



مركز محمد بن راشد
للفضاء

MOHAMMED BIN RASHID SPACE CENTRE

Introduction to MBRSC:

2006

Emirates Institution for Advanced Science and Technology (EIAST) was established in February 2006.



2015

On April 18th, 2015: a decree has been issued to incorporate EIAST in the newly established Mohammed Bin Rashid Space Centre



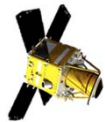
The UAE National Space Program

Emirates Mars Mission

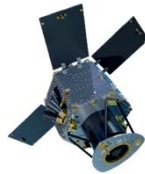


The "HOPE" Probe to the Mars

Satellite Development Programme

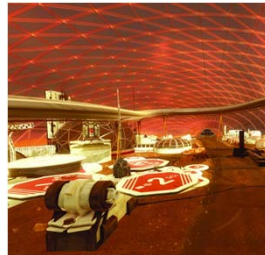


DubaiSat-1 & 2



KhalifaSat

Mars 2117 Strategy



UAE Human Space Flight Programme



Training and Space Flight Missions



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Satellite Development Programme

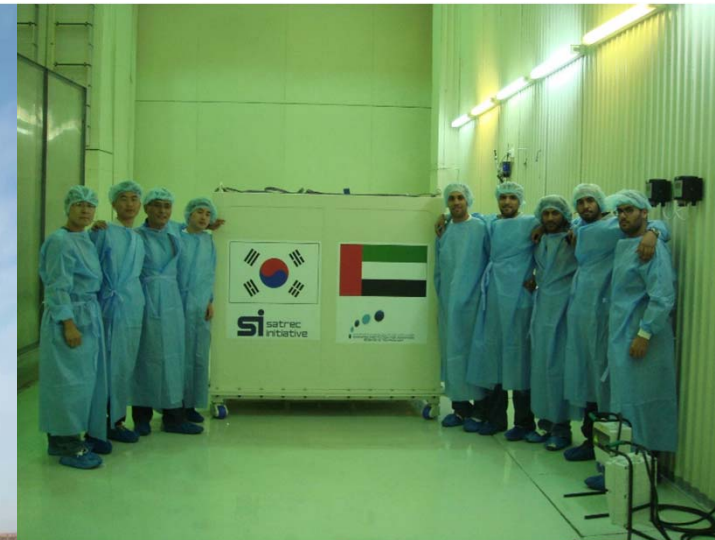
DubaiSat-1 and DubaiSat-2

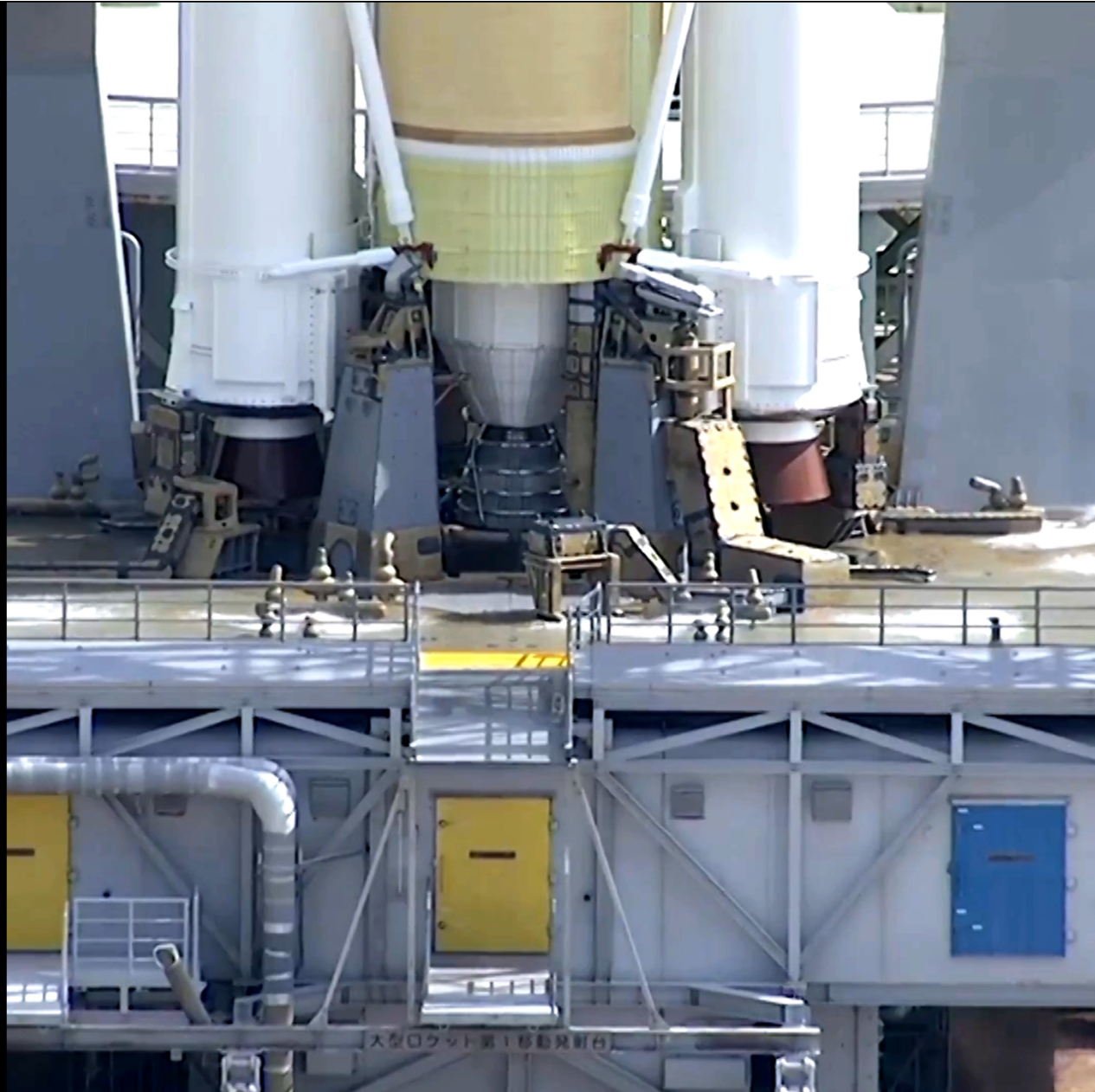
Main Objectives:

