JAXA's Activities update 2010

For CSIS Forum
10-15-2010

By Norimitsu KAMIMORI
Director of JAXA WDC Office

1 . Introduction
JAXA's Organization and Programs

Total personnel: 1,650

President

Vice-President

Systems Engineering

S&MA

Policy Coordination

Admin. Management

Human Space Sys. &Utilization Mission Dir

Lunar & Planetary Exploration Prg.Group

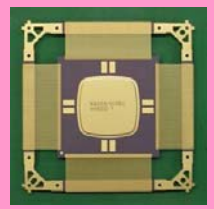
Inst. of Space & Astro. Science (ISAS)

Space Transport. Mission Dir.

Space Applications Mission Dir.

Aviation Program Group

Aerospace R&D Dir.

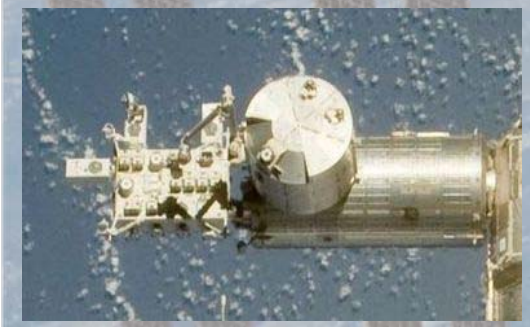


IGS Group

Consolidated Space Tracking and Data Acquisition Dep.
Environment Test Technology Center, etc.

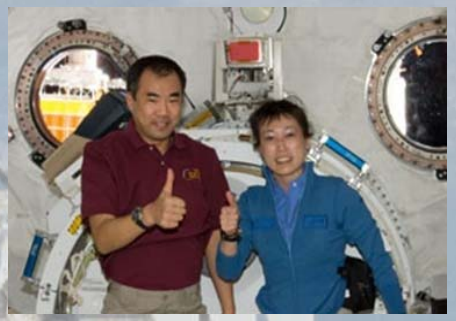
2. Latest Topics in each Program

2-1 ISS program



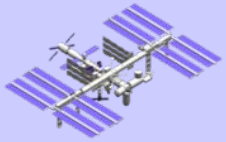
JEM (KIBO) Completion (Jul.2009)

HTV docking (Sep. 2009)



2 Japanese on ISS (Apr.2010)

2009 2010 2011 2012 2013 2014 2015



WAKATA
(Mar. 2009 ~ Jul.2009)

NOGUCHI
(Dec.2009 -June 2010)

YAMAZAKI
STS-131 (Apl.2010)

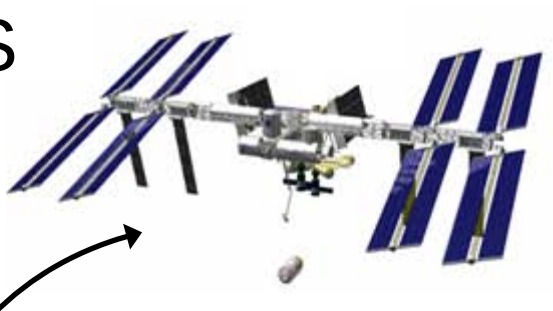
FURUKAWA
(2011)

HOSHIDE
(2012)

- Japan decided to agree ISS extension beyond 2015

HTV Return Vehicle Concept

ISS



Cargo Supply

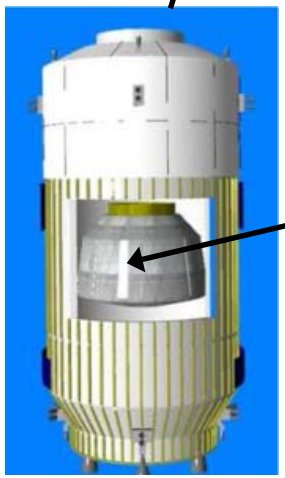
Deorbit

Separation

Lifting flight

De-celeration

Ocean Landing



Return Module (PL of several 100kg)

Modified HTV

(Target Launch is 2015)

