



Analytical Approaches to Regional Characterisations of Soils

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The health and wealth of people is governed by basics as access to potable water and food. To insure food supply, well maintained soils are mandatory. Unfortunately, soil degradation is largest in vastly overpopulated areas and in regions where formerly cultivated soils decay due to land grabbing or civil war. The gross domestic product of any country is highly dependent on the knowledge and availability of the usable soil coverage. Countries, that lost soils and soil data due to natural catastrophes or warfare need immediate help. Such assistance can be supplied by airborne surveys and remote sensing techniques. Nevertheless, acquired information such as natural gamma-ray distribution, hyperspectral and infrared data etc. need to be linked to geochemical, mineralogical and physical etc. ground truthing data before it may be used as a proxy for soil characterisation. The linkage can be established by statistical means as cross correlation patterns, multivariate analysis, self organising map systems etc. and by physical relations such as clay mineral content and its hyperspectral response, water content and temperature variation, parent rock material and its natural radiation pattern. Especially knowledge about the allocation of different clay minerals and their state of alteration can be very useful to physically link hyperspectral patterns with soil characteristics. So even when remote sensing data of different kinds are available to map regional soil systems, analytical approaches are necessary to develop to differentiate soils. The German ReCharBo project aims to solve the analytical problems by combining expertise from geophysicists, geochemists, soil scientists, remote sensing experts etc. The intended approaches will be presented and discussed.