

IHI AeroSpace

INTERSTELLAR  
TECHNOLOGIES

Marubeni



KYOCERA

RFtestLab



SAGAMI



Space BD



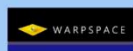
YUKI



TANAKA

Tamagawa

UCHIDA  
Advanced Composites Technical Center



METI  
Ministry of Economy, Trade and Industry



spacesystems

Japan  
Booth



Japan.  
Space  
Industry

## Japan Booth

Supported by Ministry of Economy, Trade and Industry of Japan  
Conducted by Japan Space Systems

32<sup>nd</sup> Small Satellite Conference

August 4-9, 2018

Logan, UT, USA

Mt. Fuji, World Heritage  
Satellite: ASTER  
Observation Date: 2002-10-04 01:40:48 (UTC)  
DEM: ASTER GDEM  
Processed by Japan Space Systems



# Exhibitors

- ☆ IHI AEROSPACE Co., Ltd.
- ☆ Interstellar Technologies Inc. / Marubeni Corporation
- ☆ ImPACT SHIRASAKA Program
- ☆ KYOCERA Corporation
- ☆ RFtestLab Co., Ltd.
- ☆ SAGAMI Electrics Industry Ltd.
- ☆ Shimafuji Electric Inc.
- ☆ Space BD Inc.
- ☆ Takasago Electric, Inc. / YUKI Precision Co., Ltd.
- ☆ Tanaka Precious Metals
- ☆ TAMAGAWA SEIKI CO., LTD
- ☆ UCHIDA Co., Ltd.
- ☆ Warpspace Inc.
- ☆ Yamaguchi Aerospace Cluster

Supported by

Ministry of Economy, Trade and Industry

Conducted by

Japan Space Systems



# Program at Japan Booth

Aug 6

Time	Program	Presenter
14:00	Video, MOMO Rocket	Interstellar Technologies
16:00	Portable Ground Station	Warpspace

Aug 7

Time	Program	Presenter
10:00	High Quality Components	Yamaguchi Aerospace Cluster
14:00	Portable Ground Station	Warpspace
16:00	Small SAR Sat System	ImPACT

Aug 8

Time	Program	Presenter
10:00	Video, MOMO Rocket	Interstellar Technologies
14:00	Stepper Motor	TAMAGAWA SEIKI
16:00	High Quality Components	Yamaguchi Aerospace Cluster

Aug 9

Time	Program	Presenter
09:00	Stepper Motor	TAMAGAWA SEIKI
10:00	Small SAR Sat System	ImPACT



# IHI Aerospace



**Takashi Arime (有銘 崇)**

t-arime@iac.ihl.co.jp

It is my fifth time to come back here, SSC. I lived in Denver, Colorado about twenty years ago, so I love junk food, Coors light and Denver Broncos. Go! Broncos and IHI Aerospace!

**IHI Aerospace Co., Ltd.**

株式会社 IHIエアロスペース

<http://www.ihl.co.jp/ia/en/>

**IHI**AeroSpace

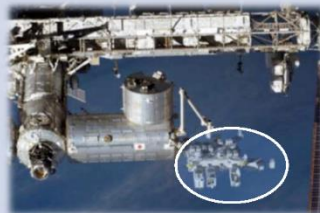
IHI Aerospace (IA) is carrying out the development, manufacture and sales of rocket projectiles, and has been contributing in a big way to the indigenous space development in Japan.



Epsilon Launch Vehicle



H-IIA Launch Vehicle



Exposed Facility of ISS Japanese Experimental Module



1N



4N

Catalytic Decomposition Thruster



Sample Return Capsule from space

# Interstellar Technologies



Takahiro Inagawa, Ken Terakawa

info@istellartech.com

We will launch sounding rocket MOMO2 on Jun. 30 from Hokkaido, Japan. Please visit our booth and get latest information.

**Interstellar Technologies Inc.**

インターステラテクノロジズ株式会社

<http://www.istellartech.com/english/>



We have developed rockets since 2006 in our offices, vehicle assembly factory and engine test facility located at Tokyo and Taiki-cho, Hokkaido, Japan. Following launch of our sounding rocket MOMO, we will shortly start development of a new rocket which is capable of sending compact satellites into low Earth orbit.





