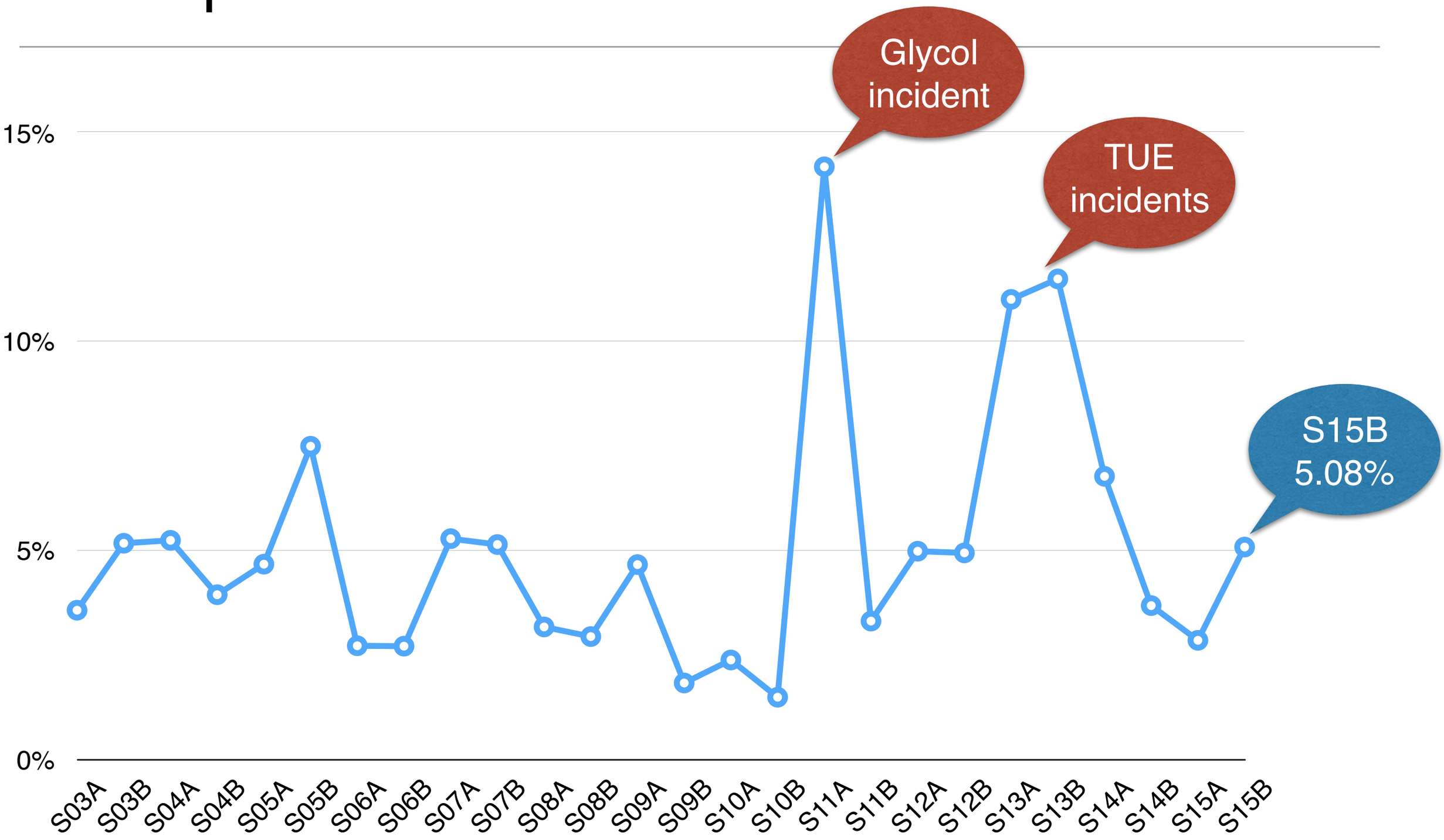

# Maunakea Synergy

# Subaru Operations in Coming Years

Ikuru Iwata (Head of Operations & Associate Director for Finances, Subaru Telescope)

