Mt St. Helens Dominant Vegetation

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Abstract

Mt. St. Helens has undergone two eruptions in the last three decades with the latter of which being significantly smaller and as such has undergone primary succession twice. After the first eruption we saw the dominant species alter in various areas around the mountain. The purpose of this project is to determine, since the 2008 eruption, what species was and currently is the dominant species on Mt. St. Helens. The analyzed data was sourced from LANDFIRE.GOV and included data sets from 2001 to 2018. No datasets pre 1980 were available for analysis so this was confined to those available dates. I went through five different operations to achieve results with four of the five being nonconclusive. The fifth of which was the simplest of all. Involving sorting data in descending order followed by a selection of the highest populated. The results of the analysis were underwhelming with Western Hemlock-Silver Fir dominating both in 2018 and 2001.

Operations Attempted

- Weighted Overlay – worked but ended up too generalized
- Raster Comparison – didn’t work (I primarily intended to use this)
- Table Comparison – didn’t work
- Excel Charts – didn’t work illegible charts
- Basic Selections – the only option that showed the dominant species by area

Issues

- The newer dataset was extremely detailed
  - Comparing raster and table information was an absolute nightmare
  - What similarities the two had were rendered useless
- No CSV or Excel file with the zip files
  - Spent hours trying to manipulate field names for comparison
  - To run raster or table comparison your alias names don’t matter but your field names do
- Landfire data puts a lock on their xml data so it can’t be severely altered and redistributed
  - Makes it hard to use the comparison tool which is what relied on initially

Workaround

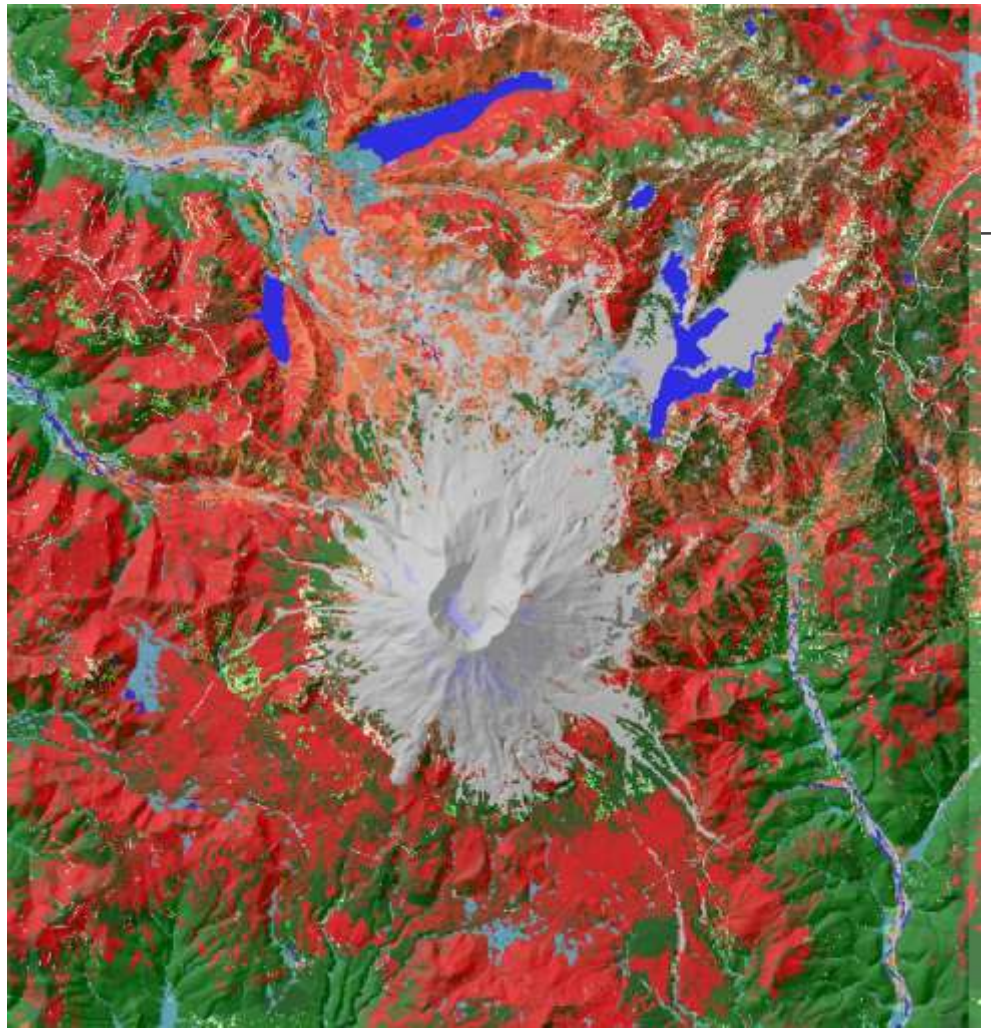
To workaround the barriers I tried a number of methods

