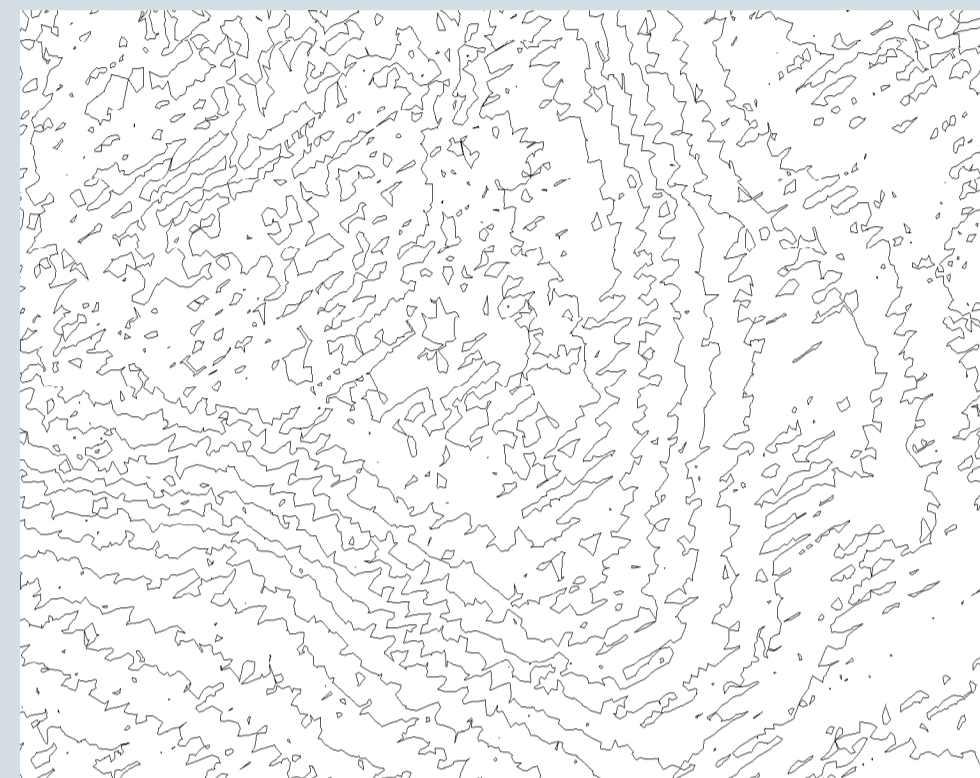


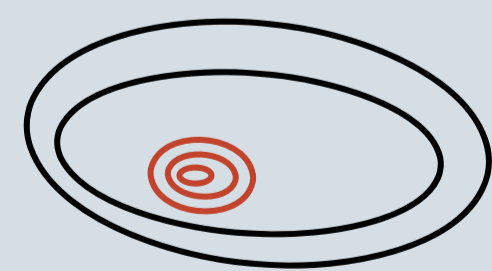
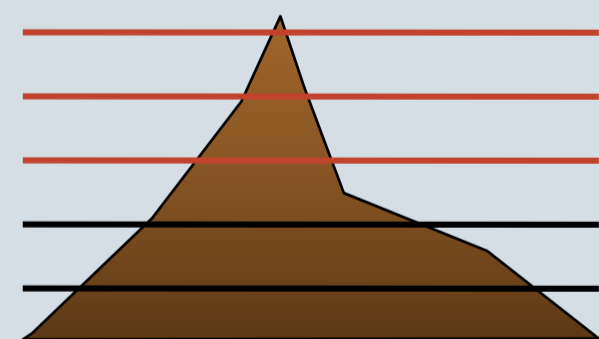
TerraSTREAM: Contour Line Generation

Motivation

- High resolution elevation model noisy and unpleasant looking contours.



