



Description of BigEarthNet-MM

The BigEarthNet archive was constructed by the Remote Sensing Image Analysis (RSiM) Group and the Database Systems and Information Management (DIMa) Group at the Technische Universität Berlin (TU Berlin). This work is supported by the European Research Council under the ERC Starting Grant BigEarth and by the Berlin Institute for the Foundations of Learning and Data (BIFOLD). Before BIFOLD, the Berlin Big Data Center (BBDC) supported the work.

BigEarthNet is a benchmark archive, consisting of 590,326 pairs of Sentinel-1 and Sentinel-2 image patches. The first version (v1.0-beta) of BigEarthNet includes only Sentinel 2 images. Recently, it has been enriched by Sentinel-1 images to create a multi-modal BigEarthNet benchmark archive (called also as BigEarthNet-MM).

BigEarthNet with Sentinel-2 image patches (called as BigEarthNet-S2 now, previously BigEarthNet), 125 Sentinel-2 tiles acquired between June 2017 and May 2018 over the 10 countries (Austria, Belgium, Finland, Ireland, Kosovo, Lithuania, Luxembourg, Portugal, Serbia, Switzerland) of Europe were initially selected. All the tiles were atmospherically corrected by the Sentinel-2 Level 2A product generation and formatting tool (sen2cor). Then, they were divided into 590,326 non-overlapping image patches. Each image patch was annotated by the multiple land-cover classes (i.e., multi-labels) that were provided from the CORINE Land Cover database of the year 2018 (CLC 2018).

To construct BigEarthNet with Sentinel-1 image patches (called as BigEarthNet-S1), 321 Sentinel-1 scenes acquired between June 2017 and May 2018 that jointly cover the area of all original 125 Sentinel-2 tiles with close temporal proximity were selected and processed. BigEarthNet-S1 consists of 590,326 preprocessed Sentinel-1 image patches - one for each Sentinel-2 patch. A more detailed explanation on the processing is given in its data description document.

To exploit BigEarthNet-MM, it is required to separately download BigEarthNet-S2 and BigEarthNet-S1. Then, the BigEarthNet-MM tools can be used to define the BigEarthNet-MM.

If you use BigEarthNet, please cite:

G. Sumbul, A. d. Wall, T. Kreuziger, F. Marcelino, H. Costa, P. Benevides, M. Caetano, B. Demir, V. Markl, "BigEarthNet-MM: A Large Scale Multi-Modal Multi-Label Benchmark Archive for Remote Sensing Image Classification and Retrieval", IEEE Geoscience and Remote Sensing Magazine, 2021, doi: 10.1109/MGRS.2021.3089174.

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