2-2-1 Exploration Program –Asteroids and Planets

2000's → 2010's

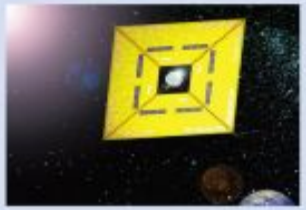
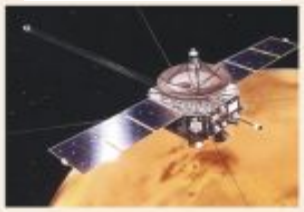
Collaboration

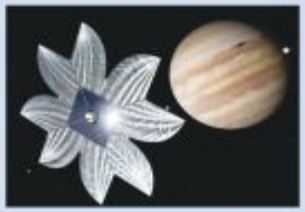
- Primitive Bodies Sampling
  - Hayabusa (S type Asteroid)
  - Hayabusa-2 (C type Asteroid)
  - Hayabusa-Mk2 (Malco-Poro) (D type Asteroid,etc)
- Planetary Science
  - のぞみ (PLANET-B) 1st Mars Explore
  - Bepi-Colombo Mercury Explore
  - Saturn & Trojan belt Explore
  - Planet-C Venus Remote sensing (First in the world)
  - Mars Detailed Explore Mars Landing

○ Small Demonstrator

IKAROS Solar Ceiling (First in the world)





Hayabusa Back to Earth in Jun 13th 2010

- Prime Minister commented positive for Hayabusa follow-on mission.
- Lately found particles from asteroid.

Outline of Hayabusa-2

Launch

July 2014

Spacecraft has an impactor.

Observation of the asteroid, release of small rover/lander, sampling

June 2018

2019

The impactor collides to the surface of the asteroid.

Sample analysis

Earth Return

Dec. 2020

Further exploration

2-2-2 Exploration Program –Lunar and Planets

2010's future

●Robotic Lunar Exploration

Kaguya (SELENE)
Lunar Remote sensing

Successful in 2009

SELENE-2
Lunar Landing

SELENE-X
Facilitation for human activity (studying)

○Japanese long-staying on Moon
○Lunar Science and Utilization

Decision for participating International Lunar program (depend on context)

Japanese on Moon by International program (on studying)

●Human Lunar Exploration

Through ISS and HTV Japan get capability for human space activity

Human Mars Exploration

- Strategic HQ decided continuity of Lunar Exploration Scenario
- However in fact, Slow down in Lunar Exploration due to limited budget