- Tech and Know-How Transfer for satellite Development
- Continuous Manpower Development
- Meeting the continuous need of spatial information and EO data of the UAE



	DubaiSat-1	DubaiSat-2
Altitude (km)	680	600
Mass	~ 200 kg	< 300 Kg
Spatial Resolution	PAN 2.5m, MS 5m	PAN 1M, MS 4m
Data Quantization	8-bits	10-bits
Mass Storage	64 Gbits	256 Gbits
Imaging Modes	Single Strip	Single Strip Fast Multi-Strip Single Pass Stereo
Data Download Speed	30Mbps	160Mbps
Swath Width (km)	20	12
Launch date	29 th July 2009	21 st Nov 2013

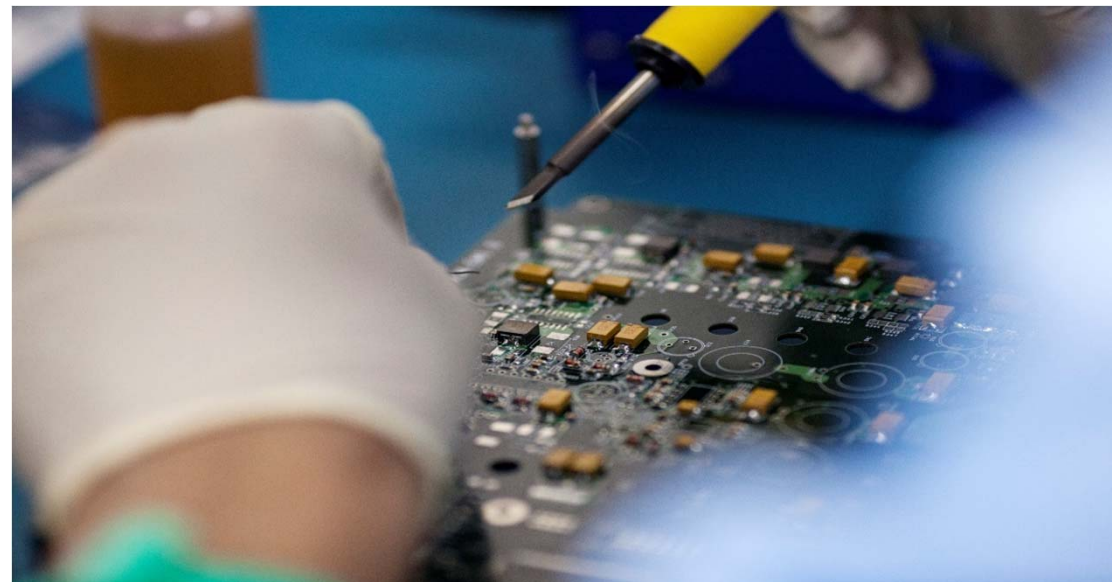




KhalifaSat



- KhalifaSat is MBRSC's 3rd Earth Observation Satellite.
- A historical milestone achieved. 100% developed by Emirati engineers.
- The four year programme to develop KhalifaSat began in 2013.
- It has been launched successfully with Mitsubishi Heavy Industries, Ltd (MHI); with GOSAT-2 onboard H-IIA launch vehicle on 29th Oct 2018
- Spatial Resolution: 0.7m
- Currently under CAL/VAL period





