Triassic part of the section ends with limestones sometimes with cherts and is overlain by Egerian breccias.

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The GSSP for the base of the Jurassic is in the Northern Calcareous Alps (Kuhjoch section; Karwendel Mountains, Tyrol, Austria)

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The Kuhjoch section near Hinterriss (Tyrol, Austria) was ratified in April 2010 as GSSP for the base of the Hettangian Stage and, as such, the base of the Jurassic System.

Sedimentary successions across the Triassic/Jurassic boundary which are expanded and highly fossiliferous in the Northern Calcareous Alps are restricted to the so-called Eiberg Basin, a Rhaetian intraplatform depression, that can be traced over 200 km from the Salzkammergut (Kendlbachgraben, Upper Austria) in the east to the Lahnewiesgraben valley (northwest of Garmisch-Partenkirchen, Bavaria) in the west. Flanked by carbonate platforms to the north and south, this continuously subsiding basin reached 150-200 m water depth in late Rhaetian time and was, therefore, less affected by the end-Triassic sea level drop which led to widespread and longer-lasting emersion of the surrounding shallow water areas. Instead, marine conditions prevailed in the basin across the system boundary, though a distinct and abrupt lithological change from basinal carbonates of the Koessen Fm. (Eiberg Mb.) to marls and clayey sediments of the lower Kendlbach Fm. (Tiefengraben Mb.), which is interpreted as a result of this sea level fall. This drastic change in lithology was interpreted during the last decade as the T-J boundary because it coincides with the disappearance of typical Triassic fossils such as ammonoids and conodonts. New studies demonstrate, however, that the lower metres of the Tiefengraben Mb. (=„Rhaetische Grenzmergel“ sensu FABRICIUS 1960 - including also the reddish Schattwald Beds) still yield a Triassic micro- and nannoflora and that the earlier cessation of Triassic macrofauna may be an effect of detoriating environmental conditions. With a thickness of more than 20 m, the Karwendel Syncline exposes the most expanded Triassic-Jurassic boundary succession within the Eiberg basin as well as worldwide. The well-exposed section displays a high and continuous sedimentation rate with a constant facies trend across the boundary level. It contains well preserved and frequent fossils and an abundant microflora allowing a cross-correlation with the continental realm.

The exact level is 5.80 m above the top of the Koessen Formation and corresponds to the FO of the ammonite *Psiloceras spelae tyrolicum* HILLEBRANDT & KRYSTYN. This taxon relates to the group of *Psiloceras tilmanni* that is considerably older than other Northwest European psiloceratids (i.e. *Psiloceras erugatum*, *Psiloceras planorbis*) and is comparable with the oldest *Psiloceras* in North America (Muller Canyon, Nevada, USA) but is much better preserved (aragontic shell, whorl section and complete suture line). The ammonite event correlates to the FO of *Cerebropollenites thiergartii*, a widely distributed palynomorph and Early Jurassic marker in continental successions. Additional boundary events are the FO of the aragonitic foraminifer *Praegubkinella turgescens* and of the ostracod *Cytherelloidea buisensis* 60 cm below the proposed stratotype point and the disappearance of the ostracod *Eucytherura sagitta* immediately above the point. The $\delta^{13}C_{org}$ record shows an initial strong negative excursion near the boundary between the Koessen and Kendlbach Formations that may be worldwide correlatable. The Triassic/Jurassic bioevent lies shortly above this negative peak. The stratotype point coincides with a shift to more positive $\delta^{13}C_{org}$ values**.**

Fluid assisted Cataclastic Deformation in quartzitic rocks (Portizuelo Antiform, Luarca, NW Spain)

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The outcrop at the Portizuelo Beach in Western Asturias presents an antiformal bulge of the transition zone between siliciclastic and marine sediments. The core of the antiform comprises of pure, rigid and resistive quartzitic rocks, severly damaged by brittle deformation and cataclasis. Two large transform faults with a particular thrust component can be found in the hinge area. They are clearly in charge of the damage of the surrounding rocks. The faults accommodate the main part of the deformation, but also sub-parallel cataclastic bands show evidence for lateral movement. Originating from the fault planes, fluidized cataclasites pervade the rock mass, leading to further fracturing. Obviously the fracturing ceases with increasing distance from the transform faults. The fluidized material tends to use preexisting planes, such as bed interfaces, joints or veins for its intrusion. Additionally the fluids are responsible for the cementation of the cataclastic zones, generated during incremental strike slip deformation.

Crests of cemented material, cropping out in the surf zone, are linear structures that can be mapped with differential GPS to reveal their spatial distribution. Besides the main bands of cataclastic material also veins showing Riedel-like geometries appear. Furthermore there exists a network-like system that connects the bands. Kinematic considerations propose a syn-alpine, coseismic formation of the brittle faults and the related cataclasites.
Microstructural investigations exhibit multiple generations of cataclastic deformation and fluidization events and yield the coherence between them. Grain Size Analysis of binary Back-Scattered Electron and Cathodoluminescence images of cataclastic material clearly shows differences between fault gouges and fluidized cataclasites.

