Evaluation of High Resolution Data for LCLUC Science

Case studies:

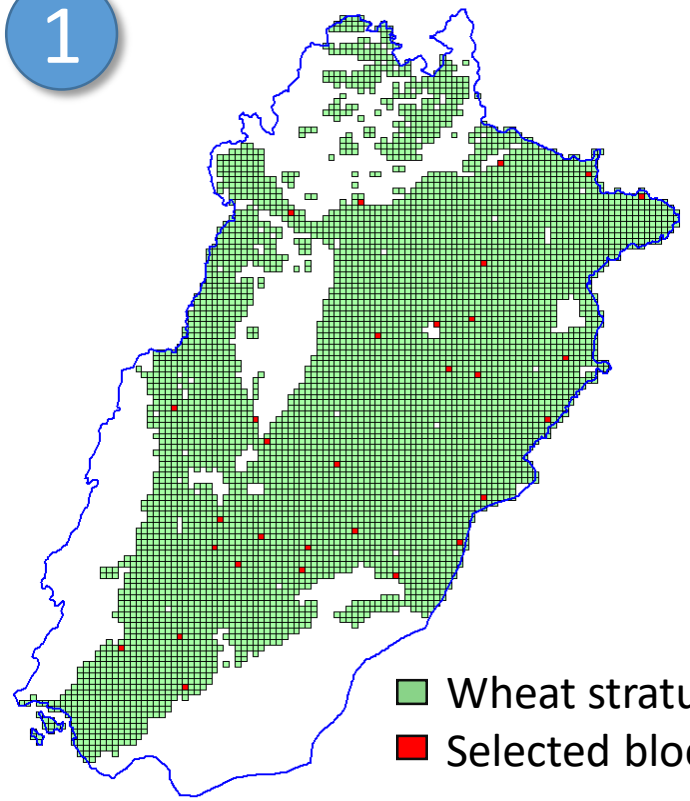
- Winter wheat assessment in Punjab, Pakistan
- Carbon footprint of forest disturbance in the Republic of the Congo and the DRC
- Global forest monitoring time-series validation

PI: Dr. Matthew C. Hansen
University of Maryland

Winter wheat assessment in Punjab, Pakistan

Ahmad Khan, Matthew Hansen, Peter Potapov

1



2-stage stratified sampling design using Landsat wheat maps 2015-2017.

- Wheat stratum (98.8% wheat area).
- 30 5x5km random blocks.
- 20 30x30m pixels within each block.

