SLOVENSKI STANDARD
SIST EN 17030:2018

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Vesolje - Opazovanje Zemlje - Stopnje obdelave slik

Space - Earth observation - Image processing levels

Raumfahrt - Erdbeobachtung - Bildinformationstiefe

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Space - Earth observation - Image processing levels

Espace - Observation de la Terre - Niveaux de traitement des images

Raumfahrt - Erdbeobachtung - Bildinformationstiefe

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European foreword

This document (EN 17030:2018) has been prepared by Technical Committee CEN-CENELEC/TC 5 “Space”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2018, and conflicting national standards shall be withdrawn at the latest by October 2018.

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1 Scope

This European Standard specifies the definition of the different processing steps (levels) of images coming from Earth observation systems observing the surface of the Earth regarding the different sensor sources of the origin data.

It applies at least to image products generated from the following types of sensors:

— electro-optical (including infrared and hyper-spectral);

— SAR (Synthetic Aperture Radar).

The standard allows to identify the information depth and the used auxiliary data/information. Furthermore it allows the comprehension of image data from different sources and gives hints about the information compatibility.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
Level 0
data stream from sensor, not yet processed to an image product

3.2
Level 1
image product without application- and/or customer-specific presentation or transformations

3.3
Level 2
image product with application- and/or customer-specific presentations and transformations

Note 1 to entry: Higher levels are possible, but not defined within this standard.

4 Symbols and abbreviations

The symbols shown in Table 1 shall be used for the different image levels.

Table 1 — Symbols of different image levels

notation	geometry	radiometry	necessary declarations
0	Data stream from sensor, not yet processed to an image product		— none
1aα	sensor-specific without transformation rules to geo coordinates	uncalibrated data, without calibration information	— none
1aβ	sensor-specific without transformation rules to geo coordinates	uncalibrated data, with calibration information	— information about calibration
1aγ	sensor-specific without transformation rules to geo coordinates	calibrated data, related to a reference at the sensor	— information about calibration and about the reference
1aδ	sensor-specific without transformation rules to geo coordinates	calibrated data, related to a reference on Earth surface	— information about calibration and about the reference
1bα	sensor-specific with transformation rules to geo coordinates	uncalibrated data, without calibration information	— transformation rules to geo coordinates
1bβ	sensor-specific with transformation rules to geo coordinates	uncalibrated data, with calibration information	— transformation rules to geo coordinates — information about calibration
1bγ	sensor-specific with transformation rules to geo coordinates	calibrated data, related to a reference at the sensor	— transformation rules to geo coordinates — information about calibration and about the reference
1bδ	sensor-specific with transformation rules to geo coordinates	calibrated data, related to a reference on Earth surface	— transformation rules to geo coordinates — information about calibration and about the reference
1cα	Earth-related	uncalibrated data, without calibration information	— information about Earth model and used projection
1cβ	Earth-related	uncalibrated data, with calibration information	— information about Earth model and used projection — information about calibration
1cγ	Earth-related	calibrated data, related to a reference at the sensor	— information about Earth model and used projection — information about calibration and about the reference
1cδ	Earth-related	calibrated data, related to a reference on Earth surface	— information about Earth model and used projection — information about calibration and about the reference
2	Image product with application- and/or customer-specific presentations and transformations		— specific to image product

The scheme of image levels is given in Figure 1.

