WCS

Elevation data and WCS

Land Survey of Sweden
WCS

- In production since beginning of this year
- Based on MapServer 7
- WCS versions: 1.0, 1.1, 2.0
- Elevation grid in 1m resolution
- Formats: GeoTiff and AsciGrid
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- Few lines of MapServer Configuration

```plaintext
MAP
...
LAYER
...
PROCESSING "CLOSE_CONNECTION=DEFER"
NAME "elevation_1m"
STATUS ON
DATA /data/elevation1m/pyramid.vrt
TYPE RASTER
PROCESSING "BANDS=1"
PROJECTION
   "init=epsg:3006"
END
END
END
```
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- Datasource is a raster pyramid
- Pregenerated levels/resolutions
- Handle requests for any resolution
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- Exposing a raster pyramid to MapServer
  
  DATA /data/elevation1m/pyramid.vrt

- Easy in WMS, but not in WCS

- Pyramid must be exposed as a single raster
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- A VRT for each pyramid level
- A VRT with all pyramid levels
- Levels >0 are overviews

```
<VRTDataset>
<VTRasterBand>
  <ComplexSource>
    <SourceFilename>level_0.vrt</SourceFilename>
  </ComplexSource>

  <Overview>
    <SourceFilename>level_1.vrt</SourceFilename>
  </Overview>

  <Overview>
    <SourceFilename>level_2.vrt</SourceFilename>
  </Overview>

</VTRasterBand>
</VRTDataset>
```
WCS

- Drape orthoimagery on elevation
  - https://youtu.be/DUzbcREypwA

- Dynamic hillshade using JavaScript
  - https://youtu.be/JxLFS18XL_E