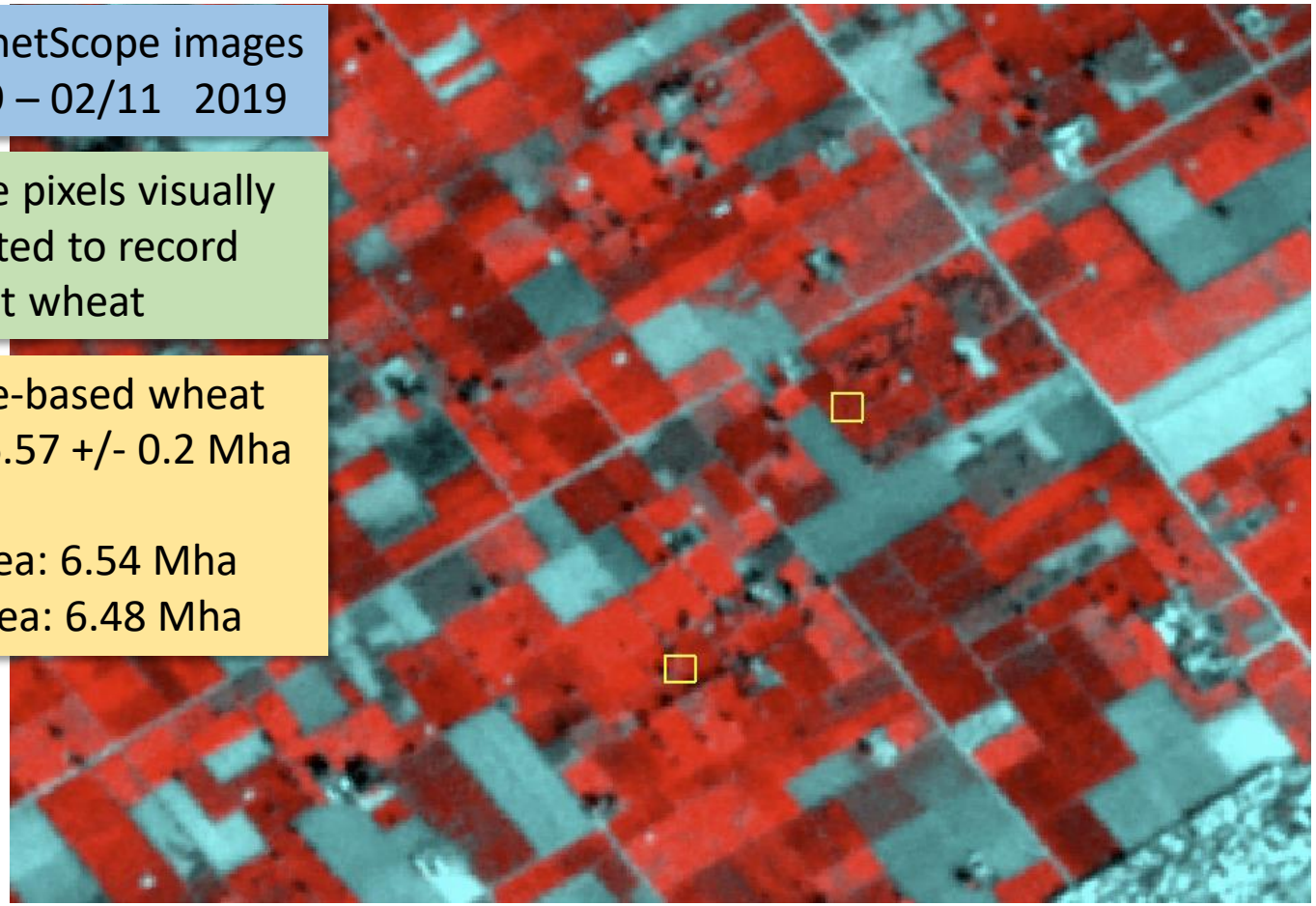
2

47 PlanetScope images
01/29 – 02/11 2019

Sample pixels visually evaluated to record percent wheat

Sample-based wheat area: 6.57 +/- 0.2 Mha

CRS area: 6.54 Mha
FAO area: 6.48 Mha



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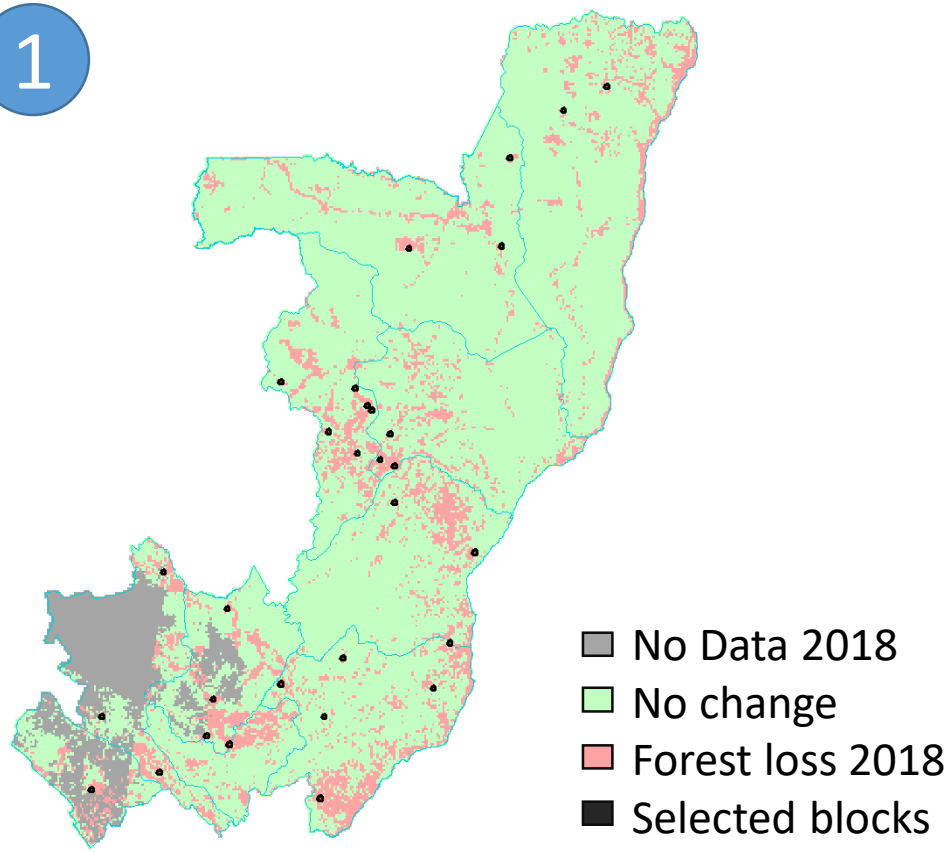
Field validation and yield data collection

- - - in progress - - -

Carbon footprint of forest disturbance in the R. of Congo

Matthew Hansen, Patrick Amani, Jeffry Pickering, Peter Potapov, et al.

1

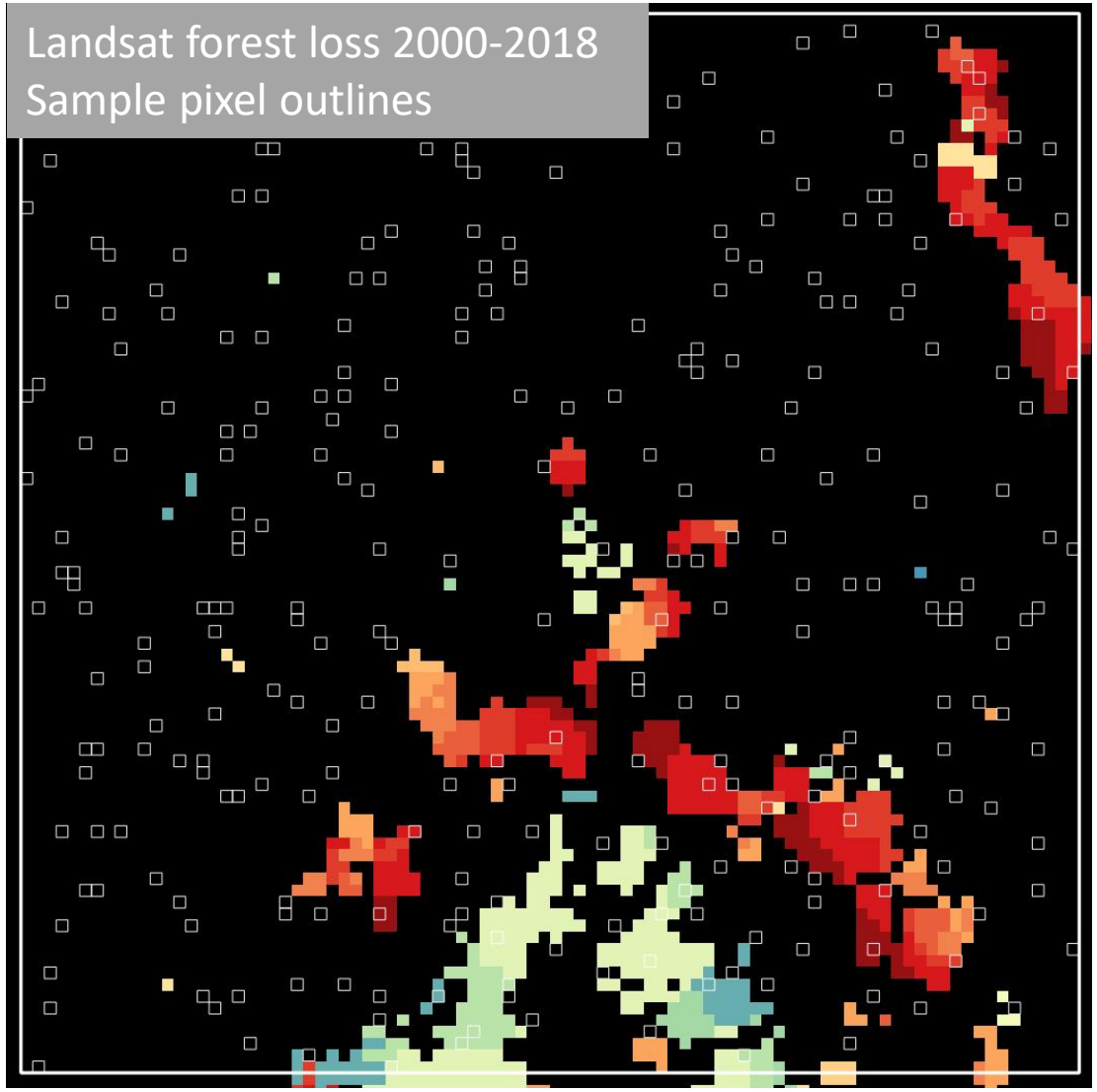


2-stage stratified sampling design using Landsat forest loss 2018.