# Marubeni Corporation



Atsushi Takao (高尾 篤史)

Takao-A@marubeni.com

Welcome to Japan Booth!!

We Marubeni have a business collaboration with Interstellar Technologies Inc which is a Japanese Rocket Launching Company. Our rocket makes Quick, Affordable and Reliable delivery to space possible and definitely contributes to your mission.

## Marubeni Corporation

丸紅

**Marubeni**

<https://www.marubeni.com/en/>

Marubeni Corporation ("Marubeni") Overview

- One of the largest General Trading Companies in Japan
- Founded in 1858 Publicly listed on the Tokyo, and Nagoya Stock exchanges (8002.T)
- Global trader of a widerange of commodities
- Conducts business investment, development and management on a global basis

Marubeni Corporation announced business collaboration with Japanese rocket manufacturer of Interstellar technologies Inc. ("Interstellar") on 19<sup>th</sup> January 2016.

Marubeni supports Interstellar's rocket development, domestic and overseas rocket sales. Interstellar is developing the following two types of rockets.

Sub-orbital Rocket (Launch Service in 2018)

Main Specification

- Payload: 20kg
- Altitude: 100km

for Micro Satellites (Launch Service in 2020)

Main Specification

- Payload: 50kg
- Altitude: 500 – 700km (LEO)



# ImPACT SHIRASAKA Program



Seiko Shirasaka (白坂 成功)

impact-srs@jst.go.jp

At our booth, we exhibit a full-scale mock-up model of our small SAR satellite. In addition, we introduce in-orbit images of the satellite and our future business pursuit via concept video. We welcome your visit!

## ImPACT SHIRASAKA Program

### ImPACT 白坂プログラム

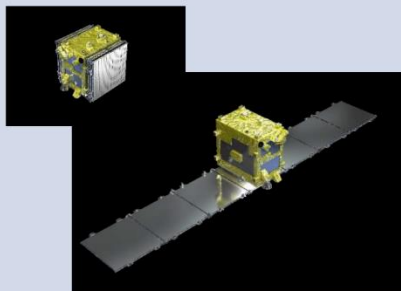
<http://www.jst.go.jp/impact/en/program/13.html>



ImPACT SHIRASAKA Program develops a lightweight, highly compact SAR satellite system while drastically saving the production cost. Our aimed system also achieves high-performance SAR imaging with 1m spatial resolution. By incorporating high-performance SAR imaging with "high-revisit whole earth monitoring by constellation", we explore areas in which EO has not been actively used so far and cater to increasingly diverse and sophisticated commercial needs.

The big data, acquired from the unprecedented system, enables us to pursue innovating new applications and pioneering new business in which the high-level information is vital for important decision making all around the world.

Our exhibition aims to make potential partners reach our future business scheme which provides high-level information solutions and applications by processing SAR big data (e.g., deep learning). Our colleagues also show the detailed program status at Auditorium.



# KYOCERA Corporation



**Masatsugu Kamiura**

masatsugu.kamiura.gt@kyocera.jp

Kyocera is the world leader in fine ceramics (advanced ceramics) manufacturer, and we are honored to join this Small Sat Conference. Taking this opportunity, we are happy to promote our sophisticated ceramic material for small satellite, especially low CTE cordierite mirror for telescope application.

**Kyocera Corporation**

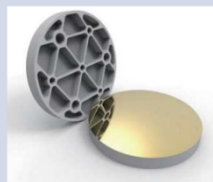
京セラ

<https://global.kyocera.com/>

THE NEW VALUE FRONTIER



Kyocera was established in 1959 as a small workshop in Kyoto City where 28 young colleagues began producing ceramic insulators for TVs. Initially their goal was to be the No. 1 company on the street, but they had a bigger dream to become the No. 1 fine ceramics company (advanced ceramics company) in the world. With a strong will and pioneering spirit, their limitless efforts made this dream come true. Kyocera is now the world leader in fine ceramics (advanced ceramics).





**Shigeki Morisawa (森沢 茂紀)**

smallsat2018@RFtestLab.com

We design and manufacture antennas and filters for space use.

