# *Sandbox:  Immersive Terrain Modeling*

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# *Concept and Motivation*

IMMERSIVE MODELING, the potential of video game technology as a design tool for landscape architecture 3D modeling software is nowadays the standard product architects and landscape architects use to design and communicate their envisioned designs to non-experts in the field. However, these platforms provide the designer with a highly abstracted environment to work with spatial geometry, usually from unnatural points of view to the human scale such as bird's eye, thus warping the designer's perception and understanding of their creation. A new approach to this design paradigm is rising from bringing video game technology, the so called game engines, into the production of 3D navigable environments for the purpose of conveying architectural experiences.

These experimental techniques are opening a vast space for enhanced design opportunities, when seen beyond mere representational tools and fully understood as a new modeling environment.

The aim of this project is to create a prototype of a topography sculpting platform, with special stress on the human scale and nature's logics.

The ambition is to impart the designer with an understanding and experience of being in the landscape that they are designing.

The rules for this platform will be:
- User interaction with the environment will strictly be bound to the first person view, fostering the understanding of the environ ment through the human scale.
- User movements will also be bound to real scale velocities, such as walking, running or driving, further enhancing a scaleful dy namic relation to the topography.
- Topography sculpting tools will be related to nature, and they will come in the form of water, rain, erosion, rifts, etc.
- Collaboration will be explored through the interaction of several agents concurrently in the same model, and a hierarchy of edi tion privileges.
- Geometry will be imported and exported for communication with other platforms.

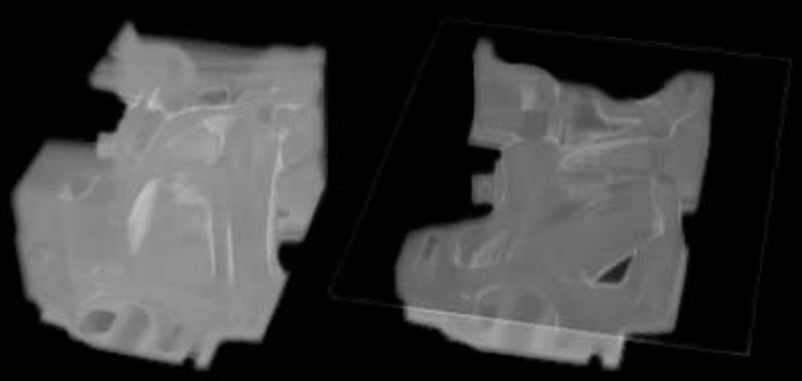
# Concept and Motivation

**Techniques for Immersive Modeling**

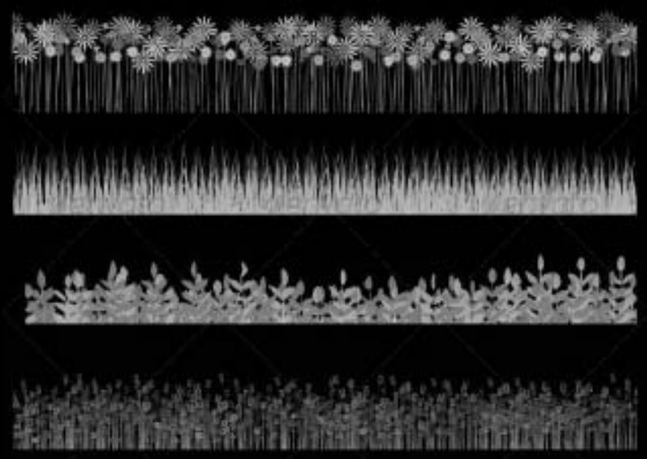
**This would be an interface that would allow for less intrusive or disruptive interventions to a given landscape model. This is in line with Native American philosophies of minimal intervention. Consequently, as opposed to conventional modelling commands (extrude, loft, trim, etc.) which are scaleless and devoid of physical constraints, this platform instead provides modelling commands that emulate natural processes. This should allow for a more visceral and meaningful relationship between the designer and the landscape of interest.**

**An additional focus will be placed on modes of representation. As opposed to commercial model visualization packages like Lumion, this platform is more interested in abstraction over photorealism. It will provide a series of preset view modes intended to evoke a more qualitative understanding of the environment. Additionally the platform will support anaglyphic stereoscopy for enhanced spatial perception.**

