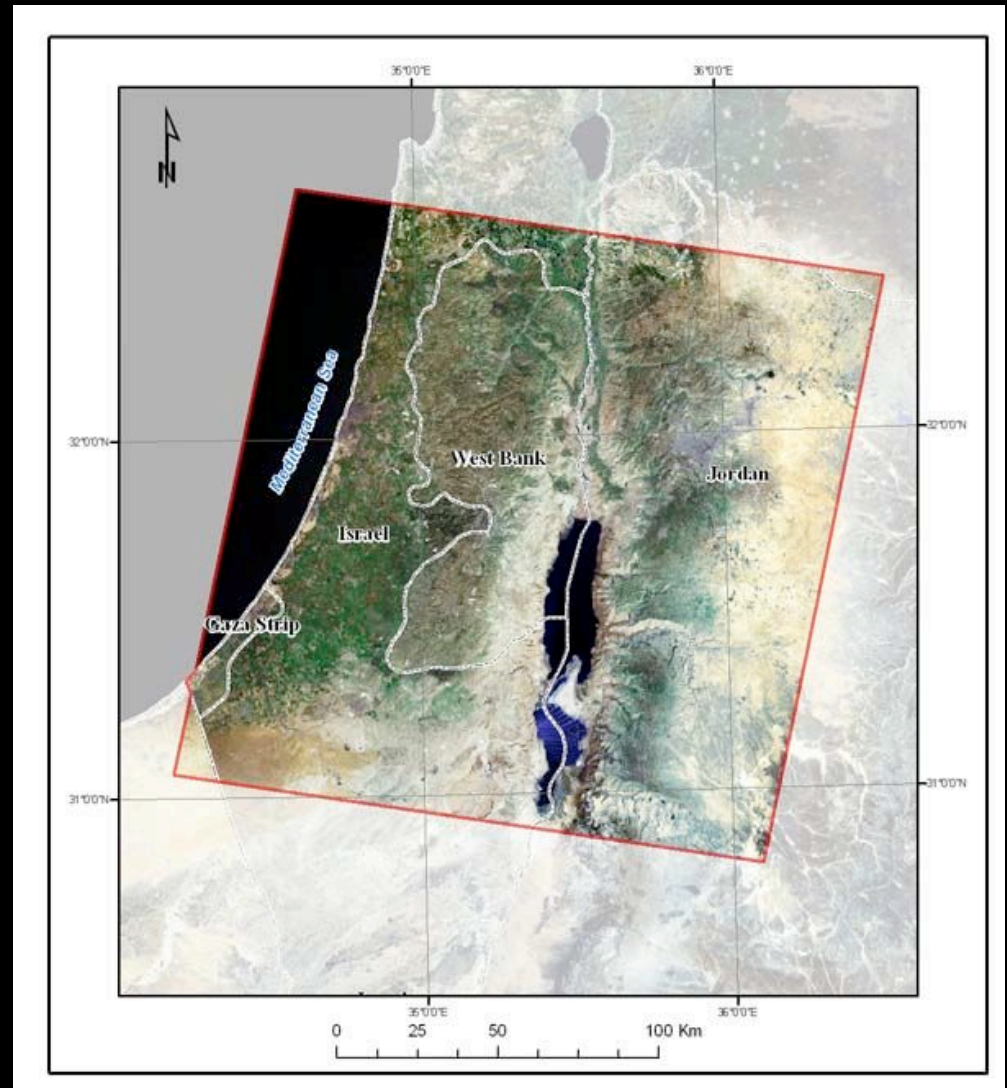


Land Cover Change in the Southern Levant: 1973 to 2003

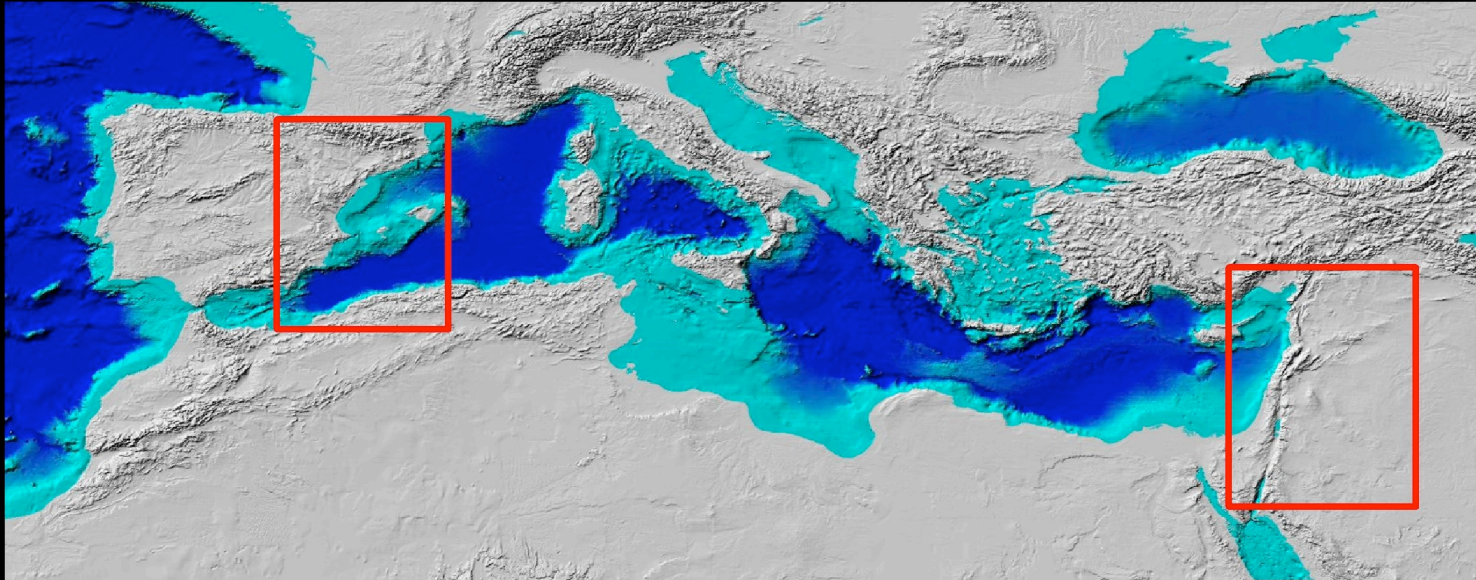
Mariela Soto, Pat Fall,
Michael Barton, Steven
Falconer, Hessam
Sarjoughian and Ramon
Arrowsmith

ASU



Presented at ASPRS Southwest technical conference, March 7, 2007

Landuse and Landscape Socioecology in the Mediterranean Basin



A Natural laboratory for the Study of the Long-Term Interaction of Human and Natural Systems



