META-DATA for Winland-project

This table documents new data created and collected in the Winland project funded by the Strategic Research Council at the Academy of Finland 2016-2019.

	All data							
	Name of data	**Description**	**Keywords**	**Date of data production**	**Creator (persons/organisations)**	**Format (incl. data format)**	**Temporal coverage**	**Geographical coverage**
A	Interview data on energy security in Finland	30 semi-structured key informant interviews on energy trade and security in Finland.	Energy security	17.3.2017-24.3.2018 and 13.8.2018-24.1.2019	Sakari Höysniemi, University of Helsinki	Mp3 audio record, transcriptions doc files	2017-2019	Finland
B	Drought scenarios	Modeled discharges and water levels during serious drought and climate scenarios, modeled with WSFS hydrological model	Hydrological models, drought, water security	19.1.2019	Noora Veijalainen, SYKE	ascii (*.dat), maps and figures based on the origical data	1939-1942, 1981-2010, 2010-2039 and 2040-2069	Entire Finland, discargs and water levels by 3. division watershed areas
C	Stakeholder input data on energy, food and water security from project workshops	Stakeholder input from project events, e.g. workshops	interaction, communication	1.4.2016-17.4.2019	Kirsi-Marja Lonkila, Demos Helsinki	Excel, docs, ppt, picture format	2016-2019	Finland
D	Stakeholder data	Stakeholder data on sector representation	interaction, communication	1.4.2016-17.4.2019	Kirsi-Marja Lonkila, Demos Helsinki	Excel	2016-2019	Finland
E	Interview and questionnaire data on scientific and societal interaction from consortium researchers	Project researcher interviews (8) and questionnaires (2016: 12 respondees and 2018: 3 respondees) on topics related to interaction	interaction, communication	Survey 1, Dec 2017; 4 interviews, Jan-Feb 2017; Survey 2, Nov 2018; 4 interviews, Apr-May 2019	Kirsi-Marja Lonkila, Demos Helsinki	Excel and docs files	2016-2019	Finland
F	Interview data on water politics and governance in Finland	14 key informant interviews of water politics in Finland, focus on bioeconomy, mining and water rights	water security, water governance, water law, bioeconomy, mining, water rights, Finland	26.1.2018-9.1.2019	Suvi Sojamo & Lauri Ahopelto, Aalto University	Mp3 audio record, transcriptions docs files	1900-2019	Finland
G	Interview data on societal security and resilience	Key actors (n=5) in societal security of Finland. Challenges and applicability of the Security Strategy for society on a various kinds of societal levels.	Societal security, resilience, societal learning	23.4.-2.5.2018	Johanna Anttonen & Arttu Kantola, MPKK	Docs	2016-2018	Finland
H	Two-thirds of global cropland area impacted by climate oscillations	See abstract	food security, crop yields, climatology, El Niño	24.10.2018	Heino, Matias et al.	NetCDF	1980-2010	Global
I	The planet's stressed river basins: too much pressure or too little adaptive capacity?	See abstract	water resources, river basins, geospatial resilience analysis, social-ecological systems, Asia, Africa	12.9.2019	Varis, Olli; Taka, Maija; Kummu, Matti	NetCDF	1990-2015	Global
J	Gridded global datasets for Gross Domestic Product and Human Development Index over 1990-2015	See abstract	datasets, spatial data, development, indices	10.1.2019	Kummu, Matti; Taka, Maija; Guillaume, Joseph H. A.	NetCDF	1990-2015	Global

