

Drones for Greenland Ice Optical Remote Sensing:

Greenland ablation area MODIS 500m sub-pixel classification
by photography from fixed wing UAV

prepared by Jason E. Box
11 nov, 2016



Aberystwyth University

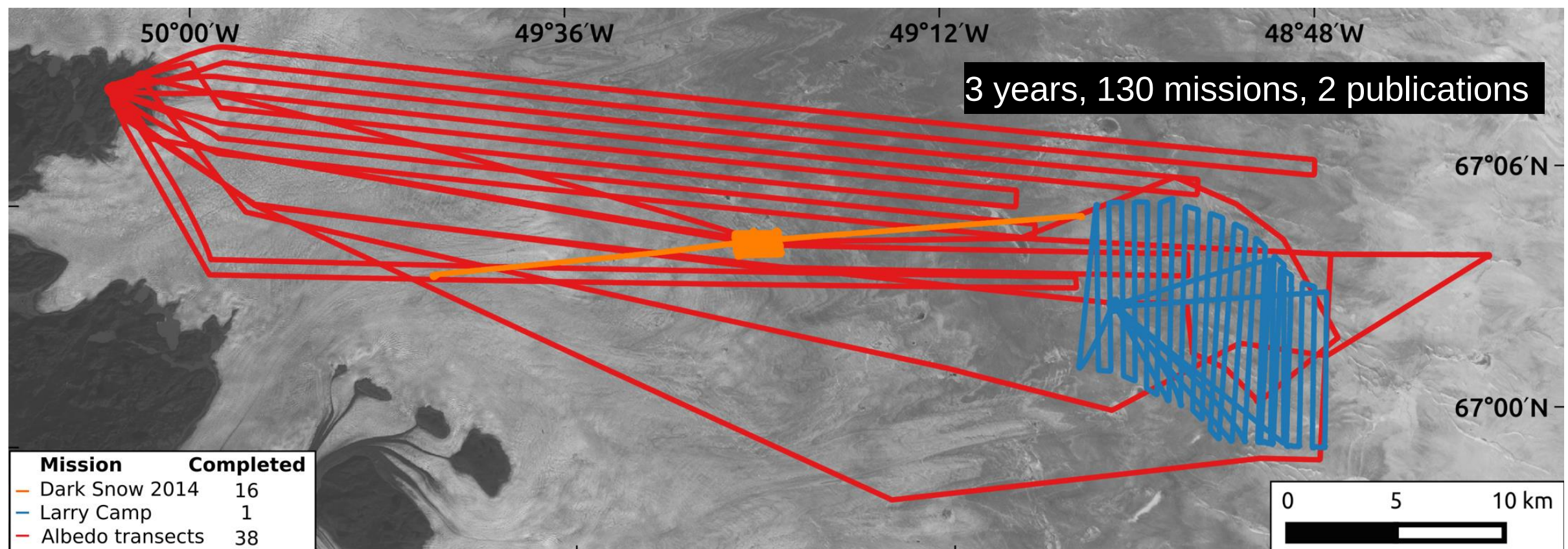


DARK SNOW

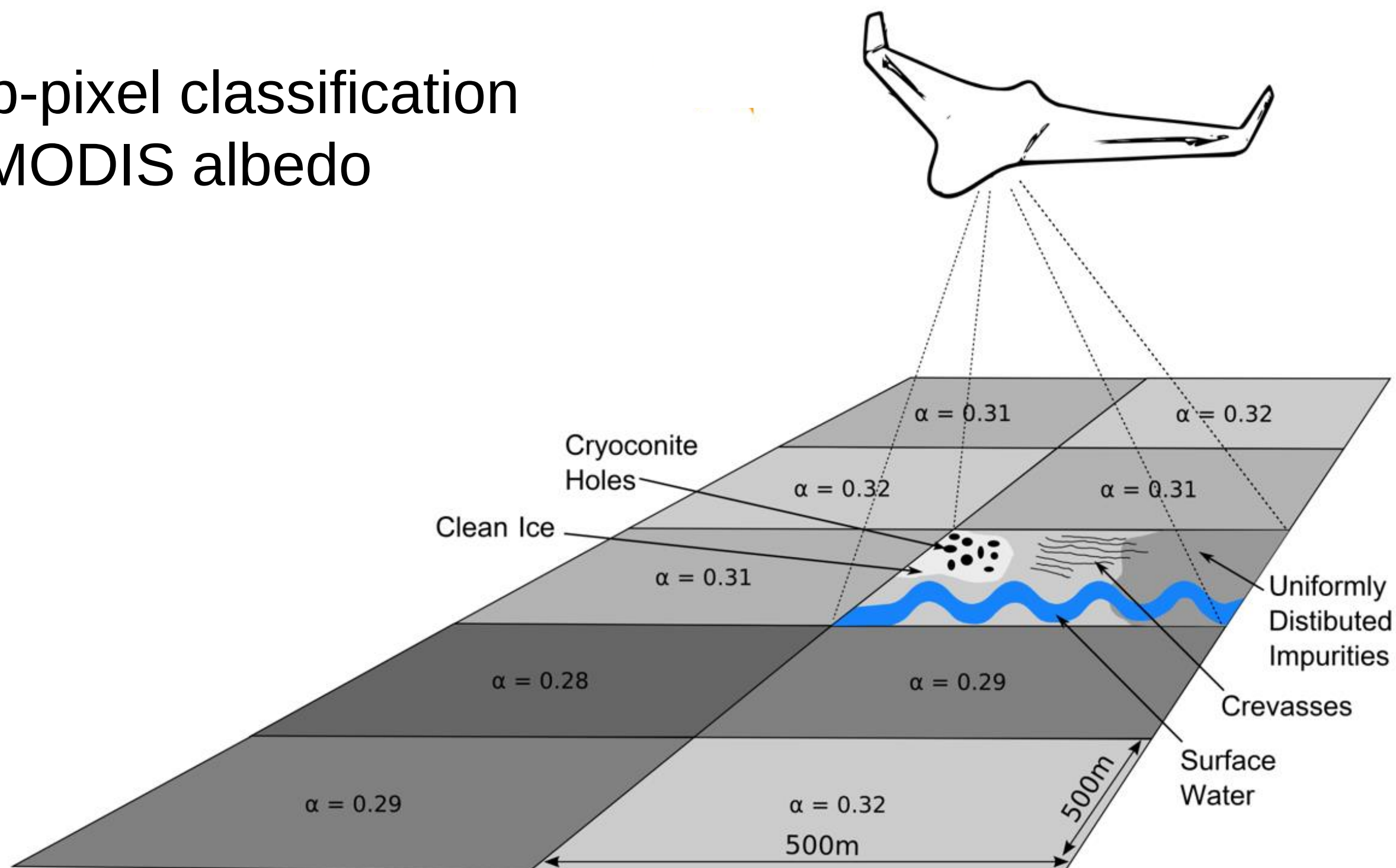


Johnny Ryan Aberystwyth University, Wales, UK and the 'albedo drone' August, 2014.

1. Ryan, J. C., Hubbard, A. L., Stibal, M. Box, J. E, 2016, Attribution of Greenland's ablating ice surfaces on ice sheet albedo using unmanned aerial systems, The Cryosphere Discuss, tc-2016-204, 2016 <http://www.the-cryosphere-discuss.net/tc-2016-204/>
