

SMOKAの現状と 今後の計画 Current Status and Future Plans

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What is SMOKA?

- **Subaru-Mitaka-Okayama-Kiso-Archive System**

- The astronomical observation data archive system for Japanese optical and infrared telescopes (<https://smoka.nao.ac.jp/index.jsp>).
- Mainly provides raw data for the purpose of creating new research results, verifying research findings, and promoting research and educational activities.

Main data released in SMOKA

Subaru	S-Cam, FOCAS, HDS, IRCS, OHS/CISCO, MIRTOS, COMICS, CIAO, CAC, Kyoto-3DII, MOIRCS, HiCIAO, FMOS, HSC, CHARIS, IRD, SWIMS, MIMIZUKU, VAMPIRES
Okayama	SNG, OASIS, HIDES, ISLE, KOOLS, MuSCAT
Kiso	1kCCD, 2kCCD, KWFC
MITSuME	MTA (AKENO), MTO (OKAYAMA)
Kanata	HOWPol, HONIR
Seimei	KOOLS-IFU, TriCCS
Nayuta	NIC

Note: Data released in a different system configuration

Tomo-e Gozen stacked data, Digitized photographic plate data, All-sky monitor images

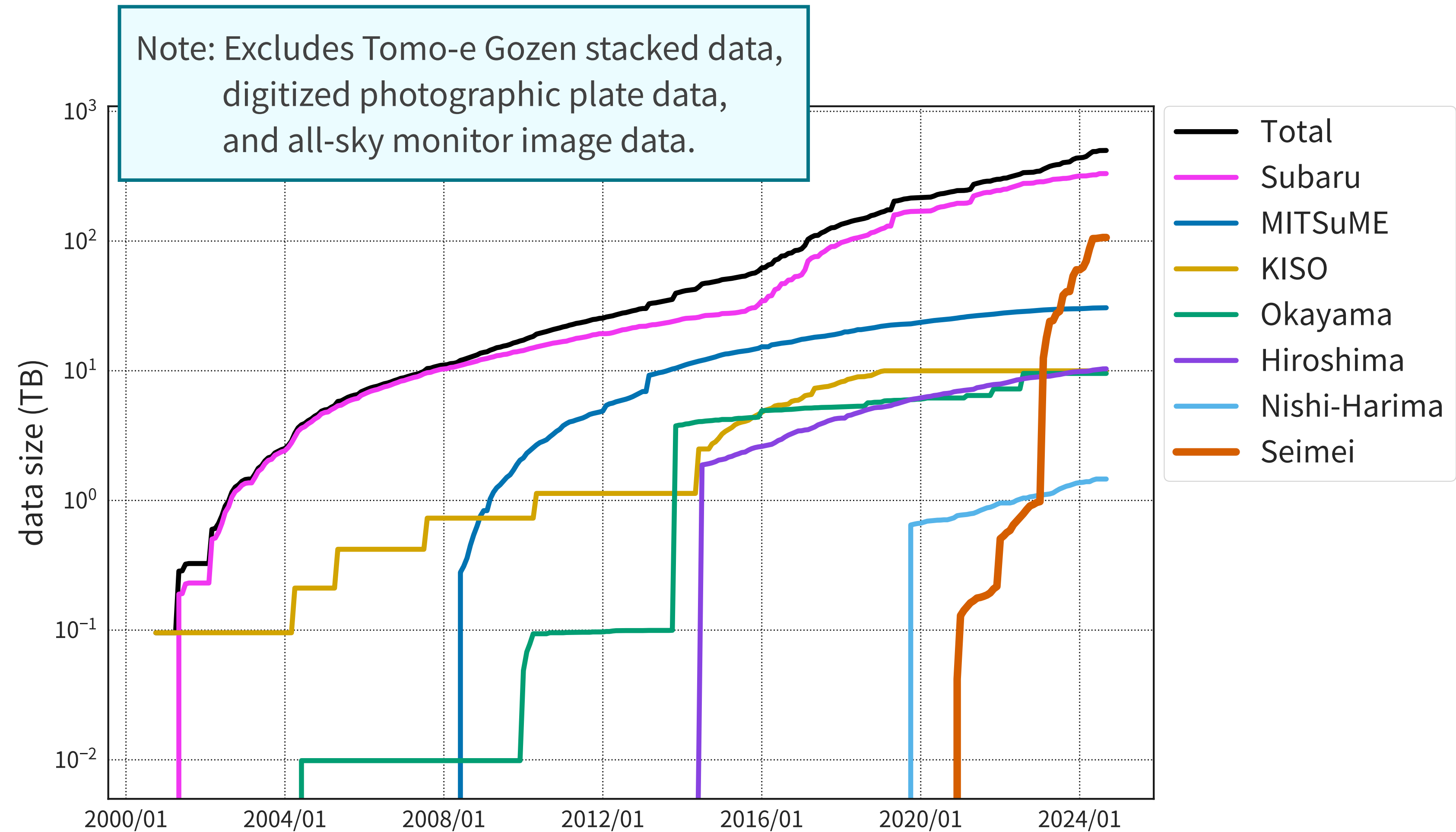
The Trend of SMOKA Released Data Volume

- **Total data (as of Sep. 2, 2024)**

- 40 million frames
- 500 TB

- **Seimei data**

- 304,152 frames
- 107 TB



SMOKA Functions

• Data Search

- Simple search (by object name)
- Advanced search (coordinates, observation mode, etc.)
- SUP search (quality indicator)
- HSC search (quality indicator)
- Pin-point search
- Calendar search
- All keywords search

• Data Request

- Request from search results
- Mail-based request

SMOKA Archive Advanced Search

[Click here for SUP Search \(Suprime-Cam data Search\).](#)
[Click here to know how to search.](#)

Search Conditions

Object Name (for name resolve) **Resolver**
 SIMBAD NED Don't Resolve

Coordinate System
Equatorial
 Circular
Equinox J2000

Field of View (arcmin)
 Rectangle

center (RA) **Radius(arcmin)**
center (DEC)

From (RA) **To (RA)**
