

OHia Project



We call all related activities towards unmanned summit night operation '*Ohia*' project.

OHia = Night **O**peration from **H**ilo **a**t Subaru Telescope

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Project's status

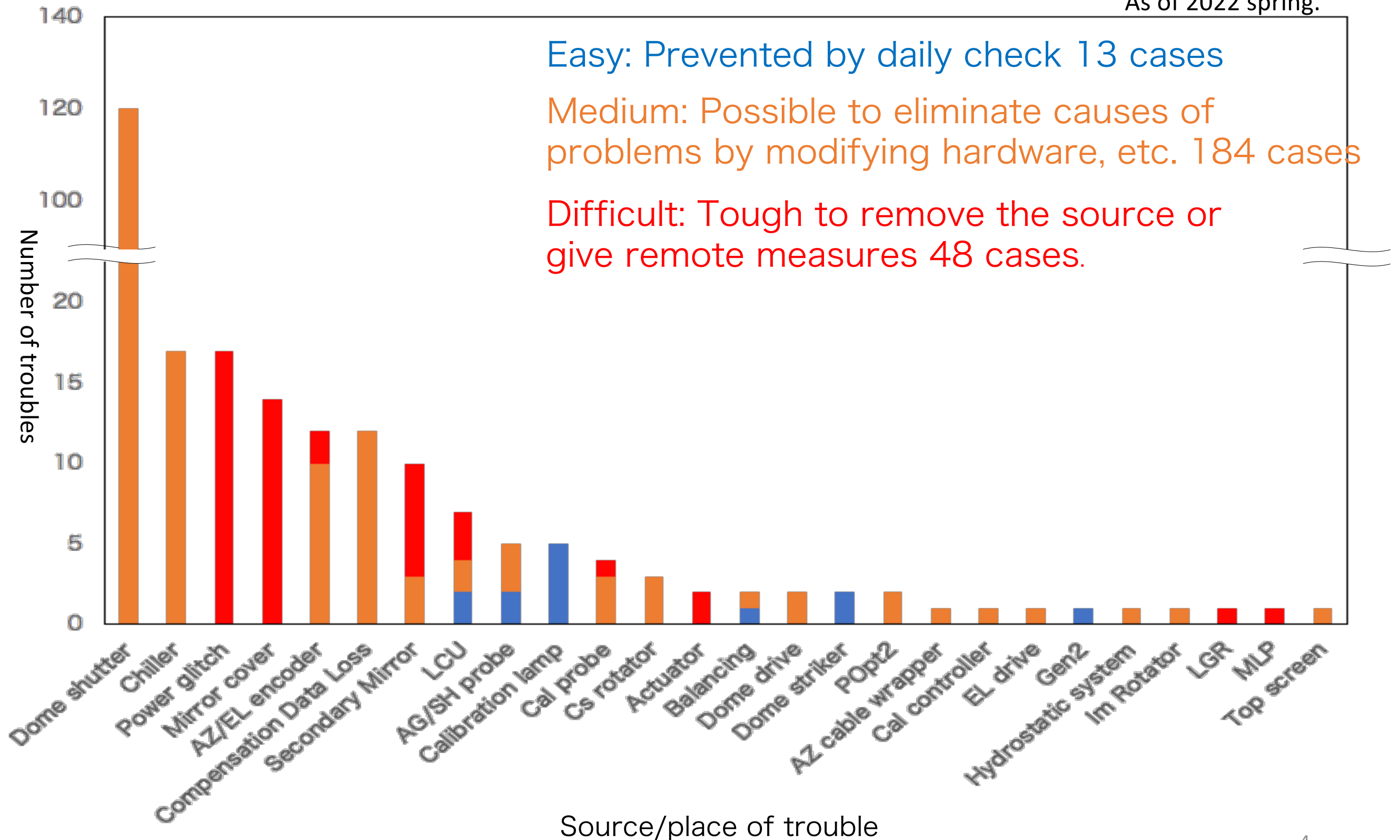
- Started in June 2020. Directorate ordered Aoki to start it.
- Project core members: 6
 - Kentaro Aoki, Takuya Fujiyoshi, Yuhei Takagi, Ichi Tanaka (support astronomer)
 - Tatsuhiro Sato, Koichi Sawatari (engineer)
- Analyzed telescope/dome troubles during night (2021).
- Made a charter of the project (2022).
- We are in design phase. Next will be to make concrete plans.

Analysis of troubles from telescope and dome

- List all troubles for 3 years (2019-2021).
- Pick up the troubles which needed human actions at the summit during night.
 - 110 cases (2019), 79 (2020), 56 (2021)
- Categorize the troubles (source and difficulty).
- Consider possible solutions.

Troubles need human actions at summit during night (2019-2021)

As of 2022 spring.



Current status of renovation for Ohia project

- Target: Less than one night loss per month due to unmanned = $12 / \text{yr} = 36 / 3\text{yrs}$. Cf. 4-5 nights loss/yr (2019-2021).
- Already renewal works have started for dome shutter and chiller (independent of Ohia).
- Detail investigations have been done for the power glitch issue.
- We need more deep discussions about major causes such as mirror cover, encoder, compensation data loss issue, and secondary mirror issue.
- We must expect new troubles which do not happen in these three years.

Project Charter ver. 0 = 'draft'

- Share the objectives, aims and a picture of the project among Subaru staff and stake holders.
 - ***What will be Subaru's unmanned summit night operation ?***
- Contents
 - Scope of Document
 - Background of OHia
 - Objectives of OHia
 - Top Requirements of OHia
 - Assumptions and constraints
 - Definitions (Mode, Condition, STOPS)
 - Effect on the observatory's staff and stakeholders.
 - Operation Models (Common operation procedures)
 - Use cases

If you are interested in the charter, please let me know.

Top Requirements

- OHia will allow **all facility instruments** to conduct science and engineering observations from the **Hilo base facility while no one is at the summit.**
- Observation modes and functions **currently available at the summit will remain available** at OHia.
- OHia should not increase the number of accidents involving people.
- OHia should not cause damage to the telescope, dome, or observing equipment.
- OHia will **not increase the overhead of observations** by reducing the speed of the dome or telescope drive or by increasing the safety margin.
- The increase in loss of observations due to OHia should be limited to **less than 1 night per month.**

Assumptions and Constrains

4. This project **will not do** anything other than what is necessary to conduct unattended mountaintop observations. **We will not do the following items.**
 - 1) **Provide lodging and transportation** for the night crew.
 - 2) Provide remote means of daytime work.
 - 3) Remote access to the **current PI- type instruments.**
 - 4) **Sustained monitoring** to ensure OHia rules are followed.
 - 5) **Changing the observation operation assignee.** It is assumed that the person who is currently performing the summit observation operation will perform the observation from Hilo.

5. Cost reduction is not the goal of this project though it is important to design OHia keeping in mind the long-term sustainability of the observatory.
6. OHia assumes that the unattended summit observations are canceled and the attended summit observations are conducted under the following circumstances.
 - 1) A situation in which night crews are requested to go to the summit to deal with possible problems during nighttime observations.
 - 2) A situation where night crews are requested to be on standby to go to the summit.
 - 3) When weather conditions at the summit cannot be determined without requesting assistance from another observatory.
7. Start of observation from locations other than the Hilo Base Facility is not a goal of this project. Observations will always be made from the Hilo Base Facility.

Inputs from non-core members

- All-hands meeting was held on Dec. 5 2022, and explained the charter ver. 0 to the observatory's staff.
- We are conducting the survey for observatory's staff's response toward Ohia project.
- We will also do a survey for the community's response.

Please give me your questions, comments and concerns at UM.