

April/7/2023, PDC

# Public education activities for planetary defense in Japan

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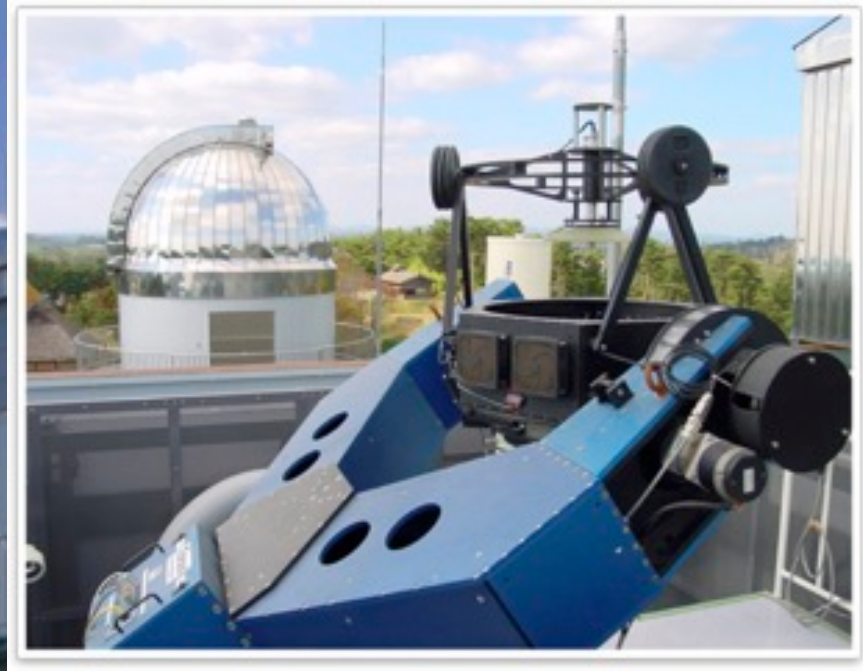
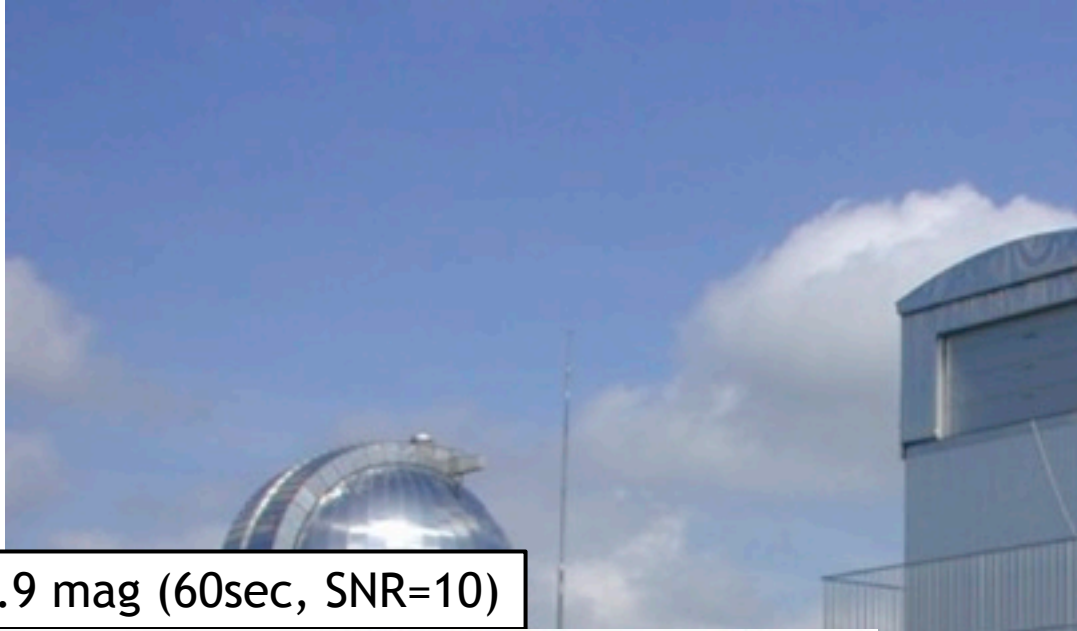
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# Introduction

