

TÜRKİYE ULUSAL RADYO ASTRONOMİ GÖZLEMEVİ (TURAG): TÜRKİYE İÇİN RADYO TELESKOP

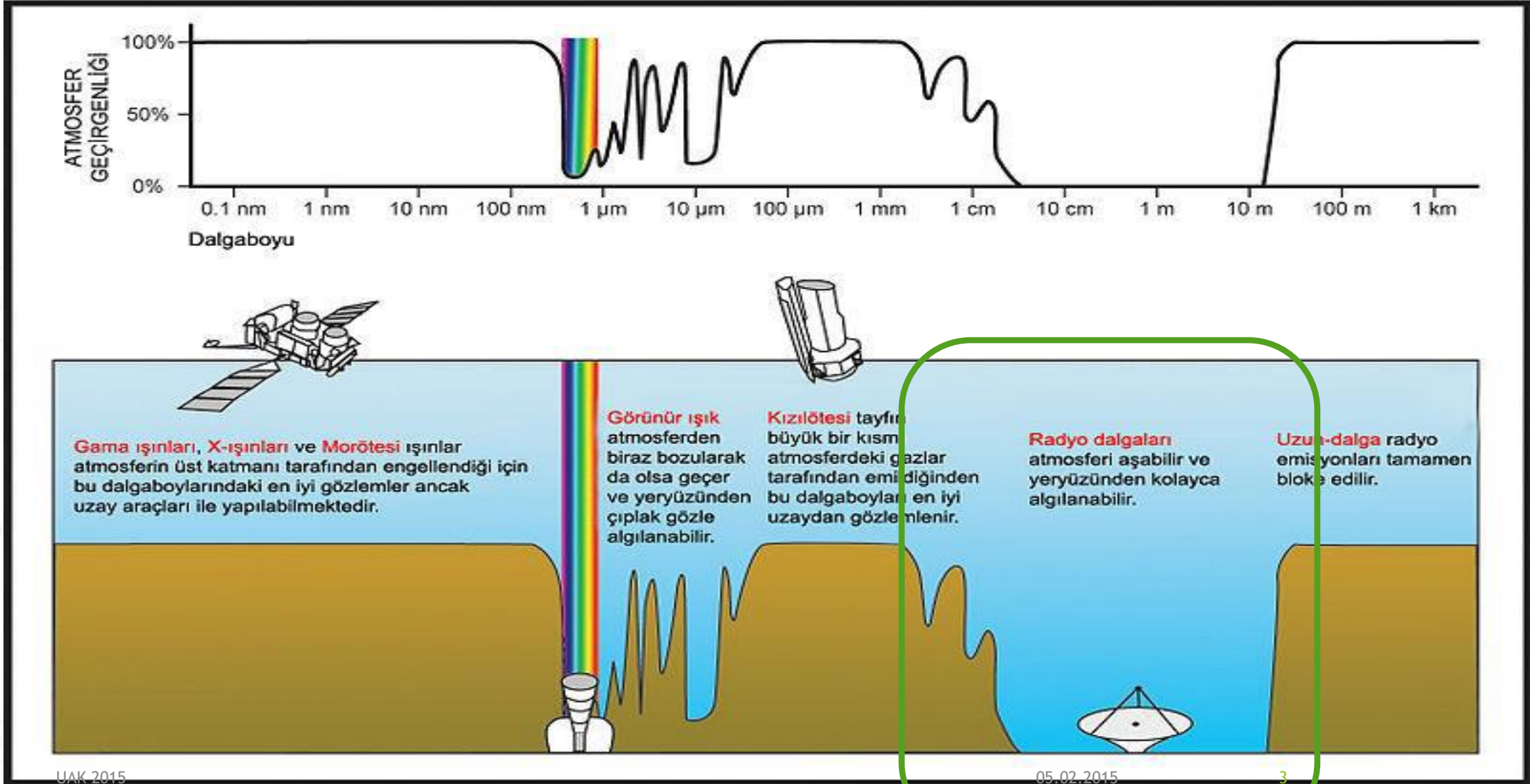
Fahri Öztürk (Tübitak UZAY)

İbrahim Küçük (Erciyes Üniv.), Umut Yıldız (NASA/JPL), Selçuk Topal (Oxford Üniv.), Elif Beklen (SDU/NRAO), Tülün Ergin (Tübitak UZAY), Gülay Gürkan U. (Hertfordshire Üniv.), Ahmed Akgiray (Özyeğin Üniv.)

