

Drafting Committee for the '*Asia-Pacific Plan of Action for Space Applications for Sustainable Development (2018-2030)*

TURKEY

Assoc. Prof. Ufuk SAKARYA (Group Leader in Remote Sensing Group of TÜBİTAK UZAY)

Bangkok, Thailand
31 May - 1 June 2018

FIELD OF ACTIVITIES (TÜBİTAK UZAY)



Satellite
Technologies



Aerospace
Technologies



Remote Sensing
Data Fusion
Image Processing



Communication
Systems

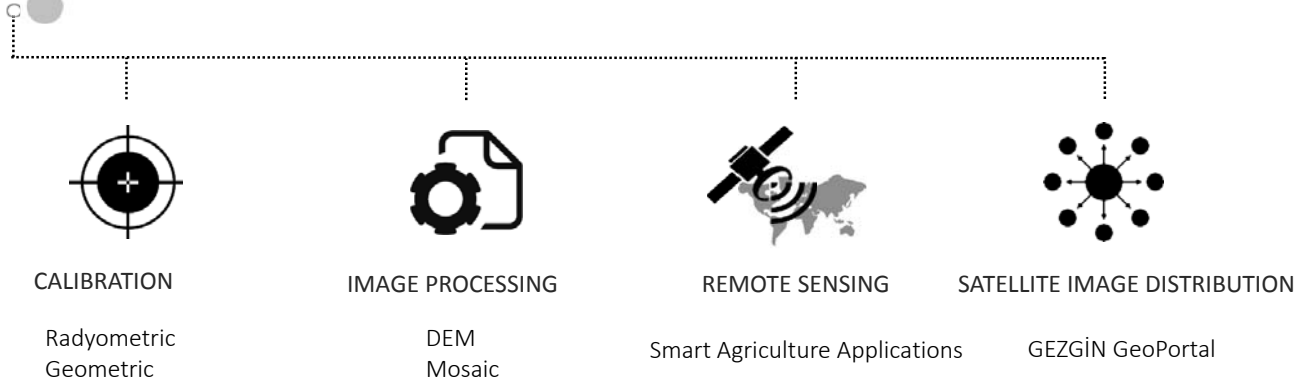


Optical
Systems

Satellite Image Services (TÜBİTAK UZAY)

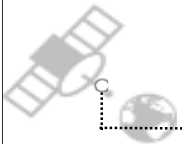


SERVICES

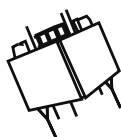


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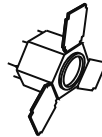
SATELLITE SYSTEMS



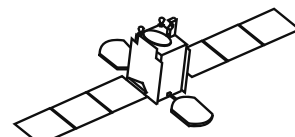
BİLSAT
2003



RASAT
2011



GÖKTÜRK-2
2012



TÜRKSAT-6A
2020

Technology Transfer

- SSTL Joint Program
- 12.6 m Resolution
- 129 kg total weight
- 686 km LEO
- Joint design, production, integration and testing.
- Partners: UZAY-SSTL

Remote Sensing

- 7,5 m resolution
- 94 kg total weight
- 686 km LEO
- Indigenous design, production, integration and testing.

Observation

- 2.5 m resolution*
- 409 kg total weight*
- LEO orbit
- Indigenous design, production, integration and testing
- Partners: UZAY-TAI

Communication

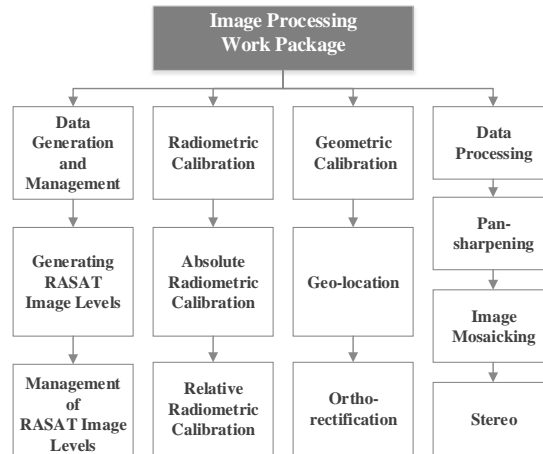
- 20 transponders
- 4500 kg total weight
- 36000 km GEO
- Design, production, integration and testing
- 42° East
- 15 years service lifetime
- Partners: UZAY-TAI-ASELSAN-C2TECH

*<http://uzay.tubitak.gov.tr/projeler/gokturk-2>

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IMAGE PROCESSING

TÜBİTAK UZAY has developed its own automatic satellite image processing suite, Vi (Veri İşleme/Data Processing) software. RASAT images are processed with minimal user interaction. Automation also decreases the amount of processing errors and processing time.



H.S. Deveci, A. Kuru, U. Sakarya, İ. Tevrizoğlu, M. Teke, R. Küpçü, B. Avenoğlu, C. Demirkese, S.Z. Gürbüz, A.F. Öztoprak, İ.S. Açıkgöz, İ.H. Demirhan, A.Ö. Kozal, M. Efendioğlu, E. Berke, F.F. Şimşek, İ. Atıl, D. Kaya, P. Uçmak, E. Ersöz, H. Özen, "The Benefits and Challenges Having an Open and Free Basis Satellite Data Sharing Platform in Turkey: GEZGİN", The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLI-B8, 2016, XXIII ISPRS Congress, Prague, 5 Czech Republic, pp. 1341-1347, 12–19 July 2016. doi:10.5194/isprsarchives-XLI-B8-1341-2016

GEZGİN PORTAL

- Turkey's first national satellite imagery portal called the GEZGİN Portal was developed to facilitate sharing of earth observation satellite imagery over the internet. GEZGİN is based on sharing RASAT satellite images and taking new requests over the internet. The raw imagery obtained from the RASAT satellite are uploaded to the GEZGİN portal (www.gezgin.gov.tr) after geometric and radiometric correction followed by coordinate registration.
- Turkish citizens may download desired RASAT imagery free of charge, as well as request the acquisition of new imagery, through the e-Government Gateway (e-Devlet Kapısı) web interface since November, 2015. The e-Government Gateway is a website offering access to a variety of public services through a single, unified secure login website.