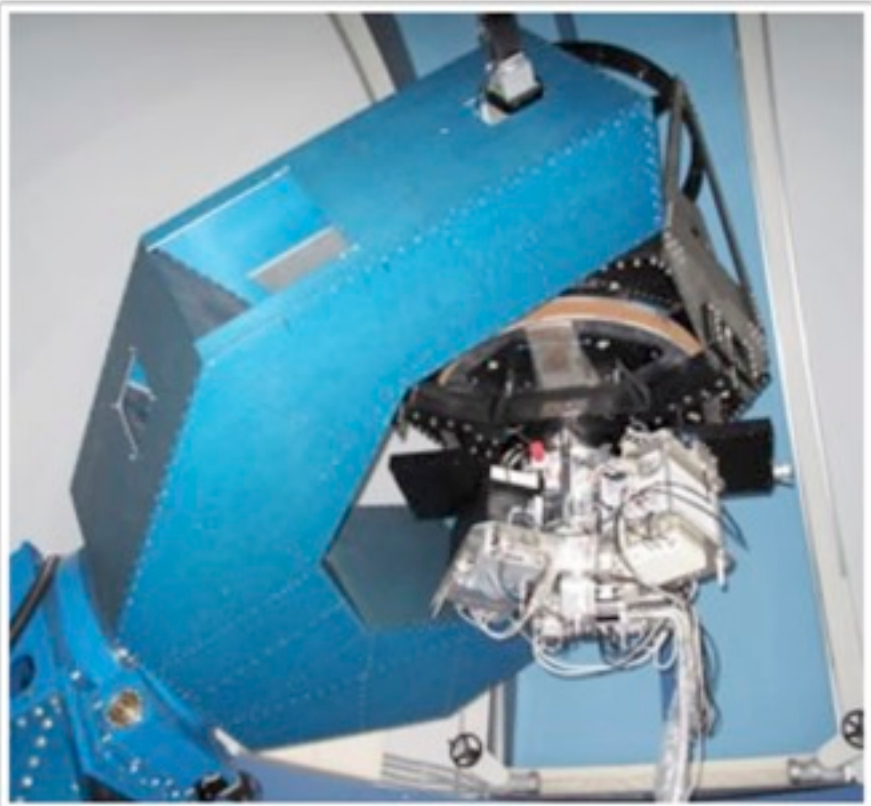
## -Japan Spaceguard Association (JSGA)-

- ▶ Founded in 1996. The 1<sup>st</sup> president is Dr. Shuzo Isobe (1942-2006).
- ▶ Operation of the Bisei Spaceguard Center 1.0 m and 50 cm telescopes under the administration by JAXA.





18.9 mag (60sec, SNR=10)



# Introduction

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- ▶ Operation of the Bisei Spaceguard Center 1.0 m and 50 cm telescopes under the administration by JAXA.
- ▶ Observation of near-Earth Objects (NEO confirmation page's targets)
- ▶ Hayabusa(Itokawa), Hayabusa-2(Ryugu), Destiny+(Phaethon)
- ▶ Dedication of outreach for planetary defense in Japan

