In November 2013, we have obtained two images of the comet ISON in R filter using 2-m HCT telescope of IIA, Hanle, India on date:

2013-11-10

In November-December 2013, CCD on HFOPSC experienced readout problems and only half of the CCD was operational, reducing the effective FOV. That is why we have only images of the head of the comet. One image is completely defocussed relevant for some reason at that time. The other image is with normal focussing.

This dataset contains the following subdirectories with following data in the directories:

Imaging/November/:

Raw/:

Comet images:	**filter**	**exposure (sec)**
wk100130.fits	R	60.000
wk100131.fits	R	60.000

Biases:

wk100001.fits	"1 Free"	0.000
wk100017.fits	"1 Free"	0.000
wk100031.fits	"1 Free"	0.000
wk100045.fits	"1 Free"	0.000
wk100059.fits	"1 Free"	0.000
wk100068.fits	"1 Free"	0.000
wk100091.fits	"1 Free"	0.000
wk100101.fits	"1 Free"	0.000
wk100118.fits	"1 Free"	0.000
wk100129.fits	"1 Free"	0.000

Sky flats:

wk100011.fits	R	3.500
wk100012.fits	R	5.000
wk100013.fits	R	8.000

Calibration/:

Zero.fits	Master Bias
Flatr.fits	Master Flat in R

Processed/:

`cc' - means cosmic ray cleaned, `f' - flat-fielded and `b' - de-biased.

fbwk100130.fits	R	60.000	ccfbwk100130.fits
fbwk100131.fits	R	60.000	ccfbwk100131.fits

Documentation/:

preprocessing.cl	-	Preprocessing IRAF code
cosmic_rays.cl	-	IRAF code for cosmic rays removal
November2013_imaging.pdf	-	This document

HFOSC CCD characteristics and Reduction procedure:

CCD:

Photometric data was obtained on November 10, 2013, using the Himalayan Faint Object Spectrograph and Camera (HFOSC) mounted on the 2.0-m HCT of the Indian Astrophysical Observatory (IAO) of the Indian Institute of Astrophysics (IIA), located at 4500 m above sea level, Hanle, Leh, Ladakh.

HFOSC is equipped with a Thompson CCD of 2048 x 2048 pixels with a pixel scale of 0.296″/pix and a field of view of ~10 x 10 arcmin. The readout noise, gain and readout time of the CCD are 4.87 e, 1.22 e/ADU, and 90 sec, respectively.

Reduction Procedure.

Basic reduction was performed by using IRAF-based script that employs IRAF procedure *ccdproc*, and includes trimming the frames to [10:710,60:1970], *zerocombine* for bias subtraction, and *flatcombine* for flat-fielding. The code creates Master bias frame called Zero.fits, and Master flat frames for each filter: FlatI.fits, FlatR.fits and FlatV.fits.

The code ***preprocessing.cl*** is attached.

Cosmic rays were removed using IRAF-based script that employs IRAF task *crmedian*. The code ***cosmic_rays.cl*** is attached.