

State of the Art Tools for Science, Resource Management, Restoration & Conservation

Advantage of LiDAR in NetMap

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NetMap Watershed Characterization: Differences Between 10 m Digital Elevation Models and LiDAR DEMs in western Oregon

Topics

- (1) resolving topography, slides 3-5
- (2) headwater network density, slide 6
- (3) floodplains, valley floors and fish habitats 7-11
- (3) erosion potential, slides 12-19

Resolving topography is greatly improved using LiDAR DEMs





Roads in LiDAR DEMs are often seen as topographic features and cause drainage diversions when building stream networks that need to be corrected



One of LiDAR's biggest advantage is in mapping and analyzing valley floors and floodplains



Potentially historical active floodplains, channel now incised



With the right tools, LiDAR's can be used to map floodplains, terraces, alluvial fans, oxbow lakes, wetlands



Using NetMap, LiDAR's can be used to identify historical floodplains, now converted to agricultural lands





Fish habitat mapping can be improved using LiDAR datasets

LiDAR can also be used to better identify erosion features and hence erosion potential. Shown below is a map of shallow landslide potential using LiDAR vs 10m DEMs.





The ability to resolve and map small scale hillslope erosion features is greatly improved using LiDAR vs 10m DEMs



Shallow Landslides and Debris Flows



Post Fire Gully Potential



Deep-seated landslide/ earthflow terrain better resolved using LiDAR



The potential for predicting debris flows or mud flows is improved, because more small, steep headwater channels can be identified, in any landscape.





Roads that are potentially unstable and pose a risk to downstream habitats can be better predicted using LiDAR



Individual forest road segments are demarcated by topographic breaks (drains) more accurately using LiDAR. Road segments drain either to streams or to forest floors.

Predictions of runoff and sediment delivery to streams, and predictions of optimized locations of new drains and surfacing to eliminate or reduce runoff/sediment delivery, are improved using LiDAR.















Optimized new drain locations for eliminating or reducing runoff and sediment delivery.

Optimized locations for surfacing upgrades or enhanced maintenance for eliminating or reducing runoff and sediment delivery.



TerrainWorks creates customized virtual watershed datasets that work with NetMap tools including utilizing LiDAR where available. If a watershed or landscape only has partial LiDAR coverage, we merge LiDAR with 10 m digital elevation data to create a seamless DEM.

Learn more about NetMap virtual watersheds, watershed analysis tools, technical help and online tools at: <u>www.terrainworks.com</u>. Contact us with questions, we are here to help.