

Current status of of HSC Standard Data Reduction Service (SDRS)

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1. Background

Hyper Suprime-Cam (HSC; Miyazaki et al. 2018) data may not be easy to reduce for individual users. The hscPipe (Aihara et al. 2018; Juric et al. 2017; Bosch et al. 2018a; Bosch et al. 2019; Ivezić et al. 2019) is a great tool to handle the HSC data, but it requires a powerful machine.

For quick and efficient scientific results as well as for usability, the Mitaka HSC team have been preparing new service that performs standard reduction procedures to all the data taken with HSC on behalf of the observers.

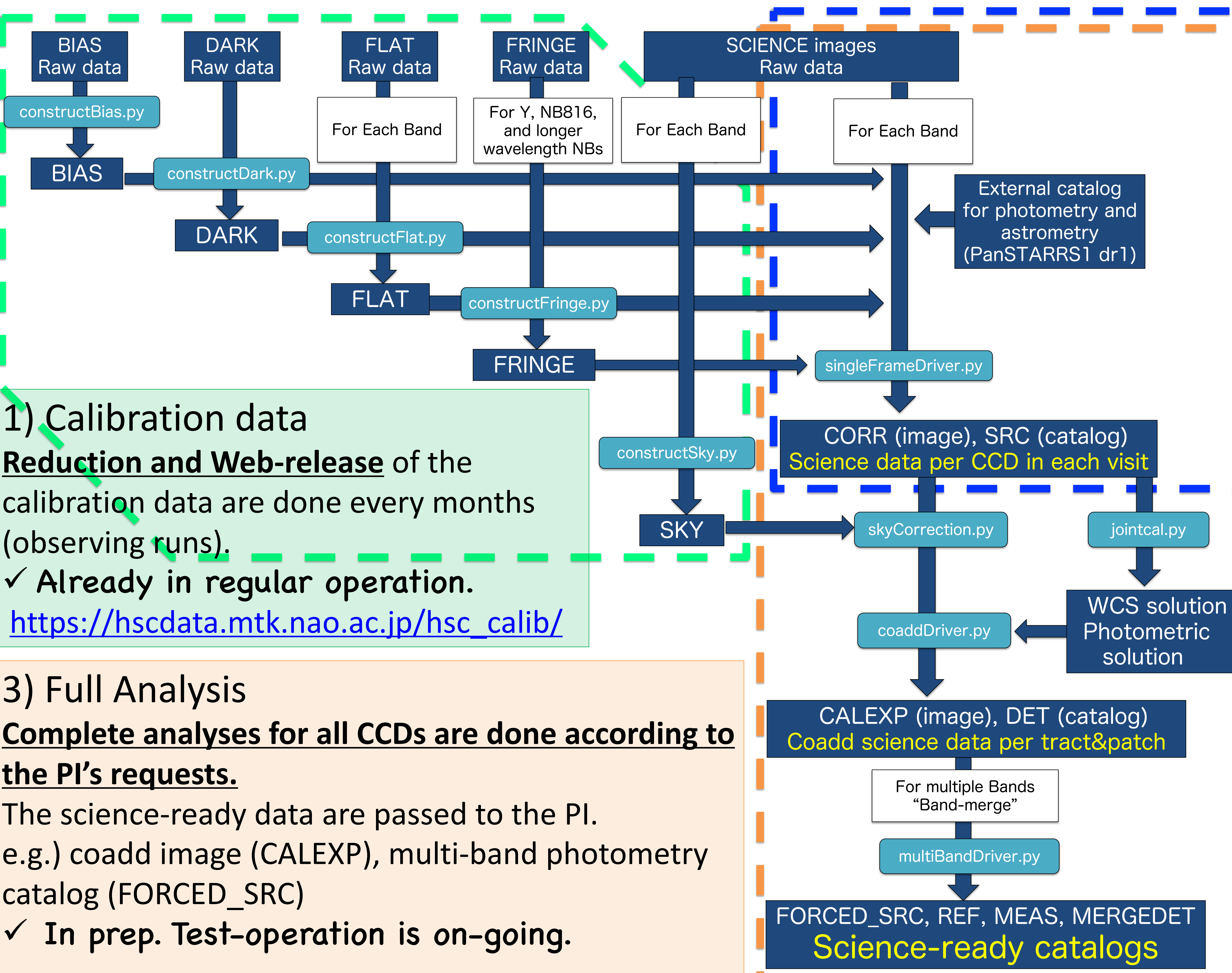
Environment

Assume you want to process 300 shots that you have taken in 3 nights. Then, a typical environment required is as follows:

		Remarks
CPU	64bit	Only x86_64 is tested.
Cores	12 (24 hyper-threads)	Not a requirement but a recommendation.
Memory	64GB	Stacking too wide a region might require more.
Storage	10TB	In case of 300 shots × object frames.