1. Tried simply changing Field Names
2. Tried converting XML file to XSLX to alter Field Names
    1. DTD permissions error and far too complicated for me
3. Add new Field and name it accordingly
    1. Worked okay but the excessive detail in the newer dataset made it impossible
4. Try a different method entirely
    1. Tried both Weighted Overlay and Table Comparison rather than Raster Comparison

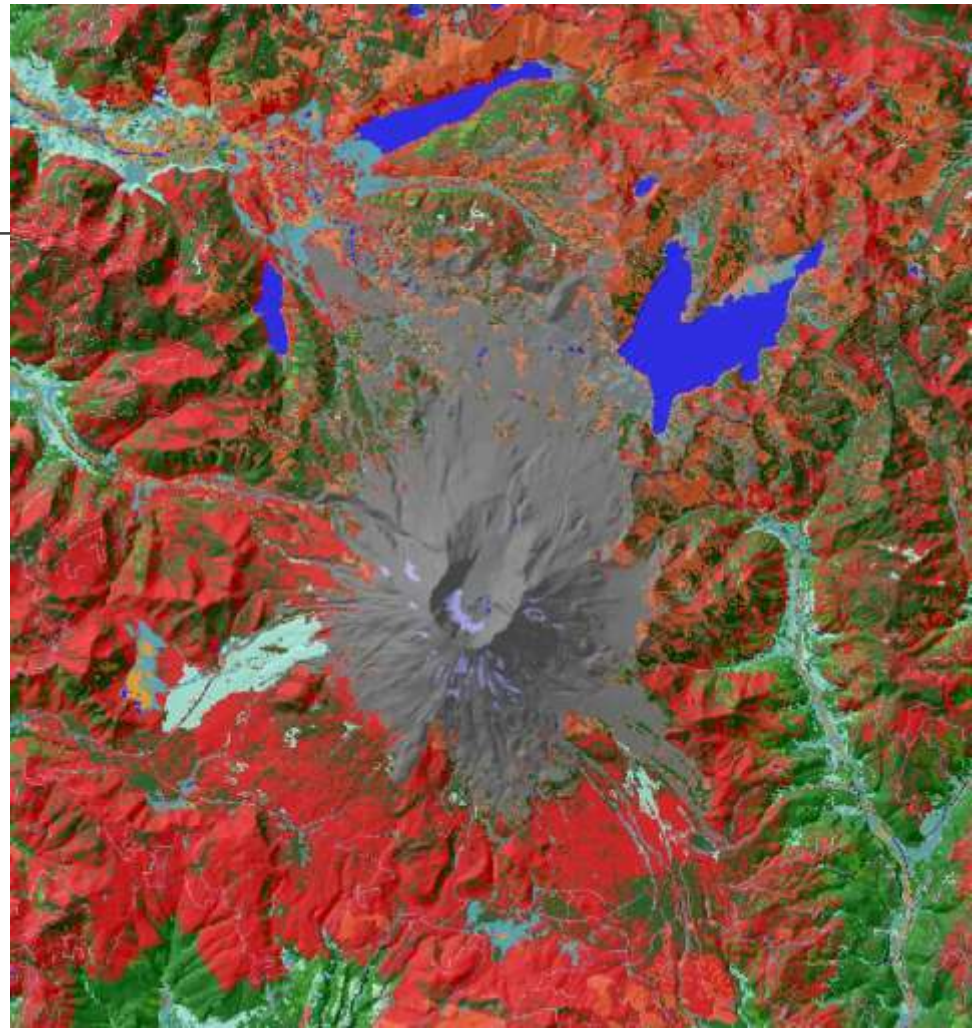
Method Used – Simple Selection

- Sort count field by descending order
- Run a selection of the first category i.e. North Pacific Mesic Western Hemlock-Silver Fir Forest
- By area I found the most dominant species
- Ultimately the datasets varied too much from one another to generate a viable comparison

2001 vs 2018



In red you'll see the coverage of the most dominant species



Changes between 2001 and 2018

- Vegetation cover increased as we could expect
  - 2008 eruption wasn't nearly as large as the 1980 eruption
- However, the increase in vegetation wasn't natural
  - The dominant species has been replanted over the course of three decades

Conclusion

- North Pacific Mesic Western Hemlock-Silver Fir Forest was the dominant species in both 2001 and 2018
- The dominant species wasn't naturally occurring
- If there's any takeaway from this, let it be that consistency in data classification is of the utmost importance

Sources

LANDFIRE data - https://www.landfire.gov