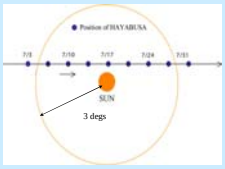
HAYABUSA

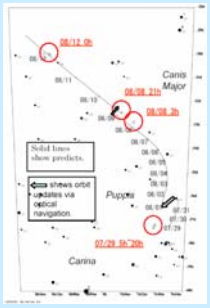
Engineering

Launch

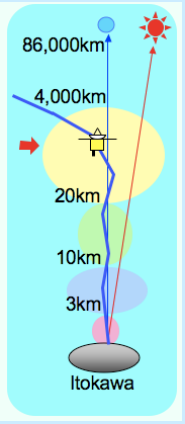
Earth swingby



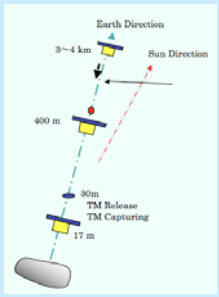
Solar conjunction



Optical navigation



Operation near Itokawa



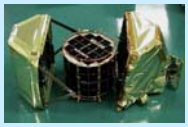
Touchdown

Instruments

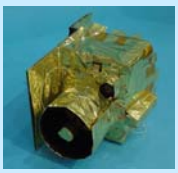
AMICA

Target marker

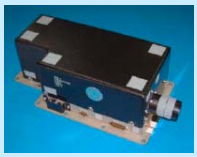
Sampler



MINERVA



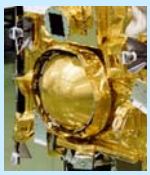
LIDAR



NIRS

XRS

Ion engine



Capsule and reentry

Mission Objectives:

<Technology Demonstration>

(1) Electric propulsion in deep space
(2) Autonomous navigation
(3) Sample collection in mG
(4) Earth direct re-entry

<Science Challenges>

(1) First look of sub-km asteroids
(2) Asteroid-meteorite connection
(3) Solar system genesis

<Other Interests>

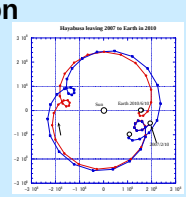
(1) Potentially hazardous asteroids
(2) Future space resource utilization

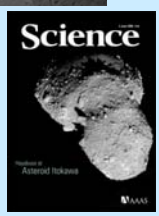
Achievements:

- IES operation in >30,000 hrs
- First landing and ascent from asteroids
- S-type asteroids linked with LL chondrites
- Proved rubble pile asteroids exist
- Discovered granular mobility in mG geology
- Delivered 880,000 names from 149 nations on the asteroid surface

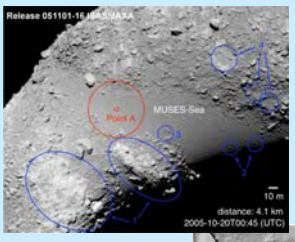
Future Prospects:

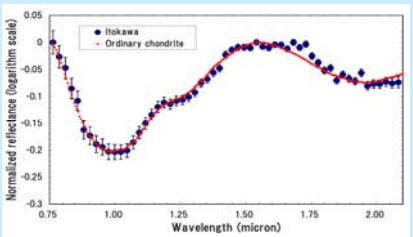
- First round-trip beyond the Moon
- Sample return in 2010
- Follow-on missions to C-type asteroids and other primitive bodies



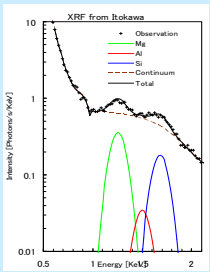


Strange looking surface



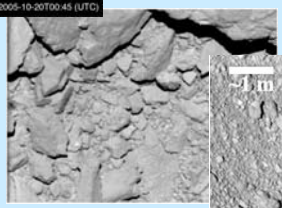


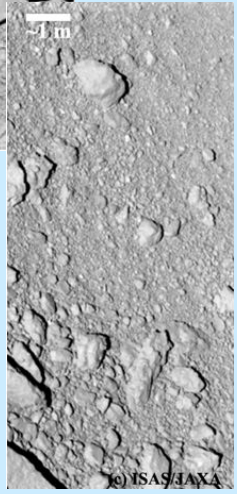
Data of NIRS



Data of XRS

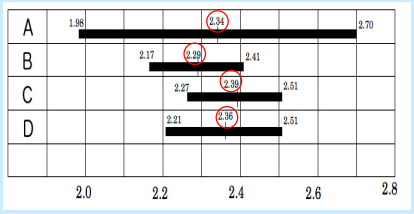
Science



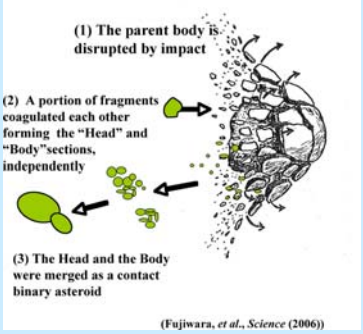


Features of surface

Color variation



Mass, shape, dencity



Origin