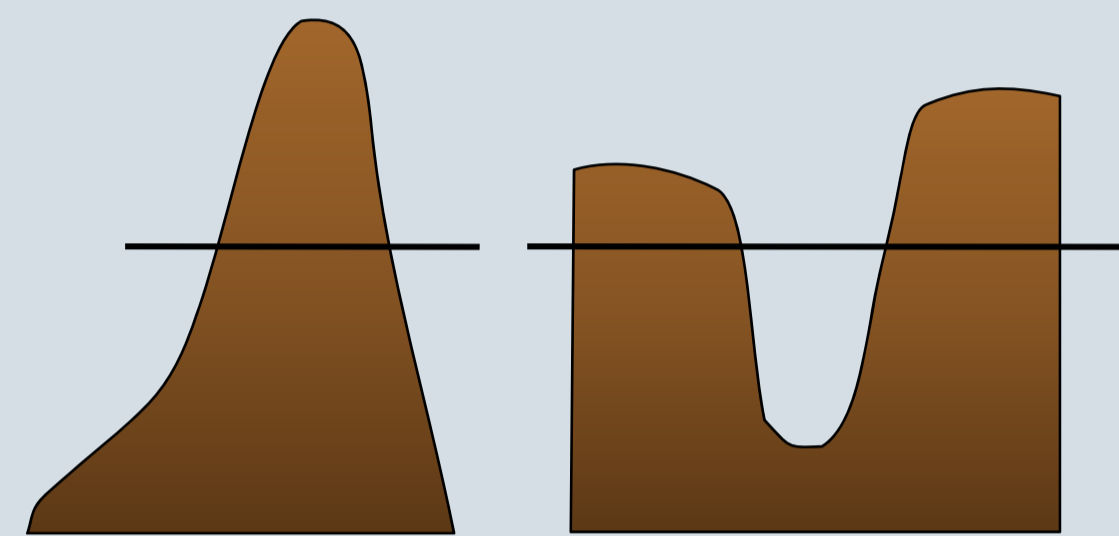
- Traditional methods typically either
 - Simplify the terrain before computing contours, or
 - Remove small (circumference) contours.
- Disadvantages
 - No control over what features are removed
 - Small important contours on hilltops removed



Important red contours representing hilltop often removed

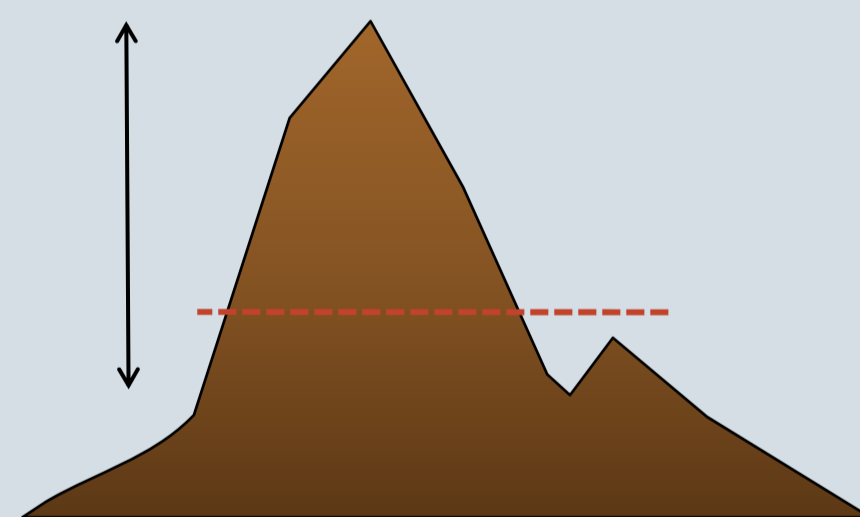
Solution

- Observation:** Small circular contours represents peaks and sinks.

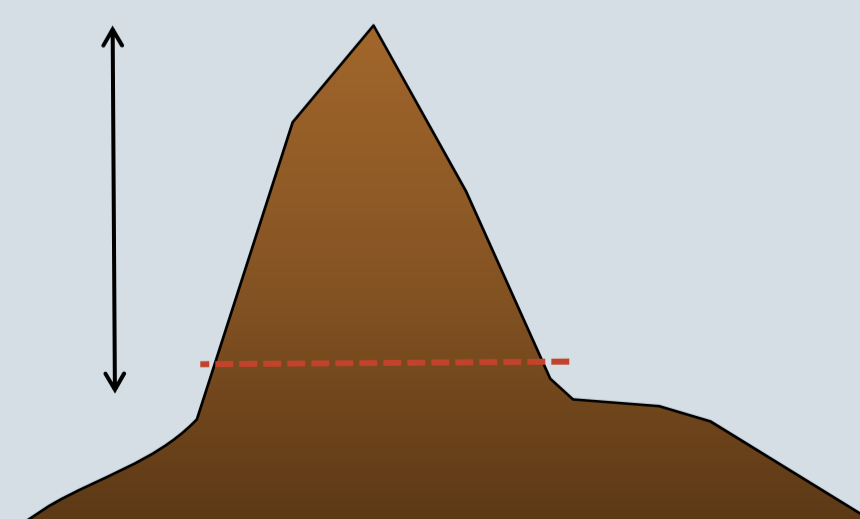


- We want to keep hilltops, but remove small bumps.