- 30 2.5x2.5km random blocks within loss stratum.
- 100 30x30m random pixels within each block.
- Selected 50 confirmed loss pixels (14 blocks)

2

80 PlanetScope images (image pairs 2017-2018)



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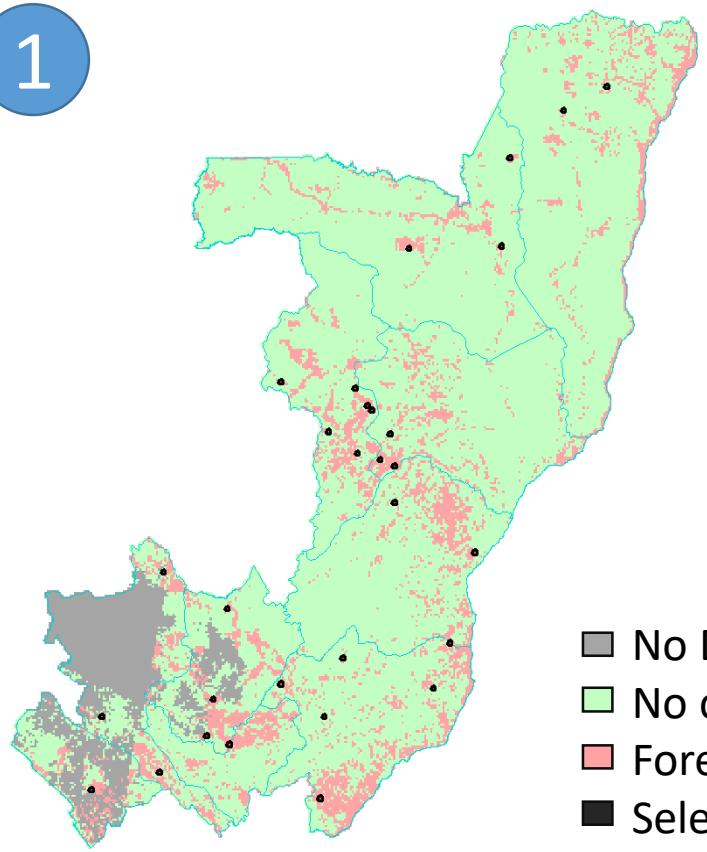

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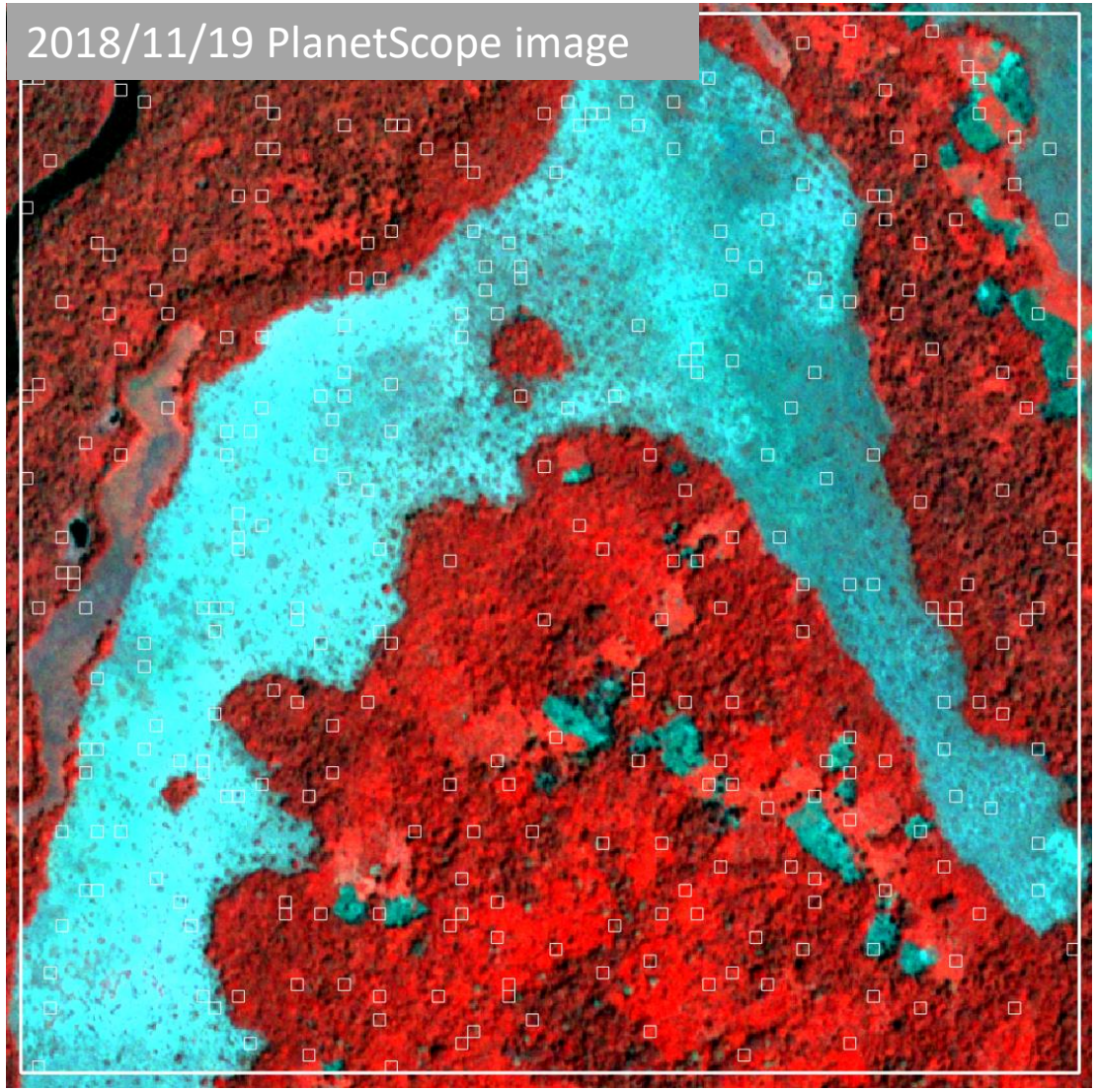