From (DEC) **To (DEC)**

Observation Date **Exp Time (sec)** **Observer**

Frame ID **Exposure ID**

Output Format
 TABLE (max 5,000 rows, HTML) ASCII (max 20,000 rows, text)

Frame or Shot mode
 FRAME SHOT (SUP, HSC, and KWF ONLY)

Instruments/Filters

Instruments 1 selected **Observation Mode** 3 selected **Data Type** 1 selected **Observation Category** 2 selected

Observation Band

Output Options

Output columns All None Reset
FRAMEID
DATE_OBS
FITS_SIZE
OBS_MODE
DATA_TYPE
OBJECT

Order by: 1. reverse

Maximum number of hits:

Output Equinox
 Show SQL Query

Seimei Data in SMOKA

- Calibration data is released without no proprietary period for KOOLS-IFU and TriCCS.
 - Other data is released after 1.5 years
- In addition to raw data files, automatically reduced data are also provided for KOOLS-IFU.
 - RawData checkbox:
 1. Raw Data
 2. KIFXXXXXXXXX-wc-norm.fits
 - Spectra after the wavelength and the flat-field calibration.
 3. KIFXXXXXXXXX-sky-3d.fits
 - The sky-subtracted datacube, or reconstructed image stack in each wavelength, produced from KIFXXXXXXXXX-wc-norm.fits.

[Click here to know how to look search results.](#)

79 frames are found. The results are summarized below:

Instrument	Number of frames
KIF	79

Thumbnail images.

Shot images. [available for Suprime-Cam (SUP), Hyper Suprime-Cam (HSC), and ...]

To retrieve data, mark checkboxes at the "Raw Data" column of rows which you want. Then push "Datarequest" button located before/after the table.

A link of "No." column will lead you to the detailed information of corresponding frame. You can see the quicklook image, the header information, and the ASCII table.

To view other page of the query results, select the range of numbers from the "No." column, then push "Go" button next to it.

Mark all Unmark all Datarequest (for 1-1000)