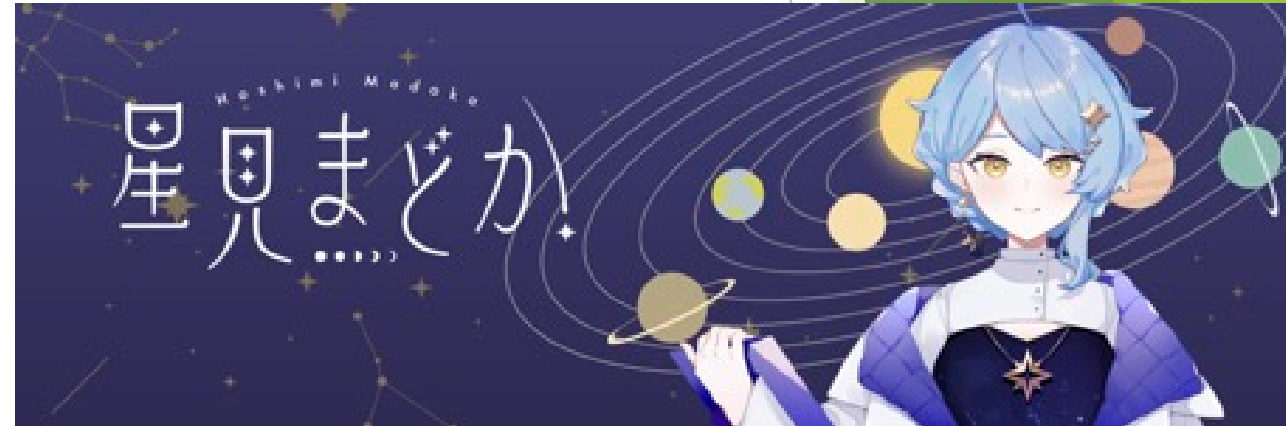
# Asteroid Day 2022 in Japan



- ▶ 1<sup>st</sup> Part lecture: Standard level / What are asteroids?
- ▶ 2<sup>nd</sup> Part lecture: Cutting-edge research / DART mission by Dr. Hirabayashi)

# Collaboration webcast with a virtual YouTuber, Madoka Hoshimi

- VTuber(Virtual YouTuber) : Online entertainer who uses a virtual avatar generated using computer graphics.



- Madoka Hoshimi: A VTuber who has distributed the program of the astronomy and planetary science since 2021.
- The special programs for planetary defense were distributed by Madoka Hoshimi collaborating with the JSGA. The purpose is to appeal to the generation of 10's - 20's person.

# Webcast programs

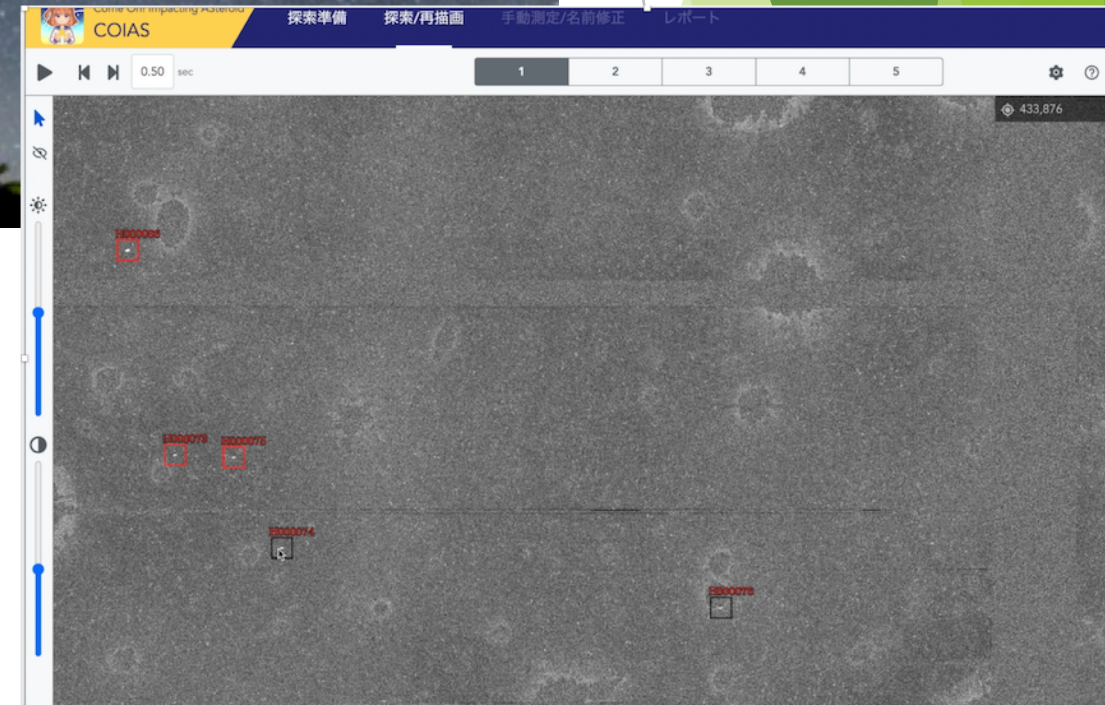
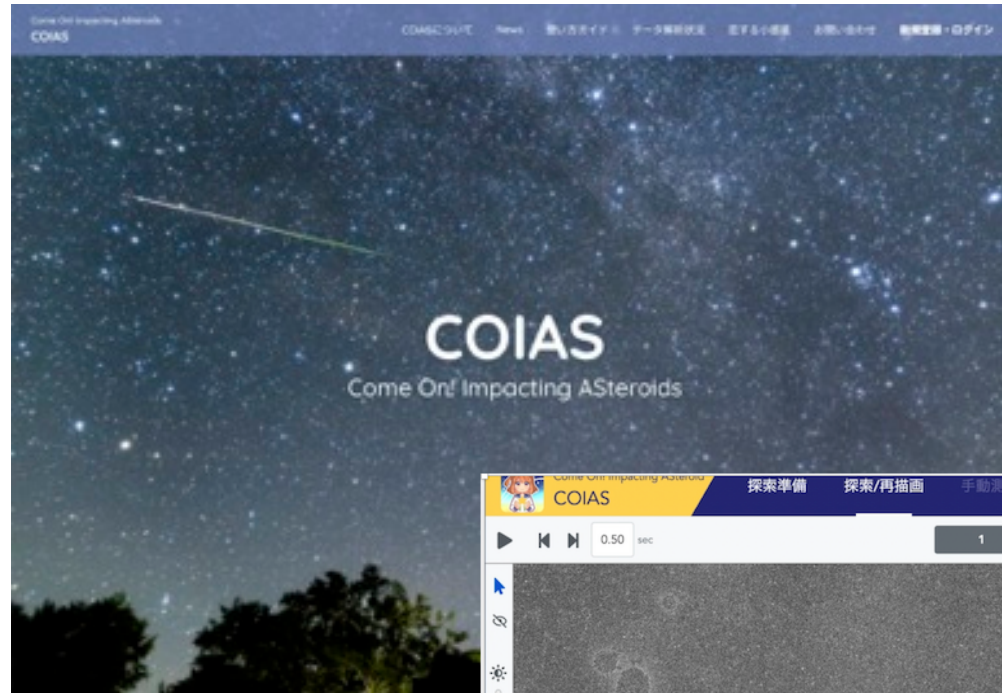


