

---

*Remote Sensing and Hydrology* (Proceedings of a symposium held at Jackson Hole, Wyoming, USA, September 2010) (IAHS Publ. 352, 2012), 329-332.

## **Using selective drainage methods to hydrologically-condition and hydrologically-enforce LiDAR-derived surface flow**

**SANDRA POPPENGA<sup>1</sup>, BRUCE WORSTELL<sup>2</sup>, JASON STOKER<sup>1</sup> & SUSAN GREENLEE<sup>1</sup>**

<sup>1</sup> *US Geological Survey (USGS), Earth Resources Observation and Science (EROS) Center, 47914 252nd Street, Sioux Falls, South Dakota 57198, USA*  
[spoppenga@usgs.gov](mailto:spoppenga@usgs.gov)

<sup>2</sup> *Stinger Ghaffarian Technologies (SGT), Inc., contractor to the USGS EROS Center, 47914 252nd Street, Sioux Falls 57198, South Dakota*

**Abstract** The methods to extract surface flow from coarse elevation data are well documented; however, the methods to extract surface flow from high-resolution, high-vertical accuracy digital elevation models (DEMs) derived from light detection and ranging (LiDAR) are less documented, yet more complex. As lidar data are increasingly used to generate DEMs, the demand for lidar-derived surface flow escalates. Thus, the US Geological Survey has developed semi-automated selective drainage methods to extract continuous surface flow from lidar-derived DEMs. This integrated network is important in understanding surface water movement and runoff, flood inundation, and erosion.

**Key words** selective drainage methods, LiDAR-derived surface flow, surface flow extraction, South Dakota