DubaiSat-1, 2.5 m resolution



DubaiSat-2, 1 m resolution



KOMPSAT-3 sample image, Satric-I

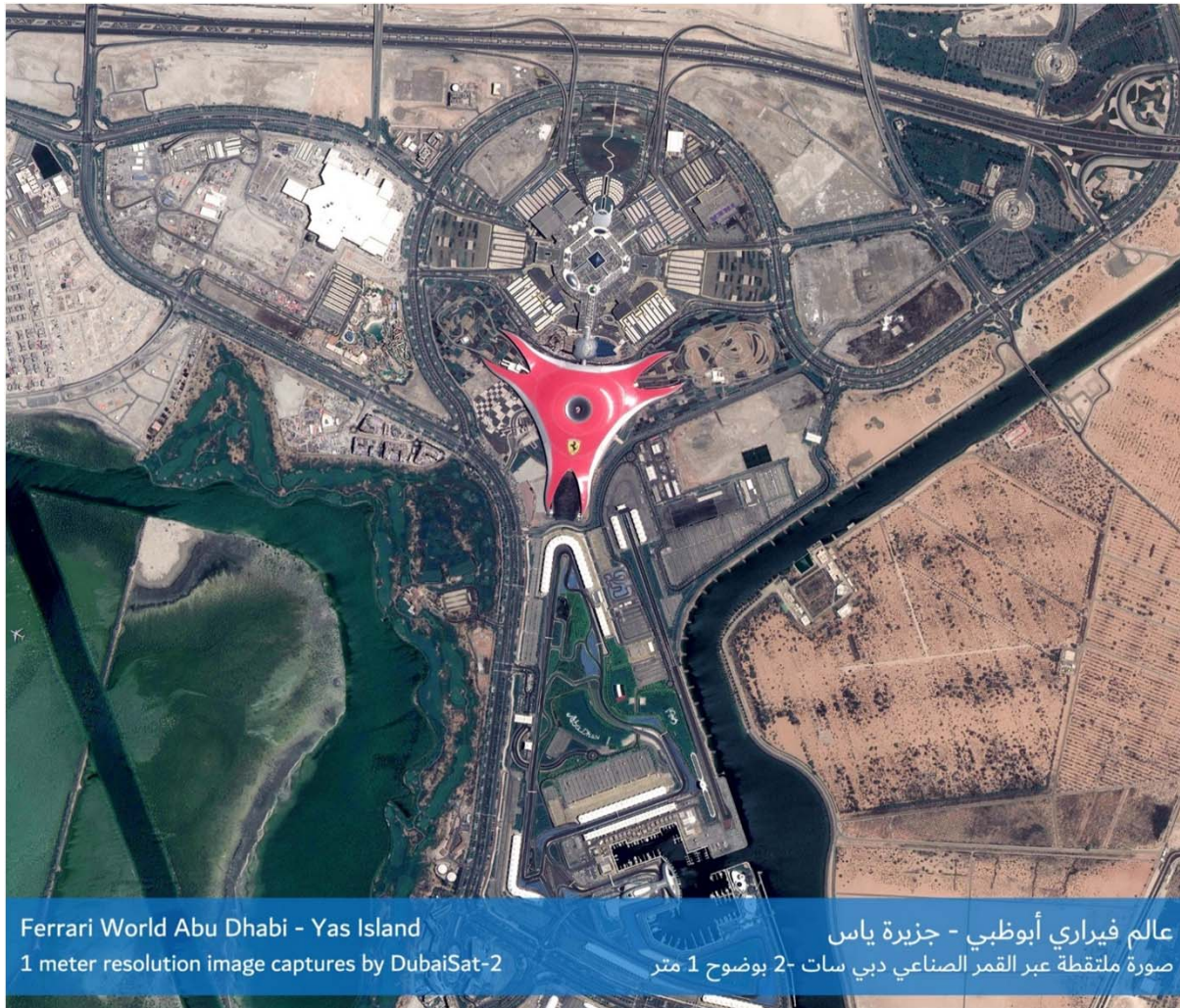
KhalifaSat, 70 cm Resolution



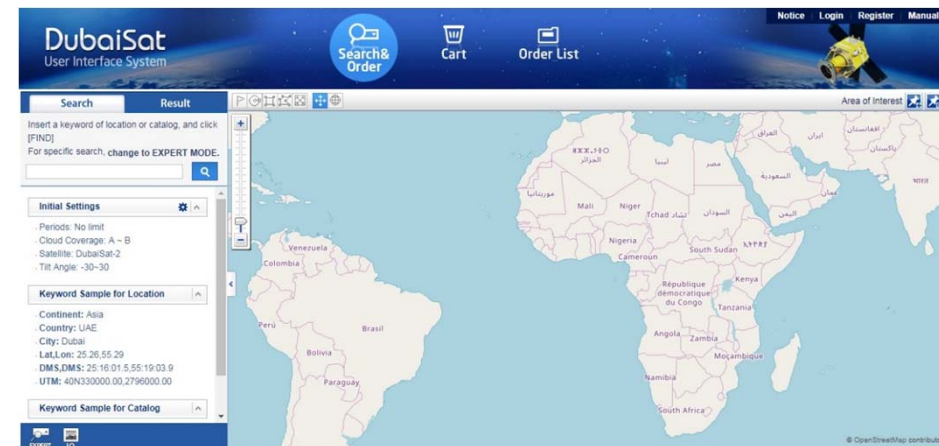
2

Products and Services

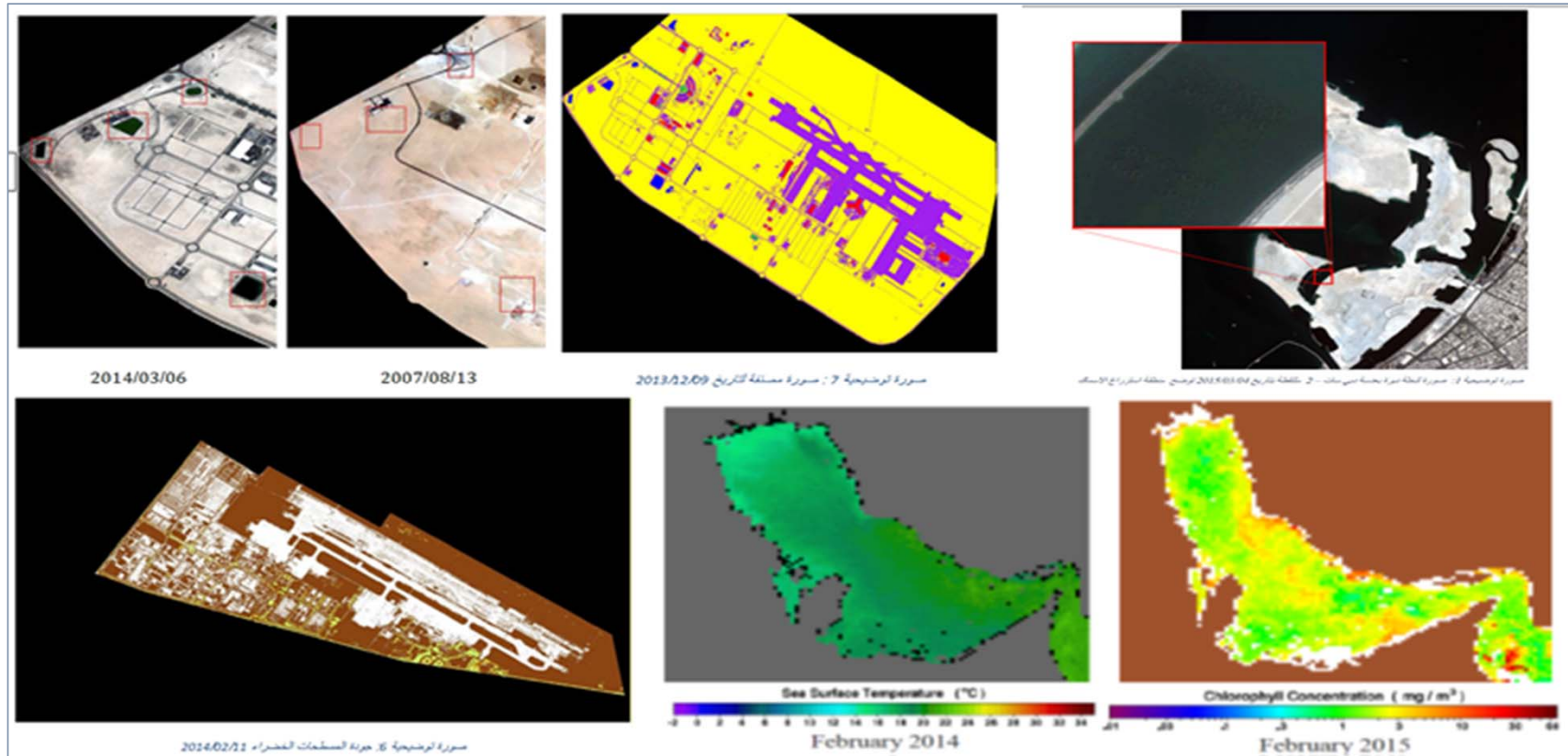
Satellite Imagery



- MBRSC Provides satellites imagery captured by DubaiSat-2 with resolution of 1 meter
- In addition, access to our online system to request archived images or even place new imaging requests



Added Value Products



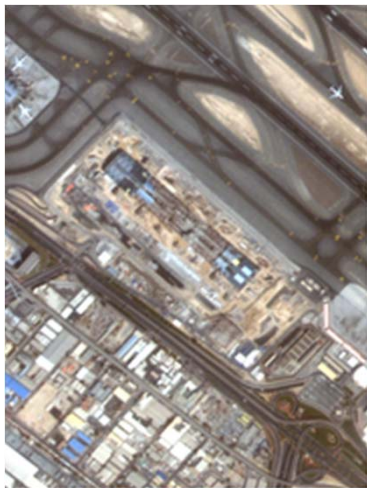
The Application Development and Analysis team provide added value services such as classifications, change detection analysis, NDVI analysis and many more. The team works with the client to provide a feasibility of their request before starting the work.

Added Value Products: Change Detection

Change detection report to monitor the development of Dubai International Airport – Terminal 3