Date	Title	Presenter	Views
Oct/8/2022	Save the Earth	Dr. Makoto Yoshikawa (JAXA)	1541
Oct/15/2022	Disaster from space	Dr. Hitoshi Yamaoka (NAOJ)	894
Oct/20/2022	Meteorite and meteor	Dr. Shinsuke Abe (Nihon University)	1007
Nov/5/2022	Discovery of asteroids	Dr. Seitaro Urakawa (JSGA)	897
Nov/12/2022	Exercise of 2017 PDC	Dr. Shin-ichiro Okumura (JSGA) + above 4 persons	833



# COIAS (Come-On! Impacting ASteroids)

- ▶ COIAS is a web application for detection, astrometry, photometry, and reporting to the MPC about asteroids imaged by the Subaru telescope.
- ▶ More than 7,000 unknown asteroids have been reported to the MPC.
- ▶ The usability of COIAS is much improved from the report in 7<sup>th</sup> PDC 2021 (Urakawa et al., 2021).
- ▶ COIAS is in the final stage of development, and will release within a few months.



## Exercise in PDC 2017 / Result of questionnaire

- ▶ Q1. An asteroid impact is inevitable, do you use nuclear device?

Use	60%
Do not use	30%
I don't know	10%

Japanese people are generally cautious about the use of nuclear device. However, it is interesting to not that 60% of respondents approved the use of nuclear device.

## Exercise in PDC 2017 /Result of questionnaire

- ▶ **Q2.** Asteroids impact have the aspect of promotion of biological evolution, like the extinction of dinosaur leads to the prosperity of mammals. Does the human race have a right to stop the promotion of biological evolution? Should we accept the destiny of extinction by the asteroid impact?

Accept the extinction	9%
We should make efforts to avoid the extinction.	88%
Immigration to other planets	2%

## Summary

- ▶ We reported the public education activities for planetary defense in Japan. Due to the “Hayabusa-2” probe, asteroids are well known to the Japanese people.
- ▶ Planetary defense is not recognized as a real issue to be addressed in Japan. Planetary defense has not been raised as an issue in Japan’s disaster management plan.
- ▶ Each citizen must recognize the importance of planetary defense.
- ▶ Keep on public education activities

## Exercise in PDC 2017 / Result of questionnaire

- ▶ Q3. If you get the asteroid impact information, how to treat the information?

Information disclosure for all people	21%
Information disclosure for observers	53%
No information disclosure, but some actions start for planetary defense	17%
No information disclosure and no action	9%