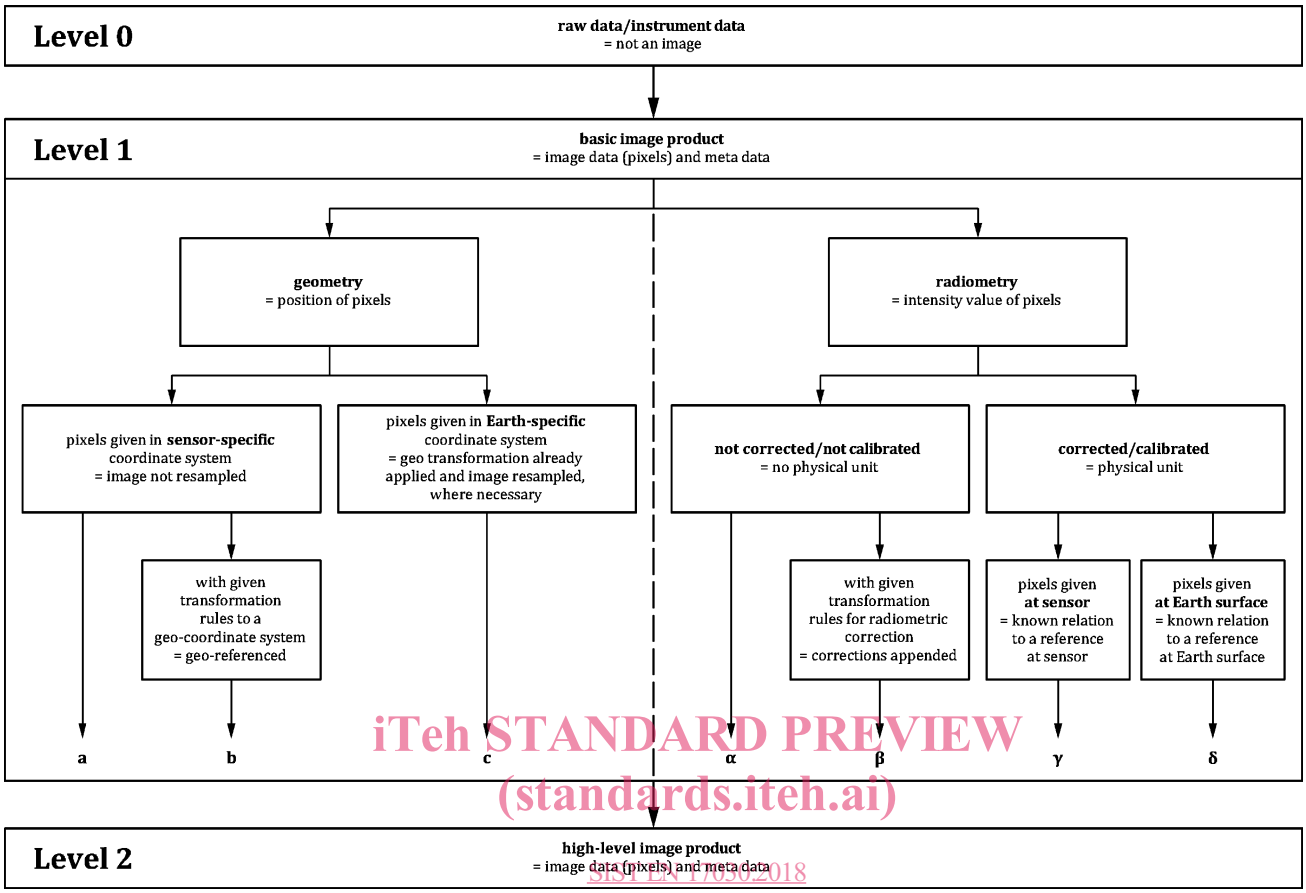

Figure 1 — Scheme of image levels

5 General

A level 1 image is a two-dimensional matrix, representing information with regard to a physical space. In case of multi-frequency systems, there is a matrix for each of the represented frequencies. This has to be considered in the meta data.

Level 1 images shall be characterized by details on their geometrical **and** radiometrical content:

a) geometrical information:

— Pixels are given in a sensor specific coordinate system;

— Image is geo-referenced, i.e. transformation rules from sensor specific to a geo coordinate system are given;

— Pixels are given in an Earth-related coordinate system, i.e. a geo transformation is already applied and the image is resampled where necessary.

b) radiometrical information:

— Classification in calibrated or uncalibrated data. Uncalibrated data may content transformation rules for calibration within their meta data. Calibrated data are related to a reference at the sensor or to a reference on Earth.