



GeoBase Raw Imagery 2005-2010
Data Product Specifications

Edition 1.0

2009-10-01

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RELEASES HISTORY

Date	Version	Description
2009-10-01	1.0	Initial version

These specifications are produced in accordance with *International Standard ISO/TC 211, 19131: 2007 Geographic Information / Geomatics – Data Product Specification*, which refers in particular to standard *ISO 19115: 2003 Geographic information – Metadata*.

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1 OVERVIEW

1.1 Title

GeoBase Raw Imagery 2005-2010

1.2 Reference date

Data product specifications creation date:

2009-10-01

1.3 Responsible party

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1.4 Language

Languages in which the data product specifications are available according to ISO 639-2 standard:

eng – English

fra – French

1.5 Terms and definitions

Raw Image

An image acquired from SPOT4 or SPOT5 satellites that have been used to produce orthoimages of the GeoBase Orthoimage 2005-2010 product.

SPOT

SPOT (Système probatoire d'observation de la Terre) satellites, which, in this context, invariably refers to the Spot 4 or Spot 5 satellites.

1.6 Abbreviations and acronyms

NTDB: National Topographic Data Base

CCRS: Canada Centre for Remote Sensing

CTI-S:	Centre for Topographic Information – Sherbrooke
FGCD:	(US) Federal Geographical Data Committee
GCMD:	(NASA) Global Change Master Directory
CAP:	Image File Format for SPOT4 imagery
DIMAP :	Image File Format for SPOT5 imagery

1.7 Informal description of the data product

The Raw Imagery GeoBase 2005-2010 product is composed raster imagery acquired by SPOT4 and SPOT5 satellites. This imagery contains a panchromatic band with 10 meter pixels and a multispectral band with 20 meter pixels. This imagery was used to produce the orthoimages for the GeoBase Orthoimage 2005-2010 product. The raw SPOT4 and SPOT5 images are not georeferenced.

The main objective of the Raw Imagery GeoBase 2005-2010 project was to produce a complete set of raw imagery for all of Canada's landmass over the five-year period of May 2005 to October 2010.

The raw SPOT4 and SPOT5 images are available for download, in CAP format for SPOT4 and in DIMAP format for SPOT5. The images are made available as soon as they are produced. The availability of scenes is controlled by the producer according to their planning and capacities.

The last character of the Raw Image Identifier represents its spectral mode. Therefore, for SPOT4, the last character "M" identifies the panchromatic mode while the character "I" identifies the multispectral mode. For SPOT5, the last character "A" identifies the panchromatic mode while the character "J" identifies the multispectral.

The raw SPOT4 and SPOT5 images are available without cost or restriction and under a common data license on the GeoBase portal.

2 SPECIFICATION SCOPE

2.1 Scope identification

Global

2.2 Level

This scope makes reference to the following level according to the ISO 19115 standard:

006 – series

2.3 Level name

GeoBase Raw Imagery 2005-2010

2.4 Extent

This section describes spatial and temporal extents of the scope.

2.4.1 Description

The main objective of the project is to produce, over a five-year period, a complete set of raw images covering Canada's landmass south of the 81st parallel.

2.4.2 Vertical extent

The *GeoBase Raw Imagery 2005-2010* are two-dimensional. There is no elevation (z) associated with the data.

2.4.3 Horizontal extent

The geographic box, or minimum bounding rectangle, for covering all of the existing or future *GeoBase Raw Imagery 2005-2010* in Canada is:

2.4.3.1 West bound longitude

-142 (or 142 degrees west)

2.4.3.2 East bound longitude

-52 (or 52 degrees west)

2.4.3.3 South bound latitude

+41 (or 41 degrees north)

2.4.3.4 North bound latitude

+81 (or 81 degrees north)

2.4.4 Temporal extent

There is no temporal attribute for the *GeoBase Raw Imagery 2005-2010* other than the date of capture of the imagery identified in the metadata.

However, the following periods for image acquisition are approximate in order to coincide with periods of active vegetation whenever possible.

Annual acquisition period:

- South of the 60th parallel: May to October.
- Between the 60th and the 68th parallels : June to September.
- North of the 68th parallel : mid-July to mid-September.

For an image to be acceptable, it must be 95% free of snow and ice in its land coverage, with the exception of permanent snow or ice. Shorelines must all be free of ice and snow (although there may be ice or snow at the centres of bodies of water).

