Einführung

DK3WN – Mike Rupprecht

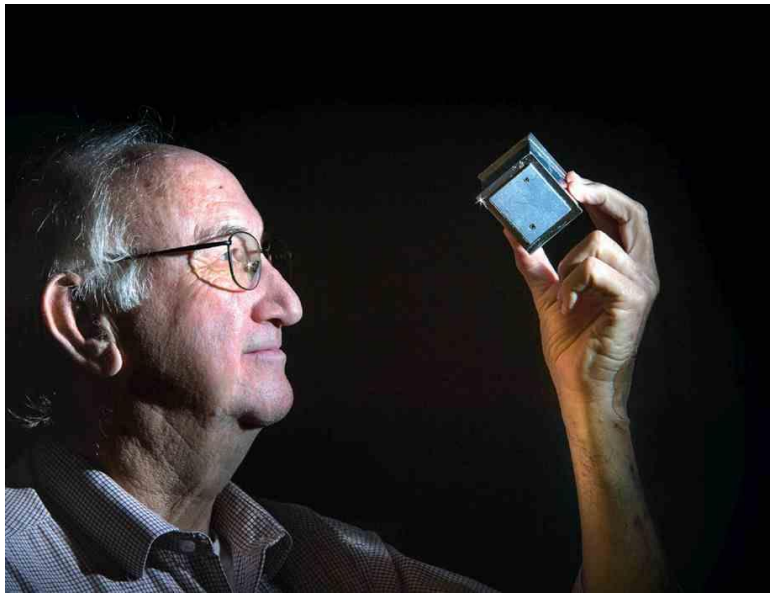
Amateurfunkdienst über Satellit «Mission Control bei sich zu Hause»

AMSAT-DL

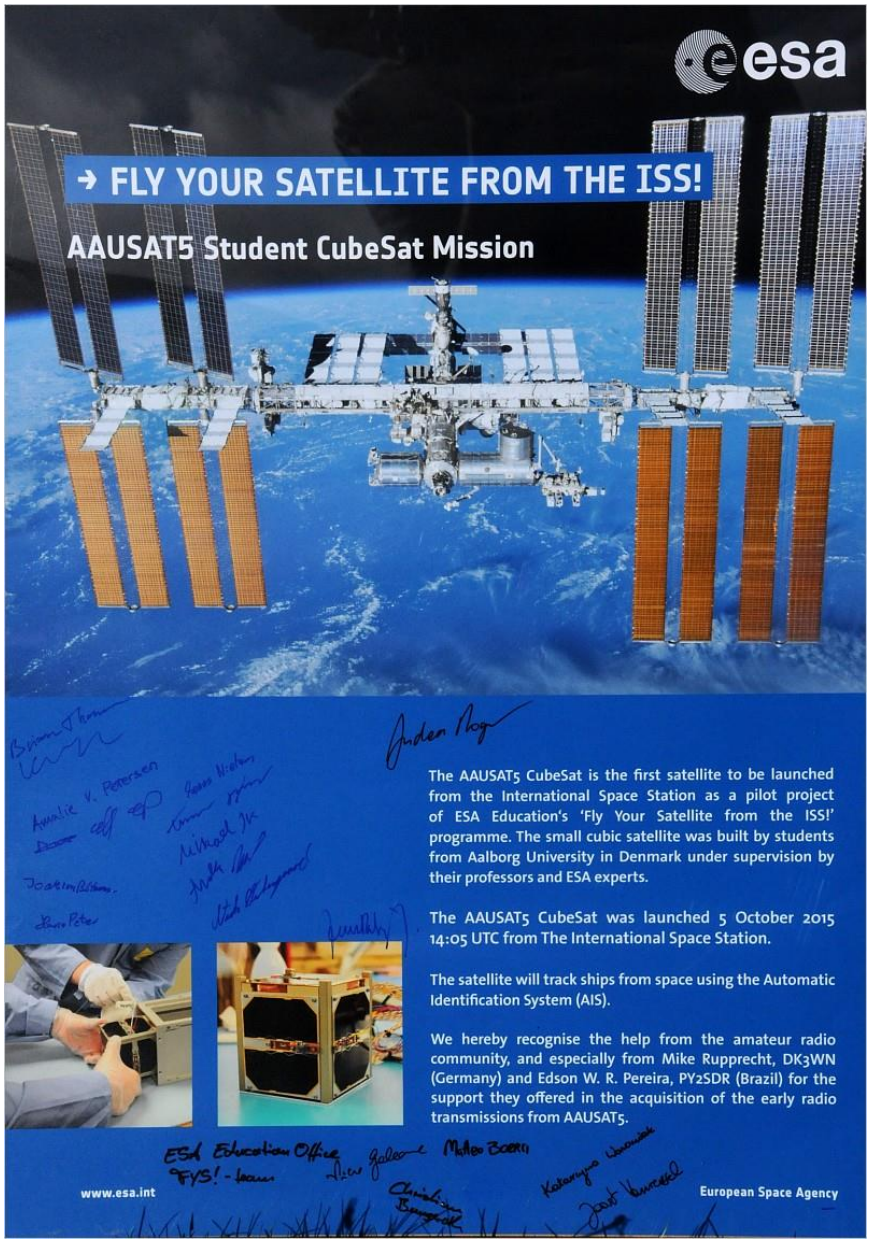
International Satellites for Communication, Science and Education

