















Supplementary Table S1. Climate-related hazard definitions.**Table 1. Overview exposure indicators developed in this paper**

	Extreme temperature
Why?	Temperature extremes at both ends of the spectrum can impact human health and economic activities, while they are worsening due to climate change.
Indicators	
18.	Percentage of population exposed to <i>n</i> number of hot days
19.	Percentage of population exposed to <i>n</i> number of tropical nights
20.	Percentage of population exposed to <i>n</i> number of days identified as a hot day and tropical night
21.	Population-weighted average of the number of days with heat stress
22.	Percentage of population exposed to <i>n</i> number of icing days
	Extreme precipitation
Why?	Precipitation extremes can cause sudden flooding, impacting agriculture and leading to a loss of agricultural yield, and is expected to worsen due to climate change.
Indicators	
6.	Percentage of cropland exposed to <i>n</i> number of days with above-average precipitation amounts
Why?	Drought has far-reaching socio-economic impacts, particularly on agriculture, resulting in a loss of agricultural yield, and is influenced by climate change.
	Drought
Indicators	
7.	Average cropland soil moisture anomaly
	Wildfire
Why?	Wildfire threatens people's lives and wellbeing both directly and indirectly, and can also occur more frequently and intensively because of climate change.
Indicators	
8.	Percentage of population located in areas at risk of burning
9.	Percentage of forested areas at risk of burning
	Wind threats
Why?	Wind threats are common hazards to humans directly through flying debris and falling trees or damage to built-up areas, and are expected to worsen due to climate change.
Indicators	
10.	Percentage of population exposed to violent wind gusts
1.	Percentage of built-up area exposed to violent wind gusts
2.	Percentage of population exposed to cyclone wind threats with different return periods
3.	Percentage of built-up area exposed to cyclone wind threats with different return periods
	River flooding
Why?	River flooding can cause significant economic losses, impacting the population, built-up areas or infrastructure, and is expected to worsen due to climate change.
Indicators	
14.	Percentage of population exposed to river flooding with different return periods
1.	Percentage of built-up area exposed to river flooding with different return periods
2.	Percentage of cropland exposed to river flooding with different return periods
	Coastal flooding
Why?	Coastal flooding threatens coastal regions and communities and is expected to worsen due to climate change.
Indicators	
17.	Percentage of population exposed to coastal flooding with different return periods
1.	Percentage of built-up area exposed to coastal flooding with different return periods
2.	Percentage of cropland exposed to coastal flooding with different return periods
Note: A return period is the average or estimated time that a specific climate-related hazard is likely to recur.	

Supplementary Table S2. Correlation results for the relationship between the male-to-female ratio and each climate variable.

Variable	Correlation	<i>p</i> -value	Number of cases
ET_10w	-0.028	0.899	16042
EP_10w	-0.217	0.32	16042
D_10w	0.4	0.058	16042
WF_10w	-0.222	0.309	16042
WT_10w	0.12	0.586	16042
RF_10w	0.201	0.357	16042
CF_10w	0.174	0.427	16042
CLIMATE_10w_d	0.228	0.296	16042
CLIMATE_10w_hot	0.016	0.941	16042
CLIMATE_10w_water	0.158	0.473	16042

		Mean age	Dry eyes	Dry mouth	Systemic disease
	Extreme temperature		↑		↑
	Drought	↓		↑	
	Extreme precipitation	↓	↑	↑	
	River flooding	↓	↓	↓	↑
	Coastal flooding	↓	↓	↓	↓
	Wind threats	↓	↓		↓
	Wildfire	↓			↓

APPENDIX

Other members of the Sjögren Big Data Consortium who contributed to the study:

