OSIRIS

Optical, Spectroscopic, and Infrared Remote Imaging System

OSIRIS camera bad pixel list

RO-RIS-MPAE-TN-080

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1 / -	29/06/2015	all	first release
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1 General aspects

1.1 Scope

This document describes the current bad pixel list of the OSIRIS NAC and WAC.

1.2 Introduction

The OSIRIS cameras are built with a 2048x2048 high quality scientific CCD. These devices may contain blemishes, which must be corrected during the image calibration process. Bad pixels are produced:

- during the manufacturing of the detector
- during integration of the camera system
- in-flight

1.3 Applicable Documents

no.	document name	document number, Iss./Rev.
AD1	OSIRIS Experiment Data Record and Software Interface Specification (EDR/SIS)	RO-RIS-MPAE-ID-018
AD2	Rosetta-OSIRIS to Planetary Science Archive Interface Control Document	RO-RIS-MPAE-ID-015

1.4 Reference Documents

no.	document name	document number, Iss./Rev.
RD1	OSIRIS user manual	RO-RIS-MPAE-UM-004, D/s
RD2	OSIRIS Calibration Report	RO-RIS-MPAE-RP-147, D/b
RD3	OSIRIS Calibration Pipeline OsiCalliope	RO-RIS-MPAE-MA-007, 1/-

2 Bad pixel list

2.1 Correction method

The bad pixels are corrected by replacing their DN values by the median (or average) of the neighboring good ones. Lines or clusters can also be corrected by shifting their DN values to match the adjacent line or cluster. Details on the correction methods can be found in [RD3].

2.2 NAC bad pixels

The current bad pixels list is in effect from 2014-01-01.

Bad pixels and correction methods
      None
Bad columns and correction methods
      994,   SHIFT_L_CORR
      996,   SHIFT_R_CORR
      995,   MEDIAN_CORR
Bad rectangular regions and methods (x_0, y_0, h, w)
      915, 970, 20, 20   NO_CORR

Column 995 is a bad column, with further effect on the neighboring columns (C994 and C996). The method first corrects columns 994 and 996 by shifting their values to match in average with C993 and C997. Column 995 is then corrected by replacing each of its pixels DN with the median of 6 neighboring column pixels.

The NAC "blob" area is a rectangular area with effectively higher (dark) noise. This is marked in the image quality map, but currently not corrected.

2.3 WAC bad pixels

The current bad pixels list is in effect from 2014-01-01.

Bad pixels and correction methods
      None
Bad columns or clusters and correction methods
      119,   1664   MEDIAN_CORR
Bad rectangular regions and methods (x_0, y_0, h, w)
      None

The WAC has one bad cluster at column 119, for line 1664 and larger.

3 Calibration files used by OsiCalliope

The calibration files used by OsiCalliope to calibrate OSIRIS images are:

- NAC_FM_BAD_PIXEL_V01.TXT
- WAC_FM_BAD_PIXEL_V01.TXT

Previous versions:

- NAC_FM_ BAD_PIXEL_LIST.LBL (obsolete, same values as NAC_FM_BAD_PIXEL_V01.TXT)
- WAC_FM_ BAD_PIXEL_LIST.LBL (obsolete, same values as WAC_FM_BAD_PIXEL_V01.TXT)