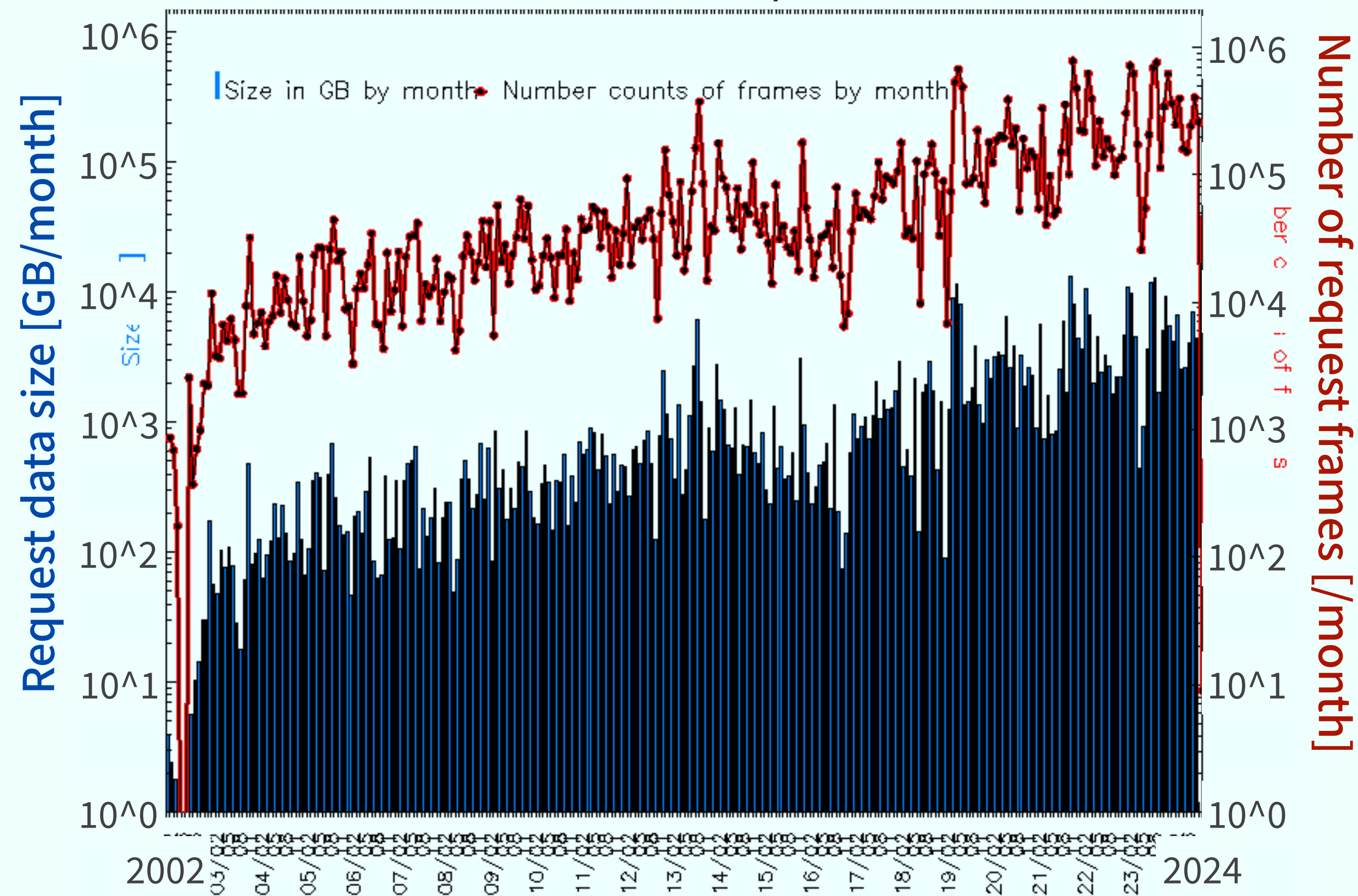
No.	Doubt	RawData	FRAMEID	DATE_OBS	FITS_SIZE	OBS_MODE
1		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085476	2020-12-15 weather	7	IFS
2		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085477	2020-12-15 weather	7	IFS
3		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085478	2020-12-15 weather	7	IFS
4		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085479	2020-12-15 weather	7	IFS
5		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085480	2020-12-15 weather	7	IFS
6		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085482	2020-12-15 weather	7	IFS
7		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085483	2020-12-15 weather	7	IFS
8		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	KIF00085484	2020-12-15 weather	7	IFS

SMOKA Usage Status

- **Annual registered users**
 - ~250 (reset every year)
- **Recent monthly data request volume**
 - Number of frames: 0.1 - 1 million
 - Data size: 1-10 TB
- **The number of Seimei data requests**