İÇERİK

1. Radyo Astronomi
2. Dünyadan Radyo (Mm ve mm-altı) Teleskoplar
3. TURAG: Türkiye için Radyo Teleskop
4. Ekip & Referanslar & Destekler

1.2. Radyo Frekans Bölgesi



NGC 6946

NGC 6946



UAK 2015

05.02.2015

Görüntüler aynı ölçekte !

2. Dünyada öne çıkan Radyo (mm/mm-altı Teleskoplar)



3. TURAG: Türkiye için Radyo Teleskop

3.1 Tarihçe

2005 TUG kararı ile Türkiye’de bir Radyo Teleskop kurulması çalışmaları başlatıldı.

2007 DPT destekli Türkiye Ulusal Radyo Astronomi Gözlemevi için yer seçimi çalışmaları, Erciyes Ün. Astronomi ve Uzay Bilimleri Bölümü tarafından sonuçlandırıldı.

<http://www.tug.tubitak.gov.tr/radyoteleskop.php>

2008 DPT desteği ile Erciyes Ün. bünyesinde Radyo Ast. Gözlemevi kurulumu çalışmaları başlatıldı.

► 12.8 m teleskop ve 22 m radom NATO-SATCOM’dan alındı.

2010-2011’de iki kez DPT’ye başvuru yapıldı ve olumsuz sonuçlandı.

2012 yılında daha geniş katılımlı bir ekip oluşturuldu.