# Telescope/Instrument/Software Trouble Downtime



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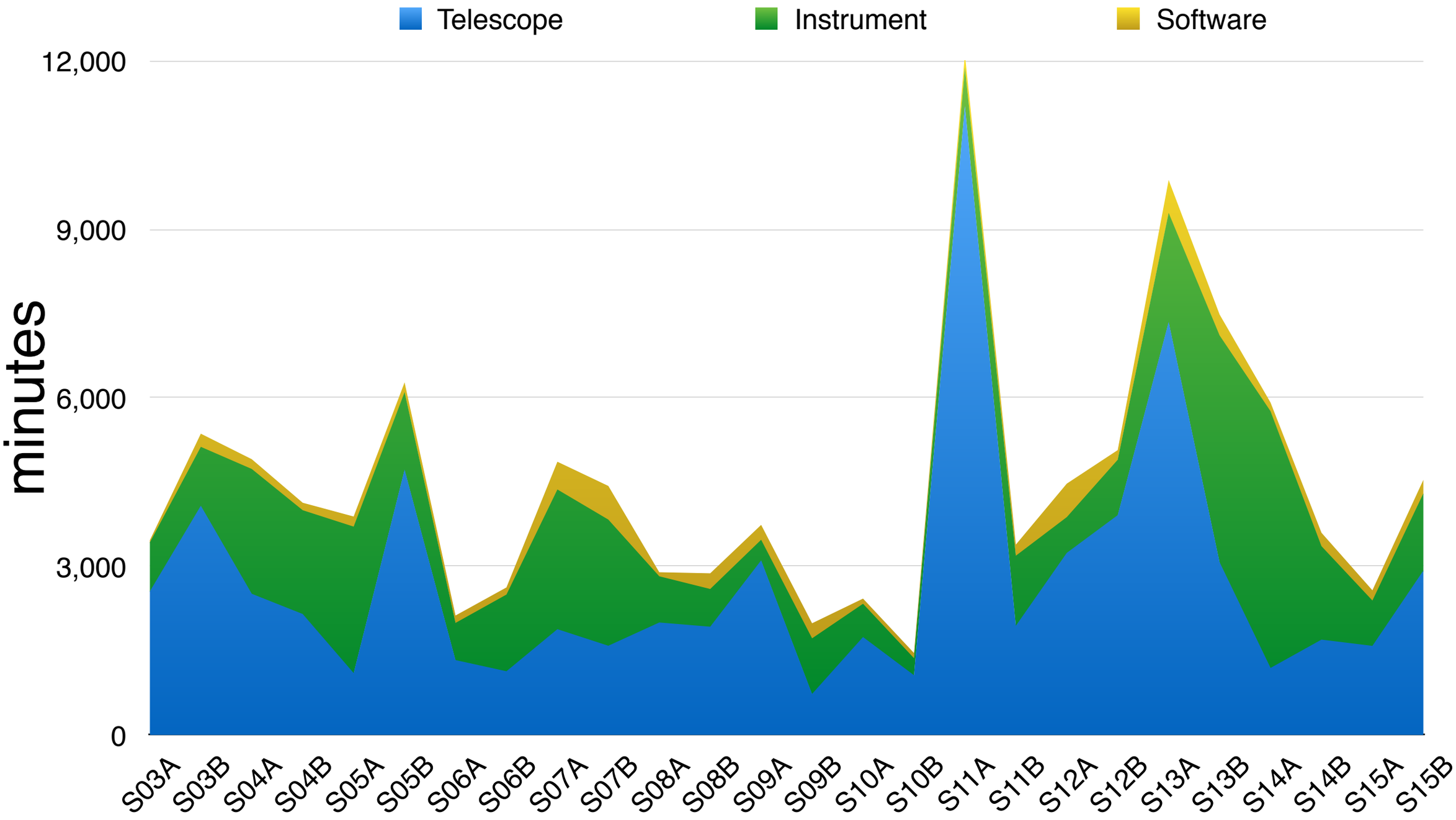

# Subaru Telescope Operations in Coming Years

- Telescope Maintenance
  - S16B - M1 recoating (Aug.-Sept.) 55 nights (TBD)
  - S17B - UPS replacement (TBD, 20 nights?)
  - S19B - Pump / Chiller system refurbishment (TBD, 30 nights?)
  - S20B - M1 recoating (~60 nights; Telescope modification for ULTIMATE-S?)
  - S21B - EL drive cable refurbishment (TBD, 30 nights?)

