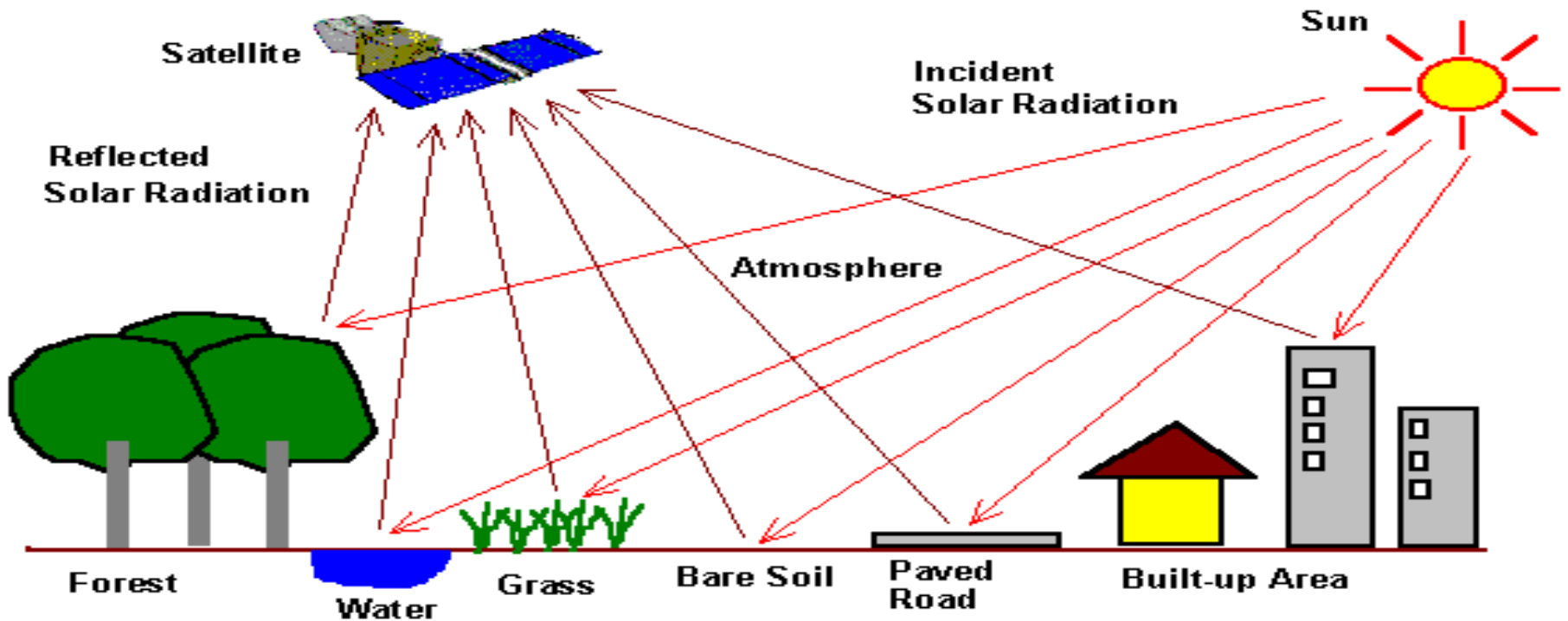


# Gezira Mapping

Researcher : Julia , Tamani , Romaysa , Amgad and Rami  
Supervisor : Dr. Khalid , Prof. Abu Obieda and Prof. Yasir



# حصر المساحات المزروعة بمشروع الجزيرة العروة الصيفيه باستخدام الأقمار الصناعية



# Introduction (General)

## مشروع الجزيرة

### Introduction Gezira Scheme

Objective  
Methodology  
Method  
MLC  
OBIA

Result  
Wad Hilal  
El Naseh  
Wad Basir  
El Hosh  
El Gabel

Gezira Result  
summer



تقريبا 2,200,000 فدان





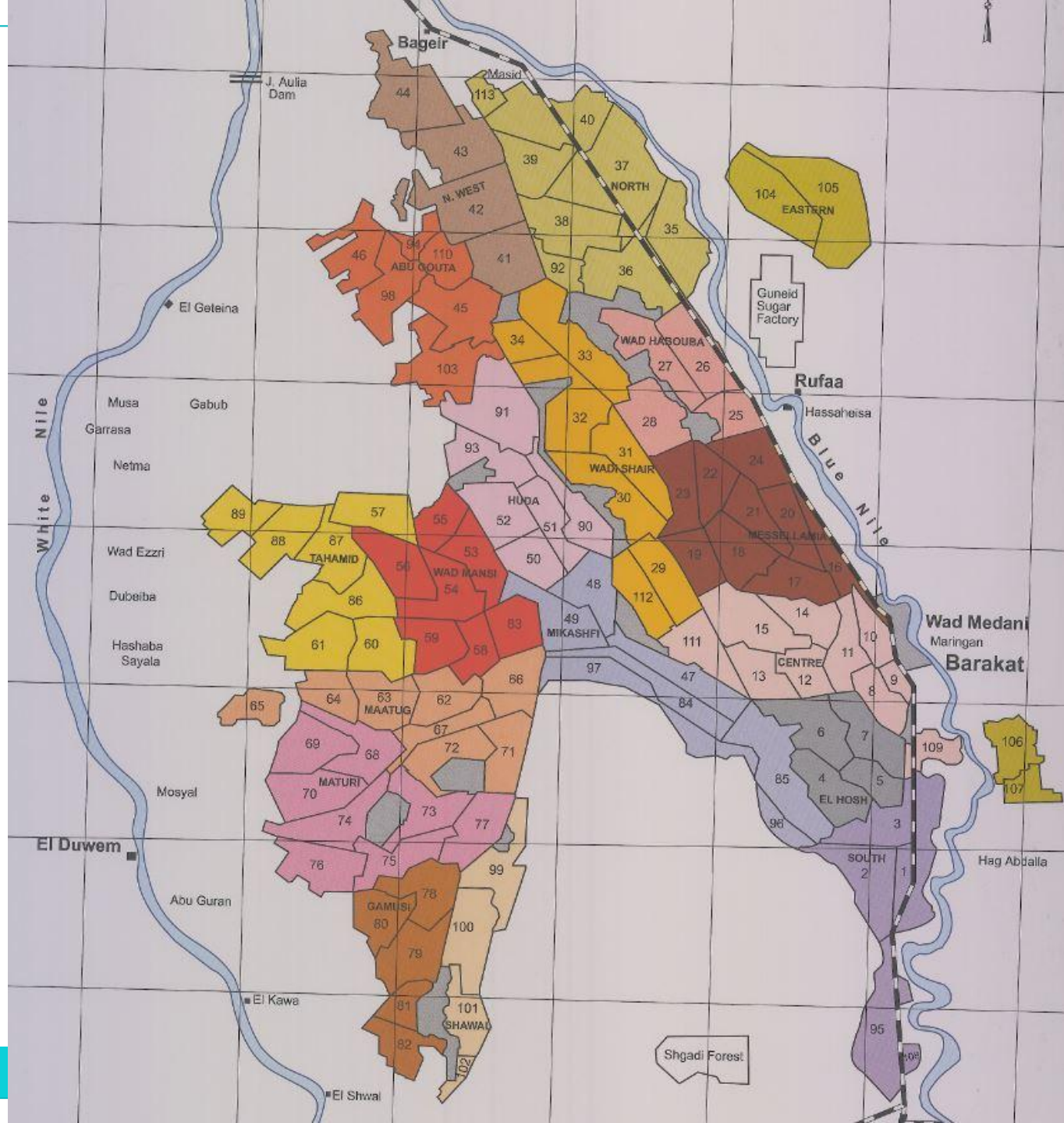


## Introduction Gezira Scheme

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summer







# مكتب ود هلال (عدد من الترع)





# ترعة التكل قبلي (عدد من النمر)

## Introduction Gezira Scheme

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- Result
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- Wad Basir
- El Hosh
- El Gabel

