

天文データアーカイブシステム SMOKA の現状報告

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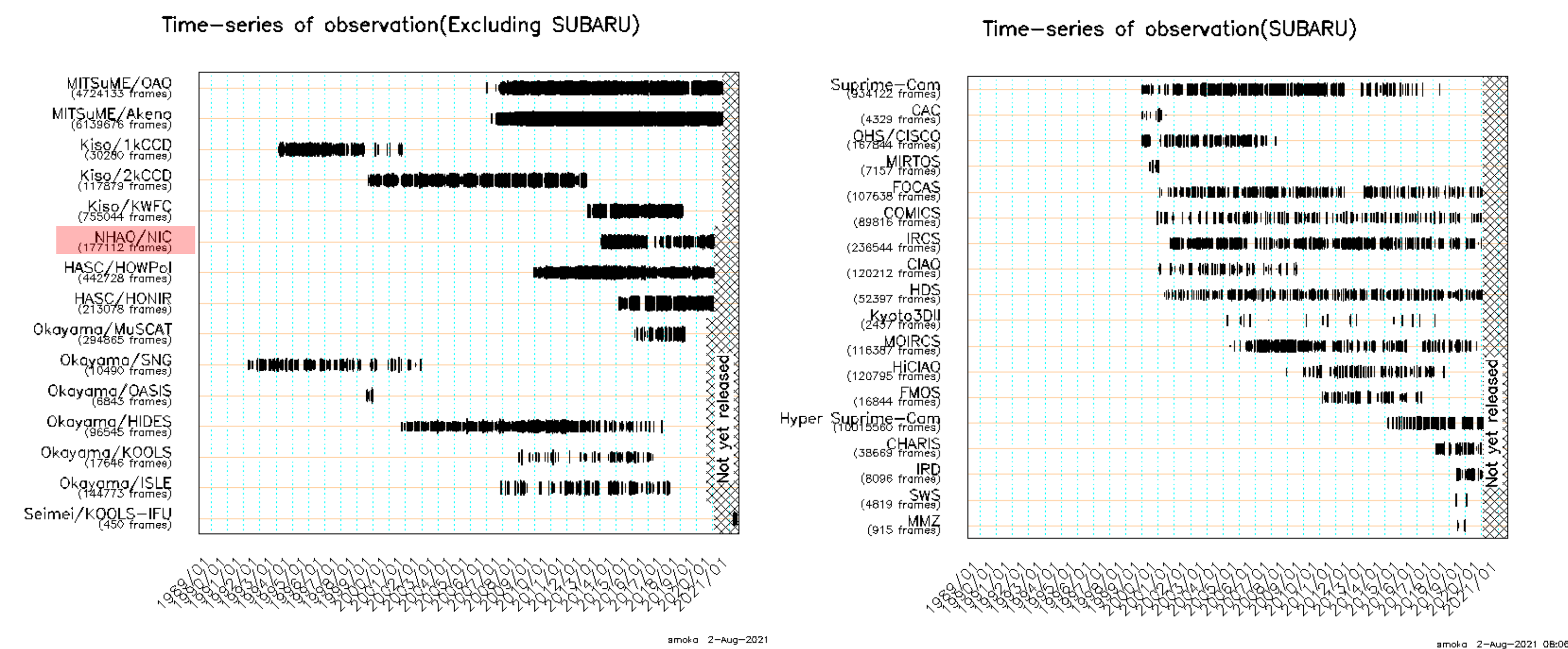
SMOKA

is the science archive system providing access to public data of:

- ▶ **Subaru** Telescope
- ▶ the 188cm telescope at the **Okayama** Astrophysical Observatory
- ▶ the 105cm Schmidt telescope at the **Kiso** Observatory of the University of Tokyo
- ▶ **MITSuME** telescopes of Tokyo Institute of Technology
- ▶ the 150cm **KANATA** telescope of Hiroshima University
- ▶ **NAYUTA** telescope at Nishi-Harima Observatory
- ▶ **Seimei** telescope of Kyoto University

Everyone can get the data for the purposes of astronomical research and education.

20 years have passed since the beginning of SMOKA, which has been operated and developed by the Astronomy Data Center of National Astronomical Observatory of Japan.