**Erosion / Deposition**

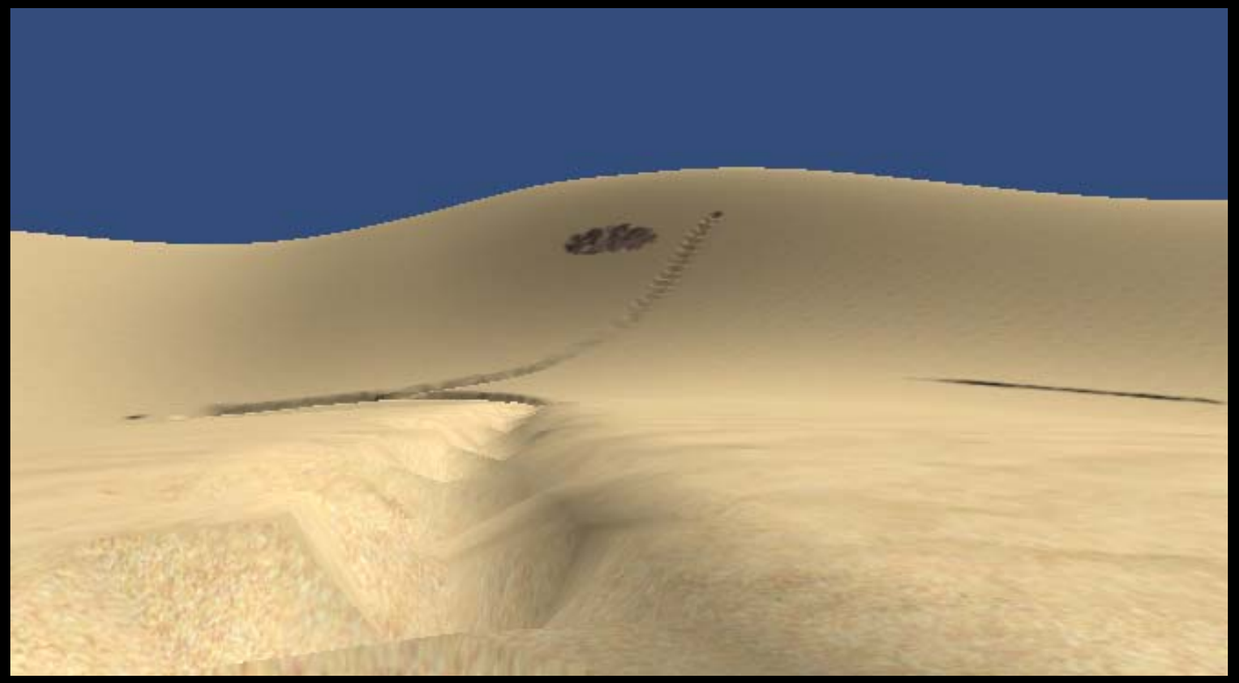


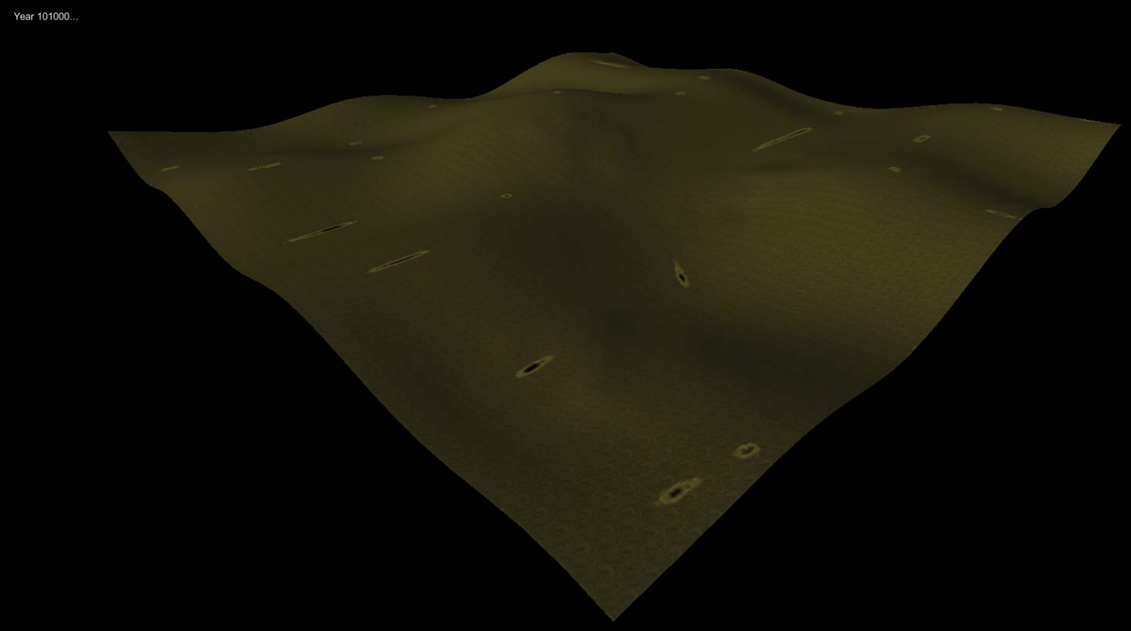
**Grow / Harvest**



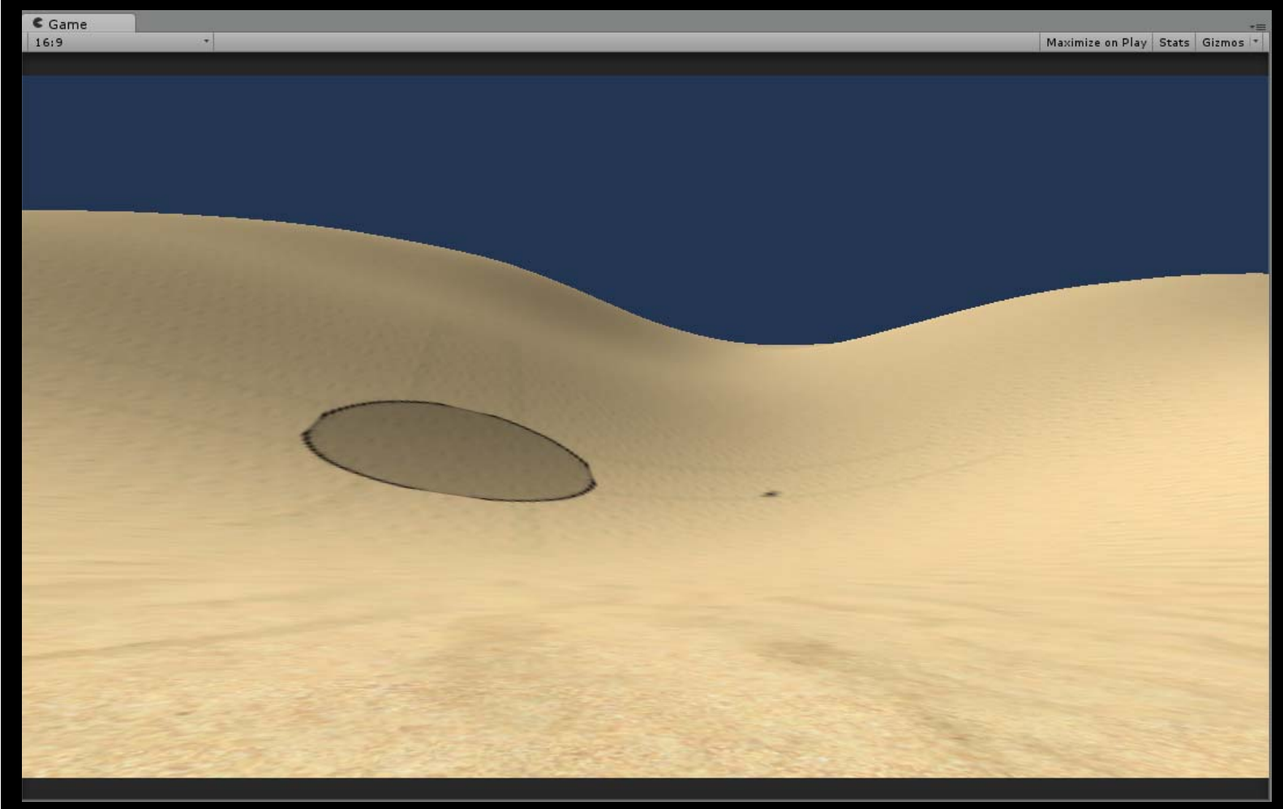
