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DOWNSCALING LANDSAT ET AND SOIL MOISTURE MAPS TO THE METER-SCALE

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ABSTRACT: For most hydrological and agricultural activities the Landsat spatial resolution of 30 m is adequate. However, there are applications for ET and soil moisture maps at finer scales such as in precision agriculture and orchards with incomplete soil cover or for observations of m-scale phenomena such as the ET and soil moisture conditions on narrow sandbanks in rivers or in seepage areas on a slope. This study presents a method for high-resolution (2.7 m) ET and soil moisture mapping using satellite optical imagery that is readily available from Landsat (30 m pixels) and QuickBird (2.7 m pixels). The method has been tested and qualitatively validated in Helmand Province, Afghanistan, using a Landsat7 image and a QuickBird image of April 23 and 24, 2009, respectively.

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