



Asia & Astronauts : Working Together Towards Sustainable Space



Soichi Noguchi

Lead Astronaut, JAXA

President, Association of Space Explorers



My Space Experience

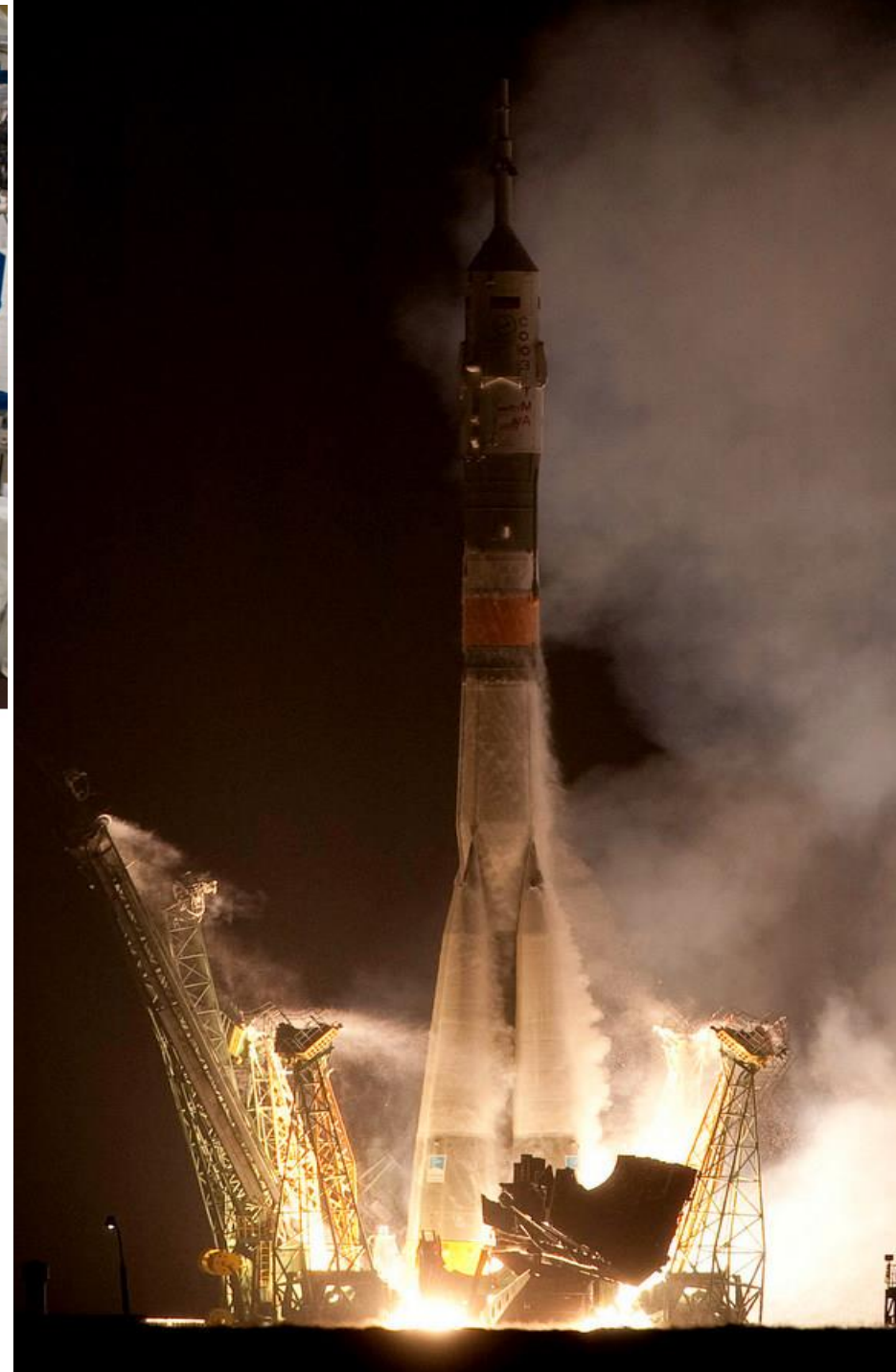
- American Space Shuttle
 - Discovery STS-114 (2005)
 - Space Station Assembly
 - Three Spacewalks: 20hours





