THE BEDROCK-SURFACE LINK IN BLANKETED TERRAINS VIA ASCENDING DIFFUSE GAS FLOW AND GROUND WATER

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This study deals with the nature of the bedrock-surface geochemical link in blanketed terrains via gaseous and hydromorphic transport. In addition to existing hypotheses, a leading role of micro/nanofissure formation is presumed in triggering of the gas bubbles/films generation from the supersaturated meteogenic ground water and ‘recording’ of geochemical information on the surfaces of these bubbles/films. Minor part is attributed here to the natural radioactive decay and deep (juvenile) gas flow. A translational motion of clusters and nano-particles with/along bubbles and films is considered as an explanation of a paradoxically low dissolving ability of the pellicular water. Nitrogen as a major constituent of the diffuse gas flow (outside current volcanic and metamorphic areas) facilitates in preservation of the geochemical ‘records’. The encounters of the metal-bearing gas flow with geochemical barriers are a must; hence inevitable noise in the ‘records’. Displacement and dispersion of the gas-related nanoform halo from the bedrock source’s epicenter are not as pronounced as those of dissolved hydromorphic species. The more simple and homogeneous is the structure and chemistry of the migration media, the lower the ‘noise’ level. Potentially, the bedrock-surface link sustained by the ascending diffuse gas flow is most pronounced in those blanketed terrains where bedrock is covered by thick drift (talus, glacial till, including the permafrost areas). A reciprocal complementarity of information obtainable from the selective leaching and gas flow-based techniques is demonstrated.