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Comment

Interactive comment on “Soils of amazonia with particular reference to the rainfor sites” by C. A. Quesada et al.

Anonymous Referee #3

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This is an interesting and informative paper. Its principal contribution is to outline a pedogenic approach to the soil classification of forested Amazonia and to group the soil sites that were collected as part of the RAINFOR project. These were classified according to the World Reference Base for Soil Resources (IUSS). The soil groups are then interpreted within a soil development or evolutionary framework. The emphasis on selected soil properties (exchangeable cations, organic matter/(carbon and texture provides a simplified but effective description of the soil characteristics.

It is not clear what material is included in the other paper in this special edition (Quesada et al), which may affect some of the points below.

Principal suggestions

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Representative examples are given for each of the soil groups, but no assessment is presented of the variance within groups, nor how many sites fell within each group. It is therefore difficult to assess variability, though the data presented is relevant and valuable to the aims outlined. It is particularly useful that the different groups over a very large area were surveyed and analysed using comparable methods.

The paper refers to each of the main soil forming factors but deals with parent material generally through the drainage zones (Fittkau ,1971) rather than by comparison with geological distribution. A simplified map of the geology would be helpful or some greater detail of the geology/parent material within each of the sites. The same applies to topographic variation, which is mentioned as important in relation to erosion/deposition but is not examined in any detail. A morphological map would be helpful. Although frequent reference is made to 'the forest', the nature of each forest type could be explained, with greater reference to published work on vegetation-soil relationships. For example, the links between the more deciduous forest (and indicator plants) and mesotrophic soils of higher Ca +Mg content is worth exploring. 'Closed woodland' is considered as a savanna formation but is not defined. The paper omits anthropogenic factors, despite a good deal of evidence of 'man-made soils' in many locations, notably the terra preta soils with black carbon (Glasser et al., 2001) and evidence of disturbance even within what is today continuous forest (see chapters in Posey & Balick 2006).

The review aspects of the paper ('Introduction') are valid but limited, and much of the information has been published earlier. The discussion is arguably too long for a standard paper but too short for a comprehensive review. There are numerous sources and references which have been omitted, the most startling being the absence of comparison with Projeto Radam data (eg Cochrane 1985, and follow-up surveys). Although at a reconnaissance level, the detailed information on specific sites from Radam would have made a valuable comparison with RAINFOR sites (eg Nitisols in SW Amazonia). The maps of the soils groups presented here are inevitably drawn from a widely scat-

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tered data base. I should have preferred a very brief introduction outlining the aims with sufficient justification and background; followed by a short section reviewing the pedogenic approach and giving a brief background and context. It seems overly ambitious to review the literature about the main soil groups occurring in Amazonia as expressed in the Abstract. The alternative is a much more detailed and comprehensive review of Amazonian soils, which is probably inappropriate here.

Minor points

Title: Although RAINFOR is included in the title, it might be more helpful to call this 'The forest soils of...', since perhaps as much as 1/5th of the area is non-forest. It would also be helpful to indicate how Amazonia has been defined in this context.

The English needs some editing in places and there are a few (relatively minor) errors; eg Inceptisols; pre-Andean

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