

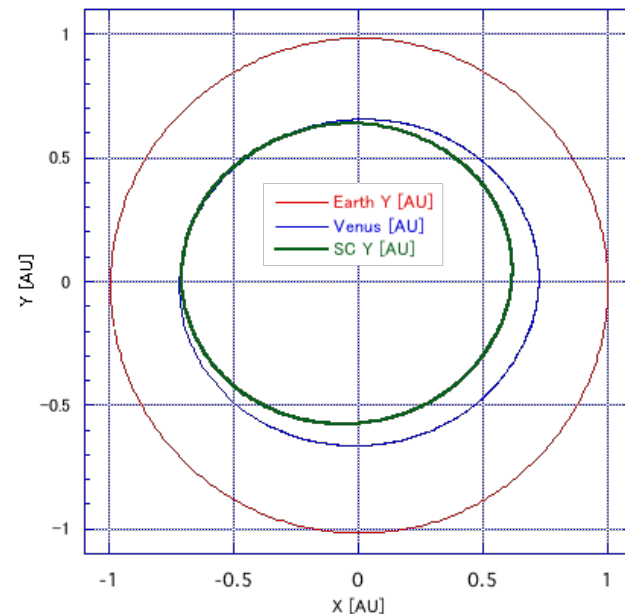
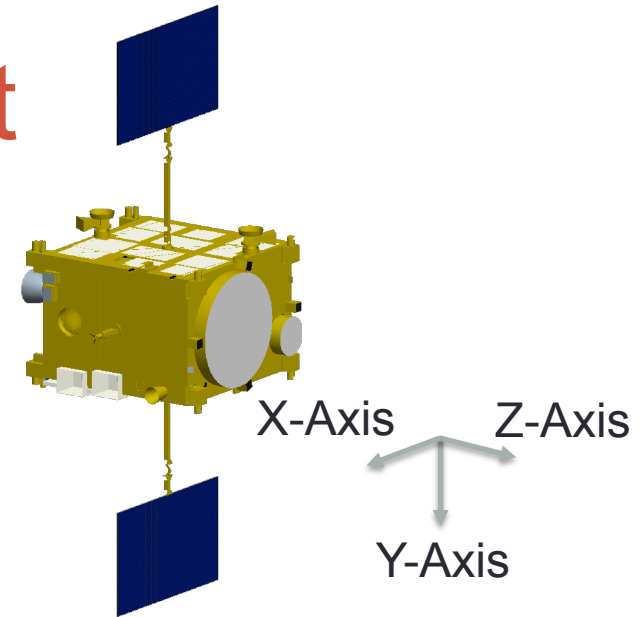


