

Towards NBS Impact Assessment for Yerevan: geospatial technologies as a tool for assessing urban thermal conditions and guiding on NBS development



# UrbanByNature

The Global Programme for Urban Nature Pioneers



Session "Powerful evidence for nature-based solutions: identifying opportunities for NBS impact assessment"



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Center for Ecological-Noosphere Studies of the National Academy of Sciences RA

### Armenian CENS the state research and educational institution established in 1993 Registered at European Nature-Based Enterprise platform http://NatureBasedEnterprise.EU





ecologically tolerant plant species

(gas and dust resistant plant

schools and higher education

Pilot NBS at kindergartens,

phytophilters)

institutions (HEI)

#### Center for Ecological-Noosphere Studies of the National Academy of Sciences RA

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#### *Towards NBS Impact Assessment for Yerevan*: geospatial technologies as a tool for assessing urban thermal conditions and guiding on NBS development

	NBS characteristics Pro														ocess of design and	The Target tree plantin	g program, developed 2007-2008 by CENS, supposed to			
Туре	NBS: Target tree planting program for Yerevan by CENS															im	nplementation	investigate the urban air, soil, and plant pollution, to map the green spaces in Yerevan using satellite imagery. CENS also identified Gas- and dust resistant and		
Scale	City level, district level, street level																			
Location (map and	Yerevan and green areas from satellite image Sentinel 2A																	metal cumulating species of plants and provide a set of tree and shrub species to		
geographical																		he planted in Verevan pr	s of plants and provide a set of thee and sinds species to	
coordinates)																		be planted in ferevall pa	and squares based on the type and level of pollution of	
40°140°N 40°140°N 40°140°N														_			each urban site. Now	the Municipality implementing consistently the program		
		100	h.	1 A A	2.7		a si	for the	01									planting the species prov	rided by CENS at city level, district and street level.	
40-1520'N																CENS develops a meth	od of monitoring the urban LST and the level of urban			
																thermal comfort using sa	atellite and UAV remote sensing.			
														Cu	urrent deployment and	Now the Municipality	is implementing consistently the program planting the			
														de	eadline	species provided by CEN	S at city level, district and street level.			
																	Since 2018 CENS started	developing approaches to monitor the state of the urban		
	40°10''N																	thermal comfort using satellite and UAV remote sensing.		
																Fi	nancing and	The financing and stew	ardship of Target tree planting program was provided by	
	ste																Version Municipality. The continuous implementation of the planting process is			
																ewaruship	fereval municipality. The continuous implementation of the planting process is			
																	also funded by own resources of therewall.			
				a fort	and the second	A start		351										urban comfort using remote sensing data is provided by the State Committee of		
				40*6*0**			A.	100												
	arver N																Science of MESCS of Armenia and conducted in the frames of two projects supplementing Connecting Nature project: (i) Grant number: 18T-1E085; (ii)ML4GEO project, Grant number: 20TTCG-1E009			
									-	-										
	- 1 2	4	6	Km					V							U	N SDGs reference	6 Clean Water and Sanitation	12. Responsible Consumption	
														n	umbers:	o. clean water and Samtation	and Production			
The strategic objectives in															1.	. No poverty	7. Affordable and Clean Energy	13. Climate Action		
NBS: target tree plantin	g 1	2	3	4 5 6	7	8 9	10	11	1 2	13	14	15	16	17		2.	. Zero hunger	8. Decent Work and Economic	14. Life Below Water	
program context	and													<b>—</b>		3 600	Good Health and	9 Industry Innovation and		
corridors, connectivity and p	bublic		x					×		×		x				w	ellbeing	Infrastructure	15. Life on Land	
amenities							_	_											16. Peace and Justice Strong	
spaces	in		×					×		×		х				4.	. Quality Education	10. Reduced inequality	Institutions	
Prevent and/or reduce heat									<u> </u>							5	Gender Fauality	11. Sustainable Cities and	17. Partnerships to achieve	
island effect and other impa	cts of		×					×		×		×				5.	Conder Equality	Communities	the Goal	
Increase physical activity.		+			+		<u> </u>	+		-										
recreation, walking.			×					×		×		×					https://sdqs.un.o	org/goals		
Noise reduction & air quality	/																			
green spaces, walls, barriers	with																			

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#### *Towards NBS Impact Assessment for Yerevan:*

#### geospatial technologies as a tool for assessing urban thermal conditions and guiding on NBS development



# URBAN THERMAL FIELD VARIANCE INDEX (UTFVI) as a tool for assessing spatial-temporal changes of urban thermal comfort in YEREVAN from 1989-2018







Yerevan is 2800 years old

#### THE MARVELOUS VIEW OF THE ARMENIAN SYMBOL, THE BIBLICAL MOUNTAIN OF ARARAT



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