

Space Program of Korea

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UN COPUOS STSC



**Ministry of Science
& Technology**

KARI
KOREA AEROSPACE RESEARCH INSTITUTE



Agenda

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History

2

Accomplishment in Space Program

3

Major Space Program

4

National Space Development Plan





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History

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Accomplishment in Space Program

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National Space Development Plan



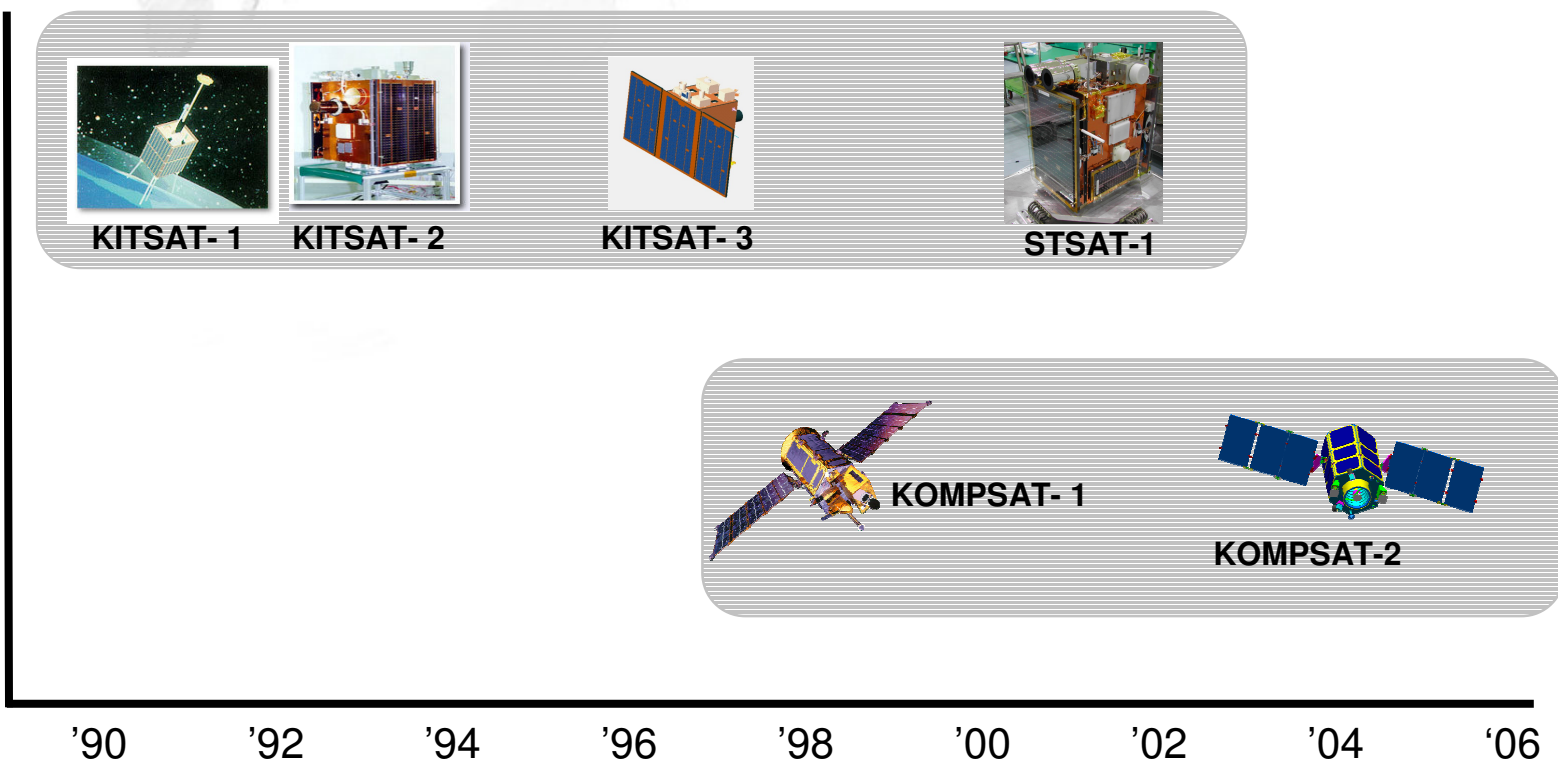
History

❖ History of Korean Space Program

- KITSAT 1,2 launched on 1992, 1993.
- Initial plan of the National Space Program (NSP) of Korea was established in 1996, and revised in 2000 and 2005.
- NSP describes long-term plan of Korea's space development, and serves as basis for future space activities in Korea.

History

❖ History of Space Development





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Accomplishment in Space Program

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Accomplishment in Space Program

❖ KITSAT -1, 2, 3



O Mission

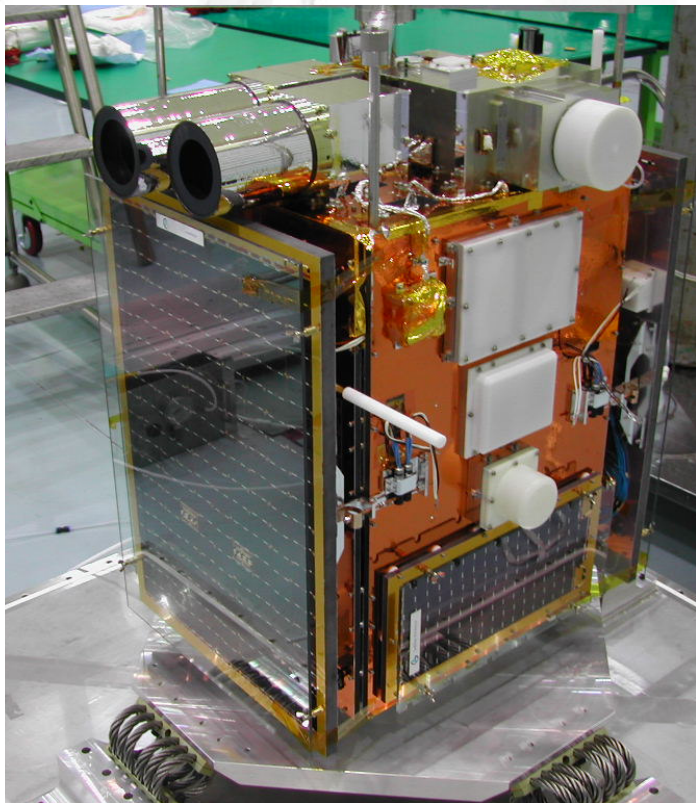
- 1 : Earth Observation (Res. 400m), Scientific Experiments
- 2 : Earth Observation (Res. 200m), Scientific Experiments
- 3 : Earth Observation (Res. 13.5m), Scientific Experiments

O Details

No.	Wt.	Orbit	Launch	Life Span
1	50kg	1,300km	Aug.1992	3yr
2	50kg	820km	Sep. 1993	3yr
3	110kg	720km	May 1999	3yr

Accomplishment in Space Program

❖ STSAT-1 (Science and Technology Satellite-1)