Bewertung von Tunnelausbruchsmaterial als Baurohstoff

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Das FFG-Forschungsprojekt Nr.: 820 516 „Recycling von Tunnelausbruchsmaterial“ hat das Ziel, die wesentlichen Gesteinseinheiten Österreichs, welche in Zukunft bei Groß-Tunnelbauvorhaben anfallen, zu untersuchen, potentielle Verwertungsmöglichkeiten aufzuzeigen sowie Richtlinien für die Untersuchung des anfallenden Materials vor Ort zu erstellen. Die Schonung geogener Ressourcen ist ein wichtiger Beweggrund, die maximale Verwertung bei optimaler Wirtschaftlichkeit und minimaler Umweltbelastung zu erreichen.
Neben einer genauen Erfassung aller relevanten Gesteinsparameter sowie verwendungsspezifischen Untersuchungen bereits in der Planungsphase, ist der Selektionsprozess des Ausbruchsmaterials vor Ort auf der Baustelle ein wesentlicher Faktor. Dazu ist die Einrichtung eines Schnellprüflabors auf der Baustelle nötig, an dem mittels Indexversuchen die Qualität des anfallenden Ausbruchmaterials nach den Vorgaben aus der Planungsphase kontrolliert wird.
Prinzipiell werden die Gesteine in drei Großgruppen untergliedert. Lockere und gering verfestigte Sedimente welche neben ihrer Verwertung als Gesteinskörnung, auch Verwendung in der Ziegel- und Zementindustrie sowie für keramische Zwecke haben. Bei Karbonatgesteinen steht eine Verwendung als Gesteinskörnung, Zementrohstoff und als Hüttenzuschlag im Vordergrund. Daneben gibt es aber noch Spezialverwendungen (Flussmittel, Füllstoffe, Futtermittelindustrie, etc.) die vom Chemismus und den optischen Parametern anhängig sind. Die Verwertung von Kristallingesteinen ist auf die Verwendung als Gesteinskörnung für Betone und Mörtel eingeschränkt und wird dabei von störenden Mineralen sowie von ihrer Alkalireaktivität kontrolliert.
Derzeit werden ausgewählte kristalline Lithologien für Gesteinskörnungs- und Betonversuche beprobt und analysiert. An diesen Lithologien werden mineralogische, geochemische und geotechnische Parameter bestimmt um eine gute Charakterisierung der Gesteine zu erhalten. Als Ergebnis der Betonversuche werden Frisch- und Festbetoneigenschaften sowie die Verarbeitbarkeit des Betons erwartet. Diese Betoneigenschaften werden anschließend mit den lithologisch/geochemischen Parametern korreliert, um Aussagen über bestimmte, den Beton negativ beeinflussende, Faktoren zu erhalten.
Im Zuge der Betonversuche werden Standardtests zur Alkali-Reaktivität durchgeführt. Nach FREYBURG & SCHLIFFKOWITZ (2006) kann aus dem Stressgrad der Quarze die Alkali-Reaktivität abgeleitet werden. Bei den Dünnschliffuntersuchungen werden hierfür die Quarze nach STIPP et al. (2002) ausgewertet und mit den Standardversuchen korreliert.

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Evidence of young regional uplift in the non-glaciated Easternmost Alps: the dissected relict landscape of the Styrian margins

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The margins of the Styrian basin lie at the transition between the Pannonian Basin and the Alps. In this particular area, mountains up to 2200 m elevation high were not glaciated during the last glacial maximum (LGM), providing a good opportunity to study long term landscape evolution in this part of the Alps. Paleosurfaces or relict landscape of unknown age have long been recognized, for example in Koralpe (WINKLER-HERMADEN 1957), but never mapped or analysed in a quantitative way. Moreover, the age of their formation as well as the age of their partial destruction is almost not constrained. We performed a morphometric analysis including slope map, river profiles and hypsometric curves using a 10 m resolution DEM. Our main result is the first map of the relict landscape of the Styrian margins. We drawn the map by contouring the upper low slope relict landscape (mean slope of 13°), excluding the steep valleys (mean slope of 26°) dissecting these paleosurfaces. We interpret this morphology as the result of a rejuvenation of a mature landscape probably due to a recent increase in uplift rate. The upper relict landscape is disconnected from the present day base level and the incised part of the landscape is adjusting to the new base level. We identified and mapped paleosurfaces in Koralpe, Saualpe, Pohorje and Fischbacher Alpen. The river profiles analysis shows some prominent knickpoints