

MRD 190a- Estimate of Collected Surface Sample Area

Data Product Overview

The estimate of the surface sample area is a number expressing the areal coverage of the surface sample.

Overview

- Data Table with Accompanying Image
- It measures the area coverage of the surface sample at mm-scales.
- This product contributes to satisfying MRD-190.
- This product requires observations of the TAGSAM contact surface at a number of different incidence angles post-Sampling and the same angles pre-Sampling (for calibration).
- These observations are acquired pre-Sampling (calibration) and post-Sampling.
- This products can be produced in several days.
- This product is of science value.

Data Product Structure and Organization

The data product consists of a table presenting the area of the surface sampling disks positioned at TAGSAM contact surface covered by Bennu surface sample, accompanied by the post-Sampling images of the TAGSAM contact surface, in which the regions of successful contact sampling are identified.

Data Format Descriptions

Header information included with the surface sample area estimate will be those of the headers belonging to the images of the contact surface that are used in generating the estimate, including

- Date of Observation
- Exposure Start/End/Duration Times
- CCD Temperature
- Object
- Calibration History giving what processing steps have been applied
- Name of Calibration Files used in processing
- Lat/lon of the Imaging Location

Detailed Description of Data Format

The estimated surface area is recorded as a table, possibly organized by surface sampling disk ID, in which the area identified as occupied by grains of Bennu material is recorded.

Data Product Generation

How and by whom is the product generated?

The inputs for this are

- Images Acquired of the TAGSAM head Pre-Sampling under lighting conditions similar to those anticipated for the post-Sampling imaging situation
- SPK, PcK, SCLK, CK, FK and other kernels
- Radiometrically Calibrated SamCam images

What algorithms and/or calibration data is used to generate products?

- The standard OCAMS pipeline along with the image processing capabilities of J_Bennu
- Alternatives to J_Bennu include:
- The Small Body Mapping Tool
- Generic image processing tools such as Adobe Photoshop

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

This product is provisionally assigned to Bashar Rizk, who will reassign it as necessary.

Will multiple versions of the product be generated?

There will not be multiple versions of this product.

Data Product Validation

How will the product be vetted to ensure contents and format are correct?

Different estimates will be made from images acquired at different lighting conditions.

Data Flow

Update Phase B data flow diagrams with more detailed based on current processing configuration.

Flow Diagram TBD

Sources, destinations, and transfer procedures for data products

State the size of an individual data product and the total size of all the data products generated over the course of each mission phase.

- The table of area results will occupy 50-100 k
- The image suite accompanying it will occupy 30-80 MB of space.

State the time span covered by a product, if applicable, and the rate at which products are generated and delivered.

- The table will be delivered in a preliminary/quick-look form after two days of processing
- The image suite will be acquired post-Sampling by the SamCam with minimal time pressure; all the images are acquired at once and then processed together. If necessary, the image set may be taken again.

Standards used to generate data product

- Time (e.g. times are all converted to UTC)
- OCAMS Instrument clock time (equivalent to S/C time)
- Coordinate System
- Data Storage Conventions (i.e. byte order, compression, machine dependence)
- csv or txt for the table
- jpeg, png or some other standard image format for the image set