

FIG

FIG WORKING WEEK 2017

Helsinki Finland

29 May - 2 June 2017

Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland

Development of a Fast and Cost Effective Geospatial Techniques to Monitor Real Estate Potential of Residential Manmade Islands in the Countries of the Gulf Cooperation Council

TS081: GIS AND ITS EVOLVING ROLL IN VALUATION AND STANDARDS PAPER ID 9025_1st June 2017 (16h00-16h00-17h30)

By Ali El Battay, Abderrazak Bannari and Nadir A.Hameed

Surveying the world of tomorrow -
From digitalisation to augmented reality

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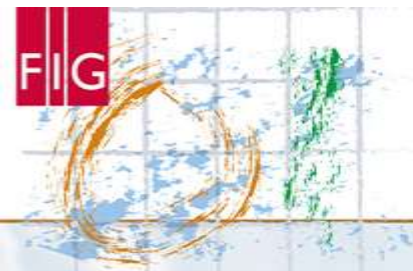
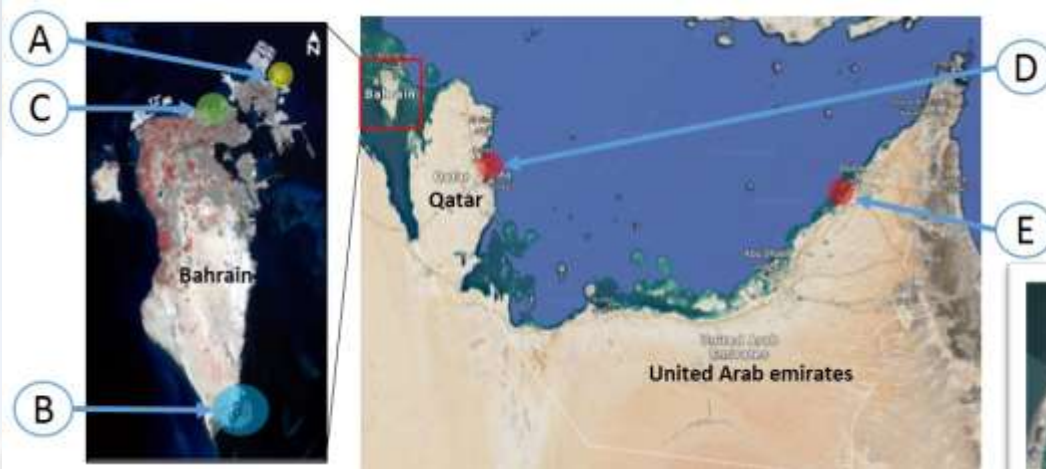


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Locations of artificial Islands used in this study; (A) Amwaj Islands, (B) Durrat Al-Bahrain, (C) Reef Island, (D) The Pearl-Qatar and (E) The Palm Jumeirah





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ed reality



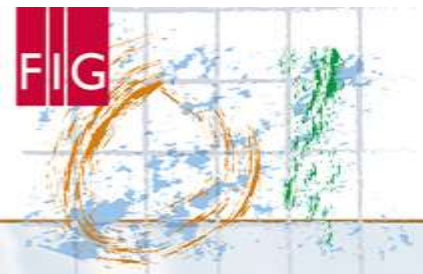


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Rational of the study:

Investors, home-buyers or potential tenants have very crucial questions to help them decide :

1. What is the overall status of development of the island(s)?
2. How fast (or slow) the construction/development of the island has gone so far?
3. How it compares to competitors of similar projects?

The problem is that it is extremely difficult to get accurate, timely and objective answers to these (legitimate) questions!!! Most realtors or even project developers and contractors can not give a holistic and/or neutral answers!!



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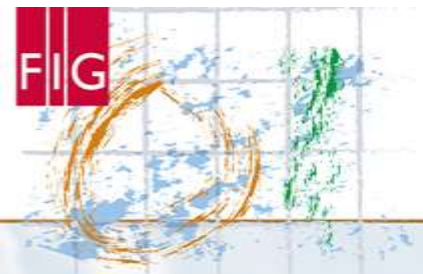


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Where?
When?