- ▶ Only OBJECT frames are displayed.
- ▶ <https://smoka.nao.ac.jp/status/status.jsp>

Progress in 2020 & 2021

SMOKA [▶ https://smoka.nao.ac.jp/](https://smoka.nao.ac.jp/)

[New Feature]

- KWFC data include information on Astrometric Calibration (Apr.30, 2021).
- HIDES-F data of Okayama Astrophysical Observatory are released as a part of HIDES data (Mar. 30, 2021).
- KOOLS-IFU data of Seimei Telescope are released (Dec. 22, 2020).
- DRM-HSC(Data Request via eMail query system for HSC.) is open (Sep. 28, 2020). [NEW]
- HSC Search is open (Sep. 28, 2020). [NEW]
- MIMIZUKU data of Subaru Telescope are released (Jul. 21, 2020).
- SWIMS data of Subaru Telescope are released (Feb. 19, 2020).
- IRD data of Subaru Telescope are released (Jan. 22, 2020).

Photographic Plate Archive [▶ https://pplate.nao.ac.jp/](https://pplate.nao.ac.jp/)

News

2021.07.14

- Digitized color films have become newly available (132 images in total). All of them can be found by selecting SR16 as Emulsion, but the other searching options are unavailable at present.
- See [here](#) (Japanese) for an example procedure of the negative-positive conversion.
- [The image use policy of Kiso Observatory](#) is linked.

2020.10.21 NEW Astrometric Calibration Information is added to 4609 new FITS files (KSQ)

Sky Monitor Image Archive [▶ https://ozskymon.nao.ac.jp/](https://ozskymon.nao.ac.jp/)

2020/10: 東京大学木曾観測所の全天モニタ画像が取得できるようになりました

Data-Accessible Instruments via SMOKA

34 instruments, 8 telescopes

- ▶ **Subaru:**
Suprime-Cam, FOCAS, HDS, OHS/CISCO, IRCS, CIAO, COMICS, CAC, MIRTOS, MOIRCS, Kyoto-3DII, HiCIAO, FMOS, HSC, CHARIS, **IRD, SWIMS, and MIMIZUKU**
- ▶ **Okayama:**
ISLE, KOOLS, HIDES (and **HIDES-F**), OASIS, SNG, and MuSCAT
- ▶ **Kiso:**
1kCCD, 2kCCD, KWFC, Kiso Schmidt Plate digitized data (**color films added**)
- ▶ **MITSuME:**
MITSuME Akeno and Okayama
- ▶ **Higashi-Hiroshima:**
HOWPol and HONIR
- ▶ **Nishi-Harima:**
NIC
- ▶ **Seimei:**
KOOLS-IFU
(only calibration data at present)

Instrument	Occupation	Data since
Okayama	---	1991
Kiso	---	1993
Subaru	18 month	1999
MITSuME	1 yr	2006
Higashi-Hiroshima	18 month	2008
Nishi-Harima	18 month	2013
Seimei	18 month	2019

Status of Archive

SMOKA basically provides raw data.

Quick-look images and weather information (e.g., temperature, humidity, sky-monitor images) are also offered.

The list of all the frames archived in SMOKA is available as text files for each instrument:

<https://smoka.nao.ac.jp/status/obslog.jsp>
So, users also have an option to select frames by themselves without using SMOKA search and then request the data **by e-mail** (DRM: Data request system via e-mail).

DRM for HSC has been available since Sep. 28, 2020.

Amount of Archived Data

Instrument	Frames (x10 ⁶)	Size (TB)
Subaru	~15	~243
MITSuME	~13	~27
Kiso	~2	~10
Okayama	~1	~7
Higashi-Hiroshima	~0.8	~8
Nishi-Harima	~0.2	~0.9
Seimei	~0.03	~0.2
Total	~32	~296

