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Introduction

This special section contains a set of papers inspired by and resulting from initiatives started at the workshop on soil aggregation in semi-arid and arid lands held in Las Cruces, New Mexico, on 8–10 May 1997. This workshop was organised by the IGU-GERTEC (International Geographical Union-Commission on Geomorphology and Environmental Change). Scientists from both the United States and Europe attended the meeting. Contributions from Australia were also included at the meeting.

The two main objectives of this meeting were (1) to discuss and review soil aggregation processes in dry semi-natural areas and (2) to identify and evaluate methods for assessing soil aggregation in arid ecosystems. Emphasis was given to both methodological problems and aggregate-forming processes, as an understanding of these processes is necessary to interpret the results of the various methods.

The themes were discussed both in the form of key-note presentations and posters, and a field workshop where various methods were demonstrated and compared by some of the participants.

The role of soil aggregation is currently reviewed in the light of environmental change and is by many regarded as a candidate indicator for land degradation in dry geo-ecosystems. It was therefore logical to the GERTEC commission to address soil aggregation as an important topic within their range of ongoing activities.

As the workshop was devoted to dryland ecosystems and the USDA-ARS Jornada Experimental Range is located in the Northern Chihuahuan desert, this location was an excellent place to discuss soil aggregation in the field. The Jornada Experimental Range is well known for its long-term records of vegetation change and grazing history dating to surveys completed in 1858. Experimental work on the Jornada was begun in 1915, and work continues today on a variety of basic and applied studies. The Jornada is an NSF-LTER (Long-Term Ecological Research) site and is included in the MAB-IBP network. Problems related to land degradation or desertification of extensive range lands are clearly present. Soil aggregation was found to be extremely weak and highly heterogeneous in its spatial distribution.

The significance of the workshop topics is clear in terms of scientific interest. It elaborated further on research on soil aggregation processes and how to unravel these, and in terms of needs by the UN Convention on Desertification and other end users such as the World Bank, focusing on the need for candidate indicators, insofar as these might be applied as early warning indicators of degradation of dryland areas.

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The outcomes of the workshop resulted in different initiatives; three tracks of follow-up activities are being explored:

1. To develop a standard method for assessing soil aggregation and protocols for comparing results of studies completed with different methods.
2. To enhance appreciation and understanding of links between soil aggregation and more general issues of sustainability.
3. Benchmark sites are being selected where comparisons can be made to (a) select appropriate methods of soil aggregate determination, and (b) study the resilience of soil structure.

The section presented here is only a first result initiated by this first meeting in Las Cruces.

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