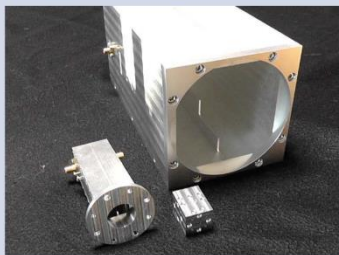
They are on satellites launched in Japan

**RFtestLab Co., Ltd**

RFtestLab

<http://www.RFtestLab.com>

**RFtestLab**



Sepulum  
Poralizer  
2GHz-110GHz

# SAGAMI Electronics



Takeyuki Handa (半田 剛之)

handa@sagami-net.co.jp

I am Takeyuki Handa, Chief Executive Officer of "SAGAMI Electronics Industry Ltd", in Yokohama JAPAN. We are manufacturing the sub module for communication equipment for commercial off-the-shelf. Based on years of experience in manufacturing of commercial off-the-shelf, We are developing from designing and manufacturing standard modules for space use. We are looking forward to collaborate with you.

## SAGAMI Electronic Industry Ltd.

相模通信工業

<http://sagami-net.co.jp>



SAGAMI Electronics Industry Ltd,  
<http://sagami-net.co.jp>

Our company engages in  
assembling electronics boards for space.

With a hope to contribute more to space by leverag-  
ing this technology, we are now working on the devel-  
opment.

### Waterbear. for Cubesat

Easier access into the space mission  
with qualified process manufacturing.

we can provide  
- On-board Computer  
- Power control unit  
- Front Access Board

Makes easier to develop  
"Cube Sat" (10 cm cube, less than 1kg)

Contact Us: <http://sagami-net.co.jp/contact/>  
Address: 370-19 Enzo, Chigasaki-shi, Kanagawa, JAPAN 253-0084







## Iwao Fujishiro (藤代 巖)

fujishiro@shimafuji.co.jp

Hello, I am Iwao Fujishiro, CEO Shimafuji Electric Inc. This is 3rd times to host our booth in the Small Satellite Conference, and we display the SpacePi which is daughter board to add SpaceWire function on RaspberryPi3. We are welcoming to visit our booth and very happy to introduce NEW board.

## SHIMAFUJI Electric Inc.

シマフジ電機株式会社

<http://www.shimafuji.co.jp/>



## Space Pi

**SpaceWire Appliance Reference Board**


**SHIMAFUJI**

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— Designed with ISAS/JAXA and Osaka Univ. —

- Support 2 SpaceWire ports.
- Compatible for Raspberry PiG extension boards
- Operate without Raspberry Pi with standalone FPGA/IP
- Stack Raspberry Pi compatible extension boards
- Build High reliability, Low cost and Flexible network system
- Mounted low cost connectors RJ45 as SpaceWire connectors and MEM connector ready
- Provide sample software and FPGA IPs  
FPGA IP(SpaceWire IP, Router IP, UDP IP, Control IP etc.)  
Sample source code
- Use as low cost educational board to learn SpaceWire

<Specification>	
PinPA	Port base-GCCE03S.X196-2P(TX/RX)
SpaceWire	2 Ports
RaspberryPi LP	1 Sub (Type 10Mbit/S(MAO))
CPU	General i4
LED	Sub LED x10 (Green) Power LED x1 (Red)
Switch	Sub DipSW x1 (Green) Power SW x1 (Black)
Size	85 (W) x 55 (H) (mm)
Power source	4.5V (Supplied by Raspberry Pi or AC Adapter) + AC adapter to optics



**<Block Diagram>**



**SHIMAFUJIElectric Inc.**    NS Bldg. 3F 4-36-11, Nishikomatsumi, Otsu City, Tsukuba, Japan  
TEL: +81-3723-8208   FAX: +81-3723-8218   E-mail : info@shimafuji.co.jp   URL : http://www.shimafuji.co.jp

In 2006, we developed SpaceWire platform unit called SpaceCube with JAXA and NEC. Since then, we have developed number of SpaceWire and science technology products.



