Ocean and Snow Studies from CALIPSO and ICESat-2

Xiaomei Lu[(1)], Yongxiang Hu[(1)], Yuekui Yang[(2)], Sunny Sun-mack[(1)], Tom Neumann[(2)],
Nathan Kurtz[(2)], Mark Vaughan[(1)], Ali Omar[(1)], Chip Trepte[(1)]
[1]NASA Langley Research Center, Hampton, VA, 23681, USA
[2]NASA Goddard Space Flight Center, Greenbelt, MD

[01].[Space-borne lidar mission, instruments and science]

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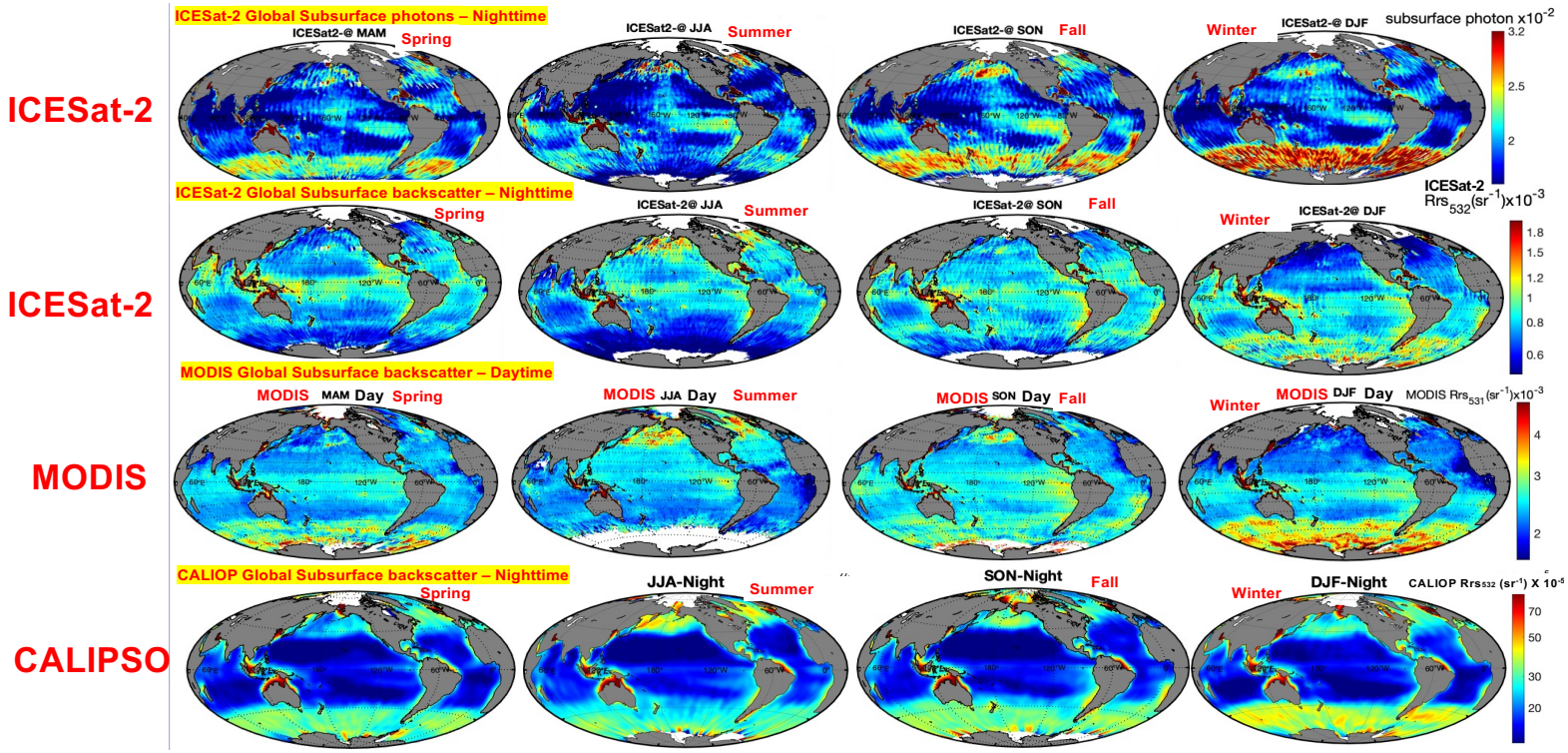
Ocean and Snow Studies from CALIPSO and ICESat-2 (Lightning Talk Slide 1)

Global Ocean phytoplankton distribution from Space lidars and passive ocean color