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summer

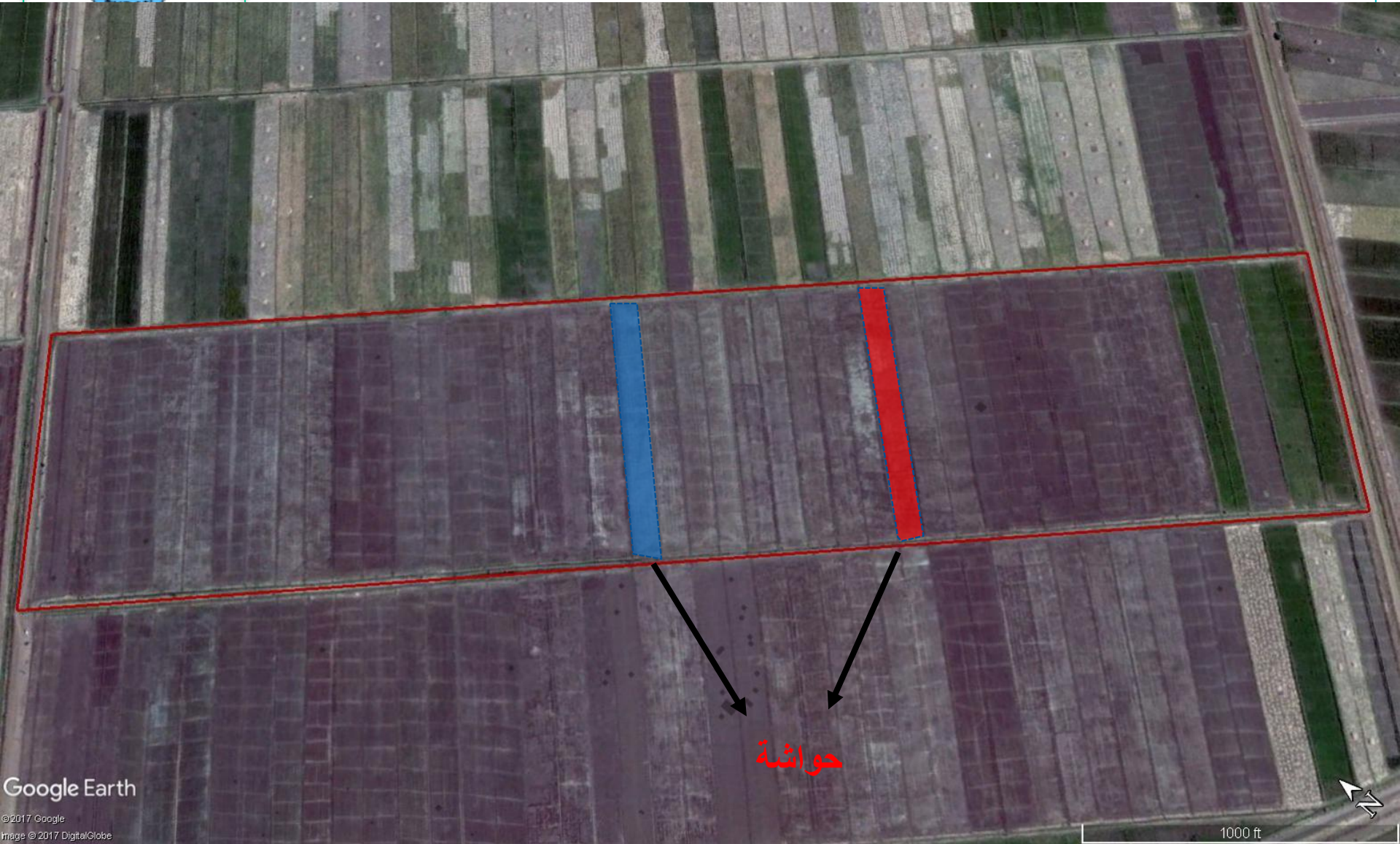


نمر مساحتها  
بحدود 90 فدان





# النمرة تتكون من 90 فدان



Google Earth

© 2017 Google  
Image © 2017 DigitalGlobe

1000 ft



# Introduction (General)

## مشروع الجزيرة

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الموسم الممطر: القمح و الفول السوداني والبقوليات والقطان والجنابن