**Rain / Wind**

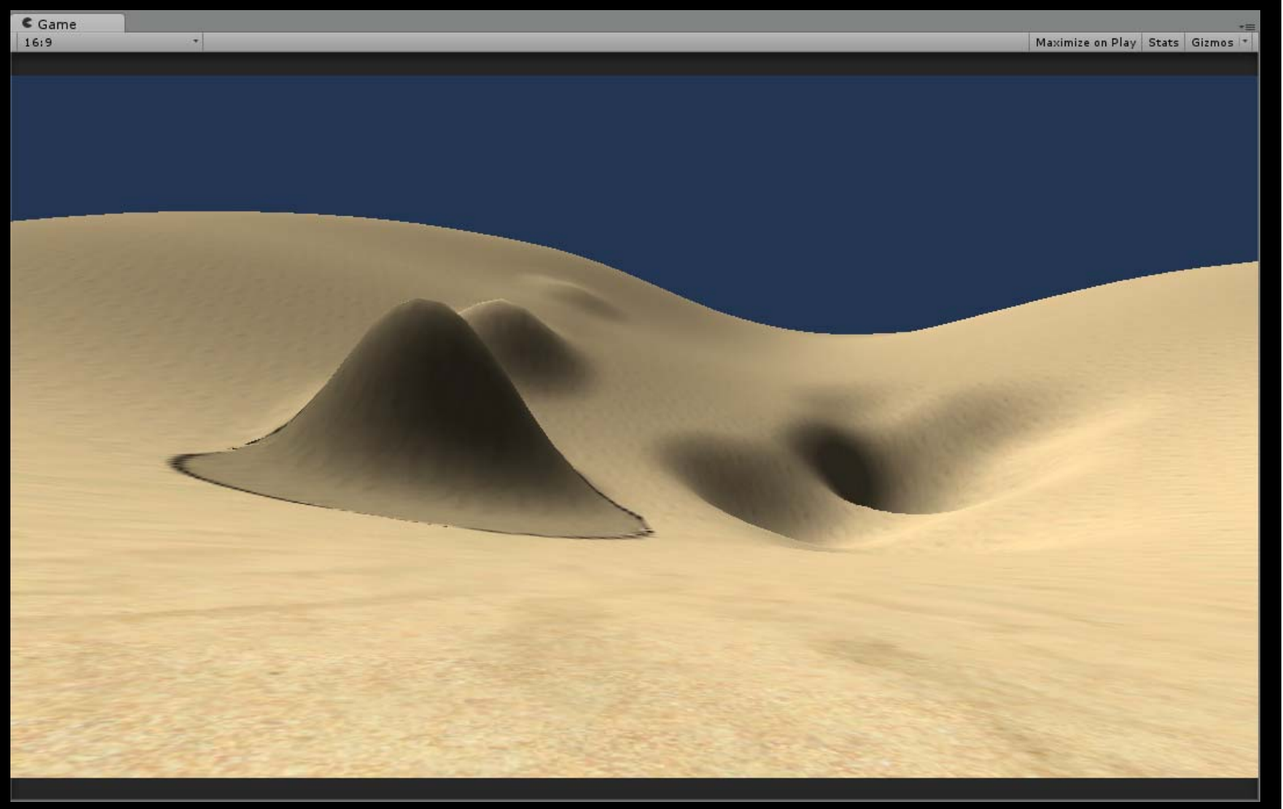
# *Time Scales*



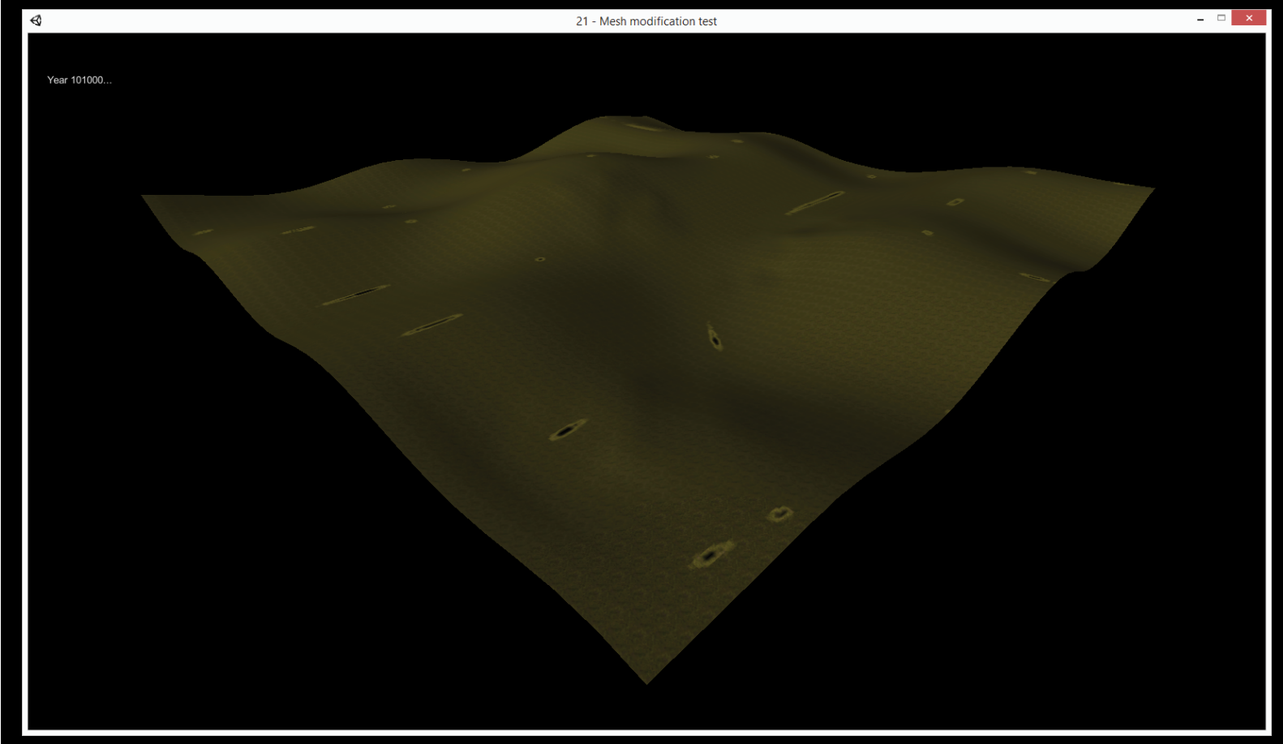


