METALLOGENIC DOME STRUCTURESOF NEVADA AND NORTHWEST BRAZIL

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The formation of metallogenic dome structures are related in space and time with magmatic and volcanic processes, especially in interplate settings. A new interdisciplinary approach, which includes morphostructural analysis of digital topographic data and compilation of exisiting geological and geophysical data, identifies the most promising sites of mineral exploration. This procedure reveals surface manifestations of quasi-circular, hierarchical patterns of domelike morphostructures. These structures occur at the intersection of long-lived zones of weaknesses in the crust, and prove to be some of the most promising areas of mineral exploration. Our approach displays morphostructures of various sizes, shapes, and hierarchical structural patterns, which include stages of development. The term morphostructure is applied to the surface manifestation of magmatic-induced tectonic activity and geochemical processes in the overlying strata. Morphostructures comprise an array of genetically associated components, which may include isolated and structurally aligned quasi-circular domes and(or) calderas. Such structural formations occur in geologic settings where there is an interaction between the host rocks, magma, heat, pressure, water, and mixtures of microcolloidal metals. Our work reveals productive metallogenic dome morphostructures within some of the largest mineral districts in Nevada and Northwestern Brazil.