README FILE

Products: Soil Moisture Maps

Data used: Sentinel-1 (SAR- radar sensor) and Sentinel-2 (optical sensor)

Scale: Plot scale

Site: Near Agia, Greece

The soil moisture maps were carried out at a plot scale. A map is provided each 6 days (12 days with Sentinel-1A and 12 days with Sentinel-1B) for the period between October 2017 and September 2018.

Inversion algorithm for estimating soil moisture was applied for some agricultural plots of wheat and other summer crops.

Sentinel-2 images were used to calculate the NDVI (Normalized Differential Vegetation Index).

11 NDVI maps over the study site are provided in the folder named "NDVI". For each Sentinel-1 acquisition date a corresponding NDVI map was used in producing the soil moisture map:

| Sentinel-1 acquisition date	NDVI map used
October 2017	NDVI October 2017
November 2017	NDVI October 2017
December 2017	NDVI December 2017
January 2018	NDVI January 2018
February 2018	NDVI February 2018
March 2018	NDVI March 2018
April 2018	NDVI April 2018
May 2018	NDVI May 2018
June 2018	NDVI June 2018
July 2018	NDVI July 2018
August 2018	NDVI August 2018
September 2018	NDVI September 2018

Deliverable description

The Soil Moisture Maps are divided into two main folders:

> **S1A: referring to maps derived from Sentinel 1A satellite**

To see the location of S1A surface soil moisture map according to Agia region please refer to the provided map "Footprint_S1A (.JPEG)" in folder S1A.

> **S1B: referring to maps derived from** Sentinel **1B Satellite**

To see the location of S1B surface soil moisture map according to Agia region please refer to the provided map "Footprint_S1B (.JPEG)" in folder S1B.
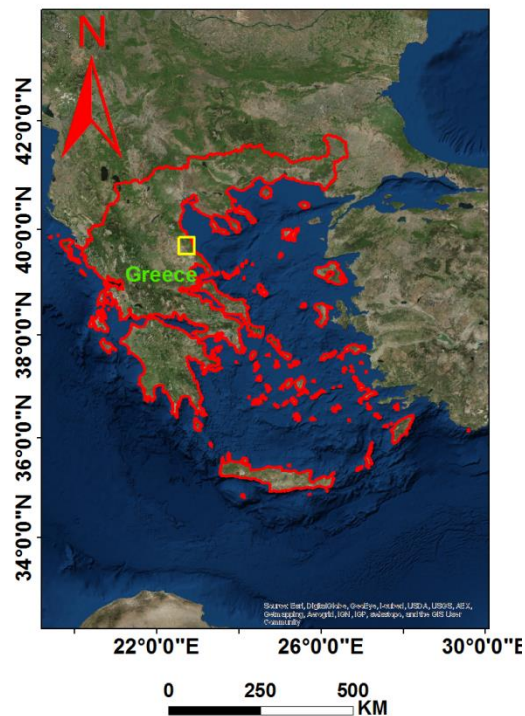
Format:

Format description of soil moisture maps (for example 20160904T173856_ mv.tif):

- GeoTIFF
- Structure of files name: yyyymmddThhmmss_mv.tif

  - yyyy:year
  - mm: month
  - dd: acquisition day

T is used to separate the date and the time (UTC)

  - hh: hour
  - mm: minutes

- ss: seconds

Important:

1. In the provided soil moisture maps (WGS84, EPSG: 4326), the soil moisture values (*mv*) are multiplied by **5.** In order to derive the estimated soil moisture value from the provided maps **it is necessary to divide** by **5**.

$$Soil\ Moisture\ Estimation\ (mv\ Vol.\%) = \frac{Value\ obtained\ from\ the\ Map}{5}$$

2. In the provided NDVI maps (NDVI folder, Geotiff format), the NDVI values are multiplied by **100**. To derive the NDVI value from the maps **it is necessary to divide** the obtained value by **100.**

$$NDVI = \frac{Value\ obtained\ from\ the\ Map}{100}$$

3. Null values in the soil moisture maps = no data (no soil moisture estimation)

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