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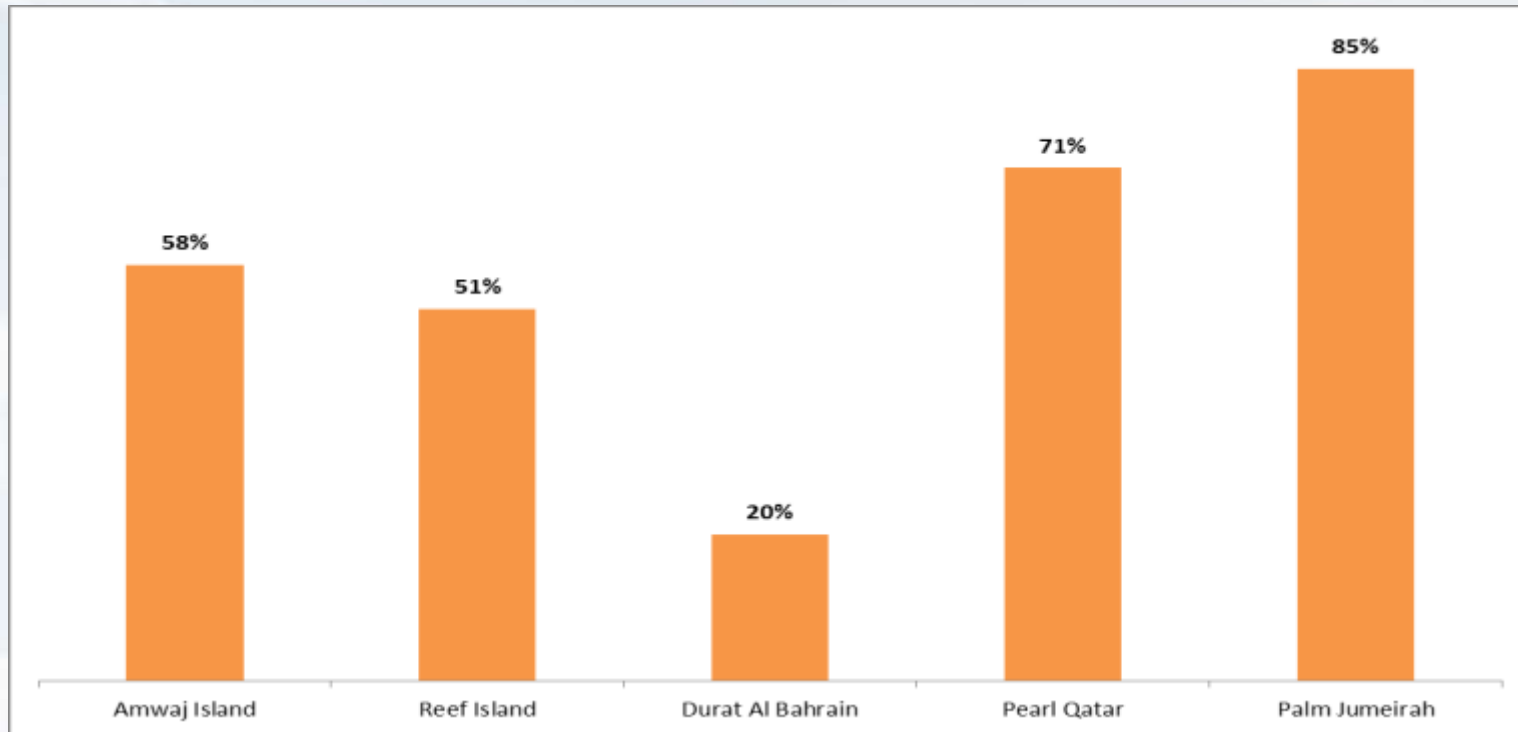


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Percentage of development of all five study sites as per April 2014 using Landsat 8 OLI Images*

* Data valid for purpose of research only and no liability for its accuracy or implications is accepted by researchers involved in this study