2-3 Space Transportation Program

H-IIB Rocket

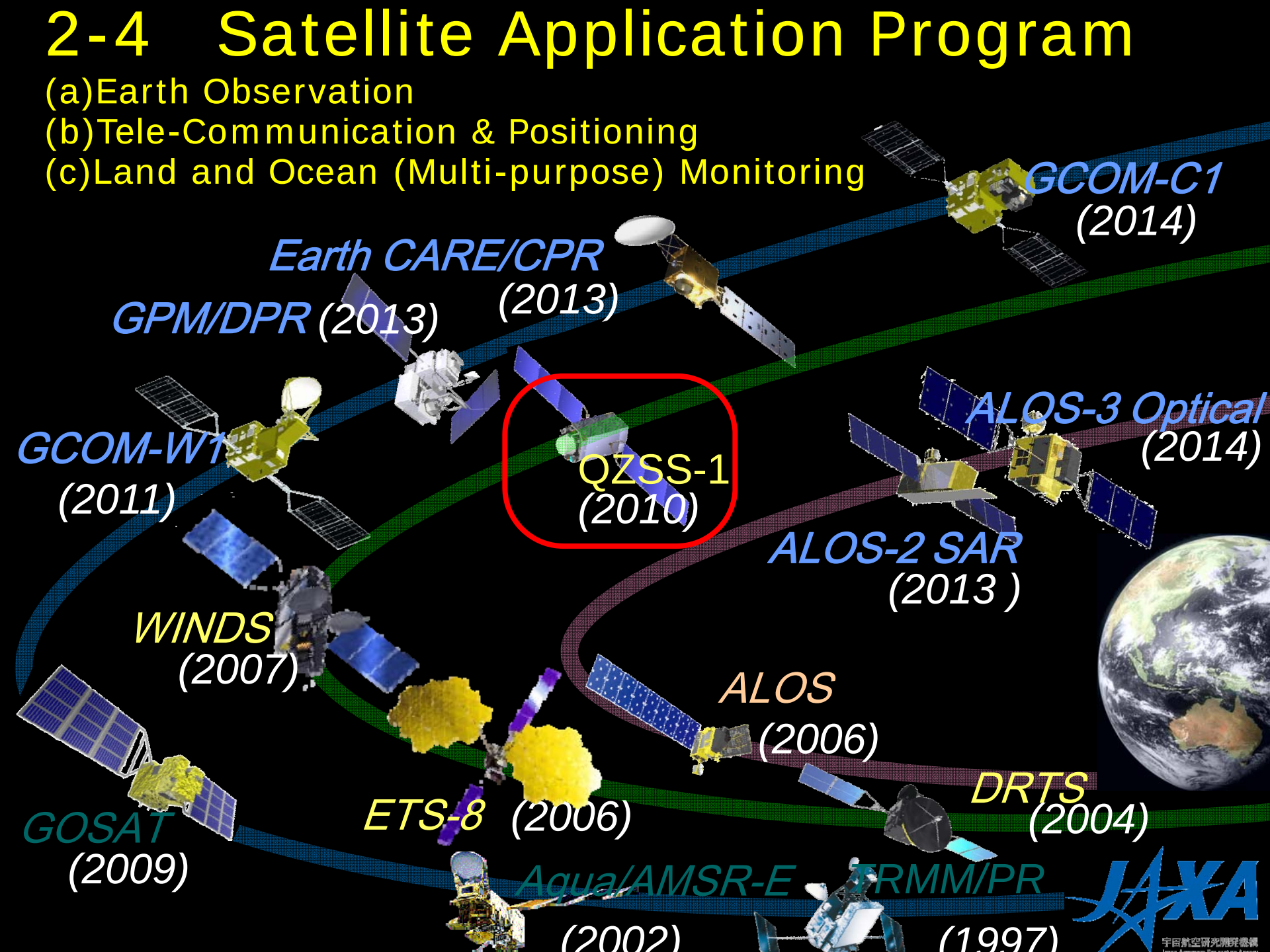
New solid Rocket Epsilon (ε)

Comparison of H-IIA and H-IIB

		H-IIA202	H-IIB	ε
Specifications Length (m)		53	56	24
Mass (t)		289	551	91
SRB-A		2	4	N/A
Maximum Launch Capacity (ton)	GTO	4.1	8	
	ISS Orbit	–	16.5 (HTV)	700kg @500kmCircle

2-4 Satellite Application Program

(a)Earth Observation
(b)Tele-Communication & Positioning
(c)Land and Ocean (Multi-purpose) Monitoring



QZSS System Design

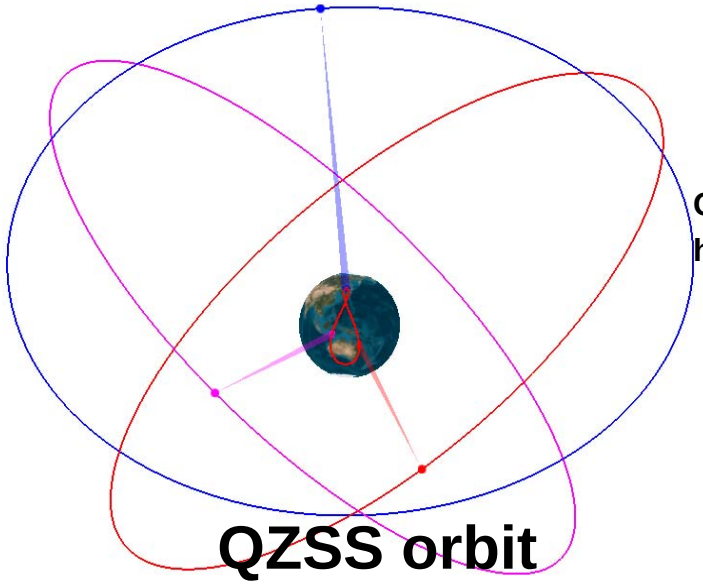
QZSS orbit constellation

- Three satellites are in **elliptical and inclined orbits** in **different orbital planes** to pass over the same ground track.
- QZSS is designed so that **at least one satellite out of three satellites exists near zenith** over Japan.

