



Applied socio-hydrology using volunteer geographic information (VGI) to integrate ecosystem-based adaptation (EbA) and disaster risk reduction (DRR)

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Socio-hydrology proposes to understand coupled human-water systems by conceptualizing its components to be dynamically connected by bi-directional feedbacks. For practical purposes, especially in developing countries of South America, socio-hydrology does integrate practical, empirical and theoretical fundamentals from citizens' knowledge and culture. This contribution shows South American examples of how volunteer geographic information (VGI) can help socio-hydrology to integrate emerging aspects with heavy feedbacks, exploding uncertainties and relevant scales of socio-hydrological scales. Here we select examples at different scales of using VGI to link aspects of ecosystem-based adaptation (EbA) and disaster risk reduction (DRR). On the one hand, we show some learning cases of EbA/VGI linked to socio-hydrology also related with water valuation, both monetary and non-monetary, under scenarios of changing conditions of land-use and land cover changes of strategic water supply systems in subtropical biomes. This example brings a bridge of VGI and EbA towards Disaster Risk Reduction (DRR) through water topics of securitization, insurance, smart cities and sustainable urban drainage systems (SUDS). Thus, on the other hand, we also depict how VGI support applied elements for socio-hydrology on South American urban areas, capable of policy actions for DRR through SUDS at human-impacted biomes under extremes of droughts, floods and pollution. We here recommend yardsticks of learning conditions from these real examples of using VGI's knowledge and culture biases for a more resilient socio-hydrology, in order to create opportunities for theoretical, conceptual and applied nature of EbA and DRR with viable alliances from IAHS/Panta Rhei with UN/Sendai/DRR Framework and UN/Sustainable Development Goals. From these examples, however, seem plausible co-evolutionary dynamics with stakeholders if local-scale constraints, from sociopolitical nature, institutions' policies and approaches, were robustly addressed.