# Subaru Telescope Operations in Coming Years

- Subaru Strategic Programs
  - HSC-SSP (S14A-) 300 nights, 236 nights to go (dark time)
    - 30 nights per semester planned
    - PFS commissioning from S18A?
    - IRD-SSP (S17A or S17B) ~170 nights (bright time)
    - PFS-SSP (S19B?-) 300 nights (dark time)
    - HSC-SSP2 after current HSC-SSP (dark time)
- Time Exchange Programs
  - with Gemini - Intensive (Long-Large) and Fast Turnaround
  - with Keck - Enhancement discussion on-going

# International Partners

- There's a strong pressure from Japanese government and NAOJ management to have income from external countries for Subaru Telescope operations.
- Why?
  - For TMT construction and operation
    - NAOJ management told the government '*TMT is a successor of the Subaru Telescope*'.
    - The government assumes Subaru Telescope will stop operation after TMT starts operation.
- Tentative goal is to secure ~$5M income from international partners.

# International Partners (contd.)

- There are some possible ways to participate Subaru Telescope Operations.
  - Cash contribution
  - In-kind contribution
    - Send well trained staff (astronomers, engineers, etc.) to Subaru Telescope
  - Instrument Development for New Facility Instruments
    - Need to match with long-term Subaru strategy
- Some partners want to participate Subaru Telescope decision making process
  - Need organization to accommodate such demands
- Some partners are interested in participating 'Large Surveys', not consuming their observing time to small programs
  - For PFS SSPs, collaboration for instrument development has rights to define members
  - Possibility to participate future SSPs by partner countries / institutes for Subaru Operations should be considered.

# Subaru Night Allocation Simulation

| | S16A | S16B | S17A | S17B | S18A | S18B | S19A | S19B | S20A | S20B | S21A | S21B | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M1 recoating | | UPS replace | | | | Pump system refurbish | | M1 recoating | | EL drive cables refurbish | |
| **Downtime** | | 55 | | 20 | | | | 30 | | 60 | | 30 | |
| **Country A** | | | | | | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |
| **Country B** | | 5 | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| **Country C** | | | | | | | | | | | 15 | 15 | |
| **UH** | 26 | 17 | 26 | 23 | 26 | 26 | 26 | 21 | 26 | 17 | 26 | 21 | |
| **HSC GTO** | 2 | 3 | 3 | 3 | 3 | | | | | | | | |
| **PFS GTO?** | | | | | | | | | 2 | 2 | 2 | 2 | |
| **Gemini-Subaru TE** | 3 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| **Keck-Subaru TE** | 5 | 4 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| **HSC-SSP** | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 24 | | | | | 234 |
| **IRD-SSP** | | | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 150 |
| **PFS-SSP** | | | | | | | | 20 | 30 | 30 | 30 | 30 | 140 |
| **HSC-SSP2** | | | | | | | | | 25 | 25 | 25 | 25 | 100 |
| **Eng+Staff** | 35 | 30 | 35 | 30 | 35 | 35 | 35 | 30 | 35 | 30 | 35 | 30 | |
| **Service** | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| | | | | | | | | | | | | | |
| **Open-use nights** | **75** | **29** | **44** | **30** | **39** | **30** | **27** | **-4** | **1** | **-43** | **-15** | **-32** | |
| **total nights / semester** | 182 | 184 | 181 | 184 | 181 | 184 | 181 | 184 | 182 | 184 | 181 | 184 | |
| **UH fraction** | 0.18 | 0.17 | 0.18 | 0.17 | 0.18 | 0.17 | 0.18 | 0.17 | 0.18 | 0.18 | 0.18 | 0.17 | |
| **SSP total** | 30 | 30 | 45 | 45 | 45 | 45 | 45 | 59 | 70 | 70 | 70 | 70 | |