- ▶ 2021-08-05
- ▶ <https://smoka.nao.ac.jp/status/frmcent.jsp>

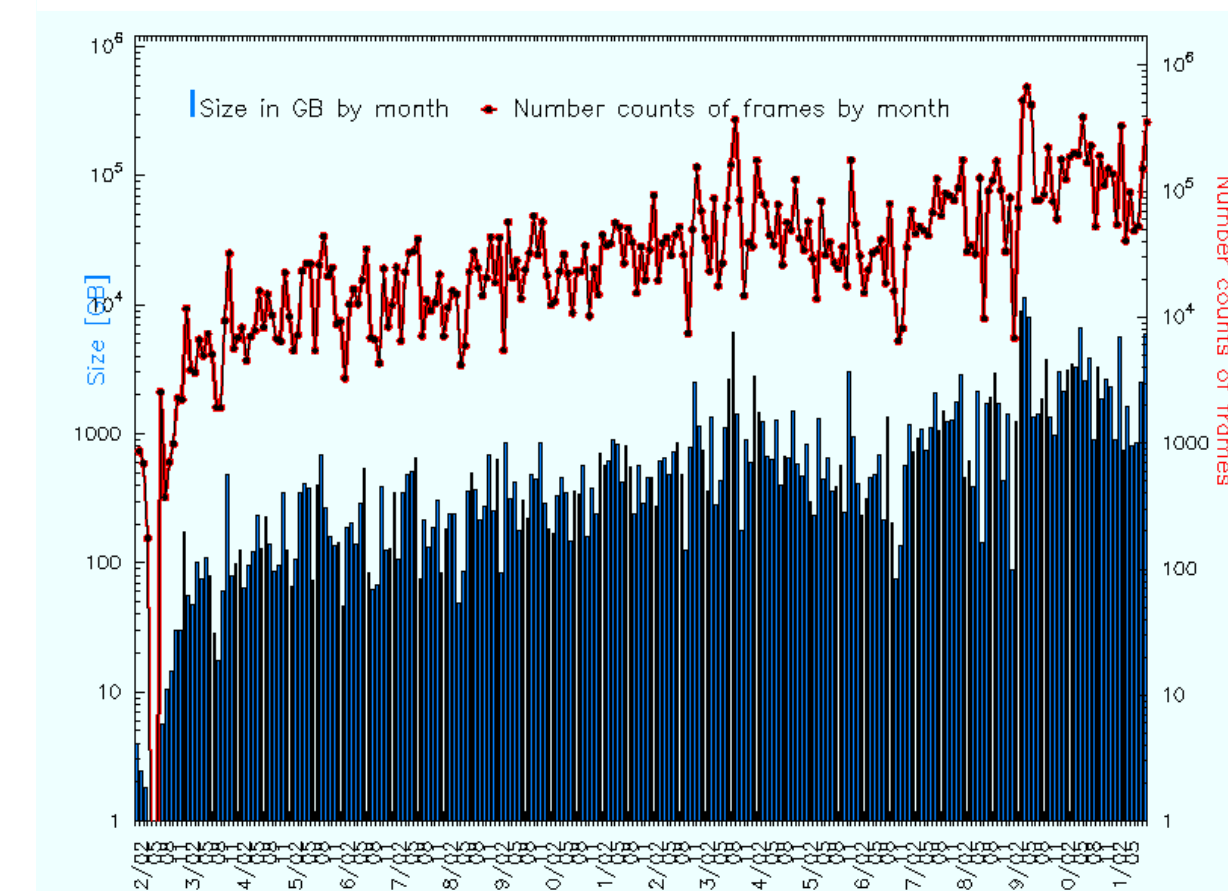
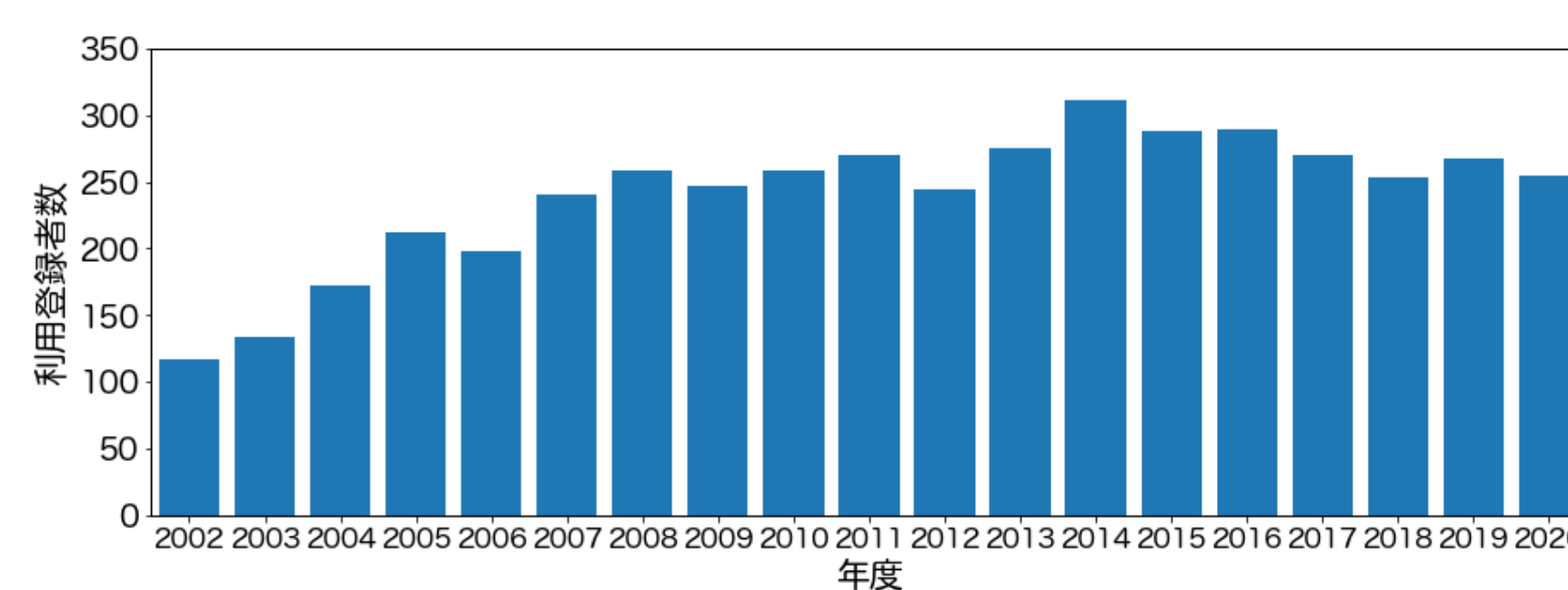
Status of Use

