



Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing L	ink "URL"
1	Potential Tsunami	Image Processing	Tsunami extreme events present	2018	https://doi.org/10.100	7/s10661-018-6876-z.
	Hazard, Vulnerability	/ GIS / Tsunami	a highly significant hazard and			
	and Risk Assessment to	Phenomena /	considerable risk to the coastal			
	the City of Alexandria,	Hazard	communities. The continued			
	Egypt	Assessment,	occurrence of tsunami incidents,			
		Vulnerability	together with population			
		Assessment /	growth, increases the risk in			
		Risk Assessment	coastal communities. Two			
			known catastrophic historic			
			tsunamis in Alexandria occurred			
			in the years 365 and 1303 AD,			
			with reported wave heights of 1			
			m and 2.9 m, respectively.			
			Approximately 5000 people lost			
			their lives and 50,000 homes			
			were destroyed in the city after			
			the earthquake in 365. The 1303			
			tsunami destroyed the great			
			lighthouse of Alexandria, one of			
			the seven wonders of the ancient			
			world. In order to avoid such			
			events in the future, a detailed			
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knowledge about the tsunami phenomenon and its potential risk is needed. In this paper, the vulnerability and risk to the city of Alexandria will be examined by remote sensing and GIS techniques considering three scenarios. Methodology used depends on building a comprehensive GIS in addition to recent satellite images. After digitizing raster data, it was then stored into a vector format. A digital parcel map was created; attributes (like distance to shore line, elevation, land use/cover, and population) for each polygon were added. Using the Shuttle Radar Topography Mission images, a digital elevation model was created, to test all the tsunami scenarios (based on 5 m, 9 m, and 20 m wave's height). Finally, vulnerability analysis including physical as well as social and economic constraints was Page 2 of 35 مستوى سرية الوثيقة: استخدام داخلي Doc. No. (PUA-IT-P01-F14) Publications Template Rev. (1) Date (30-12-2020) Issue no.(1) Date (30-12-2020) Document Security Level = Internal Use



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			executed for the determination									
			of the vulnerability level of									
			elements. Results indicated that									
			Alexandria city is highly									
			vulnerable to tsunami hazard.									
			Very high risk covers the biggest									
			portion of the area in Alexandria									
			(49.16% and 58.71%), followed									
			by high risk (30% and 28.41%),									
			medium risk (13.61% and									
			7.76%), and low and very low									
			risk (20.82% and 12.88%).									
2	Assesses the Resilience	Image Processing	Alexandria Governorate is	2018		DOI: 10.19080/IJES	NR.2018.12.555841					
	Index to Sea Level Rise	/ GIS / Satellite	vulnerable to sea level rise risks,									
	Risk of Alexandria	Images	especially with its current high-									
	Governorate, Egypt		density coastal communities and									
			the rapidly increasing population									
			rates. Most of the Governorate's									
			inhabitants are living in the low-									
			lying land and some are even									
			below sea level. Moreover, the									
			Governorate has been identified									
			as one of the 'Mediterranean									
			vulnerable sites. This paper									
			assesses the resilience of									
			Alexandria Governorate to sea									
			level rise risk, focusing on hazard									
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			assessment (Inundation) as one of the most significant physical impacts. Resilience index to SLR for each district in the study area is developed using vulnerable built-up areas, vulnerable population and socioeconomic conditions (represented in the unemployment rate, annual population growth and Human				
			Development Index (HDI).				
3	Assessment, Prediction	Image Processing	Mapping land use/land cover		2018	http://www.aun.edu.eg/arabic/	society/aubfer-oct-2018.html
	and Future Simulation	/ GIS / Satellite	(LULC) changes at regional				
	of Land Cover	Images / Future	scales is essential for a wide				
	Dynamics Using	Dynamics	range of environmental hazards				
	Remote Sensing and		and risk, including global				
	GIS Techniques.		warming, earthquakes, landslide,				
			erosion, flooding, etc. These				
			rapid changes adversely affect				
			the environment and have				
			potential economic and social				
			impacts. Thus, detailed accurate				
			information about changes is				
			urgently needed for updating				
			LULC maps, to provide				
			information for policymakers to				
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		support sustainable				
		development, and the				
		management of natural				
		resources. The purpose of this				
		paper was to extract reliable land				
		cover information from two				
		Landsat imageries with				
		moderate resolution (Landsat 5				
		TM and Landsat 8 OLI) over a 15				
		years period (1999 to 2014)				
		using post-classification change				
		detection analysis. Traditional				
		post-classification change				
		detection approach based on				
		pixel-based classification.				