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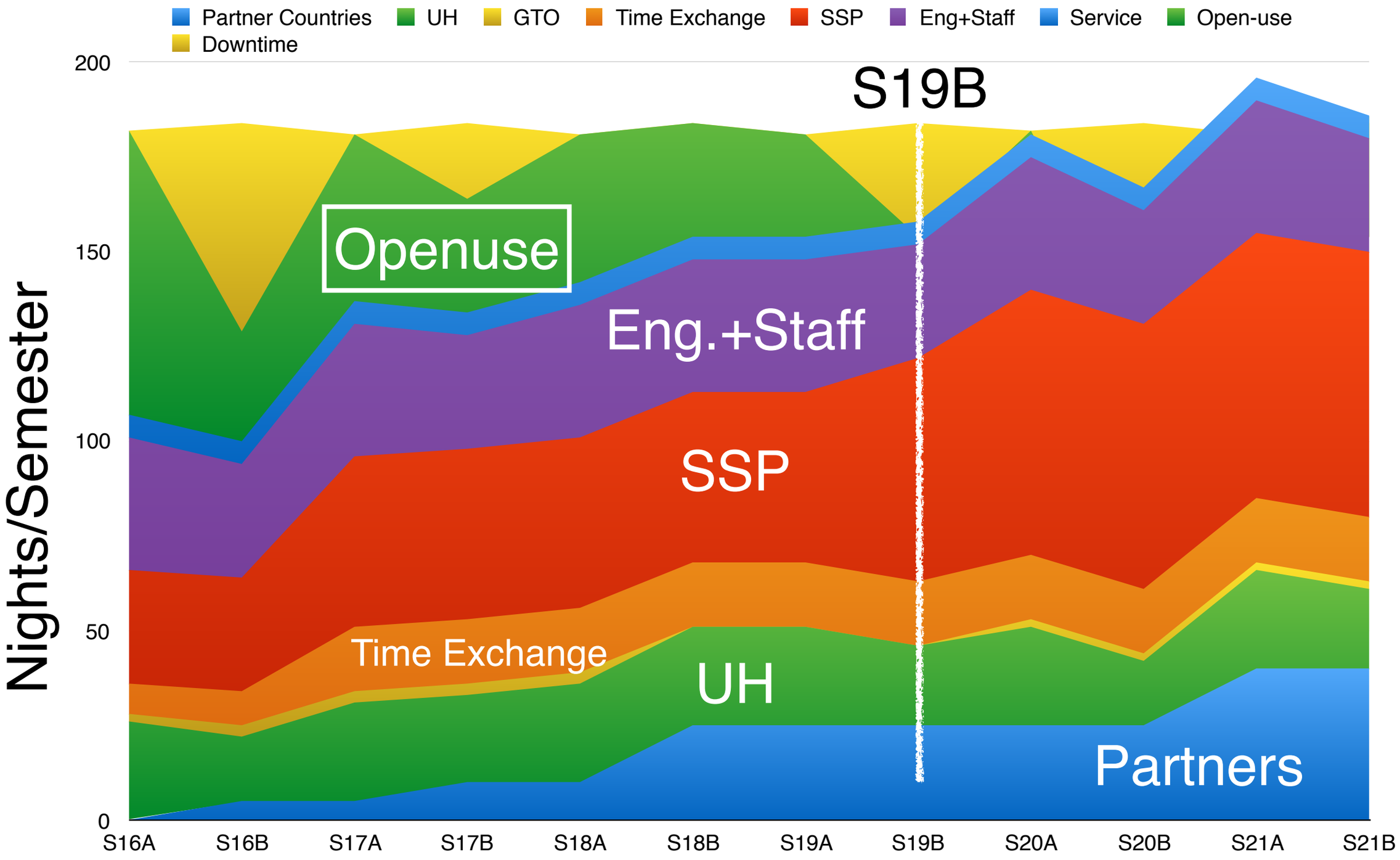
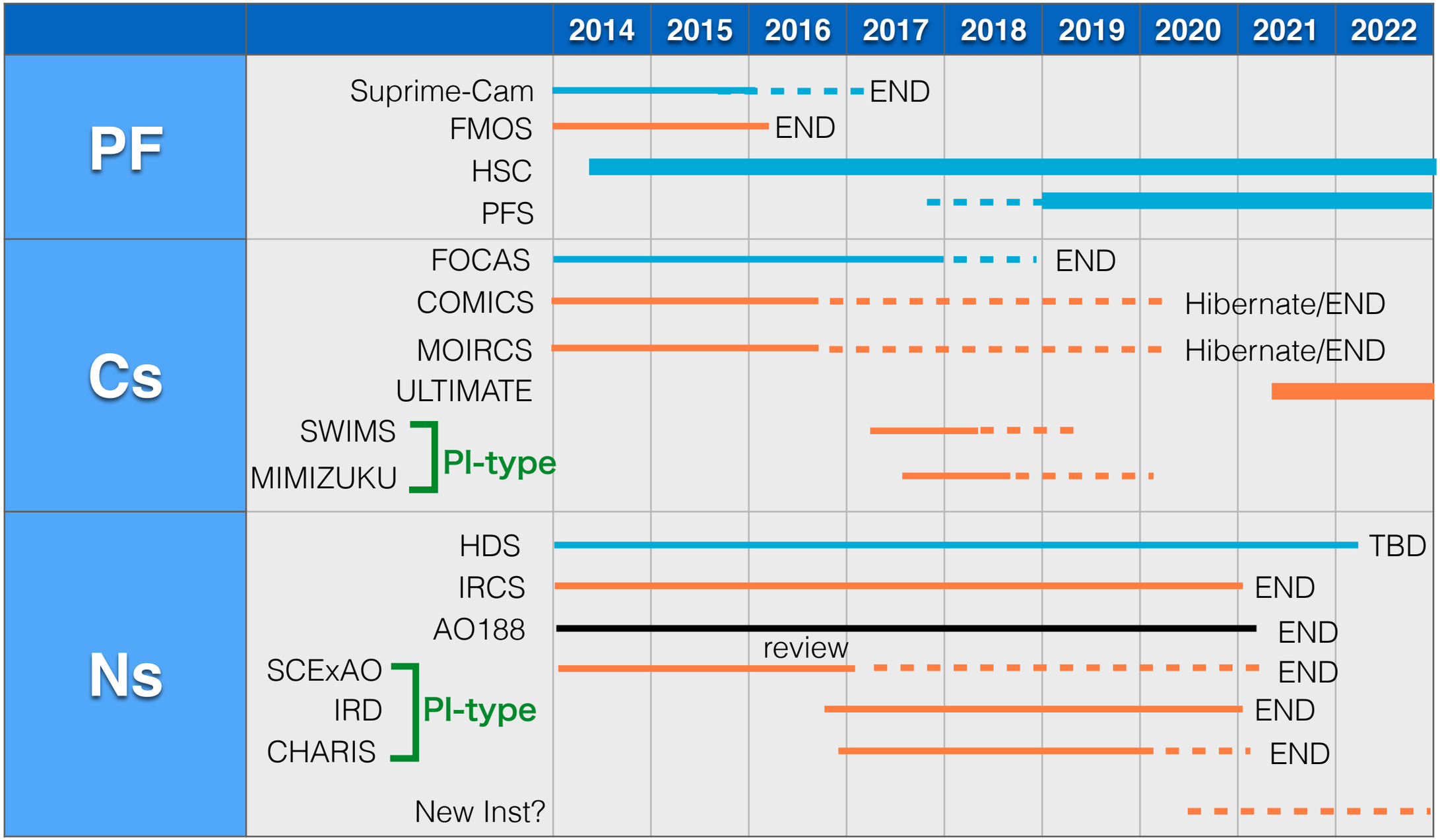


