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Development of Hydro3D - a three dimensional hydrological modeling approach

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In order to develop hydrological model suitable for Karstic region, the traditional two dimensional approach may not be suitable due to the presence of many cracks and associated percolating water which flow into the surface hydrological regime at a certain distance. Also for the mountain region, hydrological processes in steep slopes are not identical to those in a gentle slope. In this study we propose a three dimensional hydrological modeling approach entitled as Hydro3D which combine 3D networking model for subsurface flow including percolating water and surface 1D-network and 2D shallow water modeling approach. The Hydro3D also include three dimensional hydraulic module which can illustrate lakes and reservoir in the continental region and bays/estuaries at the river mouth. The downsides of this modeling approach are- relative expensive computational resources when generating grids for whole catchment zone, difficulty in assuming appropriate dataset, and grid generation in vertical directions.
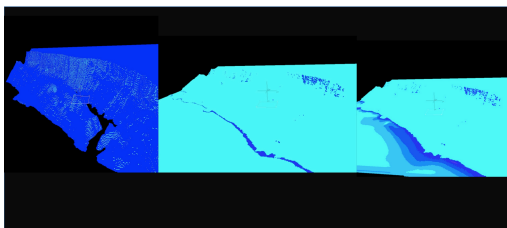
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