**Mac Kanazawa**

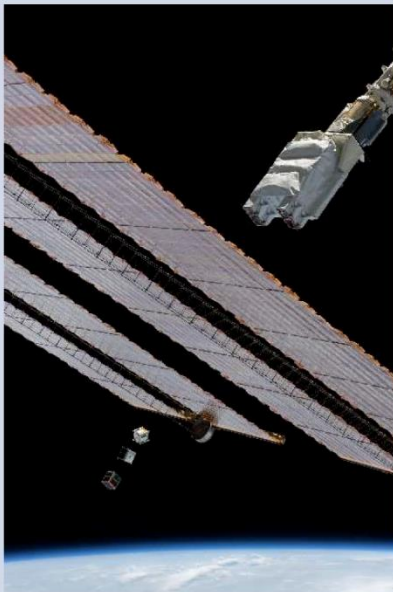
m.Kanawaza@space-bd.com

It is a great honor to participate in Japan Booth! As a business development professional, I look forward to build a lot of relationship to promote expansion of space industry. Please feel free to talk or email me for any inquiry.

**Space BD Inc.**

Space BD株式会社

<http://www.space-bd.com/en/>



JAXA/NASA



**Authorized by JAXA**

Selected as the commercial operator for the satellite deployment service on the Japanese "Kibo" module on the ISS

Space BD provides various services and solutions for overcoming obstacles to the industrialization of space, and contribute to developing space even further.

1. *One-Stop Satellite Launch Service*
2. *ISS Experimental Platform Service*
3. *Trading of Space Hardware/Components*
4. *Business Incubation and Development Service*

# Takasago Electric



Masahiko Inoue

m-inoue@takasago-elec.co.jp

Hello! We are Takasago Electric, Inc. from Nagoya, Japan. Takasago specializes in microfluidics and is currently entering the aerospace field. This is our second time here at the Small Satellite Conference. We have recently developed a miniature valve for small satellite applications, small enough even to fit into PocketQube systems. Our strength is in miniaturization of fluidic systems, without compromising performance. If you are searching for a solution to fit into the "small space" of your system, we are happy to work together on solving your challenging requirements. Please visit our booth. and let's discuss about your "big" future.

**Takasago Electric, Inc.**

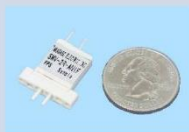
高砂電気工業

<http://takasago-elec.co.jp/>



Takasago Electric, Inc. is a specialist manufacturer of miniature chemically inert valves and pumps. Our head office is located in Japan, and we have a company history of more than 50 years. Since October 2012 we have a branch office in the United States, Takasago Fluidic Systems, located in Westborough, Massachusetts. Using the expertise accumulated over many years in the field of fluid dynamics, we continuously contribute to the development of chemical analyzers, our main adopted field, by offering solution-oriented products. Our flow control products are used in cutting-edge fields such as medical diagnosis, environmental measurement and specific substance detection (e.g. protein). With a quality management level encompassing food safety, they are indispensable for the preservation of people's health and the Earth's beautiful environment. With this background, we are now dedicated to expanding business to the aerospace field.

We are dedicated to continue contributing to the international society by setting targets at a global level and by producing high quality, high performance products.





# YUKI Precision



**Yukiko Matsumoto (松本 幸子)**

yukiko.matsumoto@yukiseimitsu.co.jp

Nice to meet you. This is my first time at this conference, but second time in Utah. In May I enjoyed my visit to the beautiful Zion National Park. I will be happy to introduce you to our engineering and manufacturing services.

**YUKI Precision Co., Ltd.**

株式会社由紀精密

<https://www.yukiseimitsu.co.jp/english>

**YUKI**



**SPACECRAFT  
MACHINING**



**From fine fasteners to whole satellite structures,  
YUKI Precision has supplied parts for  
multiple successful flight-proven projects.**

**We will realize your parts with craftsmanship  
based on experience and innovation.**

**Let us manufacture parts for your success.**



# Tanaka Precious Metals



Yasutaka Ihara

1-669-242-0376

It is my first time to be here. Pleasure to see you all!

## Tanaka Preciou Metal

田中貴金属

<http://www.tanaka.co.jp/english>



### Direct Printing of AuSn Solder

Application: Cap Wafer, Bump, Glass Lid, Die-Bonding

*SQ soldering process*

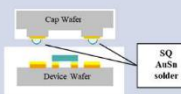
*AuSn solder core technique  
Direct Printing of AuSn Solder*

Technology to directly form AuSn solder to various substrates & surfaces by combining the techniques of unifying size in balls and tuning the XY stage.