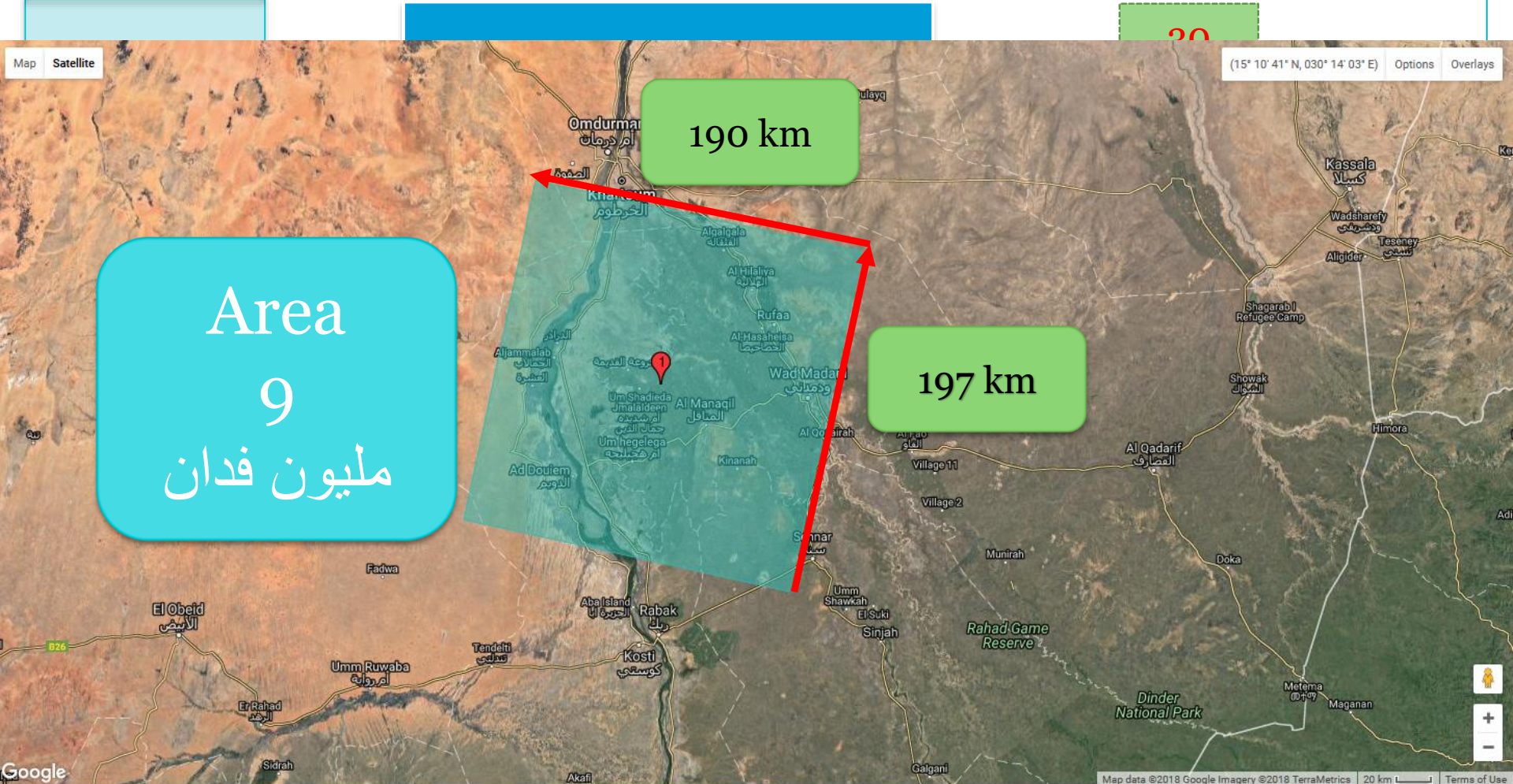
# Landsat 8 Satellite







# Landsat 8 Satellite



30

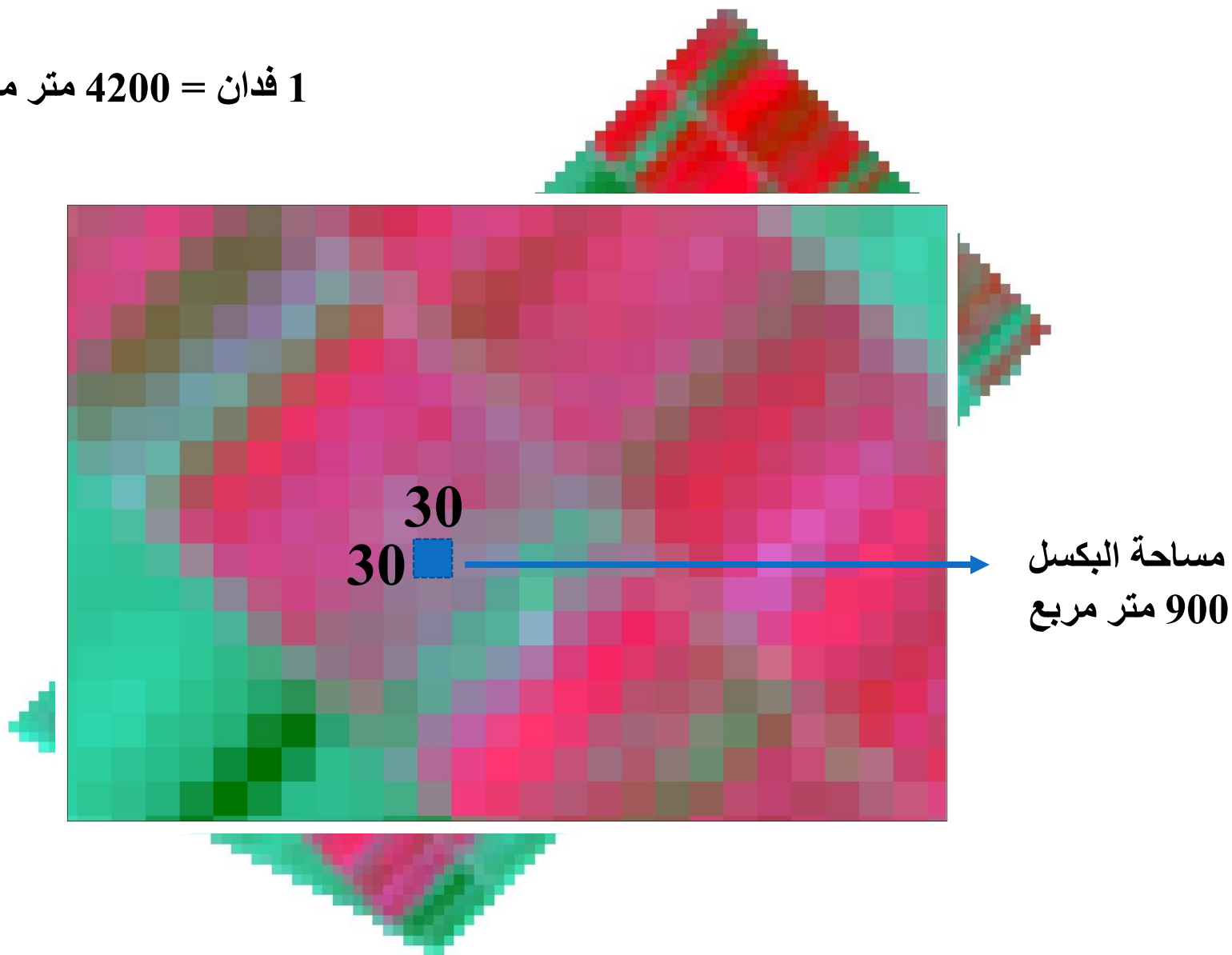
Area  
9  
مليون فدان

190 km

197 km

image

1 فدان = 4200 متر مربع







حواشة تقريبا 2  
فدان

# Objective

Introduction  
Gezira Scheme

## Objective

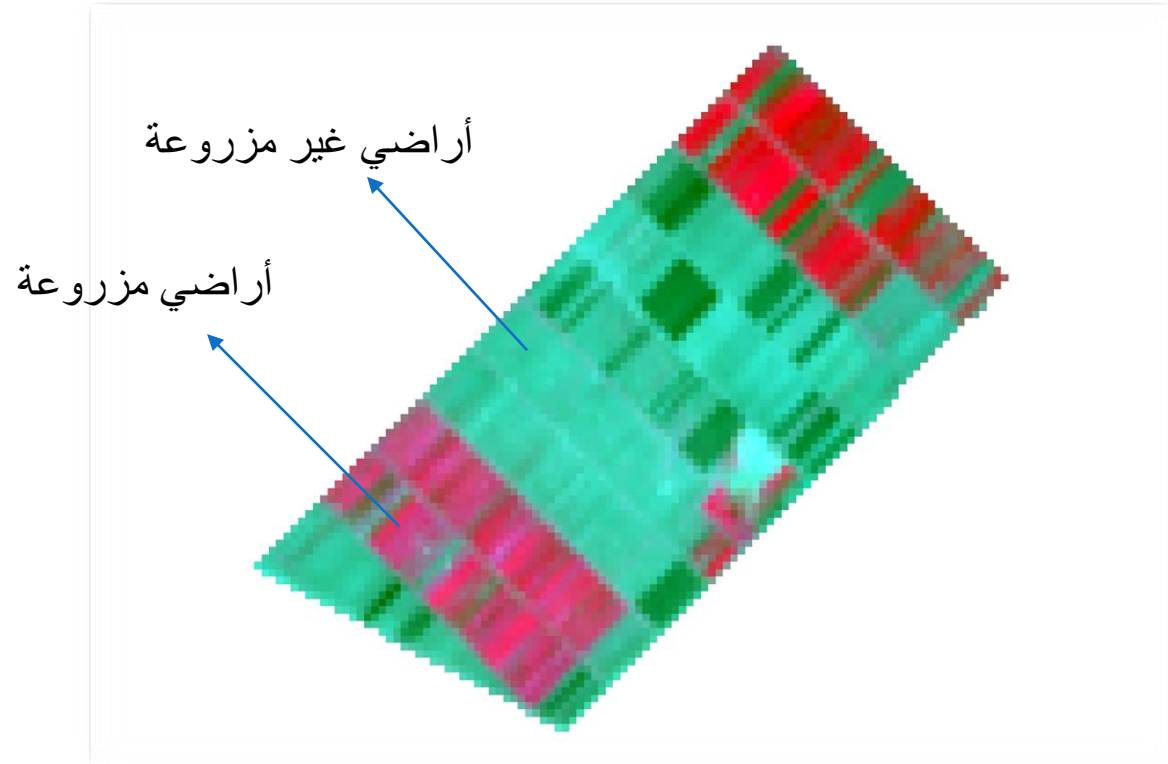
Methodology  
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## Result

Wad Hilal  
El Naseeh  
Wad Basir  
El Hosh  
El Gabel

Gezira Result  
summer

- حساب المساحات المزروعة والغير مزروعة بمشروع الجزيرة .
- حساب مساحة المحاصيل المختلفة بمشروع الجزيرة .







# Methodology

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Acquisition of the satellite  
data (2 scenes/month)



Field Survey (2)



HRC

## Field survey for collecting the training areas (signatures)

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HRC

## Field survey for collecting the training areas (signatures)

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100 عينة من كل مكتب  
جزء من العينات يستخدم للتصنيف والجزء  
الآخر للتأكد من دقة التصنيف



