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## Scale and Value: Challenges in the assessment and representation of geodiversity in Australia

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Though interpretations of the concept of geodiversity vary widely between the prominent researchers and practitioners of Australia, most agree that the definition is inclusive of abiotic elements (which can be detected spatially and assessed quantitatively), and their associated values (which can be used in reserve system planning, geotourism and to relate culture and nature to elements and functions). Challenges in Australian geodiversity assessment and representation are three-fold - there is lack of recognition of the concept across the nation, spatial datasets are incomplete or inadequate in some regions, and the spatial extent of some elements extends hundreds of kilometres whilst other potentially equally-significant elements occur at scales of tens of meters.

In this presentation, I present three case studies of Australian geodiversity. I first explore a regional interpretation of geodiversity, in a spatially-heterogenous protected area in Tasmania - a place that has myriad unique superlative natural values. I demonstrate that the delineation between elements of geodiversity is supported by a geological framework, that facilitates adequate rank comparisons of similar landforms and/or geological types across variable topography and vegetation communities. I then demonstrate the challenges associated with values-based assessment of geodiversity at this scale - that nearly all elements become regionally significant, there are many singular examples that cannot be adequately compared, and that the additional values associated with superlative landform elements may skew the spatial expression of more scientifically significant forms.

I then present two examples of state (similarity 'provincial') 'geodiversity site' (sensu Brilha 2016) inventories. One is extensively populated, is backed by expertise and universally-accepted criteria that dates back to the founding notions of geodiversity, but nominations are ad hoc and therefore a spatially-systematic ranked system has not been used. Conversely, in the other state example, inventory are systematically allocated on the basis of pre-established criteria - but this state is inherently far less spatially geodiverse than the former example, leading to a situation where the inventory entries of the latter would not be considered significant enough to warrant listing in the former.

Finally, I present some upcoming future challenges with national-level geodiversity assessment. I show the spatial extent and granularity of our four key national datasets (soils, geology, landform, topography). I present new data that shows the values associated with geodiversity elements that

are recognised in IUCN Ia-III reserve management plans across Australia. I demonstrate how the comparative dearth of spatial element complexity on the Australian mainland is at odds with the immensely heterogeneous state of Tasmania, and how this may in part have influenced prior thinking regarding the concept and its inherent value to conservation and society.

The 'Australian Geodiversity Assessment Challenge' raises questions about scale, territory, value, precision and representativeness - all of which are likely to be consistent with attempts to create a unified global geodiversity index or assessment approach. It is hoped that this presentation stimulates discussion among members, and informs the debate on the ways in which geodiversity elements and values can be evaluated at a range of spatial scales.