

# SAFIY Feature Extraction Project's Contribution to the Sustainable Development Goals

Meera AlShamsi

Head, Remote Sensing Applications Unit

# Outline

- Sustainable Development Goals
- SAFIY Project
- Conclusion

# SUSTAINABLE DEVELOPMENT GOALS



# SAFIY

- SAFIY (**S**mart **A**pplication for **F**eature extraction & 3D modelling using high resolution satellite **I**magery)
- Objective: automated system that can generate **geospatial information based on satellite data to aid the planning and monitoring of environmental and urban change** in the UAE.

صافي  
SAFIY



# SAFIY

- Extracts the following features:

Roads



Water

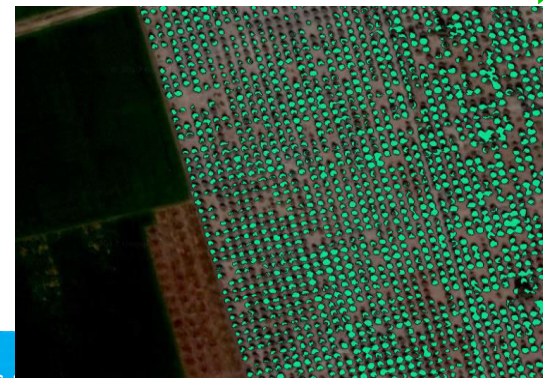


Vegetation

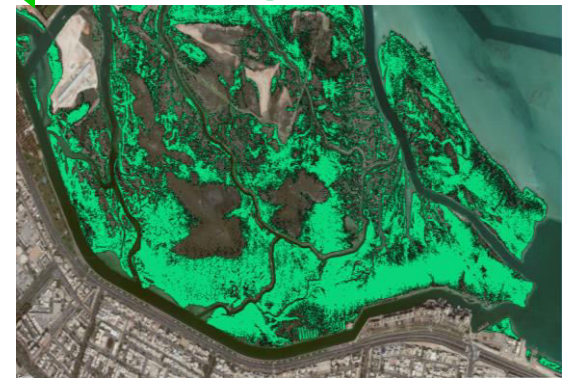


Phase 1  
June 2015 – May 2016

Palm Trees



Mangroves

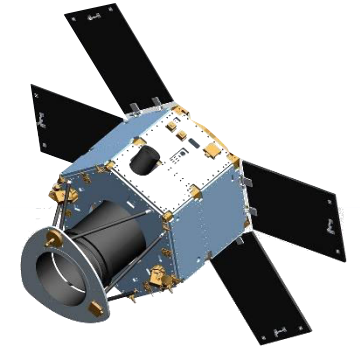


Phase 2  
November 2016 – April 2017

# SAFIY

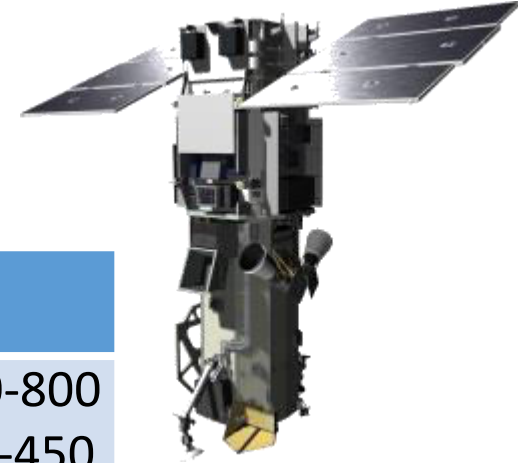
- Satellite Data: DubaiSat-2, Deimos-2, and Worldview-3

Mission	Spatial resolution	Spectral bands (nm)	
DubaiSat-2	Pan: 1m Multispectral: 4m	Pan:	550-900
		Blue:	450-520
		Green:	520-590
		Red:	630-690
		NIR:	770-890
Deimos-2	Pan: 0.75m Multispectral: 4m	Pan:	450-900
		Blue:	420-510
		Green:	510-580
		Red:	600-720
		NIR:	760-890



# SAFIY

- Satellite Data: DubaiSat-2, Deimos-2, and Worldview-3

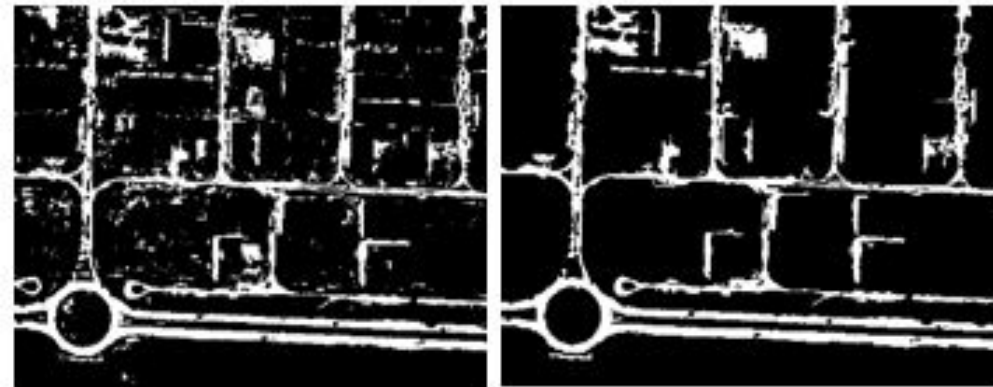


Mission	Spatial resolution	Spectral bands (nm)
<b>WorldView-3</b>	Pan: 0.3m Multispectral: 1.24m	Pan: 450-800 Coastal Blue: 400-450 Blue: 450-510 Green: 510-580 Yellow: 585-625 Red: 630-690 Red edge: 705-745 NIR-1: 770-895 NIR-2: 860-1040