❖ Development Outline

- Period : Oct. '98 ~ Dec. '03
- Development by SaTReC / KARI
- Launch : 2003

❖ Payload

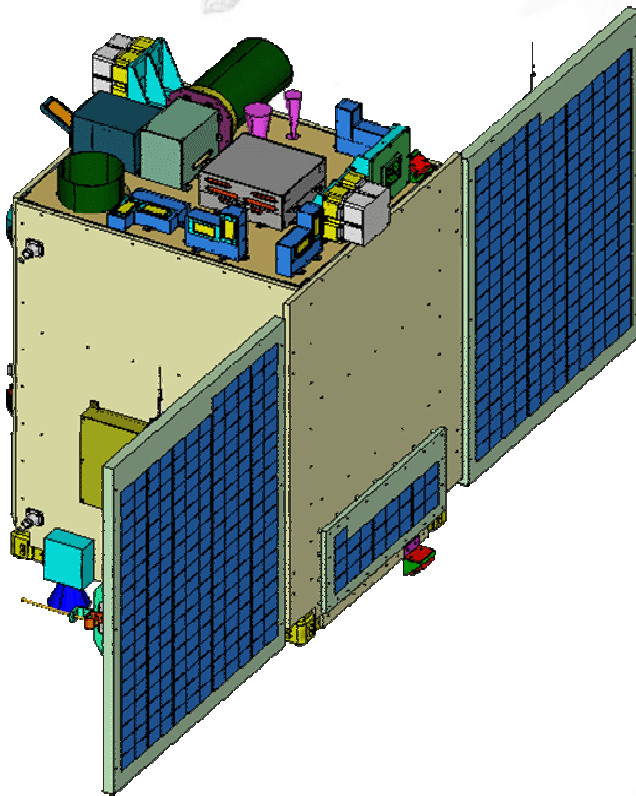
- Far ultra-violet Imaging Spectrograph
- Space Physics Package

❖ Configuration

- BUS 0.67m X 0.55m X 0.83m
- Weight : 106kg

Accomplishment in Space Program

❖ STSAT - 2



❖ Development Outline

- Period : Oct. '02 ~ Dec. '05
- Development by SaTReC / KARI
- Launcher : KSLV-1 (2007)
(Korea Space Launch Vehicle-1)

❖ Payload

- Microwave Radiometer
- Satellite Laser Reflector

❖ Configuration

- BUS 0.65m X 0.62m X 0.93m
- Weight : 100kg

Accomplishment in Space Program

❖ KOMPSAT-1 (Korea Multi-Purpose Satellite-1)

❖ Development Outline

- Period : Nov. '94 ~ Jan. '00
- Joint development by KARI & TRW
- Launch : Dec. 22, 1999

❖ Mission

- Cartography of Korean peninsula
- Ocean Observation
- High energy particles & Ionosphere measurement

❖ Configuration

- BUS Diameter 1.35 m X Height 2.5 m
- Weight : 470 kg
- Resolution : 6.6 m





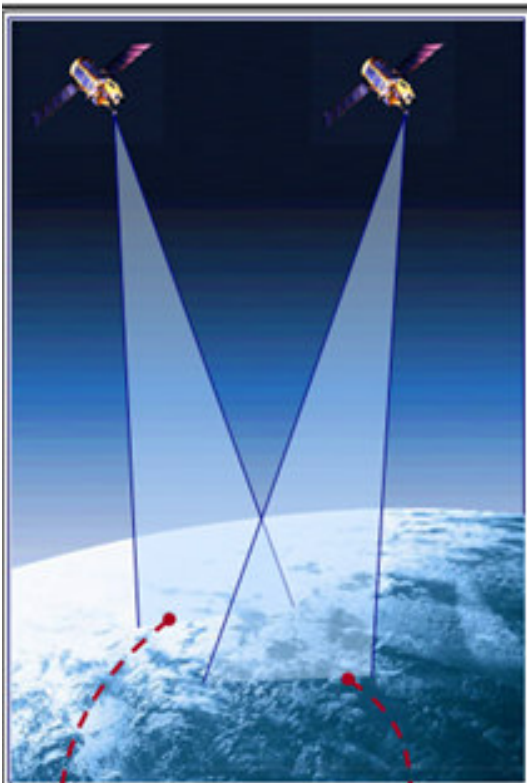
Accomplishment in Space Program

Seoul (EOC Image Mosaic)
2000.2.15 (L)+2000.1.20 (R)

