

Bulgaria



Observer Status
PECS Procedure Started



Space History of Bulgaria:

Bulgarian Space Research and Development Technologies was started in 1969 by the Bulgarian Academy of Sciences /BAS/ in response to contemporary trends in studying Space. BAS staff participated in INTERCOSMOS program space experiments, Bulgaria 1300 space research project in 1981, interplanetary probes Vega-Haley and Phobos-1/2, and in the scientific programs of two Bulgarian cosmonauts (1979 and 1988). Different teams have participated since 1990 in space experiments, including the development of instruments, data processing, analysis and interpretation of data for international space projects: APEX, ACTIVNY, KORONAS-F, INTERBALL-1/2, Mars-96, Space Greenhouse SVET, BION 1,2 satellite, International Space Station (ISS), Indian Moon satellite CHANDRAYAAN, Probe-V and Phobos-Ground probe. Today Bulgarian space players have many multilateral agreements for joint space research in solar physics, in situ and remote sensing the Earth and planets, deeply space, study of global changes, key space technologies and they participate in the large European programs such GMES, FP6, FP7 etc.

Bulgaria in Space – what we offer:

- EO Data Receiving/Management Station (Up-Down links); Space Observatory - largest telescope in the Balkans;
- Capacity in EO data processing, modeling & simulation, GIS/Risk analyses;
- Radiometers, EO sensor development; national navigation network;
- Micro Satellite Payload System Development;
- UAVs, small aircraft design and production;
- Data mining & analysis systems; Reference land cover databases;
- EO Data validation through a network of test sites in the country.

Landscape of Academic and Governmental Research Institutes :

More than 20 research institutes are linked with space activities in Bulgaria – some in the frame of the Bulgarian Academy of Science (BAS), and other in Universities. The leading structure is the Space research and Technologies Institute (BAS); others are - National Institute for Meteorology and Hydrology (BAS), Institute of Mathematics and Informatics (BAS), Institute of Solid State Physics (BAS), National Institute of Geophysics, Geodesy and Geography (BAS), Institute of Cryobiology and Food Technology (BAS), Institute-Soil Science “N. Poushkarov”, Rozhen Observatory, Sofia University, Technical University Sofia, University of Shumen, New Bulgarian University, Plovdiv University and others.

Landscape of Industry, SMEs, NGOs and private Research Institutes:

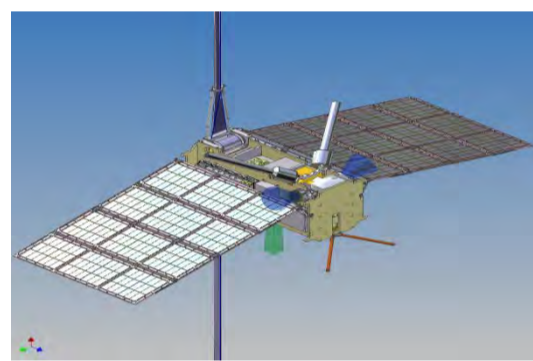
More than 30 companies, NGOs and SMEs in Bulgaria contribute to space activities. The most important are members of the Bulgarian Information Office on Earth Observation-GMES (BIOG) and the Cluster “Aero Space Technologies, Research and Applications – CASTRA”. Among the private research institutes and NGOs those more active in EU Space programs are: Remote Sensing Application Center – ReSAC and Agency for Sustainable Development and Euro integration – ASDE .

Bulgaria: Space Highlights and Contribution

Initiative for EU-Mediterranean Network for Integrated Risk and Security Management – Resolution 826/16.11.2011



Bulgarian “Balkansat” on Russian microsatellite platform “Chibis”



Spatial Data Receiving and Satellite Control Space Station



Blue Gene/P Computer for large volume scientific data computing



International Cooperation and Networking

Bulgarian Information Office for GMES (BIOG)



GMES - Bulgaria aims to support the participation of Bulgaria and other member-states and candidate countries in the European Earth Observation Program - Global Monitoring for Environment and Security. The establishment of a single national point called Bulgarian Information Office for GMES (BIOG) will concentrate information, advisory and support activities related to GMES in one institution. This should result in an increased efficiency and synergy.

<http://www.gmes-bg.org/>

Regional Unit for Risk and Security Management - RURSE

RURSE

- proposed as the first-pilot bottom-up coordination structure of a possible future European - Mediterranean network for integrated risk and security management;
- is an element of the balanced centralized & decentralized management of EO-GMES with priority user requirements and needs;
- is based on harmonised and coordinated MS operational capacity;
- is open towards reasonable integration with GALILEO, the Global Earth Observation System of Systems (GEOSS) and the Danube Strategy.
- was proposed in Bulgaria, during the EU12 operational capacity workshops in Sofia, Bulgaria in 2010 and 2011. The Bulgarian government has started the process of negotiation with Resolution 826/16.11.2011.

http://www.gmes-bg.org/rurse/index_en.php

Cluster “Aero Space Technologies, Research and Applications – CASTRA”.