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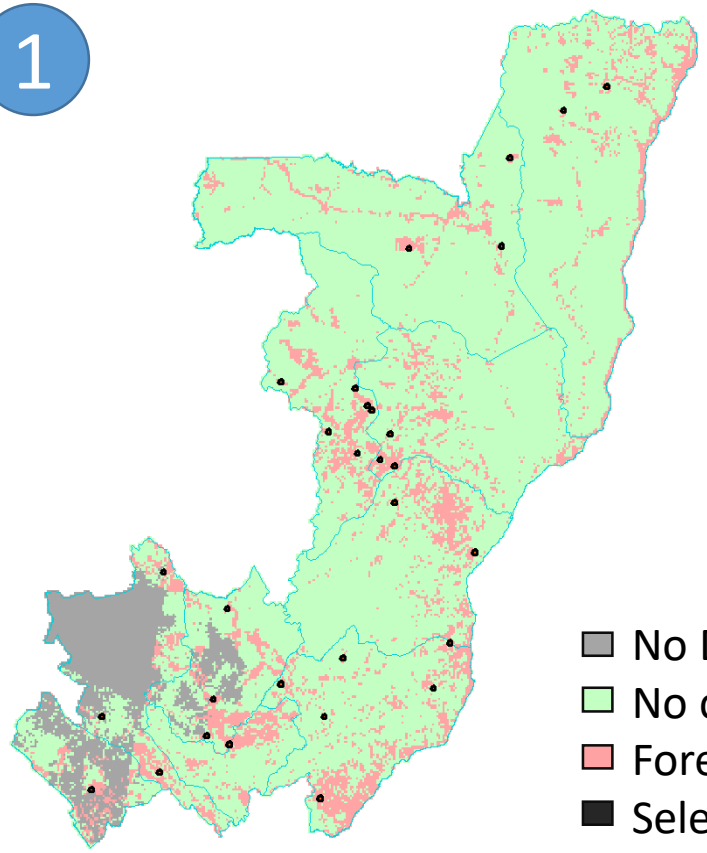

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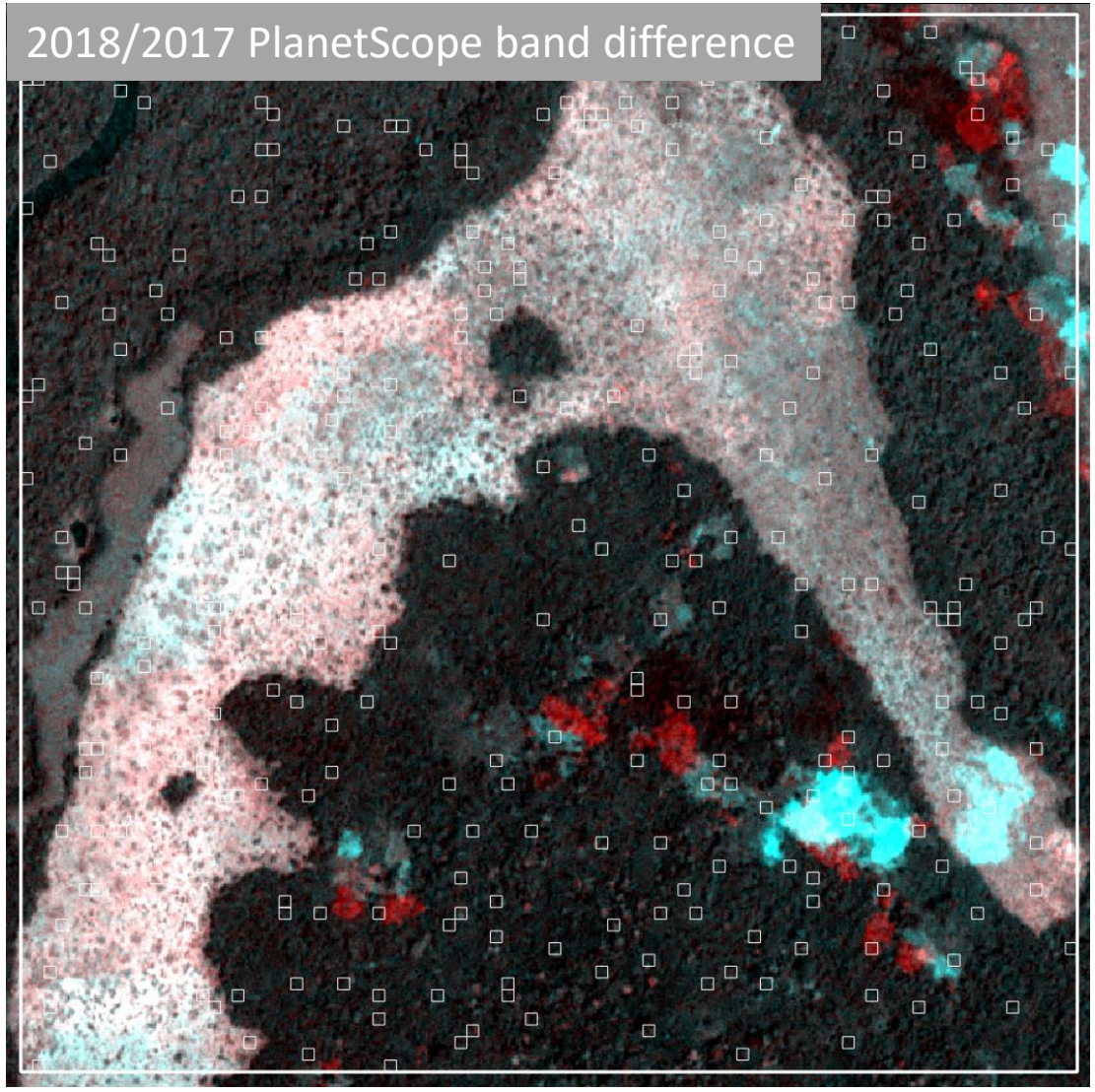