# We will have no time for Open-use from S19B!

- ‘Open-Use nights’ include nights for intensive programs
- We will be short of observing time about 20-40 nights in 2020s
- How we can deal with the situation?
- International partners’ involvement to SSPs
- Reconsider the schedule of SSPs?
- UH time: current agreement defines 52 nights per year for UH time
  - 10-15% for other telescopes
  - UH’s involvement to SSPs?

# Timeline (proposal, update 2015/12/13)




# Maunakea Synergy

# 2015 was a challenge for MK observatories

- On June 24, TMT construction vehicle attempted to go up to the summit. Protestors blocked the road by humans and rocks. Subaru Telescope and some other observatories lost one night.
- With the Hawaii Supreme Court rulings in December, many local people consider the fate of TMT becomes unclear.
- Some protestors are against the renewal of the Master lease of Mauna Kea Science Reserve which will expire at the end of 2033.

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# Governor Ige's Ten Requests to UH, May 26, 2015

http://governor.hawaii.gov/newsroom/news-release-governor-david-ige-announces-major-changes-in-the-stewardship-of-mauna-kea/

1. Accept its responsibility to do a better job in the future.
2. Formally and legally bind itself to the commitment that **this is the last area on the mountain where a telescope project will be contemplated or sought**.
3. Decommission – beginning this year – as many telescopes as possible with **at least 25 percent of all telescopes gone by the time TMT is ready for operation**.
4. Restart the EIS process for the university's lease extension and conduct a full cultural impact assessment as part of that process.
5. Move expeditiously the access rules that significantly limit and put conditions on non-cultural access to the mountain.
6. Require training in the cultural aspects of the mountain and how to be respectful to the cultural areas for anyone going on the mountain.
7. Substantially reduce the length of its request for a lease extension from the Board of Land and Natural Resources.
8. Voluntarily return to full DLNR jurisdiction all lands (over 10,000 acres) not specifically needed for astronomy.
9. Ensure full use of its scheduled telescope time.
10. Make a good faith **effort to revisit the issue of payments by the existing telescope** now as well as requiring it in the new lease.

# UH President Response, June 1st, 2015

http://www.hawaii.edu/news/2015/06/01/uh-implementation-plan-for-improved-stewardship-of-maunakea/

- **TMT is the last new site.** Any new observatories may only be placed on existing sites.
- Adopting a decommissioning schedule
  - to be presented by the end of 2015 - **CSO, Hokukea, UKIRT - 3 / 12 = 25%**
- Return of leased land to DLNR
- Restarting the EIS for the master lease renewal
- Improved management of non-cultural access to Maunakea
- Improved cultural research, education and training
- Full use of observing time
- Increased financial support for stewardship
- New scholarship programs

- How we can support TMT to be built on Maunakea?
- How we can ensure Master Lease to be renewed so that telescopes can be operational beyond 2033?

# Subaru and MKO Commitment to Community

- Subaru-Makali'i Seminars
  - Learn Hawaiian cultures
- Subaru / Japan Foundation for Promotion of Astronomy has supported UH Hilo and 'Imiloa Astronomy Center >10 years
- Kama'āina Observatory Experience: Tour of Telescopes for Local community
  - cf. Subaru has been doing Public Tours over ten years, inviting >600 people around the world per year
- Journey Through the Universe and other Outreach Events
- TMT's THINK fund for STEM scholarship

Subaru

Wide-field Imaging

Keck Telescopes

Faint Spectro. & IFS

TMT

Gemini

All-Sky Coverage Flex Obs.

MSE

Multi-Object Spectroscopy

- How we can support TMT to be built on Maunakea?
- How we can ensure Master Lease to be renewed so that telescopes can be operational beyond 2033?

- We believe that Maunakea is the Premier place on the Earth to do the best astronomy. How we can keep the strengths of the astronomy on Maunakea?
    - All telescopes are facing financial issues. Is astronomy not important to people?
    - Should we make some coordination in seeking for new partners? If yes, how we can do that?
    - What is the vision of astronomy on Maunakea in 2020s and beyond?
        - Pan-Pacific Observatory? What level of integration are you expecting?