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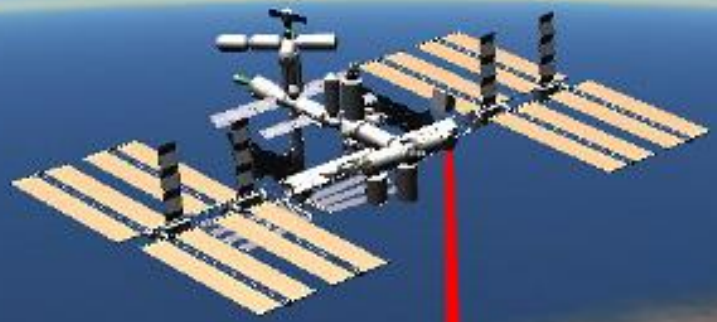
K&C Initiative

An international science collaboration led by JAXA



Related mission updates:

MOLI

Masato Hayashi, Tadashi Imai, Daisuke Sakaizawa,
Jumpei Murooka, Rei Mitsuhashi, Toshiyoshi Kimura
Japan Aerospace Exploration Agency (JAXA)

Science Team meeting #24
Tokyo, Japan, January 29-31, 2018

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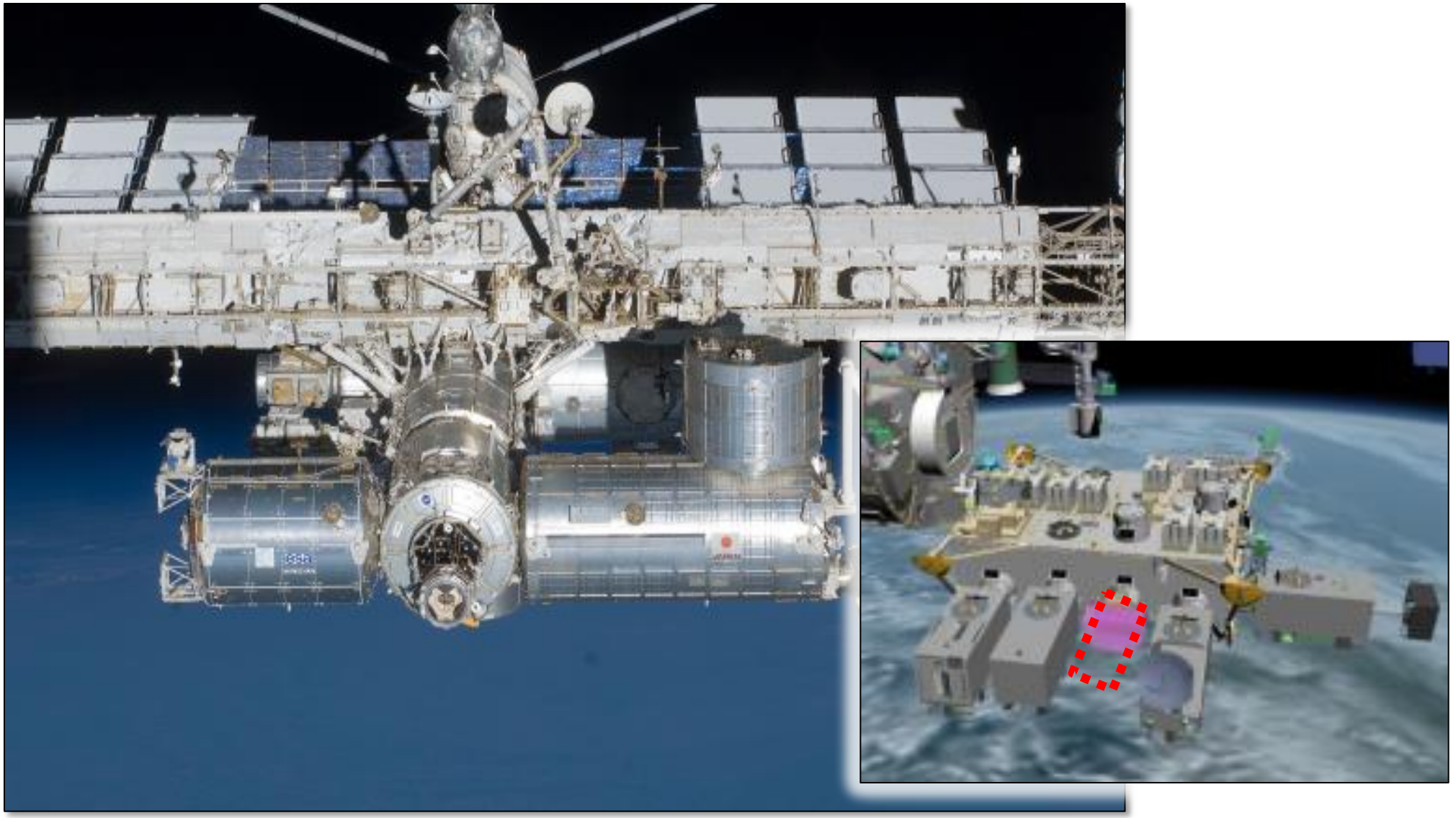
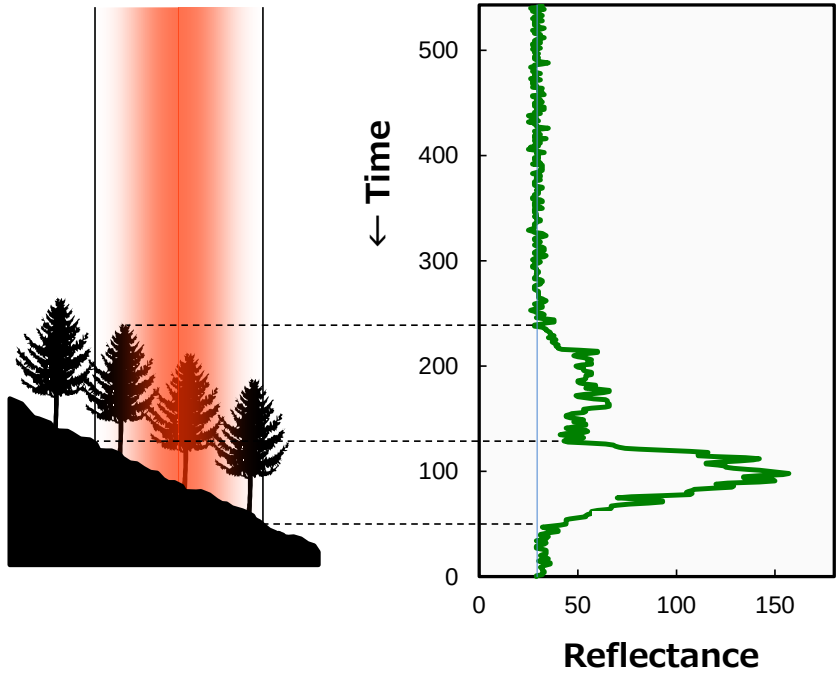
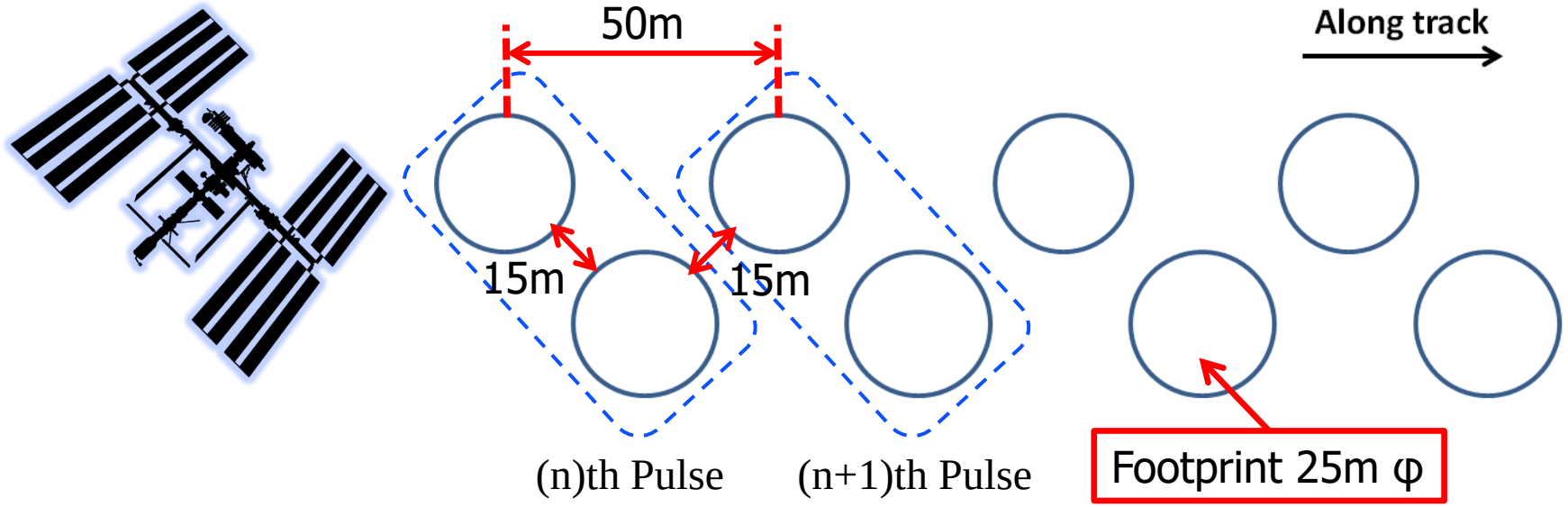