NSF Biocomplexity in the Environment Program, Grant # BCS-0410269

Land Cover Change in the Southern Levant: 1973 to 2003

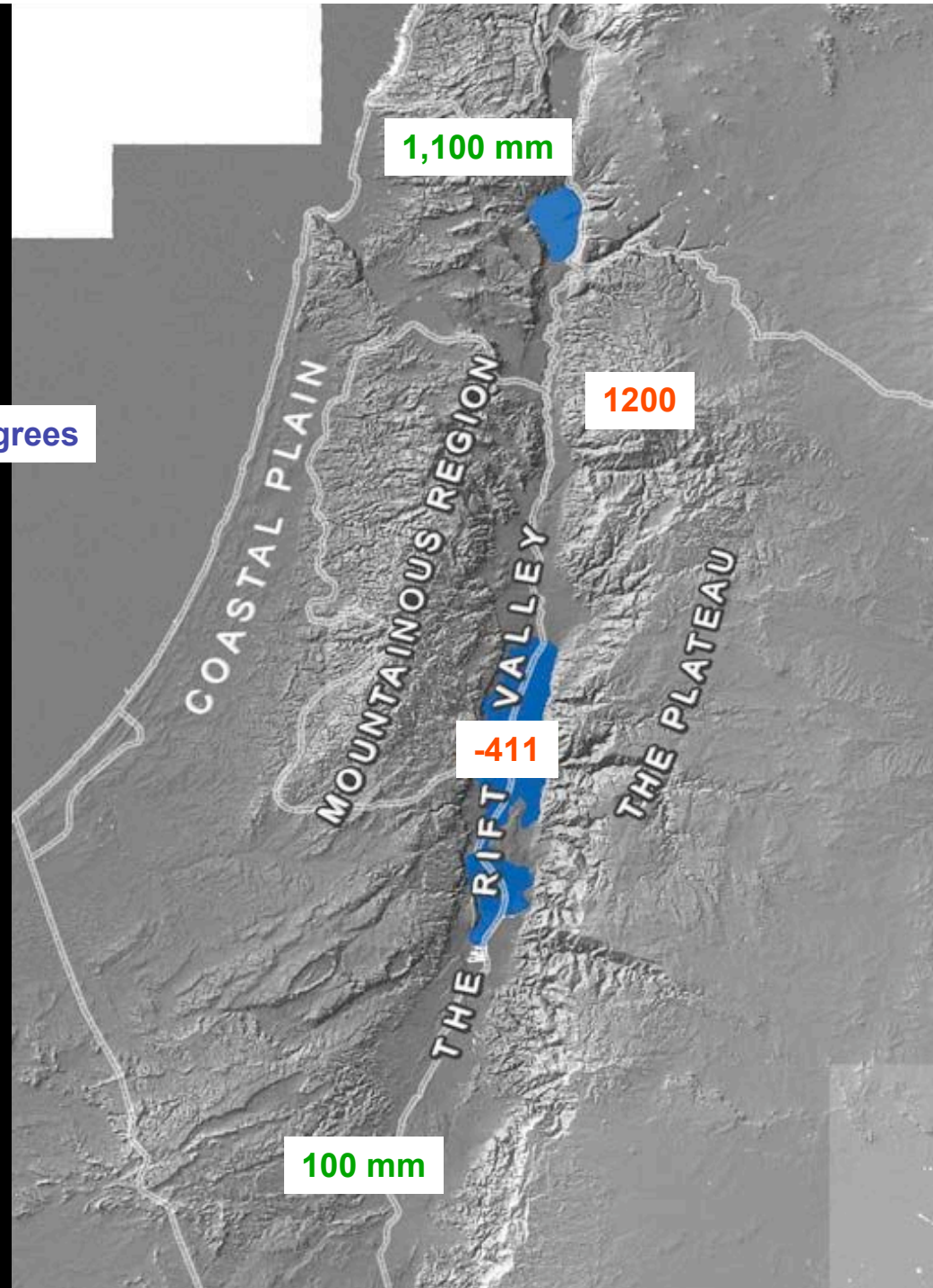


BACKGROUND

Elevation

