maDalGo
CENTER FOR MASSIVE DATA ALGORITHMICS

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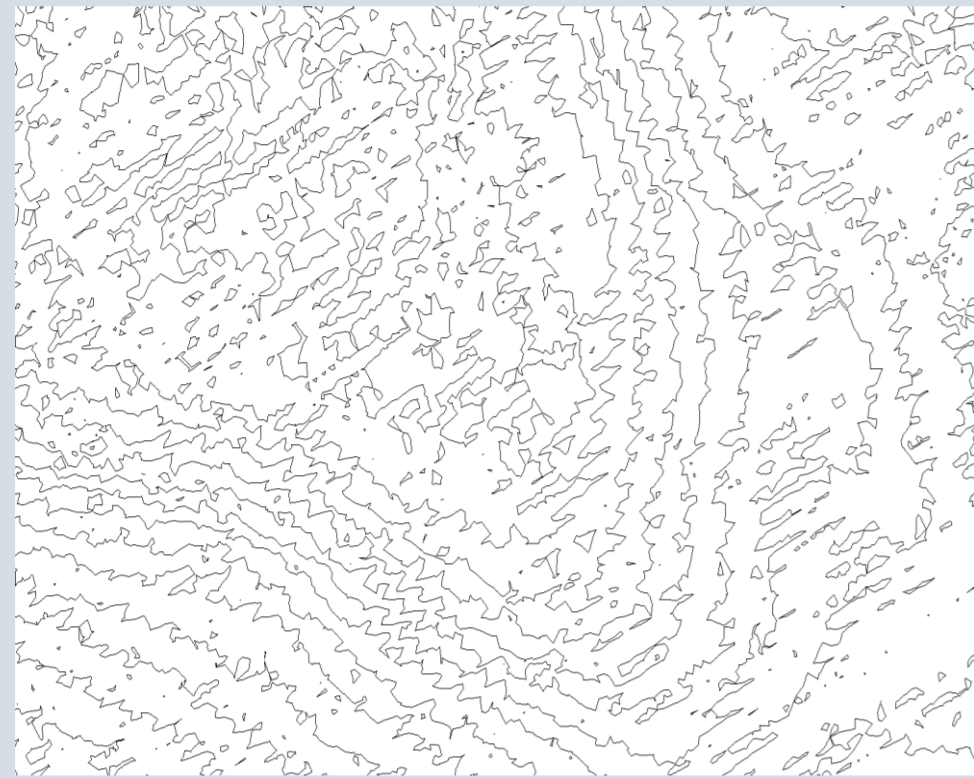Kasper D. Larsen
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TerraSTREAM: Contour Line Generation

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
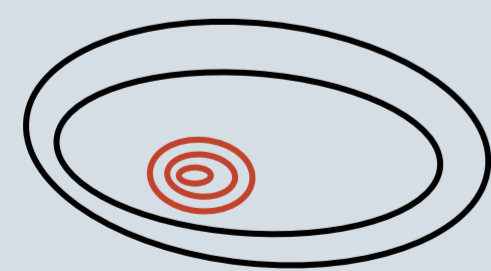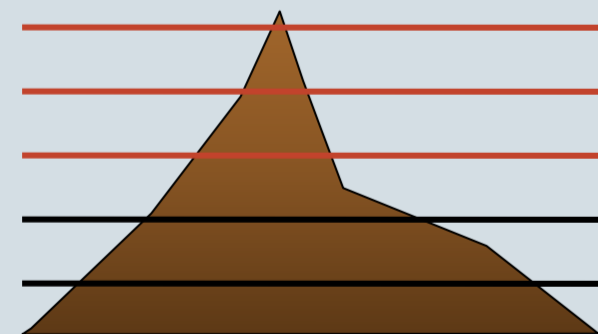
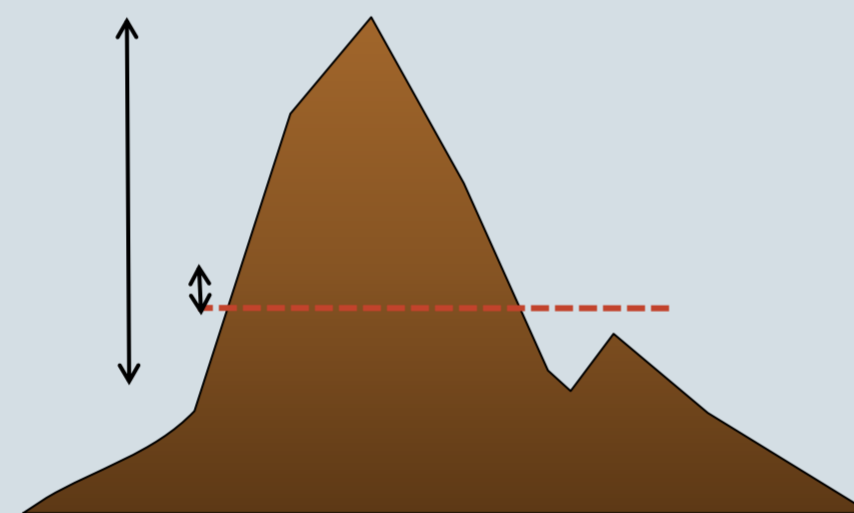*Important red contours representing hilltop often removed*