ISS022E041767

- Russian Soyuz Spacecraft
 - Soyuz TMA-17 (2009)
 - ISS Expedition 22/23
 - Multi-National crew:
 - American, Russian, Japanese
 - Conducted 22 Science Experiments





MEXT

MINISTRY OF EDUCATION,
CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY



23RD
APRSAF
ASIA-PACIFIC REGIONAL
SPACE AGENCY FORUM
PHILIPPINES

THE 23RD SESSION OF THE ASIA-PACIFIC REGIONAL SPACE AGENCY FORUM

BUILDING A FUTURE THROUGH SPACE SCIENCE, TECHNOLOGY, AND INNOVATION

NOVEMBER 15-18, 2016
SOFITEL, MANILA
PHILIPPINES

CO-ORGANIZED BY THE DEPARTMENT OF
SCIENCE AND TECHNOLOGY (DOST),
DEPARTMENT OF FOREIGN AFFAIRS (DFA),
MINISTRY OF EDUCATION, CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY OF JAPAN (MEXT), AND
JAPAN AEROSPACE EXPLORATION AGENCY (JAXA).

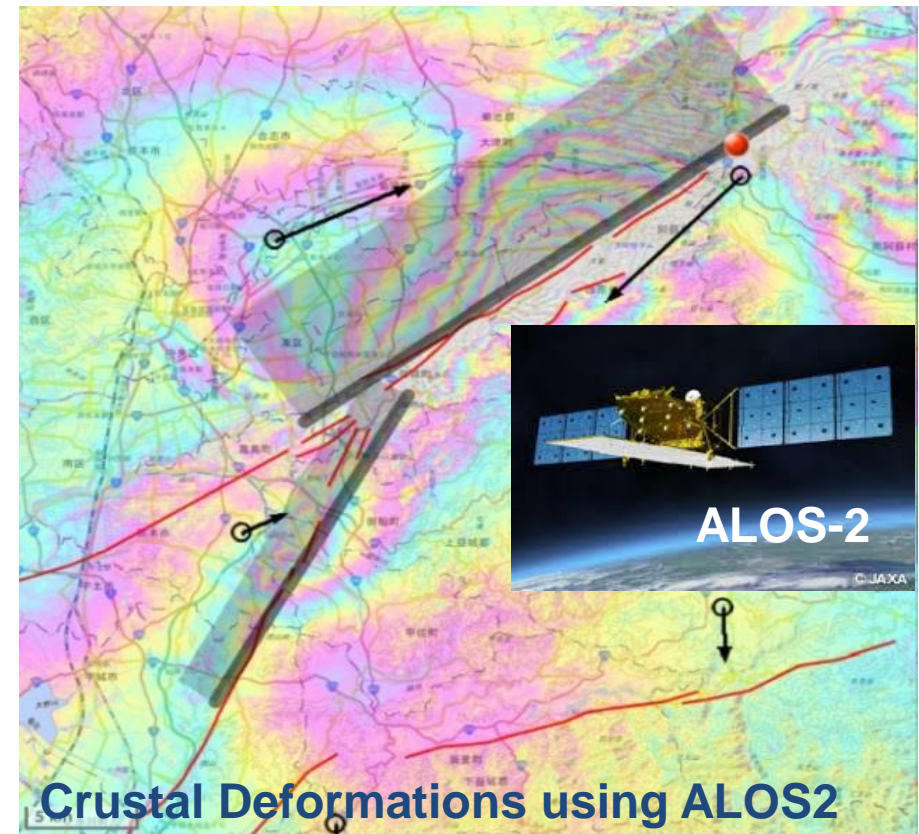
I  **MANILA**

Satellite Information for Disaster Management - Earthquakes -

- ALOS-2 data revealed large crustal deformations along the fault zone.
- The information was used by central and local governments to assess the recurrence risk of earthquake.



