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Real-time identification of land transformation and degradation in the fynbos and thicket biomes from remotely-sensed vegetation activity

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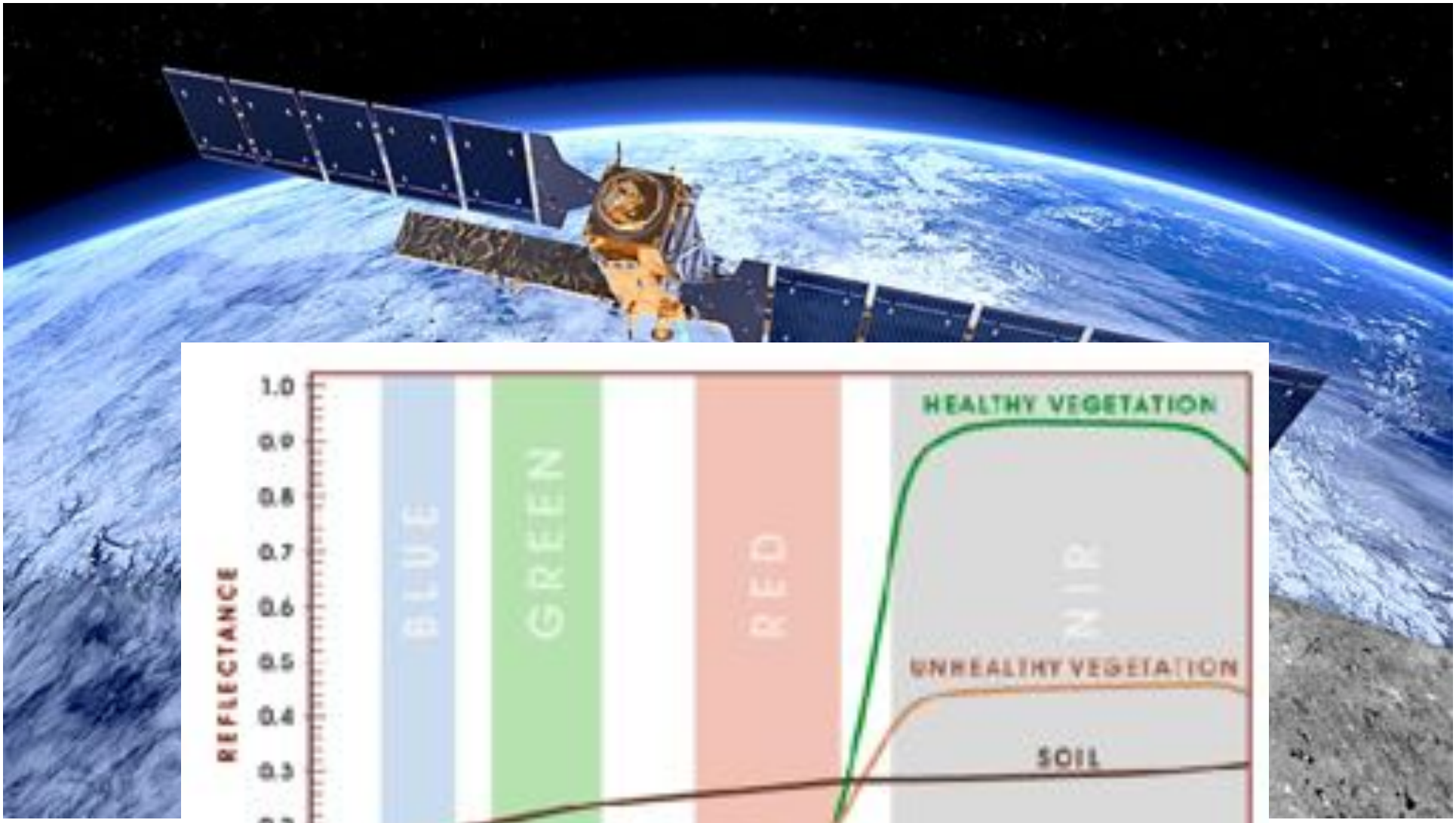
5. Department of Geography, University at Buffalo, Buffalo, NY 14261

