**COSC422 Assignment 1 Report**

**The Scene**

**Basic Terrain Model**

1. **Dynamic level of detail – Camera movement:**

\* Toggle wireframe view, \* move camera, \* toggle wireframe, tess level decrease (further away), more levels closer – controlled in the control shader. \* (have cracking issue using Equation)

1. **Lighting:** Geometric shader includes ambient + diffuse lighting – Face normals, tried vertex normals (but unsuccessful)
2. **Textures: \*** Water, \*snow, \*grass, adjustable snow and water levels, \*blending (show weighting Eq)
3. **Terrain Models:** Used MtCook & MtRuapehu height maps, ‘1’ is MtCook and ‘2’ is MtRuapehu

**Extra features**

1. **Cracking:** \*Was solved via calculating for the length instead (show Equation)

change background to show issue, grey background hides it

1. **Adjustable water levels:** \*Show this \* buttons …
2. **Adjustable snow levels:** \* Show this \* buttons …
3. **Fog:** \* Show this, toggle ‘f’ \* Show equation
4. **Adjustable Fog Level:** \*change fog density
5. **Smooth Shadding attempt:** show equations (in the fragment shader)
6. **Extra Buttons:** c

**Control Functions**

1. ↑: Moves the camera forwards.
2. ↓: Move the camera backwards.
3. ←: Turn the camera left.
4. →: Turn the camera right.
5. Spacebar: Toggles between wireframe and textured view.
6. '1': Displays Height Map 1
7. '2': Displays Height Map 2
8. '+' or '=': Decreases the cameras height
9. '-':  Increases the cameras height
10. 'c': Toggle cracking
11. 'q': Increases water level
12. 'a': Decreases water level
13. 'w': Increases snow level
14. 's': Decreases  snow level
15. 'f': Toggle fog
16. 'd': Decreases  fog density
17. 'e': Increases fog density
18. 'l': Toggle light shading
19. 'b': Toggle sky color

**Compiling & Running Application**

On a Windows Machine in the Makefile level, type: make && make program

**References to Sources**

* Height Maps from the lab.
* All mesh models from <https://www.textures.com/library>
* JPG to TGA converter <https://www.freeconvert.com/jpg-to-tga>