2.4.4.1 Beginning date

2005-05-01

2.4.4.2 Ending date

2010-10-31

3 DATA PRODUCT IDENTIFICATION

3.1 Title

GeoBase Raw Imagery 2005-2010

3.2 Abstract

To acquire raw Earth observation images covering Canada's landmass south of the 81st parallel during the period 2005-2010. Each *Raw Imagery 2005-2010* tile covers an area of approximately 3 600 km², or 60 km x 60 km of the Earth's surface.

3.3 Purpose

The main objective of the project is to produce a complete set of raw images of Canada's landmass south of the 81st parallel. The process of acquiring raw and orthorectified Earth observation images covering Canada's entire landmass will be spread out over a five-year period, from May 2005 to October 2010.

Geomatics Canada of Natural Resources Canada has the mandate to provide Canadians with knowledge of the canadian landmass.

3.4 Topic category

Key themes of the product, as defined according to the ISO 19115 standard:

001 - farming

002 - biota

005 - economy

007 - environment

010 - imageryBaseMapsEarthCover

011 - intelligenceMilitary

012 - inlandWaters

017 - structure

018 - transportation

019 - utilitiesCommunication

3.5 Spatial representation type

The form of the spatial representation (see: ISO 19115: *MD_SpatialRepresentationTypeCode* «CodeList»).

002 - grid

3.6 Spatial resolution

Spatial resolution denominators of the data:

10 000 - 100 000

Local or regional scale.

The highest-resolution raw images are resampled at 10 m for the panchromatic image and at 20 m for the multispectral image. For example, if the image is located in a region for which a 5 m panchromatic resolution is required, the 10 m panchromatic national image is derived from the highest-resolution raw image. The radiometric values of the 10/20 metre pixels of the national image are obtained through 5/10 metre pixels from the highest-resolution image.

3.7 Geographic description

3.7.1 Authority

International Organization for Standardization (ISO)

3.7.1.1 Title

Standard of the code of geographical regions:

ISO 3166-1:1997 Codes for the representation of names of countries and their subdivisions – Part 1: Country codes.

3.7.1.2 Date

Reference date of the ISO 3166-1 standard:

1997-10-01

3.7.1.3 Date type code

Type of date according to ISO 19115 standard:

002 – publication

3.7.2 Code

Code of the geographical region covered by the product according to the ISO 3166-1 standard:

CA – Canada

3.7.3 Extent type code

Type of code of the delimitation polygon of the extent according to the ISO 19115 standard:

1 – inclusion

3.8 Reference to specification scope

Global

4 DATA CONTENT AND STRUCTURE

4.1 Description

The *GeoBase Raw Imagery 2005-2010* is composed of thousands of pixels. Each pixel of information covers a portion of the Earth's surface according to its spatial resolution (spectral bands).

4.2 Coverage information (CD)

4.2.1 Description

Raw images have a resolution of 10 metres for the panchromatic band and 20 metres for the multispectral bands. If the resolution of the source image is better than the requested 10 metres or 20 metres and the images are resampled at 10 and 20 metres. The radiometric information from the resulting image matches the information from the original higher-resolution image as closely as possible. Each band has a radiometry of 8 bits (values between 0 and 255).

The multispectral image provides four bands. Panchromatic and multispectral bands are taken simultaneously.

4.2.2 Coverage type

Continuous quadrilateral grid coverage.

4.2.3 Specification

4.2.3.1 Domain extent

Canada's landmass according to the raw imagery coverage acquired.

4.2.3.2 Range type

Name: Radiometry

Value: Integer (0-255)

Spot 4 Imagery – Spectral and spatial resolution

Spot4 Band No.	Spectral Location	Wavelength (in μm)	Resolution (pixel size in m)
	Panchromatic	0.61 – 0.68	10
B1	Green	0.50 – 0.59	20
B2	Red	0.61 – 0.68	20
B3	Near infrared	0.78 – 0.89	20
4	Short wavelength infrared	1.58 – 1.75	20

Spot 5 Imagery – Spectral and spatial resolution

Spot5 Band No.	Spectral Location	Wavelength (in μm)	Resolution (pixel size in m)
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	Panchromatic	0.48 – 0.71	10
B1	Green	0.50 – 0.59	20
B2	Red	0.61 – 0.68	20
B3	Near infrared	0.78 – 0.89	20
4	Short wavelength infrared	1.58 – 1.75	20
<i>North of 71st parallel</i>	Panchromatic	0.61 – 0.68	10

4.2.3.3 Common point rule

Not applicable

4.3 Reference to specification scope

Global

5 REFERENCE SYSTEMS

Images from GeoBase Raw Imagery 2005-2010 are not georeferenced.