HRC

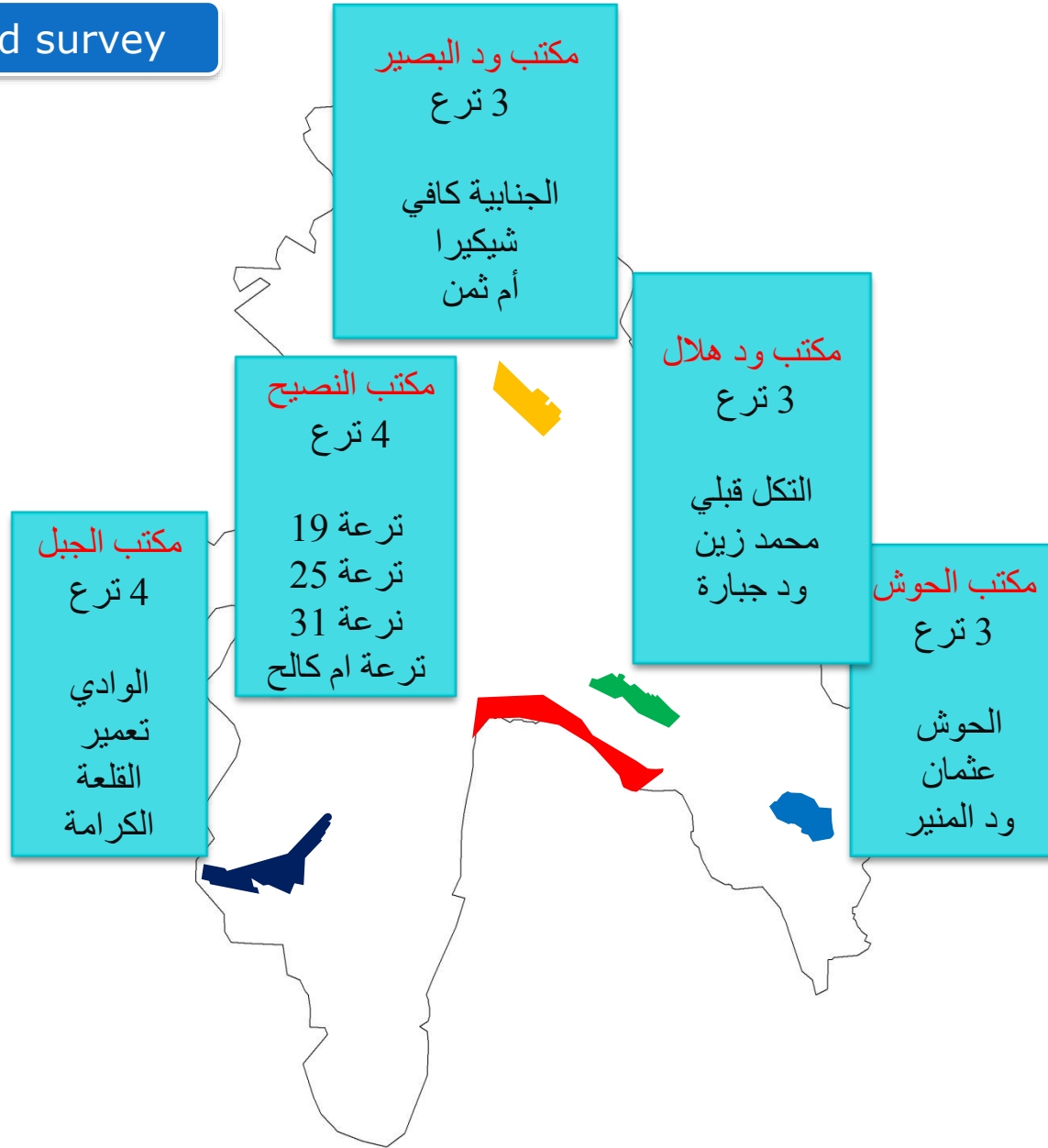
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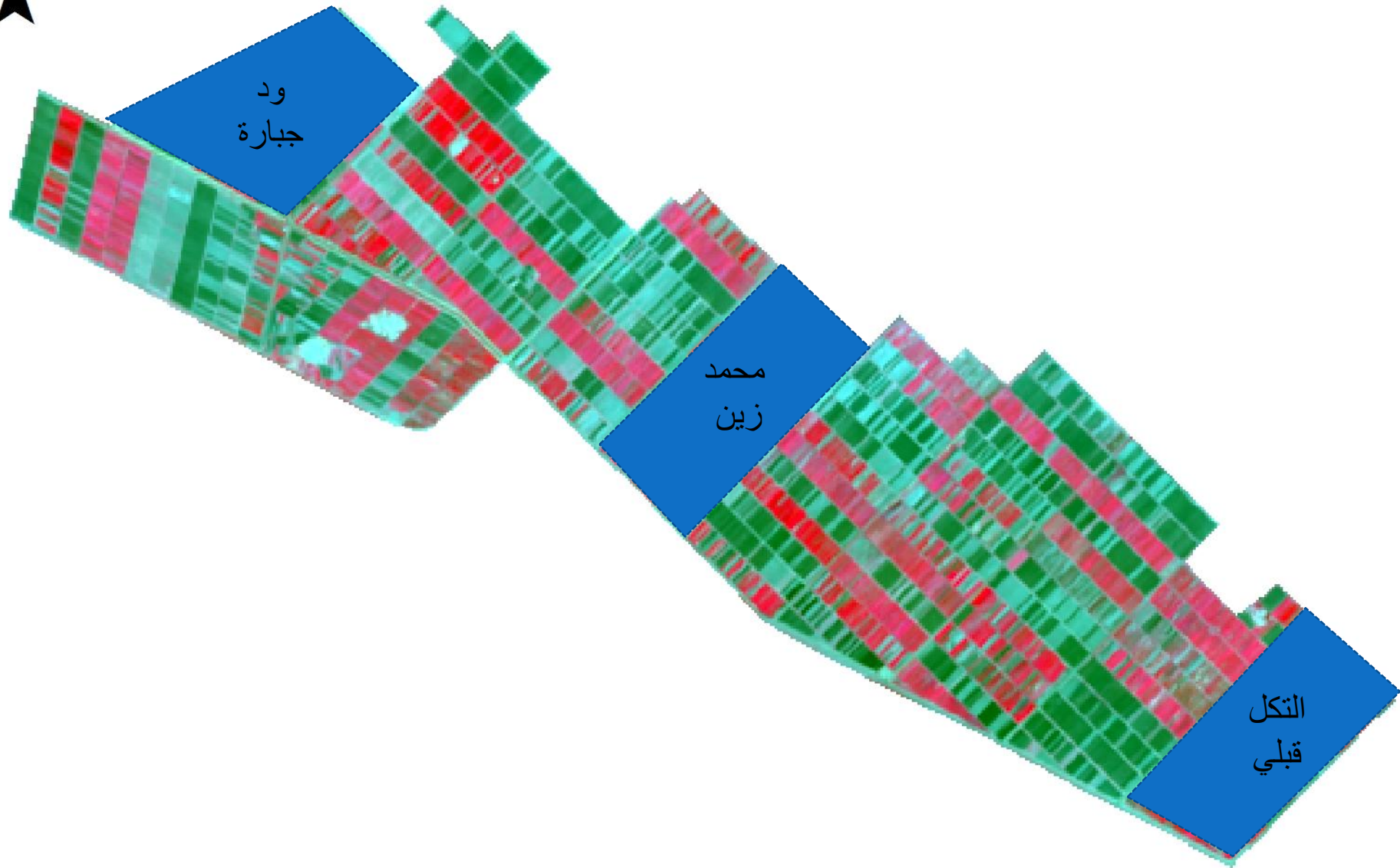
Result  
Wad Hilal  
El Naseeh  
Wad Basir  
El Hosh  
El Gabel

Gezira Result  
summer

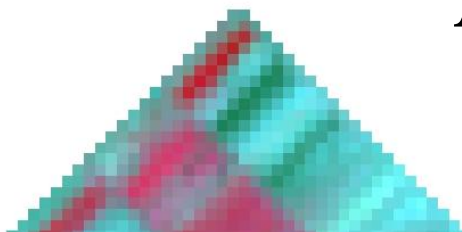
## Field survey



Wad Hilal 9-10-2016







Excel ribbon showing tabs: Alignment, Number, Styles, Cells, Editing. Sub-tabs include Merge & Center, Conditional Formatting, Format as Table, Cell Styles, Insert, Delete, Format, Clear, Sort & Filter, Find & Select.

J	I	H	G	F	E	D	C	B	A		
				الحصر من خلال : المركز		الترعة: محمد زين		12/10/2016	التاريخ:	1	
				المساحة							2
الفني	ملاحظات	بور	علف	جناثن	عدسية	قطن	فول	ذرة	رقم التمرة	3	
	سليمان	بصل	12		2.5	26.5		2.5	46.5	1	
	سليمان		90							2	
	سليمان		90							3	
	سليمان		90							4	
	سليمان		90							5	
	سليمان		12.5			2.5		75		6	
	سليمان		-13.75			3.75		100		7	
	سليمان		18.75			31.25		8.75	31.25	8	
	سليمان		6.75			9			74.25	9	
	سليمان		11			66.25		3	9.75	10	
			407.25	0	2.5	139.25	0	189.25	161.75	المجموع	
										15	
										16	





# *Methodology*

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Acquisition of the satellite  
data (2 scenes/month)



Field Survey (2)



Image Processing



Land-use/land-cover  
(LULC) maps



Accuracy Assessment

Compare Between (Area from  
Satellite image, Area from HRC )



**Error From Canal**

Error Block= Average (Errors From  
Canals)



**Error From Block**

Error Gezira = RMSE (Errors From  
Blocks)





Area from HRC	Area from Office	Area from Satellite image
????	????	????