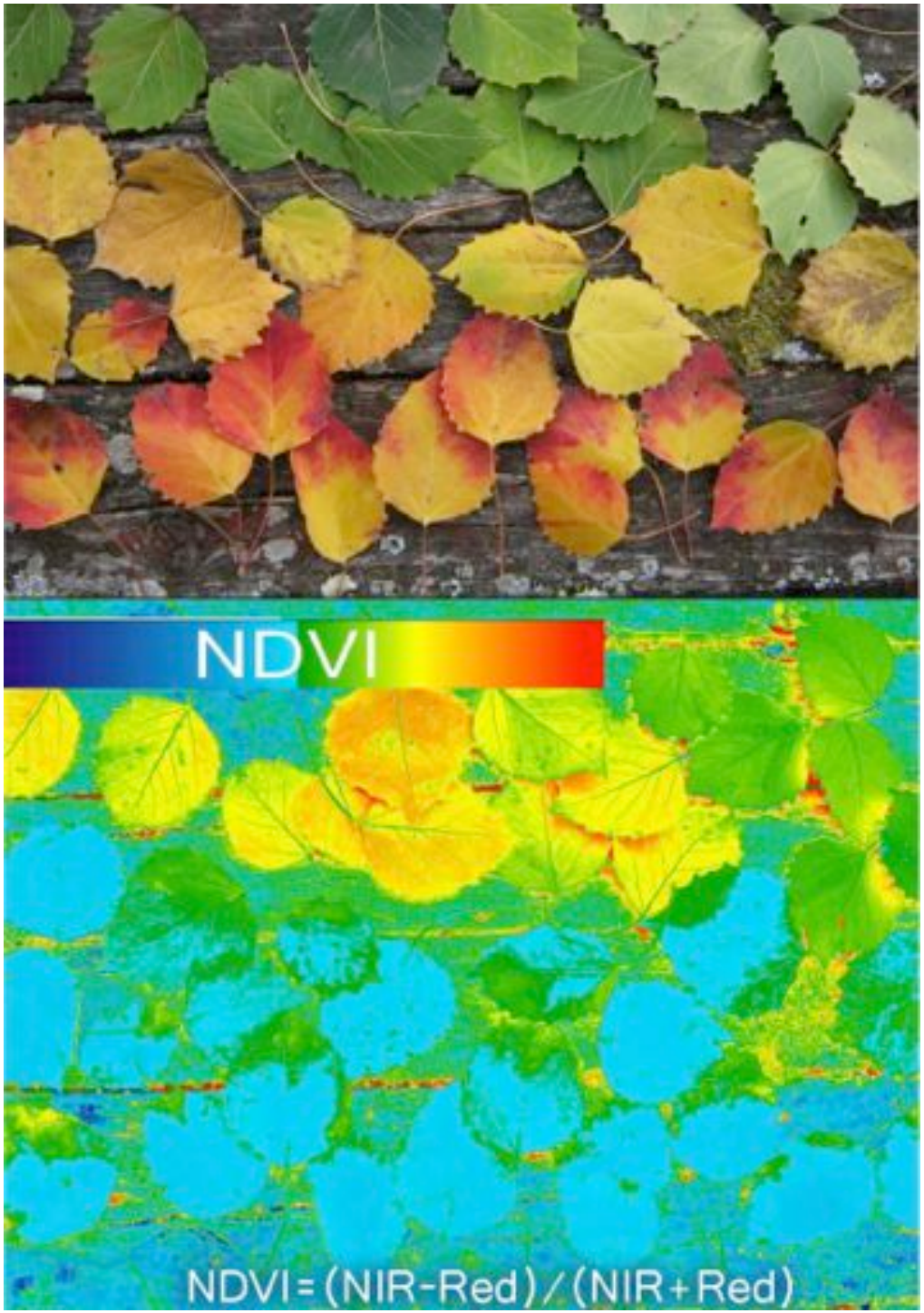
http://landsat.gsfc.nasa.gov/

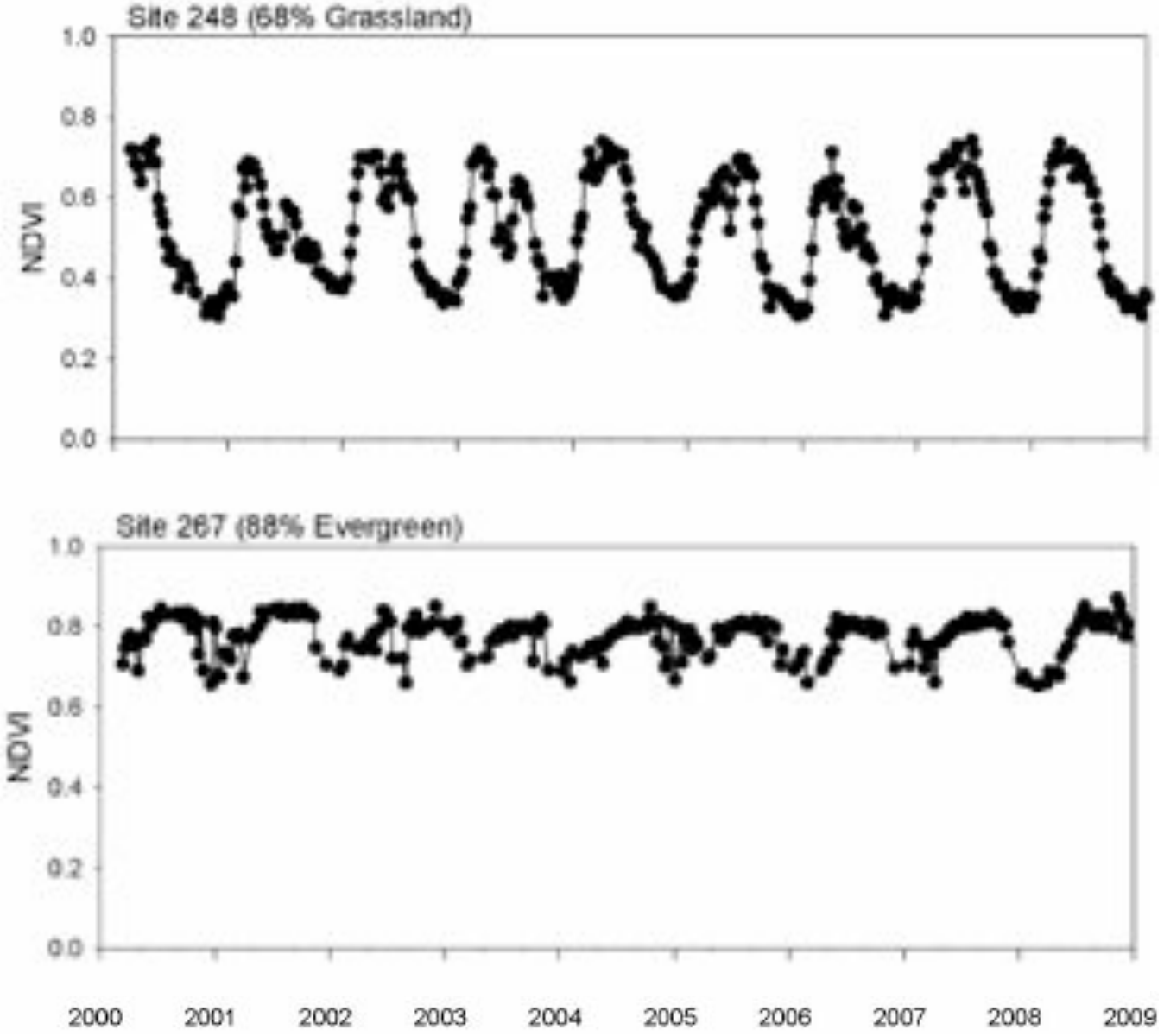