Solution

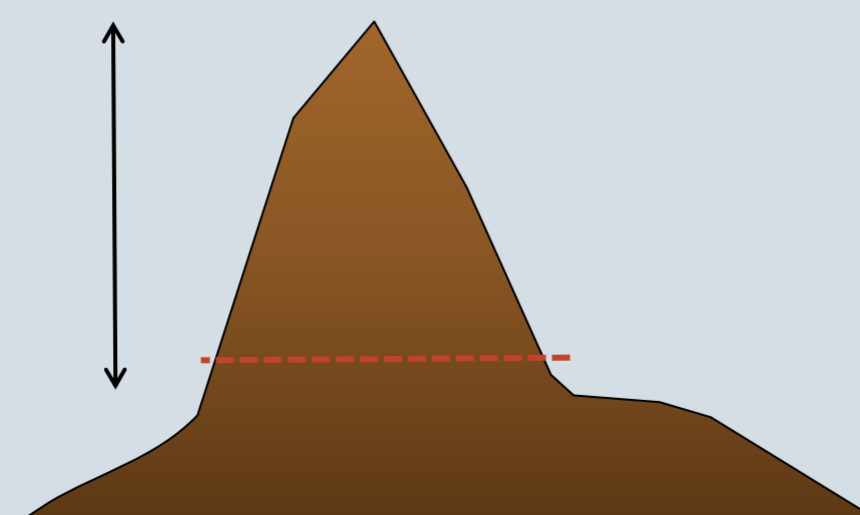- **Observation:** Small circular contours represents peaks and sinks.
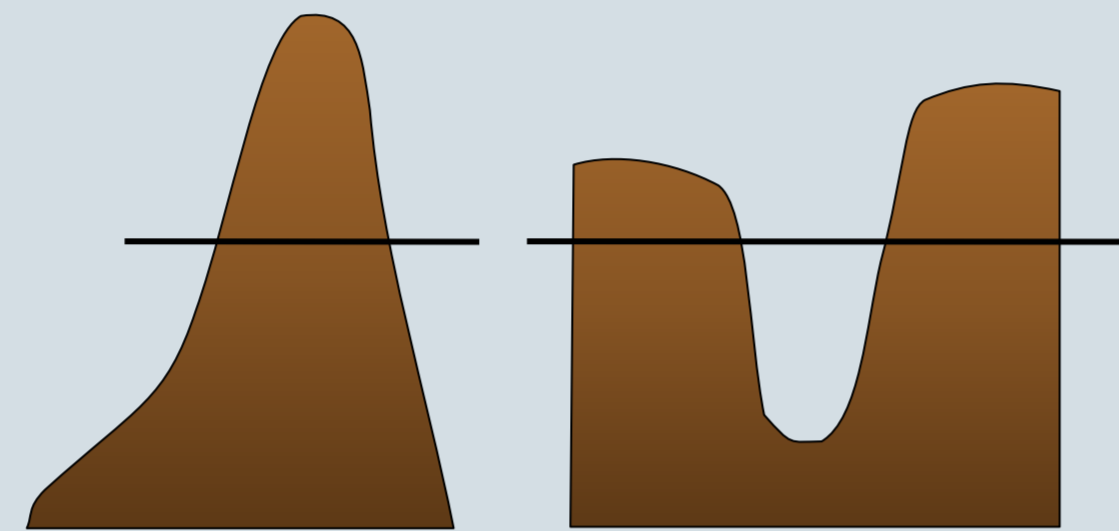
- We want to keep hilltops, but remove small bumps.

