Properties Sub-Team meeting

5/16/18

Participants:

* 1. Dylan Beaudette
  2. Colby Brungard
  3. Tom D’Avello
  4. Chad Ferguson
  5. Suzann Kienast-Brown
  6. Zamir Libahova – absent
  7. Jessica Philippe
  8. Stephen Roecker – absent
  9. Alex Stum
  10. Travis Nauman
  11. Jim Thompson
  12. Rob Vaughan
  13. Skye Wills
  14. Dave Zimmerman

Agenda:

* Focus team update
  + Vision
    - Nationwide continuous property stack
    - Follow GlobalSoilMap specifications as a starting point
      * Recognize the flexibility to adapt as needed
        + Add more properties, change depth intervals, etc.
        + Add properties to some parts of the country, not others (e.g. EC)
    - Properties predicting using pedon point data for training
    - Discussion of the need to consider horizons vs. depth intervals (local vs. national scale product)
  + Soils2026
    - National coverage continuous soil property data is Tier 3 of the Soils2026 effort
    - Question yet to be answered: when is the national coverage property data considered full-coverage soils information for meeting the Soils2026 goal?
      * We will need to produce something to demonstrate utility before this question is considered
  + Ground work – Rob and Colby
    - Discussions between Suzann, Rob, and Colby have led to some developments in testing and exploring options
    - Rob is heading up an effort to create a thinner set of covariates (compared to Soilgrids) and use resources at USFS GTAC to test capabilities with GEE and Tensorflow to predict properties
      * Option to keep covariates on GEE as assets, but not necessarily create there, especially hydrologically based derivatives
      * Process available from GTAC to develop spectral data from Landsat archive that removes disturbances in imagery
        + May impact dynamic soil properties effected by land use changes; will need to consider
      * Desire to leverage GEE resources without getting too tied into Google; definitely no plan to use GEE as final data repository or require users to interact with GEE in any way
    - Colby is entering agreement with USFS to provide property data for the Cascades region
      * Focus team members already looped into project: Jim, Suzann, Travis
      * Project can serve as test area for ideas/methods to apply to larger effort
      * Will focus on Mt. Hood area initially, then expand to greater Cascades region
      * Exploring discrete entities to stratify the area for modeling; Noller – geomorphic environments; LRUs
* Group discussion
  + Data processing options
    - GEE
    - HPC options; Univ of Illinois, WVU, USGS
    - Citrix-based virtual desktop system at NRCS Ft. Worth center; can customize to meet processing needs; only available to those with a LincPass
  + Discrete units in modeling
    - MLRAs; LRUs; what is appropriate?
    - Option to use discrete elements as modeling domains and develop local models
    - Option to develop global model with more sophisticated algorithm and incorporate discrete elements as a covariate
    - Leave location our cross-validation methods could be explored
    - Balance model interpretability with prediction accuracy
    - Comparison of local vs global results
      * Set goal posts early in process
      * Use some sort of matrix for comparison
      * Do the models have pedogenic interpretation? Does it matter?
* Group – these items will be requested by email
  + Vision
  + Expertise or interests
  + Involvement
* Next steps
  + Test some ideas on soilgrids 100 covariate data
    - Use this data to test some of the most pertinent questions as we are working toward preparing other covariate data
    - Will discuss this further and prioritize testing at next meeting
  + Continue work with Rob and Colby
  + Others?
* Decide on meeting frequency and set next meeting
  + Minimum of once a month – more frequent is better for building and maintaining momentum
  + Next meeting scheduled for Wed June 6 @1pm CST