Temperatures: 5 – 38 C Degrees

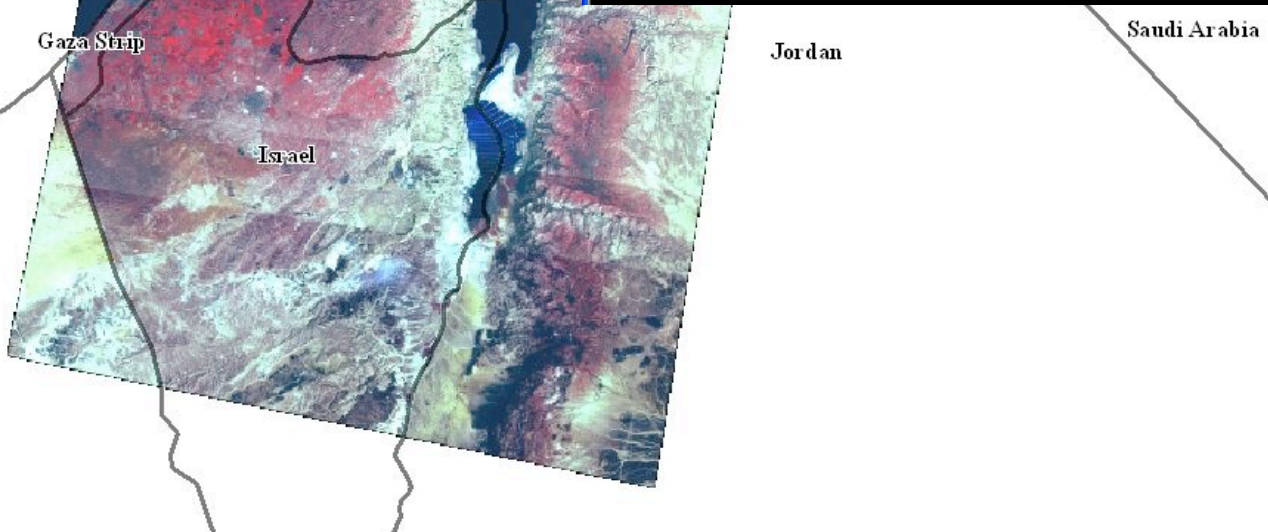
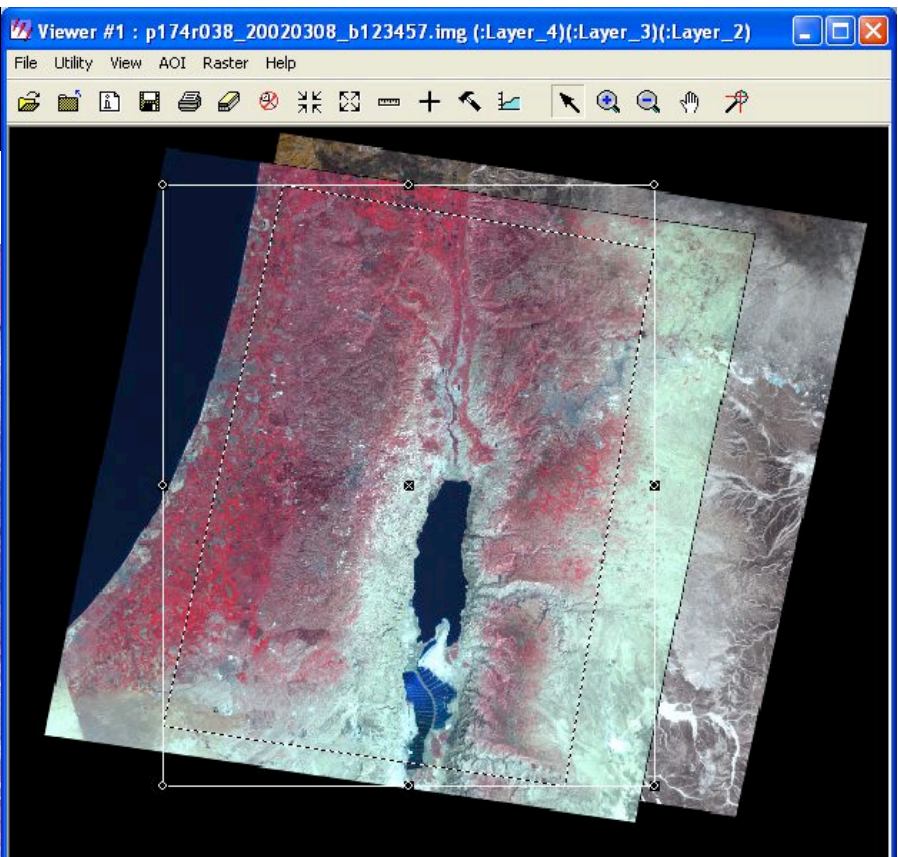
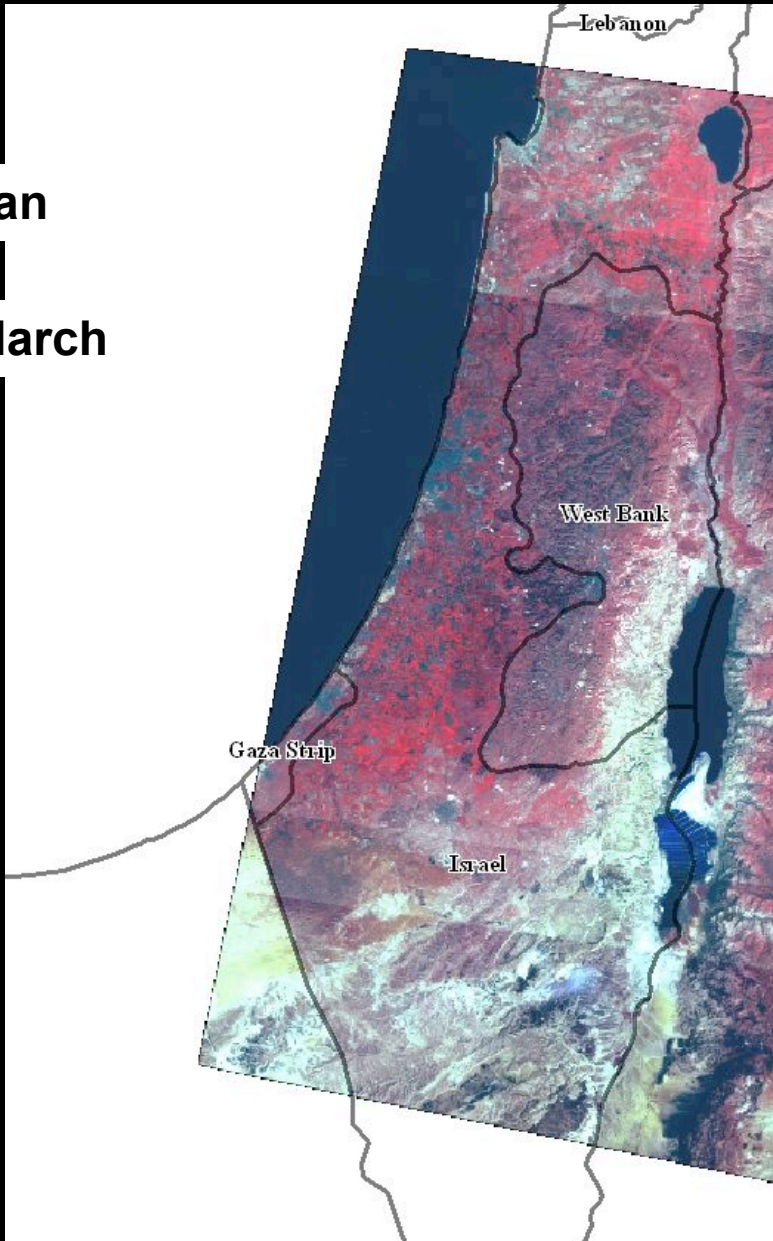
Rainfall: Oct - May