- Xu Dong, Zhao Yan, Department of Rheumatology, Peking Union Medical College Hospital, Beijing, China.
- Xiaomei Li, Li Wang, Department of Rheumatology and Immunology, The First Affiliated Hospital of USTC, University of Science and Technology of China (Anhui Provincial Hospital), Hefei, China.
- Peter Olsson, Thomas Mandl, Department of Rheumatology, Skane University Hospital Malmö, Lund University, Lund, Sweden.
- Raphaële Seror, Xavier Mariette, Center for Immunology of Viral Infections and Autoimmune Diseases, Assistance Publique – Hôpitaux de Paris, Hôpitaux Universitaires Paris-Sud, Le Kremlin-Bicêtre, Université Paris Sud, INSERM, Paris, France.
- Arjan Vissink, Hendrika Bootsma, Department of Oral and Maxillofacial Surgery, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands.
- Debashish Danda, Department of Clinical Immunology and Rheumatology, Christian Medical College and Hospital, Vellore, India.
- Vasco C. Romão, Matilde Bandeira, Manuel Silvério-António, Rheumatology Department, Hospital de Santa Maria, Centro Hospitalar Universitário Lisboa Norte and Rheumatology Research Unit, Instituto de Medicina Molecular, Faculdade de Medicina, Universidade de Lisboa, Lisbon Academic Medical Centre, Lisbon, Portugal.
- Roser Solans, Department of Internal Medicine, Hospital Vall d'Hebron, Barcelona, Spain.
- Carlos Galisteo, Department of Rheumatology, Hospital Parc Taulí, Barcelona, Spain.
- Demian Sene, Hôpital Lariboisière, Paris, France.
- David Isenberg, University College of London, UK.
- Paola Cipriani, Clinical Unit of Rheumatology, University of l'Aquila, School of Medicine, l'Aquila, Italy.
- Valerie Devauchelle, Cavale Blanche-University Hospital, Brest, France.
- Tamer Gheita, Rheumatology Department, Kasr Al Ainy School of Medicine, Cairo University, Cairo, Egypt.
- Marcos Vázquez, Department of Rheumatology, Hospital de Clínicas, San Lorenzo, Paraguay.
- Jacques Morel, Department of Rheumatology, Teaching hospital and University of Montpellier, Montpellier, France.
- Sandra Consani, Internal Medicine, Hospital Maciel, and Universidad de la República (UdelaR), Montevideo, Uruguay.
- S-K. Kwok, S-H. Park, Division of Rheumatology, Department of Internal Medicine, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, South Korea.
- Marika Kvarnstrom, Marie Wahren-Herlenius, Department of Medicine, Solna, Division of Experimental Rheumatology, Karolinska Institutet, and Karolinska University Hospital, Stockholm, Sweden.
- P. Ericka Díaz Cuiza, B.E. Herrera, Departamento de Reumatología del Seguro Social Universitario y consultorio privado de Reumatología, Sucre, Bolivia.
- Toshimasa Shimizu, Department of Immunology and Rheumatology, Division of Advanced Preventive Medical Sciences, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan.
- Andrés González-García, Department of Internal Medicine, Hospital 12 de Octubre, Madrid, Spain.
- Sheila Melchor-Díaz, Department of Rheumatology, Hospital 12 de Octubre, Madrid, Spain.
- Michele Bombardieri, Queen Mary University of London, London, UK.
- Adrian Lees, Westmead Hospital, Sydney, Australia.
- Suzanne Arends, Department of Rheumatology and Clinical Immunology, University of Groningen, University Medical Center Groningen, The Netherlands.
- Elena Treppo, Simone Longhino, Valeria Manfrè, Maria Teresa Rizzo, B. Fazzi, Division of Rheumatology, University of Udine, Department of Medicine, University Hospital "Santa Maria della Misericordia", Udine, Italy.
- Agata Sebastian, Piotr Wiland, Department of Rheumatology and Internal Medicine, Wrocław Medical University, Wrocław, Poland.
- Roberto Gerli, Rheumatology Unit, Department of Medicine, University of Perugia, Italy.
- Sarah Downie-Doyle, Department of Rheumatology, The Queen Elizabeth Hospital, University of Adelaide, South Australia, Australia.
- Alain Saraux, Rheumatology Department, Brest University, INSERM 1227, Brest, France.
- César Morcillo, Hospital Digital Sanitas, Hospital CIMA-Sanitas, Barcelona, Spain.
- Lluís González-de-Paz, Antoni Sisó-Almirall, Primary Healthcare Transversal Research Group, IDIBAPS, Primary Care Center Les Corts, CAPSBE, Barcelona, Spain.
- Cecilia Fugmann, Rheumatology, Department of Medical Sciences, Uppsala University, Uppsala, Sweden.