

Seismostratigraphic Division of the Non-Exposed Part of the Earth Crust of the Shields

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The oldest units of the Aldan shield, typical of the Aldanian, have most amply been studied. The Aldanian is an erathem (3.6-3.7 to 3.9-4.0 Ga) subdivided into the Upper and Lower Aldanian. This is a megarrhythm consisting of 2 subrhythms with a total thickness of up to 7-10 km. The subrhythms comprise 4 elements, the lower of which has a more basic composition than the rest. This unit (thickness 1-1.5 km) is formed of basic schists and marked by marble and/or ultrabasic schist lenses. The base of the Aldanian lies at 10-15 km. The pre-Aldanian probably consists of the Lower pre-Aldanian (Eoprealdanian) with chronoboundaries of 4.5-4.6 and 4.2-4.3 Ga, and the Upper pre-Aldanian (Neoprealdanian). In their stratigraphic volume and structure they correspond to the Aldanian. About 10 seismic boundaries have been recognized in the crystalline crust. 5 of them are high-velocity horizons 1-2 km thick, which allows us to distinguish seismic layers and sublayers. The identification of seismic layers with straton is incorrect due to a high angle of the latter. In the Lower Archean there are 5 deep lower elements of subrhythms, which due to their basic composition are favorable for layering and are registered by high-velocity horizons. A unit bounded by zones of layering is a quasistraton, whose bulk corresponds to a true straton, and the lowermost and uppermost strata, due to folding, are a mixture of the given and adjacent straton. The quasistraton fully corresponds to a seismic layer; and the straton, only in its major part. It is in this sense that to the lower 'basaltic' sublayer corresponds the Lower Eoprealdanian; to the upper sublayer, the Upper Eoprealdanian; to the 'dioritic' layer, the Lower Neoprealdanian; to the lower 'granitic' sublayer, the Upper Neoprealdanian; and to the upper sublayer, the Lower Aldanian.