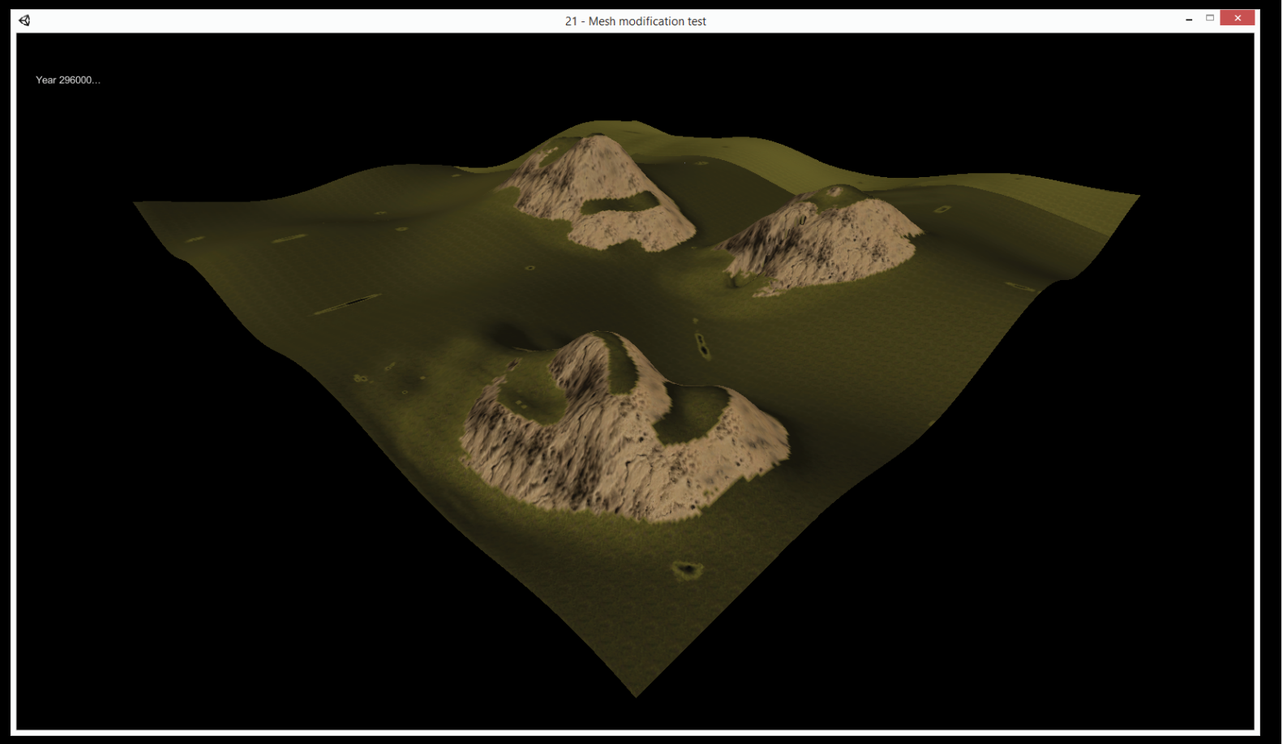
# *Human Scale*


Game
16:9
Maximize on Play
Stats
Gizmos


Game
16:9
Maximize on Play
Stats
Gizmos