		However, in this paper, both of				
		pixel based and segment-based				
		classification approaches are				
		deployed and the				
		appropriateness of the				
		classifications to derive accurate				
		land cover maps. Then, Markov				
		model is used to predict and				
		simulate trends of LULC changes				
		during the period of 1999 to				
		2014 and a future land cover				
		map of the year 2050 are				
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			produced. The results showed					
			that image segmentations led to					
			better classification accuracy					
			(86.67% in 1999 and 94.09% in					
			2014). Vice versa, traditional					
			classification led to poorer					
			accuracy (83.33% in 1999 and					
			93.33% in 2014).					
4	Assessment of Urba	n Image Processing	Sea level rise (SLR) is closely		2018	https://	auber.journals.ekb.eg/article_133181	_f7beb2922e4f62e8ca4f412bb6ec38c8.pdf
	Community Resilienc	e / GIS / Satellite	linked to increasing global					
	to Sea Level Rise Usin	g Images	temperatures. Rising					
	Integrated Remot	e	temperatures					
	Sensing and GI	s	are warming ocean waters,					
	Techniques		which expand as the					
			temperature increases. This					
			thermal expansion was					
			the main driver of global sea					
			level rise for 75 - 100 years after					
			the start of the Industrial					
			Revolution,					
			though its relative contribution					
			has declined as the shrinking of					
			land ice has accelerated.					
			Alexandria					
			is vulnerable to sea level rise					
			risks, especially with its current					
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		high density coastal				
		nign-uensity coastai				
		communities and				
		the rapidly increasing population				
		rates. Most of the ``s inhabitants				
		are living in low-lying land and				
		some are even below sea level.				
		Moreover, Alexandria has been				
		identified as one of the				
		"Mediterranean vulnerable				
		cites". This paper assessed the				
		resilience of Alexandria to sea				
		level rise				
		risk, focusing on hazard				
		assessment (inundation) as one				
		of the most significant physical				
		impacts.				
		Resilience index to SLR for the				
		ten-urban district in the study				
		area is developed using				
		vulnerable				
		built-up areas. vulnerable				
		population and socioeconomic				
		conditions (represented in				
		unemployment				
		rate annual population growth				
		and Human Dovelopment Index				
		and Fullian Development index				
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		1	T					
			(HDI). The results revealed that					
			the					
			resilience index ranged from "0"					
			for low resilience and "1" for high					
			resilience. The calculated					
			resilience index indicated that					
			urban districts in Alexandria had					
			different levels of resilience to					
			SLR					
			impacts. Sharq district had the					
			highest resilience that may be					
			attributed to the relatively high					
			HDI,					
			availability of high levels of					
			infrastructure and services in					
			addition to the improved					
			environmental					
			and demographic conditions.					
5	Vulnerability	Image Processing	Egypt suffers from freshwater		2019		https://doi.org/10.100	7/s11069-019-03571-x
	Parameters for Flash	/ GIS /	crisis, and the shortage is				<u></u>	//51100/ 01/ 055/1 <u>x.</u>
	Floods Using GIS	Vulnerability	predicted to become severe by					
	Spatial Modeling and	Assessment /	2025. Egypt is exposed to flash					
	Remotely Sensed Data	Satellite Images	floods, especially in Sinai					
	in El-Arish City, North of		governorate, causing rapid rises					
	Sinai-Egypt		of water in a short amount of					
			time and can trigger other					
			catastrophic hazards associated					
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		with damage, danger to human					
		life, properties and environment.					
		Flash floods may be considered a					
		source of water that can be					
		explored to meet the water					
		shortage problem. In this study, a					
		composite flash floods					
		vulnerability index based on an					
		integrated hydro-climatic and					
		physical vulnerability					
		component was created. The					
		composite index was based on					
		eight parameters including					
		rainfall distribution, elevation					
		and slope, flow direction,					
		streams, geomorphological					
		features, soil type and land cover.					