- Multiple satellites provide timely and frequent observation under **Sentinel-Asia framework**

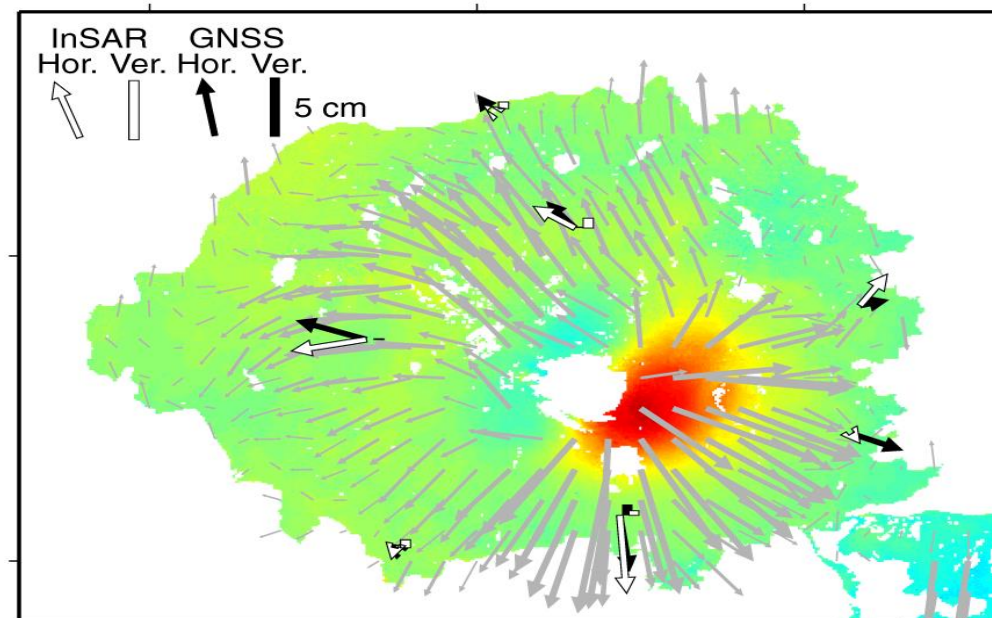


Satellite Information for Disaster Management

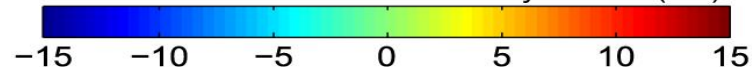
- Volcanoes -

- 3D Displacement Map generated from ALOS-2 data provides information on:
 - elevation of volcanic ground
 - volume of inflated magma

3D Displacement Map



Estimated vertical deformation by InSAR (cm)



Analysis by GSI from ALOS-2 raw data of JAXA
<http://onlinelibrary.wiley.com/doi/10.1002/2016GL068293/full>

 Geospatial Information Authority of Japan (GSI)
Ministry of Land, Infrastructure, Transport and Tourism