MOLI will be installed to ISS JEM in 2020.

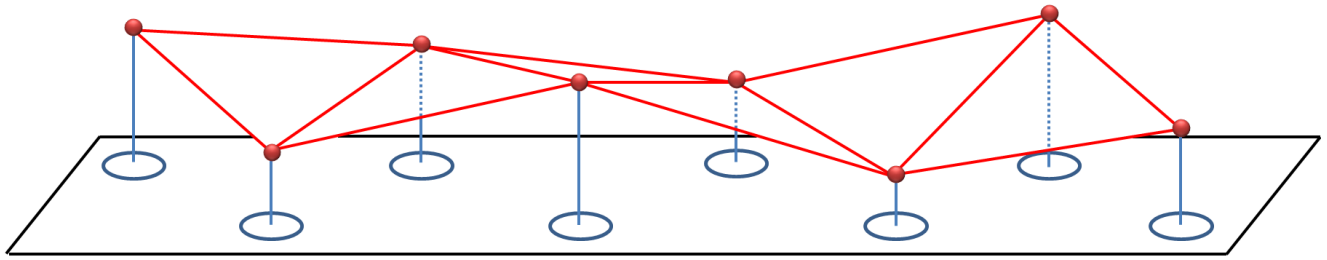
M ulti-footprint
O bservation
L idar and
I mager



Sensor	➢ **LiDAR** : 2 beams, 25mφ footprint. ➢ **Imager** : 5.0m resolution, 3 bands, 1km swath.
Objective	➢ To estimate forest biomass precisely and globally. ➢ To obtain spaceborne LiDAR technology for future missions.



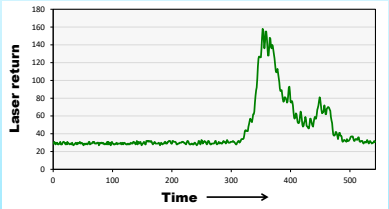
Calculating ground elevation and slope.



Multi-footprint observation.

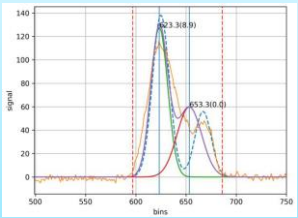
L1: Image

L1: Waveform



Waveform analysis

L2: Canopy height Biomass



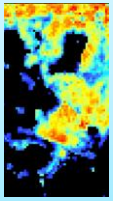
Other satellite

PALSAR-2, GCOM-C…

Machine learning

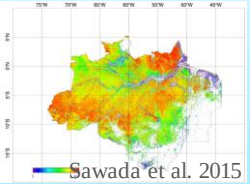
Machine learning

L3: Canopy height / biomass map



Narrow area

L4: Canopy height / biomass map



Wide area

MOLI products.