		The composite index was ranked					
		into three categories: high,					
		moderate and low. The index can					
		help identify the weak and					
		strong points to support the					
		decision-making process					
		concerned with water					
		management as an essential					
		prerequisite for Egypt					
		sustainable development. The					
	I	I			I		
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			results revealed that the urban,				
			vegetation cover, loamy sand,				
			sand dunes, the low elevation				
			and the flat areas are the most				
			affected by the flash floods in EL-				
			Arish City in Sinai governorate.				
			42% of Wadi El-Arish had low				
			vulnerability, 45% moderate				
			vulnerability and 13% high				
			vulnerability.				
6	Land Cover	Image Processing	The Qaroun Lake, Wadi El-		2019	https://link.springer.com/articl	e/10.1007/s10661-019-7339-
	Classification and	/ GIS / Image	Rayyan, and Wadi El-Hitan are			x	
	Change-Detection	Classification /	some of the most promising				
	Analysis of Qaroun and	Pattern	ecotourism destinations in Egypt				
	Wadi El-Rayyan Lakes	Recognition	due to their natural mineral				
	using Multi-Temporal		resources, wildlife, and				
	Remotely Sensed		biodiversity in addition to their				
	Imagery		historic heritage that dates back				
			to the age of The Pharos. These				
			natural resources should be				
			managed and maintained				
			without affecting the needs of				
			future generations. Land				
			use/land cover change is the				
			most important factor in causing				
			biodiversity loss. Accordingly,				
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I				
	the objectives of this study are to			
	identify, quantify, and model			
	future land cover changes using			
	remote sensing and GIS			
	techniques. To fulfill the			
	objectives of the study, a hybrid			
	image classification is employed			
	using the combination of			
	unsupervised and supervised			
	classification methods to detect			
	land cover types. Post-			
	classification comparison is used			
	to map changes in land cover			
	between 2000 and 2017.			
	Markov model is applied to			
	analyze, predict, and simulate			
	future land cover changes from			
	2017 to 2050. This is in order to			
	safeguard against the adverse			
	effects and negative			
	consequences of land cover			
	changes, preserve the natural			
	resources, and consequently			
	achieve goals of sustainable			
	development. The outcome of			
	this study can provide policy			
	makers and urban planners with			
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			the required information regarding the status of the environment and subsequently reduce pressure on natural resources in order to facilitate conservation planning and sustainable development.				
7	Application of satellite image processing and GIS-Spatial modeling for mapping urban areas prone to flash floods in Qena governorate, Egypt	Image Processing / GIS / Landsat-8 Satellite	Flash floods in Egypt are considered frequent meteorological natural hazards. Qena is one of the most Egyptian governorates prone to flash floods. Various flash floods events hit Qena from 1954 till 2016. Flash floods occurred in Qena on 28th October 2016 inundated houses and roads, generated losses in lives, damages to private and public property. The intensive rainfall coupled with the rapid urban expansion in Qena and along the Nile Valley could worsen the situation. Despite, the destructive impacts of the flash floods in Qena, flash floods can	2019		https://doi.org/10.1016/	j.jafrearsci.2019.05.015
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		be used as a valuable source of				
		fresh water as the study area is				
		classified as an arid zone and				
		characterized with the fresh-				
		water shortage. Integration of				
		remotely sensed data with the				
		Analytical Hierarchy Process and				
		Geographic Information Systems				
		spatial modeling presented				
		valuable analysis techniques in				
		this study. The present study				
		focused on mapping the spatial				
		distribution of flash floods				
		vulnerability in Qena's urban				
		areas. Ten indicators were used				
		to analyze the flood floods				
		namely; rainfall, soil, geology,				
		slope, elevation, flow direction,				
		drainage network, land cover,				
		total population, and population				
		density. The results revealed that				
		Qena, Qus, Naqadah, and				
		Dishna urban districts are the				
		most vulnerable to flash floods				
		and located in the very high zone				
		with 25.3%, 14.9%, 12.3%, and				
		9.8% respectively. The total				
1				1		
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			population situated at very high							
			and high vulnerability zone							
			reached represents 7.66% and							
			43.36% of the total population.							