http://landsat.gsfc.nasa.gov/

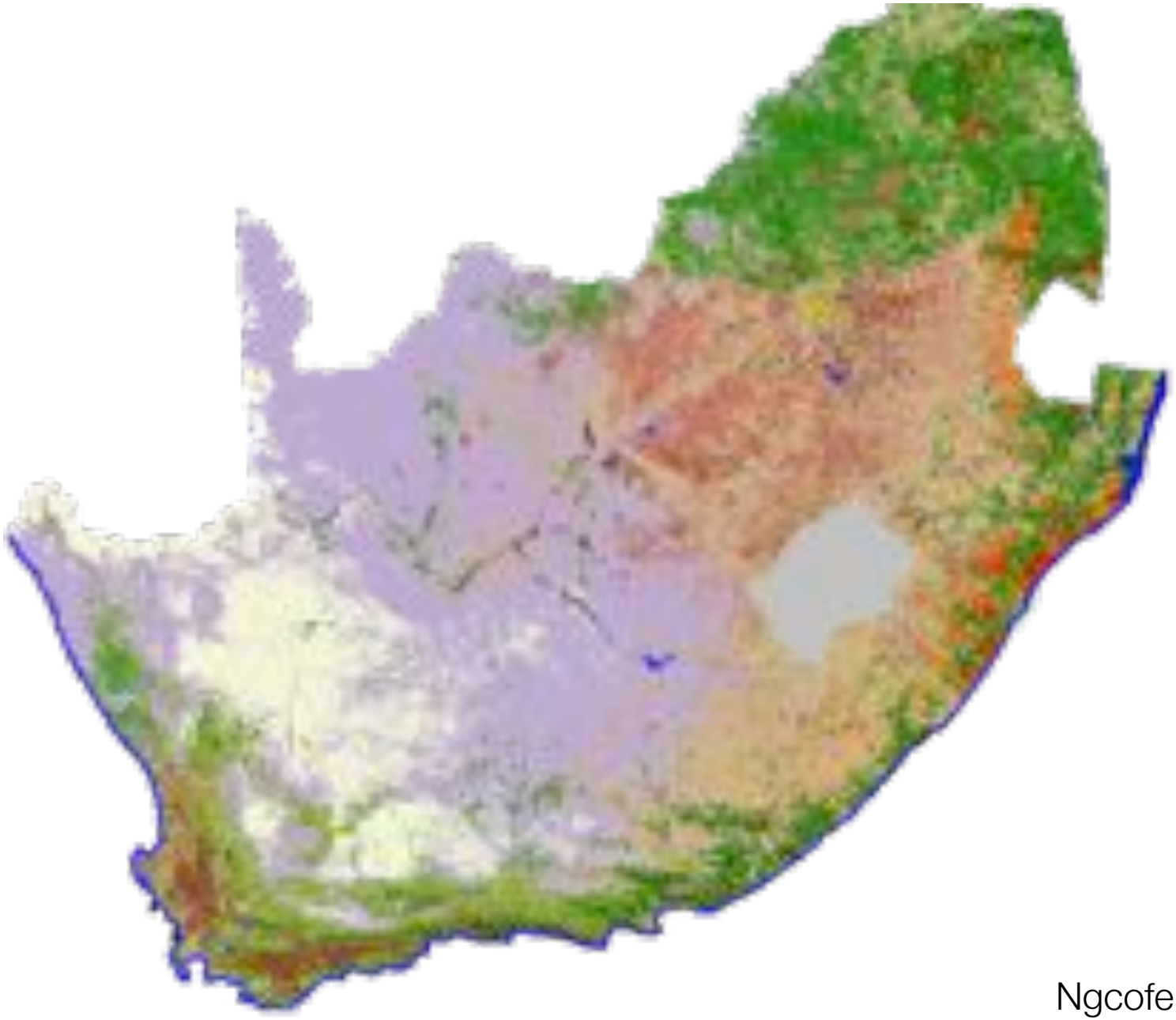
