

MRD 121- Image Sequences Videos

Image sequences will illustrate the evolution of the surface of Bennu as revealed through an imaging time-series. This product will consist of OCAMS image frames that are coregistered, sequentially ordered, and converted in a video (avi) format.

Overview

What is the Data Type?

Video files

What MRD does this data product satisfy or contribute to satisfying?

MRD 121: OSIRIS-REx shall image > 80% of the surface of Bennu with < 21cm spatial resolution (4-pixel criterion), once at 10am local time and once at 2pm local time, to produce a global mosaic, stereo images, mosaics of hazards and regions of interest, and image sequences of the asteroid surface.

What observations are required to provide the input data needed to make the data product?

PolyCam images acquired during the Baseball Diamond.

What is the spectral and/or spatial resolution of this data product?

The required spatial resolution is ≤ 21 cm for individual image frames from Detailed Survey (MRD 121) for > 80% of the surface of Bennu. The temporal resolution of the sequences will be determined by the slew rate at which the images are acquired, and a frame-rate will be chosen to make the image sequences viewable while still illustrating the evolution across the surface on Bennu in a timely manner.

When in the DRM are the observations that make the data product scheduled to be taken?

Detailed Survey during Baseball Diamond

How long does it take to produce the data product?

1-2 days

Is this product used for sample site selection, science value, or long term science?

This product will not be formally incorporated into any of the above categories, but will likely become valuable if any active surface processes (i.e. plumes) are detected on Bennu.

Observation Requirements

OCAMS images sequences can be generated from any set of frames that are acquired sequentially and with enough overlap (~40 %) such that the surface of Bennu appears to evolve continuously from frame-to-frame.

Data Product Structure and Organization

What is the structure of the data product?

A video file in avi format with a metadata label.

Data Format Descriptions

Header information (metadata) included with data product:

At a minimum the following metadata will be associated with each video:

```
/* Identification Information */
```

```
DATA_SET_ID = "OSIRIS-REx_DETAILED_SURVEY_OCAMS_IMGSEQ1_V1.0"
```

```
DATA_SET_NAME = "OSIRIS-REx CAMERA SUITE GLOBAL IMAGE SEQUENCE  
V1.0"
```

```
PRODUCER_INSTITUTION_NAME = "UNIVERSITY OF ARIZONA"
```

```
PRODUCER_ID = "UA"
```

```
PRODUCER_FULL_NAME = "BASHAR RIZK"
```

```
PRODUCT_ID = "DTbcd_LLLLLL_NNNN_RRRRRR_NNNN_Vnn"
```

```
PRODUCT_VERSION_ID = "V1.0"
```

```
INSTRUMENT_HOST_ID = "OSIRIS-REx"
```

```
INSTRUMENT_NAME = "OSIRIS-REx CAMERA SUITE"
```

```
INSTRUMENT_ID = "OCAMS-POLYCAM"
```

```
FRAME_NUMB = "1608"
```

```
FRAME_RATE = "2 FPS"
```

```
FRAME_SIZE = "1024, 1024"
```

```
VIDEO_LENGTH = "00:13:24"
```

```
SOFTWARE_NAME = "ADOBE_PHOTOSHOP"
```

Data Product Generation

By whom is the product generated?

A member of the IPWG will generate this product

What are the input products needed to produce the product?

L2 Calibrated PolyCam

MapCam panchromatic images in units of I/F

SPICE kernels

Are there format expectations for the input products?

All input images will need to conform to the OCAMS SIS for Level 2 products.

What algorithms are used to generate products?

Using a shell script OCAMS images will be converted from FITS format into a more standard image format using the ISIS3 utility isis2std. If necessary, OCAMS images will also be geometrically corrected in ISIS3 before converted using isis2std. Images will then be transformed into a video in avi format using PhotoShop, Quicktime, jpeg2avi, or another standard tool.

What calibration data are used to generate products?

PolyCam and MapCam L2 images are used to create this product. These products will be radiometrically calibrated by the OCAMS pipeline prior to use by the IPWG. In ISIS3, the products will be geometrically corrected using the PolyCam and MapCam camera models.

Has a specific Science Team Member been assigned to produce this product?

Carina Johnson has been assigned to generate this product. Will re-assign as needed.

Will multiple versions of the product be generated?

A video image sequence may be generated during each phase of the mission, but video products are only formally required during Detailed Survey and TAG.

Data Product Validation

How will the product be validated to ensure contents and formats are correct?

This data product will need to pass an IPWG acceptance test before being delivered to the SPOC. The IPWG acceptance test will ensure that format is correct.

The IPWG lead will review the content of the data product and the data provenance before it is delivered to the SPOC.

Data Flow