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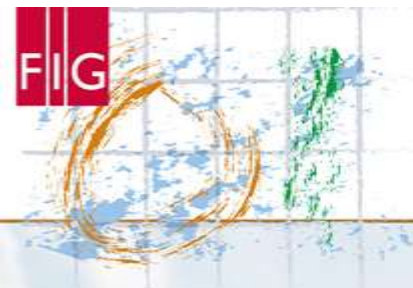
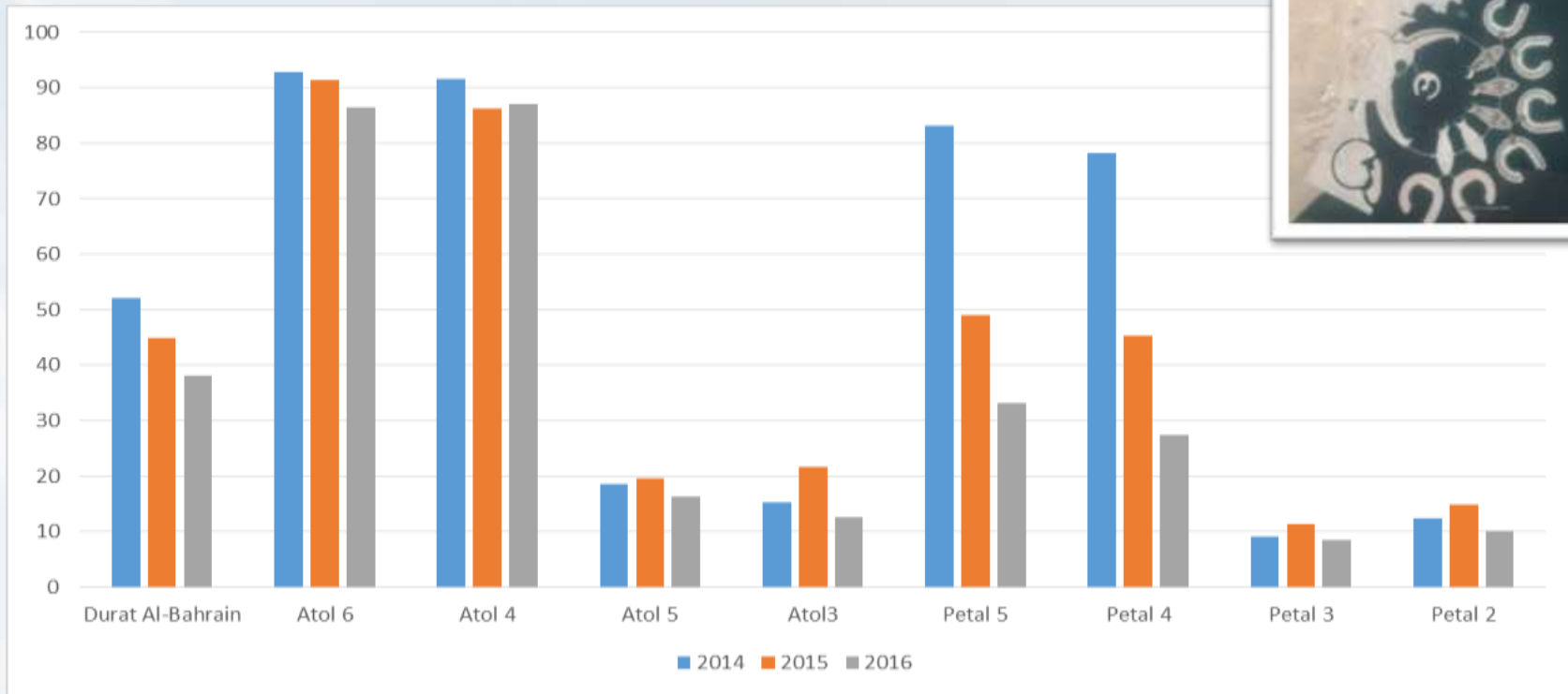


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Percentage of undevelopment* of study site in Durrat Al-Bahrain and its sub-islands from OLI images in 2014,2015 and 2016

