

UNOOSA



United Nations  
Office for Outer Space Affairs

Committee on the Peaceful Uses of Outer Space: 2009  
Fifty-second session  
(3-12 June 2009)

# Uses of Outer Space for Scientific Aims in Turkey

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# Turkish Astronomy, Space Sciences and Technology

## Actors of Turkish National Science and Technology System (policy makers)

- Supreme Council of Science and Technology (BTYK)
- TUBITAK-The Scientific and Technological Research Council of Turkey
  - TUBİTAK UZAY (Space Technologies Research Institute)
  - TUBITAK National Observatory (TUG)
- The Turkish Academy of Sciences (TÜBA)
- DPT- State Planning Organization
- Higher Education Council (YÖK)
  - Universities having astronomy and space sciences departments
- MEB- Ministry of Education
- TAEK- The Turkish Atomic Energy Commission
- TOBB- Union of Chambers and Commodity Exchange of Turkey
- KOSGEB- Small and Medium Sized Industry and Development Organizations
- MIT- Ministry of Industry and Trade



**TAI, ASELSAN, ROKETSAN, HAVELSAN, AYESAS, GATE, MILSOFT, VESTEL, SELEX and METEKSAN are the companies which have potential, interest and/or partial capability in the field of satellite and satellite subsystems.**



# TUBITAK-The Scientific and Technological Research Council of Turkey

- At its 10th meeting in 8 September 2004, The Supreme Council for Science and Technology (SCST) has taken an important leap decision towards opening NEW AREAS and reaching high development standards by raising R&D expenses in Turkey. In accordance to this target the main priority areas, to be realized under the custody of Prime Minister, have been determined. “Space Research” was one of these priority areas. “National Space Research Program” had been prepared entirely considering Turkey’s capability, capacity, infrastructure and culture. TÜBİTAK is responsible for the coordination and implementation of the National Space Research Programme together with the Turkish space stakeholders.

Turkey also gives importance to international cooperation in space research. Turkey and ESA have signed the “Agreement Between The Government of Turkey and The European Space Agency Concerning Cooperation in The Exploration and Use Of Outer Space for Peaceful Purposes”, which entered into force on 2006. TÜBİTAK is authorized as the responsible body for the implementation of this agreement. TÜBİTAK also joined EURISY as a full member in June 2007. The first concrete result of these collaboration initiatives was a joint conference organized by TÜBİTAK, ESA and EURISY, namely the conference on “Areas and Mechanisms for Collaboration Between Turkish and European Actors in Space Activities” on 22-23 October 2007 in Istanbul. The Conference brought together the Turkish and European officials from universities, public institutions and industry within the space sector and enabled them to know each other’s capabilities and find possible areas of cooperation.