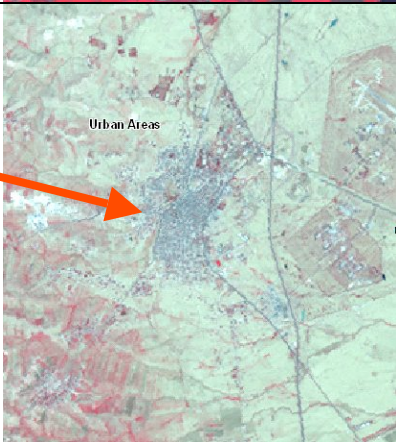

STUDY AREA

1973 - Jan

2003 - March



Classification

CLASS	CHARACTERISTIC	EXAMPLE
Irrigated fields	Gridded fields that appear bright red in false color composites.	
Non-Irrigated fields	Gridded fields that appear dark green and orange in false color composites.	
Urban	Irregular areas with bright spectral signature that usually irradiate from a center	
Shrub - Steppe - Oak woodland	Areas of irregular shape (that predominate in the mountains and plateau) that usually appear green and light red in a false color composite.	
Desert scrub	Usually the pixels with the brightest values in a false color composite. These areas predominate along lower elevations (e.g. The Jordan Rift Valley)	
Water	Usually pixels with the lowest digital numbers.	

