

# ACTIVITY REPORT

“FROM THE EARTH”



Speaker

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# ABSTRACT

1. What's "From The Earth"?
2. The goal of this year
3. The Hybrid Rocket
4. The main projects we worked on
5. Conclusion

# 1. WHAT'S "FROM THE EARTH"?

## Regular activity

To launch model rockets

To launch hybrid rockets

Social action work

in elementary school,  
temporary house, etc.



## Our ultimate goals

To reach out of the atmosphere

To share dreams and impression with all the people

## 2. HYBRID ROCKET

Propellants of the motor

Solid

+

Gas  
or  
Liquid

Motors used by amateur rocket groups

HyperTEK series

Cesaroni Technology Inc.

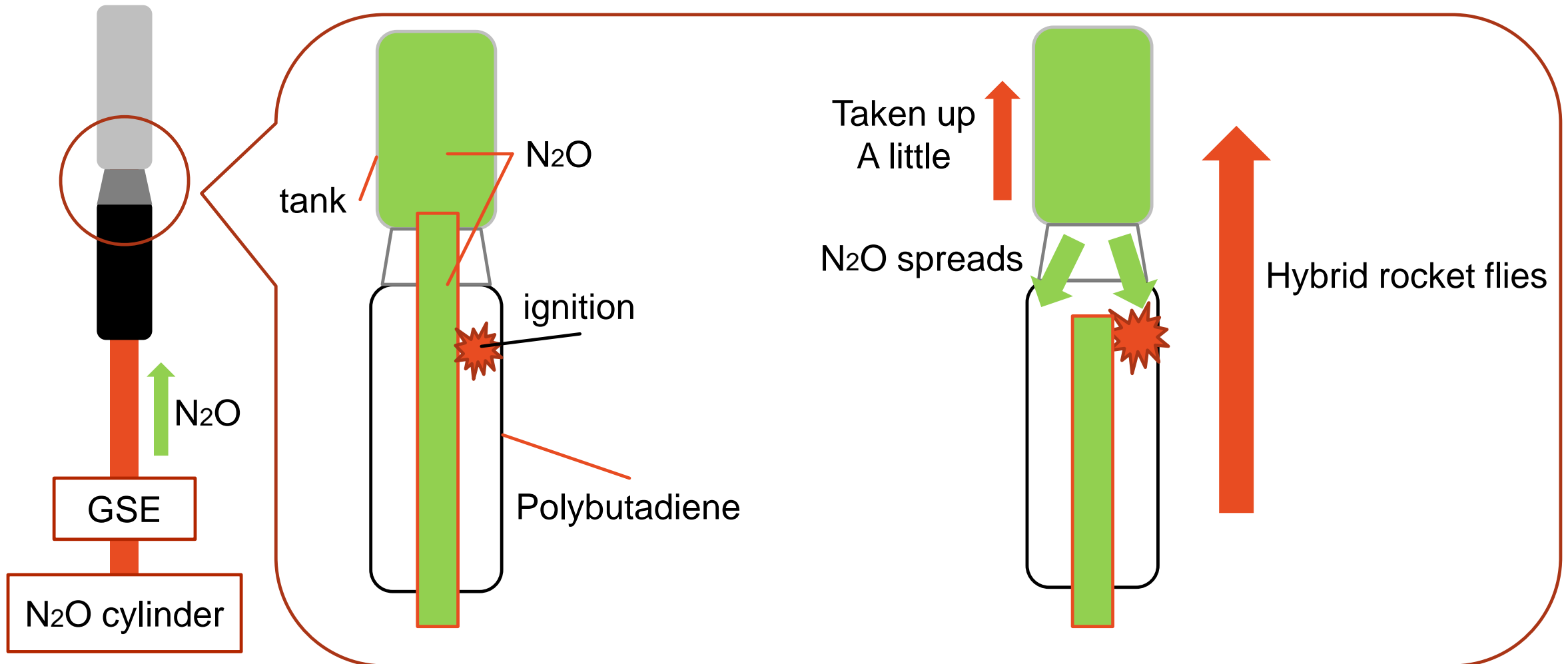
Polybutadiene

+

$N_2O$



## 2. HOW HYBRID ROCKET FLIES



# 3. THE GOAL OF THIS YEAR

We launch the hybrid rockets...

