



Terminology

Version	Author	Data	Comment
1.0	JT. Acquaviva	April 17, 2024	inception
1.1	Alena Bakhoryna (GCORE)	April 22, 2024	
1.2	JT. Acquaviva	April 29, 2024	enforce alphabetical order
1.3	A. Bilas	May 23, 2024	Review and edits
1.4	S. Smart	July 5, 2024	Added AoI/Tol

DaFab’s deliverables will all include a project Terminology. This terminology is kept updated in a dedicated document and version.

- **AI**, stands for Artificial Intelligence.
- **ANN** (Artificial neural network), a computational model that mimics the way nerve cells work in the human brain.
- **AoI**, Area-of-Interest
- **Bounding Box**: A square definition of (Longitude1, Latitude1, Longitude2, Latitude2) to define an earth observation image boundaries on a CRS

Bounding-box

Image polygon

BSG-114-20240327-114812-220295117

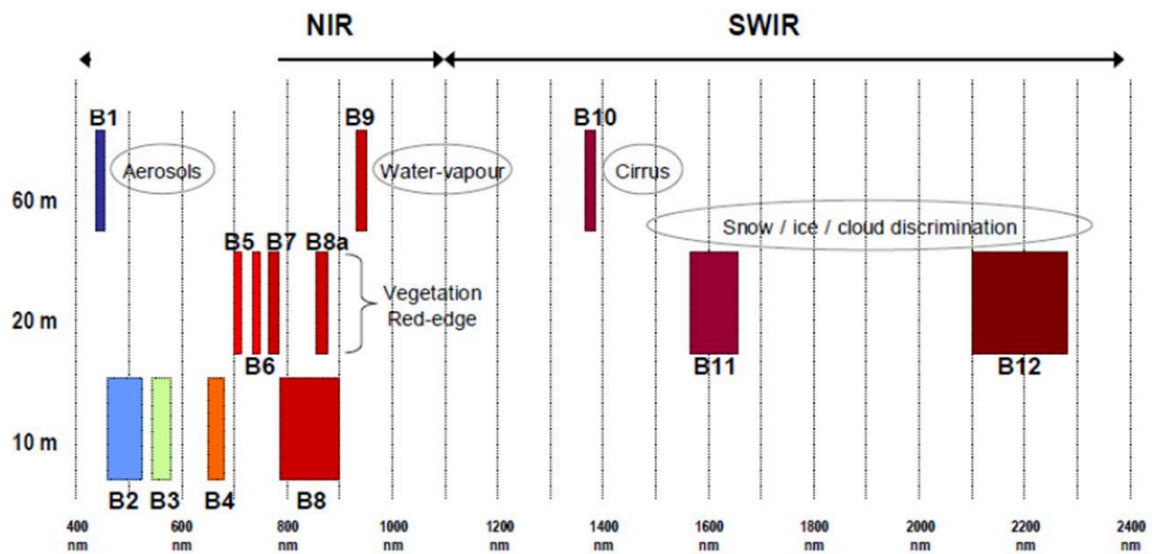
Date: 03/27/2024
 Time: 11:48:12 UTC
 Area: 29.3km²
 Cloud cover: 44%
 Georeferenced: ● Yes
 Orthorectified: ● Yes
 Sun elevation: 80.1°
 Sun azimuth: 156.9°
 Satellite elevation: 78.1°
 Satellite azimuth: 187.2°
 Off-nadir angle: 11.9°
 Resolution: 1.0m
 Sensor: Global-14
 Product type: Daytime



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- **Copernicus**, Copernicus is the Earth Observation component of the European Union's space program, looking at our planet and its environment for the benefit of Europe's citizens.
- **CPU**, central processing unit refers to the general processing unit without constraint on the instruction set (x86, ARM)
- **CRS**: Coordinates Referential System
- **DL** (Deep Learning), the subset of ML methods based on ANNs.
- **EO**, stands for Earth Observation.
- **External metadata**, metadata which refers to the object embedding data. For instance a file size.
- **GPU**, Graphical Processing Unit, data parallel architecture initially used for computer vision and graphical processing, now the workhorse of most of AI workload. Promoted by NVIDIA, AMD and Intel.
- **Hierarchical schema**, a scheme corresponds to the structure of an ontologies, where metadata are organized by categories. For instance, internal metadata, and external metadata.
- **Image segmentation**, a process of partitioning a digital image into multiple image segments, also known as image regions or image objects (sets of pixels).
- **Internal metadata**, or **Semantic metadata**, metadata which refers to the content of the data. For instance, the maximum value of parameters fields which the meteorological data file.
- **IPU**, Intelligence Processing Unit, novel architecture dedicated to AI processing and promoted by Graphcore, a UK based startup.
- **Metadata catalog**, a database holding descriptive information about data objects which are themselves stored remotely. An example being a catalog of geospatial coordinates, each associated to a satellite image stored in a remote datahub. Metadata catalogs are tools used for querying and dataset building.
- **ML** (Machine Learning), a field of study in AI concerned with the development and study of statistical algorithms that can learn from data and generalize to unseen data, and thus perform tasks without explicit instructions.
- **MSI**: Multi-Spectral Instrument embedded on Sentinel2 earth observation satellites. MSI spectral-bands versus spatial-resolution is provided in the next figure.



- **Neuromorphic Architecture**, an approach to computing that is inspired by the structure and function of the human brain. There is no per-se Neuromorphic processor generally available on the market but it remains an intense domain of research.
- **Non-Von Neumann Architecture**, any computing architecture, such as dataflow systems, that does not follow the fetch-decode-execute cycle of traditional CPUs.
- **Ontologies**, formal explicit description of concepts in a domain, properties of each concept describing various features and attributes of the concept, and restrictions. An ontology together with a set of individual instances of classes constitutes a knowledge base.
- **OSM**, OpenStreetmap collaboration. Map is a free, open geographic database updated and maintained by a community of volunteers via open collaboration.
- **Semantic Web**, sometimes referred to as Web 3.0, is an extension of the WWW standard. To enable the encoding of semantics with the data, technologies are used to formally represent metadata and can describe ontology, relationship between entities, and categories of things. These embedded semantics offer significant advantages such as reasoning over data and operating with heterogeneous data sources.
- **Sentinel-2**, Copernicus Sentinel-2 mission is based on a constellation of two identical satellites in the same orbit. Each satellite carries an innovative wide swath high-resolution multispectral imager with 13 spectral bands for a new perspective of our land and vegetation.
- **Sentinel2 L0 level**: Compressed raw image data acquired by satellite Multi Spectral Instruments (MSI) and specifically packaged. This product is not provided to users.



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- **Sentinel2 L1A level:** Uncompressed raw image data with spectral bands coarsely coregistered and appended auxiliary data. This product is not provided to users.
 - **Sentinel2 L1B level:** Radiometrically corrected multi spectral image data with spectral bands coarsely co-registered, without refined geometric model applied.
 - **Sentinel2 L1C level:** Ortho-rectified and UTM geocoded top-of-atmosphere reflectance with sub-pixel multispectral and multi-date registration. Covers 100 km x 100 km, accessible to all users.
 - **Sentinel2 L2A level:** Ortho-rectified and UTM geocoded bottom-of-atmosphere reflectance. Additional outputs are Aerosol Optical Thickness map, Water Vapour map, Scene Classification map and Quality Indicators data. Covers 100 km x 100 km, accessible to all users.
 - **SNN** (Spiking neural networks), an ANN that more closely mimics natural neural networks (human brain).
 - **ToI**, Time-of-Interest