Space Science Involvement

CubeSat ist ein 1999 von der Stanford University und California Polytechnic State University initiiertes internationales Programm, das es ermöglicht, kostengünstige Kleinsatelliten in eine Umlaufbahn zu bringen.



ELaNa-I	Glory	Mar 4, 2011	3 CubeSats deployed
ELaNa II	NROL-39	Dec 5, 2013	4 CubeSats deployed
ELaNa-III	NPP	Oct 28, 2011	6 CubeSats deployed
ELaNa-IV	ORS-3	Nov 19, 2013	13 CubeSats deployed
ELaNa-V	SpX-3	Feb 22, 2014	5 CubeSats deployed
ELaNa-VI	NROL-36	Sep 13, 2012	4 CubeSats deployed
ELaNa-VII	ORS-4	Nov 2, 2015	2 CubeSats deployed
ELaNa-IX	HTV-5	Dec 3, 2015	3 Cubesat deployed
ELaNa-X	SMAP	Jan 31, 2015	4 CubeSats deployed
ELaNa-XI	AFSPC-5	May 19, 2015	1 Cubesat deployed
ELaNa-XII	NROL-55	Oct 30, 2015	4 CubeSats deployed

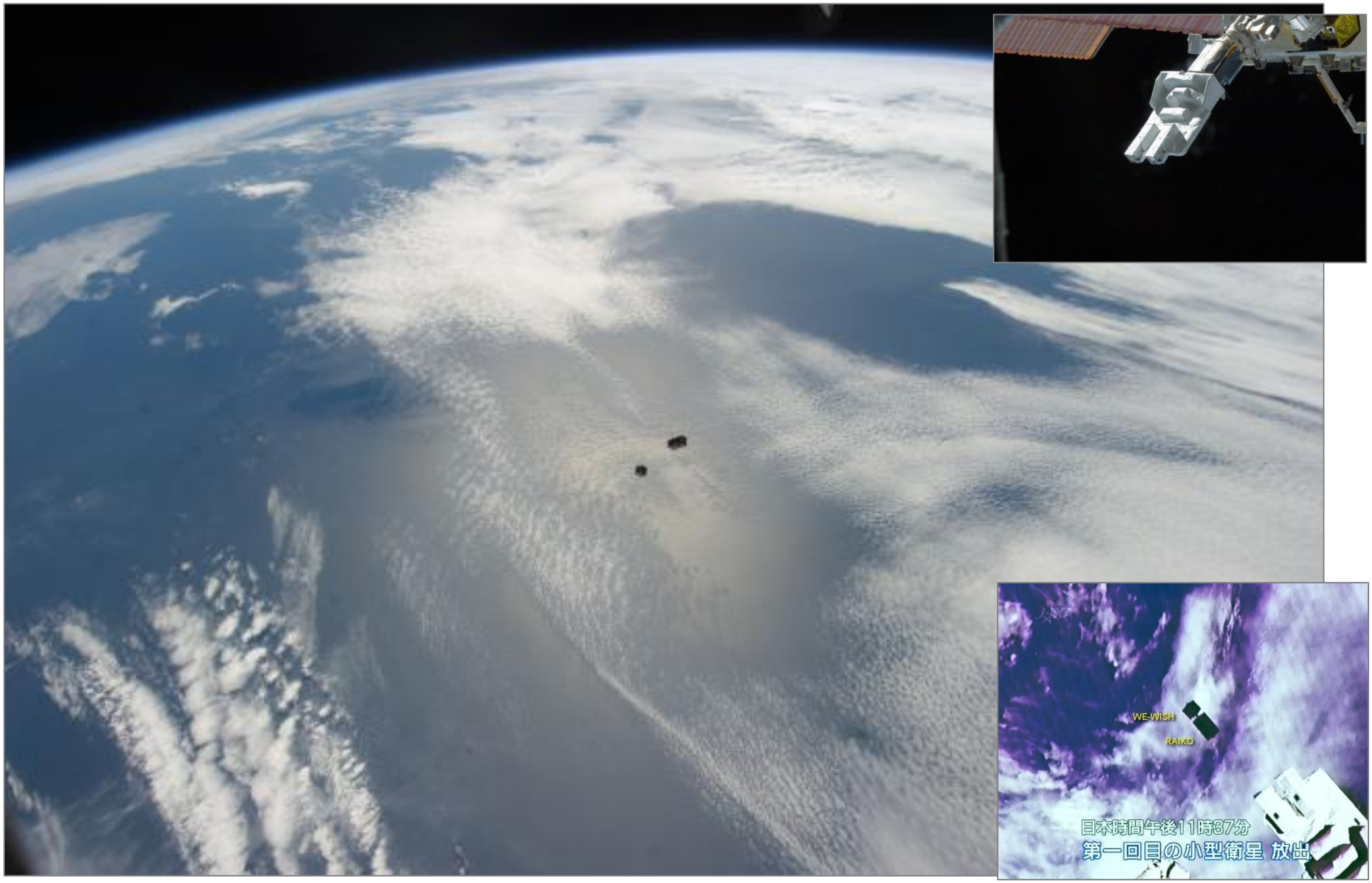


2008-2012
12 student-built CubeSats, of which 7 were launched on 2008-2012: 12 student-built CubeSats, of which 7 were launched on Vega's Maiden Flight

2012-2013
Spanish HumSat-D student CubeSat, supported in its test campaign

2013-2016
first edition of the Fly Your Satellite! programme, with 6 CubeSats selected to participate in the first phase of the programme: three of these CubeSats – OUFTI-1, e-st@r-II, AAUSAT4 – were launched on Soyuz VS14 on 25 April 2016

2015
launch of AAUSAT5 to the International Space Station and deployment to orbit under an ISS dedicated edition of the Fly Your Satellite! programmeISS dedicated edition of the Fly Your Satellite! programme