Classification

STEP 1

Obtain and process

STEP 2

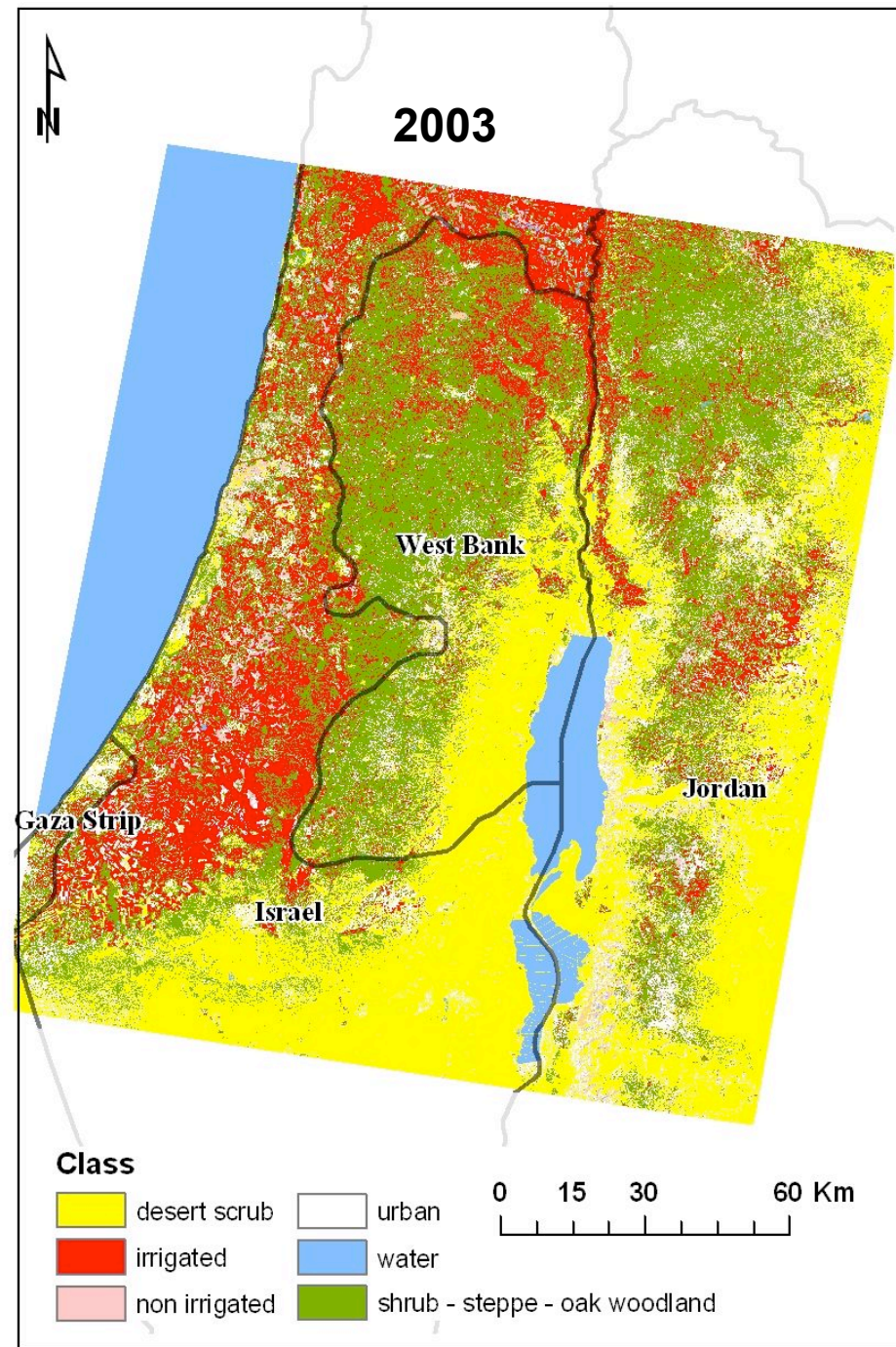