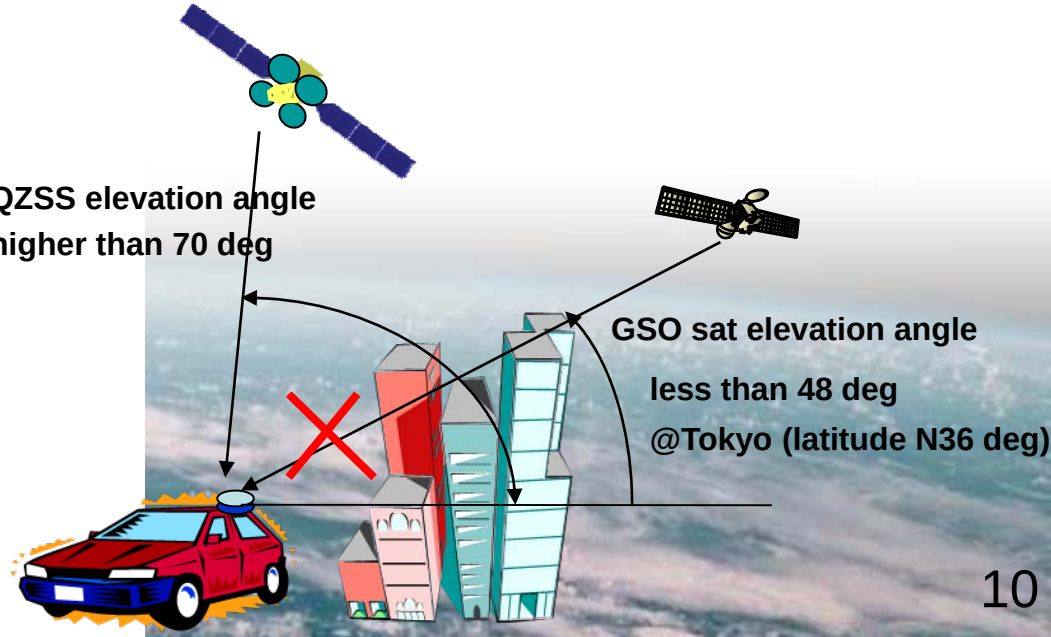
(a=42,164km, e=0.099, i=45deg, Ω= 120deg apart)

Perigee Altitude is about *32,000km*.

Apogee altitude is about *40,000km*.



QZSS orbit constellation



Cooperation in the Asia-Pacific region

Asia-Pacific Regional Space Agency Forum
APRSAF

- Established in 1993 after the Asia-Pacific International Space Year Conference (APIC) in 1992
- Enhance the development of space programs in the Asia-Pacific region and promote regional cooperation in the field of space technology and its applications.
- [Participation] Space agencies, related governments, regional and international organizations, institutions responsible for applying space technology.
- [Organizers] MEXT, JAXA and co-host organizations
  Past co-organizers: Government entities of Mongolia, Malaysia, The Republic of Korea, Thailand, Australia, Indonesia, India, Vietnam

Working Groups




- Earth Observ. WG
- Comm. Satellite Applicat. WG
- Space Environmt Utilization WG
- Space Educat.& Awareness WG

"Sentinel Asia" Disaster Management Support System

"SAFE" Space Applications for Environment

STAR

"STAR" Satellite Technology for the Asia-Pacific Region Program

JAXA

宇宙航空研究開発機構

Japan Aerospace Exploration Agency