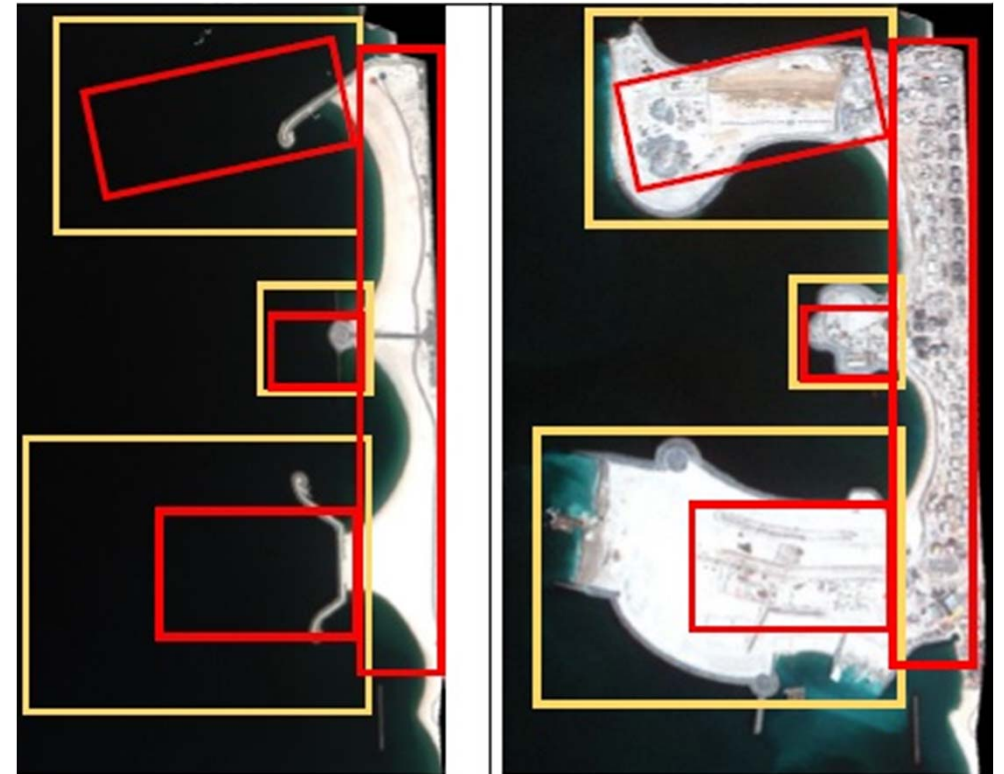
26/08/2009



18/03/2011



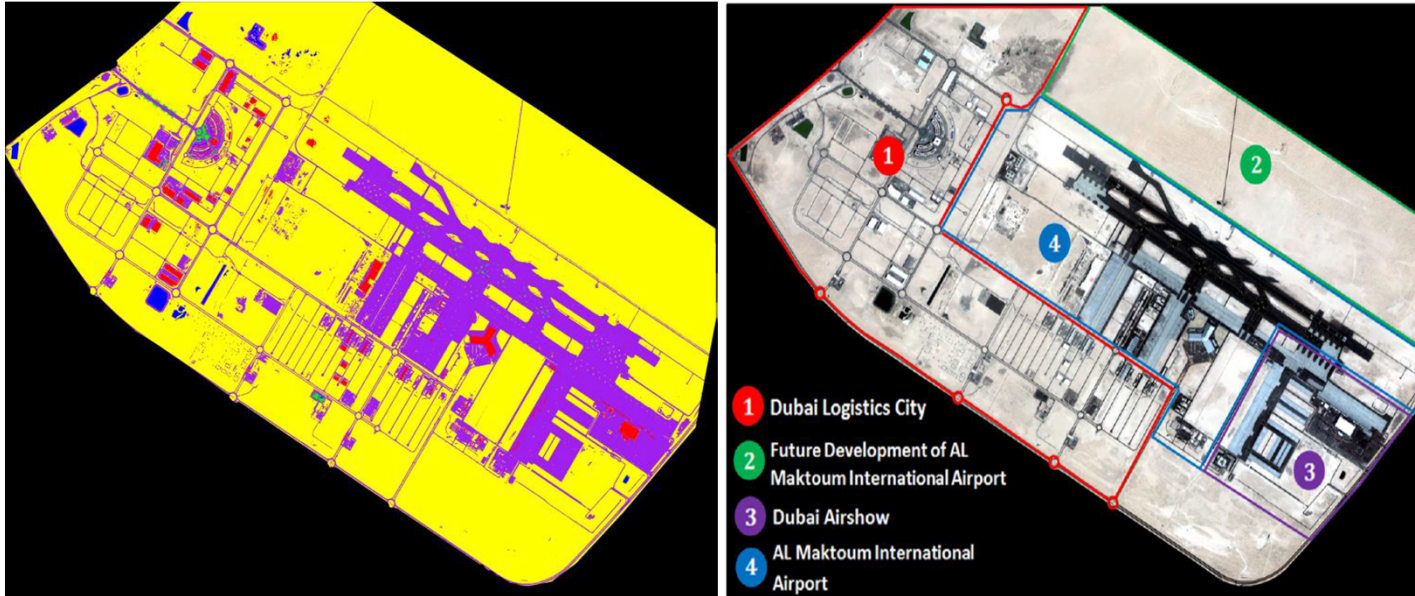
17/11/2012



Change detection report conducted between 2014 to 2016 for La Mer Island, Dubai

Added Value Products: Classification

Classification for
Al Maktoum
Airport from 2007
to 2014



Color	Class	Percentage			Overall Change Percentage
		13-08-2007	09-12-2013	06-03-2014	
Yellow	Undeveloped Area	91.30%	80.63%	76.96%	-14.35%
Purple	Roads/Paved Area	5.74%	17.61%	21.19%	15.45%
Red	Urban	2.95%	1.12%	1.18%	-1.77%
Green	Vegetation	0.00%	0.14%	0.17%	0.17%
Blue	Water	0.01%	0.49%	0.50%	0.49%

Added Value Products: Environmental Studies

- Detecting oil spills on land
- Monitoring land contamination
- Water quality and water resources monitoring
- Land Cover/Land Change detection