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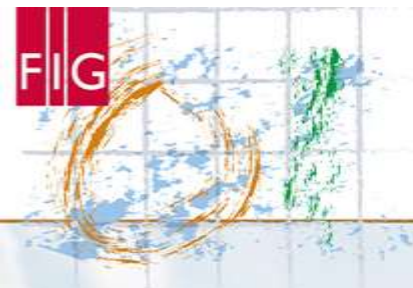
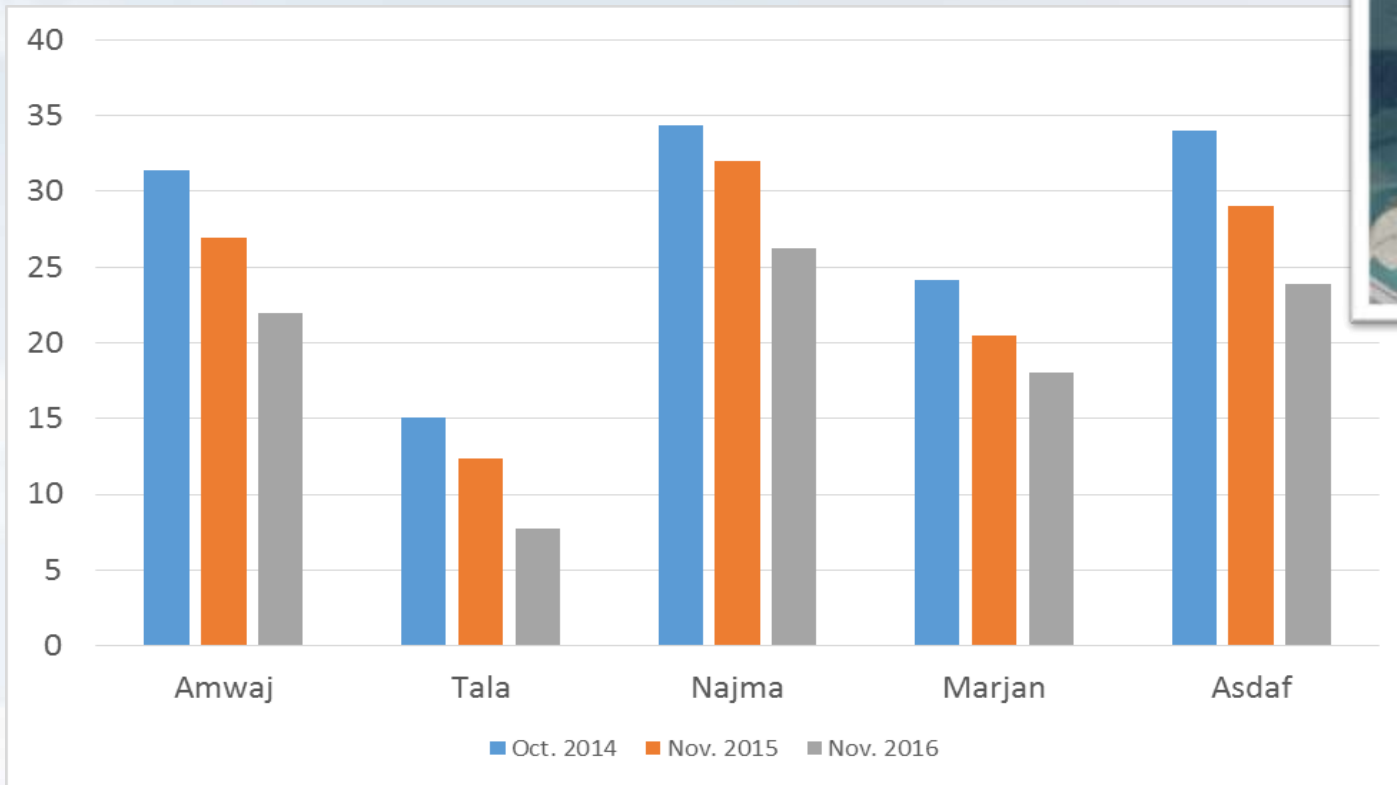


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Percentage of undevelopment* of study site in Amwaj Islands and its sub-islands from OLI images in 2014,2015 and 2016