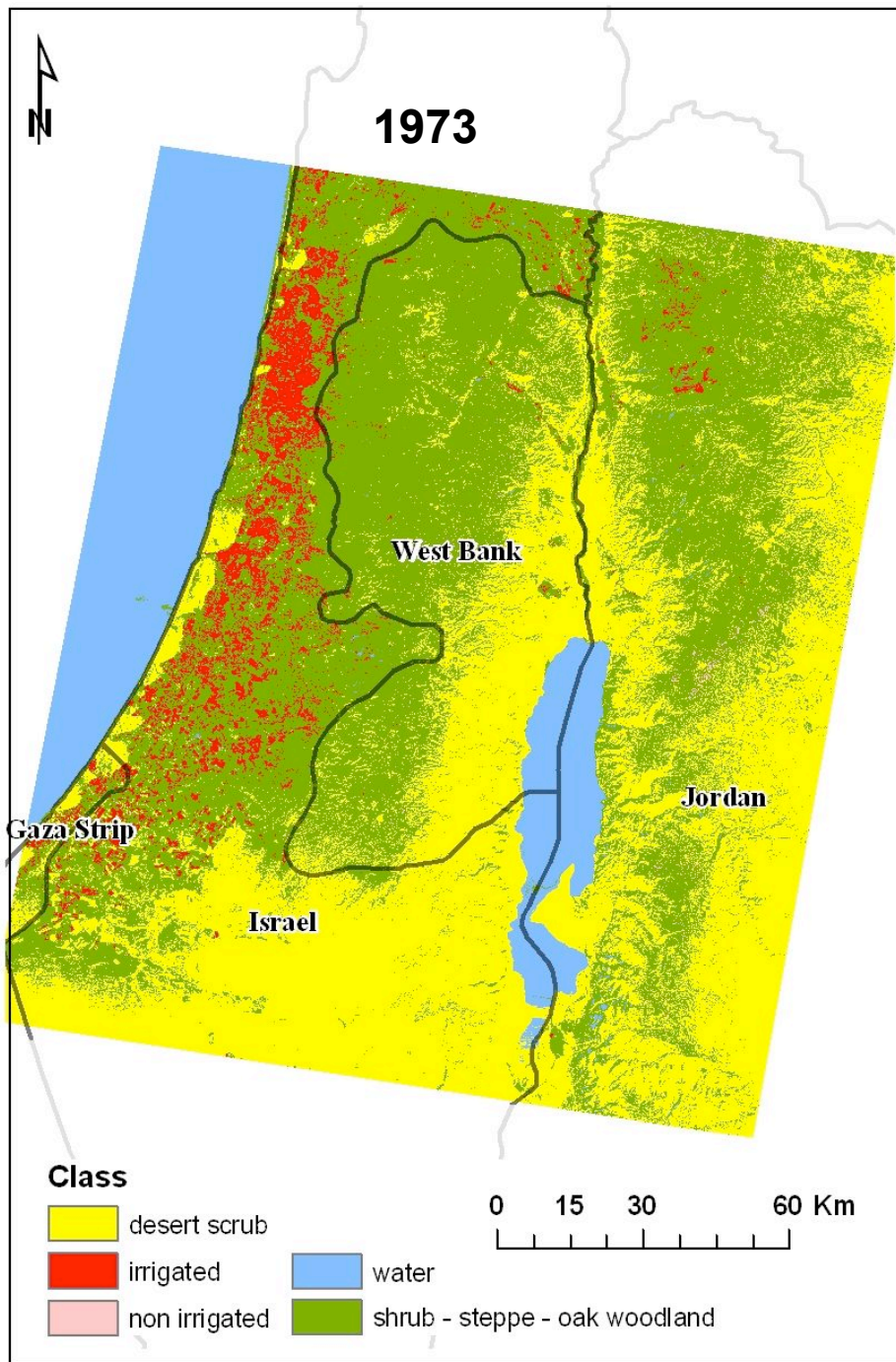
ISODATA
Unsupervised

