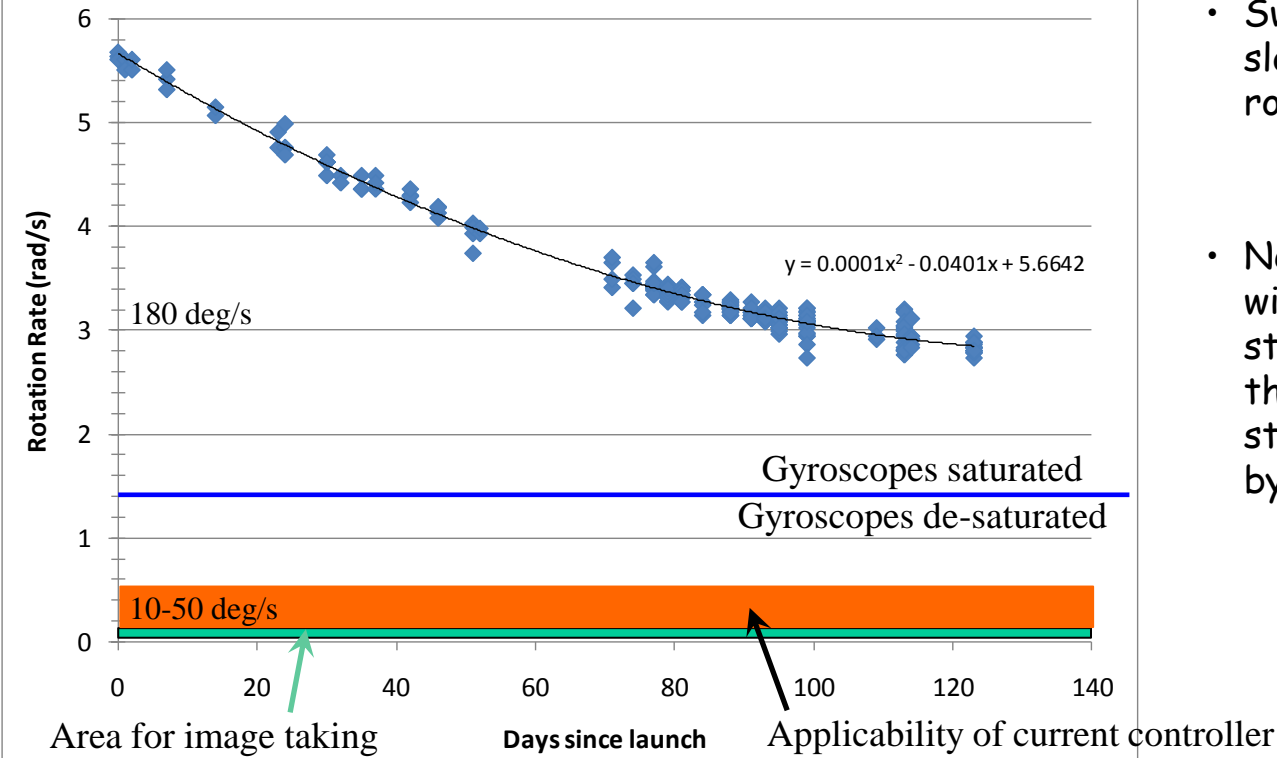
Status of SwissCube in Space

- SwissCube is now at 222 days after launch
 - Designed lifetime of 4 months (120 days)
- SwissCube has had a very high rotation rate since release from PSVL/SPL
 - Cause still unknown, needs further testing
 - Most probably due to Antenna Deployment System
 - RF data shows evidence that SwissCube is slowing down naturally (next slide)
- Satellite's subsystems have been performing quite well and have been responsive when turned on
 - Power and beacon are in good shape
 - Attitude control and payload are off
 - Communication is showing signs of degradation
- SwissCube has experienced 1 reset (non destructive latch-up) and 4-5 current limitator events in 5 months