- Observation:** Hilltops have a large vertical distance to saddle points, bumps have a low distance.

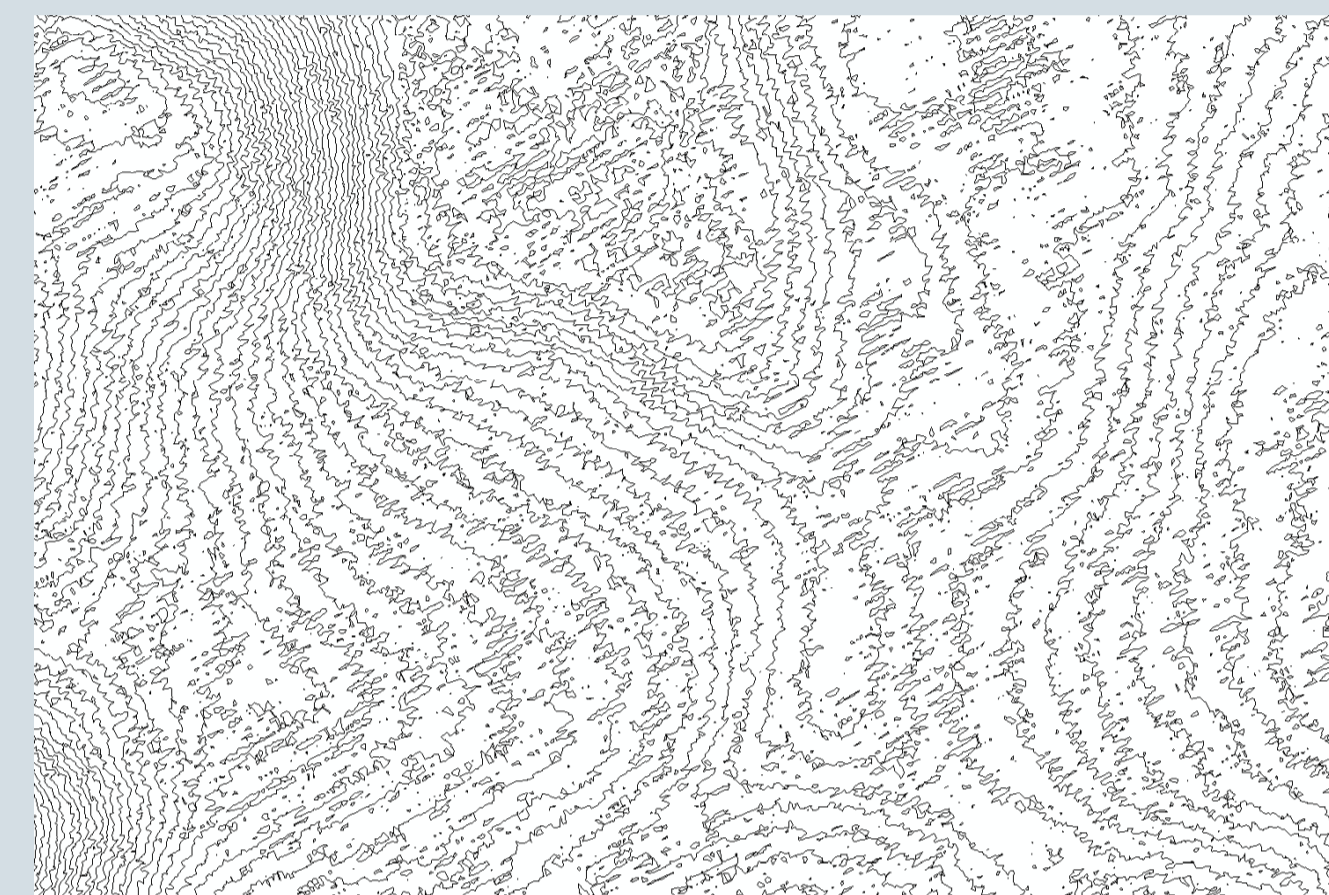


- Solution:** Remove all peaks and sinks with low vertical distance to saddle point.