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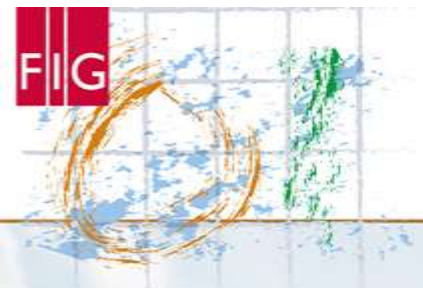
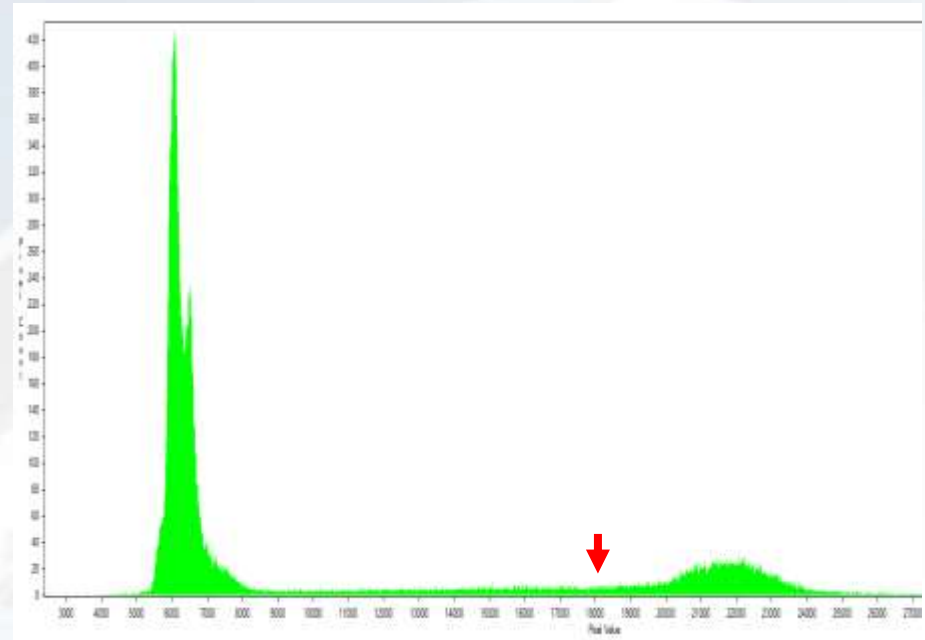
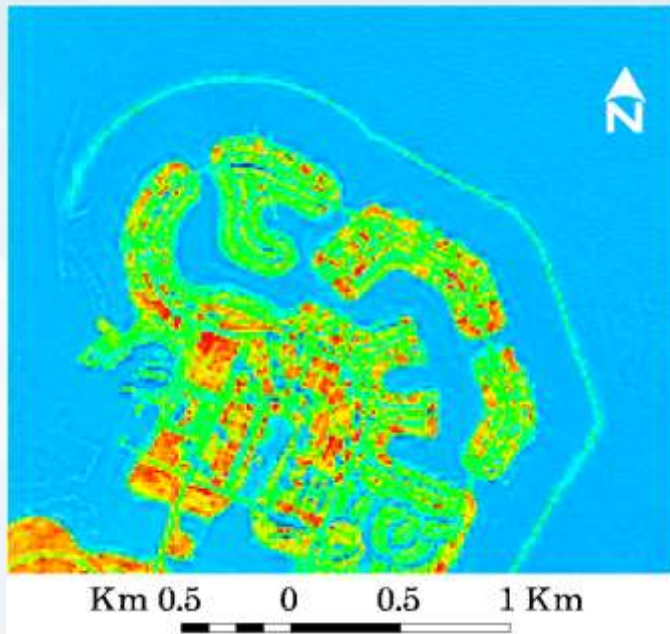


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Pseudo colors representation of OLI SWIR1 on 14 Oct. 2014 aside of its DN histogram.



