Geochemical features of the fluvial plain sediments from the riverbank profiles of the metallogenic area of Eastern Serbia– Ecological significance

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During the geochemical mapping of the Eastern Serbia region (in scale 1:1.000.000) samples from the river bank profiles of the drainage areas of several rivers were gathered. Samples (181) were taken from the A-horizons, overbank sediments and stream sediments of the different localities (56). Geochemical features of the area are preserved in the investigated river bank profiles. Significant Cu and Au deposits and smaller deposits of U, Fe and W exist in the area. The anomaly concentrations of the same metals are noted in the investigated river bank sediments.

Well preserved geochemical inscription in the river bank profiles is in good correlation with metallogenic features of this part of the Carpatho-Balkan geochemical province. Sampling network is adjusted to the hydrographical features and mapping scale. The most interesting results are presented in the table 1.

locality	level	**Pb**	**Zn**	**Cu**	**Au**	**Sb**
Mali Timok	A	160	357	1610	0.20	7
	OB	311	1065	3500	0.22	15
	S	148	984	5444	0.25	8
	level	**As**	**Cd**	**Cr**	**V**	**U**
Mali Timok	A	20	3.0	60	140	-
	OB	65	2.1	40	30	3.5
	S	20	5.1	20	60	-

A= A-horizon; OB=overbank sediment); S =stream sediment

The results of gamma spectrometric analyses for ^{238}U, ^{232}Th and ^{40}K reflect radiation burden of selected localities.

Geochemical inscription from the river bank profiles are significant for geochemical prospecting and for rmineral raw material exploration, as well as for definition of anomalous concentrations areas of toxic and other elements.

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Partial melting and its role in elemental recycling: Insight from Pamir metasedimentary xenoliths

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Elemental recycling during subduction has played a key role in the geochemical evolution of the Earth, with recycling efficiencies as high as >75–80% for some elements (e.g., Th). Tracking the fluids and/or melts responsible for recycling, and understanding the *P-T* conditions at which recycling occurs, are more difficult as access to these conditions is limited to experiments. Crustal xenoliths erupted in Tajikistan record temperatures ranging from 875–1100 ºC at pressures of 19–29 kbar. Garnet–kyanite–sanidine gneisses have a meta-sedimentary protolith and represent dehydration-melting residua based on their bulk composition trend of Al_2O_3 > (CaO + K_2O + Na_2O) and that micas are only found as inclusions within garnet and kyanite. Because the metasedimentary xenoliths record a range of temperatures and reached conditions at which melting occurred, they are key samples to investigate the conditions at which recycling occurs. A LA-ICP-MS was used to measure the trace-element composition of all major and minor phases to determine where the key trace elements (e.g., Th, Sr) are stored at different temperatures. Here we highlight three of the samples that range in attaining maximum temperature from 875 ºC to 1000 ºC. In all samples, sanidine contains the large-ion lithophile elements, garnet the heavy rare-earth elements, rutile hosts Nb and Ta, and zircon contains Zr and Hf. In the granulite-facies (plagioclase-stable) gneiss, plagioclase stores Sr but less Ba and Rb, whereas sanidine stores Ba and Rb at all temperatures and Sr at high temperatures. The bulk compositions of the samples indicate that Th, La, and Ba were not depleted until temperatures >900 ºC, even though all three samples appear to have experienced melting. Thus, melting does not seem to have been directly responsible for the depletion, as only the high-*T* samples show depletion. Instead, high-temperature fluids most likely facilitated the recycling of elements from the subducted crustal material.