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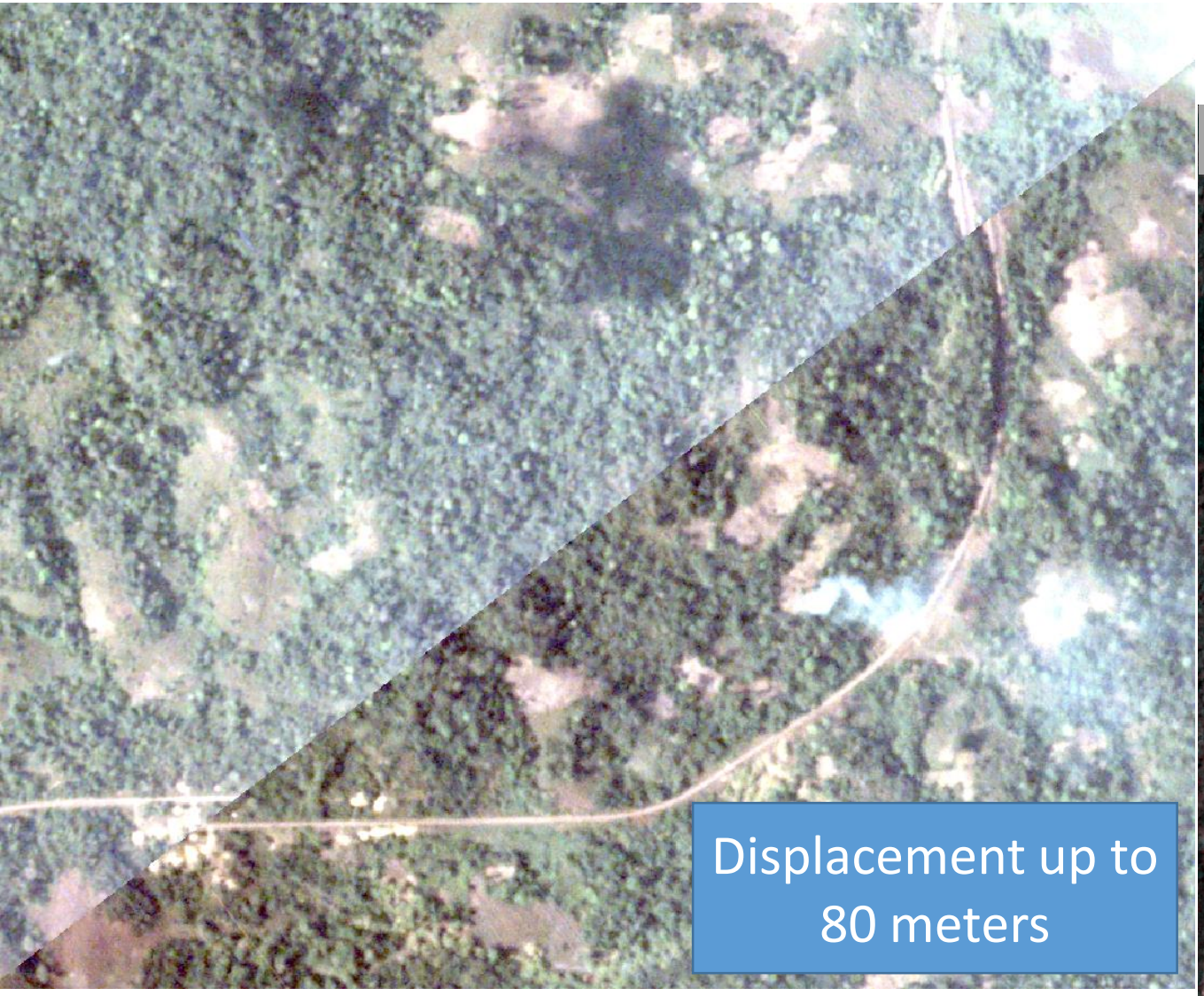

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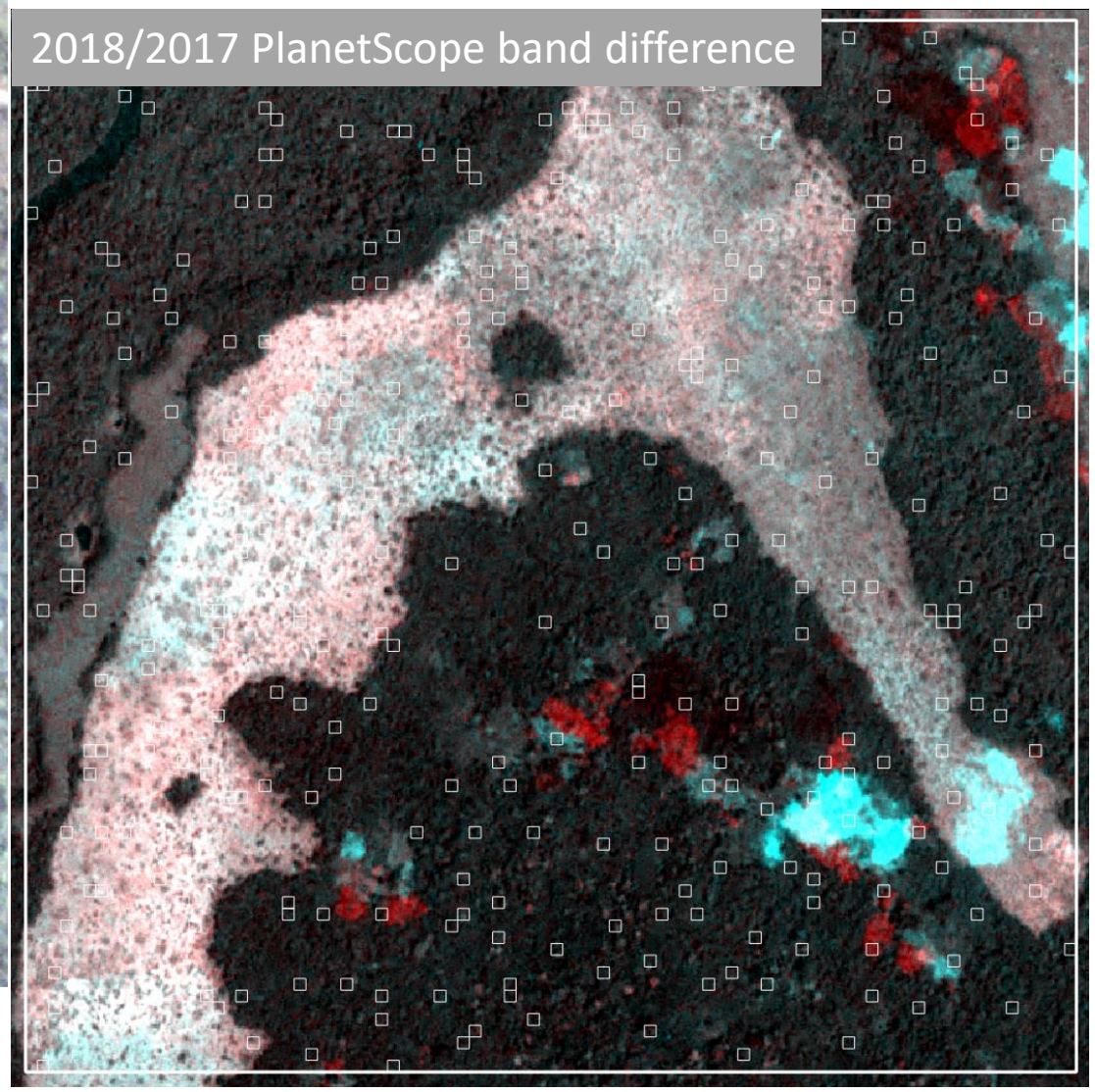

Carbon footprint of forest disturbance in the R. of Congo

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Selective logging assessment using PlanetScope image time-series