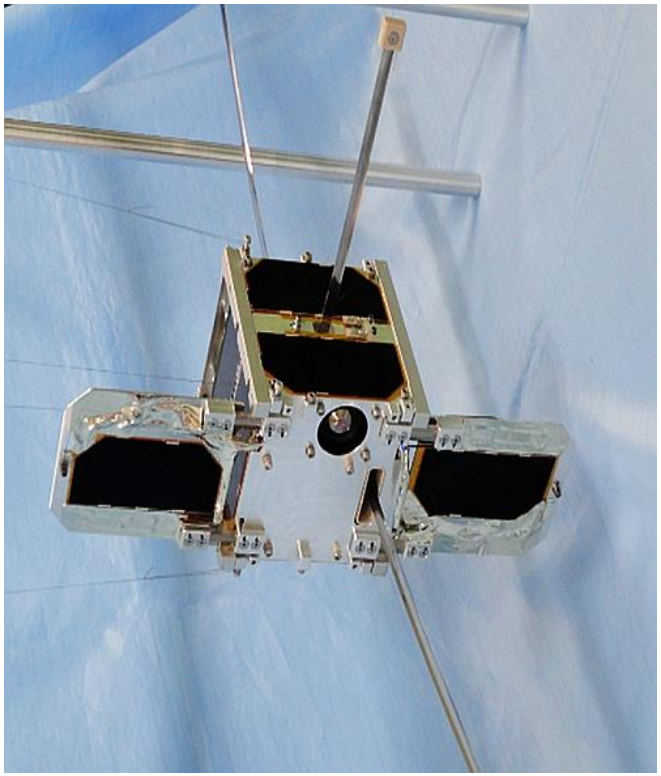

WE-WISH
RAIKO
日本時間午後11時37分
第一回目の小型衛星 放出

We Wish

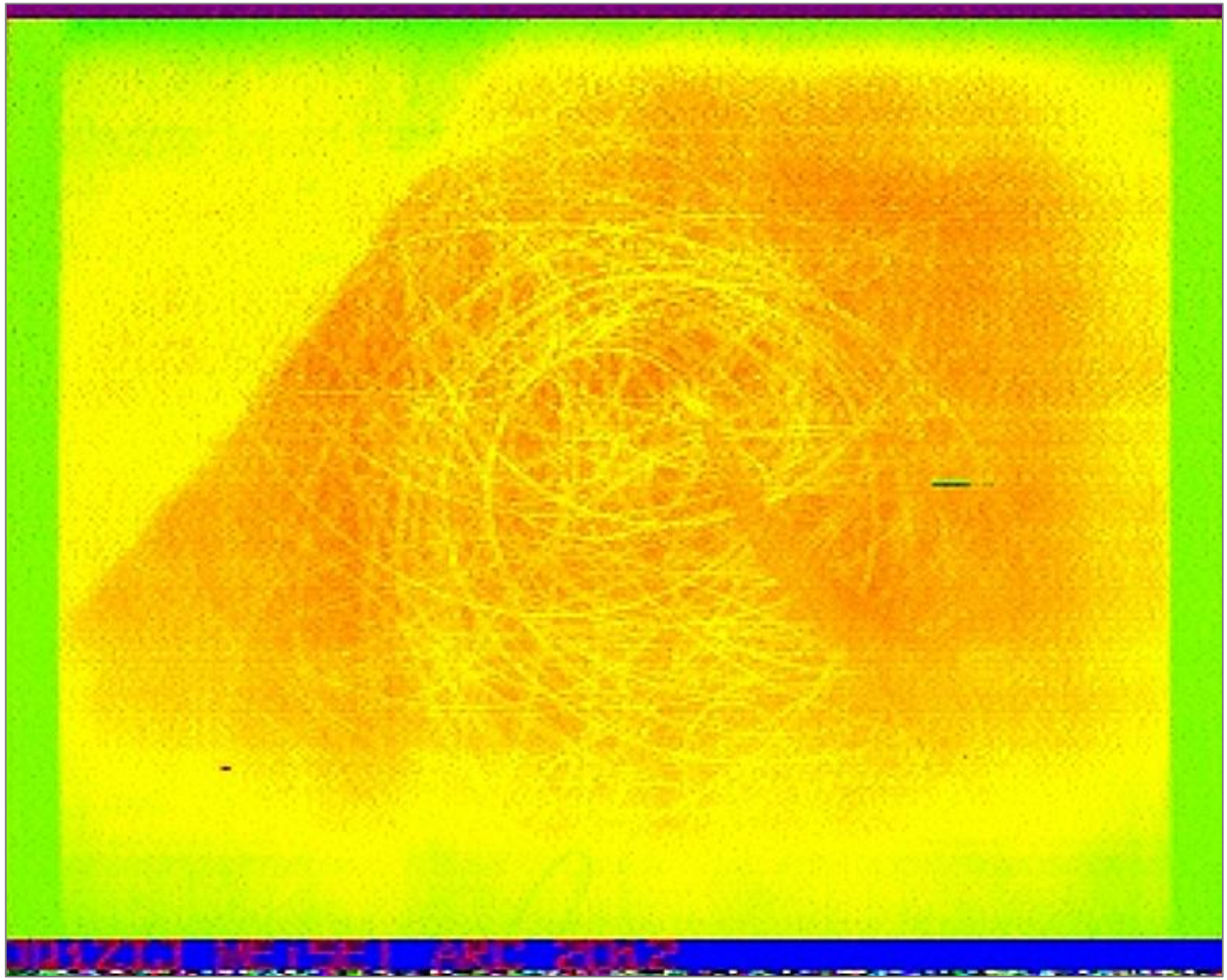
World Environmental Watching & Investigation from Space Height
Meisei Electric Co., Ltd.