- **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.
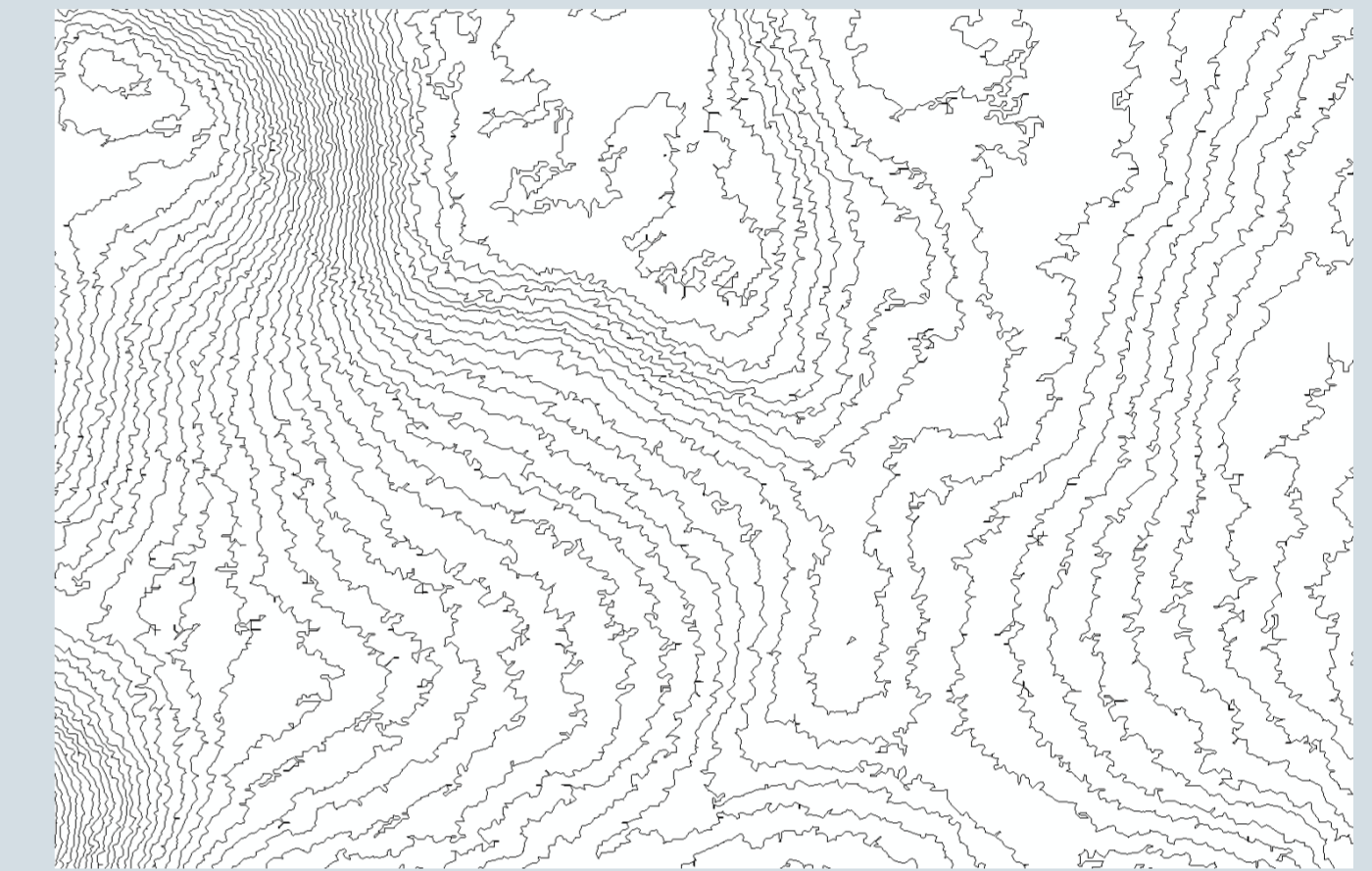

Results

- 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