المساحة من HRC لها درجة ثقة بحدود 100 %  
ولهذا نعتبرها هي *Reference data*

N

WAD HILAL

ERROR 3

ERROR 2

ERROR 1

**AVERAGE** (error1,error2,error3)

لمعرفة متوسط الخطأ على مستوى التربة و يمكن  
تعميمها للمكتب



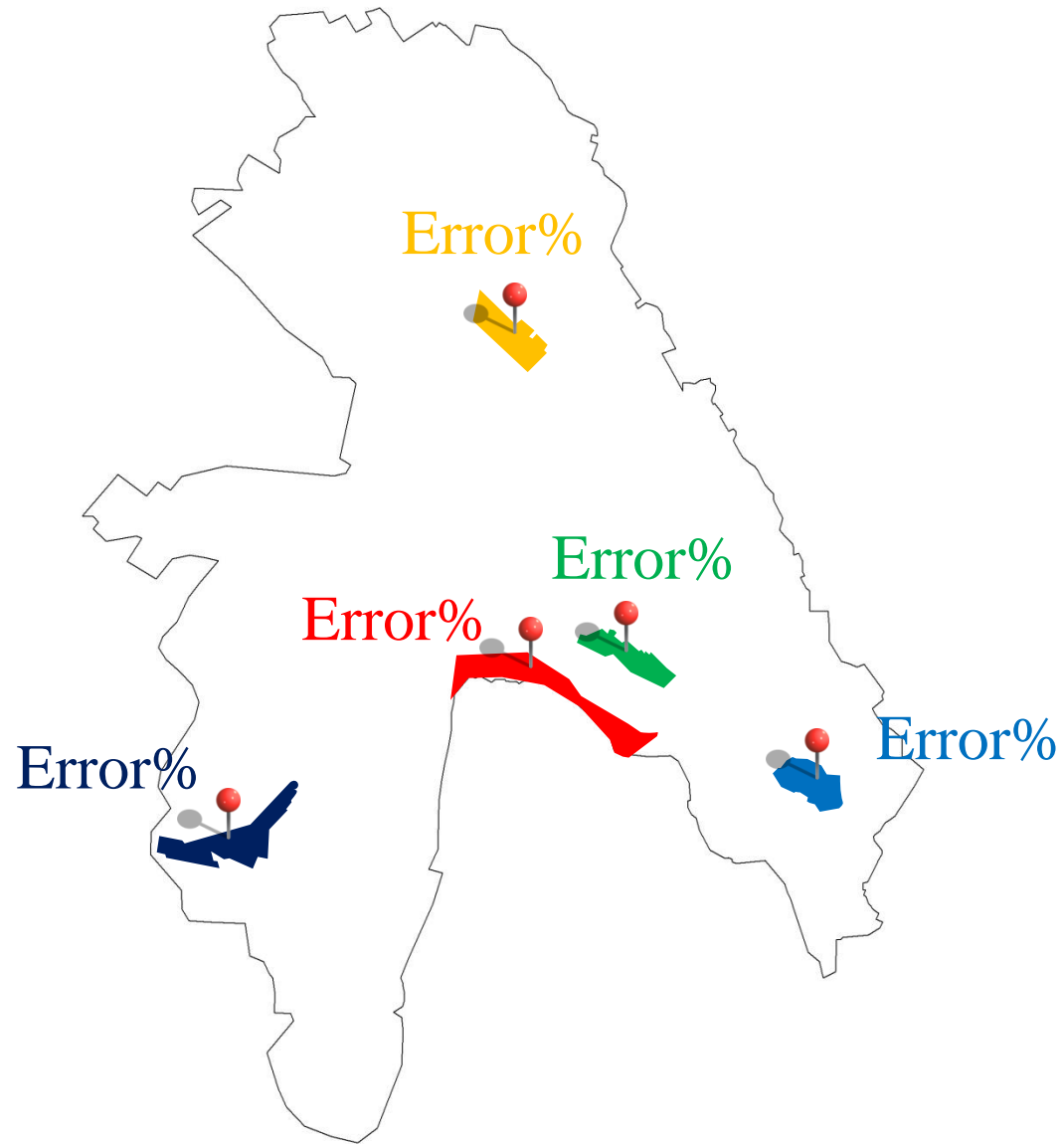
HRC

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HRC

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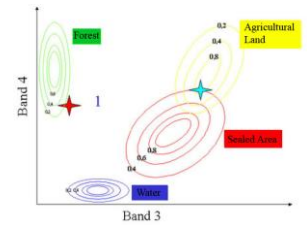
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Wad Basir  
El Hosh  
El Gabel

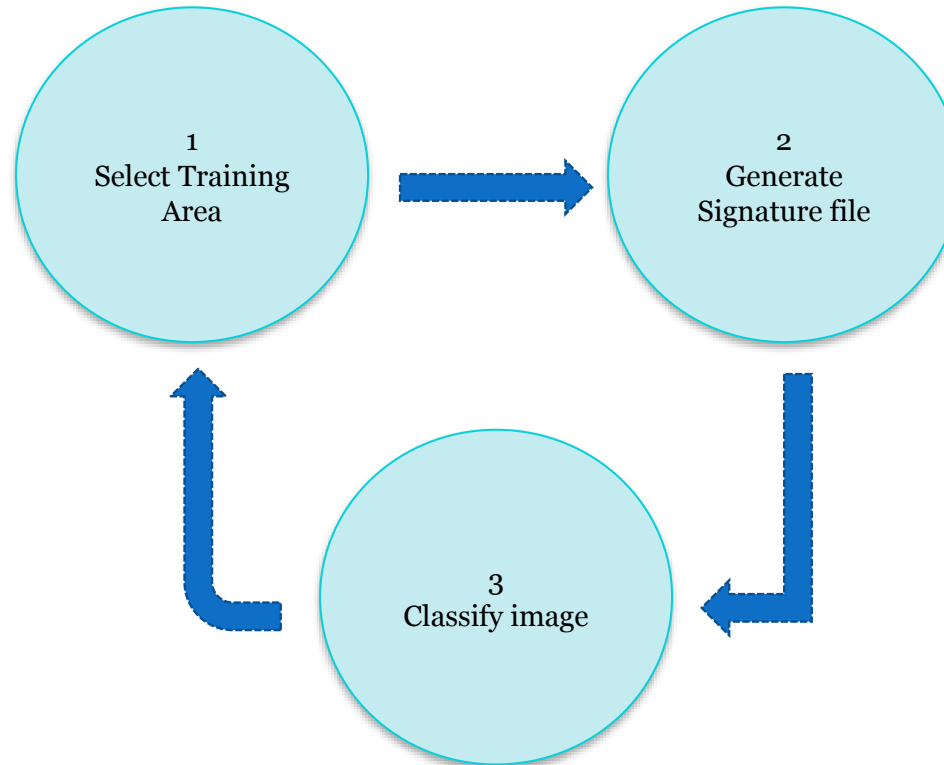
Gezira Result  
summer

# Image Analysis :Method 1 (MLC)

## Maximum Likelihood Classification



The most common method for supervised classification.





HRC

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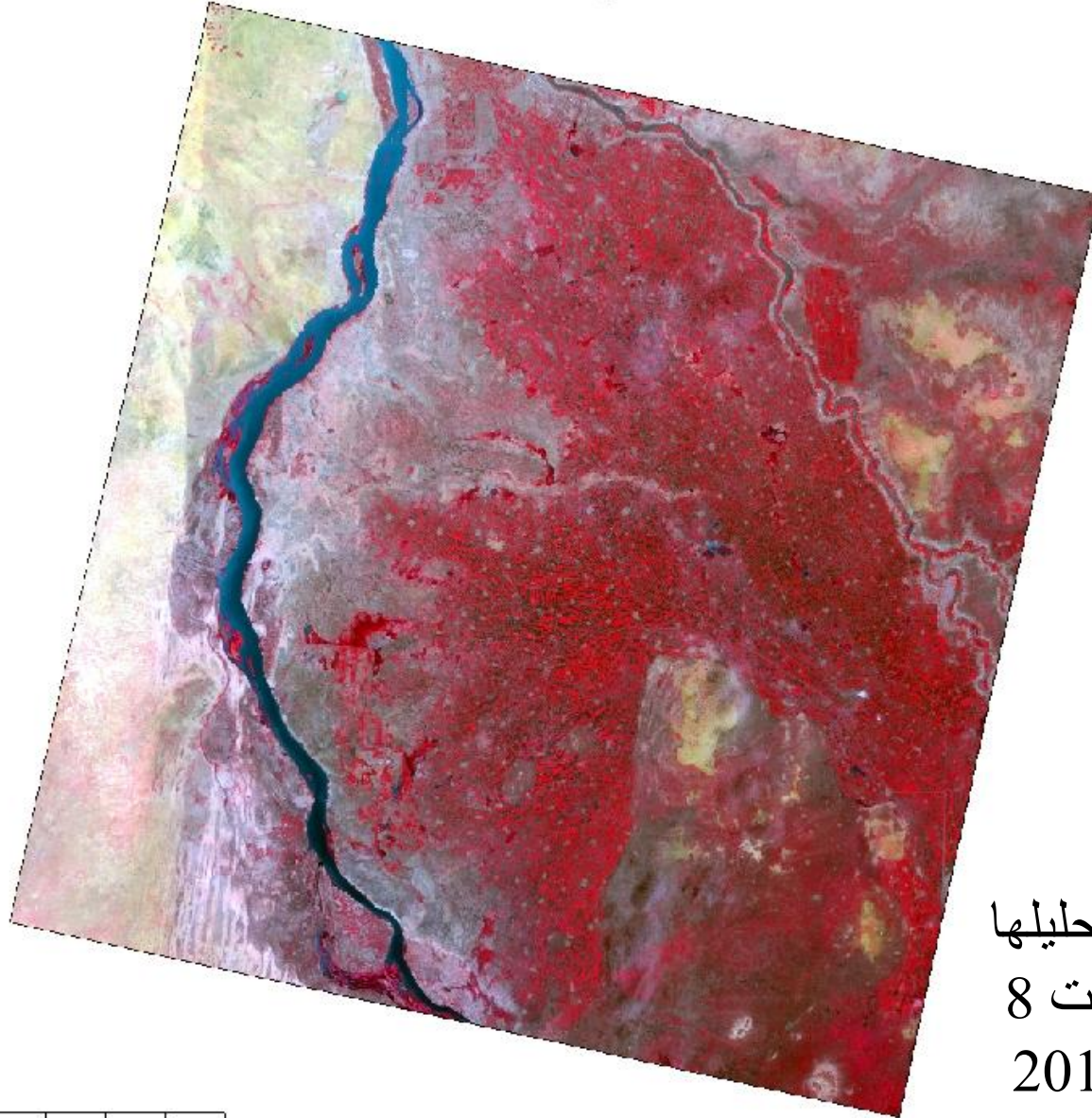
# Image Analysis :Method 2 (OBIA)

