The geochemistry of the early proterozoic Dahongshan Group, in Yunnan Province, West-south China

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Abstract

The Early Proterozoic Dahongshan Group,in Yunan Province,west-south China,is a set of copper and iron-bearing metamorphic rock system which protolith are composited of siplite-keratophyre, sandshale and carbonate rock.The study of geochemisitry of Dahongshan Group indicating __1_rock mostly are siplite-keratophyre ,in general, enriching Fe, Na, Ti. Contents of Na_2O are further more than that of K_2O, $Na_2O/K_2O \geq 5.7$. Their chemical composition is similar to that of tholeite in ocean, the Cu and Fe-bearing volcanic metamorphic rock is early Proterozoic production which is formed by eruption of alkali basalt magma which is formed by mantle liquatuin in early period of Earth evolutionary history, in sea bottom__2_Cu_Fe_Mo_Mn , etc., elements are rich , their abundance is n-n_10 times more than crustal abundance, enrichment coefficient is 2.04—25.3; _3_REE distribution mold , which ∑REE is less, Light REE enriching, Eu positive anomalous value, and Ce passive anomalous value, is extremely similar to those of rift tholeite and alkali basalt in Hawaian area. Study conclusion indicates the tectonic environment of rock and ore-forming is rift in plate.

References

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Paleohydrology of lakes from isotopic and elemental chemistry

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Two groundwater-supported lakes in the Northern Rockies of Montana are being studied to 1) demonstrate the application of geochemical sedimentary records as archives of groundwater recharge rates and processes, and 2) develop a high-resolution record of climatic change and hydrologic response for intermontane valleys near the North American continental divide. The lakes exhibit very different solute and isotope balances expressed as contrasts in salinity and isotopic compositions under similar evaporative forcing. Results from 1) serial sampling of ionic and isotopic composition of lake water and of thermochemical behavior of the lakes; 2) characterization of groundwater geochemistry through replicated minipiezometer surveys of lake margins and sampling of water supply wells in the region; 3) bathymetric mapping of lake basins and monitoring of lake levels to determine volumetric changes; and 4) characterization of the isotopic composition of precipitation and accumulated snow-pack are used in conjunction with the TIC,TOC, XRD mineralogy, $\delta^{18}O$ of endogenic carbonate, and ^{210}P B chronology of a short sediment core to develop a mass-balance model of the modern lake/groundwater systems including equilibrium modelling of the evaporative evolution of lake waters. Solutes and $\delta^{18}O$ provide independent tracers of the hydrologic processes.

Modelled solute-based carbonate sediment mass fluxes are in substantial agreement with estimates independently derived from ^{210}Pb-dated sediment cores. The modelled result supports the climatic dependency of carbonate mineral flux. Carbon and mineralogical stratigraphies now completed for the Holocene cores indicate an extended history of high-frequency (100-200 year) variation in lake solute balance, represented by characteristic variations in carbonate mineralogy and organic carbon preservation. Overprinted on this quasi-cyclic hydrologic record are several longer excursions in mineralogy, suggesting abrupt modal changes in hydrologic balance.