NDVI

publiclab.org

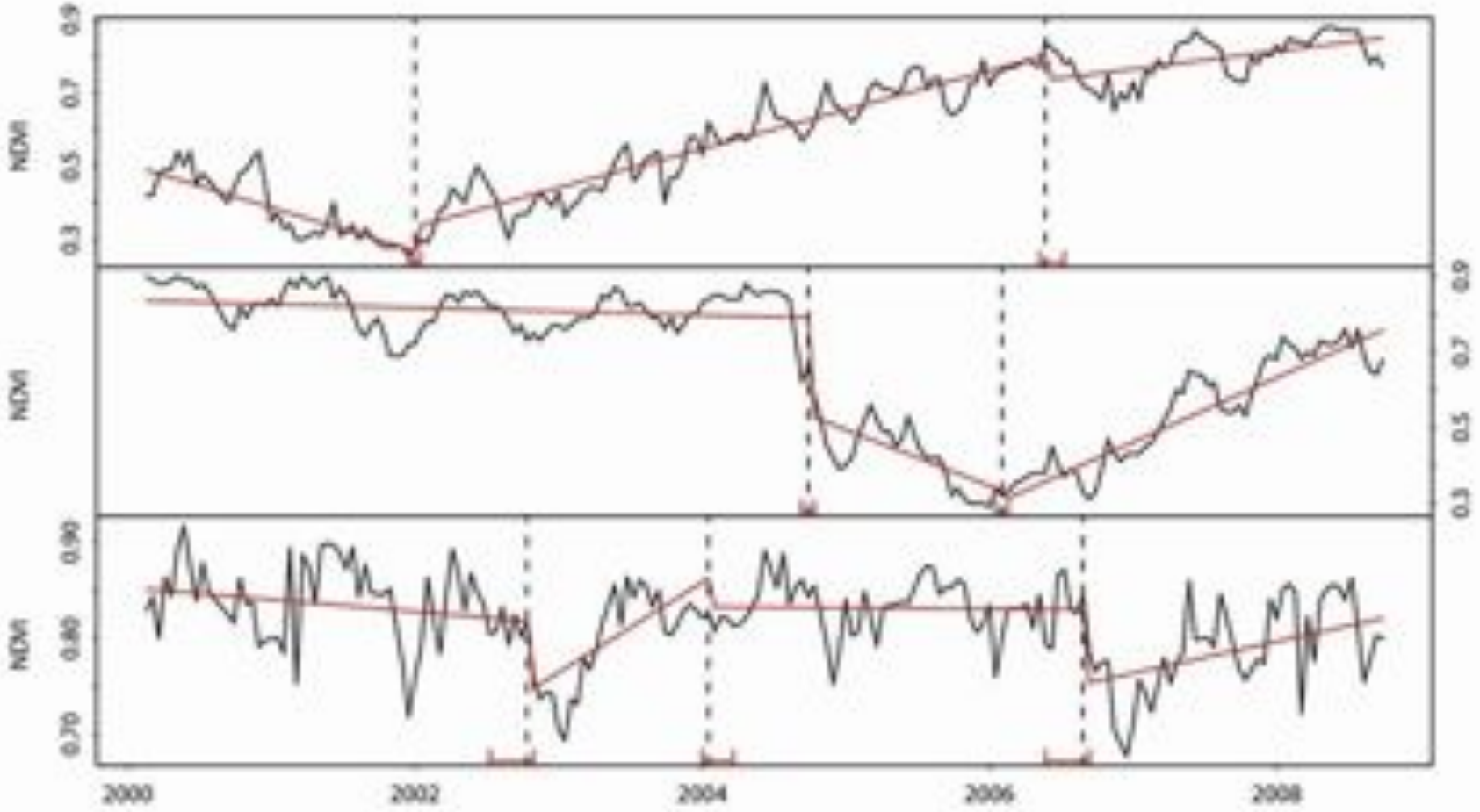




Brooks et al 2011