NDVI report classifying vegetation health on Palm Jumeirah Island, Dubai

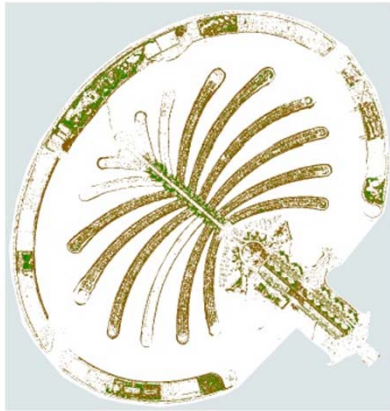


Figure 6: 2013 NDVI resulting map

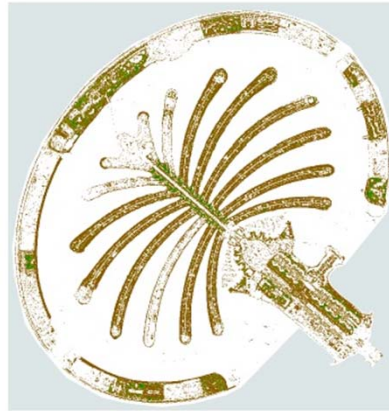
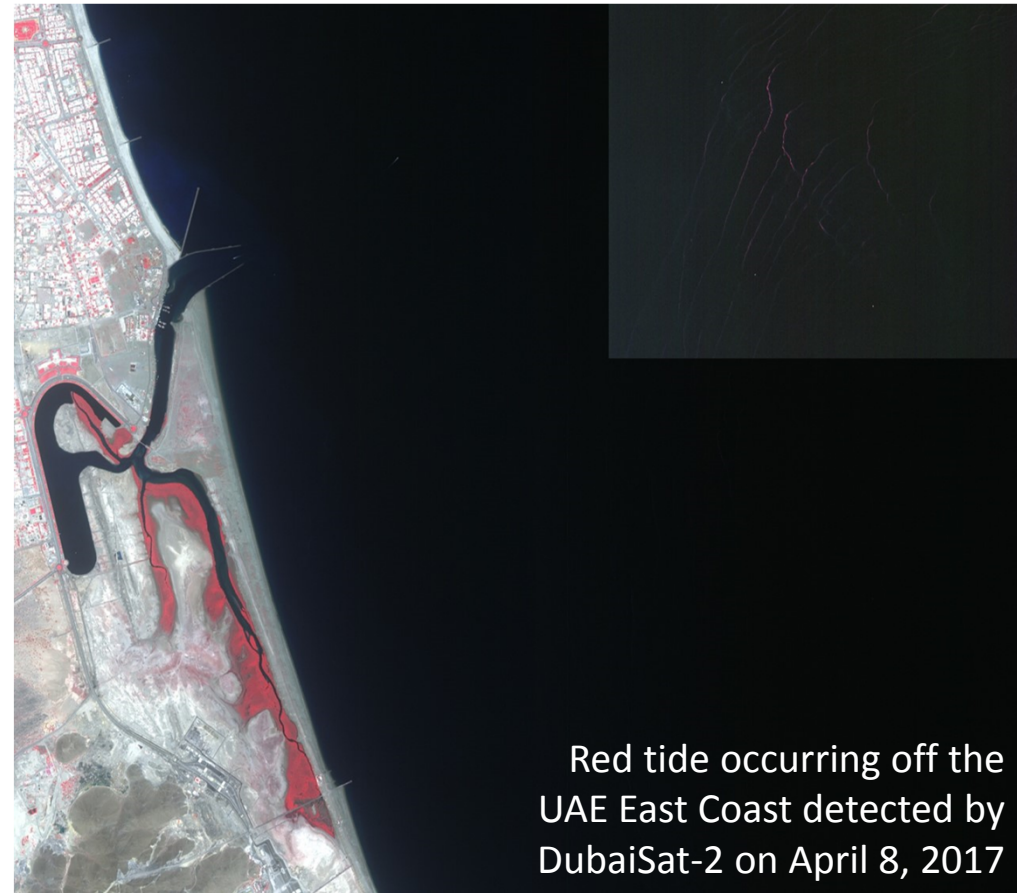