Gradient-Boom zur Lagestabilisierung
IR Kamera
SSTV Übertragung

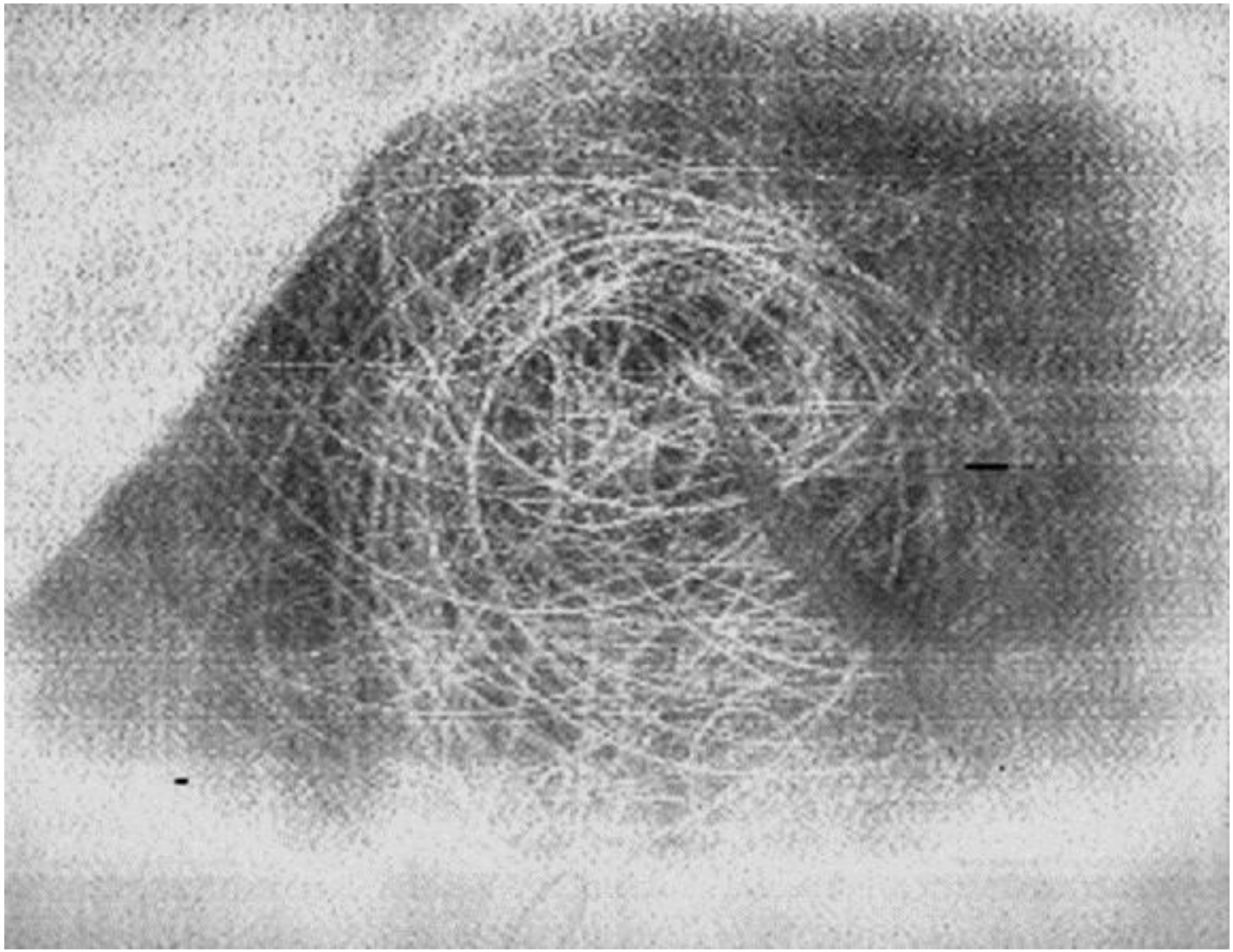
Start :	21. Juli 2012
ISS Deployment:	04. Oktober 2012
Ende:	11. März 2013
NORAD:	#38856
Modulation:	SSTV, CW, FSK
Frequenz:	437.515 MHz



