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Lineament field distortion and its analysis

Recitinear details of landscape - lineaments are the most numerous elements detectable on aerial and space photos of Earth's surface. Lineaments form a complex web on delineation maps of aerial and space photos. Photo geologists consider lineaments to be the traces of interaction of fractures or faults of Earth's crust with the surface, having direct and indirect relationships with geological structures. Lineament field is the surface manifestation of fields of tension, stress and deformation of rocks. General lineament field is the result of superimposition of multiple lineament fields of various scales, such as planetary, regional and local. The causes of planetary fields of tensions, brittle disloca tions and lineament fields are rotational and tide tensions in the Earth's crust. Within regional geological structures regional fields of stress and tensions dominate, creating regional field of brittle dislocations and regional lineament field, which is one of the manifestations of regional stresses and tensions. Local geological structures, containing mineral deposits, are characterized by fields of stress and tension, brittle dislocations and lineament field where its components affect and distort each other. Therefore traditional methods, such as the lineaments density analysis and rose-diagrams drawing are unsuccessful in geological practice. Using physical modeling and mathematical filtration, we have developed a method that allows separation of lineament fields of different scales and nature. This method has been successfully tested on different scales in Siberia and Africa on the total area of more than 650000 km2 (250000 sq. miles).

Biography

Dmitry A Kukushkin is the cofounder of researchers in Geology, LLC (FL, USA). He was born in 1947 in Moscow, USSR (now Russia). He studied in Moscow Geological Prospecting Institute from 1965 to 1970. In 1971, he began working in the field of geological research and prospecting, mostly in Siberia and Africa. Kukushkin was awarded his Ph. D. in geology in 1986. He has extensive experience in mapping and prospecting for oil, gas, metals (including gold), including the use of aerial and satellite images. Kukushkin developed a new method for analyzing aerial and satellite images that allows locating sites with a high potential for the presence of oil, gas, and/or metals. His method also helps to reduce expenses for drilling and accelerate the development of sites.

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