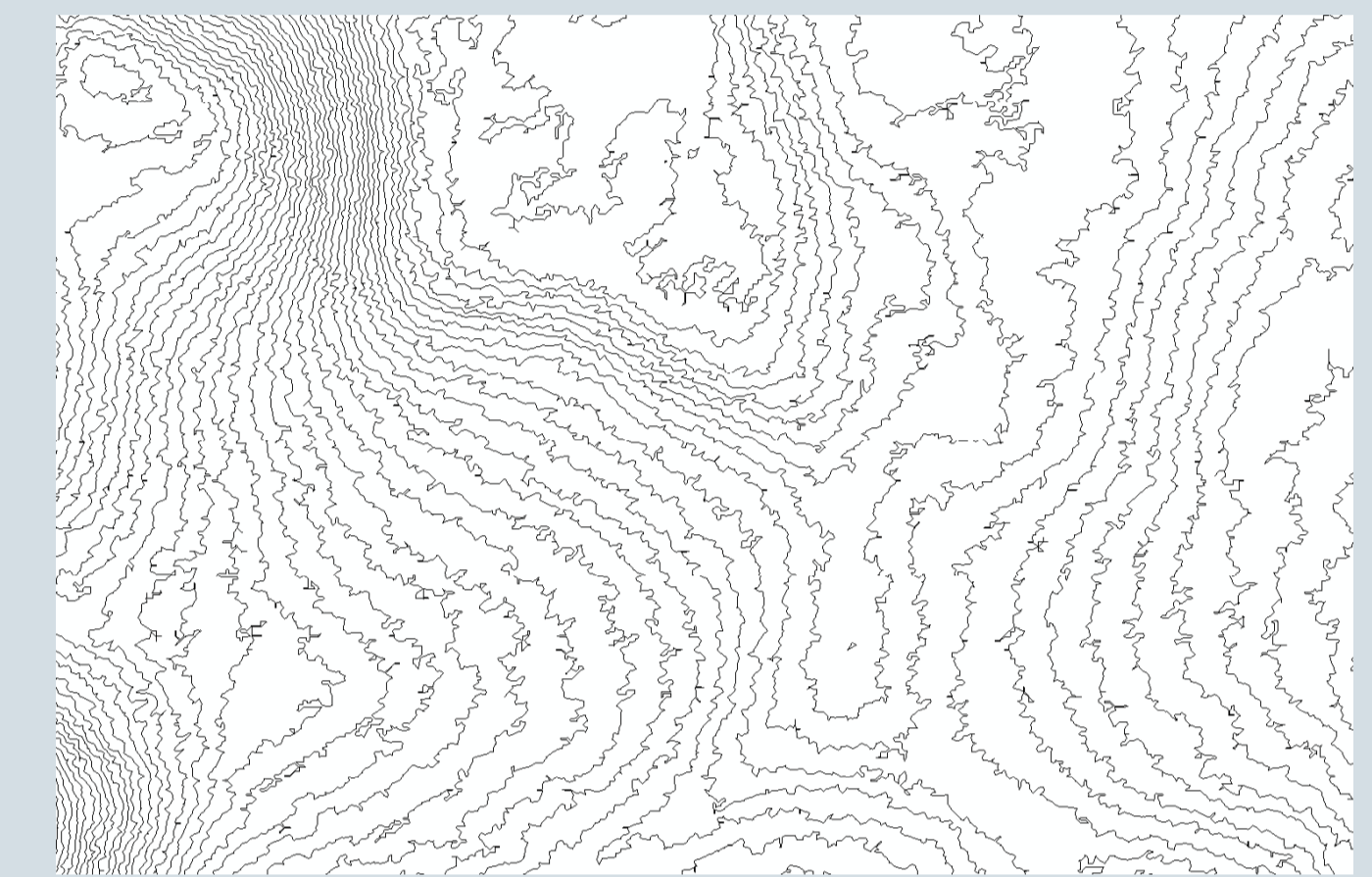


Results

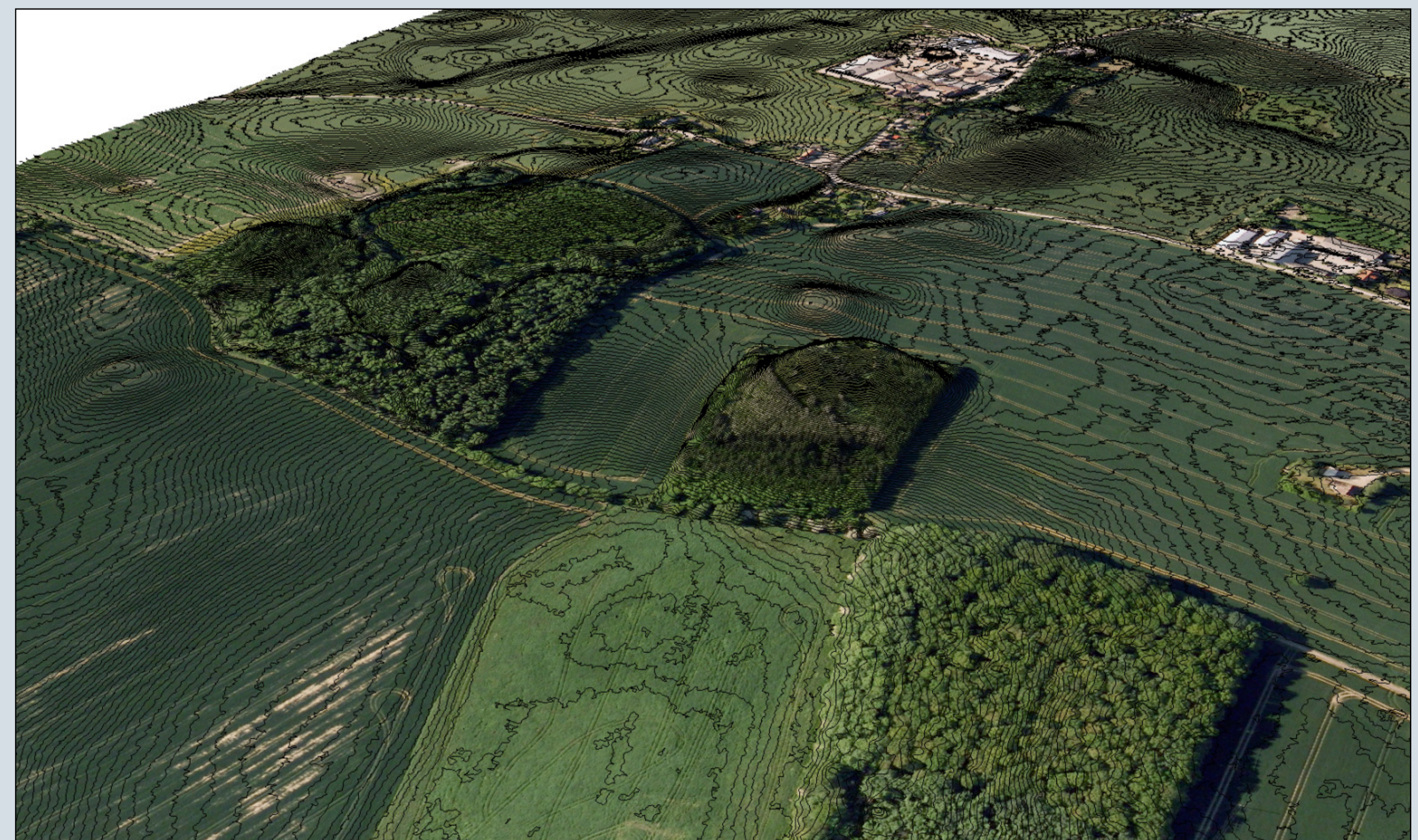
- TerraSTREAM can remove sinks and peaks based on vertical distance to saddle points (hydrological conditioning).
- Other more sophisticated criterias (such as peak/sink volume or area) can also be used.
- Method yields significant improvements:



Before hydrological conditioning



After hydrological conditioning



Orthophoto overlaid with 20cm contours