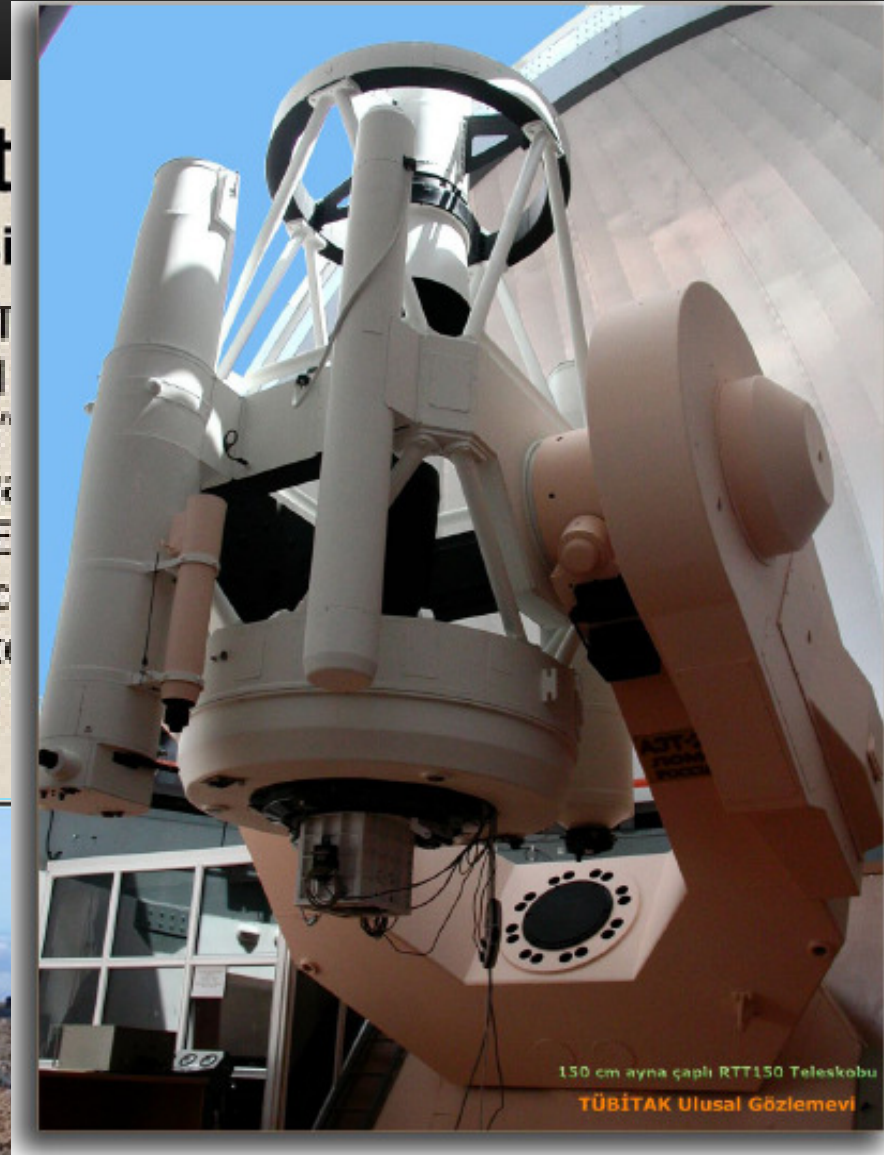
TÜBİTAK

TUG

# TÜBİTAK Nat

Akdeniz Universi

TÜBİTAK National Observatory (TUG), T center of the Scientific and Technological on the top of the hill, named "Bakırlıtepe" distance of 50 km northwest of Antalya; RTT150, 40 cm YT40 and 45 cm ROTSE district of the site. The new T100 telesc southern district of the site. It is expect astroclimatic conditions of the selected SDIMM techniques.



150 cm ayna çaplı RTT150 Teleskobu  
TÜBİTAK Ulusal Gözlemevi



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Uzay Teknolojileri Araştırma Enstitüsü  
Space Technologies Research Institute

TÜBİTAK UZAY conducts its research and development activities in the following areas with a total of 235 staff members, out of which 151 are researchers and technical support personnel.

### Research Areas

- **Space Technologies:** Satellite systems, satellite sub-systems, satellite ground station sub-systems, satellite test and integration systems.
- **Electronics:** Communication systems, electronics system design, electro-optic mission payload, high-speed digital design, IC design.
- **Software:** Computer vision, speech processing, pattern recognition, remote sensing, multimedia technologies, data mining, machine learning, natural language processing, artificial intelligence.
- **Power Electronics:** Power quality, compensation systems, electrical motor drives, switching power supplies, renewable energy resources.



# Universities

Sabancı  
Üniversitesi

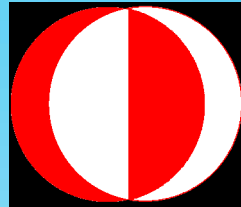
Physics



Ankara Univ. Observatory



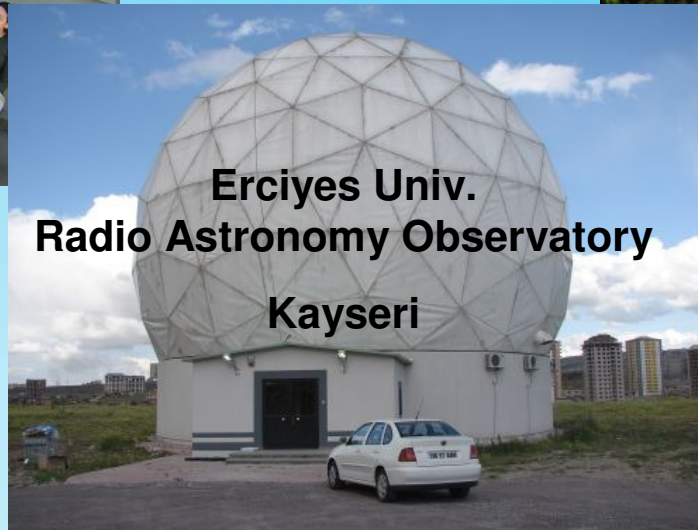
Istanbul Univ. Observatory



METU-Astrophysics



Ege Univ. Observatory  
İzmir



Erciyes Univ.  
Radio Astronomy Observatory  
Kayseri



Cukurova

UZAY BİLİMLERİ ve  
GÜNEŞ ENERJİSİ ARAŞTIRMA ve  
UYGULAMA MERKEZİ



ÇANAKKALE ONSEKİZ MART UNIVERSITY  
ASTROPHYSICS RESEARCH CENTER (ARC)  
and  
ULUPINAR OBSERVATORY (UPO)

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# Canakkale 18Mart University