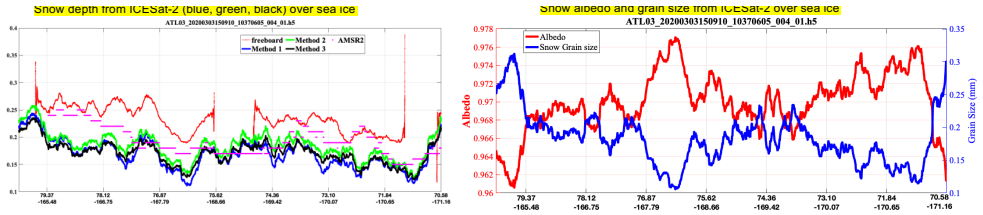


Ref: Lu, X. Y. Hu, Y. Yang, et.al., Remote Sensing of Environment. 111827, (2019); Lu, X., Hu, Y., and Yang, Y.. in 2019 Photonics & Electromagnetics Research Symposium - Fall (PIERS - Fall), 910–918. doi: 10.1109/PIERS-Fall48861.2019.9021802, (2019); Lu, X., Y. Hu, Y. Yang, et.al.,, ESS, (2021). https://doi.org/10.1029/2021EA001839; *Lu, X., Y. Hu, Y. Yang, et.al.,, ESS, (2021), .* https://doi.org/10.1029/2021EA001729

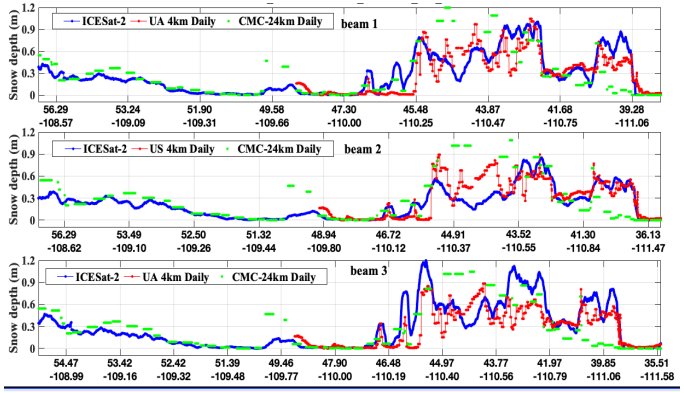
Ocean and Snow Studies from CALIPSO and ICESat-2 (Lightning Talk Slide 2)

Snow properties obtained from ICESat-2

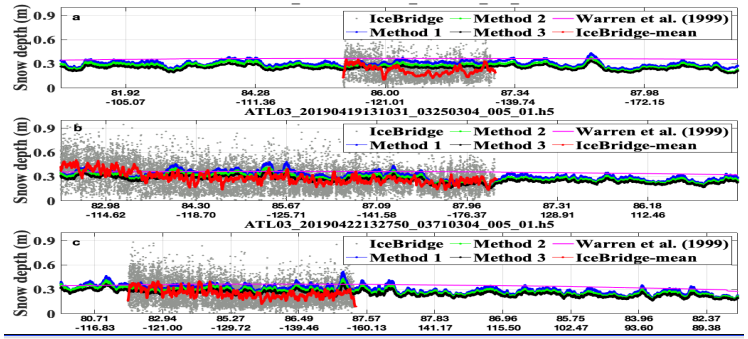
ICESat-2 snow depths, albedo and grain size



ICESat-2 terrestrial snow depths compared with gridded snow depths



ICESat-2 snow depths over sea ice compared with IceBridge airborne results



1. **Global Ocean phytoplankton distribution can be obtained from CALIPSO and ICESat-2. The ocean biology results are newly derived from ICESat-2/ATLAS lidar measurements and, *for the first time,*** Show ability to quantify the vertical distribution of phytoplankton blooms from space.
2. **Snow properties can be obtained from ICESat-2 photon vertical distributions, including terrestrial snow and snow above sea ice.**

3. Contact: xiaomei.lu@nasa.gov

References:

- *Hu, Y., Lu, X., Zeng, X., Stamnes, S. A., Neuman, T. A., Kurtz, N. T., et al.. Deriving Snow Depth From ICESat-2 Lidar Multiple Scattering Measurements. Front. Remote Sens. 3. doi: https://doi.org/10.3389/frsen.2022.855159 (2022)*
- *Lu, X., Hu, Y., Zeng, X., Stamnes, S. A., Neuman, T. A., Kurtz, N. T., et al.. Deriving Snow Depth From ICESat-2 Lidar Multiple Scattering Measurements: Uncertainty Analyses. Front. Remote Sens. Doi: https://doi.org/10.3389/frsen.2022.891481 (2022)*