

Detecting change amidst uncertainty in digital elevation models: A comparison of SRTM and ASTER DEM products for two oblasts in the Kyrgyz Republic

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Digital elevation models (DEMs) provide a starting point to investigate the landscape structure in terms of key terrain variables, such as elevation, slope, and aspect. However, in changes in the land surface arising from geomorphic processes, seismicity, and human activities can significantly alter landscape structure. The fine spatial resolution derived from SRTM and ASTER are widely used but the underlying data are separated in time. The SRTM data were acquired during the Shuttle Radar Topography Mission in 1994. In contrast, the ASTER GDEM product has been built up during ASTER's flight onboard Terra. To support an analysis of terrain effects on land surface phenology, we evaluated both DEMs to identify where differences between the DEMs were attributable to land change rather than bias or methodological uncertainty. We discuss the role of relief in influencing population distribution and land surface phenology for Naryn and Osh oblasts in the Kyrgyz Republic.

Keywords: Relief, SRTM, ASTER, Digital elevation model, Kyrgyz Republic