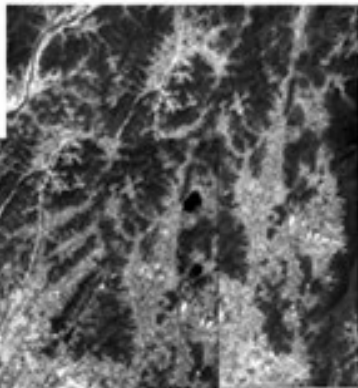


Accomplishment in Space Program

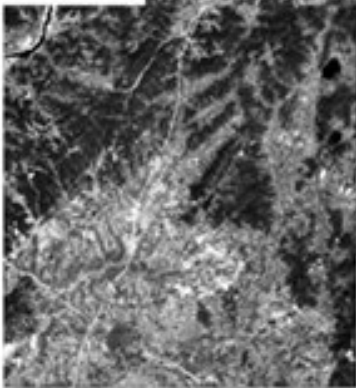




Right image

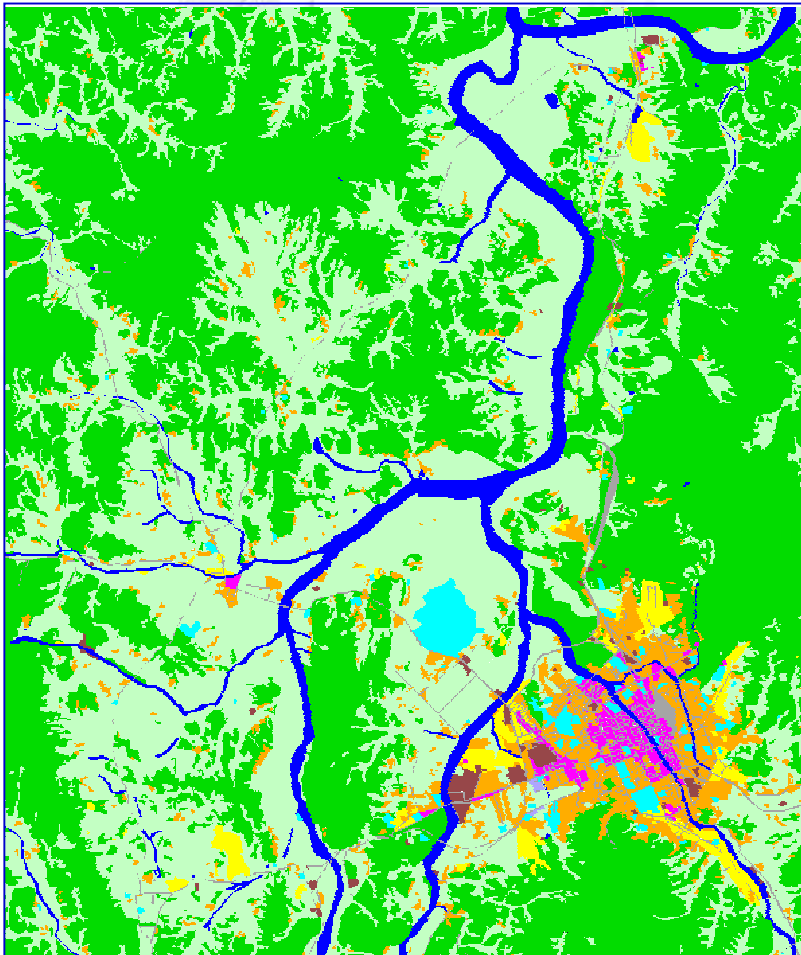


Left image

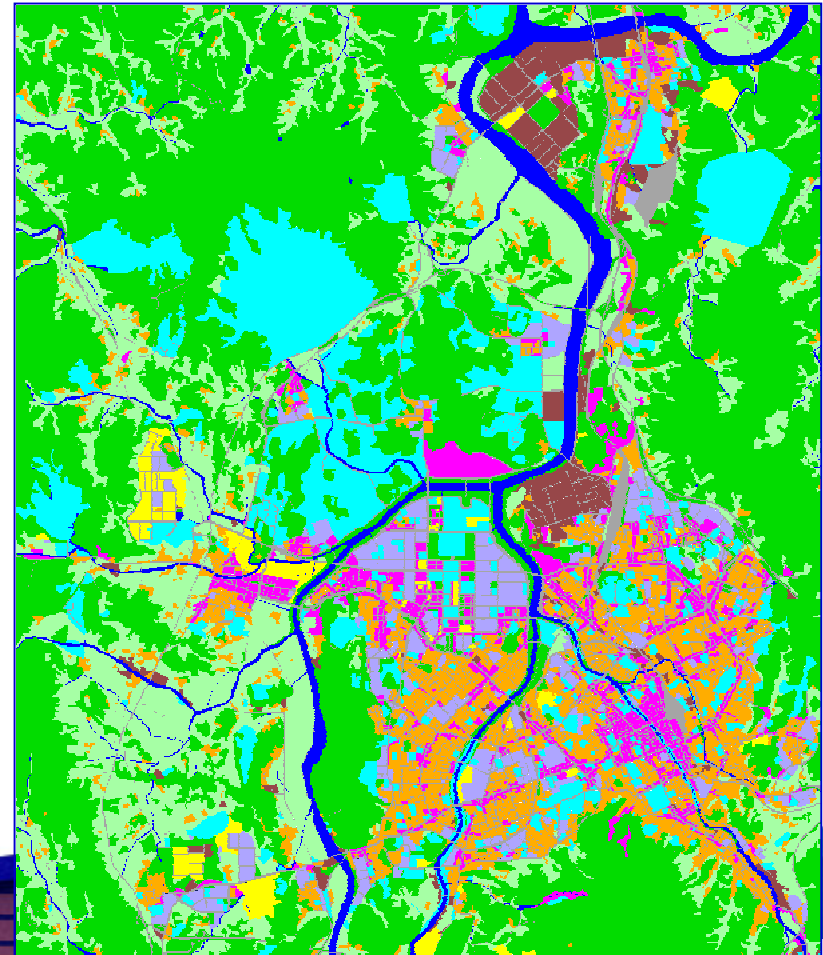


Urban Growth

1960



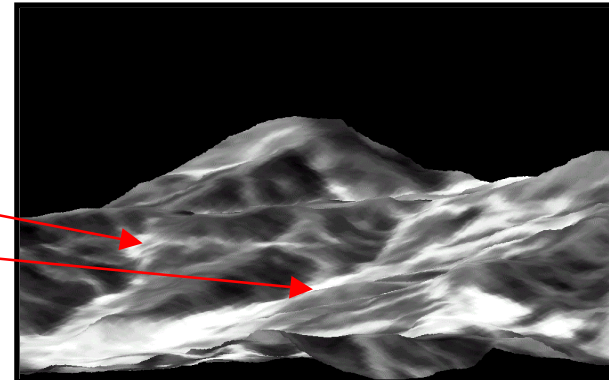
2000



Land Slide(March 2000)



In-situ Photo



EOC 3-D Image

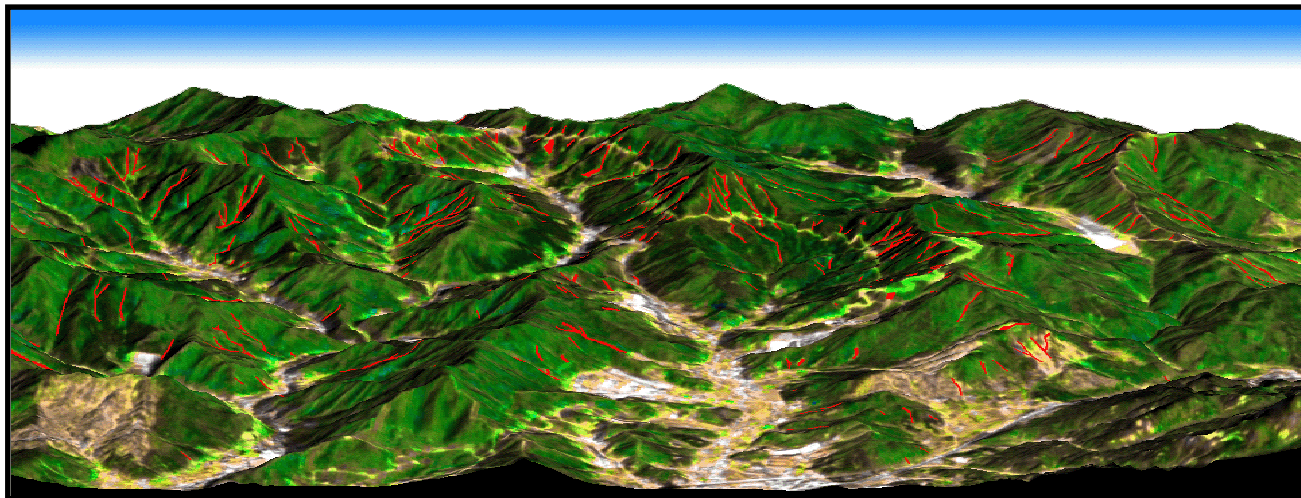
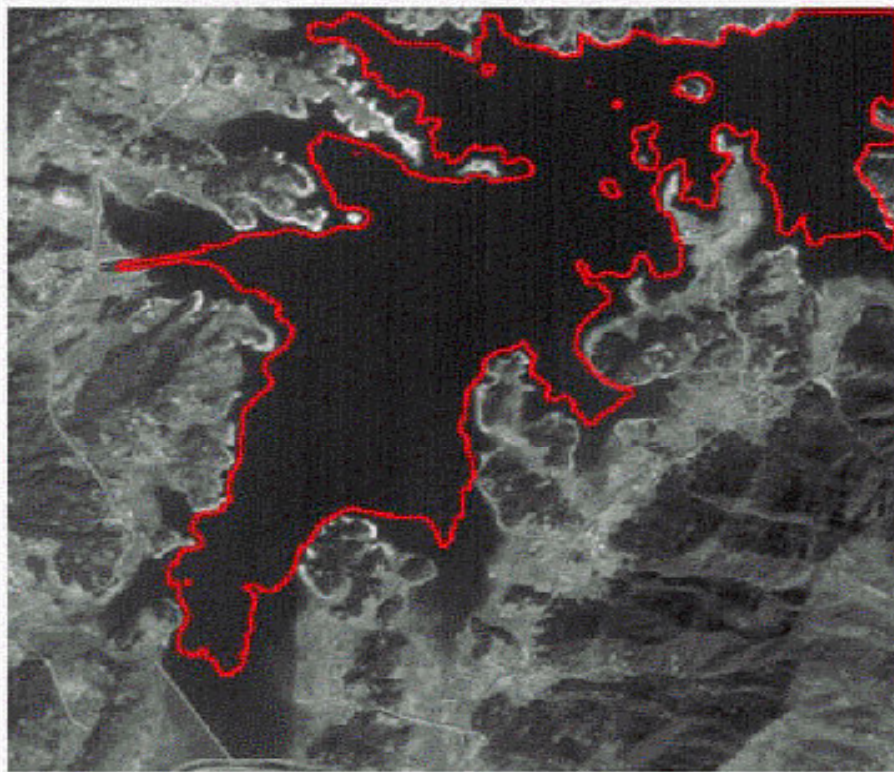


