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Displacement Textures

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Displacement Textures as a Special Way to Model 3D Geo

Vertex-described Object

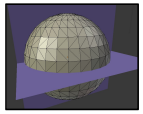

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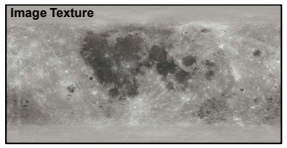
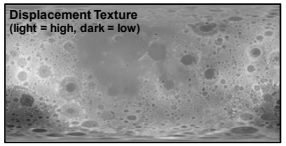
Image Texture



Displacement Texture
(light = high, dark = low)



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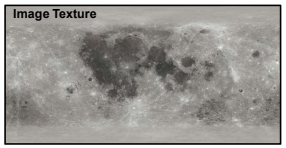
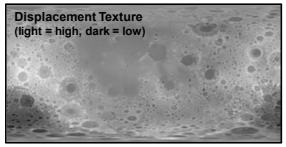
Displacement Textures as a Special Way to Model 3D Geometry

Image Texture



Displacement Texture
(light = high, dark = low)



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Displacement Textures as a Special Way to Model 3D Geometry

moondisp.vert

```
uniform float                   uScale;
uniform sampler2D               uDispUnit;

out vec2                vST;
out vec3                        vNormal;

void
main( )
{
        vec2 st = gl_MultiTexCoord0.st;
        vST = st;               // to send to fragment shader

        vec3 norm = normalize( gl_Normal );
        vNormal= normalize( gl_NormalMatrix * gl_Normal );

        float disp = texture( uDispUnit, st ).r;
                // in half-meters, relative to a radius of 1,727,400 meters
        disp *= uScale;

        vec3 vert = gl_Vertex.xyz;
        vert += norm * disp;

        gl_Position = gl_ModelViewProjectionMatrix * vec4( vert, 1. );
}
```

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Displacement Textures as a Special Way to Model 3D Geometry

moondisp.frag

```
#version 330 compatibility

uniform float                   uLightX, uLightY, uLightZ;
uniform float                   uKd;
uniform sampler2D               uColorUnit;

in vec2                         vST;
in vec3                         vNormal;

void main( )
{
        vec3 light = normalize( vec3( uLightX, uLightY, uLightZ ) );
        float intensity = uKd * abs( dot( vNormal, light ) );
        intensity += (1.-uKd);    // ambient
        vec3 newcolor = texture( uColorUnit, vST).rgb;
        gl_FragColor = vec4( newcolor*intensity, 1. );
}
```

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