



SURVEY Climate indices: Eastern European perspective

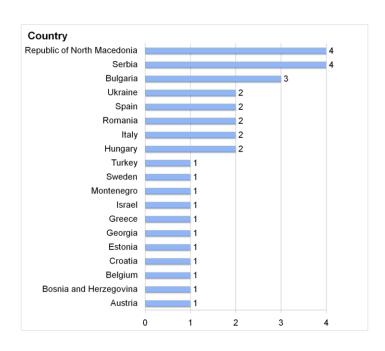
Aleksandra Krzic

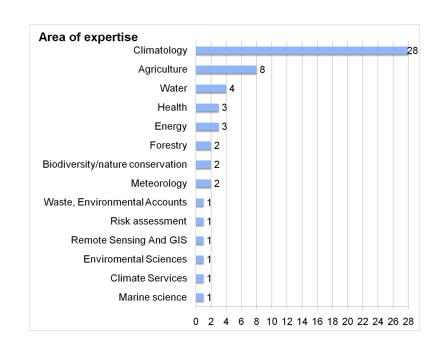
Vladimir Djurdjevic, Janette Bessembinder, Lars Bärring, Irida Lazic, Milica Tosic, Katarina Veljovic

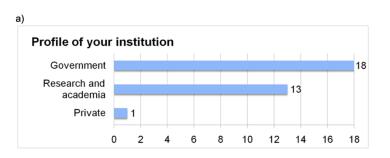


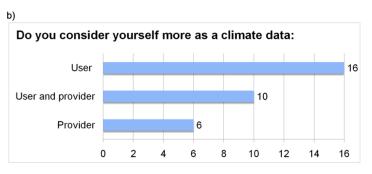
SURVEY Overview

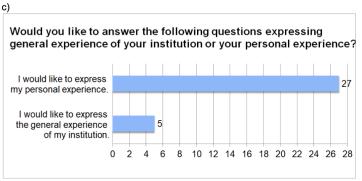
- Initial meeting: 17th May, 2021
- Online survey: 32 participants from 19 countries
- Six online interviews with representatives from: Bulgaria, Estonia, Republic of North Macedonia, Romania, Serbia and Turkey







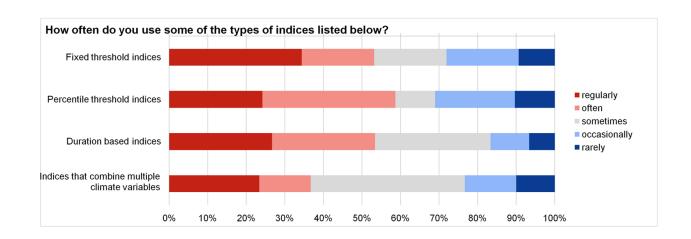


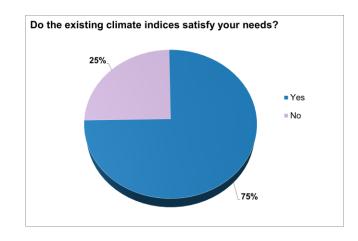


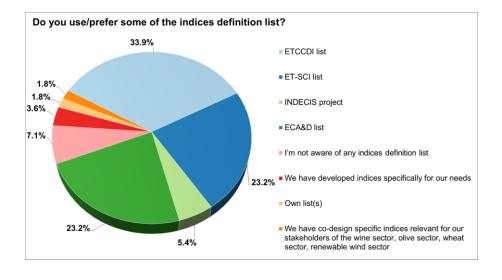


Indices definitions

- Commonly used indices definition lists: ETCCDI, ET-SCI, ECA&D
- Modification of existing definitions and/or development of new
- Implementation of complex indices
- The usage of indices: fixed & percentile threshold indices, duration based indices and indices that combine multiple climate variables
- As complexity of the indices types increases, the general use decreases









Approach to indices calculation and data sources

- The majority of participants calculate indices from input data by themselves
- None of the respondents uses only products that are pre-calculated, pre-analyzed and pre-visualized by a third party
- Station observations National Meteorological Services
- Gridded datasets: EOBS, CarpatClim, DanubeClim and ROCADA
- Climate projections: CMIP5/6 and CORDEX
- Reanalyses: ERA-5 and NCEP/NCAR