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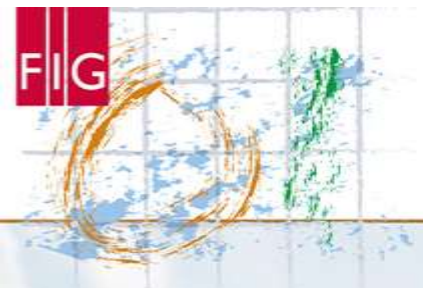
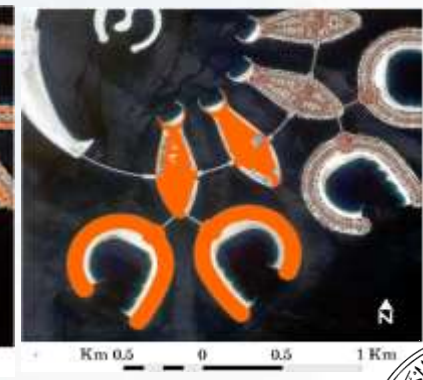
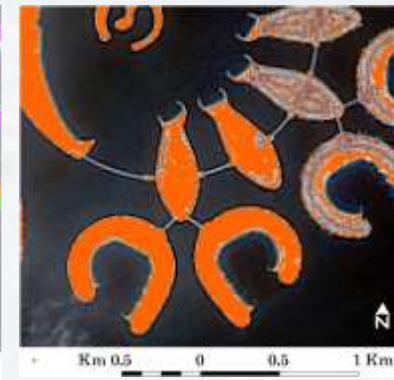
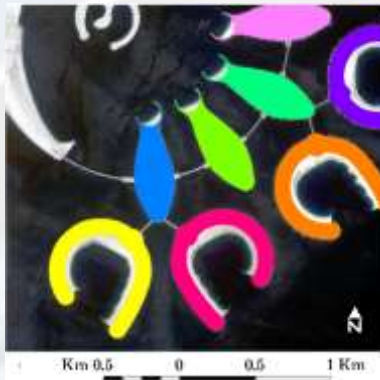
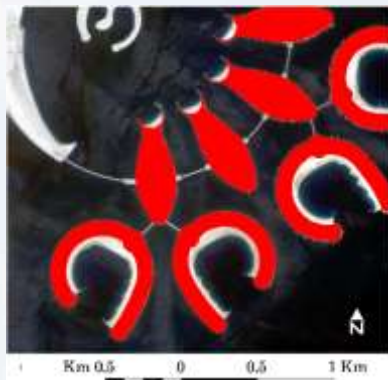
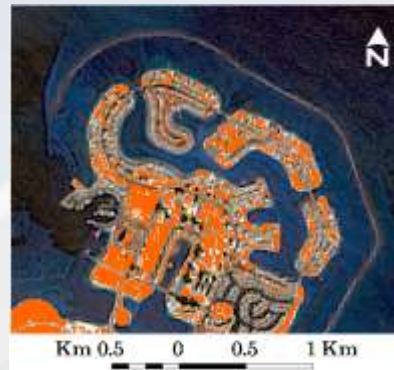
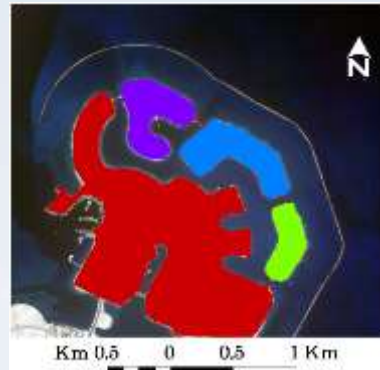
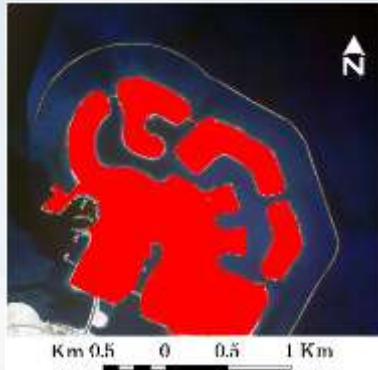


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Isolation of land areas (SWIR)

