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Assessing hydrometeorological impacts with terrestrial and aerial Lidar data in Monterrey, México

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Abstract. Light Detection Ranging (Lidar) is an efficient tool to gather points reflected from a terrain and store them in a xyz coordinate system, allowing the generation of 3D data sets to manage geoinformation. Translation of these coordinates, from an arbitrary system into a geographical base, makes data feasible and useful to calculate volumes and define topographic characteristics at different scales. Lidar technological advancement in topographic mapping enables the generation of highly accurate and densely sampled elevation models, which are in high demand by many industries like construction, mining and forestry. This study merges terrestrial and aerial Lidar data to evaluate the effectiveness of these tools assessing volumetric changes after a hurricane event of riverbeds and scour bridges The resulted information could be an optimal approach to improve hydrological and hydraulic models, to aid authorities in proper to decision making in construction, urban planning, and homeland security.

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