Downscaling SMOS-derived soil moisture products

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Introduction

• SMOS spatial resolution is adequate for global studies, to improve our understanding of water and energy fluxes between atmosphere, surface & subsurface
• However, it is insufficient for regional applications requiring higher spatial resolution (1-10 km):
  - Better land & water resources management
  - Improve agricultural productivity
  - Enhance weather and climate forecast skills
  - More effective flood/drought/landslides mitigation
• A downscaling approach to improve the spatial resolution of SMOS soil moisture estimates with the use of higher resolution visible/infrared satellite data is proposed
• The algorithm is based on the so-called “universal triangle” concept that relates VIS/IR parameters, such as the Normalized Difference Vegetation Index (NDVI), and land surface temperature (Ts), to soil moisture
• It was first tested at the REMEDHUS site (Spain), and later to real SMOS data over Australia and Spain