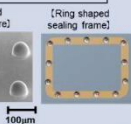
#### 【Feature】

- Pure AuSn soldering with stable material composition
- Flexible pattern forming in dots, lines, drawings etc.,
- Precise & Fine pattern forming
- Easy adjustment of solder volume
- "Resist" is not required for Pattern forming
- Not need in Cleaning after reflowing owing to Flux-free
- Reduce variation of Wettability due to compositional stability
- Alignment along with Au pattern on wafer surface

【Wafer bonding】



【Example】 【Vacuum Wafer bonding】



【SQ solder for Glass Lid】



#### 【主な仕様】

Solder material	AuSn eutectic	Available size	Square measure: 2~8inch Height: 20mm (workable custom made beyond above)
Ball diameter (dot diameter)	90~380 μmΦ (approx. 100~450 μmΦ)	Position accuracy	Distance from Target ±50 μm
Print thickness	Approx. 80~250 μm	Surface material	Au plate, Au/Ni plate
Measurement accuracy	±10 μm		



Tanaka is leading industrial precious metal company in Japan. We produce precious metal materials product such as gold, silver, platinum, palladium, rhodium, iridium, ruthenium and its alloys with various forms of wire, sheet, tape, powder, chemicals, etc.

We are founded in 1885 and have been supplying the products to space, aerospace, automotive, semiconductor and medical industry.

2017.10

# TAMAGAWA SEIKI



Yuri Yano, Jun Kiryu

yuri-yano@tamagawa-seiki.co.jp

Jun-kiryu@tamagawa-seiki.co.jp

## DRIVING FORWARD THE FRONTIERS OF TECHNOLOGY

Tamagawa Seiki contributes to the development of a variety of onboard equipment for rockets, space satellites and space stations by providing rotary sensors, drive motors, actuators and various types of mechanical units.

**TAMAGAWA SEIKI CO.,LTD.**

多摩川精機株式会社

<http://www.tamagawa-seiki.com>



## Our 5 Applications

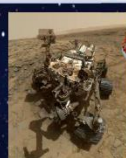
### Factory Application



### Science Application



### Amusement Application



### Space Application

High precision resolver



Reaction wheel



Fiber Optical Gyroscope



### Vehicle Application



**From COTS To Space qualified**



Come See Us





Toshikazu Uchida (内田 敏一)

[uchida@uchida-k.co.jp](mailto:uchida@uchida-k.co.jp)

Welcome to Japan Booth!  
I hope that you have some interest in UCHIDA.

UCHIDA Co., Ltd.

UCHIDA

<http://www.uchida-k.co.jp>

**UCHIDA**  
*Advanced Composite Technical Center*

UCHIDA is one stop factory of CFRP prototype products supplying special parts for top class racing motorcycles and cars, aerospace applications, industrial equipment, robots and medical equipment. There are many actual achievements in various fields to manufacture high accuracy · high heat resistant · high quality.







**Toshihiro Kameda (亀田 敏弘)**

toshihiro.kameda@warpspace.jp

It is great pleasure to show our products.  
Looking forward to seeing you on site !

**Contact**  
sales@warpspace.jp  
+81-29-856-8128

## Warpspace Inc.

株式会社ワープスペース

<http://warpspace.jp>



### ■ CubeSat Bus

- ✓ Comply with PC/104 component
- ✓ Aluminum Alloy Chassis
- ✓ J-SSOD Ready, configurable to other PODs
- ✓ Easy to Build
- ✓ Space Proven Deployment Switch Mechanism
- ✓ Scalable up to 3U
- ✓ Estimated Price < 10,000 USD

Space proven products will be delivered in 2019.