## Object Based Image Analysis

supervised Classification & unsupervised Classification



Landsat 8 satellite Image : 26-09-2017



الصورة التي تم تحليلها  
هي صور لاندسات 8  
بتاريخ 2017-9-26

0 25 50 100 Kilometers



# الصورة التي تم تحليلها هي صور لاندسات 8 بتاريخ 2017-9-26

		Summer			
		Cultivated Area	Sorghum	Groundnut	COTTON
ElHosh	Average	0%	8%	-17%	-5%
	RMS	3%	10%	12%	9%
Wad Basir	Average	-6%	-4%	-5%	-5%
	RMS	9%	14%	15%	11%
Elhaseeh	Average	1%	2%	-2%	5%
	RMS	3%	5%	6%	6%
Wad Hilal	Average	-3%	11%	6%	
	RMS	4%	12%	7%	
AL Jabel	Average	5%	-5%	5%	
	RMS	8%	11%	13%	

## Result

	Cultivated Area	Sorghum	Groundnut	Cotton
Error Form BLOCKS	4.1%	7.0%	8.6%	4.9%
Error Form Canals	5.8%	9.5%	11.4%	8.2%
Number . Canals	17			
	Cultivated Area	Sorghum	Groundnut	Cotton
Number . Canals . Used	16	16	14	9

Block	Canal	diff OBIA - MLC	Avg. MLC & OBIA	Cultivated diff HRC - Office	Cultivated diff HRC - RS	diff S	diff G	diff C	ملاحظات
El Hosh	elhosh	11	158	-4%	-4%	8%		-11%	
	Osman	-2	415	14%	0%	2%	-17%	5%	
	wadmoneer	19	68	-14%	3%	15%		-9%	
Wad Al Baseer	Kafi		1369		1%	7%	14%	8%	
	Shekira		1084		-15%	-18%	-17%	-11%	حشائش
	Umtumon		524		-6%	-2%	-12%	-13%	
Al Naseeh	Canal 19	-19.52	455.5	3%	4%	4%	0%	4%	
	Canal 31	-2.85	783	3%	1%	-4%	2%	10%	
	Canal 25								سحب
	Um Kalih	-5.39	247.5	-7%	-2%	6%	-9%	0%	
Wad Hilal	Kobli	-8.18	343.5		-4%	5%	1%		
	Mohamad Zeen	-4.94	456		0%	15%	4%		
	Wad Gobara	-6.51	317		-7%	13%	12%		
Al Jabel	Wadi	-3.66	529	10%	8%	-11%	9%		
	Taamir	-5.97	397	-2%	0%	-3%	19%		
	Kalaa	-2.10	240.5	7%	3%	-17%	4%		
	Al Karama	-0.25	409	8%	10%	10%	-14%		
	AVERAGE					-0.3%	2%	0%	-2%
MIM	-19.5181	68			-15%	-18%	-17%	-13%	
MAX	18.66667	1369			10%	15%	19%	10%	

## Summer

Block	diff OBIA - MLC	Avg. MLC & OBIA	diff HRC - Office	diff Office- RS	diff S	diff G	diff C
El Hosh							
Wad Al Baseer							
Al Naseeh							
Wad Hilal							
Al Jabel							
AVERAGE					#DIV/0!	#DIV/0!	#DIV/0!
MIM					0%	0%	0%
MAX					0%	0%	0%





HRC

الصورة التي تم تحليلها هي صور لاندسات 8 بتاريخ 2017-9-26

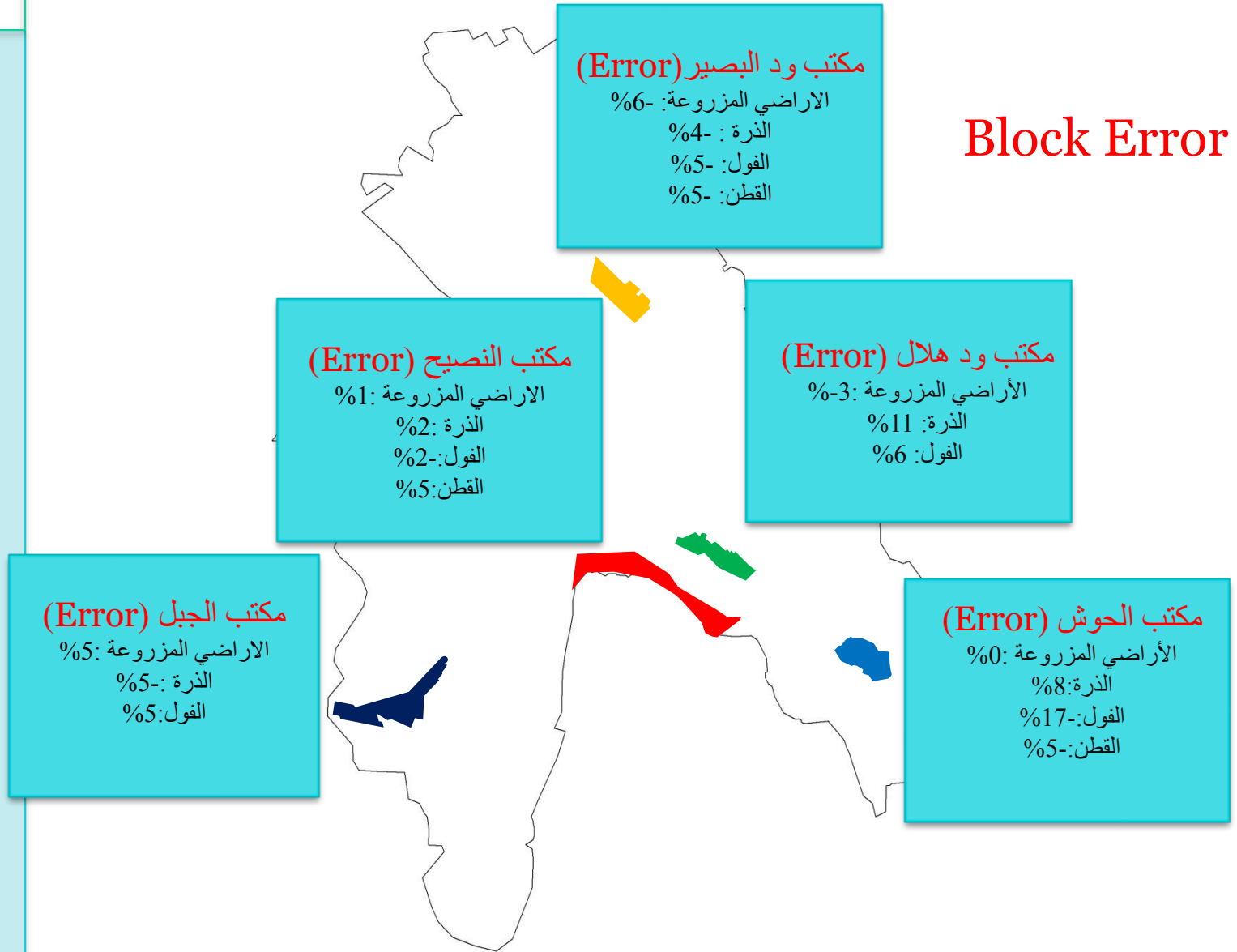
Introduction  
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**Result**  
Wad Hilal  
El Naseeh  
Wad Basir  
El Hosh  
El Gabel

