

Standards Change Request

Assign keywords to IMAGE_MAP_PROJECTION object

SCR3-1138.v1

Provenance:

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Problem:

Seven keywords in the PDS data dictionary were apparently intended to be optional keywords for the IMAGE_MAP_PROJECTION object, but were never listed in the object definition in the PSDD. Currently these keywords belong to no object. These keywords are needed for Mini-RF archives on LRO and Chandrayaan-1.

The keywords are:

KEYWORD_LATITUDE_TYPE
OBLIQUE_PROJ_POLE_LATITUDE
OBLIQUE_PROJ_POLE_LONGITUDE
OBLIQUE_PROJ_POLE_ROTATION
OBLIQUE_PROJ_X_AXIS_VECTOR
OBLIQUE_PROJ_Y_AXIS_VECTOR
OBLIQUE_PROJ_Z_AXIS_VECTOR

Current Urgency:

The keywords are used in labels planned for Mini-RF data products for the LRO and Chandrayaan-1 missions. The LRO launch date is currently 10/30/08. The Chandrayaan-1 launch is uncertain but may occur this summer.

Proposed Solution:

The keywords should be added to the optional element set in the Data Dictionary definition of the IMAGE_MAP_PROJECTION object.

C. Isbell would also like to take the opportunity to improve the description. The changes are as follows:

The IMAGE_MAP_PROJECTION object is one of two distinct objects that define the map projection used in creating ~~the~~ **cartographically registered** digital images in a PDS data set. The ~~name-the-of~~ other associated object that completes the definition is called DATA_SET_MAP_PROJECTION. The map projection information resides in these two objects, essentially to reduce data redundancy and at the same time allow the inclusion of elements needed to process the data at the image level. Basically, static information that is applicable to the complete data set reside in the DATA_SET_MAP_PROJECTION object, while dynamic information that is applicable to the individual images reside in the IMAGE_MAP_PROJECTION object. The line_first_pixel, line_last_pixel, sample_first_pixel, and sample_last_pixel keywords are used to indicate ~~which-way-is-up~~ **spatial orientation of a stored in-an** image. ~~Sometimes-a~~An image

~~can be~~ may have been shifted or flipped prior to it being physically recorded. These keywords give the mapping of pixels between the original image and the stored image. The IMAGE_MAP_PROJECTION object is to be included in a Archive Quality Data Product Label, and used to load the map projection catalog data into a PDS Catalog.

Note: For pre-V3.1 PDS Standards the default coordinate system was Planetographic.

Impact Assessment:

PDS Standards Reference: No impact.

Archive Preparation Guide: No impact.

Proposer's Archive Guide: No impact.

Planetary Science Data Dictionary: Change to IMAGE_MAP_PROJECTION object definition.

PDS Tools: No impact.

Effect on existing archives: Positive impact, if any. Any existing labels that use these keywords would be able to be correctly validated.

New development required: None.

Additional Information:

None.

Requested Changes:

An updated definition for IMAGE_MAP_PROJECTION is below.

PDS_VERSION_ID	= PDS3
OBJECT	= OBJECT_DEFINITION
NAME	= "image_map_projection"
TERSE_NAME	= "imagemapproj"
STATUS_TYPE	= "APPROVED"
SOURCE_NAME	= "MAGELLAN"
OBJECT_TYPE	= "GENERIC"
OBJECT_CLASSIFICATION_TYPE	= "PRODUCT CATALOG"
DESCRIPTION	= "

The IMAGE_MAP_PROJECTION object is one of two distinct objects that define the map projection used in creating cartographically registered digital images in a PDS data set. The other associated object that completes the definition is called DATA_SET_MAP_PROJECTION. The map projection information resides in these two objects, essentially to reduce data redundancy and at the same time allow the inclusion of elements needed to process the data at the image level. Basically, static information that is applicable to the complete data set reside in the DATA_SET_MAP_PROJECTION object, while dynamic information that is applicable to the individual images reside in the IMAGE_MAP_PROJECTION object. The line_first_pixel, line_last_pixel, sample_first_pixel, and sample_last_pixel keywords are used to indicate spatial orientation of a stored image. An image may have been shifted or flipped prior to it being physically recorded. These keywords give the mapping of pixels between the original image and the stored image. The IMAGE_MAP_PROJECTION object is to be included in a Archive Quality Data Product Label, and used to load the

map projection catalog data into a PDS Catalog.
Note: For pre-V3.1 PDS Standards the default coordinate system was Planetographic."

```
OBJECT                = OBJECT_HIER
  SUBOBJECT_NAME      = "data_set_map_projection"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_HIER

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "a_axis_radius"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "b_axis_radius"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "c_axis_radius"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "center_latitude"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "center_longitude"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "coordinate_system_name"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "coordinate_system_type"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "easternmost_longitude"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "line_first_pixel"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "line_last_pixel"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "line_projection_offset"
  REQUIRED_FLAG        = "Y"
END_OBJECT            = OBJECT_ELEMENT
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OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "map_projection_rotation"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "map_projection_type"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "map_resolution"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "map_scale"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "maximum_latitude"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "minimum_latitude"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "positive_longitude_direction"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "sample_first_pixel"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "sample_last_pixel"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "sample_projection_offset"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "westernmost_longitude"
REQUIRED_FLAG	= "Y"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "data_set_id"
REQUIRED_FLAG	= "N"
END_OBJECT	= OBJECT_ELEMENT
OBJECT	= OBJECT_ELEMENT
ELEMENT_NAME	= "first_standard_parallel"
REQUIRED_FLAG	= "N"
END_OBJECT	= OBJECT_ELEMENT

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OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "horizontal_framelet_offset"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "image_id"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "keyword_latitude_type"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_pole_latitude"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_pole_longitude"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_pole_rotation"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_x_axis_vector"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_y_axis_vector"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "oblique_proj_z_axis_vector"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "reference_latitude"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "reference_longitude"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "second_standard_parallel"
  REQUIRED_FLAG        = "N"
END_OBJECT            = OBJECT_ELEMENT

OBJECT                = OBJECT_ELEMENT
  ELEMENT_NAME        = "vertical_framelet_offset"
  REQUIRED_FLAG        = "N"

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END_OBJECT                = OBJECT_ELEMENT

OBJECT                    = OBJECT_ALIAS
  ALIAS_NAME              = "image_map_projection_catalog"
  USAGE_NOTE              = ""
END_OBJECT                = OBJECT_ALIAS

STATUS_NOTE              = "

1.0 6/20/90 G.M.WOODWARD Define the Image Map Projection
Object.
1.1 3/14/91 G.M.WOODWARD Changed reference to PDS
Central Node catalog for loading map projection.
1.2 6/29/92 G.M.WOODWARD Object hierarchy fixes,
name changes, and modified descriptions.
1.3 7/14/92 G.M.WOODWARD Added usage note to
description for line/sample first/last pixel keywords.
1.4 10-10-95 K.E. Law Added a note to the object description to note
the pre-V3.1 Standards default. Updated the required and optional
keyword lists to comply with the PDS Cartographic Standards.
1.5 05/14/08 S. Slavney Added optional keywords keyword_latitude_type,
oblique_proj_pole_latitude/longitude/rotation, and oblique_proj_x/y/
z_axis_vector. C. Isbell. Updated description."

END_OBJECT                = OBJECT_DEFINITION
END

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