Isolation of various sub-islands

Applying the threshold technique OLI

Validation WorldView-3



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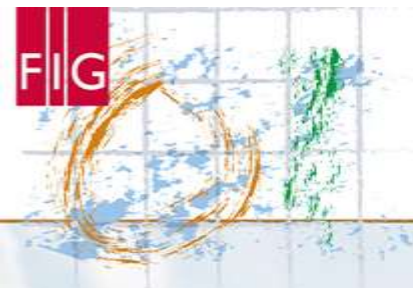
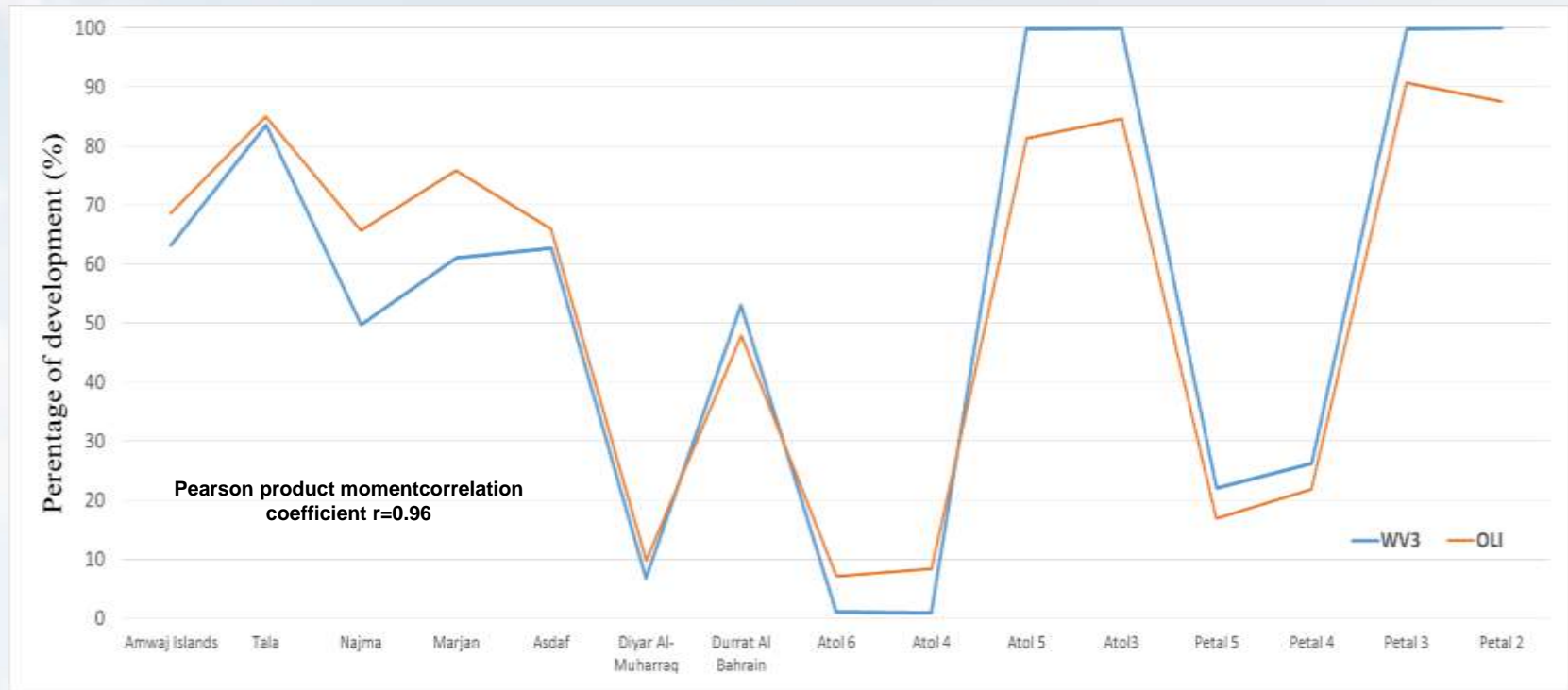


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Comparison of percentage of development in Amwaj and Durrat Al-Bahrain and sub-islands using OLI versus WV3 images in mid-October 2014*