2014 TÜRKSAT ziyareti

3.2. Ne yapacağız, nasıl yapacağız



**Yakın gelecekte
planlarımız**

**Türksat
teleskobunun tahsisi,
çalıştırılması**

**Erciyes Üniv.deki
teleskobun
çalıştırılması**

**Türkiye'deki
Astronomi camiasının
katılımını sağlamak**

ÇALIŞMA PLANIMIZ

TEKNİK PLAN

ALTYAPI PLANI

**Yer seçimi çalışmaları
(1-2 yıl)**

Kurumsallaşma

**Mühendislik,
işbirlikleri (1 yıl)**

**Eleman
yetiştirilmesi**

**Teleskop yapımı
ve işletilmesi
(2-3 yıl)**

**Çalıştaylar
düzenlenmesi**

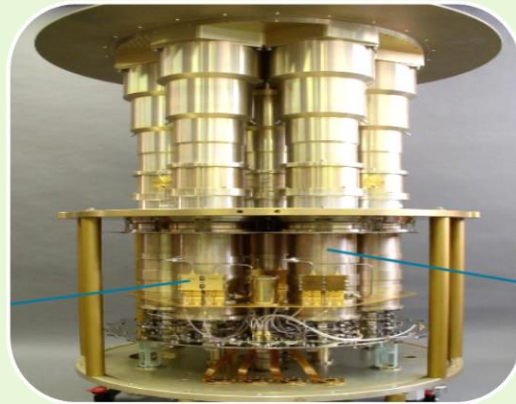
05.02.2015

3.3 Teleskobun teknik özellikleri

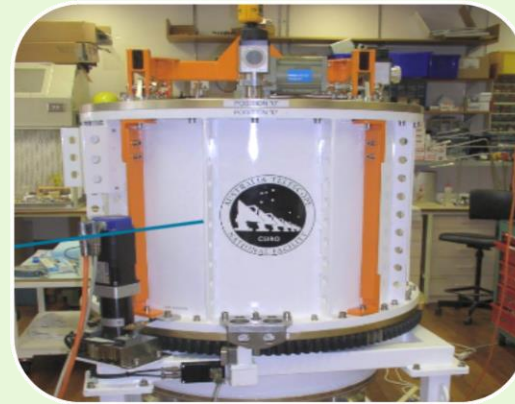
Credit: Parkes telescope in Australia



Çanak anten



Besleyici anten + alıcı modüller



Soğutucu sistemler



Sinyal sayısallaştırma, işleme, bağdaştırma birimleri

	Çanak anten	Frekans bandı	LNA / SIS	Üretim	Tasarım/Test
Optik konfigürasyon Mekanik tasarım	Cassegrain, Gregorian, + beamwaveguide	1-2 GHz	LNA	NANOTAM, Caltech, JBCA	Üretim ile aynı yer/TÜBİTAK- UZAY
Max. frekans	~350 GHz	2.3-14 GHz	LNA		
Çanak çapı	~30 metre	26-40 GHz	LNA		
Çözünürlülük	~7.2 yay saniye	100-120 GHz	SIS/LNA	NRAO, Tayvan (ASIAA), IRAM	Üretim ile aynı
Yüzey hassasiyeti, hedefleme	~ $\lambda/15-20$	220-240 GHz	SIS		
		320-360 GHz	SIS		

4. Proje Ekibi



Prof. Dr. İbrahim KÜÇÜK
Erciyes Ün. Astronomi ve
Uzay Blm.Bölüm Başkanı



Dr. Fahri ÖZTÜRK
Tübitak-UZAY



Dr. Umut YILDIZ
NASA JPL



MSc. Selçuk TOPAL
Oxford Unv.



Dr. Elif BEKLEN
SDU/NRAO



Dr. Tülün ERGİN
Tübitak-UZAY



MSc. Gülay GÜRKAN U.
Hertfordshire Unv.



Dr. Ahmed AKGİRAY
Özyeğin Ün.

ASTRONOMİ CAMİAŞI
05.02.2015

5. Uluslararası destekler

The Fermi Gamma-ray Space Telescope Mission
April 25, 2014
Dear Colleagues,
I am writing to you to express my support for the development of a large single-dish millimetre radio telescope in Turkey. We live in an exciting time in the history of astronomy. A number of radio telescopes have flourished around the world. However, the competition to gain access to the sky is becoming increasingly fierce. In order to be able to observe the universe in the millimetre and submillimetre range, we need to build new facilities. The construction of a large single-dish millimetre radio telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.

California Institute of Technology
Division of Physics, Mathematics, and Astronomy
Mail Code 251-17, Pasadena, California 91125
Pasadena, California, USA
Tel: 626 395 2800
Fax: 626 395 2800

24 May 2014
Dear Sir/Madam,
I am writing to you to express my support for the development of a large single-dish millimetre radio telescope in Turkey. We live in an exciting time in the history of astronomy. A number of radio telescopes have flourished around the world. However, the competition to gain access to the sky is becoming increasingly fierce. In order to be able to observe the universe in the millimetre and submillimetre range, we need to build new facilities. The construction of a large single-dish millimetre radio telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.



Letter of support for a submm/mm telescope
12, Toulouse, France

UNIVERSITY OF VIRGINIA
THE DEPARTMENT OF CHEMISTRY
Date: 6 May 2014
Support letter for submillimetre telescope
Dr. Kivşak Arçayrta
University of Virginia
Charlottesville, VA 22904 USA
Phone: 434-243-8437
Email: kiva@icms.msu.virginia.edu



Letter of support for a mm/sub-mm telescope
To whom it may concern
I am writing to support a 30-m class mm/sub-mm telescope to be built in Turkey. Present day similar telescopes include the IRAM-30m telescope in Spain. The frequency range of ~80-360 GHz. This telescope is mostly used for astronomical observations. The IRAM-30m telescope is a valuable asset to the astronomical community. The construction of a 30-m class mm/sub-mm telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.