## Physics Department

- **Instrumentation**
  - T-100
  - T- 40 Cassegrain-Schmidt Telescope
  - T-30 Cassegrain-Schmidt Telescope
  - T-20 Cassegrain-Schmidt Telescope
- **RESEARCH FIELDS and GROUPS**
  - **ASTERIODS and METEORIDS**
  - **SPECTRAL ANALYSIS**
  - **COSMOLOGY**
  - **INTERACTING BINARY STARS**





# Cukurova University Physics Department

- Instrumentation:
  - a 30 cm Cassegrain telescope (2003)
- Research fields
  - Gamma Ray Astronomy



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# Middle East Technical University

## Astrophysics Group

- **RESEARCH FIELDS**

- Pregalactic-Primordial low-mass stars.
- Evolution of rotating stars and of binary stars, solar evolution.
- Wolf-Rayet star models, stellar oscillations.
- Age determination of certain clusters.
- Close binary stars.
- X and gamma ray astronomy.
- Neutron star dynamics and pulsars.
- Quasiperiodic oscillations from low-mass x-ray binaries.
- Observational astronomy.
- Gravitation and cosmology



# Bogazici University Kandilli Observatory



Boğaziçi Üniversitesi

Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü

ASTRONOMİ LABORATUVARI



– Solar Physics  
group



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# 19 Mayis University Physics

- **Instruments**
  - 30 & 12.5 cm telescopes.



# Sabanci University Physics Department

- Projects that Sabanci University Astrophysics and Space Forum (SU-ASF) members conduct or participate are:
  - X-ray Pulsar (AXP)
  - Internal structure of neutron stars
  - Accretion/Ejection around black holes
  - Gamma ray polarization
  - Supernova remnants, with their central compact objects (CCOs)
  - Gamma-ray bursts and their optical afterglows
  - Astrophysical instrumentation
- For these projects SU-ASF members conduct theoretical work as well as observational studies. Members of the Group are PI or Co-I of accepted proposals for several observatories, including:
  - TUBITAK National Observatory (TUG) in optical
  - SPITZER in infrared
  - Chandra X-ray Observatory
  - XMM-Newton
  - INTEGRAL
  - RXTE, Suzaku, Swift in X- and Gamma-rays.



# Istanbul University Astronomy and Space Sciences Department

## Research fields

- The Sun
- Variable Stars
- Multicolor photometry and Galactic structure
- High energy astrophysics
- In the department observational data obtained from such as Chandra, XMM-Newton, RXTE, ROSAT, ASCA X-ray satellites are analyzed.



# Ege University Astronomy and Space Sciences Department

- Instrumentation:
  - a 48 cm Cassegrain telescope (1968)
  - a 30 cm LX200 Meade telescope (1999)
  - a 35 cm LX200 GPS Meade telescope (2004)
  - a 40 cm LX200 GPS Meade telescope (2004)
- Research fields
  - Eclipsing binary stars
  - Low-mass binary stars
  - Delta Scuti type pulsating stars
  - Stellar Activity
  - Cataclismic Variable Stars
  - Stellar Evolution
  - Magnetohydrodynamic
  - Cosmology



# Ankara University Astronomy and Space Sciences Department

- Research fields
  - Eclipsing binary stars
  - Spectroscopy
- Instrumentation:
  - 14' LX200 Telescope
  - ETX-125 Telescope





# Erciyes University Astronomy and Space Sciences Department

- Instrumentation:
  - a 13 m Cassegrain focus radio telescope with radome
  - a 25 cm LX200 GPS Meade telescope
  - a 40 cm LX200 GPS Meade telescope
- Research fields
  - Radio Astronomy
  - Eclipsing binary stars
  - Stellar Evolution
  - Open Cluster photometry