			The obtained results considered							
			crucial information for decision-							
			makers for future effective flash							
			floods hazards mitigation,							
			assessment management,							
			planning, and sustainable							
			development.							
8	Coastal vulnerability	Image Processing	This study intends to map the		2020		https://doi.org/10.1016/j.	jafrearsci.2020.103751		
	assessment using GIS-	/ GIS /	relative coastal vulnerability					-		
	Based multicriteria	Multicriteria	index (CVI) for the							
	analysis of Alexandria-	Decision Analysis	administrative governorates of							
	northwestern Nile	/ Vulnerability	Alexandria and adjacent Behera							
	Delta, Egypt.	Assessment	in the northwestern coastal							
			margin of the Nile delta. In							
			addition to other common							
			environmental stresses, these							
			governorates are under threat							
			due to accelerated sea level rise							
			induced from climate change. Of							
			special interest is that the coastal							
			margin of the study area is							
			characterized by markedly							
	·	Page 14 of 25	tels is realized to a second			I	Dec No (DUA_IT DO1 F1A)			
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constructing geology, morphodynamics and land surface topography that varies from lowlying (-3 m below MSL) to high land (~20 m height). Therefore, nine physical and geological variables influencing the vulnerability of the coast are used in this study, including land seabed/beach elevation, beach type composition, (dissipative to reflective), relative sea level, historical shoreline change, tidal range, significant wave height, shore protection measures, and land cover. Results obtained from performing multi-criteria analysis of GIS indicates that about 16.58%, 15.45, 42.03%, 18.16 and 7.78% of the shoreline is under very high, high, moderate, low and very low vulnerability respectively. Of great concern is that although the low-lying broad depression (-1 to -3 m below MSL) east and Page 15 of 35 مستوى سرية الوثيقة: استخدام داخلي Doc. No. (PUA-IT-P01-F14) Publications Template Rev. (1) Date (30-12-2020) Issue no.(1) Date (30-12-2020) Document Security Level = Internal Use



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			southeast of Alexandria is			
			protected now by a combination			
			of natural shore-parallel			
			elevated ridges (up to 10 m) and			
			artificial shore-parallel detached			
			structures, it is likely to be			
			accidently flooded by			
			unexpected extreme storm or			
			tsunami events at the lowest			
			waterfront points.			
9	Application of Geo-	Image Processing	Water is the most crucial inputs	2020	https://doi.org/10.1016/j	.jafrearsci.2020.103767
	Spatial Analytical	/ GIS /	for sustainable development.			
	Hierarchy Process and	Multicriteria	Water shortage is the primary			
	Multi-Criteria Analysis	Decision Analysis	current and future world issue.			
	for Site Suitability of the		Egypt is facing a severe water			
	Desalination Solar		crisis dilemma in recent years.			
	Stations in Egypt.		The rapid population growth and			
			economic development in Egypt			
			lead to increasing pollution and			
			environmental degradation of			
			water quality, availability, and			
			accessibility. Climate change			
			could worsen the crisis. Water			
			desalination using solar cells was			
			considered an optimal solution			
			to water shortage as Egypt is			
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	located in the arid climate zone			
	with a high rate of the sun			
	shining hours nearly all year. The			
	objective of this paper was to			
	highlight the suitable areas for			
	the installation of future solar			
	desalination stations in Egypt as			
	a necessity to sustain water			
	resource management.			
	Geographical Information			
	Systems (GIS) and Multi-Criteria			
	Analysis (MCA) techniques were			
	the main tools to map suitable			
	sites for the installation of solar			
	desalination cells. The suitability			
	was ranked in five categories			
	starting from very high to very			
	low suitability. Results showed			
	that approximately 10.9%			
	(106,424.87 km2) of the area is			
	classified as very high suitability,			
	13.7% (134,412.7 km2) high,			
	17% (166,146.36 km2)			
	moderate, 40.2% (393,351.96			
	km2) low and 18.2%			
	(178,558,48 km2) as very low			
	for installing desalination			
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			stations. These results suggested					
			energy in the construction of					
			solar water desalination projects					
			as a strategic option to conquith					
			nuture estimates of water					
			shortage in Egypt.					