# *Geo Scale*


21 - Mesh modification test
Year 101000...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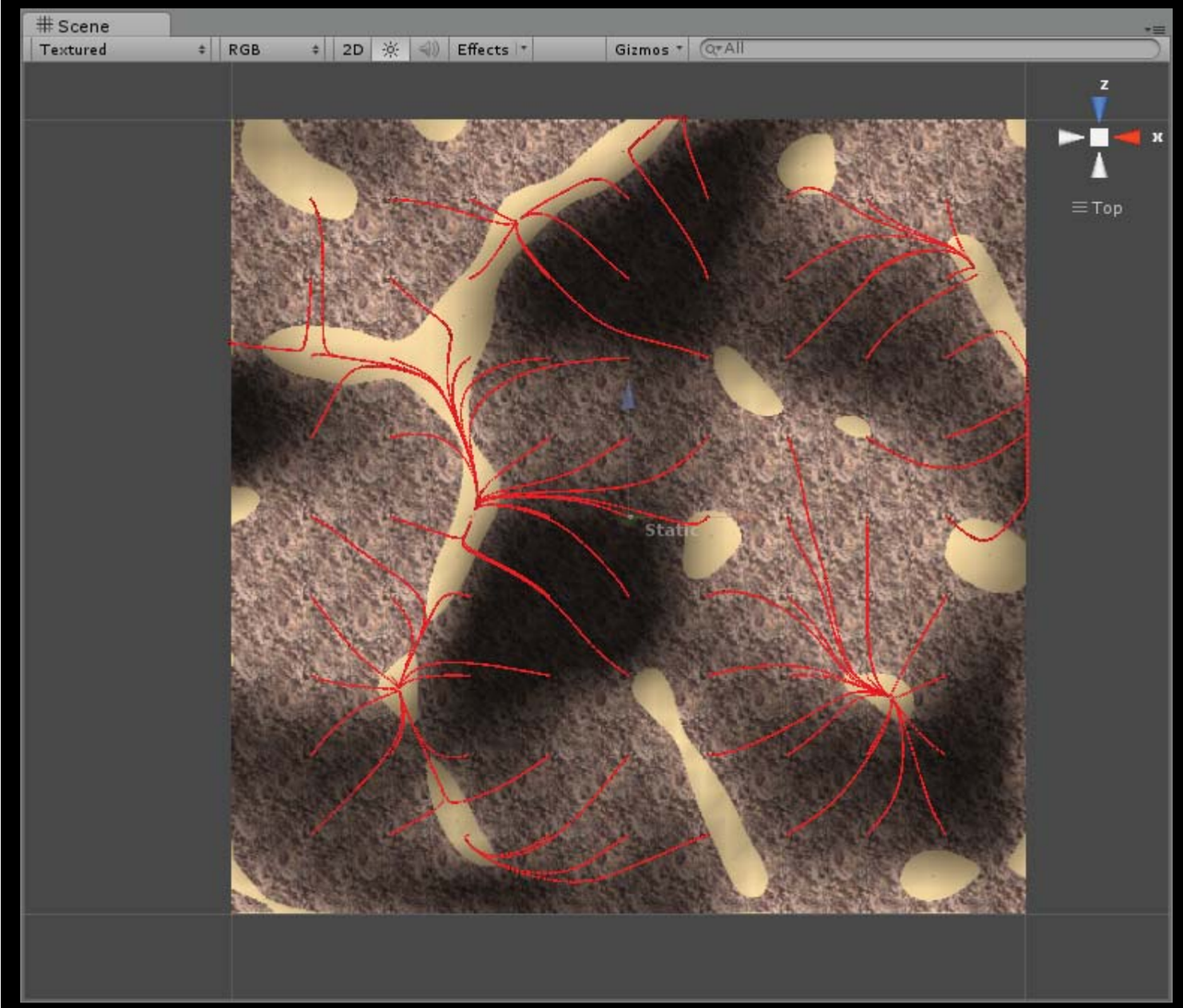