Gezira Result  
summer

**Block Error %**





HRC

## Blocks Error %

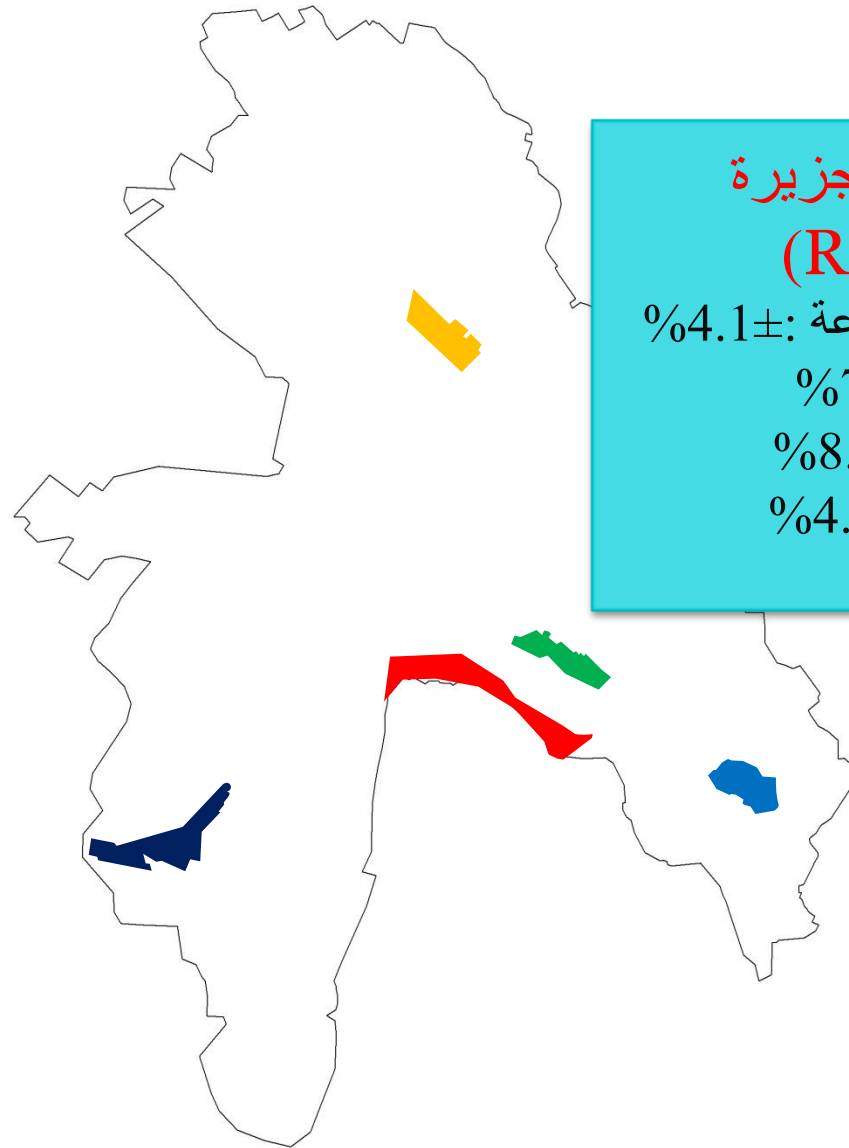
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# Blocks Error %

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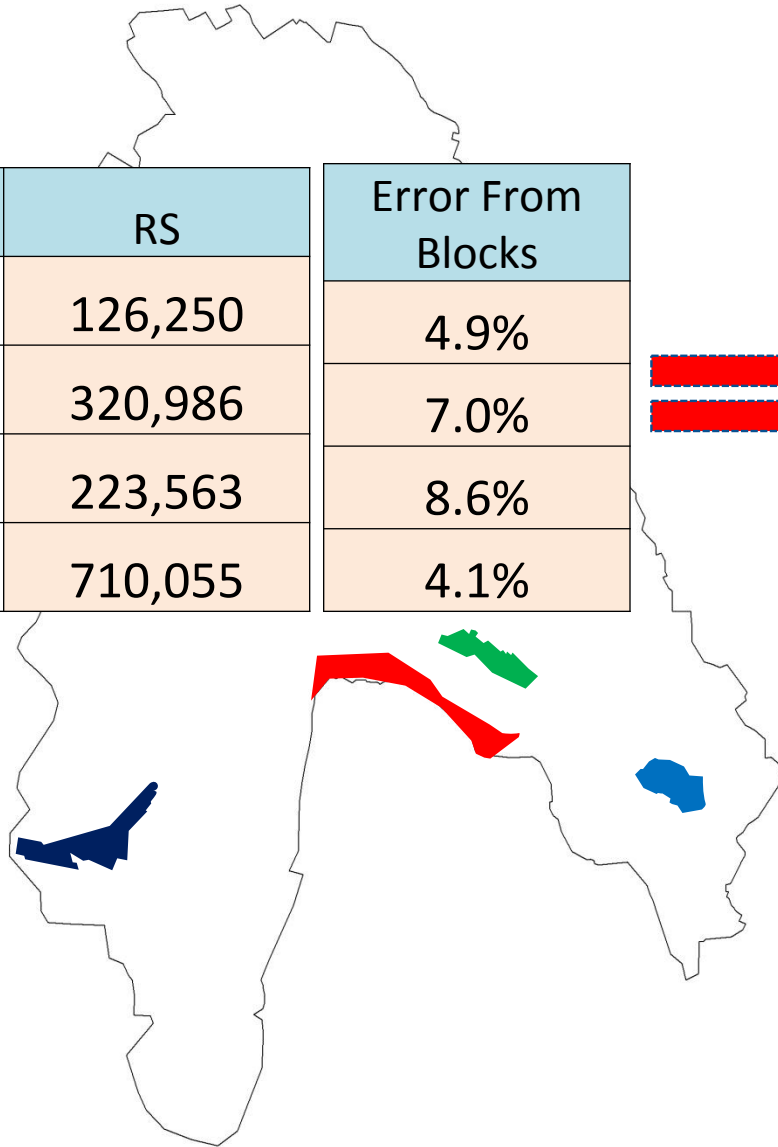
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Wad Hilal  
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El Gabel

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summer

المحاصيل	RS	Error From Blocks	From	To
قطن	126,250	4.9%	120,082	132,418
ذرة	320,986	7.0%	298,620	343,352
فول	223,563	8.6%	204,242	242,884
اراضي مزروعة	710,055	4.1%	681,165	738,945





HRC

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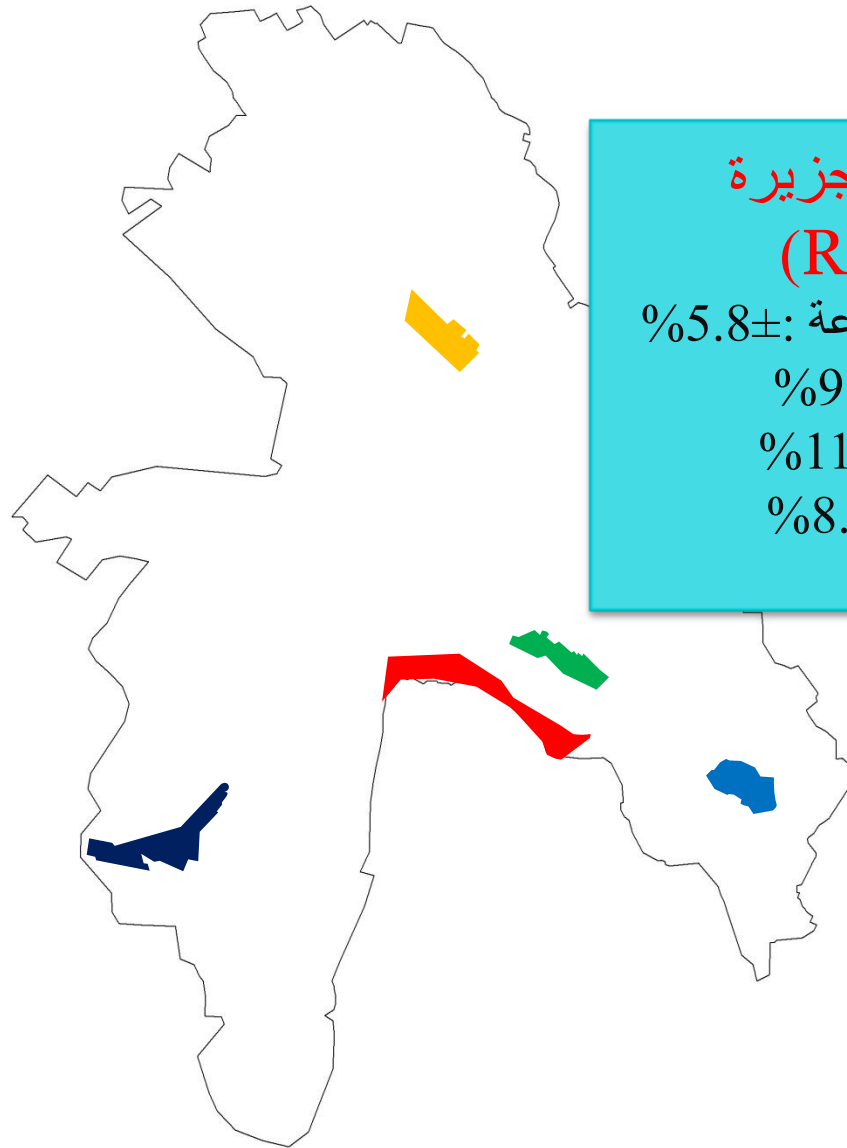
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## Canals Error %