10	Integration of GIS-	Image Processing	Understanding the dynamics of		2020		https://doi.org/10	3390/w12061702
	Based Multicriteria	/ GIS /	floods in dry environments and					55567 W12001702
	Decision Analysis and	Multicriteria	predicting an accurate flood					
	Analytic Hierarchy	Decision Analysis	hazard man considering multiple					
	Process to Assess Flood		standards and conflicting					
	Hazard on the Al-		objectives is of great political and					
	Shamal Train Pathway		planning importance in the					
	in Al-Ouravvat Region		Kingdom of Saudi Arabia's vision					
	Kingdom of Saudi		for the year 2030 in order to					
	Arabia		reduce losses in lives property					
	, aubia.		and infrastructure The					
			objectives of this study are (1) to					
			develop a flood vulnerability					
			man identifying flood-prone					
			areas along the Al-Shamal train					
			railway pathway; (2) to forecast					
			the vulnerability of urban areas.					
			agricultural land, and					
			infrastructure to possible future					
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		floods hazard; and (3) to					
		introduce strategic solutions and					
		recommendations to mitigate					
		and protect such areas from the					
		negative impacts of floods. In					
		order to achieve these objectives,					
		multicriteria decision analysis					
		based on geographic					
		information systems (GIS-					
		MCDA) is used to build a flood					
		hazard map of the study area.					
		The analytic hierarchy process					
		(AHP) is applied to extract the					
		weights of eight criteria which					
		affect the areas which are prone					
		to flooding hazards, including					
		flow accumulation, distance					
		from the wadi network, slope,					
		rainfall density, drainage density,					
		and rainfall speed. Furthermore,					
		the receiver operating					
		characteristic (ROC Curve)					
		method is used to validate the					
		presented flood hazard model.					
		The results of the study reveal					
		that there are five degrees of					
		flooding hazard along the Al-					
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	ו מוייופאנ				
	(40.39%), respectively. View				
	(45.20%) and 59.87 km2				
	nave areas of 29.23 km^2				
	riooding hazards are shown to				
	vulnerable to high and very high				
	agricultural areas that are				
	Al-Nakhleh wadis. Urban and				
	Gharbiyeh and Hsaidah Umm				
	train track with the Haseidah Al-				
	the intersection of the Al-Shamal				
	These areas are concentrated at				
	length (72.59 km) of the track.				
	representing 73.55% of the total				
	areas constitute nearly 53.39 km,				
	low, and very low flood severity				
	Al-Makhrouk wadis. Moderate,				
	train pathway with the Bayer and				
	intersections of the Al-Shamal				
	and are concentrated at the				
	26.45% of the total path length,				
	path, which constitutes about				
	comprise 19.2 km along the				
	and very high hazard zones				
	very high to very low. The high				
	Shamar train path, ranging from				



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11	Mapping of GIS-Floo	d Image Processing	Drainage basins in dry and		2020	https://doi.org/10.3390,	/geosciences10090333	
	Hazard Using th	e / GIS / Hazards	semiarid environments are					
	Geomorphometric-		exposed to sudden, irregular					
	Hazard Model: Cas	e	flooding that poses a threat to					
	Study of the Al-Shama	al	urban areas and infrastructure.					
	Train Pathway in th	e	The associated risk is					
	City of Qurayya	t,	exacerbated by land use					
	Kingdom of Saud	li	changes. Geomorphometric					
	Arabia		analyses of drainage basins					
			based on geographic					
			information systems (GIS) are					
			essential tools for assessing					
			conceptual flood hazards.					