Image Fusion with EOC & SPOT Data



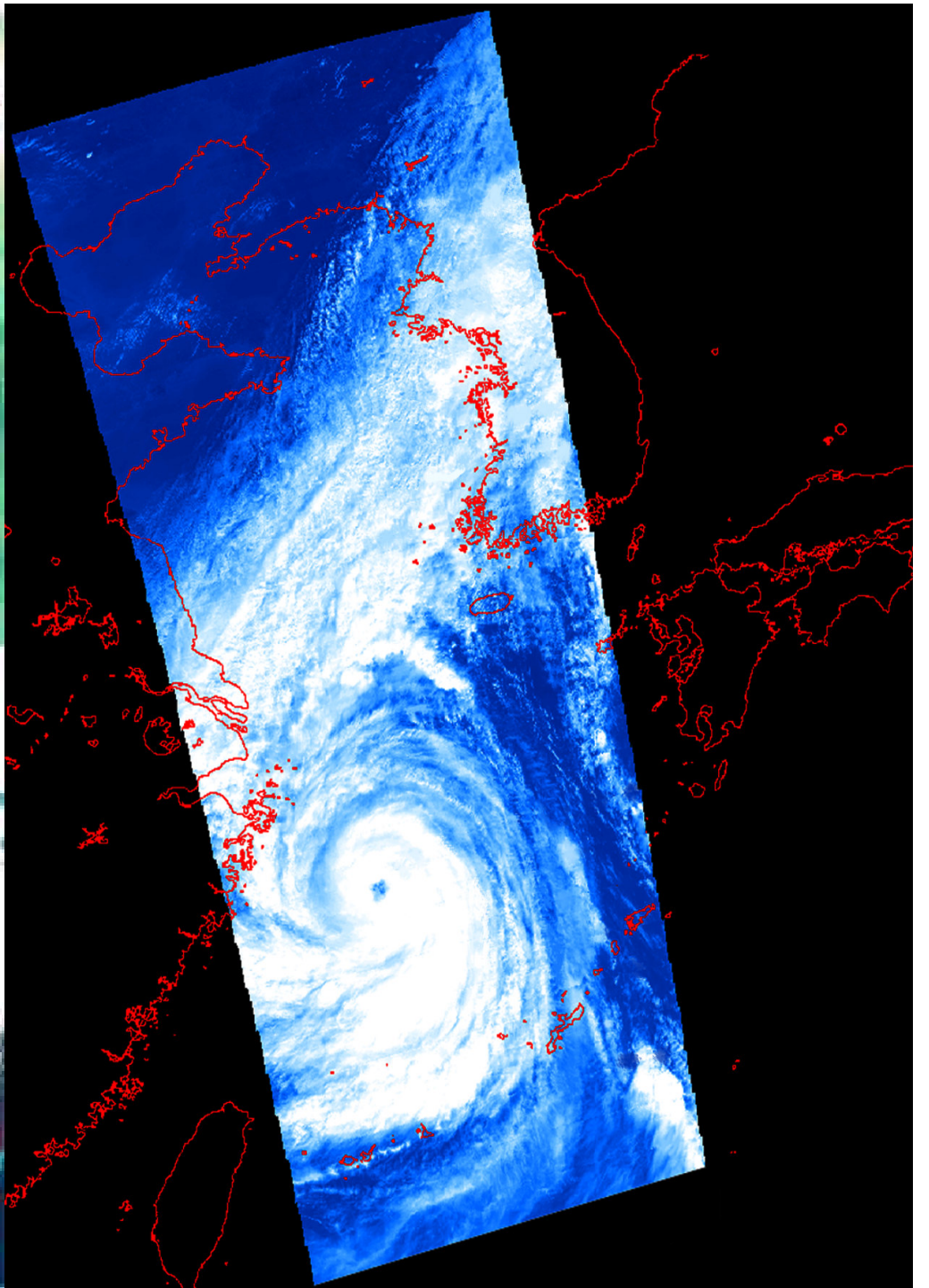
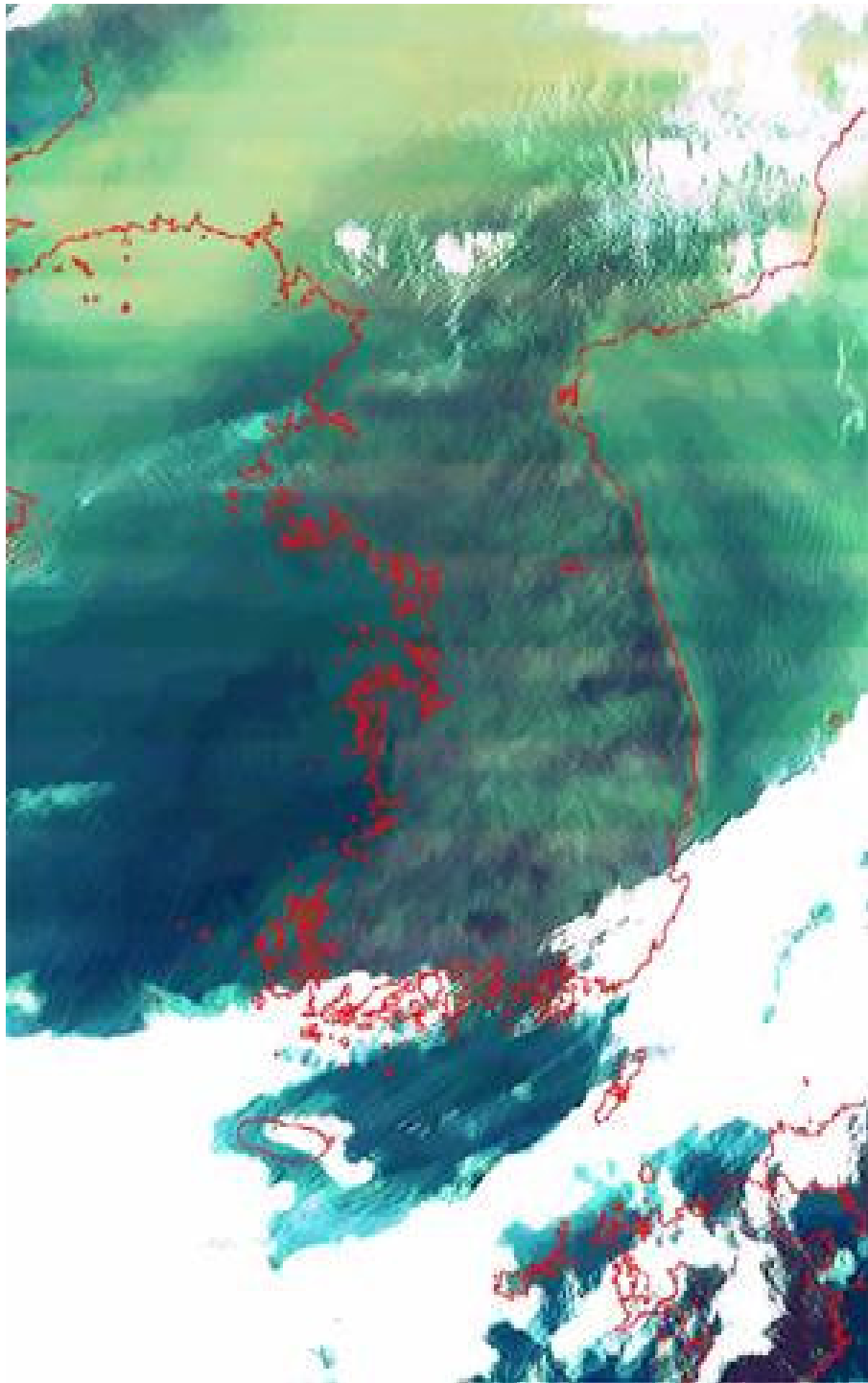
Accomplishment in Space Program

