Peer Review Report

Review Report on Regional soil patterns as indicators of late Cenozoic change in the Critical Zone: a baseline synthesis for the landscapes of peninsular India

Original Research, Earth Sci. Syst. Soc.

Reviewer: Selim Kapur
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EVALUATION

Q 1 **Please summarize the main findings of the study.**

The Quaternary implications of the Indian Peninsular Kaolinitic, Colluvial and Calcareous soils and their palaeo-environmental interpretations

Q 2 **Please highlight the limitations and strengths.**

The major strength of the paper is its sound knowledge it has reviewed from the legendary School of the Indian Pedo-geomorphologists accumulated since decades. And the amalgamation of this unique information and approach to pave the path for detailed pedologic analyses together with the ultimate interpretations to be based on the foundation of this base-line information.

Q 3 **Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.**

The mapping methods are appropriately utilised and data obtained via earlier work has been perfectly interpreted for developing the pedo-geomorphic base-line info.

Q 4 **Check List**

Is the English language of sufficient quality?
Yes.

Is the quality of the figures and tables satisfactory?
Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?
Yes.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)
Not Applicable.

If relevant, are the methods sufficiently documented to allow replication studies?
Yes.

Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)
Not Applicable.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?
Yes.

If relevant, have standard biosecurity and institutional safety procedures been adhered to?
Not Applicable.

Q 5 **Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):**

Dear Authors and Dear Editor,
As stated by the authors of this entry the study they have undertaken has attempted to successfully accomplish the 'Classification of regolith and associated land systems based on soil criteria''. However, Due all respect to the literature compiled from the legendary Indian School of Geomorphology, pedo-geomorphology and soil classification, this study only pertains to a highly precious base-line information source. Consequently to interprete the foreseen subject matter concerning the three types of soils, namely the 1. Kaolinitic residual, 2. Young colluvial and 3. Calcareous soils, which make up the Indian cratonic environment, where sedimentary archives are scarce compared to regions where young volcanic deposits, aeolian sediments, or stairways of alluvial terraces in deeply cut valleys occur, information about palaeoenvironmental signatures and landscape changes of the three soil classes should be dealt with detailed clay mineral formation and weathering via more detailed mineralogy and micromorphology
Unlike kaolinitic and calcareous properties, which are explicit in soil descriptions and presented here, parent materials are usually not explicit in Soil Taxonomy. The regolith materials hosting the soils were particularly mapped via mapping unit shapes and their cross-cutting relations. Thus, subsequently, both the detailed and innovative mapping work carried out on this review, containing the global literatüre of the mineral - interpreted soils and the interpretations on the calcretes together with the authors own field inventories, showed that thick calcrete profiles were not exclusively pedogenic but can be produced by multiple, simultaneous or sequential interactions that include groundwater (which actually are mixed with the pedogenic processes,Durand et al., 2006a) and aeolian processes (numerous refs from D. Yaalon from Israel and S. Kapur, M. Eren, M. Kızılot, S. Kadir and Claudio Zucca from Turkey, and Italy, mentioned as the windblown sources of repeated calcification-decalcification and soil formation) which need a further pedogenic approach utilizing large thin section morphology, Scanning Electron Microscopy and further x-ray diffraction and chemistry.
Thus, my ultimate decision is accept for this paper, but it would need a change in the title explaining that this was a valuable base-line info. Study, revealing the need of a pedologic approach.

QUALITY ASSESSMENT

Q 6 **Originality**

Q 7 **Rigor**

Q 8 **Significance to the field**

Q 9 **Interest to a general audience**

Q 10 **Quality of the writing**

Q 11 **Overall quality of the study**