	2021	2022	2023	2024
KOOLS-IFU	0	0	45	161
TriCCS			441	52

Trend of requested data size and number of frames from 2002 to Sep. 2024



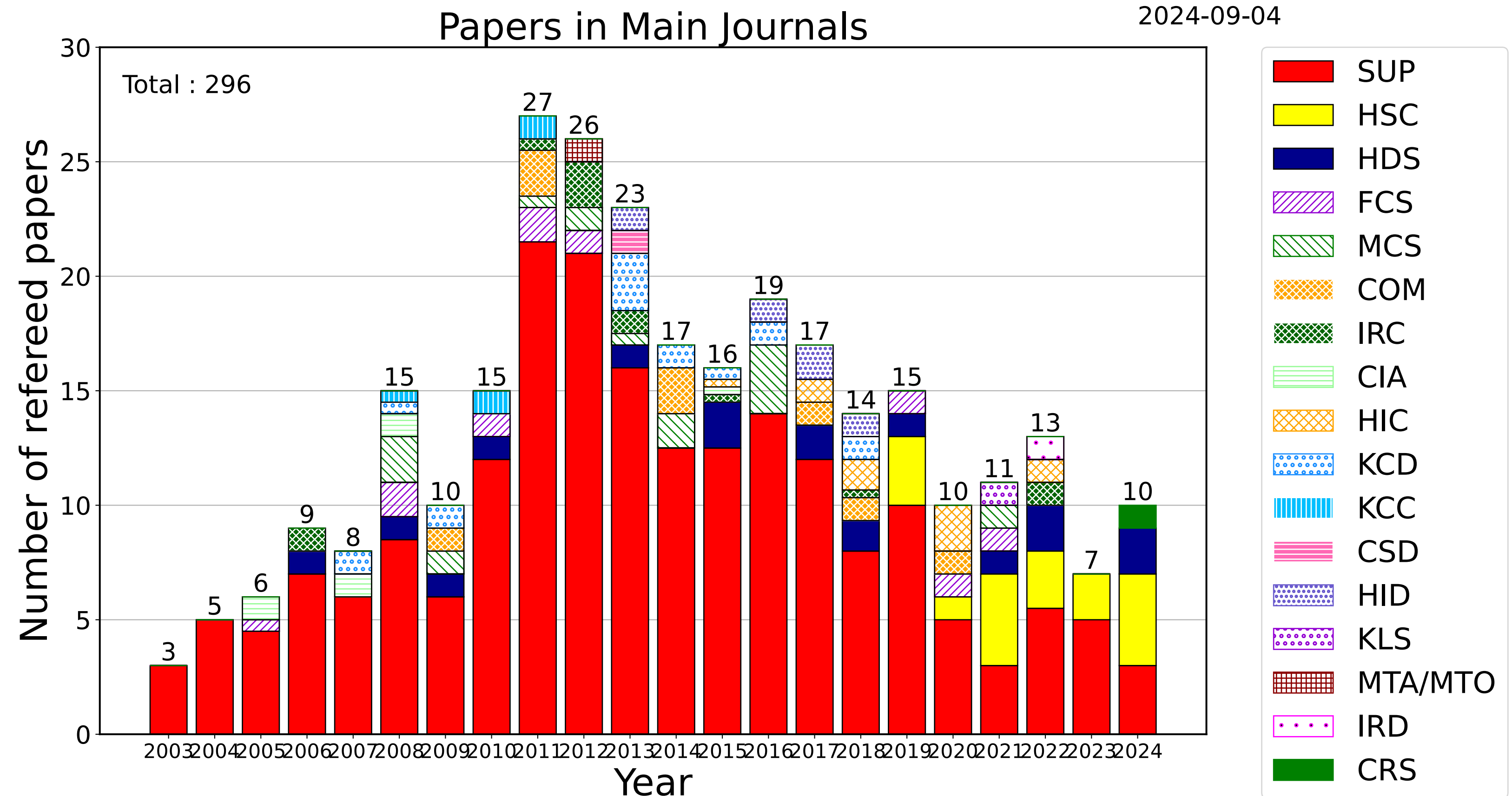
Number of Papers Using SMOKA

- **Total: 296 (as of Sep. 4, 2024)**
 - ~13 per year

- **Main journals**

- ApJ, ApJL, ApJS, A&A, PASJ, PASP, NRAS, ICARUS, Nature, Science, ...

Note: Excludes DATA AVAILABILITY



Current Status

- **Release of new instruments data**

- Subaru/PFS
 - Header is under consideration
- Seimei/GAOES-RV
 - Header is under consideration
 - Data transfer to SMOKA started from July 2023
- TAO
 - NICE header is under consideration

- **Computer system replacement (July 2024)**

- Replaced computer systems responsible for data transfer, data processing, and storage.
- All SMOKA services suspended from June 25 to July 9, 2024.
- Ongoing migration work:
 - HSC e-mail request service
 - Release of Tomo-e Gozen stacked data from July 2021 onwards

Future Plans

- **Publication of new data**

- Subaru

- Fast PDI, MEC, PFS
- All-sky monitor images

- **Seimei**

- **GAOES-RV, Near-infrared polarization imaging instrument**

- TAO

- NICE, MIMIZUKU, SWIMS, ...