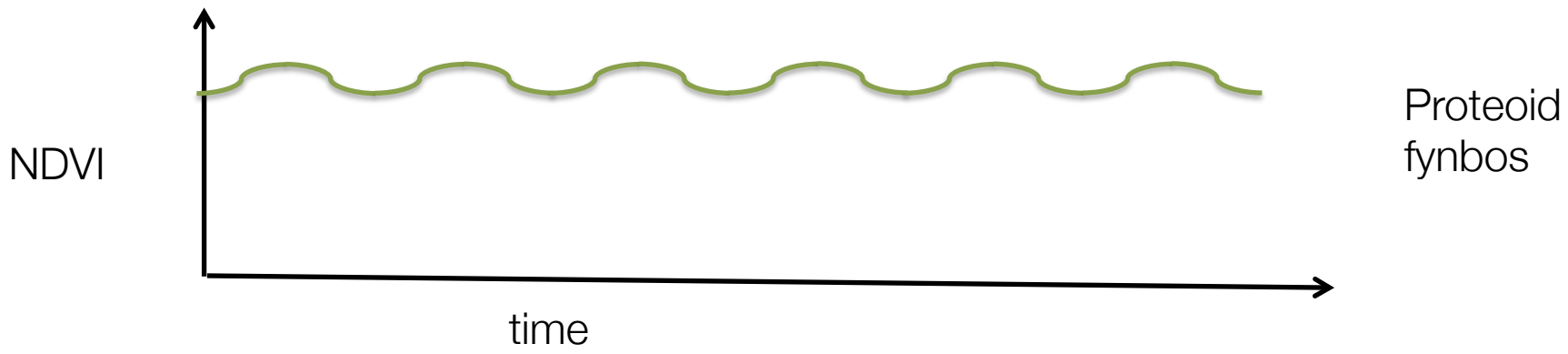
Ngcofe 2015

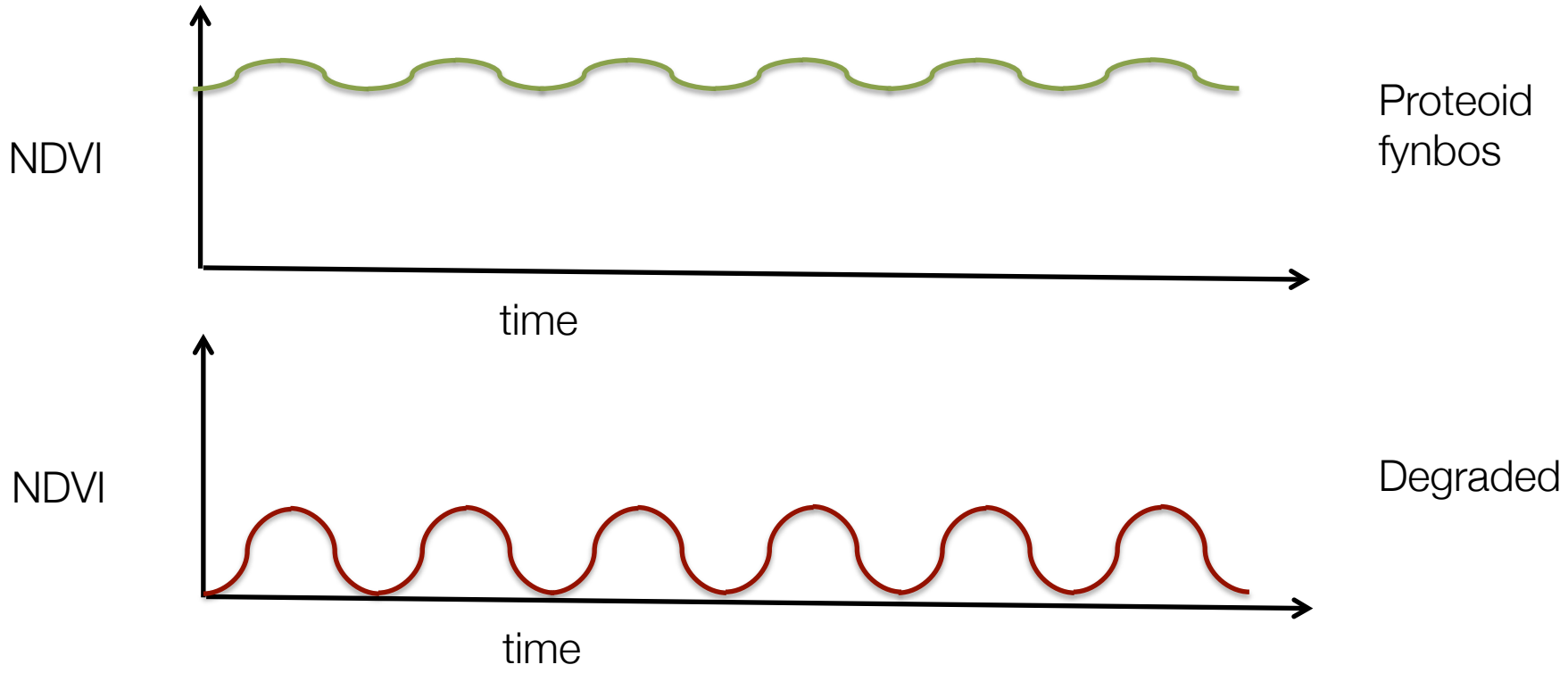


