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Decreasing emplacement rate of granitic plutons with time

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The time required for the emplacement of granitoids appears to decrease from the Archean to present time. A selection of intrusive, from sanukitoid granites, dated from 2.74 and 2.52 Ga, rapakivi granites and anorthosite suite from 1.80 to 1.10 Ga, granitic plutons from the Devonian and from the Cenozoic Pacific coast batholiths (Kodiak batholiths, North Cascades, Sierra Nevada, Southern Chile), and recent Japanese intrusions show numerous precise dating for their several petrographic facies. Those maximum and minimum age measurements provide the time estimate of emplacement of a single massif. The intrusion time linearly varies from about 50 My for Archean intrusives to less than 1 My for recent intrusions. This is well below the errors in age determination for each rock type. Several hypotheses such as the thermal state of the crust, the distance to the heat source region can be ruled out. The thermo-tectonic environment of the melting conditions (lithospheric process, subduction-related, etc) does not seem to control the observed trend. It suggests an evolution in the mechanism of magma ascent within the crust, that would drive melting and melt extraction to build those intrusions.