Olivier Barne
CNRS Research Scientist
IRAP, 9 Avenue du Colonel Roche,
31028 Toulouse, France
T +33 4 55 87 55
o.barne@irap.omp.eu
http://userpages.omp.eu/~o_barne/

Chalmers
Department of Radio Astronomy
Observatory, Sweden
To whom it may concern,
I am writing to support a 30-m class mm/sub-mm telescope to be built in Turkey. Present day similar telescopes include the IRAM-30m telescope in Spain. The frequency range of ~80-360 GHz. This telescope is mostly used for astronomical observations. The IRAM-30m telescope is a valuable asset to the astronomical community. The construction of a 30-m class mm/sub-mm telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.

Curtin University
Faculty of Science and Engineering
Curtin Institute of Radio Astronomy
Australia, Western Australia
Perth, Western Australia
Tel: +61 8 9415 2000
Fax: +61 8 9415 2000
Email: radioastronomy@curtin.edu.au

15 May 2014
European Organisation for Astronomical Research in the Southern Hemisphere

Ministry of Development
The Republic of Turkey
Doctor Timothy A. Davis
Directorate of Science
European Southern Observatory
Phone +49 89 320 06-312
tdavis@eso.org
26 May 2014

Dear Sir/Madam,
I am writing to you to express strong support for the establishment of a large (thirty metre plus) class submillimetre/millimetre telescope in Turkey. I believe such a facility, operating at either <345 GHz or <230 GHz, would be a powerful resource for international astronomy, allowing world class astronomy research to be conducted from Turkey. Such a facility would provide an important view of the universe, entirely complementary to that obtainable at other new facilities, such as the Atacama Large Millimetre/sub-millimetre Array (ALMA).
In summary I believe such a facility, located in Turkey, would strongly enhance our knowledge of the universe, and produce truly world class science.

Yours Faithfully,

Dr. Timothy A. Davis
Research Fellow
ESO, Garching

JPL
Paul F. Goldsmith
Chief Technologist
Astronomy, Physics, and
Space Technology
Directorate
MS 180-703
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
Tel: 818 393 0519
Cell: 818 239 2707

Dear Sir/Madam,
I am writing to support a 30-m class mm/sub-mm telescope to be built in Turkey. Present day similar telescopes include the IRAM-30m telescope in Spain. The frequency range of ~80-360 GHz. This telescope is mostly used for astronomical observations. The IRAM-30m telescope is a valuable asset to the astronomical community. The construction of a 30-m class mm/sub-mm telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.



18 May 2014

Support Letter for Submillimetre Telescope
Dear Sir/Madam,
I am writing to support a 30-m class mm/sub-mm telescope to be built in Turkey. Present day similar telescopes include the IRAM-30m telescope in Spain. The frequency range of ~80-360 GHz. This telescope is mostly used for astronomical observations. The IRAM-30m telescope is a valuable asset to the astronomical community. The construction of a 30-m class mm/sub-mm telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.

MANCHESTER
The Jodrell Bank
Observatory

Dear Sir/Madam,
I am writing to support a 30-m class mm/sub-mm telescope to be built in Turkey. Present day similar telescopes include the IRAM-30m telescope in Spain. The frequency range of ~80-360 GHz. This telescope is mostly used for astronomical observations. The IRAM-30m telescope is a valuable asset to the astronomical community. The construction of a 30-m class mm/sub-mm telescope in Turkey would be a major step towards this goal. I am writing to you to express my support for this project. I believe that such a facility would be a valuable addition to the world's radio astronomy infrastructure. I am confident that the Turkish government and the scientific community will support this project. I am confident that the Turkish government and the scientific community will support this project.

05.02.2015

UAK 2015

Astronomi camiasına davet

Türkiye'nin Radyo Astronomi geleceğine katkıda bulunmak isteyen herkesi ekibimize davet ediyoruz.

kucuk@erciyes.edu.tr

fahri.ozturk@tubitak.gov.tr