

Methodology of prediction, prospecting and evaluation of exogenous gold deposits as applied to various geotectonic zones

RINDZYUNSKAYA, N.M., NABROVENKOV O.S., NOVOGILOVA, I.M. Central Research Institute of Geological Prospecting for Base and Precious Metals (TSNIGRI), Moscow, Russia.

Resources of gold in exogenous deposits, such as placers and auriferous weathering crusts (lateritic and clay ores) are considerable. Near-surface occurrence, free gold and accompanying valuable minerals, up-to-date environmentally sound technologies of gold recovery, low cost of deposit reclamation, fast return of capital make these deposits attractive for investment. Many years of the TSNIGRI's experience in the study of gold placer geology allowed to develop the techniques of rapid prediction, prospecting and evaluation of exogenous gold deposits. This techniques is based on the study of common evolution-genetic series of a number of endogenous and exogenous deposits including: analysis of evolution history of geological structures and their metallogeny with distinguishing ore formations being the source of gold placers; structural-geomorphologic, paleogeomorphologic, mineralogical-geochemical, lithological-facies studies; metallurgical tests of ores; analysis of parametres and mineral composition of material from mined placers. The obtained information serves for compilation of medium-and large scale forecast maps on a structural-geomorphologic base including metallogenic data which allow to reliably identify areas promising for exogenous gold deposits, to define their type, mode of occurrence and optimal exploration methods. This methodology was successfully applied on many lode and placer gold deposits in Russia and was also tested on some areas in Europe, Asia, Africa and South America.