	Open data				
	Data publisher/owner	**Abstract**	**Access** (open, embargoed, restricted/access by request)	**DOI/Handle/URN**	**Contact person**
A	Sakari Höysiemi		Restricted		Sakari Höysniemi, HY
B	SYKE	Severe droughts cause substantial damage to different socio-economic sectors, and even Finland, which has abundant water resources, is not immune to their impacts. To assess the implications of a severe drought in Finland, we carried out a national scale drought impact analysis. Firstly, we simulated water levels and discharges during the severe drought of 1939–1942 (the reference drought) in present-day Finland with a hydrological model. Secondly, we estimated how climate change would alter droughts. Thirdly, we assessed the impact of drought on key water use sectors, with a focus on hydropower and water supply. The results indicate that the long-lasting reference drought caused the discharges to decrease at most by 80% compared to the average annual minimum discharges. The water levels generally fell to the lowest levels in the largest lakes in Central and South-Eastern Finland. Climate change scenarios project on average a small decrease in the lowest water levels during droughts. Severe drought would have a significant impact on water-related sectors, reducing water supply and hydropower production. In this way drought is a risk multiplier for the water–energy–food security nexus. We suggest that the resilience to droughts could be improved with region-specific drought management plans and by including droughts in existing regional preparedness exercises.	Access by request, key parts of results in published in Sustainability special issu paper Veijalainen et al. 2019	Paper based on the results https://doi.org/10.3390/su11082450	Noora Veijalainen, SYKE
C					
D					
E					
F					
G					
H	Heino, Matias et al.	The El Niño Southern Oscillation (ENSO) peaked strongly during the boreal winter 2015-2016, leading to food insecurity in many parts of Africa, Asia and Latin America. Besides ENSO, the Indian Ocean Dipole (IOD) and the North Atlantic Oscillation (NAO) are known to impact crop yields worldwide. Here, we assess for the first time in a unified framework the relationship between ENSO, IOD and NAO and simulated crop productivity at the sub-country scale. Our findings reveal that during 1961–2010, crop productivity is significantly influenced by at least one large-scale climate oscillation in two-thirds of global cropland area. Besides observing new possible relationships – especially for NAO in Africa and the Middle East, our analyses confirm several known relationships between crop productivity and these oscillations. Our results improve the understanding of climatological crop productivity drivers, which is essential for enhancing food security in many of the most vulnerable places on the planet.	Open	https://doi.org/10.5061/dryad.6h5p0, CC0-licenced	Matias Heino, Aalto
I	Varis, Olli; Taka, Maija; Kummu, Matti	Freshwater is one of the most critical elements for sustainable development of ecosystems and societies. River basins, concomitant with administrative zones, form a common unit for freshwater management. So far, no comprehensive, global analysis exists that would link the ecological challenges of the planet's river basins to the capacity of the societies to cope with them. We address this gap by performing a geospatial resilience analysis for a global set of 541 river basins. We use the social-ecological systems (SES) approach by relating three ecological vulnerability factors (human footprint, natural hazards, water scarcity) with three adaptive capacity factors (governance, economy, human development), based on temporal trajectories from 1990 to 2015. Additionally, we examine resilience by subtracting ecological vulnerability from adaptive capacity. The most striking result is the fundamentally different patterns of controlling factors of the resilience in different developing regions, particularly those of Africa and Asia. Their root causes are particularly low adaptive capacity in Africa, and high ecological vulnerability in Asia. Alarmingly, the difference between those continents grew within the study period. Finally, this study highlights the rapid dynamics of adaptive capacity in comparison to ecological vulnerability, the latter having more inertia. Their fragile balance is of our interest; they can either support or counteract each other depending on the geographic location.	open	https://doi.org/10.5061/dryad.h2v2398, CC0-licensed	Matti Kummu, Aalto
J	Kummu, Matti; Taka, Maija; Guillaume, Joseph H. A.	An increasing amount of high-resolution global spatial data are available, and used for various assessments. However, key economic and human development indicators are still mainly provided only at national level, and downscaled by users for gridded spatial analyses. Instead, it would be beneficial to adopt data for sub-national administrative units where available, supplemented by national data where necessary. To this end, we present gap-filled multiannual datasets in gridded form for Gross Domestic Product (GDP) and Human Development Index (HDI). To provide a consistent product over time and space, the sub-national data were only used indirectly, scaling the reported national value and thus, remaining representative of the official statistics. This resulted in annual gridded datasets for GDP per capita (PPP), total GDP (PPP), and HDI, for the whole world at 5 arc-min resolution for the 25-year period of 1990–2015. Additionally, total GDP (PPP) is provided with 30 arc-sec resolution for three time steps (1990, 2000, 2015).	open	https://doi.org/10.5061/dryad.dk1j0, CC0-licensed	Matti Kummu, Aalto