Pseudoimpactites in anthropocenically overprinted quaternary sediments

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Main investigated locations in the vicinity of Lake Chiemsee: Mauerkirchen, Chieming and Lake Tüttensee

A group of amateurs and scientists calling themselves the “Chiemgau Impact Team” (CIRT) claims a ***cosmic impact*** in southern Bavaria which shall have occurred during the Celtic period.

Proposed evidences are several crateriform structures, among them the Lake Tüttensee as well as a number of exotic material associated to the proposed impact related origin.

We present the results of our examinations which have been carried out to critically test the impact related origin of the mentioned strange materials and rocks. We could identify some key sites and independently collected samples of several of the materials and analysed these thoroughly.

Further we present first results of a detailed geological mapping of the Tüttensee area.

Iron silicides

Grains of Xifengit und Gupeiit are frequent findings in Upper Bavaria and are claimed by CIRT to represent a cosmic material.

Meanwhile it has been proven that these minerals form during fertilizer production and are distributed in the upper soil by agriculture. Consequently, the original author of the cosmic origin hypothesis now dissociated himself from this claim. (http://www.uli-schuessler.de/index.php/eisensilizide.html)

Conclusion: material is an anthropogenic side product of the chemical agricultural industry

Glass coated and fragmented rocks

Glass coated rocks can occasionally be collected in south-eastern Bavaria, wheras fragmented rocks are abundant findings. Both have been interpreted by CIRT as impact features. Glass coatings should represent impact related melt glass, open fissures on fragmented rocks spallation features.

Glass coated rocks form in lime kilns which were frequent in pre-industrial Bavaria. Weathered and fragmented rocks are common in quarternary sediments of alpine origin..

Conclusion: glass coatings are anthropogenic side product of lime kilns; fragmented rocks are a authigenic alpine features

Glassy „carbon“

Several varieties of glassy carbonaceous material have been claimed to represent a impact related shock coalification product.

Samples, including a red transparent drop like variety, have been given to us by the land owner of the original site (who also provided the published CIRT material).

Several samples showed distinct imprints of a wooden plate. IR spectroscopy showed chemical characteristics of phenolic resin.

Conclusion: material is phenolic resin such as bakelite or similar anthropogene material.

„Red variety“ of „glassy carbon“ sampled at Mauerkirchen

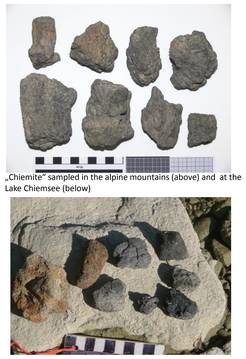
„Chiemite“

Findings of pumice like carbon collected by CIRT from the Bavarian Alps and a small island of the Chiemsee has been presented to the public as „*Chiemit*“. Many claims regarding exotic constituents such as diamond like carbon and carbyne like minerals have been made.

We could investigate samples from both original sites.

Both, color and habitus resemble weathered ordinary coke. This was confirmed by a preliminary elemental analysis which proved identical chemical composition in comparison to coke samples.

Conclusion: material is ordinary blacksmith coke not an exotic material.



„Chiemite“ sampled in the alpine mountains (above) and at the Lake Chiemsee (below)

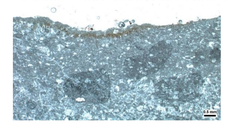
Carbonatic „regmaglypts“

Prominently furrowed carbonate rocks have been presented as impact related melt structures, so called regmaglypts.

These locally called „Furchensteine“ exclusively occur at shallow water zones of lake Chiemsee and are common at other pre-alpine lakes. Furrows develop on carbonate rocks only and are associated with carbonatic cyanobacteria crusts. Thin sections revealed presence of endolithic cyanobacteria remains.

Conclusion: furrows are a biogenic phenomenon caused by cyanobacteria.

A selection of Furchensteine sampled near Chieming (Chiemsee); Thin section exhibiting endolithic activity (below).



„Melt rocks“

These tufa-like rocks have been reported from lake Tüttensee and the “Mauerkirchen crater” and interpreted by CIRT as impact melt rocks.

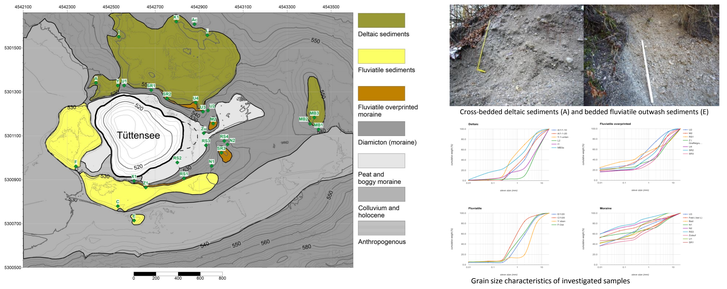
We could resample material from both locations in the vicinity of wild dump sites.

The Chiemgau area has a long iron mining tradition, slags produced by the nearby Maxhütte ironwork are frequently used for house and road construction. All our samples are identical to common Maxhütte slags.

Conclusion: material is iron slag illegally deposited in wild dump sites.

Slag sampled at lake Tüttensee; slag used as room ceiling fill material and slag samples from Mauerkirchen

Geology at lake Tüttensee: no evidence for a cosmic impact



Cross-bedded deltaic sediments (A) and bedded fluviatile outwash sediments (E)

Grain size characteristics of investigated samples

Major sedimentological units and sampling locations at Lake Tüttensee: Lake is surrounded by an upper and a lower terrace which are of deltaic or fluviatile origin respectively. These are overlaying glacial, moraine sediments. A geological setting which is incompatible to the impact hypothesis claimed by CIRT.

The anthropogenic impact

Most of the material shown here which was claimed to be impactites or of cosmic origin can conclusively be explained with phenomena of the anthropocene. Others like the Furchensteine are of clearly biogenic origin.

The pre-alpine area has been strongly influenced by humans. Gravel pits and other smaller depressions modify the landscape and have been used by humans for pre-industrial production of lime, soap or charcoal – and waste depositing.

The resulting strong anthropocene signal in the affected geology may lead to daring presumptions such as the “chiemgau impact hypothesis” - which has no scientific basis.

Camp fire remains, human waste and waste building material found near the Chiemsee and Tüttensee