Astronaut Akihiko Hoshide

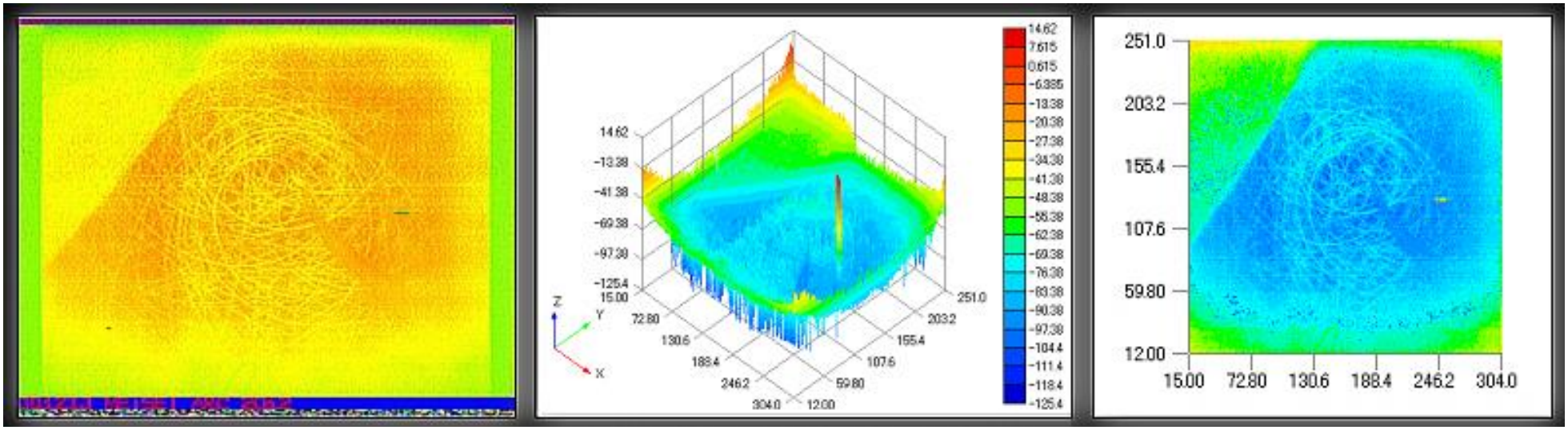


SSTV Bild empfangen am 11.10.2012 um 20:32 UTC



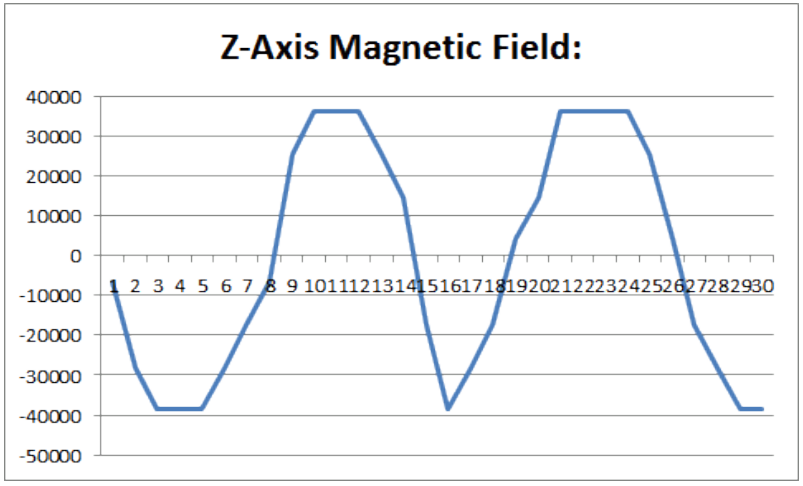
Negativ: Hier kann man sogar den Gradienten-Boom erkennen