Approach in terms of indices application and usage (multiple choices were possible)

	Number of response																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	SUI
We calculate indices from input data, perform analysis and visualization of results.		Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	N	Υ	Υ	Υ	Υ	Υ	Υ	Υ	N	Υ	Y	Υ	Υ	Y	Υ	Y	Υ	Υ	Υ	Υ	Υ	Υ	Υ	3
We use already calculated indices and only perform analysis and visualization.	N	N	N	N	N	Υ	Υ	N	N	Υ	N	N	N	N	N	N	N	Υ	N	N	N	N	N	N	Υ	N	N	N	N	N	Υ	N	
We (only) use already calculated and visualised results and products.	N	N	N	N	N	N	Υ	N	Υ	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

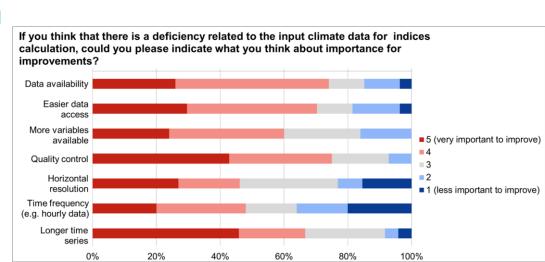
Input data used for climate indices calculation (multiple choices were possible)

		Number of response																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	SUM
Station observations	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ		_	_	_		_	_	_			_	_	_	_	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ	29
Gridded datasets	Υ	N	N	Υ	N	Υ	Υ	N	N	N	Υ	N	N	Υ	Υ	N	N	N	Υ	N	Υ	N	Υ	Υ	Υ	Υ	Υ	N	Υ	N	Υ	N	16
Reanalysis	Υ	N	N	Υ	Υ	Υ	N	Υ	Υ	N	N	N	N	Υ	Υ	N	N	N	N	N	Υ	N	N	Υ	Υ	N	Υ	Υ	N	N	Υ	N	14
Climate projections	N	N	N	Υ	N	N	N	Υ	N	N	N	Υ	N	Υ	Υ	Υ	N	N	Υ	Υ	Υ	Υ	N	Υ	Υ	N	Υ	N	Υ	N	Υ	Υ	16
Satellite data	N	N	N	N	N	N	Υ	N	Υ	N	Υ	N	N	N	N	N	N	N	N	N	Υ	Υ	N	Υ	N	N	Υ	Υ	N	N	N	N	8
Short range forecast	N	N	N	N	N	N	N	N	Υ	N	N	N	N	N	N	N	N	N	N	N	N	Υ	N	N	N	N	N	N	N	N	N	N	2
Long term forecast	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Υ	N	N	N	N	N	N	N	N	N	N	N	1



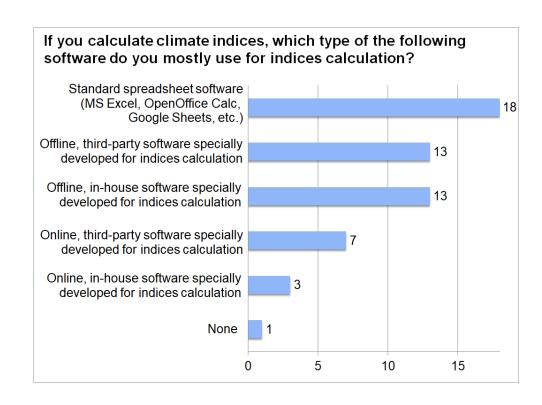
Approach to indices calculation and data sources