Figure 7: 2016 NDVI resulting map

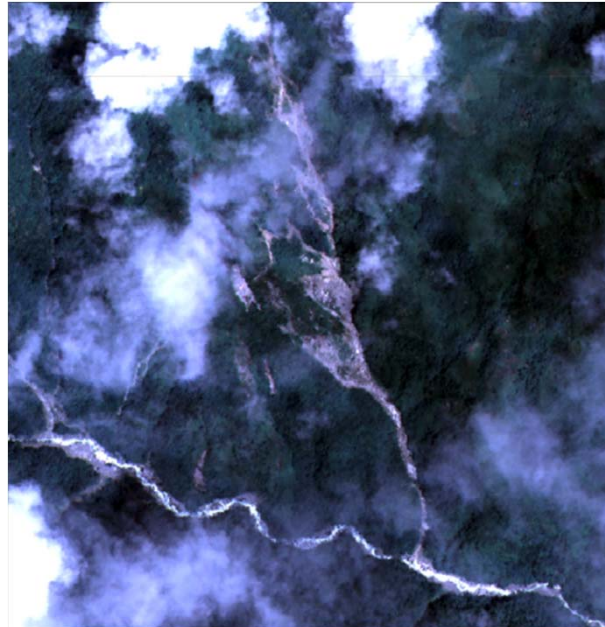
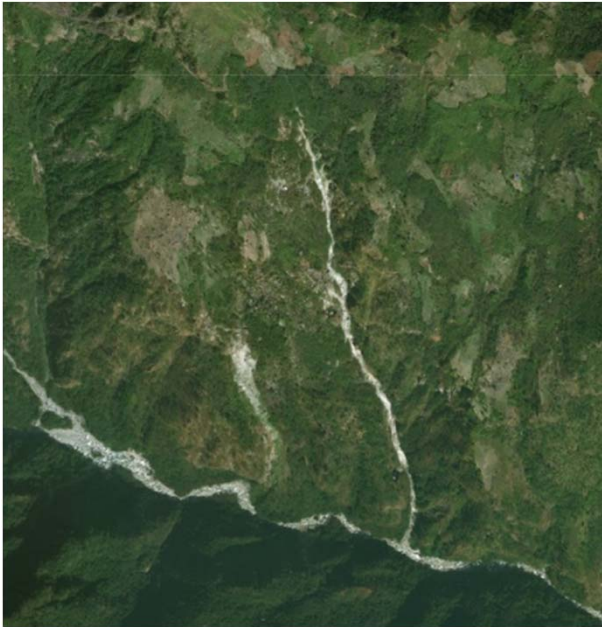
Color	Representations	Percentage		Overall change in Percentage
		2013	2016	
	Grasslands	2.670%	2.652%	-0.018%
	Dense vegetation	1.555%	1.554%	-0.001%



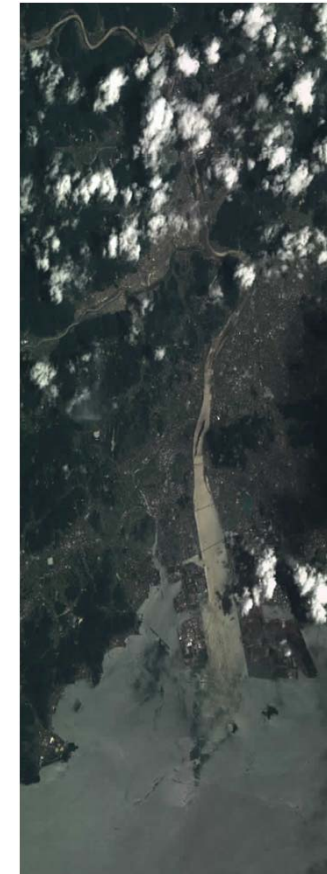
Red tide occurring off the UAE East Coast detected by DubaiSat-2 on April 8, 2017

Added Value Products: Disaster Management

MBRSC is committed to contribute to helping countries that are affected by natural disasters. Satellite images are provided whenever it is possible.



Landslide detected by DubaiSat-2 image captured on August 20, 2017 provided to Sentinel Asia to aid in mitigating and preventing damage caused by Flood in Nepal.



DubaiSat-2 image captured on July 22, 2018 provided to International Disasters Charter and Sentinel Asia to aid in preventing damage caused by Flood in Japan.



3

Contribution to Sentinel Asia

MBRSC's Contribution to Sentinel Asia



Sentinel Asia

MBRSC started providing 1 meter resolution imagery from DubaiSat-2 to Sentinel Asia in August 2017.

DubaiSat-2 was tasked to image the below EORs, not all were submitted due to completely cloudy imagery:

- Flood in Nepal
- Flood in Bangladesh
- Flood in Vietnam
- Flood in Taiwan
- Flood in Philippines
- Earthquake in Taiwan
- Earthquake in South Korea
- Flood in Sri Lanka
- Flood in Japan
- Earthquake in Indonesia
- Flood in India
- Earthquake in Japan
- Typhoon in Philippines



Typhoon in Philippines



Flood in Japan



Thank you