Submitted Abstract

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Abstract

Mountains socio-ecological research is notoriously hampered by scarcity of socio-economic data. However, new and updated fine scale continental and global built-up map and population density maps are now available for the mountain research and practitioner community. The new releases include the European Settlement Map (ESM) and the 2022 release of the Global Human Settlement Layer Built Up Surface (GHS-BU) and Population (GHS-POP) density maps. The ESM is a 2x2 m spatial resolution building map generated for 39 European countries including Turkey. It covers the epoch 2012 and 2018 and thus allows quantifying the change in the building stock between the two epochs. The ESM is produced based on very high spatial resolution satellite imagery from a mix of sensors acquired through the European Copernicus program and a combination of ancillary datasets including land use. The ESM distinguishes between residential and non residential buildings. The ESM map is well suited to study and quantify the presence of buildings in small settlements typical of mountain areas. The ESM built up map will be combined with population data from censuses to provide insights on depopulation in the more marginal mountain areas of Europe as well as to assess the growth of buildings and infrastructure in the municipality with higher rate of development.

The 2022 release of the GHS-BU is a multi-temporal set of global maps updated to 2018. The 2018 GHS-BU epoch is produced using Copernicus Sentinel data and released at spatial resolution of 10 x 10m, 100 x 100 m and 1 x 1 km grid cell size. The 2018 epoch GHS-BU distinguishes between residential and non-residential buildings. The 2022 release also includes the 2022 GHS-POP based on 2018 global population estimates. All multi-temporal GHS-BU Surface and GHS Pop dating back to 1975 are re-processed to match the spatial resolution of the 2018 epoch.

Both the ESM and the 2022 release of the GHS-BU and GHS POP are suited to assess exposure- and change in exposure - to natural hazards, to assess accessibility and cost of transport. The data have been used as a spatial infrastructure to model societal impact on protected areas and on ecosystem services. The datasets will be available as open source, and feedback from the mountain community of researcher and practitioners will be welcome to understand the interest for this information and the need for future map updates.