

## Evolution process of volcanic rocks since Pliocene of Ryohaku mountains: explanation of geochemical variety and spatial variations

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The comprehensive conception of the magma system in Ryohaku Mountains district can be understood by recognizing: (1) the heterogeneous chemical structure of lower crust and wedge mantle caused by dragged oceanic sediments on successive subducted plates, (2) two type of undifferentiated magma, which are tholeiitic Kuzuryu- like magma and high-Sr basaltic magma derived from upper mantle, where locally added LIL elements and Sr, and (3) generation of primary andesitic magma by partial melting of lower crust.