

March 20, 2023

Estimating snow accumulation and ablation with L-band InSAR

By: J. Tarricone et al.

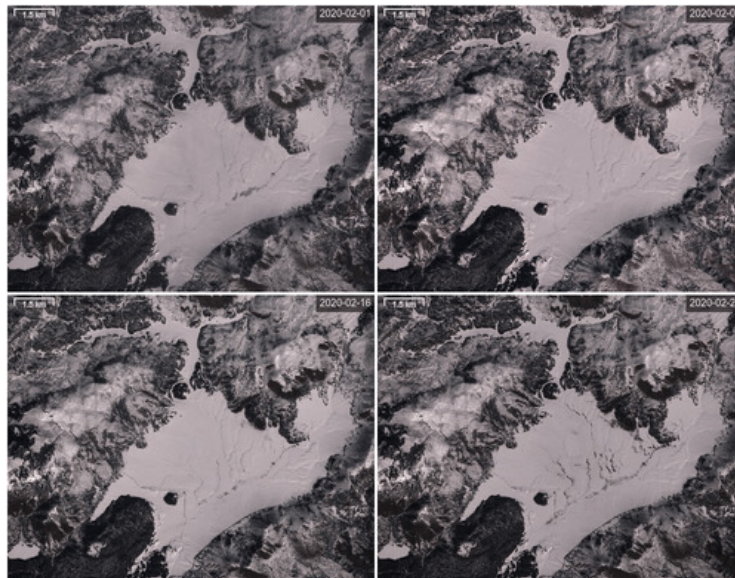
Response to Community Commenter: Simon Gascoin

Community comments are shown in black. Responses are in [blue](#).

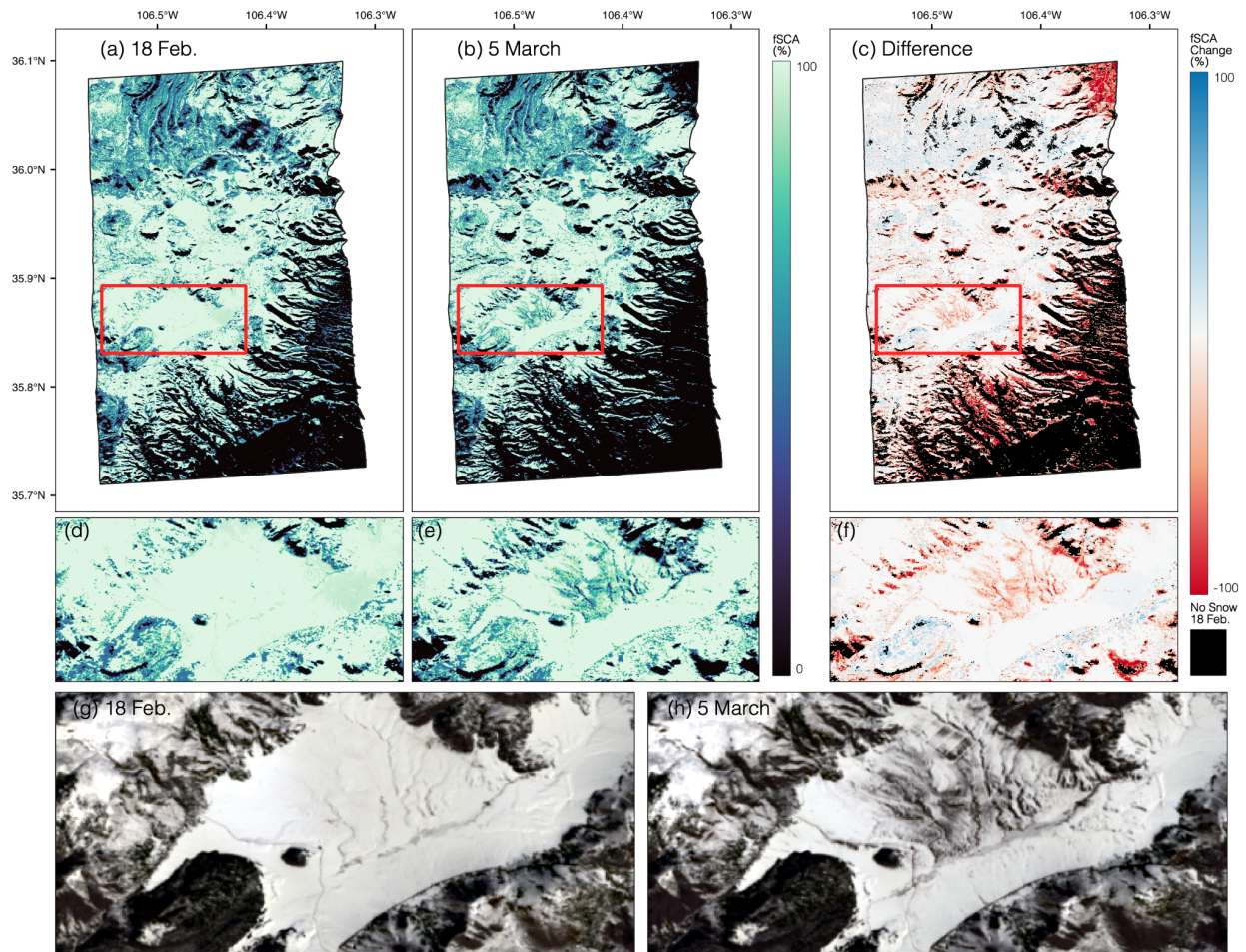
Comment:

Congratulations to the authors for this study. My comment is about this statement "Optical fSCA data are needed to identify snow covered pixels (..) The Landsat 8 image data used in this study represented two of the very few cloud free days throughout the winter time series over VCNP. To account for the significant issue of cloud cover, future investigations should leverage optical sensor fusion and interpolation methods (...)"

Instead of fusion and interpolation, Sentinel-2 provides Landsat-like data (high quality multispectral imagery at 10-20 m resolution) with a 5 day revisit time. Just in February 2020, I find 4 clear sky images over the study area in Valles Caldera National Preserve.



We would like to thank Dr. Gascoin for his commentary on our work. We choose to use Landsat 8 because the USGS produces an operational spectrally unmixed fSCA product. We have added the true color imagery from 18 February and March 5 to the updated fSCA plot below.



“Figure 4. Landsat fSCA clipped to the UAVSAR swath extent (black outline) for (a) 18 February 2020 and (b) 5 March 2020. (c) The pixel-wise percent fSCA change between the two dates, with the black area representing 0 % fSCA from 18 February 2020. The study area (red box) (a) 18 February 2020, (b) 5 March 2020, (c) and the difference between the two dates. Landsat true color image in the study area for (d) 18 February 2020 and (e) 5 March 2020.”

We also updated the language in the section you referenced, to *“The Landsat 8 image data used in this study represented two of the very few cloud free days throughout the winter time series over the entire UAVSAR swath. To account for the significant issue of cloud cover, future investigations should leverage multiple optical sensors (e.g., t, MODIS, commercial high-resolution imagery, etc.), optical sensor fusion and interpolation methods”*