AKATSUKI Mission Update

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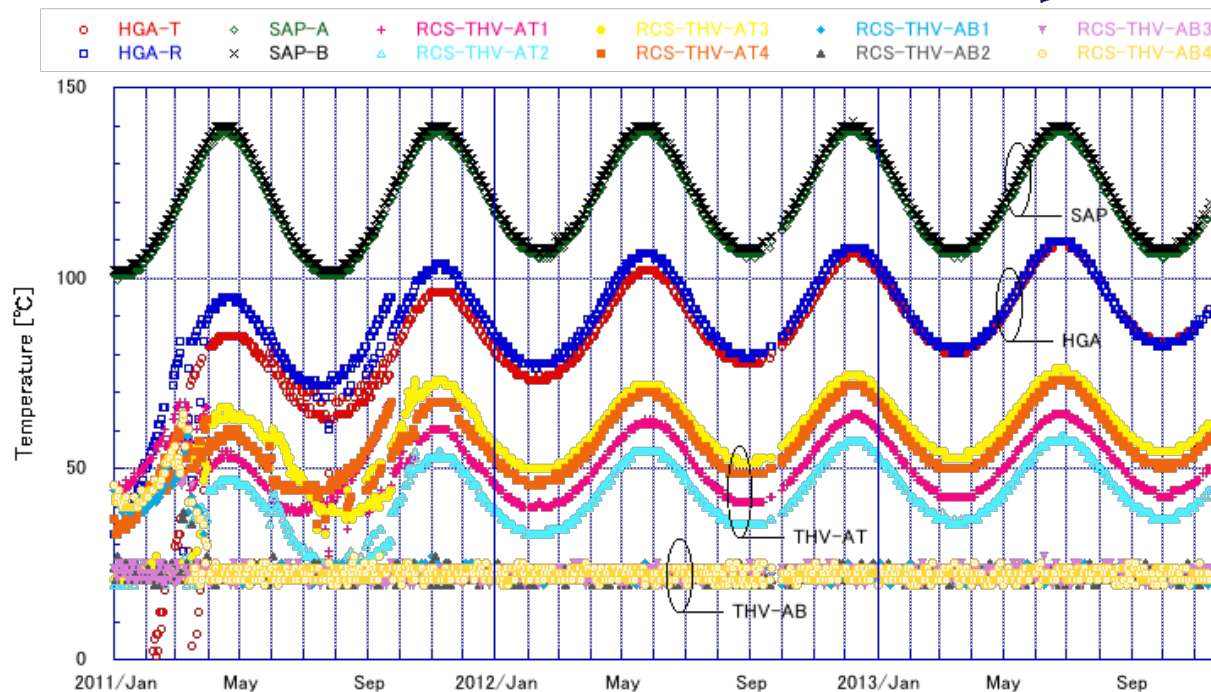
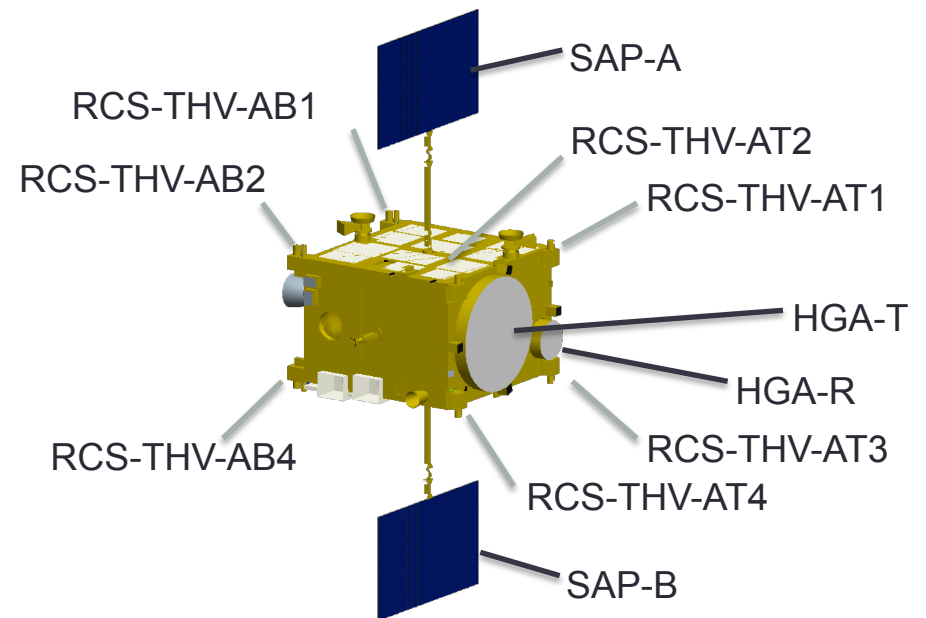
AKATSUKI & Her Orbit

- The perihelion of AKATSUKI is closer to the Sun than Venus.
- To survive and extend her lifetime, AKATSUKI has been keeping her Z-axis toward the Sun.
- The solar panel & HGAs are always exposed to solar irradiation in this attitude.
- AKATSUKI has passed the perihelion 5 times since the last VOI (Venus Orbit Insertion).



Thermal History

- The temperatures are below the specification.
- However, we see a sign of gradual degradation.