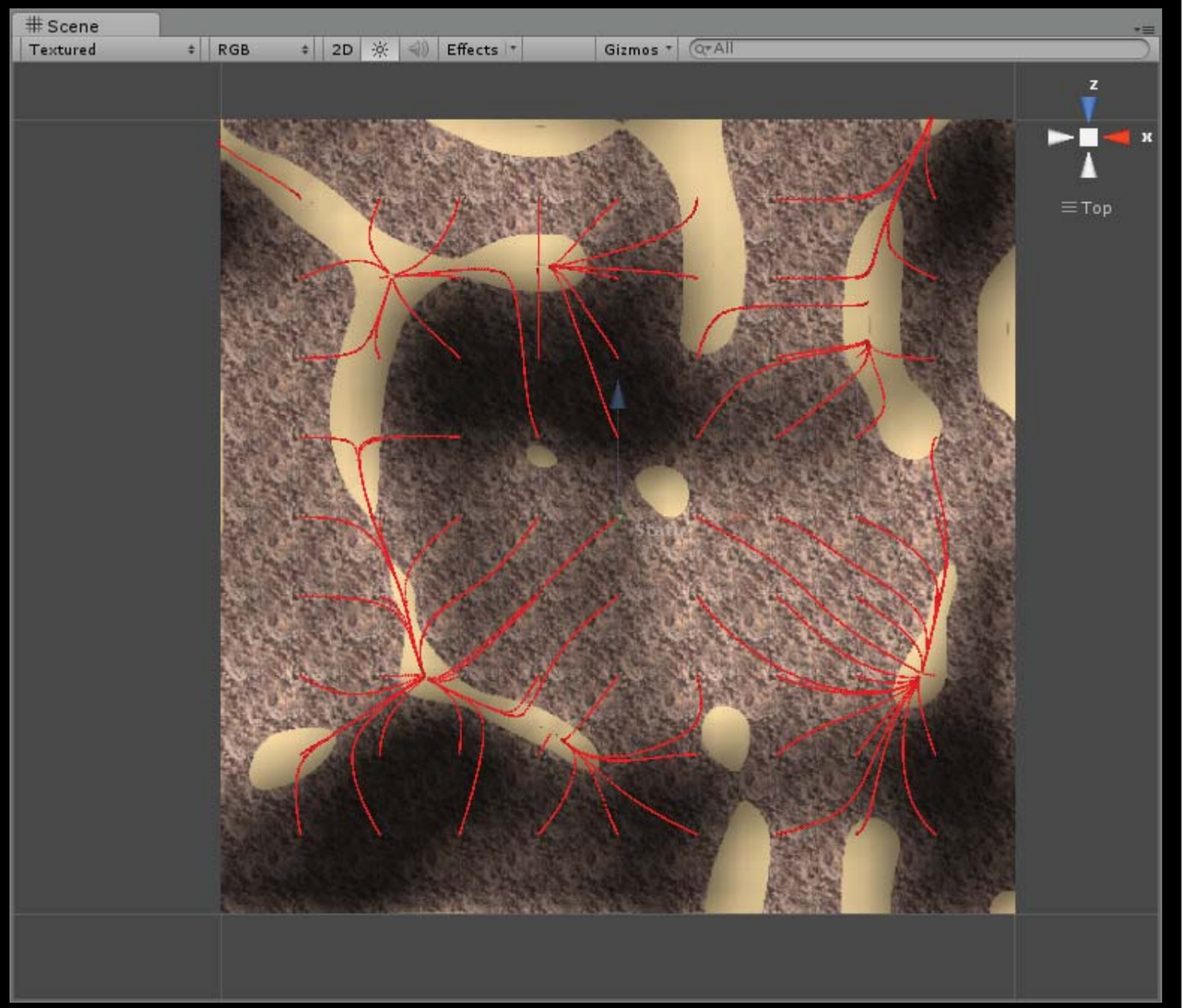
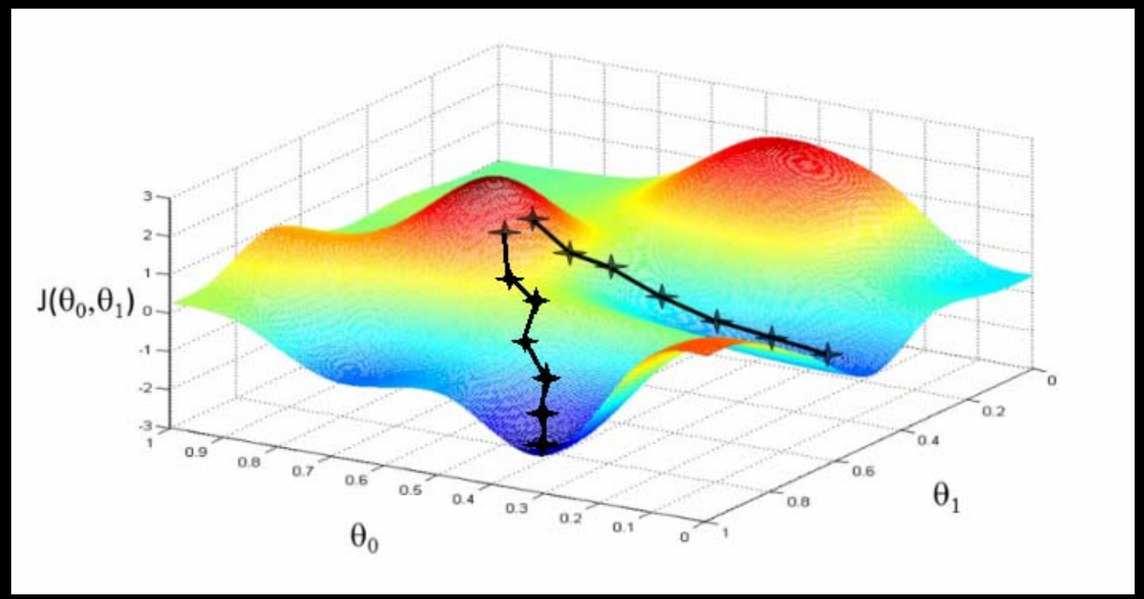
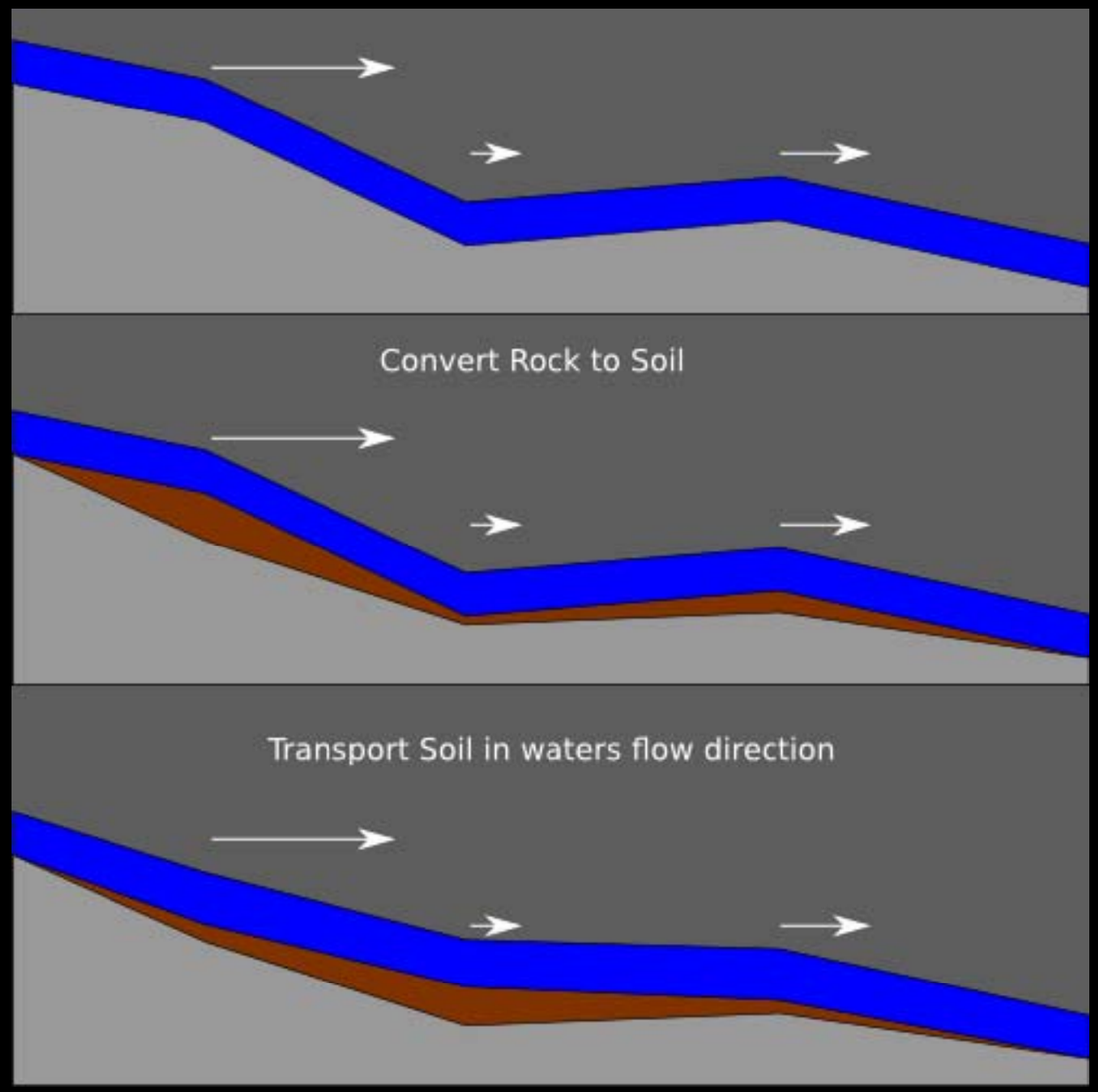
# *Water Based Erosion: Gradient Descent*