			Geomorphological data					
			extracted from high-precision					
			digital elevation models (DEMs)					
			provide valuable information for					
			modeling the geomorphic,					
			surface classifications of the					
			earth, and for flood hazard					
			mapping. This study aimed to					
			develop an integrative approach					
			to the mapping of flood hazards					
			along the Al-Shamal train					
			pathway in the city of Qurayyat					
			in the Kingdom of Saudi Arabia					
			(KSA) using GIS and hazard					
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	modeling for geomorphological			
	ranking. Furthermore, we			
	propose strategic solutions to			
	provide mitigation and			
	protection from negative			
	impacts with the aim of			
	improving the level of awareness			
	of flood geomorphology. The			
	hazard model of			
	geomorphological ranking was			
	used in mapping and calculating			
	the degree of hazards using 24			
	geomorphometric criteria. These			
	criteria were divided into formal			
	criteria, terrain criteria, and			
	criteria related to the drainage			
	network. The results of the study			
	revealed that the drainage sub-			
	basins are exposed to flood			
	hazards along the Al-Shamal			
	train pathway in the city of			
	Qurayyat. The very high flood			
	hazard constituted 4228.3 km2,			
	accounting for 70.3% and			
	65.7%, respectively, of the			
	drainage basins of the wadis of			
	Makhrouq and Bayer. The high			
		I		
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			flood hazard represented 61%					
			(4712.4 km2) of the basin of the					
			wadis of Sarmadaa. The medium					
			flood hazard was concentrated					
			in the drainage basin of the wadi					
			of Hasidah, accounting for nearly					
			57.7% (1271.3 km2). The very					
			low flood hazard was present in					
			46.5% of the drainage basin of					
			the wadis of Hasidah Umm					
			Nakhla, accounting for an area of					
			799.4 km2. The methodology					
			applied in this study can be used					
			in the estimation of flood					
			hazards in different drainage					
			basins throughout Saudi Arabia					
			and in similar arid regions. View					
			Full-Text					
12	Spatial modeling of	Image Processing	Al-Shamal train pathway, which		2021		https://doi.org/10.15	15/geo-2020-0296
	ground subsidence	/ GIS / Modeling	is extended between Saudi					
	susceptibility along Al-		Arabia and Jordan, is prone to					
	Shamal train pathway		geo-hazards due to the					
	in Saudi Arabia.		geological features, proximity to					
			faults, earthquake epicenter, and					
			the human activities along the					
			pathway. The objectives of this					
			study are to shed light on the					
		Page 23 of 35	ية ع، سد بة الوثيقة: استخدام داخلي				Doc. No. (PUA-IT-P01-F14)	
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		ground subsidence suscentibility				
		along Al-Shamal train pathway				
		in Oarravat citu in Saudi Arabia				
		and develop a ground				
		subsidence susceptibility model				
		to determine the prone areas to				
		the impacts of ground				
		subsidence to mitigate and avoid				
		the loss of life and property. This				
		study integrated the various data				
		types to map the subsidence				
		susceptibility along Al-Shamal				
		train pathway. Nine ground				
		subsidence causative parameters				
		were selected as subsidence				
		controlling factors in the study				
		area including lithology, land				
		cover/land use, elevation, slope,				
		aspect, annual average rainfall,				
		distance to faults, distance to				
		earthquake epicenter, and				
		distance to streams. The				
		analytical hierarchy process is				
		applied to obtain accurate				
		weight to each criterion through				
		the distribution of online Google				
		form questionnaire to exports in				
		torm questionnaire to experts in				
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		different expertise and get their				
		judgments on the weights of				
		ground subsidence causative				
		parameters in the study area. A				
		subsidence susceptibility index				
		was derived by classifying				
		susceptible maps into five				
		classes, namely, very low, low,				
		moderate, high, and very high				
		using the statistical distribution				
		analysis. The results revealed				
		that the study area is subjected to				
		moderate susceptibility with				
		about 32.56. A total of 29.8 and				
		11.52% of the study area had				
		very low and low susceptibilities,				
		respectively, and 8.44 and				
		17.68% had very high and high				
		susceptibilities, respectively. The				
		results were validated using the				
		receiver operating characteristic				
		using previous ground				
		subsidence locations. The area				
		under the curve showed 0.971,				
		which is equivalent to 97.1%.				
		Consequently, the findings of the				
		study are thought to be				
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			beneficial to managers and decision makers for future					
			planning, mitigating, and					
			preventing subsidence in the					
			study area.					