By Ourselves

Using our own  
Ground Support Equipment (GSE)

The Highest Ever

Developing our skills

With Perfect Recovery

Operating measuring instruments  
And recovering with no damage

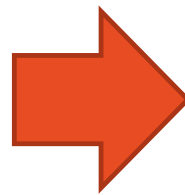
# 3. THE GOAL OF THIS YEAR

03 / 2016

Izu-Oshima Joint Launch Experiment

Tsubame

The Highest Flying  
Using our own GSE  
Developing our skills



08 / 2016

Noshiro Space Event

FTE-05

The Highest Flying

Suzume

Can-sat Release

Cancan-Biyori

Developing Can-sat

# 4.1 PROJECT “TSUBAME”



Launched in Izu-Oshima Island, Tokyo  
(2016/3/22)

## Detail

Length	1802 mm
Weight (before fuel filled)	5.830 kg
Outside diameter	116 mm
Motor	HyperTEK K-240
Instruments	Accelerometer Barometer Radio module



# 4.1 PROJECT “TSUBAME”



Launched in Izu-Oshima Island, Tokyo  
(2016/3/22)

## Goals

1. to develop our skills ✓
2. to reach the highest ever ✓ (almost)
3. to recover perfectly ✓ (almost)
4. to use our own GSE ✗

## Result

Height: 924m

Body: recovered, but partly broken  
because of landing shock

## 4.2 PROJECT “SUZUME”



Launched in Noshiro, Akita  
(2016/8/19)

### Detail

Length	1480 mm
Weight (before fuel filled)	6.152 kg
Outside diameter	143 mm
Motor	HyperTEK J-250
Instruments (Rocket)	Accelerometer Barometer Radio module GPS
Instruments (Can-sat)	Accelerometer Barometer GPS

## 4.2 PROJECT “SUZUME”



Launched in Noshiro, Akita  
(2016/8/19)

### Goals

1. to release Can-sat ✓
2. to develop new separating module ✓
3. to recover the rocket perfectly ✓
4. to design new parachute ✗
5. to use our own GSE ✓

### Result

Height: 270m

Body: recovered, but slightly broken  
because of launching shock

## 4.3 PROJECT “FTE-05”



Launched in Noshiro, Akita  
(2016/8/25)

### Detail

Length	2048 mm
Weight (before fuel filled)	2.4 kg
Outside diameter	57 mm
Motor	HyperTEK K-240
Instruments	Accelerometer Barometer GPS float Watertight mechanism

## 4.3 PROJECT “FTE-05”



Launched in Noshiro, Akita  
(2016/8/25)

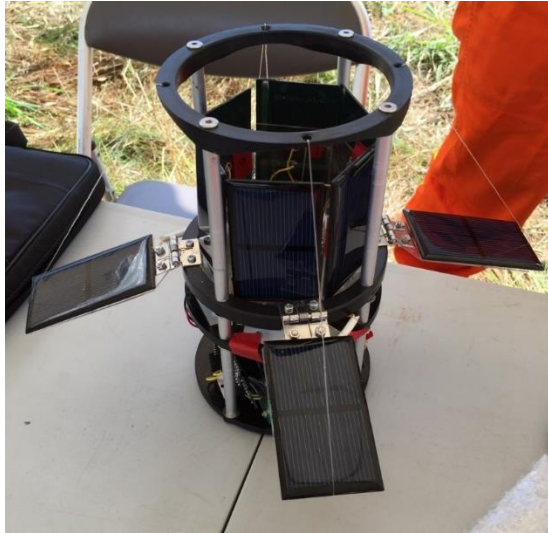
### Goals

1. high-altitude launch ✗
2. to collect much data ✗
3. to use our own GSE ✓

### Result

It broke up in midair and splash down.  
The body was partly recovered.  
We couldn't collect enough data.

# 4.4 PROJECT “CAN-CAN BIYORI”



Can-sat in Noshiro, Akita  
(2016/8/18,19)

## Detail

Height	230 mm
Diameter	146 mm
Weight	1.010 kg
Instruments	Thermometer Barometer GPS Radio module Solar cell

Taken up by  
balloon and rope

Dropped  
in the sky

Detect  
landing

Expand the  
solar panels

Collect data  
by solar cell

# 4.4 PROJECT “CAN-CAN BIYORI”



Can-sat in Noshiro, Akita  
(2016/8/18,19)

## Goals

1. to experience making can-sat ✓
2. to open the panels after landed ✗
3. to collect data by solar energy ✓

## Result

### 1st try:

Because the parachute of Can-sat didn't open, its body was broken and we couldn't collect any data.

### 2nd try:

The Can-sat landed safely.

It didn't open its panel, but we could collect data partly.

# 5. CONCLUSION

- We launched hybrid rockets by ourselves
- Hybrid rockets reached the highest ever
- We recover some hybrid rockets almost perfectly
- The satellite could measure some data