

THE PROPOSED NALBACH (SAARLAND, GERMANY) IMPACT SITE: IS IT A COMPANION TO THE CHIEMGAU (SOUTHEAST BAVARIA, GERMANY) IMPACT STREWN FIELD? K. Ernstson¹, W. Müller² and A. Neumair³.

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Introduction: Finds of peculiar samples by one of the authors (W.M.) initiated analyses that were speaking in favor of a Holocene possible new meteorite impact site in the Saarland region [1, 2]. More finds by W.M. during an intense field inspection revealed remarkable similarities to impact features in the Holocene large Chiemgau impact strewn field in southeast Germany [3, and ref. therein]. Apart from numerous craters, the Chiemgau impact is documented by abundant impact melt rocks and various glasses, shock-metamorphic effects like planar deformation features (PDFs) and diaplectic glass, geophysical anomalies and ejecta deposits, and substantiated by the abundant occurrence of metallic, glass and carbon spherules, accretionary lapilli, iron silicides like gupeite, hapkeite and xifengite, and various carbides like, e.g., cubic moissanite SiC and khamrabevite (Ti,V,Fe)C [4]. From dating archeological objects the impact must have happened in the Bronze Age/Celtic era. Here we report on distinct parallels between the Chiemgau and proposed Nalbach impact sites suggesting the possibility of a large-scale multiple impact event.

Observations: The abundant finds in the Chiemgau und Nalbach areas are featuring practically identical observations: -- monomictic and polymictic breccias, melt breccias with rock and metallic components -- aerodynamically shaped glass bodies -- aggregates with spherulitic texture, carbon spherules -- pumice particles -- vitrified, mostly quartzite cobbles -- established (Chiemgau) and probable (Nalbach) shock effects in quartz -- silicate cobbles with glass-filled tensile fractures indicative of shock spallation -- massive glassy carbon -- pumice-like glassy carbon; in the Chiemgau area identical matter contains carbon allotropes (carbynes, diamond-like/carbyne-like carbon) requiring extreme temperatures and pressures for formation [5, 6].

Discussion and conclusions: The widespread occurrence of peculiar samples in the Nalbach area covering many square kilometers makes a meteorite impact event in the Holocene very probable. Most convincing are indications of high temperatures and high pressures, particularly the mineralogical evidence of probable shock [1] and the observations of shock spallation of many cobbles. The absolutely identical findings in the Chiemgau impact strewn field suggest that obviously most similar processes at a related time took place. Once finally and independently the impact for the Nalbach area should prove well-founded, then it could be interesting and important to consider a coincidence in a much extended impact event that affected a distance of at least 500 km.

References: [1] Buchner, E. et al. 2011. Abstract #5048. 74th Annual Meteoritical Society Meeting. [2] Schmieder, M. et al. 2011. Abstract #5059. 74th Annual Meteoritical Society Meeting. [3] Ernstson, K. et al. 2010. *Journal of Siberian Federal University, Engineering & Technologies* 3: 72-103. [4] Bauer, F. et al. 2013. This volume. [5] Shumilova, T. G. et al. 2012. Abstract #1430. 43rd Lunar & Planetary Science Conference. [6] Isaenko, S. et al. 2012. Abstract, European Mineralogical Conference, Vol. 1, EMC2012-217.