2. Ryan, J. C., Hubbard, A. L., Box, J. E., Todd, J., Christoffersen, P., Carr, J. R., Holt, T. O., and Snooke, N., 2015, UAV photogrammetry and structure from motion to assess calving dynamics at Store Glacier, a large outlet draining the Greenland ice sheet, The Cryosphere, 9, 1-11, doi:10.5194/tc-9-1-2015, 2015.



Sub-pixel classification of MODIS albedo

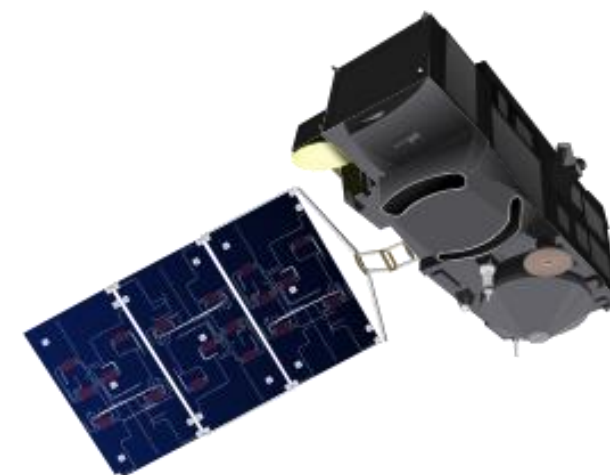


7/10 of the albedo variability is explained by distributed surface impurities, not surface water, not crevasses, not cryoconite



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Sentinel-3 validation at EGRIP and bare ice June 2017



Scientific Exploitation of Operational Missions (SEOM) Sentinel-3 for Science, Land Study 1: SNOW

AO/1-8502/16/I-NB – 'SEOM – S34SCI Land'