# Erciyes University is the one where radio astronomy studies have started in Turkey



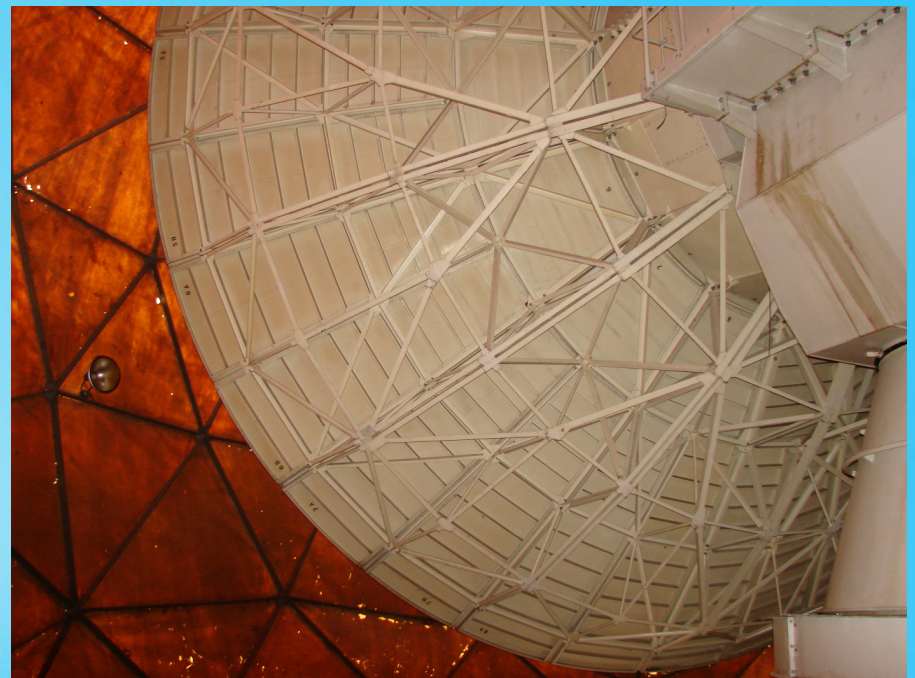
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# Mounting process



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# 13 m dish antenna



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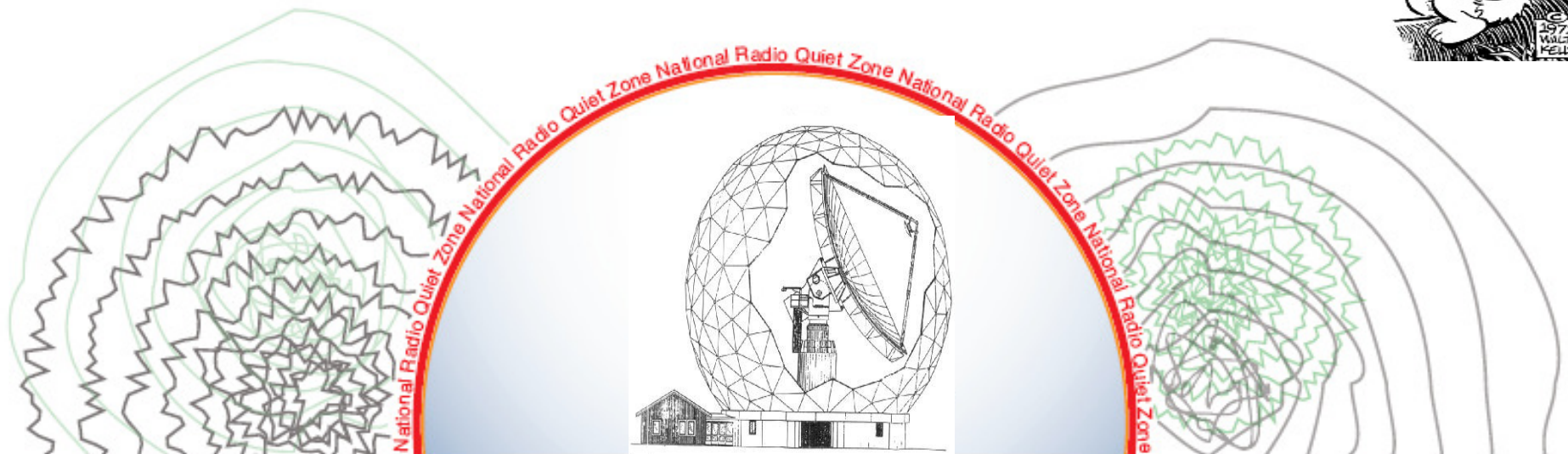
# ERT-5\_1 & ERT-5\_2 RADIO TELESCOPES



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# Site Selection studies for National Radio Astronomy Observatory

## RADIO QUIET ZONES (RQZ)



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# Using outer-near space in scientific manner

- **Chandra, XMM-Newton, RXTE, ROSAT, ASCA X-ray satellites**
- **Radio quiet zones need**
  - SPITZER in infrared
  - Chandra X-ray Observatory
  - XMM-Newton
  - INTEGRAL
  - RXTE, Suzaku, Swift in X- and Gamma-rays.



# Vision 2023 Technology Foresight Project of Turkey: Future Activities

- Establishment of Turkish Space Agency to direct all activities concerning space from a single center,
- Preparation of National Space Policy in order to guide the national space activities,
- Establishing Turkish Satellite Testing and Integration Center to be used for all space projects,
- Establishment of National Defence Research Perfectness Center and Collaboration Network,
- Creation of a regional database network concerning the space activities and its effects,
- Defining basic standards regarding near-earth space and its systems,
- Conducting R&D projects that improve national capabilities regarding near-earth space and its systems,
- Establishment of Turkish National Radio Astronomy Observatory having 30-40 meter class dish antenna





**Thanks for your attention...**



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