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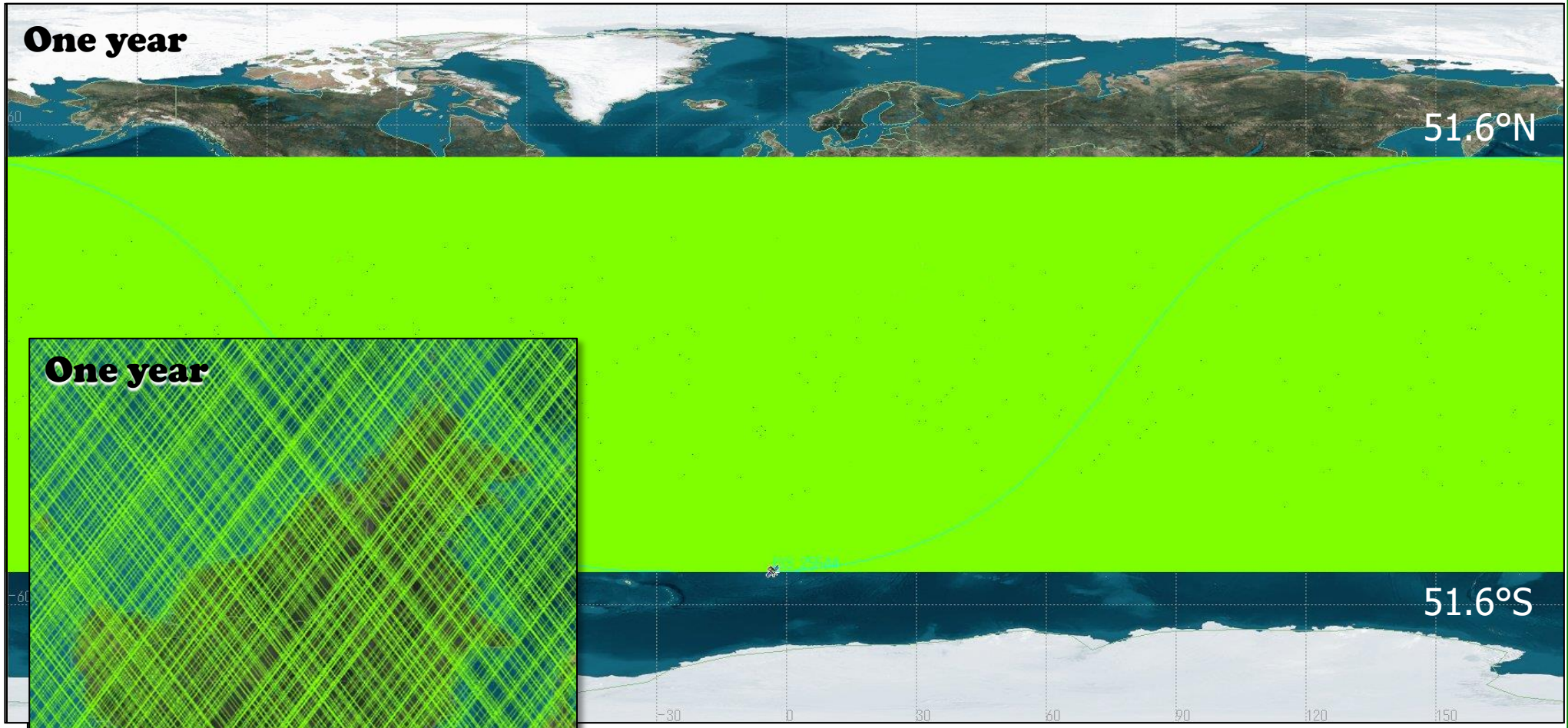