2. Standard Data Reduction Service (SDRS)

Flow of data analysis with hscPipe (ver 8.4)



1) Calibration data
Reduction and Web-release of the calibration data are done every months (observing runs).
✓ Already in regular operation.
https://hscdata.mtk.nao.ac.jp/hsc_calib/

3) Full Analysis
Complete analyses for all CCDs are done according to the PI's requests.
The science-ready data are passed to the PI. e.g.) coadd image (CALEXP), multi-band photometry catalog (FORCED_SRC)
✓ In prep. Test-operation is on-going.
Note. Complicated requests (e.g., change of parameters in sky subtraction or deblending) are NOT accepted.

2) Separately Analysis
CCD-by-CCD analysis of all the data but for 4 CCDs every months.
-> Reduced science data per visit

We make a list to quickly assess the data quality (QA list): PSF size, transparency, number of the detected objects, and so on. The QA lists are sorted by the programs, which are sent to the programs' PIs.

Visit List

Tract type: Use the same tracts as HSC-SSP (See https://hsc.mtk.nao.ac.jp/pipeline/pipeline_f_a_tutorial_e/basic_info.html)

Sky subtraction: (Extremely large scale (size: "global sky subtraction"))

(For global sky subtraction, see https://hsc.mtk.nao.ac.jp/pipeline_src/sky_sub/key.pdf)

Choose visits to use in the table below, and push "Submit".

name	visit	ra	dec	magp	psf_size	skylevel	transp	objc		
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160144.334-2	0.40903054	150.0	26.475982034	1.4271706037	2204.9923957	0.722356	992.75
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160246.334-283325	0.43335	150.0	26.7827538459	1.38518264297	2229.38427734	0.742527	1040.25
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160248.334-366833	0.48334444	150.0	26.4966699989	1.3792566632	2271.9650293	0.754212	955.5
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160250.334-1166425	0.7647	150.0	26.4993872076	1.4069398397	2264.51159648	0.733252	946.0
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160252.334-833333	0.51666667	150.0	26.4313295378	1.5213387468	2270.72875977	0.694394	781.75
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160256.334-233325	0.40903389	150.0	26.4309393499	1.6220231928	2403.24243164	0.694678	804.75
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160258.334-31669583	0.43336111	150.0	26.4307973357	1.6220320046	2432.1887207	0.688175	775.5
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160260.334-40904583	0.48334167	150.0	26.4327431595	1.5675354913	2416.0211816	0.701319	845.25
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160262.334-1500083	0.76666944	150.0	26.711322021	1.4192328923	2424.35518254	0.738158	1034.75
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160264.334-86667083	0.51668056	150.0	26.7518244238	1.3444887784	2459.46801758	0.709795	1013.0
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160268.334-16667883	0.59999722	150.0	26.7175613679	1.4202622884	2491.3494873	0.753413	966.5
SSA22_M	021611-SSA22_M-HSC-12	2021-07-02	160270.334-2598125	0.4334722	150.0	26.460281712	1.6385728234	2521.58419399	0.711548	818.5

PIs check the QA list and can request

- which visits will be used,
- tract definition (same as SSP or not),
- global sky subtraction option,

for the next step = full analysis.
✓ Test-operation is on-going.

3. Other service / activity

1) Helpdesk

Daily user support to resolve problems with hscPipe. Your question and consultation also help our understanding and improve the software.

2) Subaru Telescope Data Analysis Workshop

We have been organizing a workshop focusing on data analysis for graduate students and young researchers who want to conduct observational research using the Subaru Telescope. The purpose of this workshop is to train a new generation of researchers who will work with Subaru Telescope.

References

Aihara et al., 2018a, PASJ, 70, S8; Miyazaki, S. et al. 2018, PASJ, 70, S1; Juric et al. 2017 in Astronomical Society of the Pacific Conference Series, Vol. 512, Astronomical Data Analysis Software and Systems XXV, ed. N. P. F. Lorente, K. Shorridge, & R. Wayth, 279; Bosch et al. 2018a, PASJ, 70, S5; Bosch et al. 2019 in Astronomical Society of the Pacific Conference Series, Vol. 523, Astronomical Data Analysis Software and Systems XXVII, ed. P. J. Teuben, M.W. Pound, B. A. Thomas, & E. M. Warner, 521; Ivezić et al. 2019, ApJ, 873, 111

Helpdesk

If you have any questions about data or processing, please contact us.

- helpdesk@hsc-software.mtk.nao.ac.jp

Please follow the [Mail form](#) when you send an e-mail to Helpdesk.

Subaru Data Analysis Workshop 2021 on Nov 16 – 18 (ONLINE)



実習 2つの観測装置 (HSC, HDS) を使った、実 験的なデータ解析実習。 講義 CCDデータの基礎、観測装置紹介、プログラ ーの書き方を、エキスパートが解説。 講演 最先端で活躍する 3名の招待講師による、科 学成果の紹介。