Impact of Drought on Dam

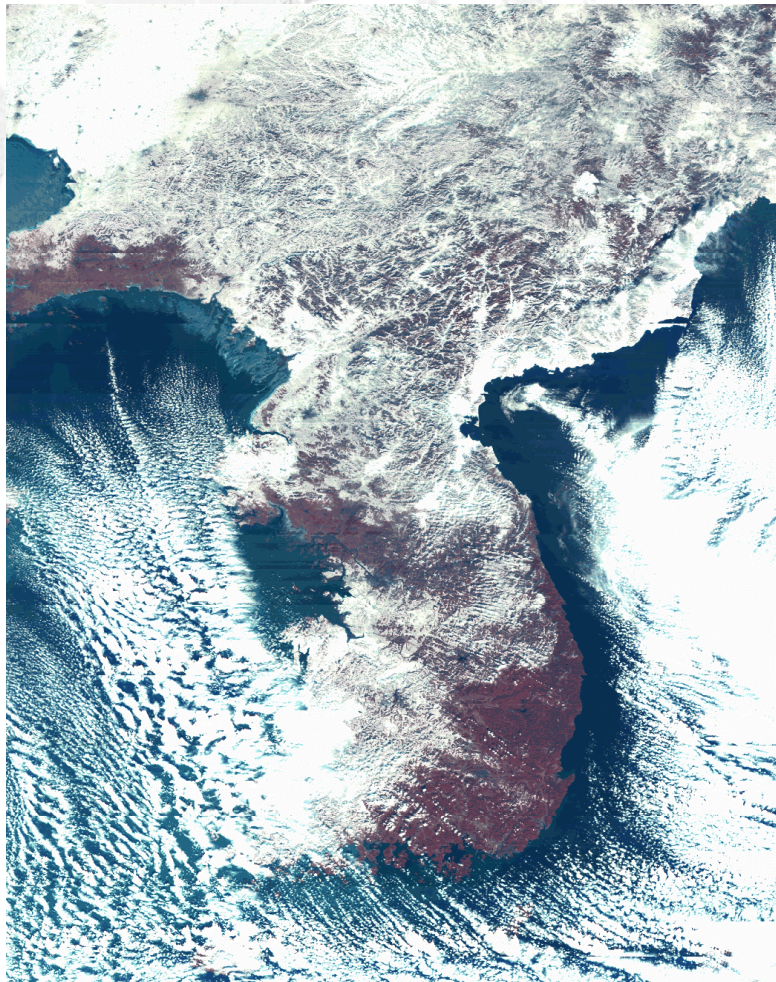


**EOC Image:
March 2000 vs. June 2001
(red line)**

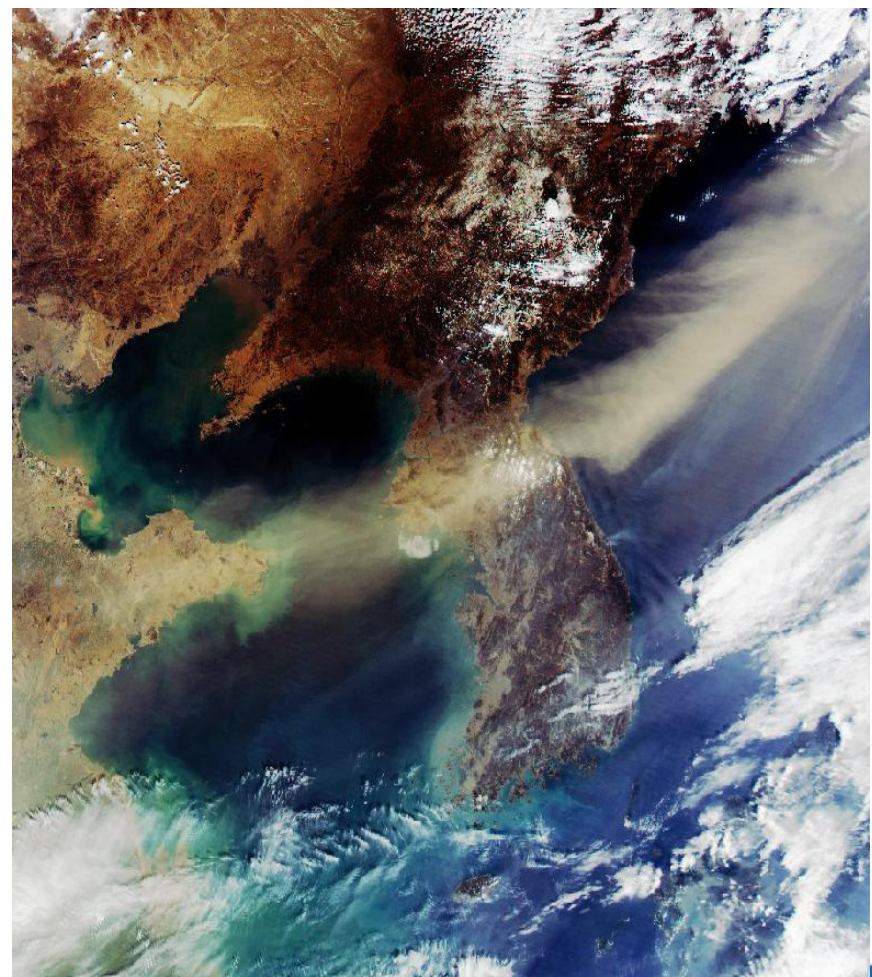




Accomplishment in Space Program



Korean peninsula



Observation of Yellow Sand

Accomplishment in Space Program

❖ KOMPSAT - 2



- **Development Outline**

Period : Dec. '99 ~ July. '06

Indigenous Development by KARI with the Technical Support from Astrium

- **Payload** : Multi-Spectral Camera

Resolution : 1m panchromatic,
4m color

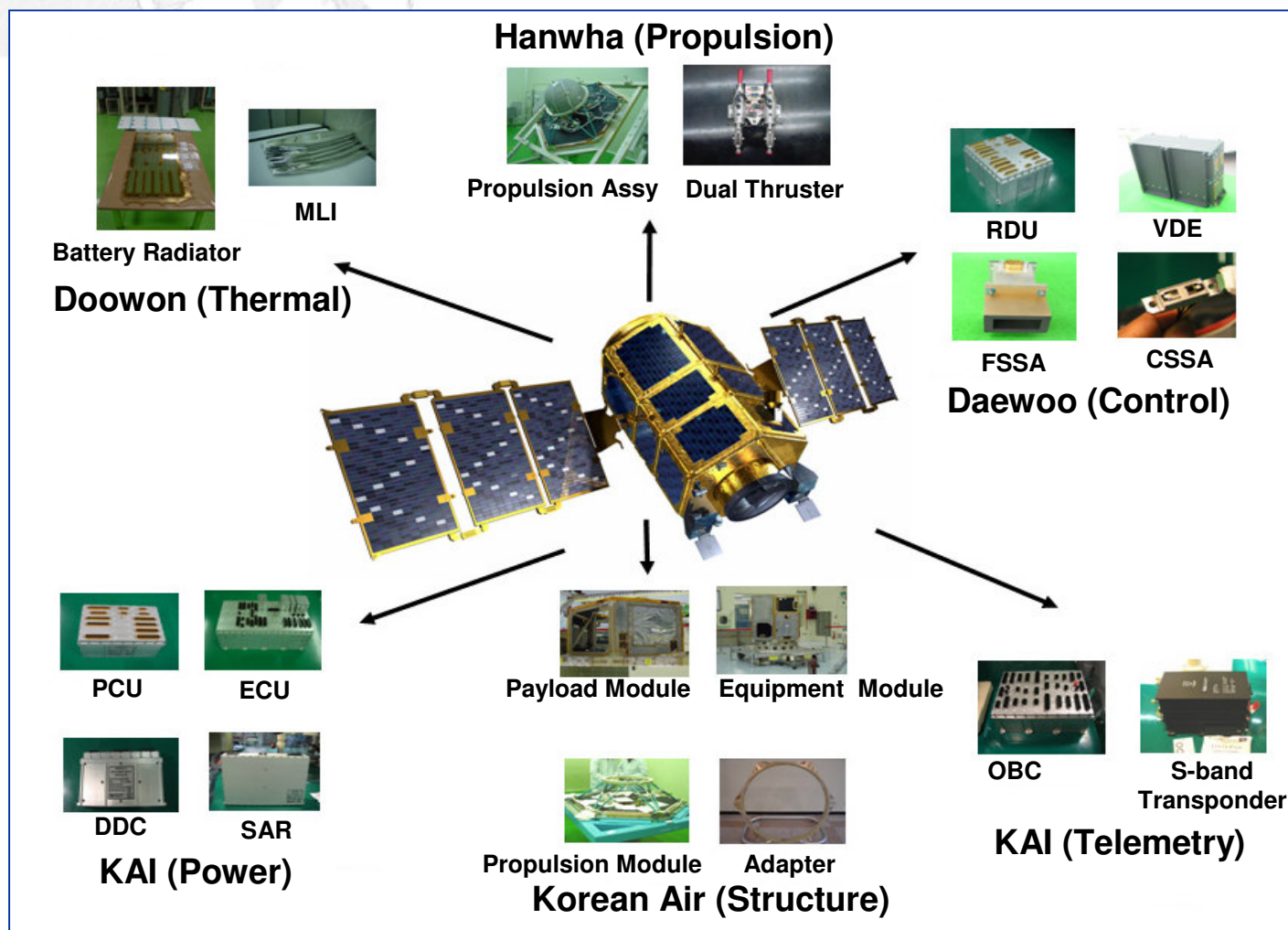
Joint development by KARI & ELOP

- **Configuration**

BUS Diameter 1.85m X Height 2.6m

Weight : 800kg

KOMPSAT-2 Components



MLI : Multi-Layer Insulator
DDC : Deployment Device Controller
RDU : Remote Drive Unit