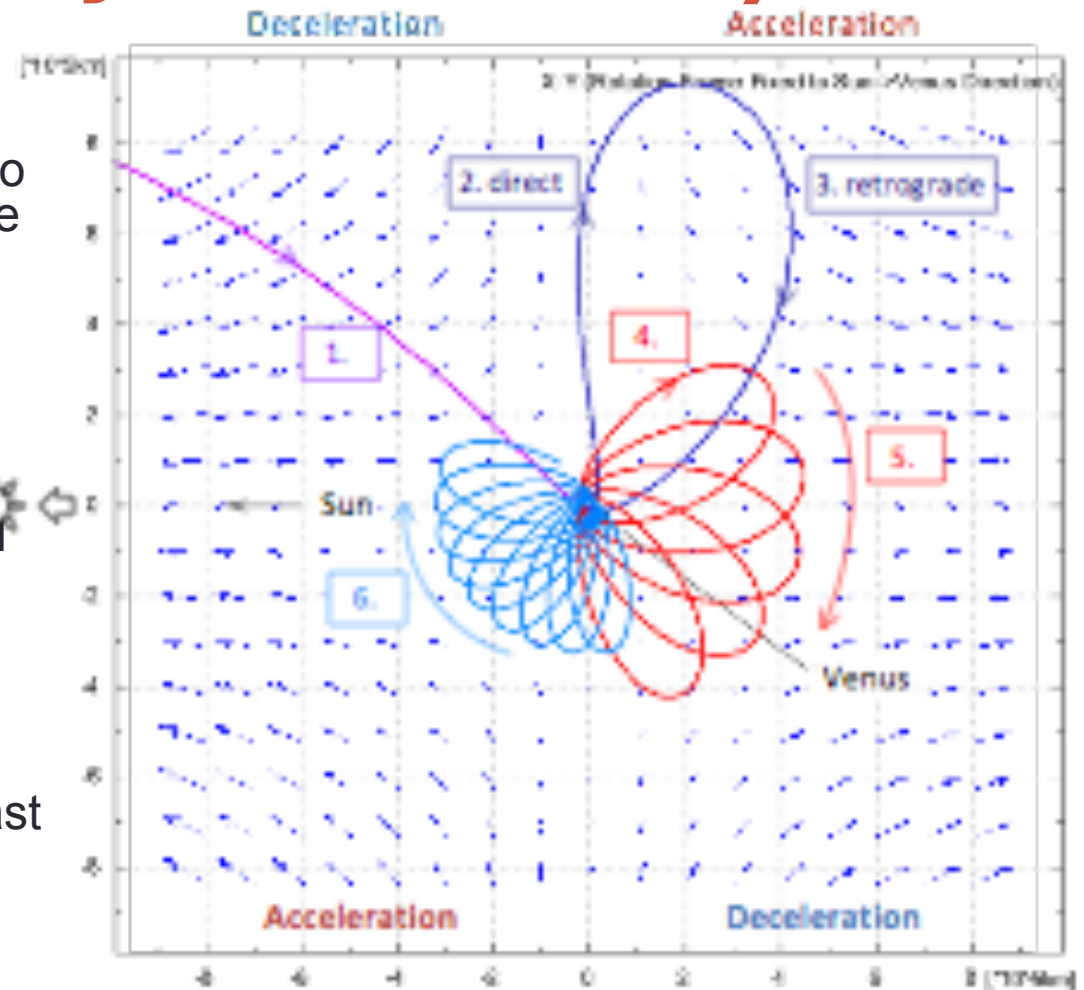


AKATSUKI Status

- We have not experienced any safe mode since VOI.
- We have successfully been keeping a normal tank pressure of RCS, which is to be used for the coming Re-VOI.
- There has been no sign of degradation of the batteries. They are reconditioned regularly.
- AKATSUKI is now on the orbit to collide with Venus in the future. A three stepped Re-VOI is planned for economizing onboard fuels. It is based on the use of a gravity field or a tidal force surrounding Venus. Re-VOI will start in November 2015.

Re-VOI Plan (Gravity Brake Method)

- Step1(1,2,&3 in the figure)
Transition from direct orbit (CCW) to retrograde orbit (CW) by setting the approaching distance close to and within the Hill radius of Venus. It is accompanied with the first ΔV .
(44 days, $\Delta V=203\text{m/s}$)
- Step2(from 3 to 4&5)
Deceleration by the second ΔV and using a tidal force (gravity) around Venus.
(128 days, $\Delta V=50\text{m/s}$)
- Step3(from 5 to 6)
Transfer to the target orbit by the last ΔV .
($\Delta V=39.9\text{m/s}$)



Re-VOI (VOI- 2)

- Re-VOI (VOI 2) is expected to be Nov.22, 2015
- AKATSUKI has to survive another 4 perihelions before VOI 2. To keep the thermal condition safe is very important.
- Better orbit insertion pattern with fine tuning is still under investigation