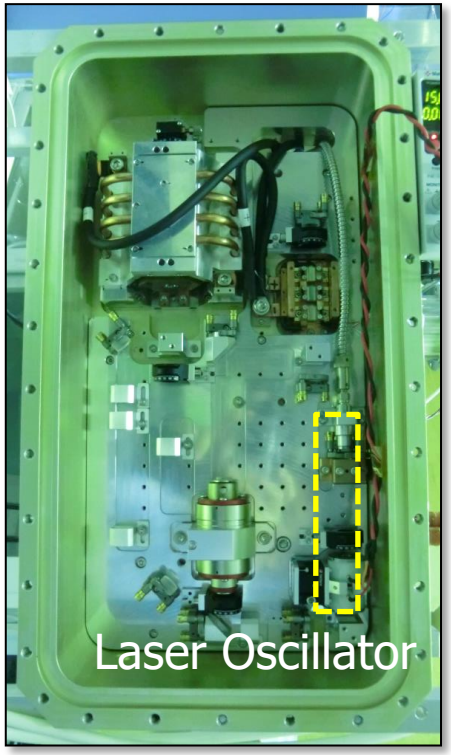
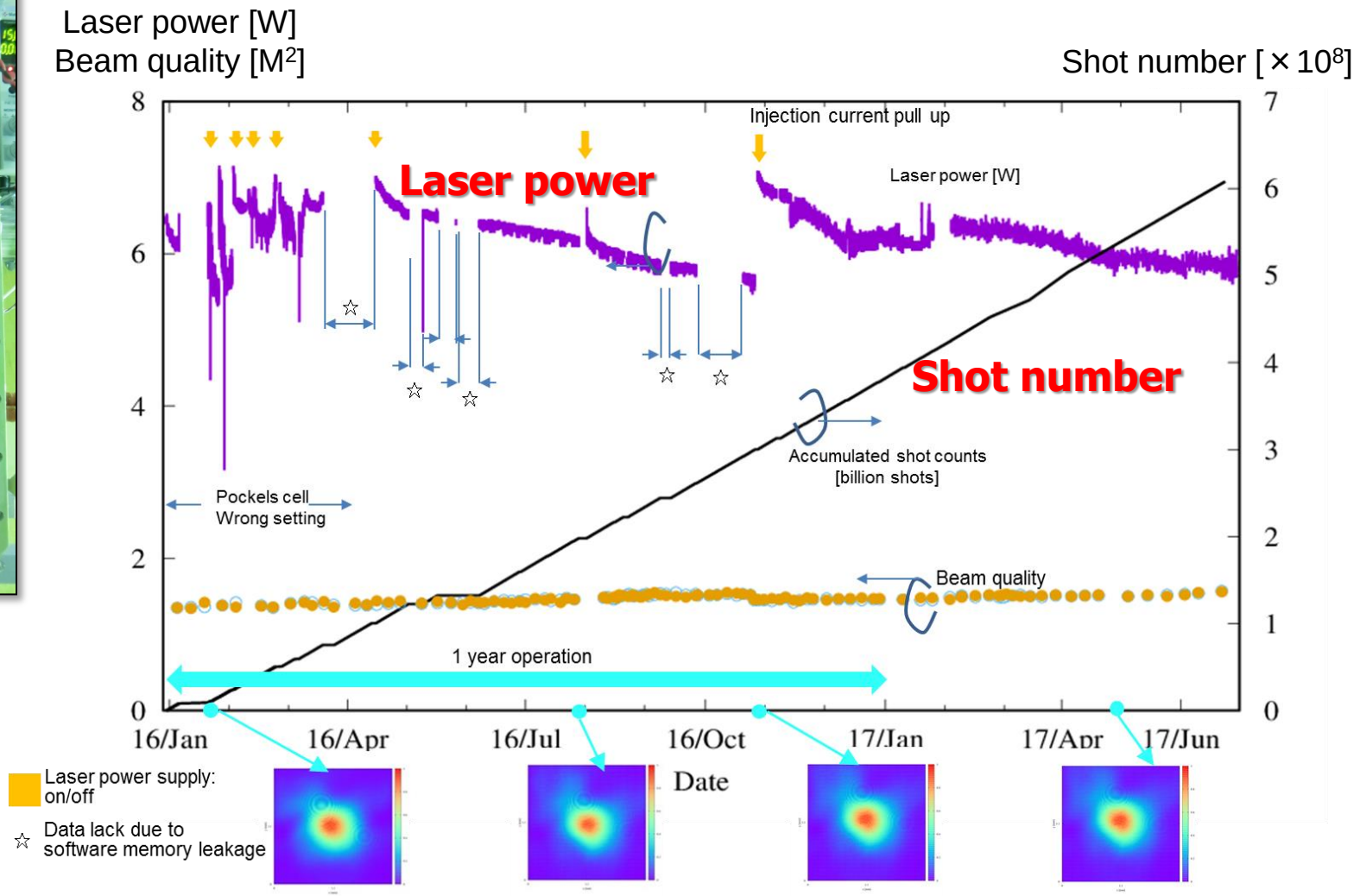
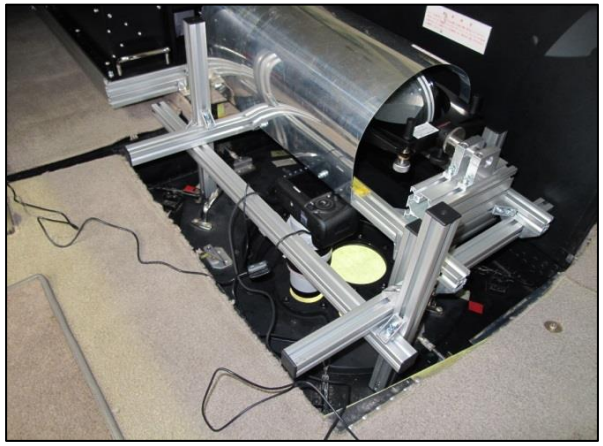