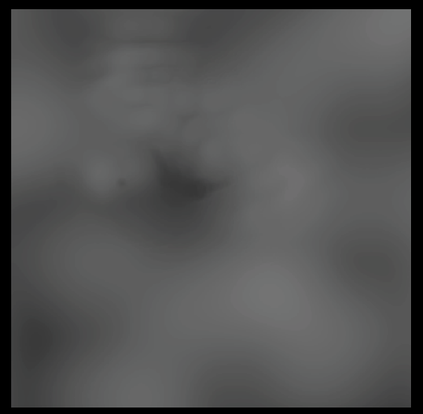
# *Erosion:*

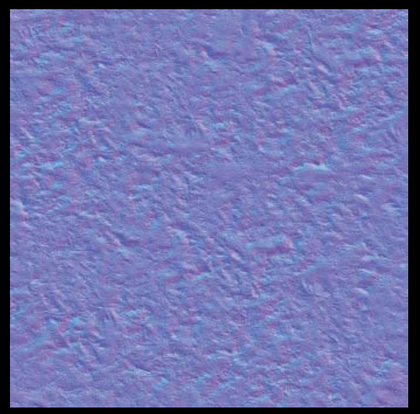
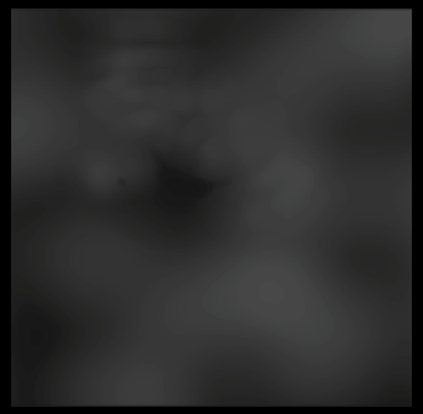


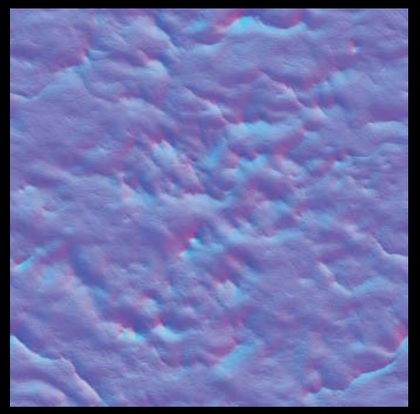



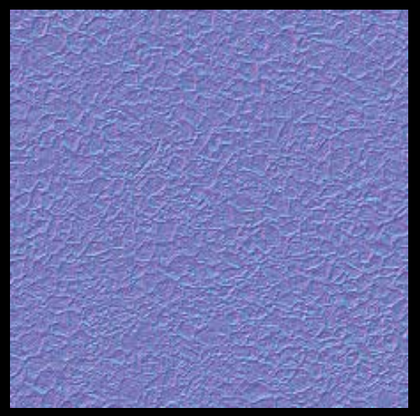

*http://codeflow.org/entries/2011/nov/10/webgl-gpu-landscaping-and-erosion/*
*http://blog.datumbox.com/tuning-the-learning-rate-in-gradient-descent/*