PCU : Power Control Unit
SAR : Solar Array Regulator
FSSA : Fine Sun Sensor Ass'y

ECU : EPS Control Unit
VDE : Valve Drive Electronics
KAI : Korea Aerospace Industries

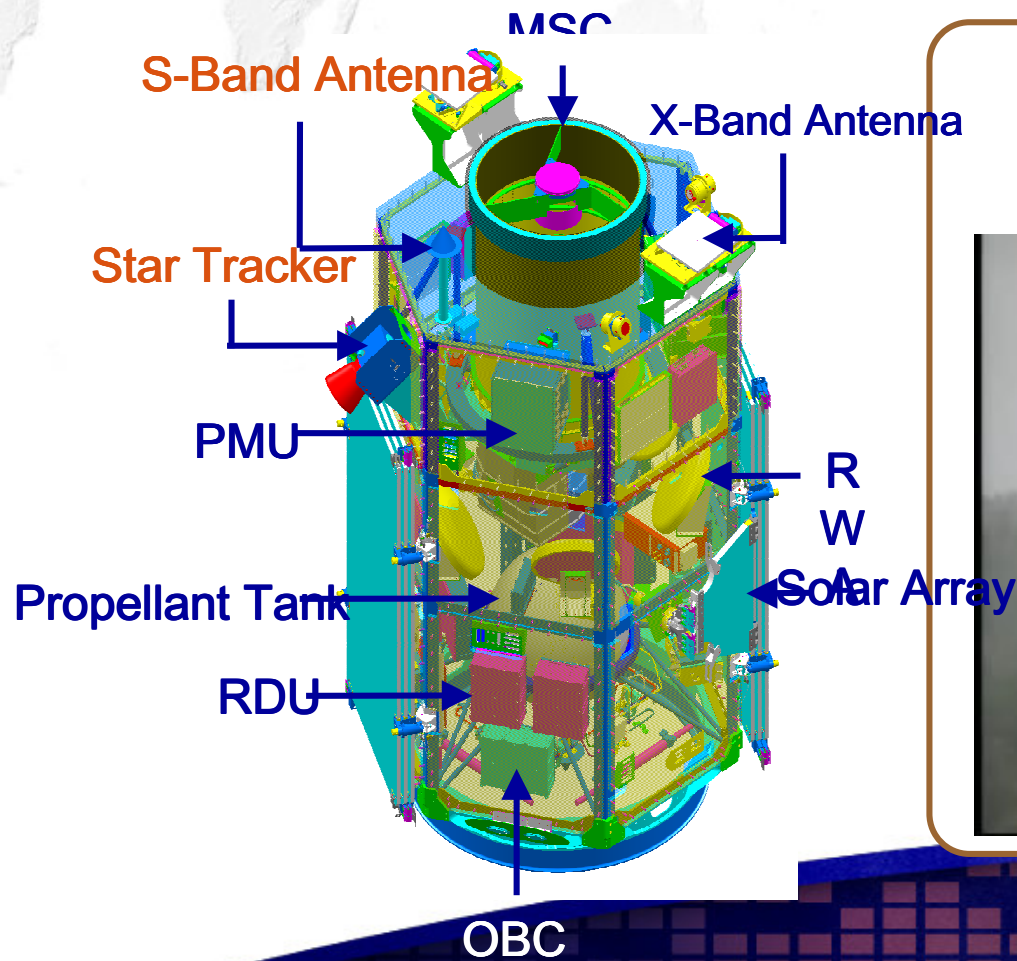


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Accomplishment in Space Program

❖ KOMPSAT - 2



< Russia on July 28, 2006 >
-Launch -



KOMPSAT-2, Test Image



Jamsil

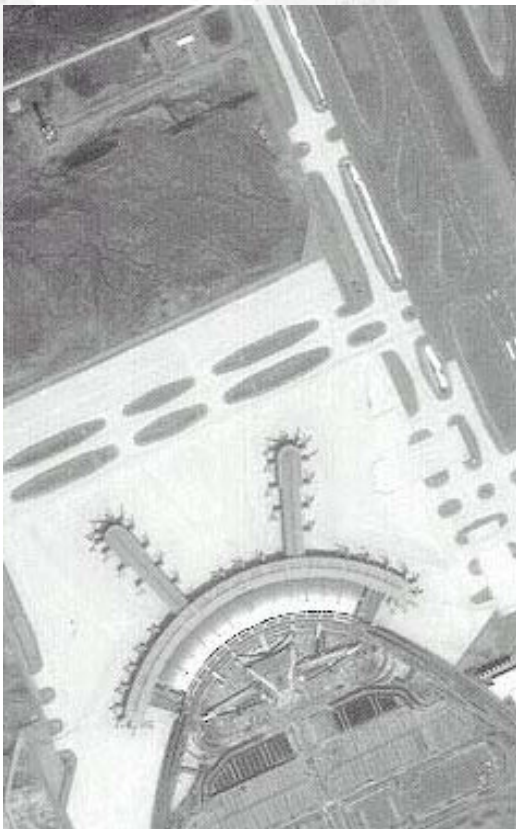
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Image Comparison(Incheon Airport)



KOMPSAT-1(6.6m Res.)



KOMPSAT-2(1m Res.)



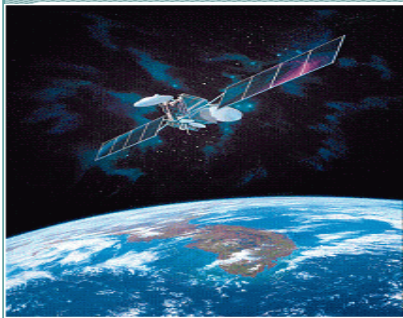
KOMPSAT-3(0.7m Res.)

Accomplishment in Space Program



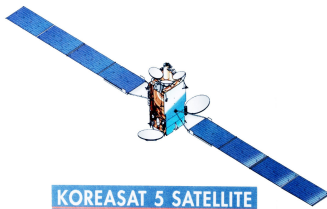
Koreasat 1,2

- Use : Communications and Broadcasting
- Launch : Aug. 5, 1995/Jan. 14, 1996
- Manufacturer : GE



Koreasat 3

- Use : Communications and Broadcasting
- Launch : Sep. 5, 1999
- Manufacturer : Lockheed Martin



Koreasat 5

- Use : Communications and Broadcasting
- Launch : Aug. 22, 2006
- Manufacturer : Alcatel

Accomplishment in Space Program

- International Astronautical Congress(IAC) is held annually.
IAC was held in Valencia in 2006.
Daejeon, Korea won the competition of the holding a meeting in 2009.





