Stress localization in mantle and its effect on melt injection

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In the Nain ophiolitic massif, we described some sheared and boudinaged dykes with trondhjemitic as well as gabbroic to wherlitic composition. Both different types of dykes, i.e. trondhjemitic and wherlitic, are specially studied. The trondhjemitic dykes, with 1.5 m to few centimeters wide, are outcropped in amphibolitic rocks, so that amphibolites take gneissic appearance. We suggest that these amphibolites occurred in adjacent to paleo-transform fault within mantle section of Nain ophiolitic massif.

Consequently, the stress and shear are distributed among amphibolitic rocks and final trondhjemitic melt, occurred in these shear zones and create a mylonitic fabric.

SPO and LPO of quartz grains indicate an intensive ductile deformation. Stretching lineation and stress shadows with recrystalized quartz are also present. Plagioclases show an intensive slip dislocation, associated with mechanical twining. Growth of subgrains and stretching lineation of muscovite neoblasts along cracks of plagioclase parallel to mechanical twining, are common. In other cases, wherlitic dykes cut the much depleted harzburgite. The Cpx porphyroclasts with kink bands, microshear and displacement, are associated with new Cpx neoblasts along cracks. Also, the strong LPO of these minerals indicate an intensive ductile deformation. Two generations of olivines, primary porphyroclasts and secondary neoblasts are distinguished. The comparative studies of minerals` LPO in dykes and host depleted harzburgites indicate that Cpx has been near subsolidus surface when melt is injected.

Changes of carbon isotopic composition in modern pine *(Pinus Sylvestris)* tree rings from Central Japan

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Increasing of mining and combustion of fossil fuels like coal, petroleum, natural gas, etc. in industrial area caused emission of carbon dioxide to atmosphere and changes of carbon isotopic composition in the atmosphere and other carbon reservoirs. First investigation of contemporary tree samples made by Suess provided that their radiocarbon activity was lower than in samples from the middle of 19th century. This measurement allowed evaluation of changes of radiocarbon concentration in the modern biosphere caused by industrial activity. The Suess effect has a global character that is the consequence of air masses mixing in the atmosphere and exchange of carbon between northern and southern hemisphere. The increase of radiocarbon concentration in the atmosphere as a result of nuclear weapon tests in the stratosphere and on the Earth's surface, made it impossible to determinate the Suess effect directly from measurements of the concentration in the atmosphere and biosphere. This determination is only possible when one assumes a mathematical model describing carbon exchange between reservoirs. The cause of Suess effect is large concentration of sources emitting inactive carbon dioxide in regions that due to climatic conditions and site profile reveal difficulties in mixing and exchange of air mass. Mainly, heavily industrialized areas are subject to such distortion. Region of the investigations is located in city of Nagoya, Central Japan. The samples were annual tree rings (*Pinus silvestris*) covering last 50 years.

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