Expert Knowledge for Object-Based Landslide Mapping in Taiwan

Clemens Eisank; Daniel Hölbling; Barbara Friedl; Chen, Yi-Chin;
Chang, Kang-Tsung

Abstract

With object-based image analysis (OBIA) landslides can be mapped more accurately than with pixel-based methods. While many authors have recognized the value of segmentation optimization for increasing the objectivity and transferability of landslide mapping, the optimization of the classification step is lagging behind. This study introduces a landslide mapping system that is based on expert knowledge models and implemented in OBIA. These models hold the operational knowledge about landslides and digital landslide mapping such as data, classification features, and feature thresholds. The knowledge was gathered during personal semi-structured interviews of 20 Taiwanese landslide experts. The system was tested for mapping landslides in a sub-region of the Baichi catchment in Northern Taiwan. The potential landslide areas were accurately extracted. The refinement of the potential landslide area into landslide types was mainly based on slope values. Additional expert‑based rules will be implemented to increase the accuracy and objectivity of the final landslide classification.