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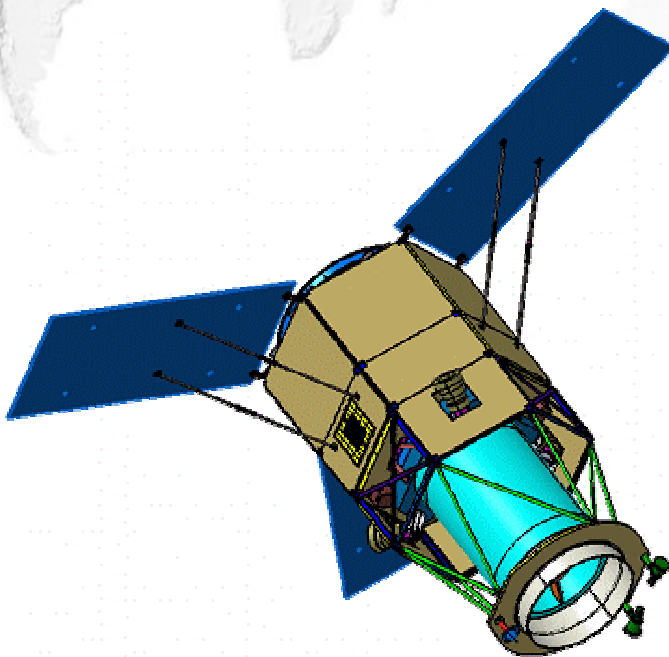
Major Space ProgramProgram

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National Space Development Plan

Major Space Program

❖ KOMPSAT - 3



Development Outline

- Period : Jul. 2004 ~ Nov. 2009
- Indigenous Development by KARI

Payload : Multi-Spectral Camera

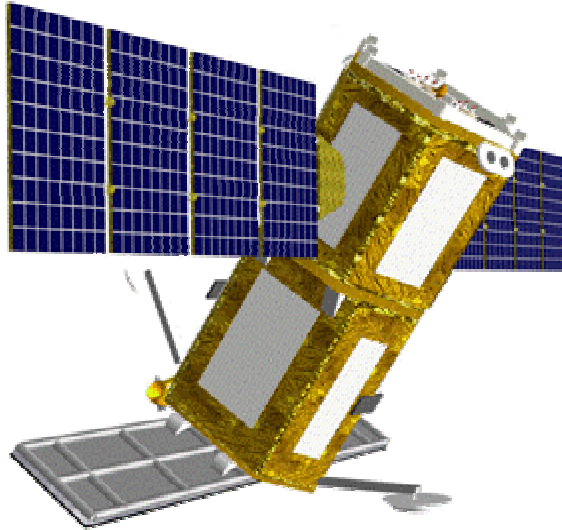
- Resolution : 0.7m panchromatic,
3.2m color
- Development by KARI with the
Technical Support from EADS Astrium

Configuration

- Weight : 900kg

Major Space Program

❖ KOMPSAT - 5



Development Outline

Period : June 2005 ~ June 2009

Indigenous Development by KARI

Payload : SAR

(Synthetic Aperture Radar)

Resolution : 3m in standard mode

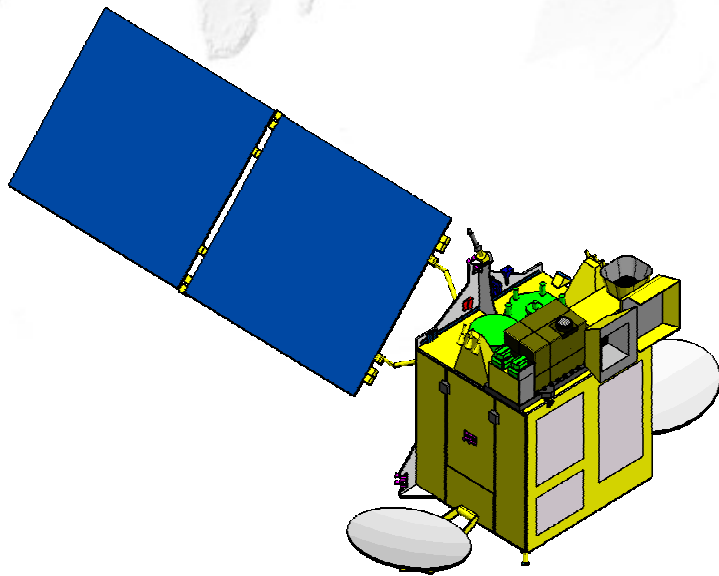
Co-Development by KARI & Alenia

Configuration

Weight 1,280kg

Major Space Program

❖ COMS



Development Outline

Period : Sep. '03 ~ Dec. '08
Joint Development by KARI & EADS
Astrium
Launch : 2008

Mission

Meteorological Observation(ITT)
Ocean Monitoring(KARI, EADS
Astrium)
Development of next generation
Communication Payload
Technology

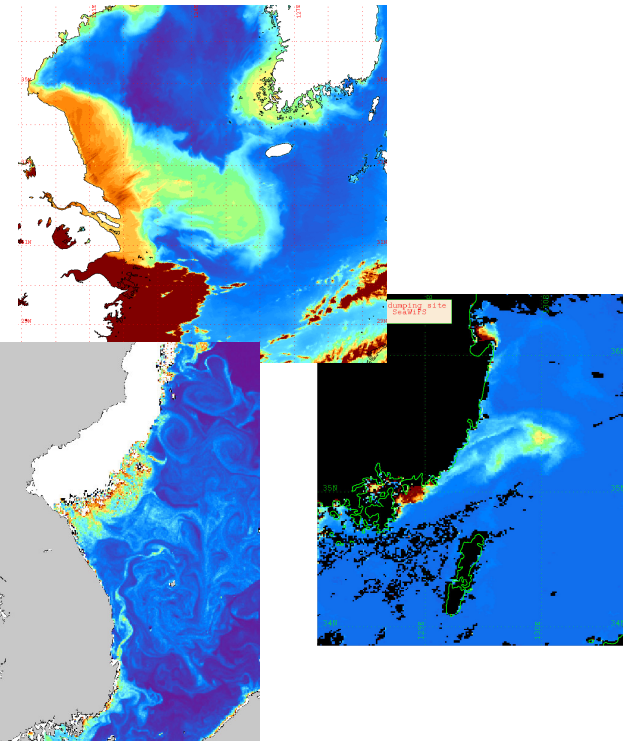
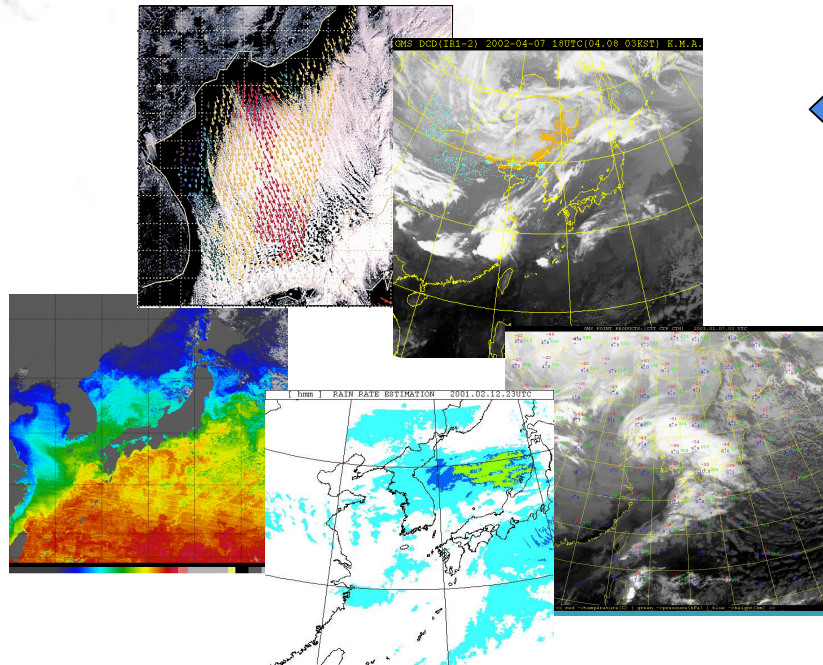
Configuration