### مشروع الجزيرة (RMSE)

الأراضي المزروعة:  $\pm 5.8\%$   
الذرة:  $\pm 9.5\%$   
الفول:  $\pm 11.4\%$   
القطن:  $\pm 8.2\%$





HRC

# Canals Error %

Introduction  
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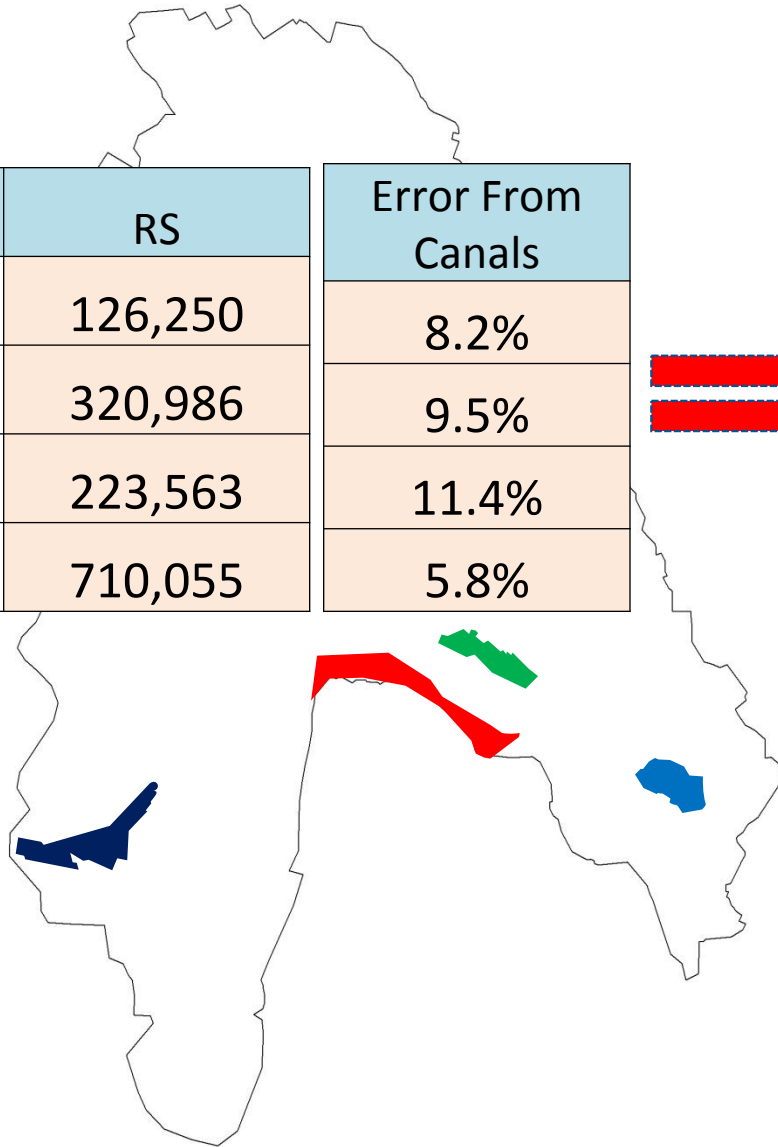
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المحاصيل	RS	Error From Canals	From	To
قطن	126,250	8.2%	115,871	136,629
ذرة	320,986	9.5%	290,436	351,536
فول	223,563	11.4%	198,004	249,122
اراضي مزروعة	710,055	5.8%	669,177	750,933





HRC

Introduction  
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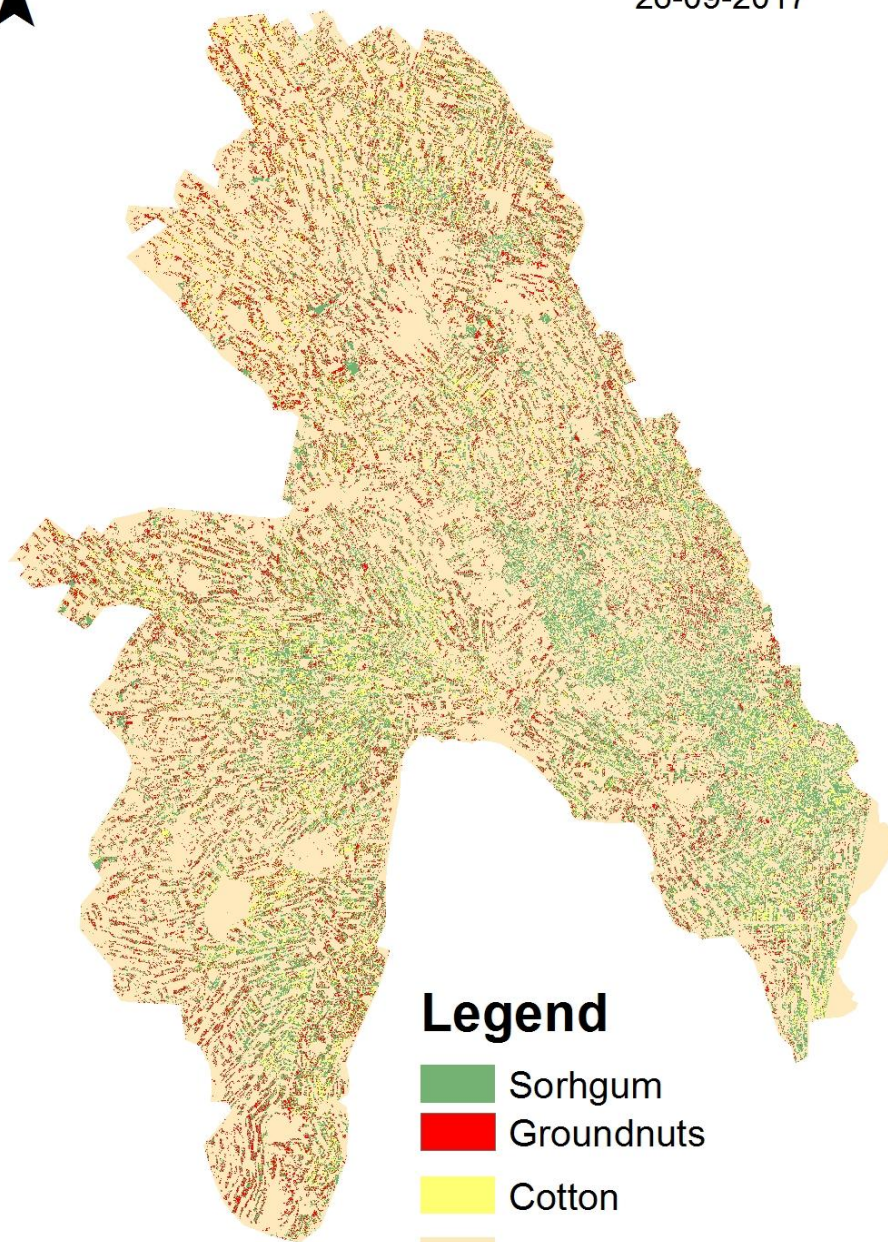
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Gezira Scheme  
26-09-2017



### Legend

- Sorhgum
- Groundnuts
- Cotton
- Fallow

0 5 10 20 KM



HRC

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El Gabel  
  
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summer

## Team

- البروف ياسر عباس.
- البروف أبو عبيدة.
- الدكتور خالد بيرو.
- جوليا عبد الكريم .
- تمني .
- رميساء فتح الرحمن.
- أمجد خليفة.
- رامي القواص.

### الفنيين والقياسيين :

- الطريفي.
- عادل داوود.
- ياسر عوضة.
- محمد صالح.