Number of registered users: **~250 every year**

- ▶ Roughly half from abroad
- ▶ User registration is NOT necessary for searching archived data or viewing quick-look images but necessary for data requests.
- ▶ User accounts are valid during the fiscal year. Re-registration is required for the next fiscal year.

Amount of requested data: **~10⁵ frames/month (~1-10 TB/month)**

- ▶ Increasing gradually, while the number of users is almost constant for the past decade



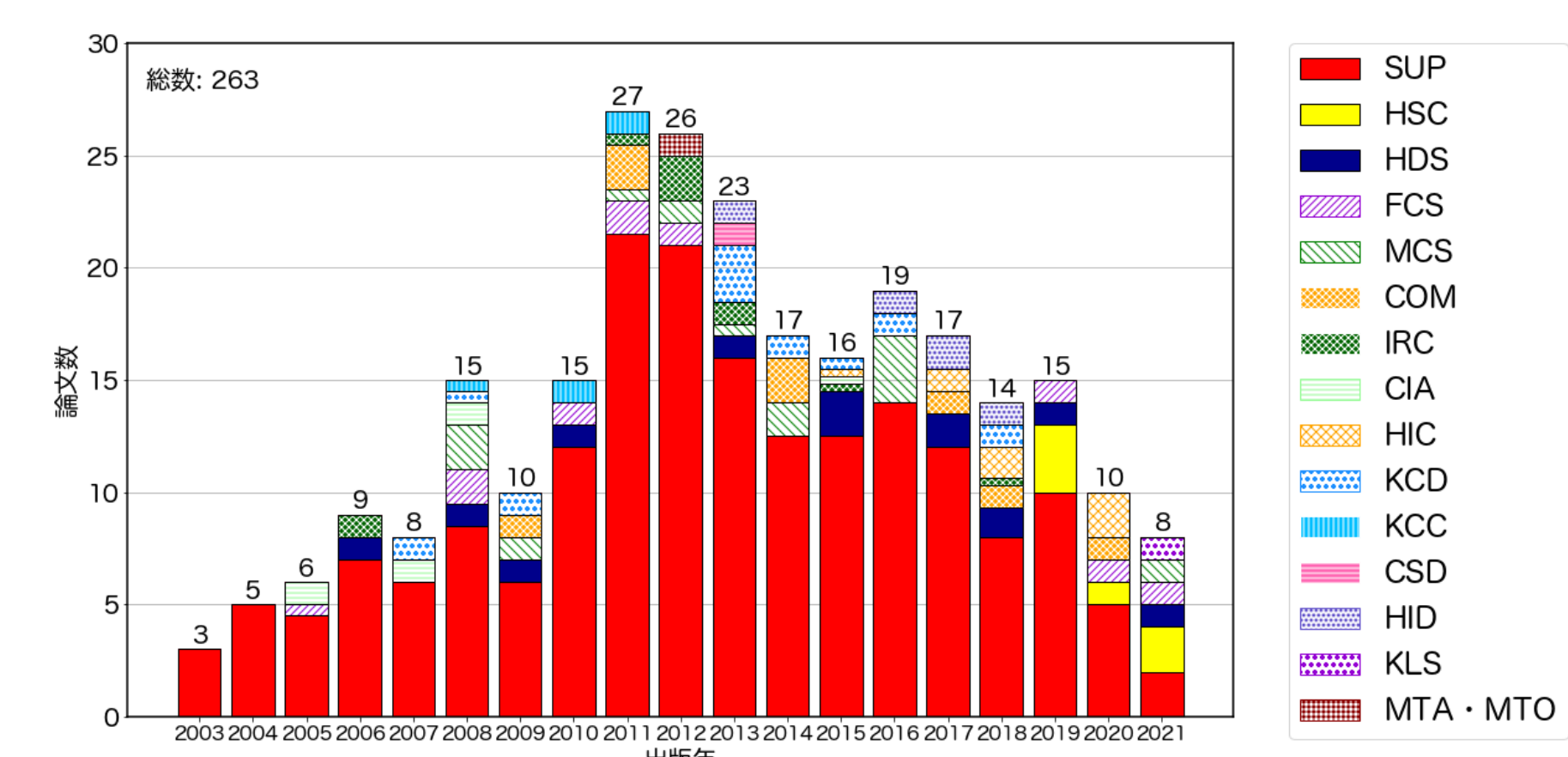
- ▶ 中島ほか, 2021, 査読中

▶ <https://smoka.nao.ac.jp/status/status.jsp>

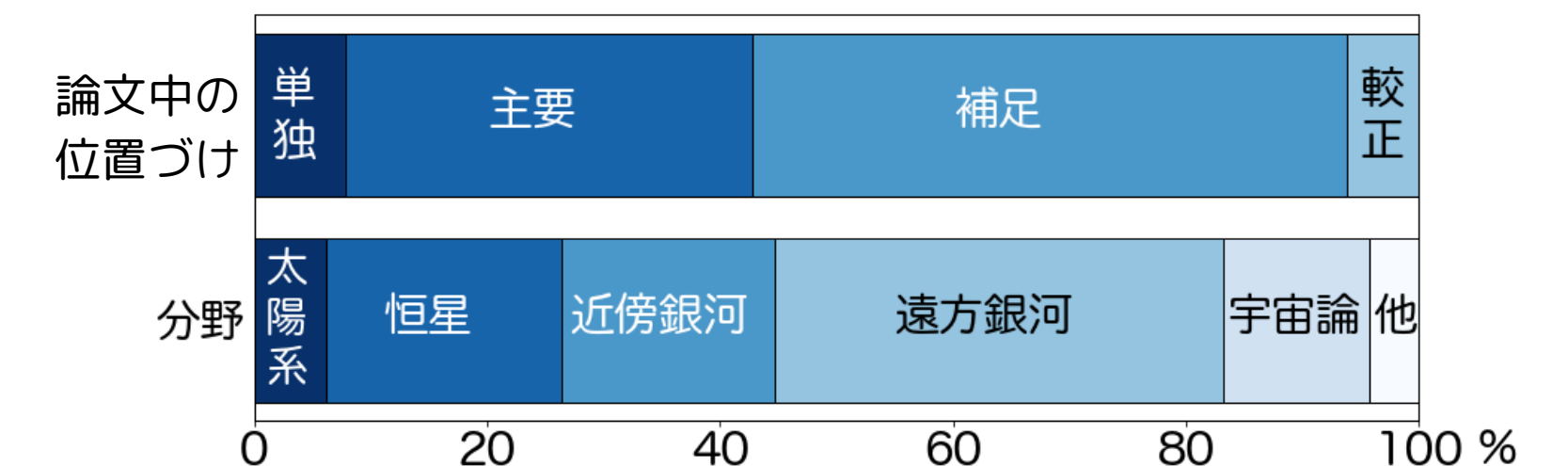
Research Papers using SMOKA

Number of refereed papers using SMOKA: **~14/yr**

- ▶ **263** in total (as of Aug. 5th, 2021)
- ▶ Only main journals are counted. (A&A, ApJ, AJ, PASJ, MNRAS, etc.)



Use cases and subjects



- ▶ 中島ほか, 2021, 査読中

Future Plan

- Subaru/VAMPIRES 2021 open
- Subaru/REACH 2022-02-01 open
- Kiso/Tomo-e Gozen in prep.
- Seimei/TriCCS in prep. (共同利用観測分)

Recent Publications

- ▶ 中島ほか, 天文月報2021年6月号, SMOKA ~日本の天文データアーカイブを先導して
- ▶ 伊藤ほか, 天文月報2021年6月号, SMOKAの教育への活用 教員養成系学部での事例紹介
- ▶ 青木ほか, 天文月報2021年8月号, 東京大学木曾観測所写真乾板のデジタル化
- ▶ 中島ほか, 国立天文台報, 2021, 査読中, 光学赤外線観測データアーカイブシステム SMOKA: 20年間の開発と運用、そして将来

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