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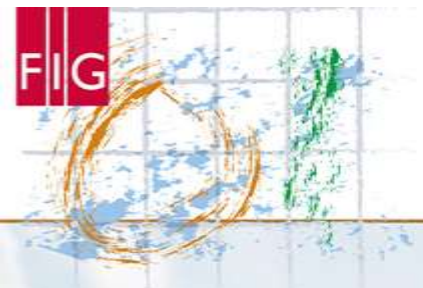
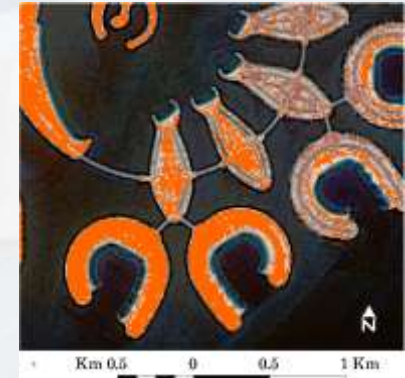
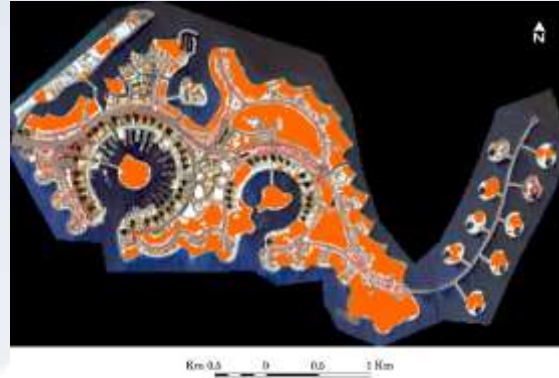
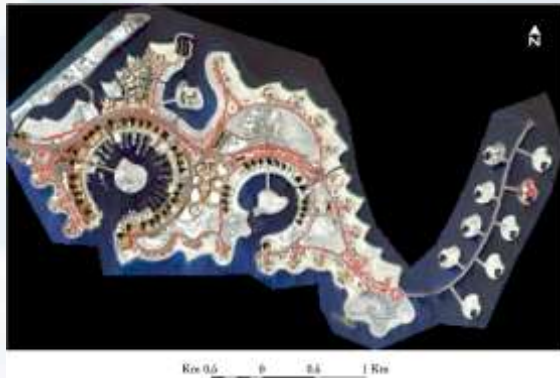


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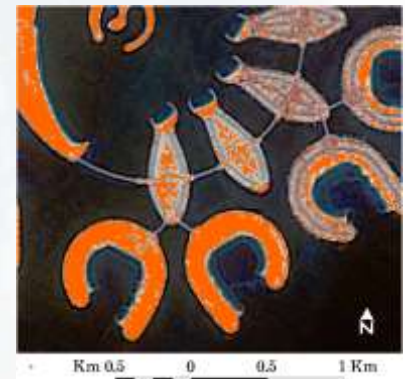
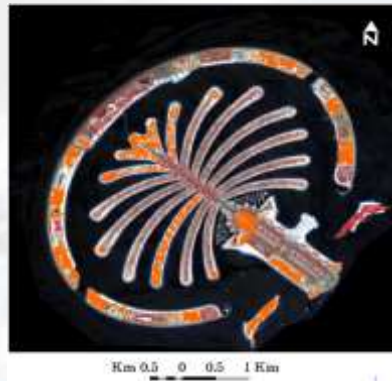
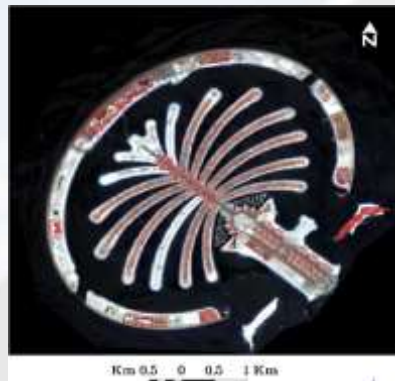
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2015



2016



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Conclusions:

Manmade islands have a very distinctive and coherent spectral signature making even the simplest remote sensing technique (in this case one band thresholding) very effective to determine the percentage of development.

OLI Low spatial resolution allowed to avoid confusion between open areas and buildings rooftops due to mixture of the last one with surrounding pixels (shadow, roads, vegetation).

Some fundamental and crucial Real Estate (\$1M dollars questions) issues can be answered in a fast, simple, reliable, accurate and timely manner (less than 24 hours processing) using basic geoinformatics techniques.

If this is the input of simple digitalization so what would happen when moving to augmented reality where investors/buyers/tenants can immerse fully in nD outdoor and indoors illustrations of their future acquisition...



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Thank you

For more details: paper ID 9025

Ali El Battay

Arabian Gulf University
KINGDOM OF BAHRAIN

Tel. +973 17 239 684

Fax + 973 239 552

Email: alieb@agu.edu.bh



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