# SAFIY

## • Roads

- Support Vector Machine (SVM) classification.
- Extracted road layer can help monitor road infrastructure and analyze different areas where roads are needed.

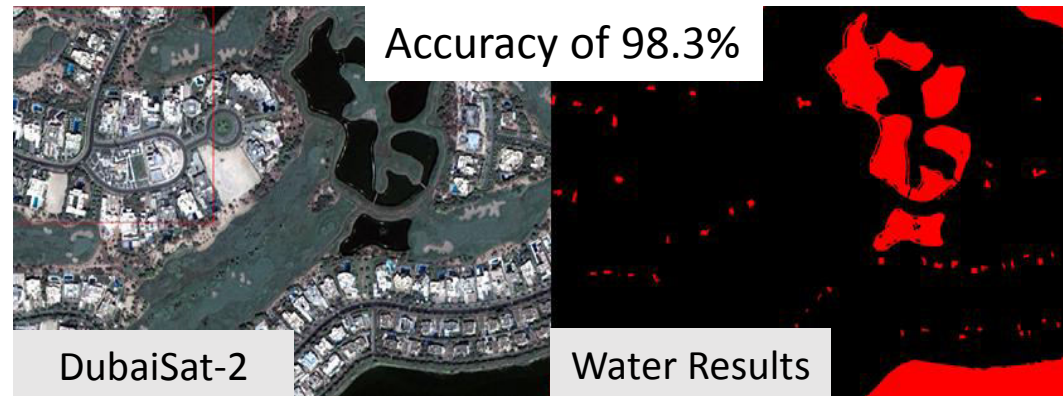




# SAFIY

## • Water

- Normalized Differential Water Index (NDWI)  $NDWI = \frac{Green - NIR}{Green + NIR}$
- Monitoring water resources in different locations, such as dams.



# SAFIY

## • Vegetation

- Normalized Difference Vegetation Index (NDVI)  $NDVI = \frac{NIR - Red}{NIR + Red}$
- Map vegetation areas and health.
- Monitor and study changes in the environment.



# SAFIY

- Palm Trees

- Assess agriculture productivity and health.



Al-Ain Farms, UAE

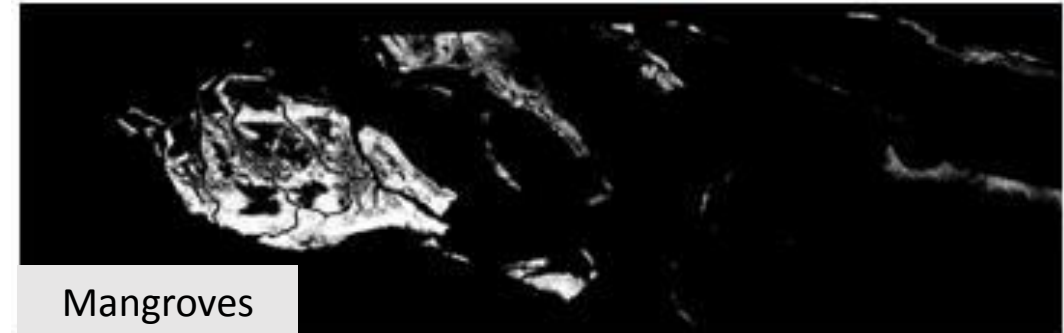


# SAFIY

- Mangroves
- Monitor health and changes to mangroves for preservation.
- Reduce impact on marine life.

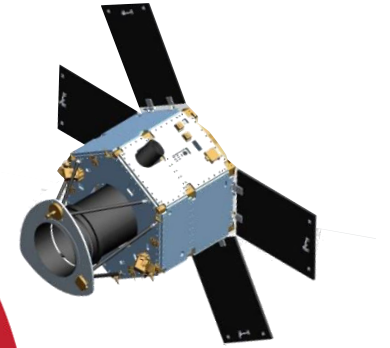


## Abu Dhabi Eastern Mangroves, UAE



# Conclusion

- Remote sensing applications data can be utilized to reach the sustainable development goals.
- Small contributions = big impact!



# Thank You



ميرة راشد الشامسي

**Meera Rashid Al Shamsi**

رئيس - وحدة تطبيقات الاستشعار

Head - Remote Sensing Applications Unit

Meera.AlShamsi@mbrsc.ae

☎ +97146071251 📠 +97142893600

P.O.Box: 211833, Dubai, UAE

Makani ID: 4538990824