Global Dam Watch: Developing a community platform to map global dams, reservoirs, and river barriers

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There are millions of dams, reservoirs and river barriers worldwide. They interact with human and non-human systems in ways that social and physical scientists have investigated from many perspectives, including assessments of river health, ecosystem services, global biogeochemical cycles, human water appropriation, food production, sanitation, waterborne diseases, energy generation, socio-economic development, transboundary conflicts, human displacement, and global environmental change. But the data with which these studies have to work are highly incomplete, unevenly distributed in space, and/or temporally disperse. The lack of globally consistent and up-to-date dam data is a major and recurring problem that prevents researchers from fully understanding the impacts of dams, investigating the efficacy of water scarcity mitigation, and monitoring progress towards water-related global goals. Despite several attempts over the last decade by individual research groups, only a small proportion of dams have been mapped today, mostly due to the enormous challenges in identifying, compiling, and curating such data. Here, we propose to develop novel scientific approaches, including the interpretation of remote sensing imagery based on machine learning techniques, to build a community platform offering a comprehensive global dam, reservoir, and river barrier database that covers dams of all sizes and is fully georeferenced, consistent, and updated at regular intervals. Our project provides the foundation for integrating this critical information on dams in scientific models, socio-environmental synthesis studies and policy applications spanning both past and future timescales.

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