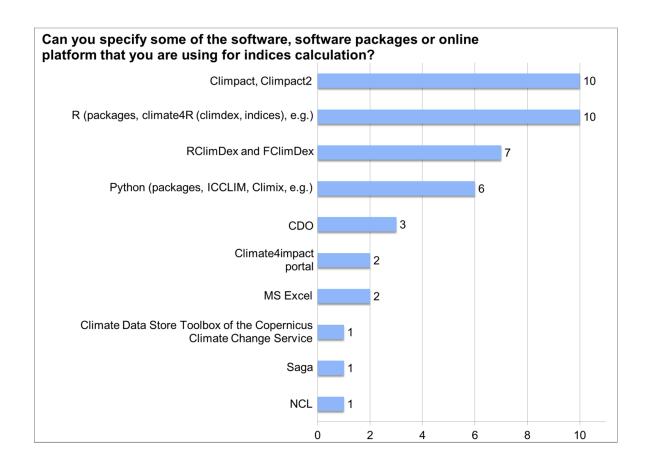
- Importance for data improvement
- Additional comments & recommendations:
 - increasing the density of the meteorological station network
 - homogenization of data
 - extending data sets' coverage back in time
 - improvement of high-resolution gridded observations and regional reanalyses
 - easier data access (downloading)
 - stricter adherence to format convention and rules
- Already calculated indices:
 - need for more metadata information
 - need for additional sectoral indices
 - improvement of the quality of high-resolution downscaled products
 - to present an economic value of the products in addition to forecast skill
- Improvement of graphical products:
 - available as different georeferenced raster formats





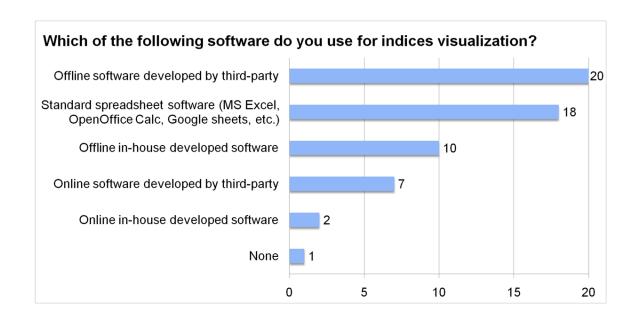
Software: indices calculation

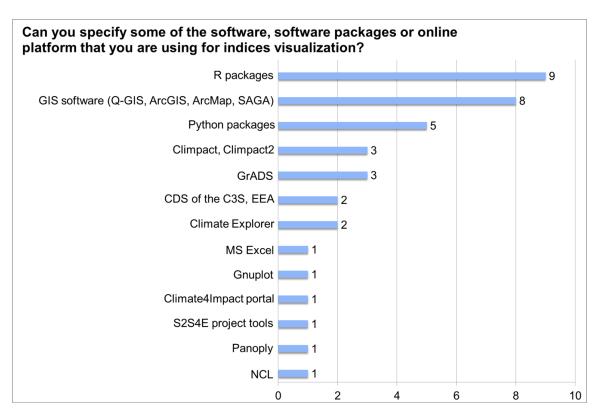




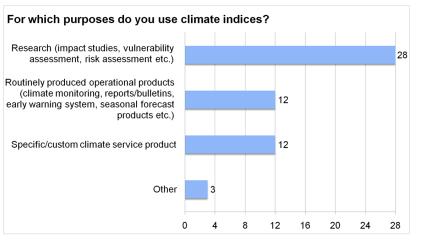


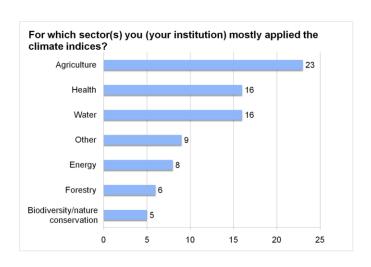
Software: indices visualization

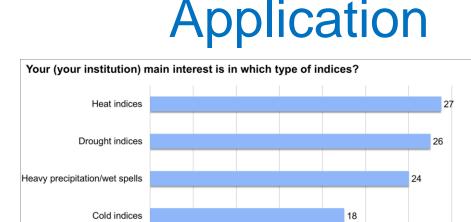












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- "Other" purposes of climate indices use:
 - sectoral climate change adaptation and mitigation studies
 - climate risk management
 - providing regional "basic" climate information to policymakers, schools and others
 - preparation of climate services products for different European projects
- "Other" sectors of climate indices application:
 - Marine science
 - Regional climatology
 - Tourism
 - DRR
 - General public
 - Retail
- Interest in "Other" type of climate indices:
 - indices related to wind
 - multi-sectoral indices like Thermal stress indices and Heating Degree Days



THE CONSORTIUM

Coordinated by CNRS-IPSL, the IS-ENES3 project gathers 22 partners in 11 countries





















Koninklijk Nederlands Meteorologisch Instituut Ministerie van Infrastructuur en Waterstaa



UK Research and Innovation





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