Introduction

- Creation of real or imaginary landscapes
- Computer graphics/ computational geometry
- Used in movies, video games, and more
- “Terrain Generation Using Procedural Models Based on Hydrology” Génevaux et al. [1]
Procedural Generation

- High variability
- Simple implementation
- Terrain is not always geologically accurate
- Large scale terrain often appears ‘fresh’
Physics Based Generation

- Create terrain exposed to morphological agents
- Low controllability
- Computationally expensive
- Difficult to generate large and detailed terrain
Sketch Based Generation

- High controllability
- May or may not be geologically accurate
- Time consuming to create even small scenes
Background

- Many methods already exist such as procedural generation, physics based generation, and sketch based generation.
- These methods have pros and cons.
- No method for controllable, efficient and geologically consistent terrain.
The Paper - Overview

• “A framework that allows quick and intuitive modelling of terrains using concepts inspired by hydrology” [1]
• Uniqueness from the modelling of hydrology concepts
• Defined a being a procedural model
The Paper - Details

• User input
• River network creation
• River classification
• Model Generation

Graphic taken from [1]
Pros & Cons

• Highly efficient both in storage and computation
• Easy for the user to create the required input
• Geologically consistent
• Issues can arise with large mountains
• Rivers can only split going upstream
Further Refinement

- Urban environments
- Generate flora in the terrain generation process
- User control balance
Related Works

• “Synthetic Modeling Method for Large Scale Terrain Based on Hydrology” Zhang et al. [2]
  
• [2] incorporates more hydrology concepts

• “Procedural Riverscapes” Peytavie et al. [3]

• [3] uses a similar storage method to [1]

• The main improvement made by [3] is adding animated river surfaces
Summary

- Efficient and geologically consistent terrain generation is possible
- Taking concepts from hydrology in order to avoid simulation is key to this method’s success
- Refinements are needed and work has been done since
