

STUDENTS HELP TO IMPROVE THE TERRESTRIAL IMPACT CRATER RECORD.

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The number of impact craters discovered on Earth so far increases continuously and is currently counting to 184. It is assumed that dozens of mid-sized impact craters and hundreds of simple craters are still undetected due to their poor state of morphological preservation. A master level course at the Albert-Ludwigs-University in Freiburg, Germany, is devoted to improve the crater record. The course, named "Screening Earth: A student (re)search project" received the teaching awards 2012 of the University of Freiburg and of the federal state of Baden-Württemberg for the integration of teaching and science.

Based on various remote sensing resources students scan selected areas of the Earth's surface for promising possible impact structures, incorporating the knowledge obtained in the coincidentally running 'Impact Geology' M.Sc. module. This includes development of a systematic screening procedure and the consideration of all influencing factors such as the geologic age as well as the sedimentary and tectonic history of the particular area. Students predict the number of expected craters in certain size intervals for the study region based on algorithm derived by [1]. In addition to working with actual Google Earth[©] imagery, students were encouraged to substantiate their geological interpretations with high-resolution remote sensing data and SRTM, Landsat, geological maps, and additional information resources. In addition, starting from late 2014, students will have access to WorldDEMTM from the TanDEM-X mission which is to feature a vertical accuracy of 2 m (relative) and 4 m (absolute), within a horizontal raster of approximately 12x12 square meters. After concluding their investigations and confirming that their suspect impact structures are not discovered to date, the students present them to the group outlining evidences for and against their proposal. This is then further discussed and debated. The students of the current course among other areas focussed on Marokko.

The second phase of the project includes field work at the most promising sites to find evidence for the impact hypotheses. In this regard, the logistics of the expeditions are planned by the student team. This is the students' chance to learn how to plan a geological trip successfully, which is a crucial part of their future professional life. The students have to take care of several factors such as field expenditure, health, safety and political issues.

The first field campaign was carried out in 2013 in Alberta, Canada. In 2014 field trips to South China, and to Inner Mongolia, China, were conducted. Preliminary results are given in [2].

References: [1] Hergarten et al. (2014) LPSC 45, #1351 [2] Kenkmann et al. (2014) 77th Ann. Conf. Met. Soc., Casablanca, #5322.