Rotation Rates

SwissCube rotation rates from Oct. 23 to Feb. 26, 2010

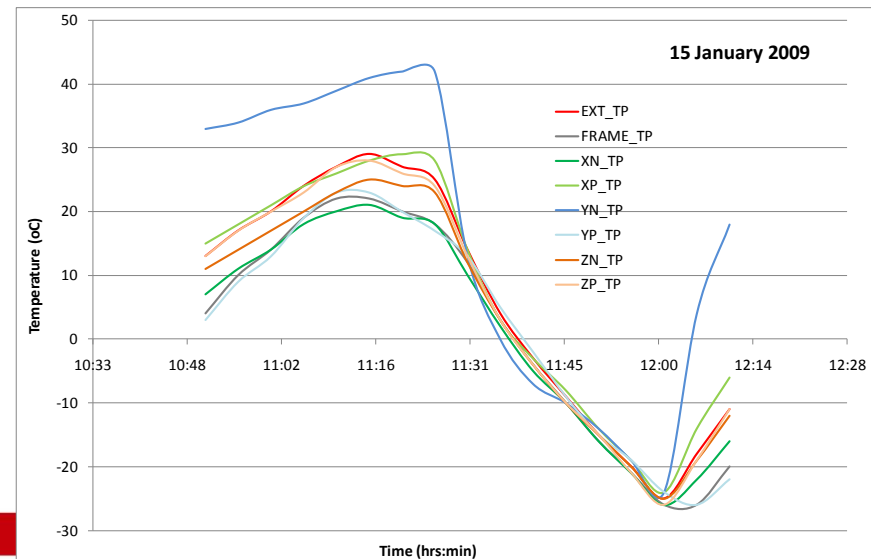