Umrechnung des SSTV Bildes und Kalibrierung




```
CW string          :  nkifda

Battery #1 voltage :  3.0V .. 3.5 V
Battery #2 voltage :  3.0V .. 3.5 V
Battery temp       :  8 deg C
CPU board temp     :  4 deg C
Z-axis magfield    :  25346 nT
Status             :  IR Cam OFF, Heater OFF, RX ON, MTQ OFF
Solar panel status :  +Y PDL non ative, -Z non active,
                      -Y non active, +Y non active
```



発行日 2012/12/12 To D K 3 W N
(the date of issue)

JQ1ZIJ WE WISH
TX FREQ 437.505MHz PWR 0.1w / Mode CW(A1A)、packet(F2D)、SSTV(F3F)
Reporting date 2012/10/9 20:05(UTC)

受信報告をお送り頂きありがとうございました。受信されたデータは確かに当衛星であることが確認できましたので、ベリカードをお送り致します。

Thank you for sending the reception report. It have been confirmed that your receiving data is down link from WE WISH. Gratitude is put and this verification card is sent. VY 73, .

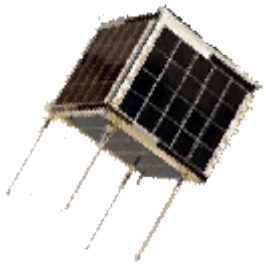
明星電気アマチュア無線クラブ MEISEI ELECTRIC A.R.C
QTH :〒372-8585 群馬県伊勢崎市長沼町 2223
明星電気（株）本社工場内（JCC#1604）
2223 Naganumacyo ISESAKI-City Gunma 372-8585 JAPAN

Ishigaki Printing Co.,Ltd

POST CARD

Natürlich gibt es einen Unterschied zwischen:

Amateurfunk Satelliten



Satelliten auf Amateur-funkfrequenzen

Aber beide KÖNNEN dem Amateurfunk von Nutzen sein:

- Idealer Mechanismus, Studenten zum Amateurfunk zu bewegen
- Begeisterung für Technik, Naturwissenschaften
- Mitgliedergewinnung für die AMSAT-Organisationen
- Lizensierung notwendig, um Bodenstation zu betreiben
- Einbindung in wissenschaftliche Projekte, Experimente und Auswertungen
- Ausbildung

Positive Beispiel, dass dieser Ansatz funktioniert:

- DELFI-C³
- COMPASS-1
- UWE-3
- We Wish
- ANDE, PCSAT-1, ParkinsonSAT
- SERPENS, AAUSAT, SWAYAM (TNC)

