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Triassic/Jurassic boundary events (biotic crisis, C and O isotope excursions, climate and ocean changes, bolide impact?) in Tatra Mts (Western Carpathians)

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The Fatra- and the Kopieniec formations in the Zliechov Basin comprise traces of several environmental crises which could contributed to the global Triassic / Jurassic Boundary Events. The diversity of benthic fauna decreased at the base of the "Transition Beds" - the uppermost member of the Fatra Formation. This fauna comprises many species, which never appeared in younger strata again. The negative δ^{13}C excursion combined with positive δ^{18}O anomaly in the Cycle No 13 is parallel with lithological changes in the sequence. Nevertheless, any disturbance of this type never occurs in deeper parts of the Fatra Formation sequence, where similar lithological fluctuations are periodically repeating. The δ^{13}C and δ^{18}O excursions are followed by thin „sphaerulae" layer(s) with peculiar lithological composition. Small calcitized bodies contain clusters of phyllosilicate (chlorite, white mica – sericite), feldspar, fluorite, quartz and dolomite showing complicated transformation during diagenesis. The layers are traceable across several tens of kilometers. Expressive terrigene event below terminal part of the Fatra Formation indicates the first important fresh water input. The

boundary between the Fatra and the Kopieniec formations is sharp, denoted by sudden termination of carbonate sedimentation followed by non-carbonate Boundary Clay of the Kopieniec Formation. The second δ^{13}C anomaly in these strata is well comparable with this, described at the T/J boundary from many sections in the world.