Satellite Information for Crop Management

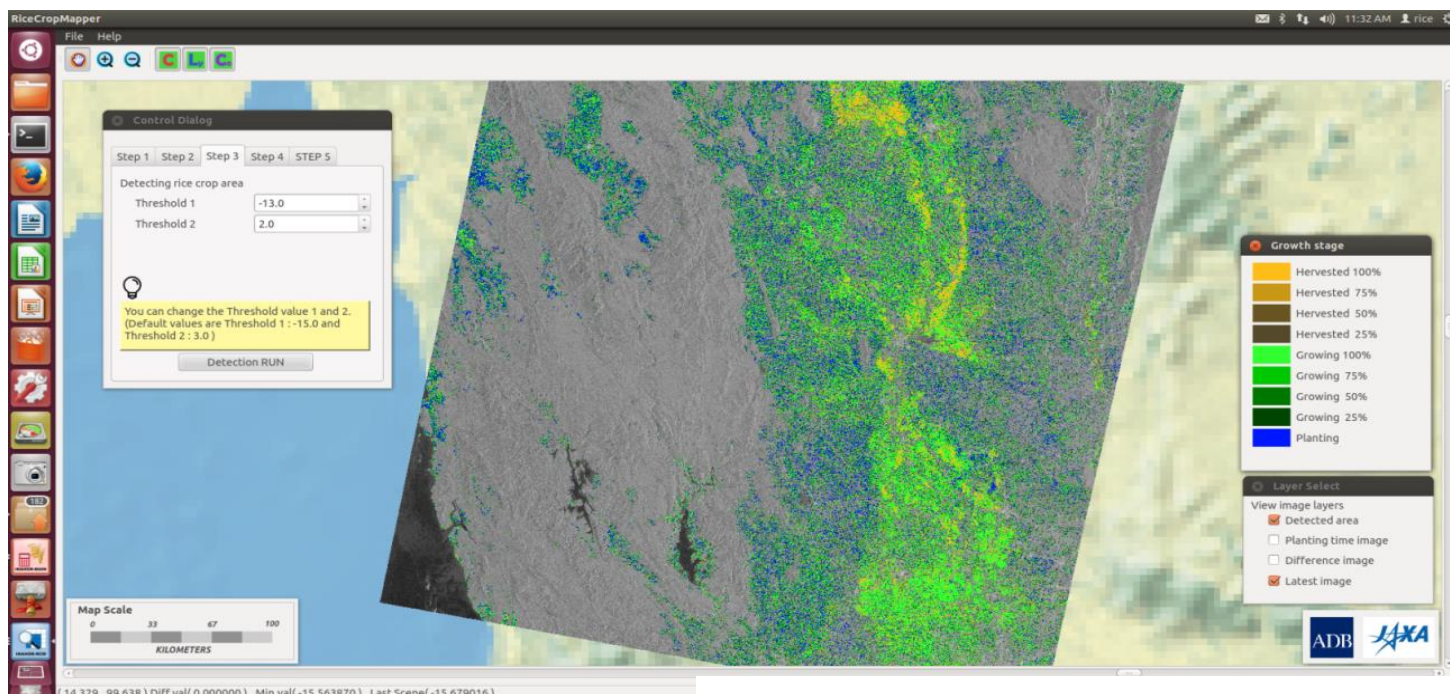
- Rice Production Statistics -

- To Improve quality and timeliness of rice production statistics by using satellite data :
 - Over 80% accuracy of information
 - Compile information within two months every quarter

3 stages:

