

Science Weekly Debrief

Carl Hergenrother gave an overview of the dust search campaign. PolyCam and MapCam images (from 11 and 12 September, respectively) do not indicate dust plumes. Carl presented an estimated upper limit on dust production rates. Whether dust production is below the threshold that would affect operations is ultimately dependent on grain size. There is no direct requirement in the mission Environmental Requirements Document for the dust environment. The working conclusion is that Bennu is not producing dust plumes and that there is no risk to the spacecraft.

Mike Nolan noted an issue, documented as a PFR, which has delayed the validation of the dust search images until early next week. A script to upload revised calibration files failed; any use of level-2 images over the past two weeks is affected. Level-0 images for navigation and JPEGs for CPE release are OK. AWG lead Carl Hergenrother should upload his preferred image for review for CPE release. Whether the data products can reach blessed status through the established pipeline remains to be seen; if not, the alternative processing steps will be documented.

Carl Hergenrother, followed by Bashar Rizk, also discussed the brightening trend and the unexpectedly large scatter in the data. Bennu generally follows the brightness trend predicted from the ground-based astronomical characterization. There is a lot of scatter around the baseline trend with Bennu appearing brighter or dimmer than expected, and the data are noisy. The culprit may be known OCAMS performance issues including finger region phenomena, aliasing, and streaking of point source image; Bashar also mentioned spacecraft pointing jitter. Bashar also discussed vertical charge transfer efficiency as the most likely source of the streaking in the PolyCam images. An optical reason for the streaks was discussed but appears unlikely based on comparisons across instruments and settings. However, the streaking phenomenon is not apparent in the MapCam images, which is the only indication of a PolyCam optical source. The team will review OCAMS performance throughout the outbound cruise to determine whether the scatter is related to new or pre-existing issue(s). No near-term products or activities are affected.

Amy Simon gave an update on OVIRS. The team has recently completed updates to the process, pipeline, and calibration for the Super-pixel = 2 mode, which reads out a much larger portion of the CCD for transmission back to Earth. The new calibration will be back-applied to all existing data. Most significantly, code for a background subtraction has been delivered. The OVIRS in-flight calibration paper has been published online.

A new spectral library was delivered to OTES (CR 316), which crashed the pipeline software. Resolution is required by 15 October.