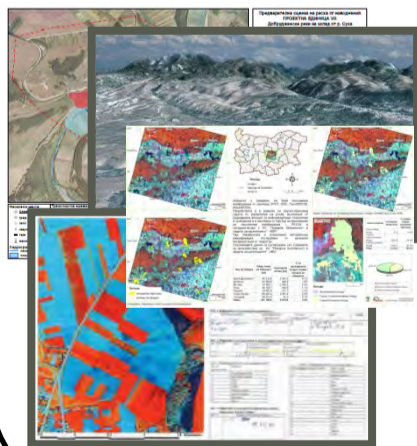


CASTRA is an NGO representing industry, academic institutions, other NGOs and research institutes having capacities in the development of aero-space technologies and its application in innovative products and services

<http://castra.org/>

Space-based applications at the service of the European Society

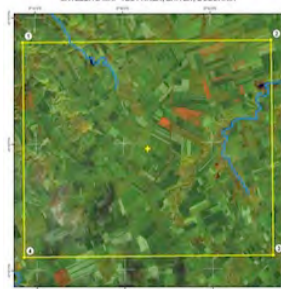
Remote Sensing Application Center



Applies Remote Sensing and GIS in agricultural and environmental management, land cover/land use, soil and forest inventory, water resources, environmental hazards, urban planning, infrastructure, participation in regional and international projects and cooperation. Partner in the major FP7 GMES Projects: Geoland2 and SAFER, as well as in downstream projects

<http://www.resac-bg.org/>

Space Research and Technologies Institute (BAS)



The PROBA-V mission definition is an attempt, spearheaded by ESA and CNES, to accommodate an improved smaller version of optical instrument of SPOT missions on a small satellite

The test area in Bulgaria is chosen in the agricultural environments of Zhitlen. The test field performs analysis and comparison between SPOT VEGETATION images and PROBA-V spectroradiometers data.

<http://www.space.bas.bg/>

National Institute of Meteorology and Hydrology (BAS)



EUMETSAT member

<http://weather.bg/>

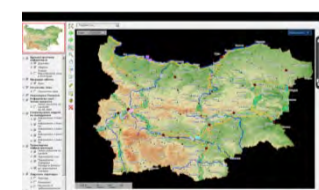
Institute of Soil Science “Nikola Poushkarov”



Test polygons with experimental stations for observation of soil and plants

<http://www.iss-poushkarov.org>

Bulgarian Spatial Data Infrastructure(BSDI)



BSDI is a prototype of the geoportal as a free service for public benefit. One of its main objectives is to provide database services and user oriented operational capacity of Bulgarian organizations. The geoportal was developed as a PPP between governmental structures and NGO's for public benefit.

<http://bsdi.asde-bg.org/>

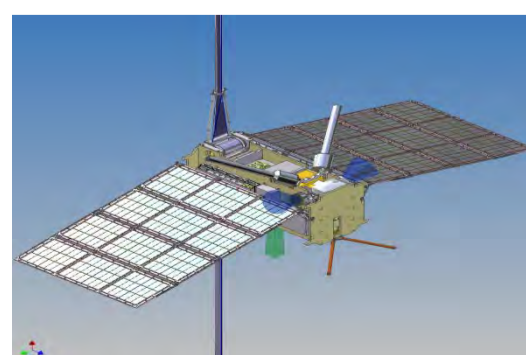
Strengthening the foundations of Space science and technology

FP7 Project AEROcapture for Future spAce tranSporTation



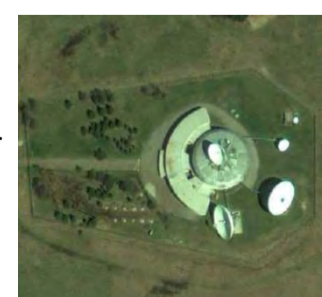
RADOM radiation meter on Chandrayaan-1 satellite 2007/2008 fly at 100 km over the Moon for 2 years, 120g, 76x86x25mm, 120 mW

Bulgarian “Balkansat” on russian microsatellite platform “Chibis”



Priorities in project: X-ray-gamma detector (RGD); ultraviolet detector (UVD); radiofrequency analyzer (RFA); digital photo camera (DPHC)

The Satellite Station



There are several antennas installed with different applications. Two antennas are of 18.3m diameter with capabilities for Telemetry, Tracking & Command (TT&C) and Data Up/Downlink operational services

Multifunctional piezoelectric quartz sensors



Multifunctional piezoelectric quartz sensors, employed method of quartz crystal microbalance (QCM) for monitoring of gases contaminations, organic and inorganic substances at cryogenic temperatures. Institute of Solid State Physics - Bulgarian Academy of Sciences Point L- Bulgaria Ltd.