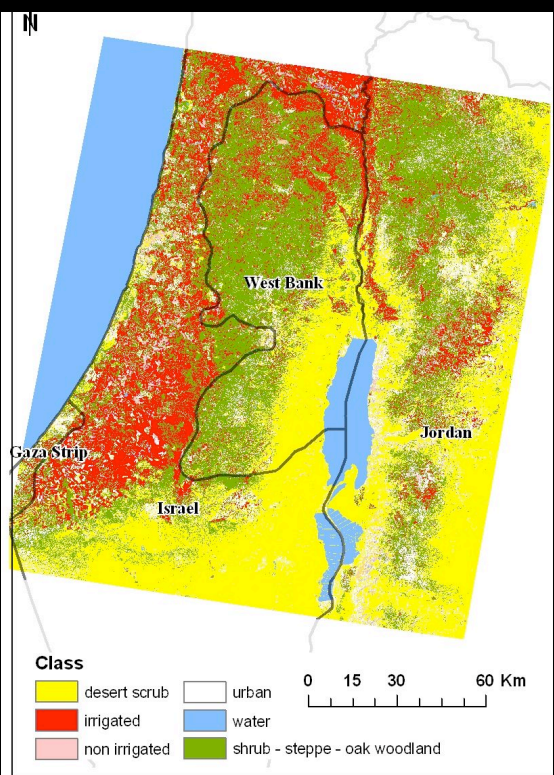
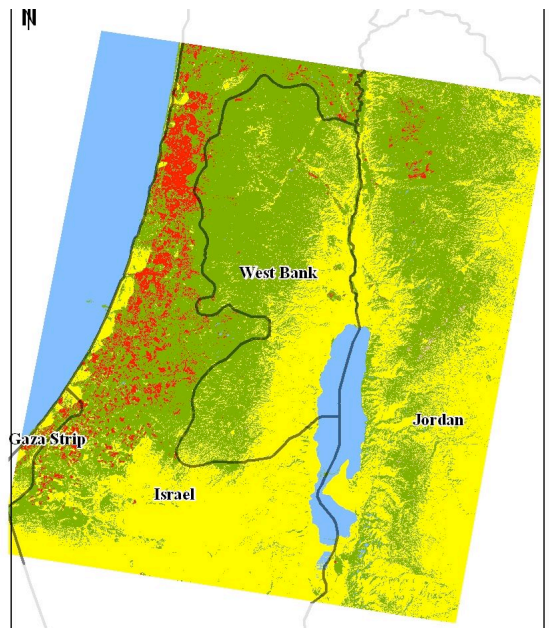
Supervised