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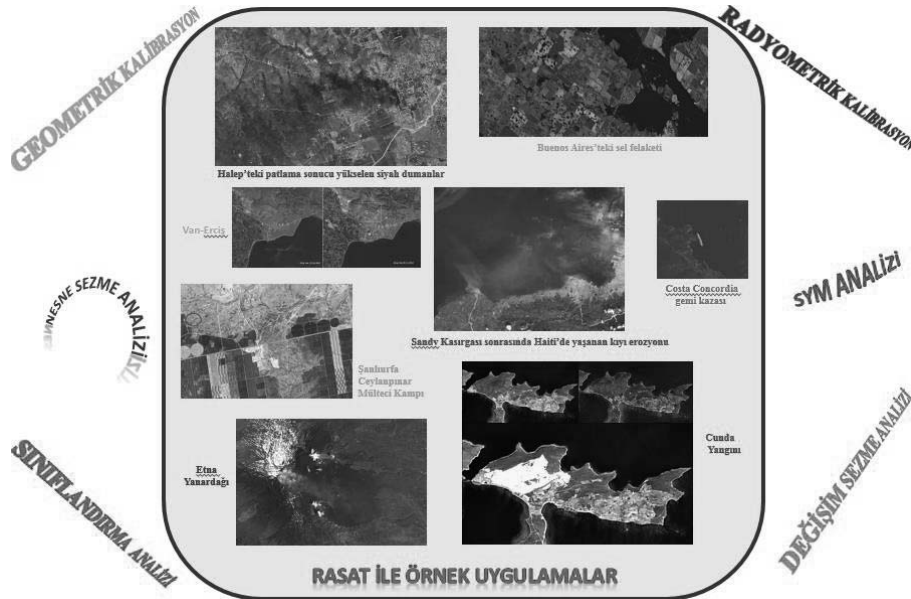
DISASTER MANAGEMENT

❑ T.C. Disaster and Emergency Management Presidency (AFAD)
(<https://www.afad.gov.tr/en/2572/About-Us>)

❑ VISKON-RS : Rapid Damage Assessment Software developed by TÜBİTAK BİLGEM (F. Kahraman et al., "VISKON-RS: Rapid damage assessment software with remote sensing," 2015 23rd Signal Processing and Communications Applications Conference (SIU), Malatya, 2015, pp. 1773-1776. doi: 10.1109/SIU.2015.7130197)

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DISASTER MANAGEMENT VIA RASAT EXAMPLES



U. Sakarya, S.Z. Gürbüz, C. Demirkese, H.S. Deveci, S. Tankız, A.F. Öztoprak, Ö. Yılmaz, İ. Atıl, M.A. Arabacı, N. Akbaba, Ö. Mişe, M. Teke, "Afet yönetiminde görüntü işleme uygulamalarının kısa bir incelemesi ve RASAT ile örnek uygulamalar" (A short survey of image processing applications in disaster management and sample applications with RASAT), V. Uzaktan Algılama ve Coğrafi Bilgi Sistemleri Sempozyumu (UZAL-CBS 2014), İstanbul, 14-17 Ekim 2014.

C. Demirkese, S.Z. Gürbüz, U. Sakarya, H.S. Deveci, S. Tankız, F. Öztoprak, Ö. Yılmaz, İ. Atıl, M.A. Arabacı, N. Akbaba, Ö. Mişe, M. Teke, "Afet Yönetiminde Algılayıcı Teknolojilerinin Kullanımı" (Usage of Sensor Technologies in Disaster Management), V. Uzaktan Algılama ve Coğrafi Bilgi Sistemleri Sempozyumu (UZAL-CBS 2014), İstanbul, 14-17 Ekim 2014.

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AGRICULTURE

- ❑ General Directorate Of Agricultural Reform (Republic of Turkey Ministry of Food Agriculture and Livestock) TARIMSAL İZLEME VE BİLGİ SİSTEMİ PROJESİ (TARBİL)

❑(<https://www.tarim.gov.tr/Konular/Cografî-Bilgi-Sistemleri/Projeler>)

❑(<https://www.tarim.gov.tr/Konular/Cografî-Bilgi-Sistemleri/Faaliyetler>)

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HASSAS Project

- To develop **precision agriculture** practices in GAP Region. Developed by TÜBİTAK UZAY.
- To analyse **wheat, corn and cotton** products in the region by using **aerial hyperspectral data, satellite imagery** together with **ground measurements**.
- To improve efficiency by reducing **inputs** such as water, fertilizer and pesticides in the same agricultural land.



Precision Agriculture and Sustainable Practices Project in GAP Region

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INTERNATIONAL MEMBERSHIPS

- International Society for Photogrammetry and Remote Sensing, ISPRS
- Disaster Monitoring Constellation, DMC
- Committee on Earth Observation Satellites, CEOS
- Group on Earth Observation, GEO
- The Consultative Committee for Space Data Systems, CCSDS
- EUROPRACTICE
- Asia-Pacific Space Technology Cooperation Organization, APSCO



CONTACT INFORMATION

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Remote Sensing Group

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