### ■ WS-Module Line-up



EPS Module  
(Li-ion 11 Wh)



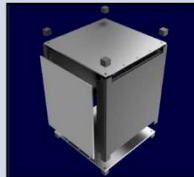
OBC Module  
(ARM® architecture)



COMM Module  
(UHF Uplink/Downlink)



ADCS Module  
(1 inch cubic 3-Axis RW)



### ■ Portable AZ/EL Rotator

- ✓ Azimuth -270° to +270°
- ✓ Elevation -20° to 200°
- ✓ Easy Set-up and Control
- ✓ Remote Control by Your PC and Smartphone
- ✓ Wi-Fi and Bluetooth® Ready
- ✓ Weather Proof
- ✓ Web Interface
- ✓ No time limitation for continuous operation
- ✓ Program Track Ready

**You MUST see our products demonstration in JSS booth.  
We can make Trial User Agreement with huge discount!!**

# Yamaguchi Aerospace Cluster



**Teruki Sakura** (t-sakura@ymg-ssz.jp)

Yamaguchi Aerospace Cluster

"Oide-mase(Welcome)" to Yamaguchi in Japan! Network of 6 manufacturing companies with high-quality manufacturing standard. With SAMURAI SPIRITS, we work together to solve various manufacturing issues of developers!



**Yousuke Furuta** (yousuke.furuta@axs-jp.com)

**AXS Co., Ltd.** (<http://www.axs-jp.com>)

Tell me about you all! Our company make sheetmetal by non-ferrous metals.



**Junji Miyazaki** (j-miyazaki@onex.jp)

**ONEX CORPORATION** (<http://www.onex.jp>)

The future is created by a hot heart. Our ONEX has been producing high quality products with our heat treatment skills. We also challenge new technologies to the future.



**Shouji Horiuchi** (shouji.horiuchi@kuroiso.co.jp)

**Kuroiso Manufacturing Company** (<http://www.kuroiso.co.jp/>)

Welcome to our booth! It is my first time to be to USA. I show our technologies although I cannot speak English well.



**Isao Matsuyama** (matsuyama130@hibikiseiki.com)

**Hibiki Seiki Co., Ltd.** (<http://www.hibikiseiki.com/>)

Hibiki Seiki is a specialist machining company based in the Yamaguchi area of Japan. We use cutting edge technology together with our skills gained through years of research with all fields from land to space.



**Hiroyuki Yanai** (s-shinwa@chorus.ocn.ne.jp)

**Shinwa Seiko** (<http://shinwa-Seiko.jp/>)

We, Shinwa-Seiko is a unique company. We are making a full-aluminum guitars and other guitars with CFRP composition. It is my first time to be to USA!

# Japan Space Systems



Shinsaku Nakamura (中村 晋作)

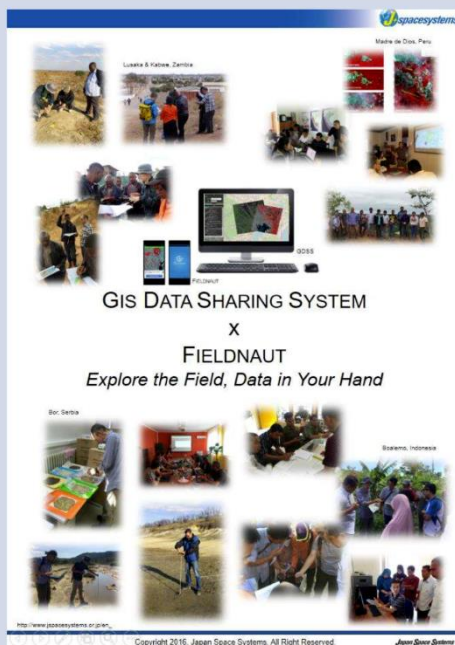
Nakamura-Shinsaku@jspacesystems.or.jp

This is my house cat, and her name is Tama. She is so fast and strong, but she is really cute. Ha, ha, ha, just kidding:-D Anyway, I am back to Logan with new Japan Booth! Enjoy our exhibit and feel the Japanese technologies!

## Japan Space Systems

宇宙システム開発利用推進機構

<http://www.jspacesystems.or.jp/en>



## Practical GIS Systems

Japan Space Systems focus on space system development, remote sensing data analysis and international cooperation.