- Kiso Schmidt

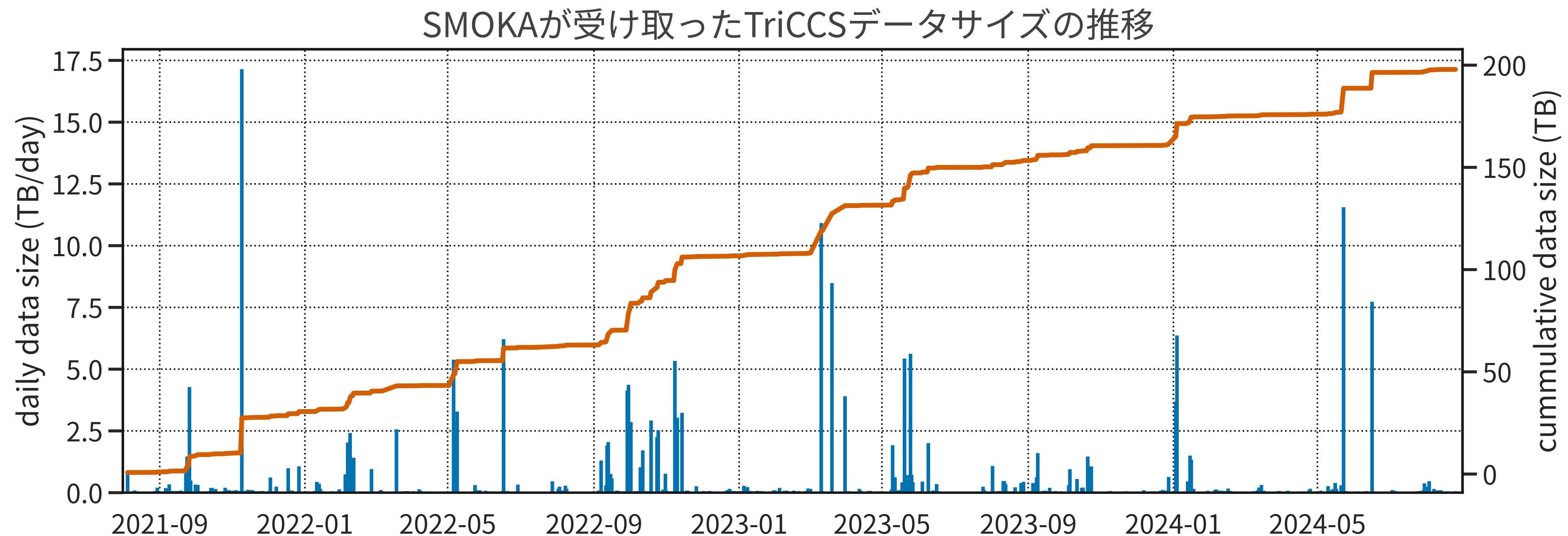
- Tomo-e Gozen raw data

(first 100 shots of all-sky survey for each observation date + flat + dark)

- **Server maintenance for long-term stability**

去年のデータ保存・公開に関する議論のおさらい

- SMOKAが受け取ったTriCCSデータ (公開前も含む) は200 TB (cf. KOOLS-IFUは 1.7TB)
 - 現状のデータレートであれば、すぐにディスクが溢れてしまうようなことはない
 - ここ1年のデータレートにも大きな変化はない
- データ保存・公開にかかわる重要案件については小委員会、UMで議論
 - 観測計画 (高FPS観測の頻度など) に応じたデータ保管・公開方針の定期的な見直し
 - 観測データの保存方法 (ホット・コールド、圧縮)



Summary

- What is **SMOKA**?
 - The astronomical observation data archive system for Japanese optical and infrared telescopes.
 - **Mainly providing raw data** for the purpose of creating new research results, verifying research findings, and promoting research and educational activities.
- **40 million frames (~500 TB)** are archived in SMOKA.
 - Including 304,152 frames (107 TB) of Seimei data.
- **296 peer-reviewed papers** using SMOKA (annual average of 13).
- Continuing to release new observational data and maintain servers for long-term stability.