13	Recognition and	Image Processing	Saudi Arabia has experienced		2021		https://doi.org/10.3	3390/su13179913
	Prediction of Land	/ GIS / Future	substantial urban growth over					
	Dynamics and Its	Dynamics	the last few decades,					
	Associated Impacts in		transforming from rural to urban					
	Al-Qurayyat City and		communities due to rapid					
	along Al-Shamal Train		economic growth. Saudi Arabia					
	Pathway in Saudi		is ranked as one of the most					
	Arabia		urbanized countries, with more					
			than 80% of its population					
			existing in urban centers. Four					
			Landsat imagery datasets					
			acquired in 1989, 2002, 2013,					
			and 2021 were used to estimate					
			the dynamics of land cover and					
			urban growth in Al-Qurayyat					
			City and investigate the					
			relationship between the					
			construction of Al-Shamal train					
			in 2011 and the land dynamics.					
			The results emphasize a strong					
			intercorrelation between the					
		Page 36 of 25	tety type 1 date that is a second			- 		
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		construction of the Al-Shamal				
		train pathway and the land				
		development and the rapid				
		urbanization in Al-Qurayyat City.				
		The results show that the urban				
		and built-up area expanded from				
		1.96% to 7.25% between 1989				
		and 2021. Future prediction of				
		land cover dynamics and urban				
		growth in 2030 were estimated				
		using the Markov chain and CA-				
		Markov models. The findings of				
		future prediction show that more				
		than 60% of the total area of Al-				
		Qurayyat City will transform into				
		urban and built-up areas by				
		2030. The dramatic increase in				
		urban and built-up areas and the				
		subsequent reduction in other				
		land cover types will impact the				
		environmental sustainability of				
		Al-Qurayyat City. The findings in				
		this paper recommend smart				
		growth, which guarantees				
		environmentally friendly				
		development for future land				
		use/land cover planning in Al-				
	1	· -		1		
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			Qurayyat City. This study will be				
			beneficial to the urban planner				
			and policymakers for proper				
			sustainable development				
			decisions by exploring the land				
			cover changing pattern and the				
			trends of urban expansion. View				
			Full-Text				
14	Development of a GIS	Image Processing	Egypt is one Arab country that is		2021	https://link.springer.com/a	rticle/10.1007/s11069-021-
	based alert system to	/ GIS / Early	vulnerable to flash floods caused			0479	99-2
	mitigate flash food	Warning Systems	by heavy and intensive rainfall.				
	impacts in Asyut		Different locations in Egypt are				
	governorate, Egypt		vulnerable to the hazards of flash				
			floods, especially in Upper Egypt.				
			Throughout history, Egypt				
			witnessed a series of events of				
			flash floods that lead to				
			mortality, damages, and				
			economic losses. The intensity				
			and frequency of flash floods in				
			Egypt vary from year to year				
			according to a number of				
			hydrological and climatological				
			variables. Although several				
			previous flash floods studies				
			have been conducted in Egypt,				
			studies on the governorate of				
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		Asyut are still limited. This study			
		integrates the physical and social			
		parameters in order to assess the			
		vulnerability to flash floods. The			
		objectives of this study are to			
		shed light on flash floods in the			
		study area, develop a			
		vulnerability model to determine			
		the regions vulnerable to the			
		impacts of flash floods, and			
		propose a flash flood alert			
		system in the governorate of			
		Asyut in Egypt to mitigate the			
		impacts of flash floods and to			
		avoid the loss of life and			
		property. The AHP (analytical			
		hierarchy process) is used for			
		assigning the optimal criterion			
		weight of the considered			
		vulnerability parameters based			
		on the responses of eight expert			
		respondents to an online Google			
		forms questionnaire. The highest			
		weighted flash floods causative			
		parameters are population			
		density (27.4%), precipitation			
		(22.1%), total population			
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PHAROS UNIVERSITY جامعة فاروس الاسكندرية ALEXANDRIA جامعة فاروس (16.4%), and elevation (10.2%), respectively. The results reveal that Asyut is one of the Egyptian governorates prone to flash floods' impacts, especially in Dayrut, Al-Qusiyah, and Abnub, urban districts. The findings of this study are expected to be useful to policymakers and responsible authorities for better disaster risk management and for dealing with the flash floods events in the future. 15 Comparison of Satellite https://dx.doi.org/10.21608/ijicis.2021.78853.1098 Image Processing Accurate extraction of land cover 2021 Images Classification types from thematic maps using / GIS / Machine Using Techniques satellite images still constitutes a Learning Landsat-8 Data for critical challenge. The selection of a suitable satellite image Land Cover Extraction in Alexandria, Egypt classification algorithm is considered a crucial prerequisite for successful classification results that are required for applications. The various optimal classification algorithm is considered a significant key for classification improving مستوى سرية الوثيقة: استخدام داخلي Page 30 of 35 Doc. No. (PUA-IT-P01-F14) Publications Template Rev. (1) Date (30-12-2020) Issue no.(1) Date (30-12-2020) Document Security Level = Internal Use



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		accuracy. The principal foci of			
		this study were to compare,			
		analyze the performance, and			
		assess the effectiveness of four			
		classification algorithms			
		including ISODATA, K-means,			
		pixel-based and segment-based			
		classification techniques to			
		attain accurate land cover			
		extraction from remote sensing			
		data. The classified images were			
		validated with ground control			
		points obtained from field visits			
		in addition to the DigitalGlobe			
		and Google Earth Pro. The			
		overall accuracy of the ISODATA,			
		K-means, pixel, and segment-			
		based classifications were			
		81.82%, 77.27%, 92.42%, and			
		87.88%, respectively. The results			
		revealed that the pixel-based			
		classification presented a			
		superior in terms of the overall			
		accuracy and kappa coefficient.			