Chantal Capeletti
Universität Brasilia

José Raimundo Braga
AEB

Edson Pereira, PY2SDR

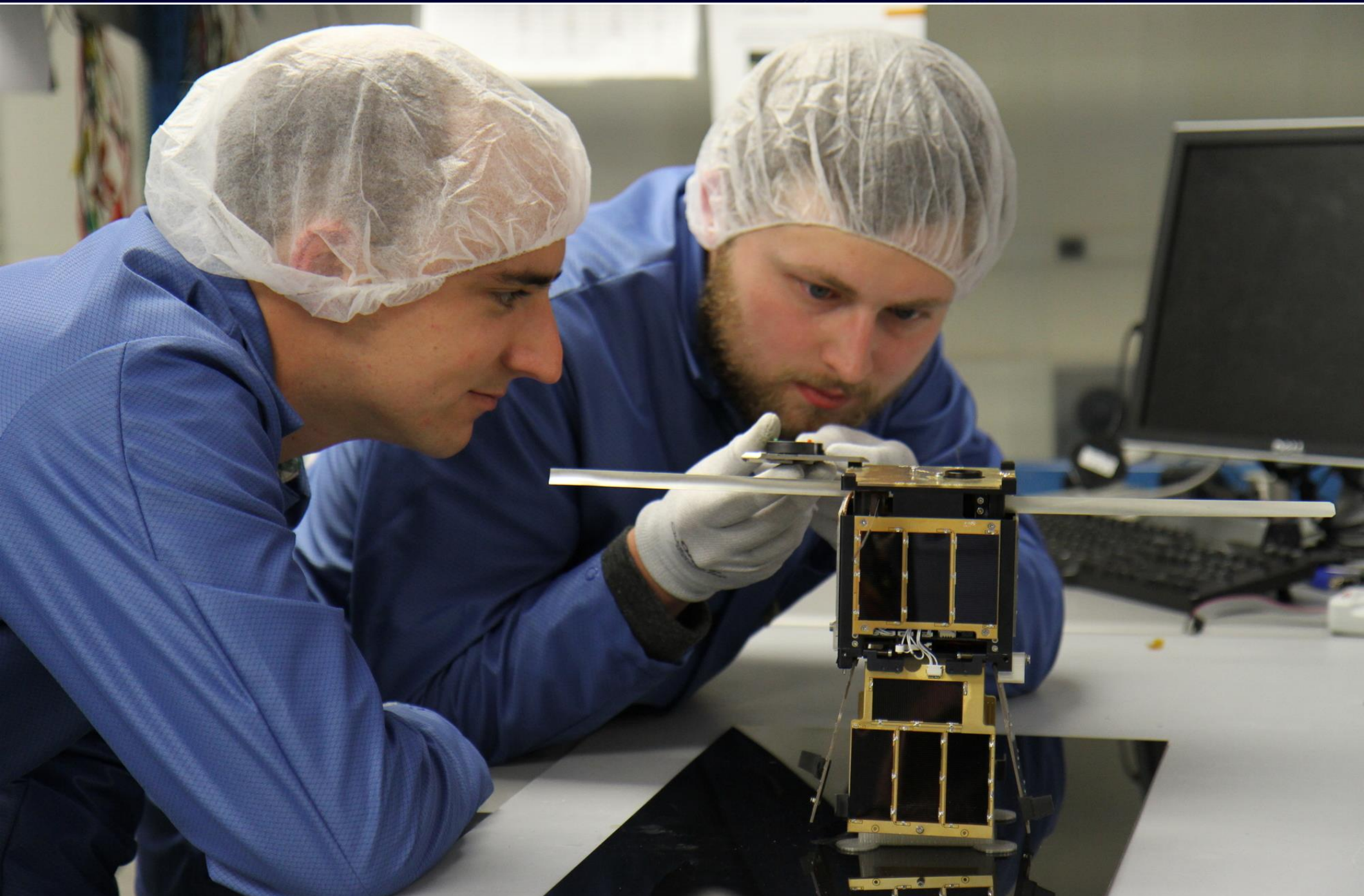
AMSAT-DL

Satellites for Communication and Science
Satelliten für Kommunikation und Wissenschaft

AMSAT-DL

Satellites for Communication and Science
Satelliten für Kommunikation und Wissenschaft

Make dr m a reality
Challenges:
- Take high-resolution photos of the Earth
- Increase transmission speed to 9600bit/s
- Experiment with more advanced capabilities such as SMS relay, RTTY mode, SSTV broadcast…
SPACE
Satellite specification:
- Size: 10x10x22cm
- Weight: 2kg (2U cubesat)
- Power supply : body-mounted solar panels, rechargeable NiMH battery
- Main computer: TS-7260 SBC, ARM9@200Mhz, 64M RAM, 128MB NAND Flash, running TS-Linux OS
- Backup computer: PIC 18F6722 micro-controller running at 12Mhz
- Main communication: Yaesu VX-3R hand held transceivers using 2m band (VHF) and 70cm (UHF)
Project goals:
- Learn to design and manufacture a small satellite (cubesat)
- Demonstrate the application of Commercial-Off-The-Shelf products in space
- Demonstrate autonomous flight software
Minimum success criteria:
SPACE GENERATION
Join us!

AMSAT-DL

Satellites for Communication and Science
Satelliten für Kommunikation und Wissenschaft