provide evidence for island arc and mid-ocean-ridge settings in the Lower Cambrian (around 525 Ma, SCHALTEGGER et al. 1997, MÜLLER et al. 1995, MILLER & THÖNI 1995). In the Silvretta a second formation event of gabbroic melts in the Middle Ordovician is claimed by SCHALTEGGER et al. 1997.
In the eastern part of the ÖCB we now have been able to trace an Ordovician basic magmatic event.
The Pfaffengrat intrusion in the southernmost Stubaital is characterised by magma mingling between a granitic and a gabbroic melt, rising the question of coeval magma sources versus independent geneses.
U-Pb laser ablation ICP-MS data of zircons of the Pfaffengrat granite show a two stage evolution. Zircon cores reproduce a Cambro-Ordovician event at 486 ± 27 Ma, corresponding to the emplacement ages widely accepted for acid intrusives within the Ötztal (SCHMIDT et al. 1967, HOINKES et al. 1997, KLÖTZLI-CHOWANETZ et al. 2001). Zircon rims however distinctly document a second magmatic phase at 454 ± 7 Ma. Simple fractionation of the magmas from the same source is thus precluded by the two stage evolution of the granite. We favor the explanation of a secondary melting of the granitic material through the heat input of a later basic intrusion.We therefore interpret the age of 454 Ma as intrusion age of the basic melt in the preexisting Lower Ordovician granite.
This second event is as well observable 12 km North of the Pfaffengrat in the Bassler granite-gneiss, where U-Pb zircon ages reflect Proterozoic inheritance, an age cluster around 490 Ma corresponding to the formation event and yield a well defined metamorphic age of 456 ± 6 Ma.
These data are in excellent agreement with U-Pb zircon data of 456 ± 2 Ma (SÖLLNER & HANSEN 1987) from a monzonitic dike crosscutting the Winnebach migmatite and data of 460 ± 10 Ma from a biotite granite from Gsieser Tal (KLÖTZLI 1995).
We are therefore confronted with a major thermal event in the Upper Ordovician leading to the formation of basic rocks in an association typical for an extensional regime.

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The Ivrea-Verbano Zone: From a simple Permian evolutionary model to a 1400 Ma long magmatic history

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The Ivrea-Verbano Zone (IVZ) is interpreted as being a block of Variscan South-Alpine lower to middle crust intruded/underplated by upper mantle magmas. Rocks have been grouped in two major units, the high-grade paragneiss Kinzigite Formation (KF) and the composite Mafic Complex (MC). The KF is interpreted as a Carboniferous accretionary prism. For the main intrusive body of the MC in the Val Sessera and Val Sesia sections, a Lower Permian intrusion age of 288 ± 4 Ma has been found. In addition, the age data indicate that some thermal event affected the country rocks of the MC around 320 to 310 Ma. This speaks in favour of a short, discrete underplating event in the Lower Permian of a „normal" Variscan crustal section during a phase of pronounced crustal attenuation and/or transtension. Spurious Triassic ages in the eastern IVZ have been interpreted as representing late stage thermal overprinting seemingly unrelated to the main magmatic activity.
In-situ U/Pb zircon age data on a variety of different igneous rocks of the MC now strongly suggest a far more complex magmatic evolutionary history:

a) Magmatic formation ages of cumulitic pyroxene-gabbros and norites interlayered with the main lithologies of the MC at Campello Monti (Val Strona di Omegna) are 1593±23 Ma and 941±28 Ma, respectively as defined by U/Pb dating of large igneous zircon crystals. They thus constitute the oldest igneous rocks found so far in the IVZ and the Southern Alps. The Permian event is documented only by small metamorphic zircons and metamorphic overgrowths on the igneous crystals.
b) A garnet-hornblende-gabbro also from Campello Monti shows a magmatic formation age of 324±8 Ma thus confirming the Carboniferous thermal event found in the Val Sesia – Val Sessera sections.
c) Magmatic formation ages of gabbros and alkaline dikes in the Finero section are Triassic with ages ranging from 226 Ma to 204 Ma. These parallel the Triassic igneous activity well known in the basement and the Permo-Mesozoic cover sequences of the central and eastern Southern Alps.

Interestingly, in all investigated samples no evidence for the aforementioned Lower Permian igneous activity is found. In contrast, the new ages witness a number of more or less discrete igneous events of a few Ma duration each leading to the formation of some amount of the lower continental crust now termed IVZ substantiating that magmatic events forming the lower crust of the IVZ have been active for ca. 1400 Ma and may not be restricted in time to the well documented Lower Permian underplating event.

Palit-ähnliche Gesteine aus der Böhmerwaldscholle nördlich der Pfahlstörung bei Schwarzenberg (NW Mühlviertel, Oberösterreich)

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In der Gegend von Freyung im Bayerischen Wald treten unmittelbar südlich der Pfahlstörung, großflächig und über fast 50 km im Streichen verfolgbar, kaliumreiche migmatitische Gesteine von sehr variabler Struktur auf, welche in den bayerischen Karten als Palite zusammengefaßt und kartiert sind (TROLL 1967). Während die Entstehung dieser sehr speziellen Gesteine in früherer Zeit oft mit einer störungsgebundenen Kaliummetasomatose in Verbindung gebracht wurde (STEINER 1969), wird in neueren Arbeiten (z. B. ARTMANN 2001, FINGER et al. 2007) magmatischen Prozessen eine große Rolle beigemessen (gleichzeitige Intrusion und unvollständige Mischung basischer und saurer Schmelzen; regionale Anatexis). Magmatische Zirkone aus grobkörnigen granitoiden Palitvarianten wurden von SIEBEL et al. (2005) mit ~ 334 Ma datiert. Auf Grund dieses Alters und unter Einbeziehung geochemischer Argumente haben FINGER et al. (2007) diese Magmatite als durch Anatexis überprägte Verwandte der tschechischen Durbachitplutone eingestuft, die in einer markanten Linie von Tabor gegen SSW bis ins Böhmerwaldgebiet zu verfolgen sind.
Ein neues Vorkommen eines solchen Durbachitplutons wurde von