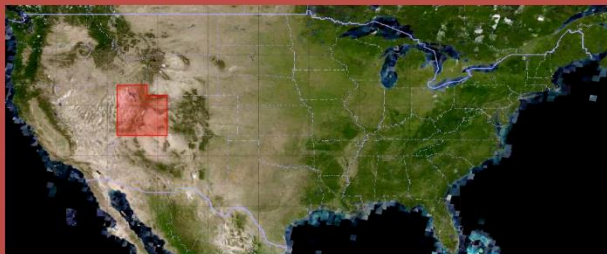
FIELDNAUT (Android App for field survey) and its database system for practical international science projects were developed. They are powerful tools for field survey and installed in Serbia, Zambia and Indonesia so far.



# The State of Utah (ASTER)



## Contiguous United States (ASTER)



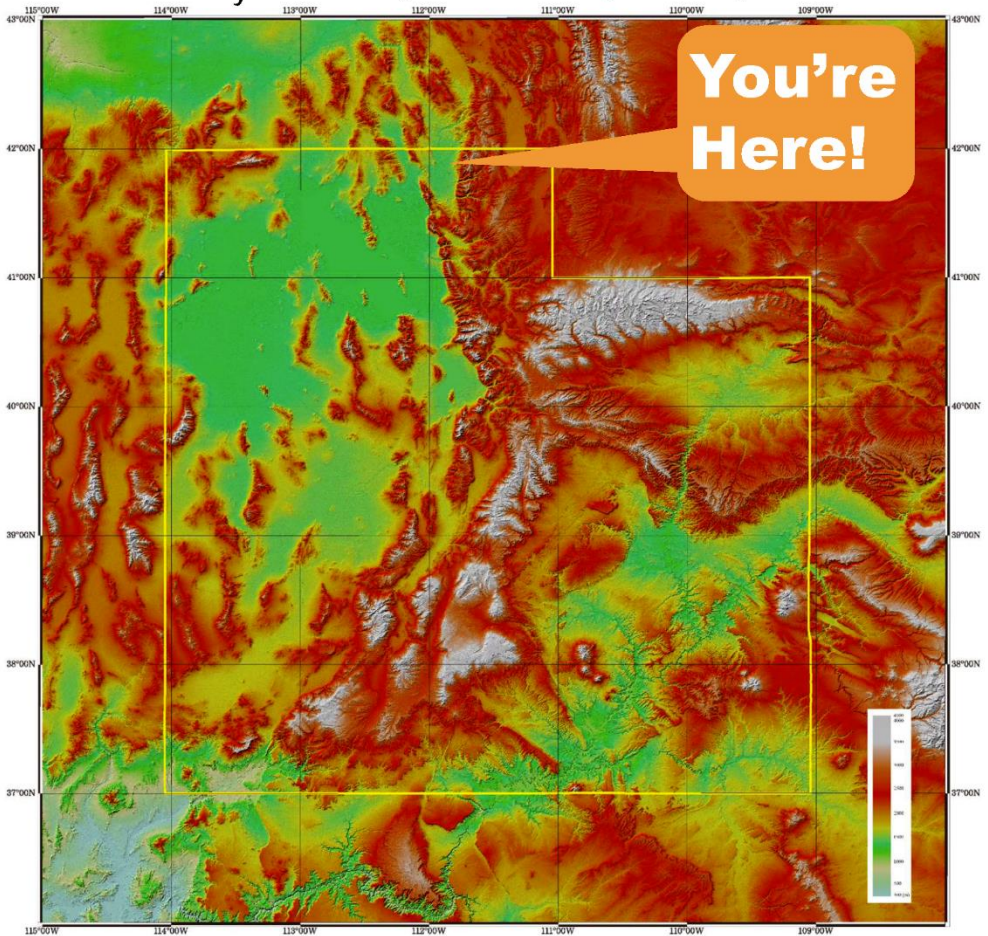
## ASTER

ASTER/Terra was launched in 1999. It has been observing the Earth over 18 years still today.

