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A soil moisture index derived from thermal infrared sensor on-board geostationary satellites over Europe, Africa and Australia

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Soil moisture plays a central role in the water cycle. In particular, it is a major component which variability controls the evapotranspiration process. Over the past years, there has been a large commitment of the remote sensing research community to develop satellites and retrieval algorithm for soil moisture monitoring over continents. Most of those rely on the observation in the microwave lengths, making use either of passive, active or both methods combined. However, the available derived products are given at a relatively low spatial resolution for applications at the kilometer scale over entire continents, and with a revisit time that may not be adequate for all applications, as for example agriculture. Thermal infrared observations from a combination of geostationary satellites offer a global view of continents every hour (or even at higher frequency) at a few kilometers resolution, which makes them attractive as another, and potentially complementary, source of information of surface soil moisture. In this study, the Copernicus LST and the LSA-SAF LST are used to derive soil moisture over entire continents (Europe, Africa, Australia). The derived soil moisture is validated against in-situ observations and compared to other available products from remote sensing (SMOS, ASCAT) and from numerical weather prediction (ECMWF). We will present the result of this validation, and will show how it could be used in continental scale evapotranspiration monitoring.