- ✓ Yellow: harvest
- ✓ Green: Growing
- ✓ Blue: Plant

- Philippines
- Vietnam
- Thailand
- Laos

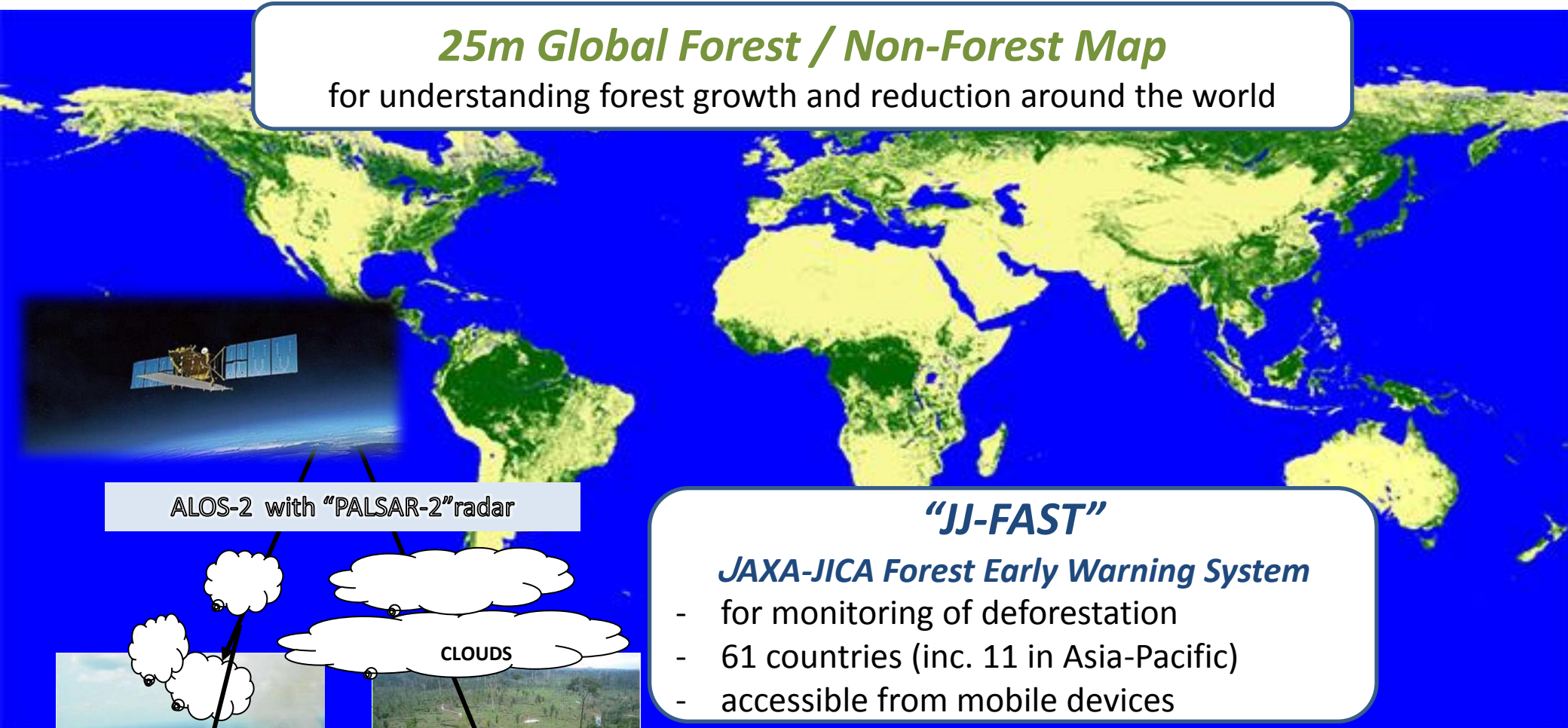


- JAXA-ADB Agreement paved the way for space technologies to contribute to the development in the Asia-Pacific region.

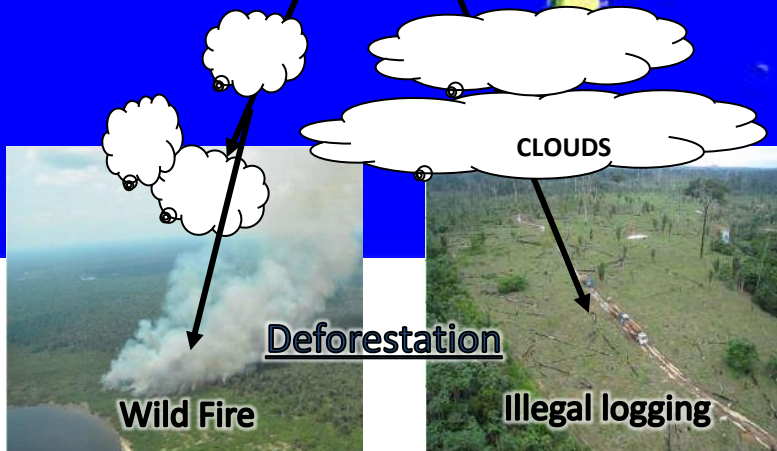
Satellite Information for Illegal Deforestation - JAXA-JICA Forest Early Warning System -

25m Global Forest / Non-Forest Map

for understanding forest growth and reduction around the world



ALOS-2 with "PALSAR-2" radar



"JJ-FAST"

JAXA-JICA Forest Early Warning System

- for monitoring of deforestation
- 61 countries (inc. 11 in Asia-Pacific)
- accessible from mobile devices

