**Interpretations Working Group**

10/29/19

Attendees:

1. Suzann Kienast-Brown
2. Colby Brungard
3. Travis Nauman
4. Dylan Beaudette
5. Bob Dobos
6. Jason Nemecek
7. Jess Philippe
8. Jim Thompson – absent
9. Skye Wills – absent
10. Stephen Roecker

* Discussion
  + Tentative list of interpretations
    - Most relevant/valuable and those we can validate
    - WSS metric report
      * HSG is top
        + Often gets used incorrectly
    - Interpretation: anytime you use soil properties to predict something
    - Soil vulnerability index will use N leaching index instead of HSG
    - Depth (to bedrock or restrictive layer) DSM product vs. SSURGO for generating an interpretation could be interesting to compare
    - Decisions
      1. HSG
      2. SVI (implementing N leaching index) – complicated
      3. Valley fever
      4. WEI
      5. Dust generation potential
      6. Dwellings with basements
      7. Land Capability Class – complicated
      8. Drainage class
    - Next step is to look at the properties required for listed interpretations
    - Interpretations can be
      * Rule-based
      * SQL
      * Calculation-based
    - What approach?
      * Predict from properties
      * Predict directly from point training data
      * Predict from polygons
      * Need to demonstrate multiple
  + What properties are needed for each target interpretation
    - SVI
      * K-factor
      * N leaching index
      * Water table depth – soil drainage class
      * Slope
      * Organic vs mineral soils
      * Landcover
      * Carbonate karst heat map
  + Make Cloudvault folder to gather necessary documentation for each interpretation
    - Everyone contribute what you have and discuss at next meeting
  + Nov 15 11am central for next meeting

**Interpretations Working Group**

10/9/19

Attendees:

1. Suzann Kienast-Brown
2. Colby Brungard
3. Travis Nauman
4. Dylan Beaudette – absent
5. Bob Dobos
6. Jason Nemecek – absent
7. Jess Philippe
8. Jim Thompson – absent
9. Skye Wills
10. Stephen Roecker

Agenda:

1. Overview of the project (recently awarded to NMSU) (Colby, Travis, Dylan)
2. The goals of the working group (all)
3. Introduce structure of the data using the Upper CO River dataset Travis created (Travis)
4. Decide what’s next; identify action items (all)

* Proposal
  + Rapid progress toward predicting continuous properties
  + Next step is NASIS interpretations
  + Dylan and Jason – 50% work toward R-based interpretations engine
  + Goals
    - Deliverable 1 – prototype soil interpretations engine built to take any source of data – pedon, raster, any value that can be queried
      * Demonstrate on several various interpretations
  + Work with Travis’ dataset from Upper CO River Plateau
  + Coccidioides fungus should be a focus
  + Choose interps that we can validate and high-value
  + Issues
    - Some interps ask for flooding frequency
    - Could pull from gNATSGO – would be aggregated
    - Could predict using Travis’ workflow – sexier approach
    - There may be other options superior to SSURGO to explore
  + R- interpretations engine with flexibility to input different formats, types of data
  + Post-doc needed
    - Advertise at SSSA
    - May be able to get Ruholla on this a bit
  + One-year funding
* Goals
  + Demonstrate interpretations with raster data – develop an available prototype
  + Post-doc
  + Candidate interpretations
    - Some will be quantitatively validated for scientific community and others will be crowd pleasers
    - CART interp
      * Soil vulnerability index
        + <http://ncss-tech.github.io/soil-pit/sandbox/stephen/svi_interp.html>
        + <https://jneme910.github.io/CART/>
        + Stephen will share some resources
        + Focused on ag lands

Start with land cover mask

Hydrologic soil group

Surface vs. subsurface loss (accommodate drained soils)

Erodibility (K factor for surface loss)

Combine with outside source of slope information

* + - Coccidioides/valley fever interp
      * CDC has validation data – Bob can see if he can get it
      * The model is better than the data going in – we can improve on it
      * Properties – input
        + Surface morphometrics
        + Air temp
        + Salinity – EC – major factor

Water retention – can tolerate osmotic environment that competitors can’t

Can’t have saturated conditions

* + - * + Microclimate based on aspect, etc
        + Concave areas that are hot and salty and dusty
      * CA, NM, TX, OK
      * Locally acquired cases in WA state – lots of potential habitat
    - Hydrologic soil group is most used/run interp
      * Each component is rated
      * May be better handled as a predictive map vs from the rule set
      * Compare prediction to using underlying rule set
    - Wind erodibility index
      * Overlay with Coccidioides
    - WSS – metric reports most used interpretations
      * Stephen will get for group
  + Communication of uncertainty
  + Validation
    - Potential validation data available for wind erodibility, Coccidioides
    - Qualitative validation is typically done and could be done for others
* Upper CO River Basin properties
  + Incorporate uncertainty into interpretations
    - Expression of risk
    - Average uncertainty in input layers – weighted
    - Average RPI for each interpretation
    - Uncertainty of inputs and relationships in models
  + New data in updated snapshot of NASIS
  + Share link to paper with Jason, Bob
* What’s next
  + Tentative list of interpretations
    - Most relevant/valuable and those we can validate
    - Stephen will track down WSS metric report
  + SVI – Stephen (maybe Jason too) tinker with rasters CO River Plateau
    - Travis send pertinent data
      * Ksat – create
      * Depth to restriction
      * Water table depth to get to HSG
        + Maybe try predicting/mapping HSG instead
  + Bob – check on validation data from CDC for Coccidioides
  + Colby – who’s going to do the work
    - Post-docs and masters students
    - Send out announcement materials to group
  + Oct 29th – 11am central