European Space Agency Contract

24 months

1 Jan, 2017 - 31 Dec, 2018

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Alexander Kokhanovsky, Carsten Brockmann and Gunnar Brandt - Brockmann Consult GmbH, Geesthacht, Germany

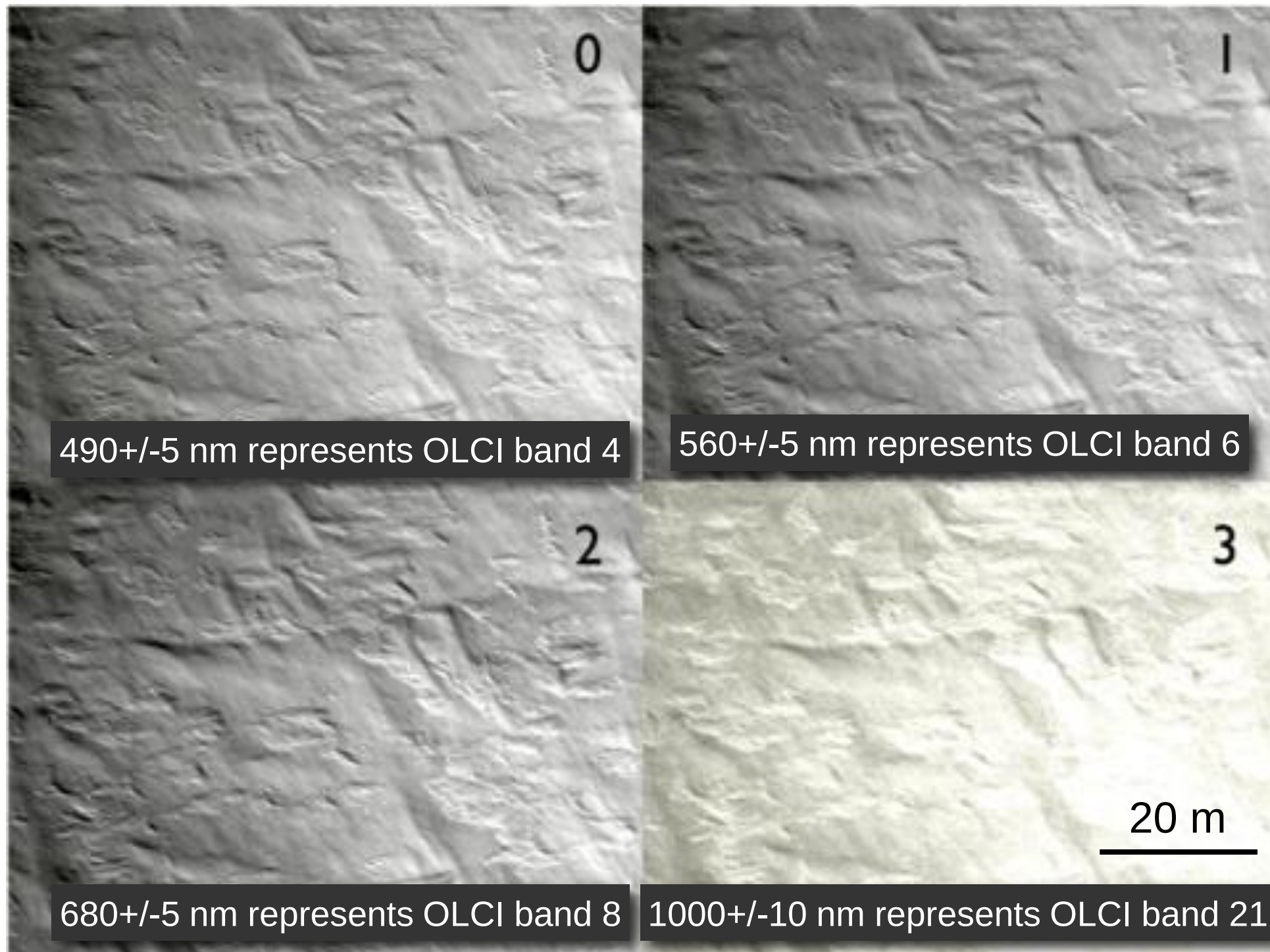
Marie Dumont – National Centre for Meteorological Research (CNRM), Météo France
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Ghislain Picard - Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE) c/o Centre National de la Recherche Scientifique (CNRS), France

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2017-2018 ESA SEOM contract Sentinel-3 validation using drone flying OLCI-simulator

Multi Camera Array images acquired over the Greenland ice sheet by 2015 PROMICE.dk Twin Otter Survey



examples of 2015 POF-based Multi Camera Array images

Tak!
 Louise Sørensen
 Sine Munk Hvidegaard
 Rene Forsberg
 @DTU!