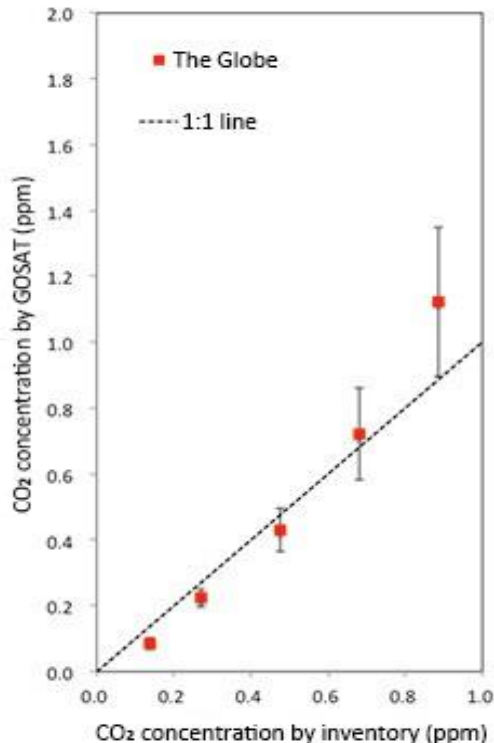


Japan International Cooperation Agency

Satellite Information for Climate Change - Anthropogenic GHG Observation -



GOSAT-2
(to be launched)



■ Satellite observation data can be used as a new verification method of GHG Emissions Inventory.

← Cross Comparison of CO₂ concentration by GOSAT data analysis with the emissions inventory based on statistical data, in Japan:
showing 1:1 correlation

JAXA, MOE and NIES have been cooperating on GOSAT Project.



Asian Try Zero-G

- ❑ With the goal of promoting manned space experiment activities aboard “Kibo,” a Japanese astronaut performs selected experiments covering themes proposed by youth from Asian countries.

International Space Station,ISS

Kibo experiment module



Asian Try Zero-G 2016 conducted by Astronaut Takuya Onishi



Participants with certificates



Proposers from Asian nations monitored the experiments in real-time at Tsukuba Space Center





ASE Planetary Congress



- 1985 - France
- 1986 - Hungary
- 1987 - Mexico
- 1988 - Bulgaria
- 1989 - Saudi Arabia
- 1990 - The Netherlands
- 1991 - Germany
- 1992 - USA
- 1993 - Austria
- 1994 - Russia
- 1995 - Poland
- 1996 - Canada
- 1997 - Costa Rica
- 1998 - Belgium
- 1999 - Romania
- 2000 - Spain
- 2001 - Kazakhstan
- 2003 - Japan**
- 2005 - Salt Lake City, USA
- 2007 - Edinburgh, Scotland
- 2008 - Seattle, USA
- 2009 - Czech Republic
- 2010 - Malaysia**
- 2011 - Russia
- 2012 - Saudi Arabia**
- 2013 - Germany
- 2014 - China**

- 2015 - Sweden
- 2016 - Austria**
- 2017 - France
- 2019 - USA



Prince Sultan, Saudi Arabia, 2012

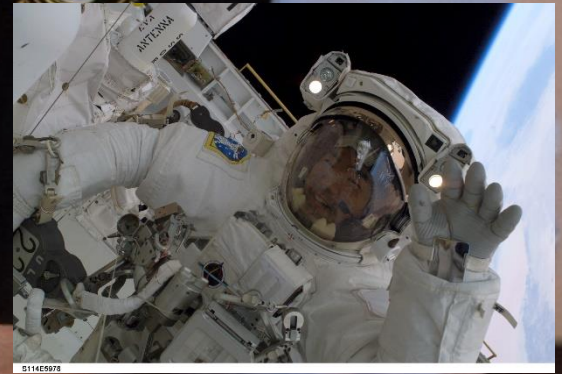


ASTRONAUT CENTER OF CHINA

Yang Liwei, Beijing, China. 2014



1965



2005

Alexei Leonov, the First Spacewalker, 2016



France, Germany, Hungary, India, Italy, Japan, Kazakhstan, Malaysia, Mexico, Mongolia, Netherlands, Poland, Romania, Russia, Saudi Arabia, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Syria, United Kingdom, United States and Vietnam