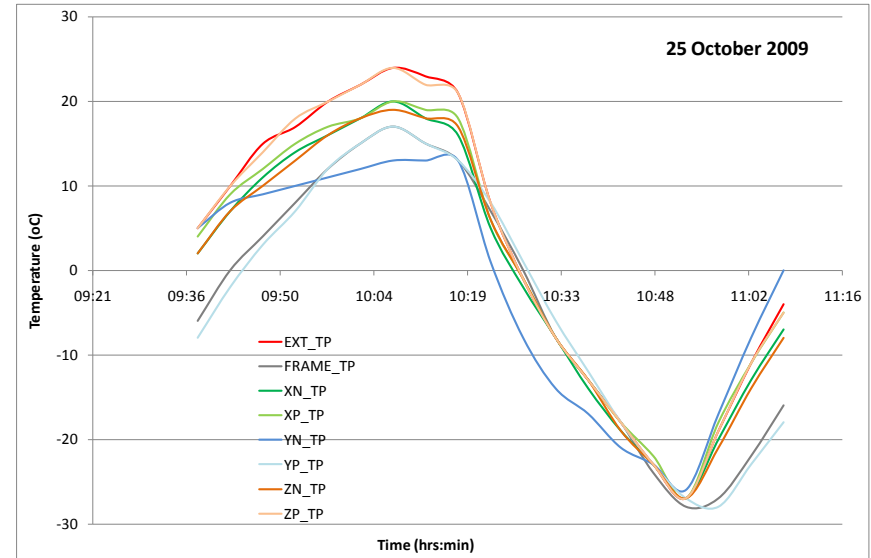
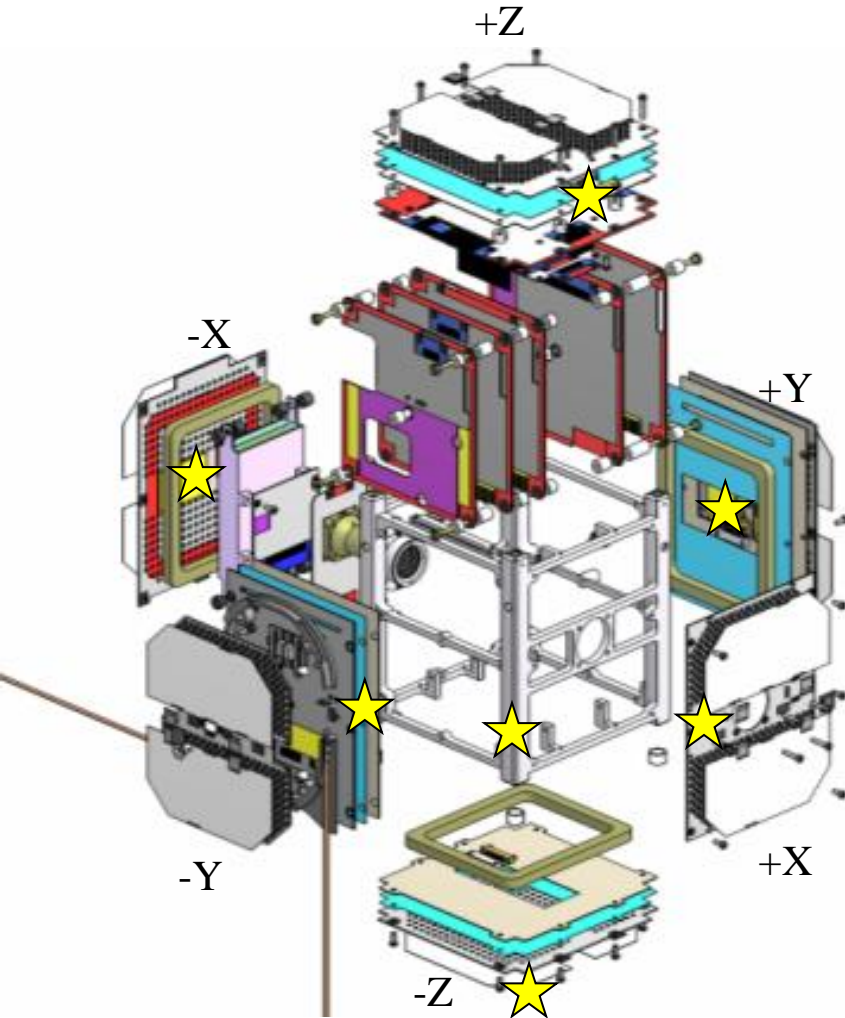