Carbon footprint of forest disturbance in the R. of Congo

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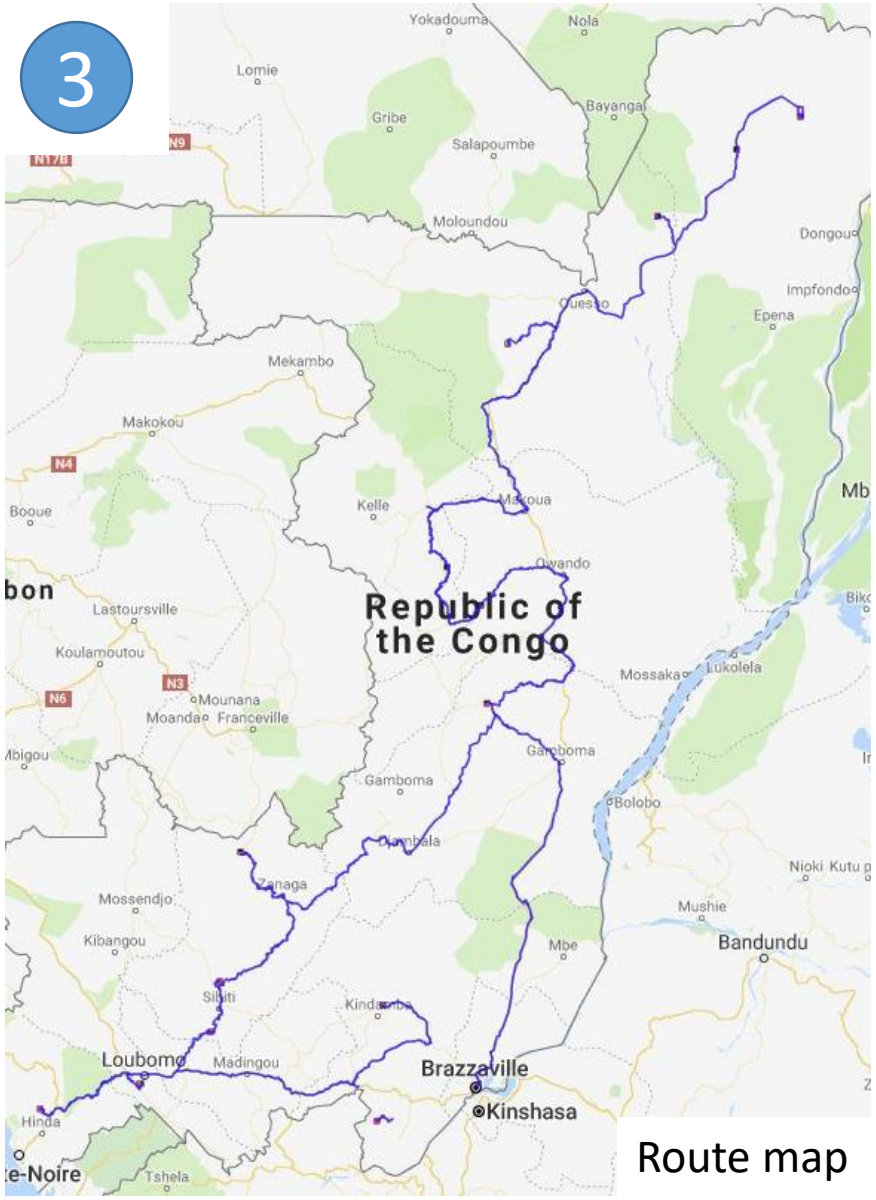
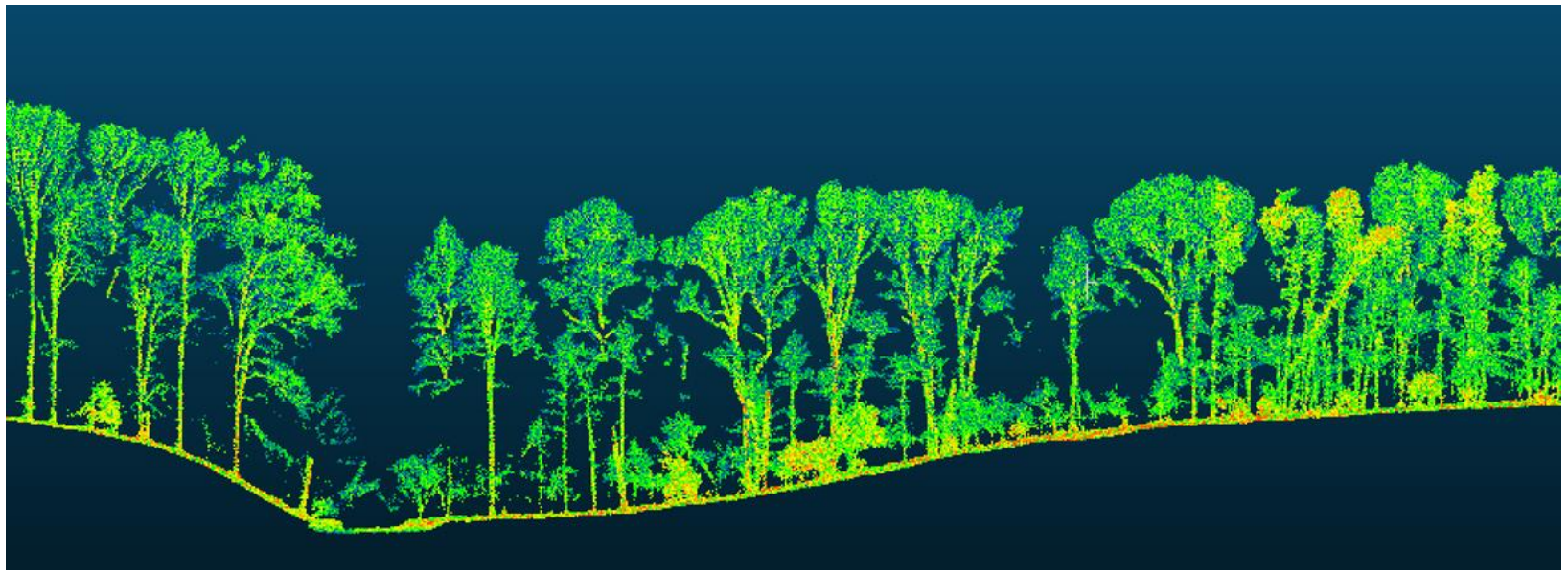
3



Route map

- Field visit of selected 50 confirmed loss pixels (14 blocks) and 50 reference (no change) pixels.
- Lidar data collection (all points) and forest inventory for a selected subset.