# *Texture Mapping: Alphamap Compositing*

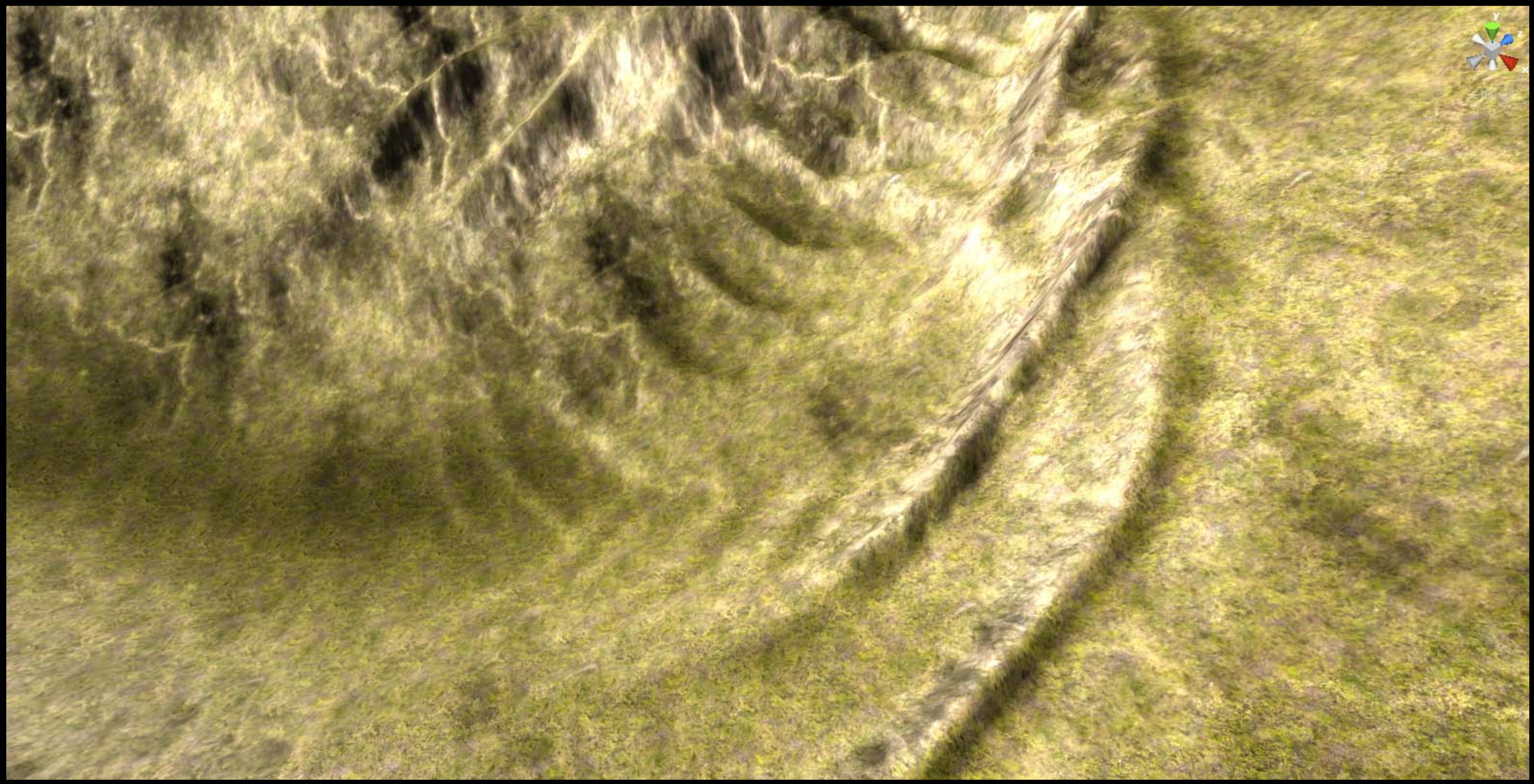




# *Screen Shots*



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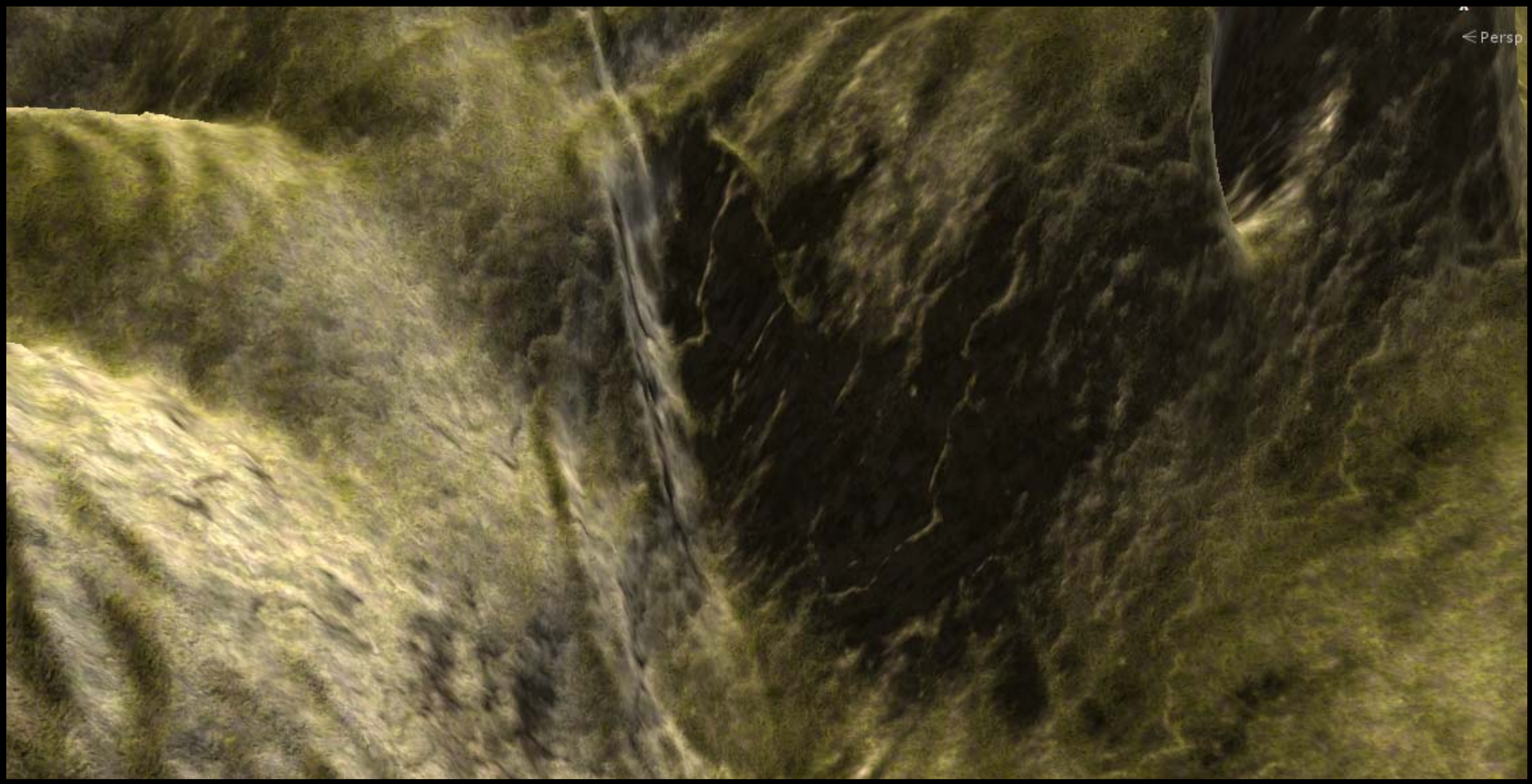

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