Harnessing Big Data to Advance Soil Science – the 55th Annual Alberta Soil Science Workshop

Pre-Workshop: The Anthroposolic Soil Order

February 20, 2018, 15:00 - 17:30

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**Summary**

Increasing anthropogenic activity resulted in continuously expanding areas of disturbed and human-made soils. In many cases, those soils cannot be adequately described using the existing soil classifications, including the 3rd edition of the *Canadian System of Soil Classification (CSSC)*. This issue has been addressed through multiple researches across the World. Extensive review provided by Dr. Anne Naeth with colleagues (Naeth et al, 2012) shows that none of the classification systems, developed by that time, satisfy the needs of Canadian soil scientists. In a response, the team proposed a new Soil Order to be included in the coming 4th edition of the CSSC (Naeth et al 2012). The system was considered by the *Canadian Society of Soil Science* (CSSS) and used in development of the *Field Handbook for the Soils of Western Canada* (Sec 4: Pennock et al 2015; Sec 5: Pennock et al 2016). Since publication of the Handbook in 2016, Anthroposolic soil classification is at the field testing stage. Members of soil and land reclamation communities are encouraged to test the classification and provide their feedback to CSSS for future rectification.

Participants of this workshop will review:

* classification of Anthroposols,
* diagnostic features, and
* nomenclature of anthropogenic soil horizons.

Anthroposols are azonal soils, highly modified or constructed by human activity, with one or more natural horizons removed, removed and replaced, added to, or significantly modified. Defining features are severe disruption of soil forming factors and introduction of potentially new pedogenic trajectories. Disturbed layers are anthropic (anthropogenic) in origin and contain materials significantly modified physically and/or chemically by human activities. Three Great Groups are defined by presence of anthropogenic artefacts and by Organic Carbon content. Six Subgroups are based on a cover soil layer with higher Organic Carbon content than the profile below it, on depth of disturbance, on drainage characteristics and water regime at the site. Some new phases and modifiers, in addition to traditional ones used in the CSSC, are based on chemical and physical properties and origins of anthropogenic artefacts (Naeth et al 2012).

Examples from various reclaimed areas will illustrate common variants of Anthroposols in Alberta. These examples will provide an opportunity for workshop participants to practice description and classification of Anthroposols. Discussion will be focused on limitations of the proposed classification, possible ways to improve it, and on the feedback to the CSSS.