The Japanese solar physics community is proposing the next orbiting solar observatory, SOLAR-C, following Hinode (SOLAR-B). Two mission candidates are under study: PLAN-A and PLAN-B (no priority between the two plans at present). One is going to be proposed to JAXA for a launch in FY2016 after fundamental studies.

**PLAN-A**: Magnetic/X-ray and helioseismic observations of the polar and equatorial regions of the Sun to diagnose the surface magnetic activity and internal flow/magnetic structures from an out-of-ecliptic orbit.

**PLAN-B**: High-spatial/throughput/cadence observations of the solar photosphere to corona with largely enhanced spectroscopic and polarimetric capabilities.

### Science Objectives:
- Understand the internal structure of the Sun and the solar dynamo mechanism
- Understand the mechanism for high-speed solar wind from vantage points for Doppler measurements
- Understand the variability of environments (space weather) in inner heliosphere with distance from the plane of the ecliptic

### Mission Description
- Magnetic/X-ray and helioseismic observations to diagnose the surface magnetic activity and internal flow/magnetic structures of the Sun from an out-of-ecliptic orbit
- Solar polar-region exploration by out-of-ecliptic observations
- Launched by JAXA H-IIA rocket
- Maintain 1AU distance for the final orbit

### Science Payload
- Optical telescope to obtain full-disk magnetogram and Dopplergram
- EUV (or X-ray) telescope for detecting coronal dynamics
- EUV imaging spectrometer to understand the fast solar wind mechanism
- Solar irradiance monitor to understand the latitudinal contribution for TSI
- Auxiliary: heliospheric imaging and in-situ measurements

### Key Technology
- High-thrust and long-life ion engine [JAXA has a heritage of ion engine in Hayabusa mission.]
- High power (~5kW) system for ion engines
- High-data rates interplanetary telemetry

### Science Payload
- Near-IR Visible UV telescope with enhanced spectroscopic capability for chromosphere
- EUV Imaging Spectrometer with the highest-spatial resolution ever achieved
- EUV imaging spectrometer with enhanced throughput and imaging quality

### Science Objectives:
- Understand the solar chromospheric and coronal heating mechanisms by enhanced spectroscopic diagnostic capability
- Understand the plasma dynamics throughout the outer solar atmosphere by high-throughput spectroscopic instruments
- Understand the acceleration mechanism for fast and slow solar winds

### Working Group Activity
- SOLAR-C Science Definition Meeting held at JAXA/ISAS in Nov 2008
- Many contributions were given from European and US scientists. The next meeting is going to be held in early 2010.

### Candidate lines for Spectro-polarimetry
- http://hinode.nao.ac.jp/SOLAR-C/index_e.html
- Orbit control methodology & max. polar visibility
- Piling lack of knowledge in polar regions
- Diffraction limited telescope; heritage from Hinode
- Image stabilization technique for all telescopes and S/C; heritage from Hinode
- Stringent contamination control
- High-data rates telemetry for continuous high-cadence observations