BUS 2.6m X 1.8m X 2.8m
Weight : 2.3 ton

Major Space Program

Meteorological Service

- Continuous monitoring with high-resolution and multi-spectral image
- Early detection of special weather
- Long-term change of sea surface temperature and cloud



Ocean Monitoring

- Monitoring of marine environments around Korean peninsula
- Production of fishery information (Chlorophyll, etc.)
- Monitoring of long-term/short-term change of marine ecosystem



Major Space Program

❖ National GNSS Plan

- **Objective** : Establishing a National GNSS Infrastructure
- **Period** : 2006~2014
- **Capability** : Positioning accuracy 1m & Applications
- **Progress**
 - '05. 12 Basic Plan of Integrated GNSS Development

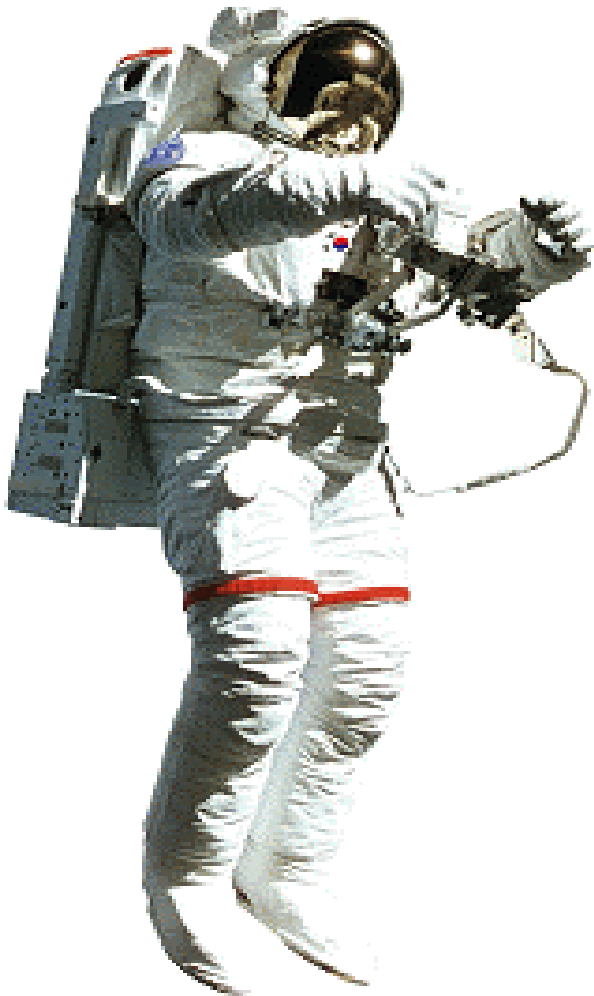
Major Space Program

❖ Korean Astronaut Program



- **Objective** : Train the first Korean Astronaut (Space exploration and execute space experiments)
- **Period** : 2005~2008
- **Plan**
 - 2008. April : Onboard ISS via Soyuz

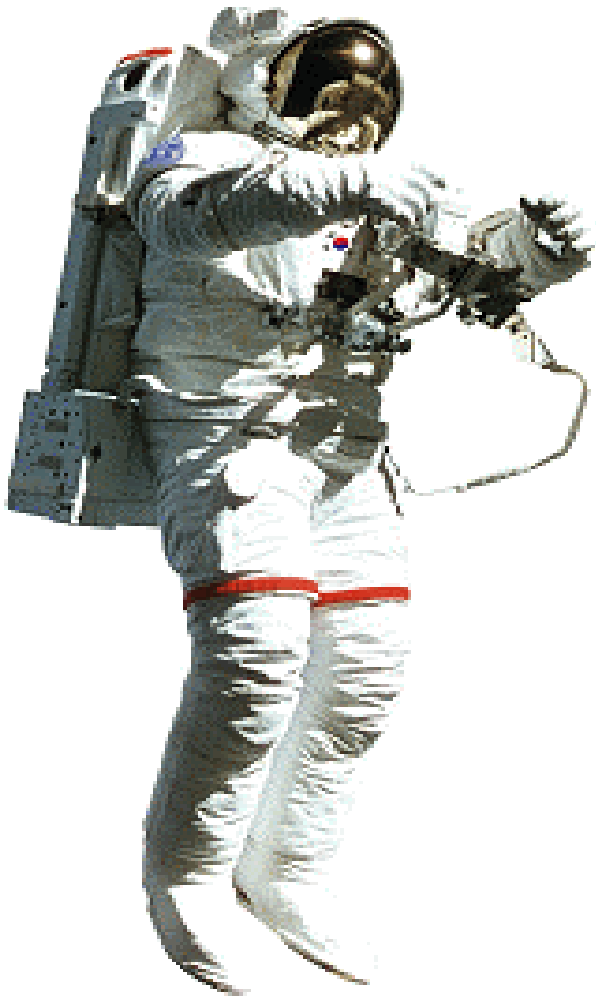
Major Space Program



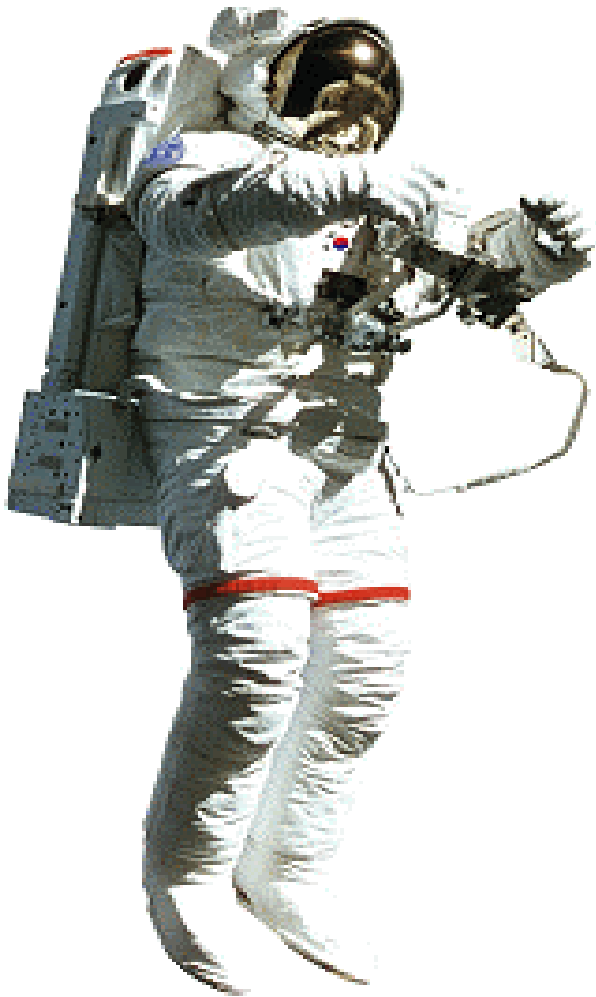
Lee(left), Ko(right)

- International space project between Korea and Russia
- Selected 2 candidates (Dec. 25, 2006)
- Training : 1.5 years starting in 2007 at GCTC (Russia)
- Year of final selection : 2008 (1 astronaut)
- Launching spacecraft : Soyuz (Russia)
- Mission : Space experiments on the ISS using Russian equipment and small experimental equipment made by Korea

Major Space Program



Major Space Program





한국 우주인 후보자들의 우주 체험 영상1'8"



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National Space Development Plan

▪ Long-term Objectives for Space Development

- ▶ Acquire capability to develop space independently through the development of core space technology
- ▶ Join the top ten ranked countries in the space industry by advancing in the global market
- ▶ Improve the quality of living condition through the acquisition and use of space resources
- ▶ Inspire the public through the achievements in space development

▪ Strategy

- ▶ Coordination of Space Technology Development
- ▶ Improve the overall coordination ability for the efficient development of space technology
- ▶ Implement a cooperative network between the main research and development organizations
- ▶ Coordination between Industry, Schools, and Research Institutes



Thank You!