- - - in progress - - -



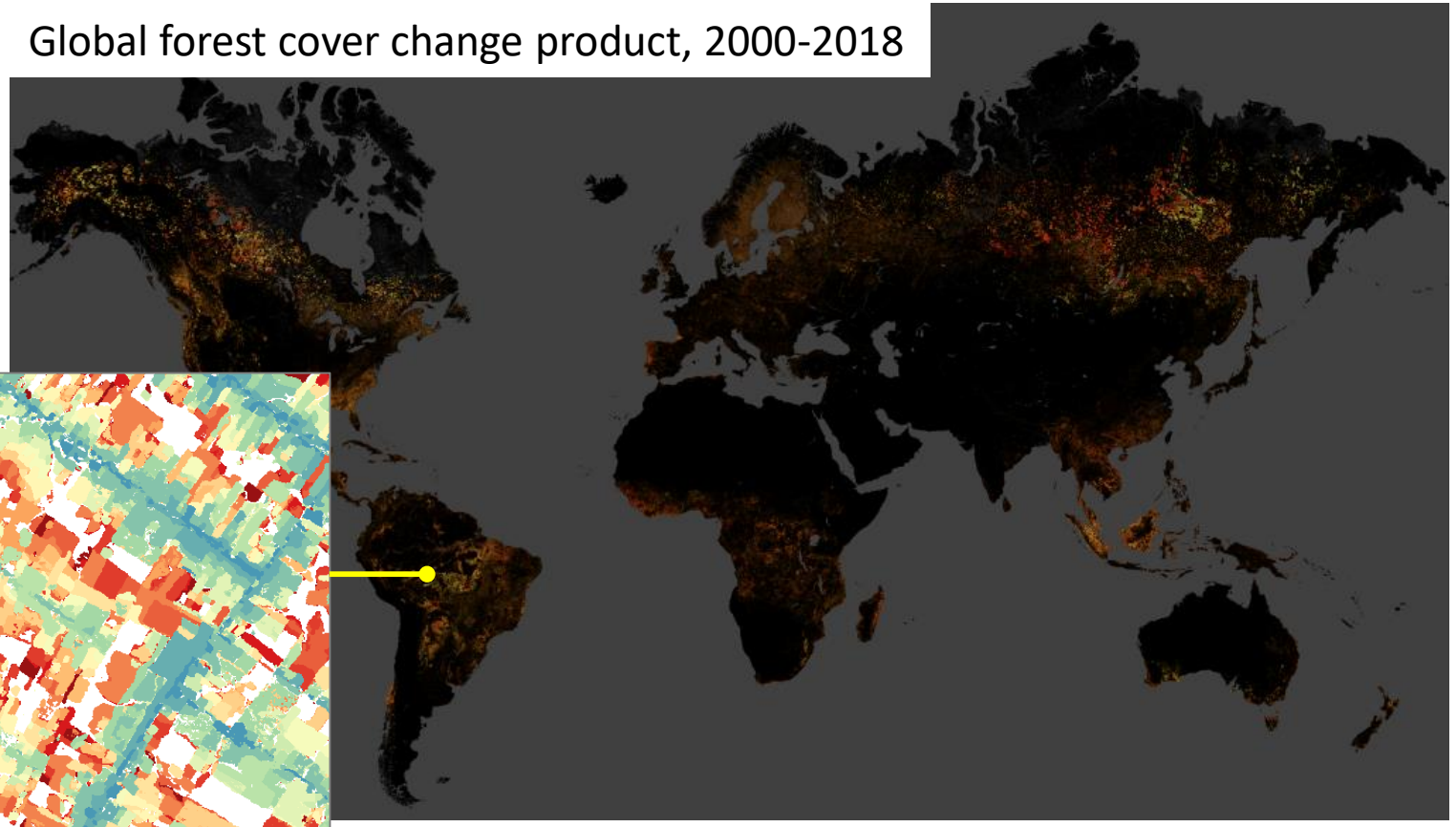
Global forest monitoring time-series validation

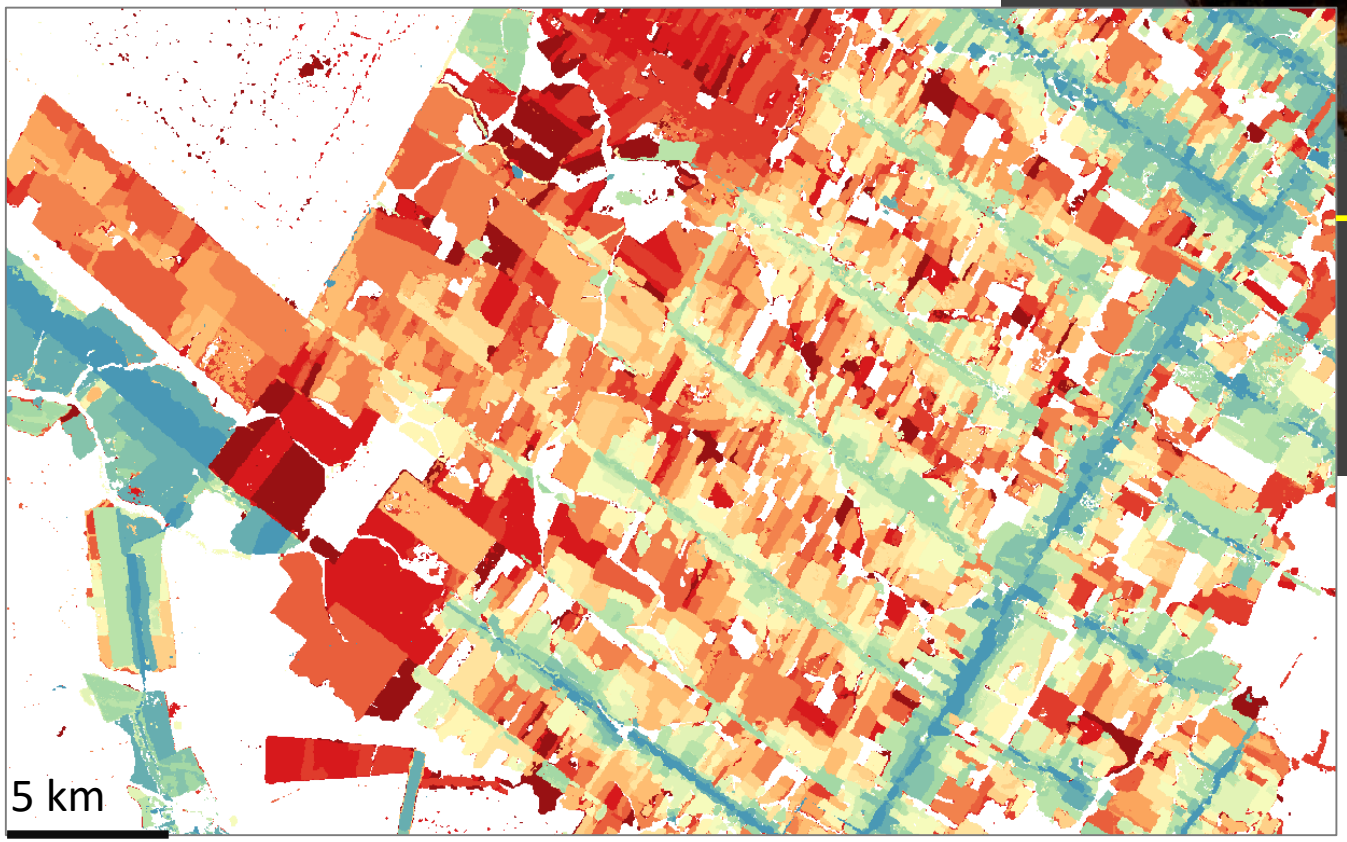
Matthew Hansen, Alexandra Tyukavina, Svetlana Turubanova, Peter Potapov, et al.