16	Air quality estimation Image Pro	cessing Air pollution is the atmospheric	2022	https://doi.org/10.1016	5/j.indic.2022.100184
	using remote sensing / GIS/	Air state in which specific elements			
	and GIS-spatial pollution/	concentrations has adverse			
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technologies along Al-	Sentinel-5	impacts on human health as well			
Shamal train pathway,	precursorSatellite	as the environment including			
Al-Qurayyat City in		global warming, transportation,			
Saudi Arabia		acidic rain, and ozone layer			
		depletion. Currently, population			
		around the world lives in urban			
		areas coupled with population			
		size in addition to the increasing			
		levels of vehicles which led to			
		deterioration in air quality.			
		Additionally, the clean air is a			
		critical and vital element for			
		environment and health of any			
		region. Therefore, the foci of this			
		research are to detect the air			
		pollution parameters and			
		investigate the relationship with			
		the meteorological parameters			
		including temperature, and wind			
		speed along Al-Shamal train			
		pathway in Al-Qurayyat City in			
		Saudi Arabia using satellite data.			
		This study involved various field			
		visits to distribute			
		questionnaires to residents to			
		gain information about their			
		health status and get their			
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		opinions about air quality. The					
		questionnaires analysis					
		manifested poor air quality					
		conditions and thermal pollution					
		due to the rapid urbanization					
		accompanied with the					
		development of the industrial					
		facilities. The main aim of the					
		study was to shed light on using					
		satellite data to detect the					
		concentration of the primary air					
		pollutants including NO2, SO2,					
		and CO to constitute a pre-					
		defensive step to control and					
		improve the air quality in Saudi					
		Arabia. The present study					
		examined using Sentinel-5					
		Precursor, Moderate Resolution					
		Imaging Spectroradiometer					
		(MODIS), and The Modern-Era					
		Retrospective analysis for					
		Research and Applications,					
		Version 2 (MERRA-2) satellite					
		data to investigate and detect the					
		air pollution parameters in the					
		study area rather than using the					
		traditional measurements from					
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		ground stations. The analysis of					
		satellite images revealed an					
		increase in the concentration of					
		air pollution parameters					
		compared to the standard limits					
		of the WHO which can cause					
		crucial negative impacts on the					
		environment as well as human					
		health. Pearson correlation					
		coefficient was used to analyze					
		the relation between various air					
		pollutants with temperature and					
		wind speed with values ranging					
		between 0.0004 and 0.6604. The					
		statistical analysis of air					
		pollutants showed strong linear					
		correlation that may be					
		attributed to the same emission					
		origin. CO and NO2 on roads					
		have a strong correlation and are					
		emitted by vehicles (R (Albugami					
		et al., 2018) = 0.66). NO2 and CO					
		do not seem to have strong					
		correlation with either SO2 or					
		AOD and their correlation					
		coefficients are weaker, that					
		indicating different emissions					
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	sources. The AOD in the study area originated mainly from the windblown dust, construction work, and suspension of particles and therefore do not emit from traffic.	

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