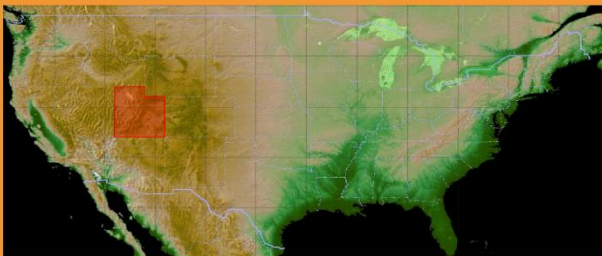
ASTER Mosaic Image Processed by Japan Space Systems



# The State of Utah (ASTER GDEM)



## Contiguous United States (GDEM)



## **ASTER GDEM**

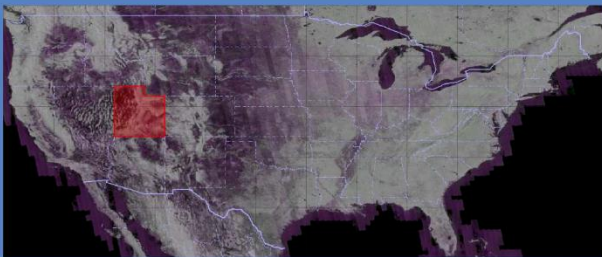
**ASTER Global Digital Elevation Mode** is a joint product developed by METI & NASA.

ASTER GDEM Mosaic Image Processed by Japan Space Systems

# The State of Utah (PALSAR)



## Contiguous United States (PALSAR)



## **PALSAR**

PALSAR/ALOS was launched in 2006. It observed the Earth for over 5 years.

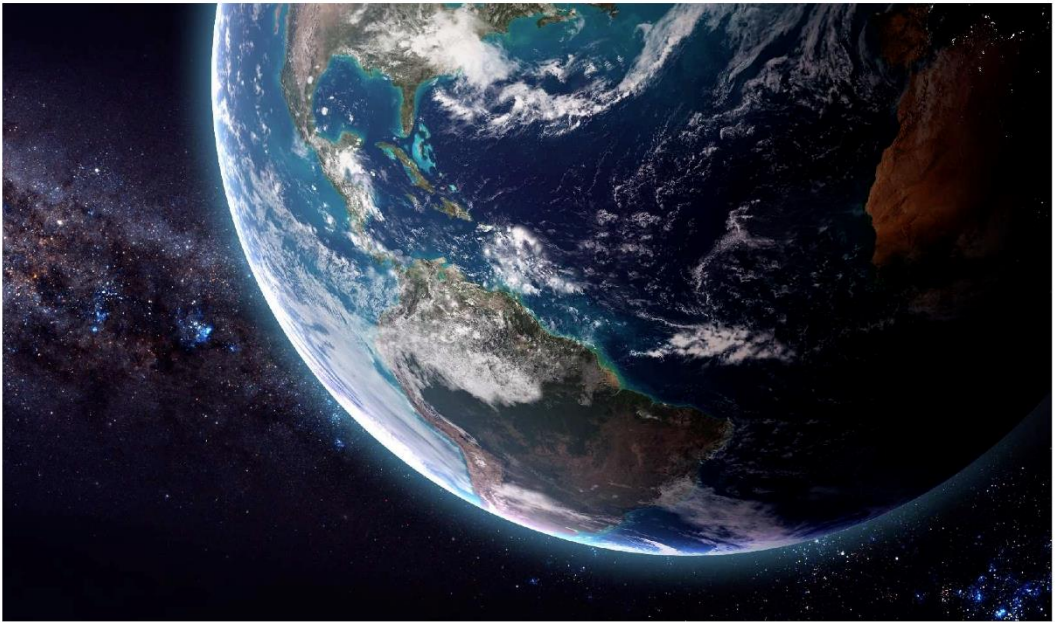
PALSAR Mosaic Image Processed by Japan Space Systems



# Editor's Note

## From the Land of Rising Sun

Thank you for another opportunity to have Japan Booth at 32<sup>nd</sup> Small Satellite Conference. This is our 3<sup>rd</sup> time. Japan Booth proudly presents Japanese activities of about 20 Japanese companies and organizations. Most exhibitors at Japan Booth are not huge industry companies, but they are increasing market shares overseas with their own unique skills. Japan Booth is not only a chance for Japanese companies to open their markets. It provides you your new business chance to collaborate with Japanese craftsmen. Come to Japan Booth, you would be a witness of Japanese high-quality space technologies, space business and services.



経済産業省

Ministry of Economy, Trade and Industry



Japan.  
Space  
Industry

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