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Satellite based estimates of soil moisture over the Tibetan Plateau

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Soil moisture plays essential role in water cycle and climate. In particular, over the Tibetan plateau, its importance is particularly pronounced in directly influencing the Monsoon systems and its precipitation patterns. The feasibility of retrieving top layer soil moisture from satellite data has been demonstrated and several techniques hold promise for extensive observation of soil moisture (Jackson et al., 1999; De Jeu and Owe, 2003; Njoku, 2004; Paloscia, et al., 2003; Su et al., 2003; Wagner et al., 2007; Wen et al., 2003; Wen and Su 2003). The consistency among the products derived using different algorithms and their uncertainties have not been yet documented. The launch of the SMOS satellite has, however, promoted renewed science interests in the production of consistent soil moisture products and use of these in water cycle and climate research (Kerr, 2007). This requires corresponding validation on the basis of extensive in-situ soil moisture measurements (Robock et al., 2000), before the consistency and uncertainties of such products can be quantified. We present recent progresses for better estimation of soil moisture at plateau and sub-continental scales by using available coarse active and passive microwave observations (SSM/I, WSC and ASCAT data in particular) and validation of the developed methodologies using in-situ measurements from dedicated SMOS cal/val sites. Preliminary validations for SMOS data will also be presented subject to data availability.