Objectives

- Sample-based estimation of forest change area.
- Global forest change product validation.
- Forest change proximate causes assessment.

Global forest cover change product, 2000-2018





Date of the first forest loss detection (V2.0 global time-series product)

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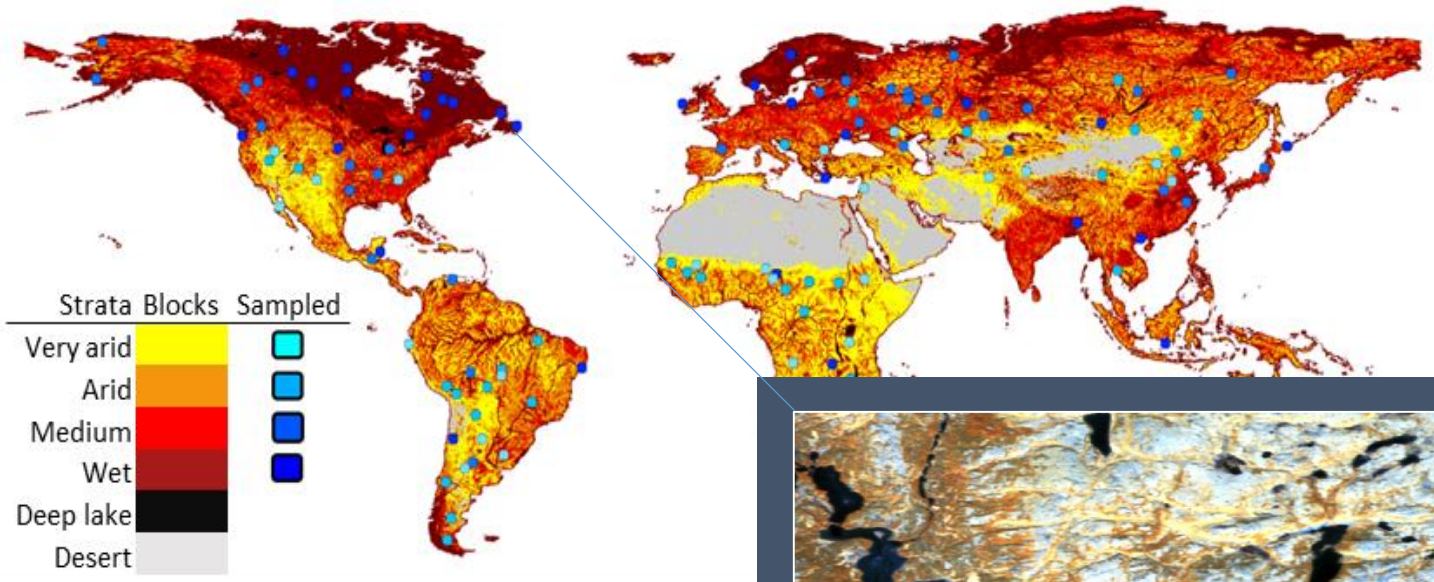
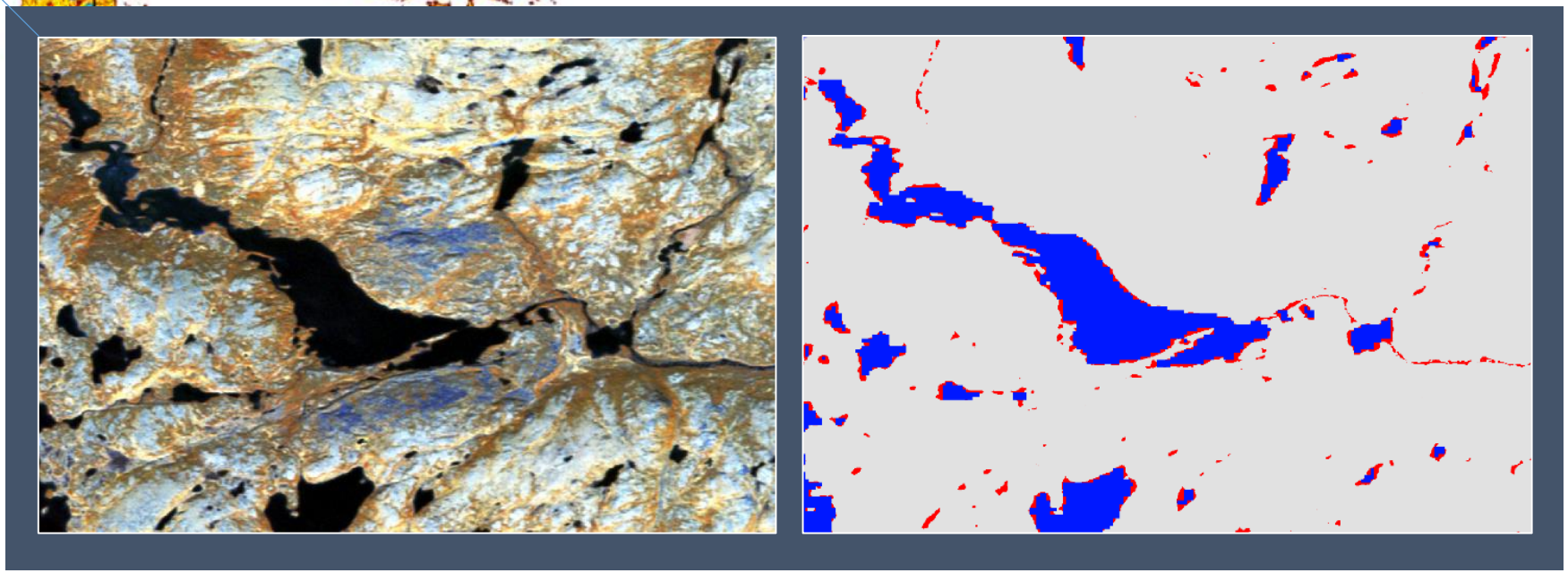
Example of using RapidEye data for water dynamic validation by Amy Pickens

Surface water strata and selected blocks



- 116 20x20 km blocks
- Anniversary RapidEye images for 2010 and 2013



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Example of using Landsat time-series and DG data for forest change analysis in Central Africa

Tyukavina et al., *Sci. Adv.*, 2018