- SwissCube's rotation has naturally slowed down to almost half its initial rotation rates
 - But slow down rate is decreasing
- New simulations done in cooperation with ISIS (NL) show there may be a strategy for actively slowing down the satellite (Bdot controller may be stable even at high rotation rates), by uploading new parameter values
 - Investigating validity and verification of simulations before implementation

OHM:	0.2	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.6	2.8	3
Lambda:															
0.1	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.2	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.3	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.4	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.5	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.6	K-	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+	K+
0.7	K-	K-	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+	K+
0.8	K-	K-	K-	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+
0.9	K-	K-	K-	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+
1	K-	K-	K-	K-	K-	K-	K-	K-	K+	K+	K+	K+	K+	K+	K+

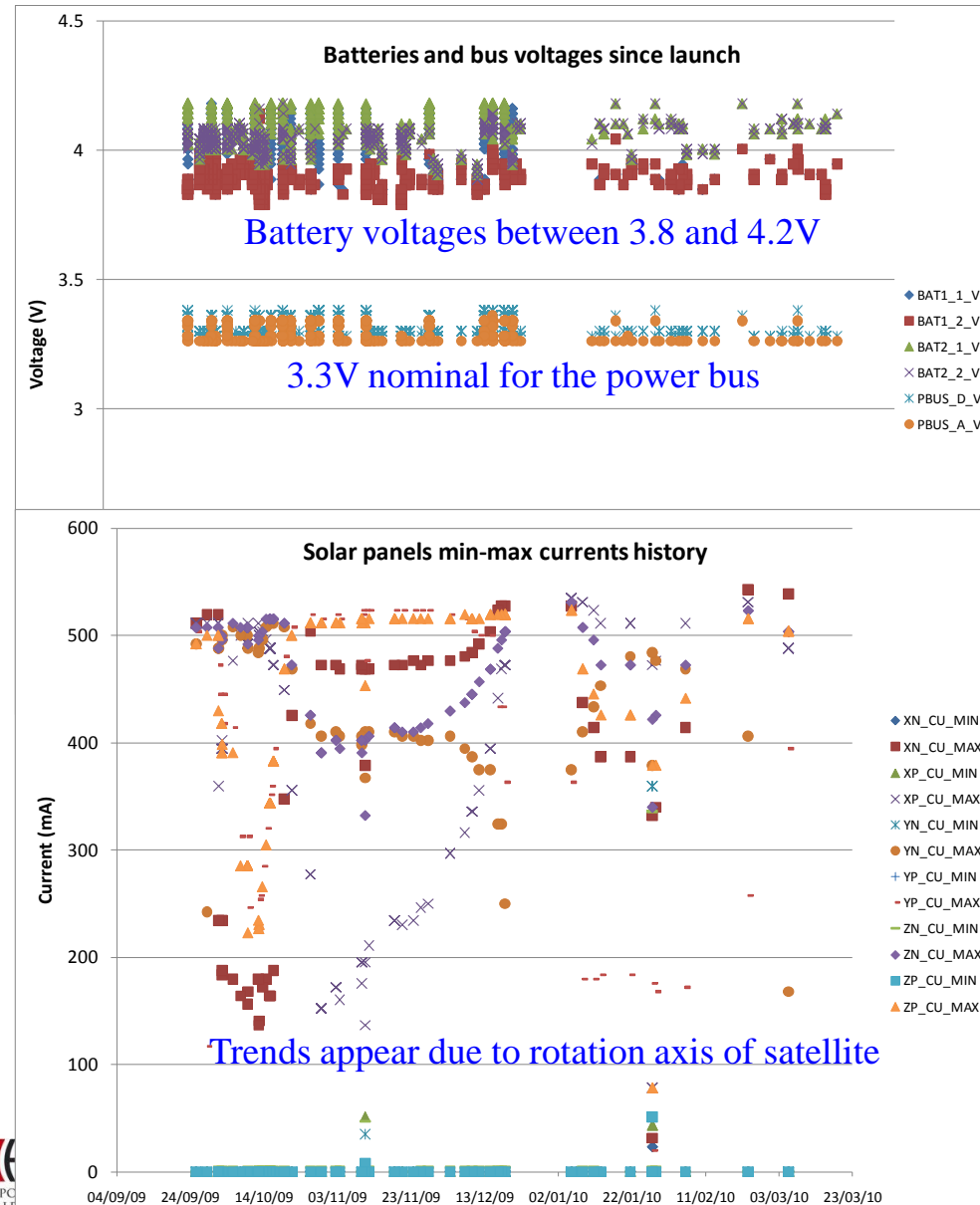
Satellite external temperatures

... within design margins and tests (-50/+70 °C)



On-board Power System

- Power system still working perfectly
- Batteries and power bus voltages are also within performance expectations
- Solar panels currents indicate that all solar panels are functional and within performance expectations



- Degradation of COM board components
 - The uplink receiver frequency is now varying as function of temperature => difficult to follow, to command
 - We are characterizing this frequency shift
 - One student working on this problem
- I2C frames
 - Internal communication bus (I2C) is unstable for long frames
 - Difficult to download big packets of data
 - Should have soon one student working on this problem
- New sponsor (EATOPS) is building a ground station in NL and will increase our commanding capability

Encounter with orbital debris

- Close encounter with orbital debris on Friday Feb. 5, 6h20 predicted by the United States Joint Space Operations Center (JSpOC)
- Debris SCC #34891 resulting from the IRIDIUM/COSMOS collision last year
- Scenario very likely to happen again...

