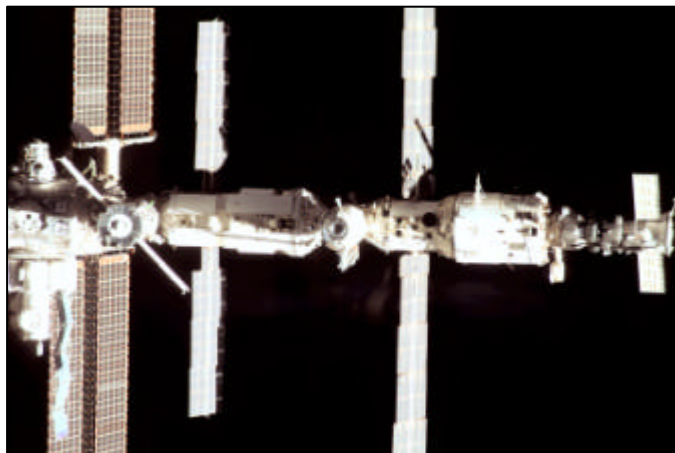


Monitoring of Electromagnetic and Plasma Parameters of "Space Weather" on the Russian Segment of the ISS

?.V. Markov, ?.?. Kuznetsov, I.V. Sorokin,
?.V. Lapshinova
RSC Energia

S.I. Klimov
IKI RAS

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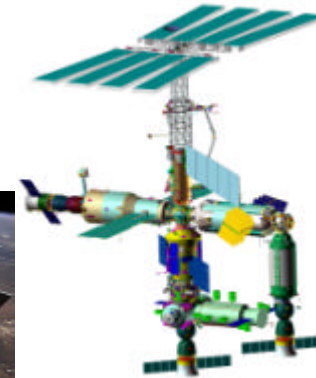
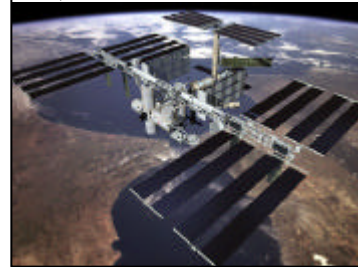


Russian Segment of the ISS

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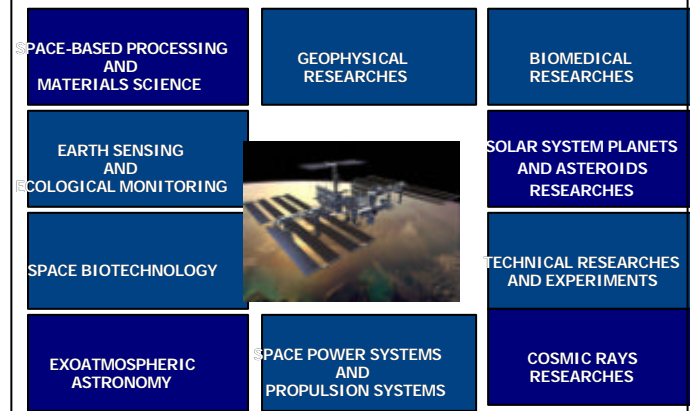
The ISS Russian Segment

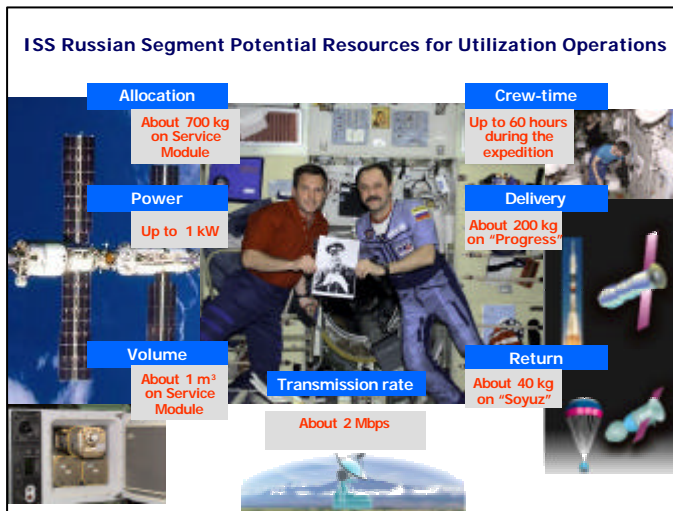
	ISS as a whole	US	Other IPS	Russia
MASS AFTER FULL DEPLOYMENT, T	408	229	46	133
QUANTITY OF ELEMENTS,	36	18	6	12
PRESSURIZED COMPARTMENTS VOLUME, T ³	1173	507	240	426



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Researching Areas on ISS Russian Segment





The use of observations from the Russian Segment (RS) of the ISS in the European and Worldwide Space Weather Network seems to be rather relevant.

Currently a long-term research and applications program for the ISS RS has been generated, covering about 40 space experiments (SE) in geophysics and space physics. The science hardware being developed for the implementation of these SE to a great extent can be used in the interests of Space Weather studies.

To combine efforts for production of the required data bank and coordination of current data acquisition, analysis and publication activities it is necessary to prepare the Space Weather investigation program and procedure agreed upon with the hardware developers and experiment scientists concerned.

The initiative in preparing such a program can be taken by the RSC "Energia" jointly with the Institute of Space Research of the Russian Academy of Sciences.

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At present the following areas of research are proposed to be incorporated in the Project for investigation and measurement of:

- spectral densities of electrostatic plasma waves, electromagnetic radiation and electric currents in the ISS proximity (not more than 1.5 m away from the surface) in a range between 0.1 Hz and 10⁷ Hz and indication of their generation sources;
- DC electric and magnetic fields in a range of (+/- 50 V/m); (+/- 50000 nT) and their gradients in a range of (10-1000 mV/m); (100-1000 nT/m);
- thermal ionosphere parameters (density of charged particles, temperatures, potentials) and their disturbances;
- energy and spectral parameter of thermal and superthermal electrons up to 10 keV;
- spatial, time and energy characteristics of proton and electron bursts in a range of 3-30 eV and 30-100 eV with an angular resolution of no less than several degrees;
- spectral radiation composition of the whole solar disk and absolute solar radiation flux in the field of low-energy X-rays and high-energy UV radiation of 0.14-157 nm;
- high-energy neutron fluxes with energies up to 10⁷ eV generated by solar flares with regard to albedo radiation and hard ionizing radiation in a spectral range between 30 KeV and 10⁷ eV;

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Major objectives of the project;

- selection of time periods and performance of measurements by using the entire set of hardware within single time intervals;
- analysis and generalization of the experimental data with regard to heliophysical environment during measurement sessions;
- database generation and maintenance;
- determination of sources of ionosphere sources;
- search for regularities of disturbances of the ionosphere and magnetosphere parameters;
- clarification of models of basic physical processes in the ionosphere and magnetosphere;
- data bank generation and publication for the Space Weather European Information Network.

It is assumed that the project implementation can be started since 2005 and will last no less than 5 years.

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