5.1 Spatial Reference System

Not applicable

5.2 Reference to specification scope

Global

6 DATA QUALITY

6.1 Completeness

Not applicable

6.1.1 Commission

Not applicable

6.1.2 Omission

Not applicable

6.2 Logical consistency

The highest-resolution raw images are resampled to 10 m for the panchromatic image and at 20 m for the multispectral image. For example, if the image is in a region for which a 5 m panchromatic resolution is required, the 10 m panchromatic image is derived from the highest-resolution raw image. The radiometric

values of the 10/20 metre pixels of the national image are obtained through 5/10 metre pixels from the highest-resolution image.

The satellite SPOT 5 is unable to acquire panchromatic images to the north of the 71st parallel. Therefore, only the multispectral image is available. However, multispectral band 2 can be used to simulate the panchromatic band.

6.2.1 Conceptual consistency

Not applicable

6.2.2 Domain consistency

Not applicable

6.2.3 Format consistency

Not applicable

6.2.4 Topological consistency

Not applicable

6.3 Positional accuracy

Not applicable

6.3.1 Absolute spatial accuracy

Not applicable

6.3.2 Relative spatial accuracy

Not applicable

6.4 Temporal accuracy

There is no temporal attribute for the *GeoBase Raw Imagery 2005-2010* other than the date of capture of the imagery identified in the metadata.

6.4.1 Accuracy of a time measurement

Not applicable

6.4.2 Temporal consistency

Not applicable

6.4.3 Temporal validity

Not applicable

6.5 Thematic accuracy

Four (4) multispectral bands with a resolution of 20 metres and one panchromatic band with a resolution of 10 metres are available.

6.5.1 Thematic classification correctness

Not applicable

6.5.2 Non quantitative attribute accuracy

Not applicable

6.5.3 Quantitative attribute accuracy

Not applicable

6.6 Reference to specification scope

Global

7 DATA CAPTURE

7.1 Description

Images from *GeoBase Raw Imagery 2005-2010* are source data used to produce orthoimages of GeoBase Orthoimage 2005-2010. SPOT Level 1A preprocessing is performed on the raw images to correct for CCD variation at the sensor level.

Images are made available as soon as they are produced. The availability of the images depends on planning and the capacity on the producing organization to generate them.

Radiometric corrections:

The radiometric corrections requested are the corrections related to the sensor and the satellite platform. The basic level of correction does not include geometrically correcting the image. For example, in the case of SPOT satellites, the requested corrections correspond to level 1A. The methodology includes the basic corrections performed on the raw image that is delivered.

A maximum viewing angle of 15 degrees is allowed.. A viewing angle of more than 15 degrees may be used but only in exceptional circumstances and upon approval from the Centre for Topographic Information in Sherbrooke (CTI-S).

7.2 Reference to the specification scope

Global

8 DATA MAINTENANCE

8.1 Description

Initial production of raw imagery for Canadian coverage. At present, there is no maintenance (image renewal) planned.

8.2 Reference to specification scope

Global

9 DATA PRODUCT DELIVERY

9.1 Delivery format information

9.1.1 Format name

CAP for SPOT4 imagery and DIMAP for SPOT5 imagery.

9.1.2 Version

Unknown

9.1.3 Specification

For CAP format:

http://www.spotimage.com/automne_modules_files/standard/public/p555_fileLINKEDFILE1_cap.pdf

For DIMAP format:

http://www.spot.com/automne_modules_files/standard/public/p452_e66fdc8d9baeb629a19beb53be67339ddimap.pdf

9.1.4 Language

Languages used in the dataset according to ISO 639-2 standard:

eng–English

fra–French

9.2 Delivery medium information

9.2.1 Units of delivery

SPOT satellite image.

9.2.2 Transfer size

The average size of a full GeoBase Raw Imagery for both, the panchromatic and the multispectral, is approximately 115 MB for SPOT4 and 280 MB for SPOT5.

9.2.3 Medium name

FTP

9.2.4 Other delivery information

Images of *GeoBase Raw Imagery 2005-2010* are available directly on-line through an FTP site. The client is informed via email when the process has been completed and the file is available for transfer.

Information regarding restrictions in terms of access to the data and its use is explained in the GeoBase Unrestricted Use Licence Agreement (www.geobase.ca - in the Data section).

9.3 Reference to specification scope

Global

10 METADATA

Not applicable

10.1 Reference to specification scope

Global