3 X 3 Smoothing

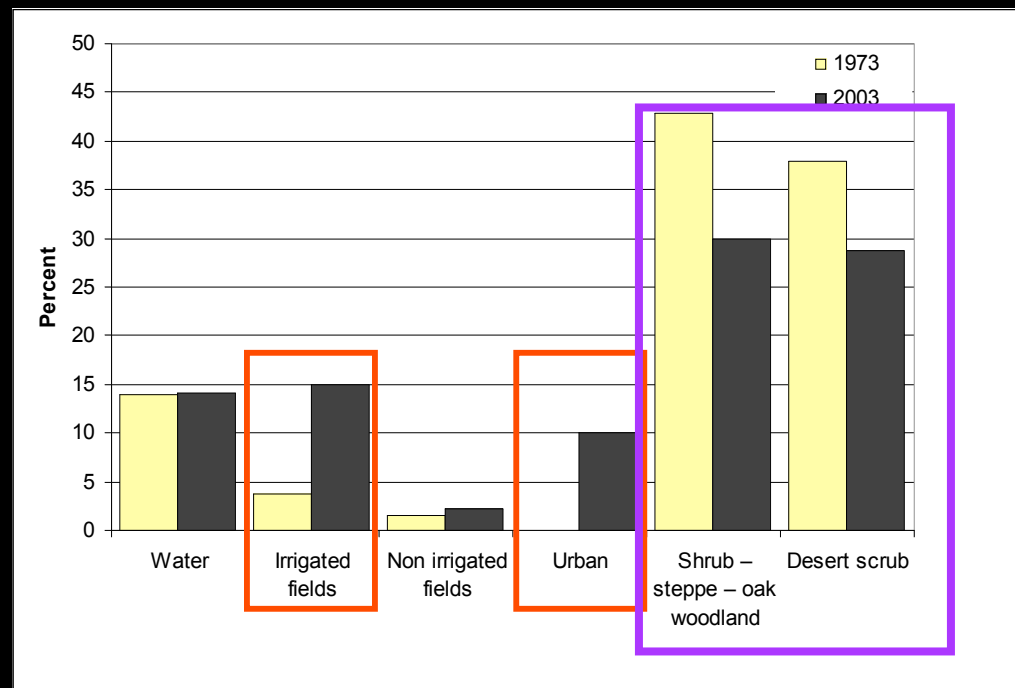
Accuracy







CLASS	1973 (Sq Km)	2003 (Sq Km)	% CHANGE
Water	4,063	4,060	-0.1
Irrigated fields	1,077	4,291	298.4
Non irrigated fields	432	655	51.6
Urban		2,900	
Shrub – steppe – oak woodland	12,485	8,643	-30.8
Desert scrub	11,062	8,255	-25.4



Accuracy Assessment

Class name	Reference totals	Classified totals	Number correct	Producers accuracy	Users accuracy	Kappa
1973						
Water	18	17	17	94.44%	100.00%	1
Shrub - Steppe - Oak woodland	35	32	21	60.00%	65.63%	0.4712
Irrigated fields	11	12	9	81.82%	75.00%	0.7191
Non-irrigated fields	3	10	3	100.00%	30.00%	0.2784
Desert scrub	33	29	24	72.73%	82.76%	0.7427

Overall Classification Accuracy = 74.00%

Overall Kappa Statistics = 0.6512

Class name	Reference totals	Classified totals	Number correct	Producers accuracy	Users accuracy	Kappa
2003						
Water	15	15	15	100.00%	100.00%	1
Desert scrub	30	22	21	70.00%	95.45%	0.9351
Non-irrigated fields	7	10	4	57.14%	40.00%	0.3548
Shrub - Steppe - Oak woodland	20	23	16	80.00%	69.57%	0.6196
Irrigated fields	13	16	13	100.00%	81.25%	0.7845
Urban	15	14	6	40.00%	42.86%	0.3277

Overall Classification Accuracy = 75.00%

Overall Kappa Statistics = 0.6939