MOLI observation area (ISS orbit).

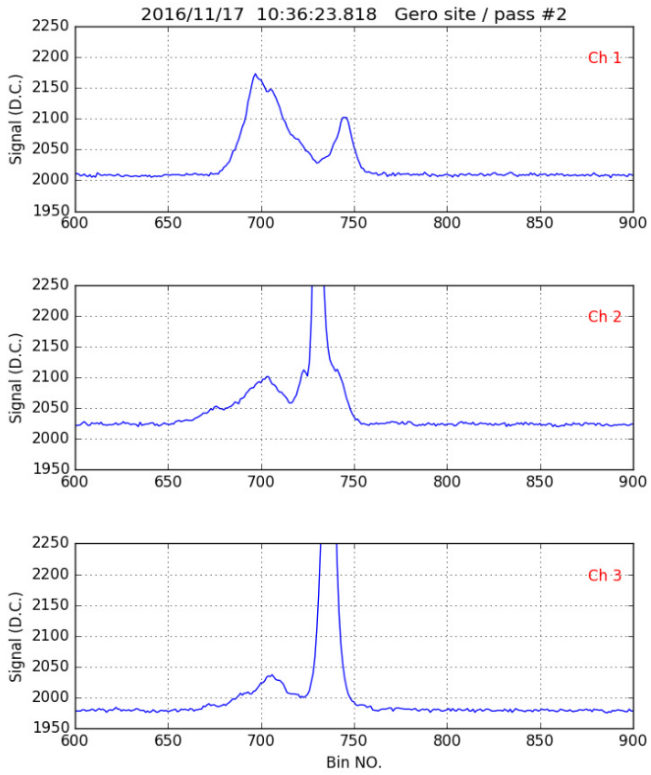




Experiment for long-lived laser.



Canopy height estimation:
RMSE = 1.08 - 1.54 m



Airborne LiDAR experiment in 2016.

Summary

- MOLI will be installed to ISS in 2020.
- It can provide precise values of canopy height and forest biomass, globally.
- We will also provide forest biomass map created by combining with the other satellite image (e.g., PALSAR-2, 4).
- We expect that MOLI will make significant contribution to carbon-cycle study and climate change measures.