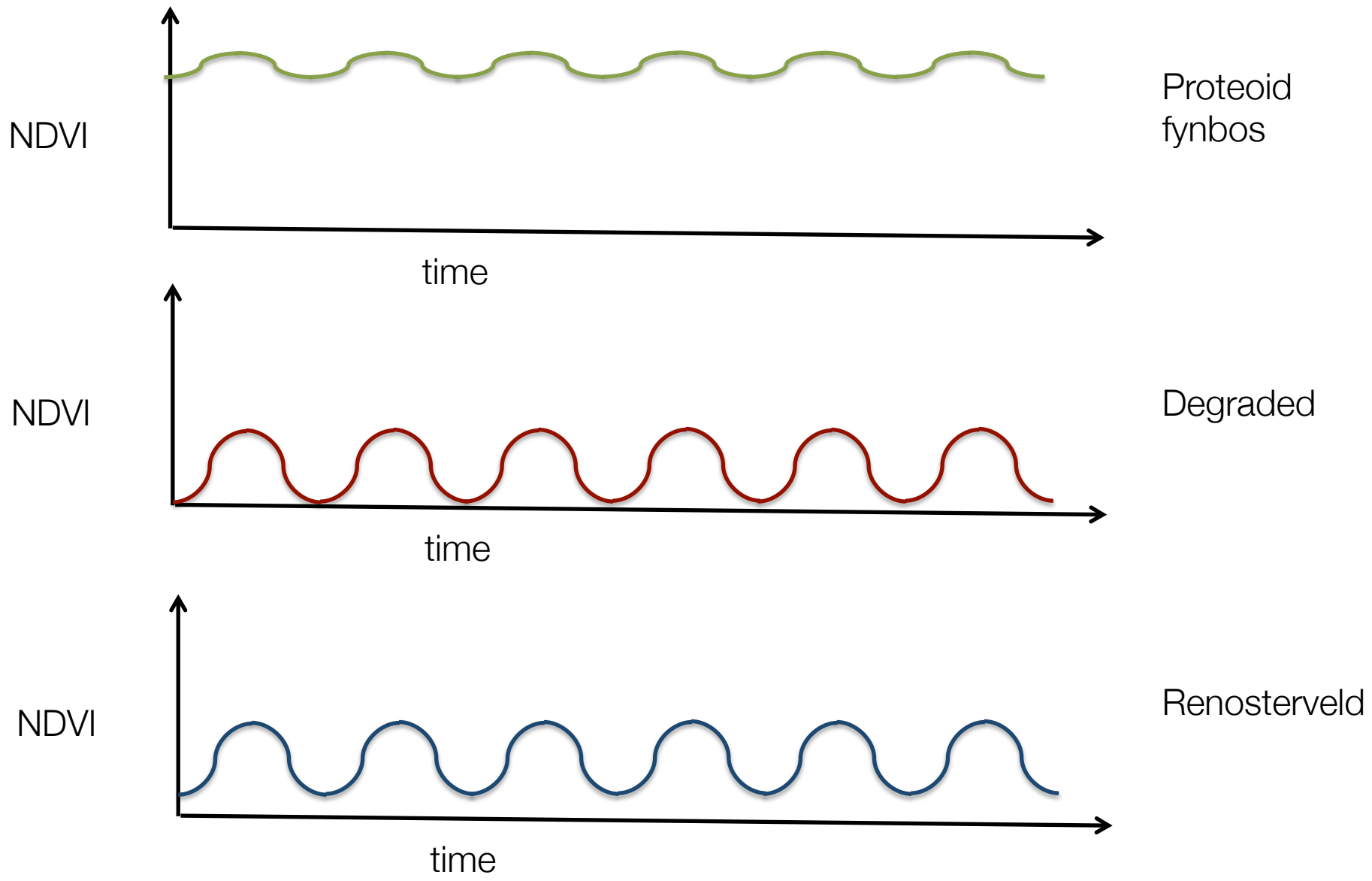
www.wageningenur.nl/…

www.globalforestwatch.org

www.globalforestwatch.org


NDVI
time
Proteoid
fynbos


NDVI
time
Proteoid
fynbos
NDVI
time
Degraded

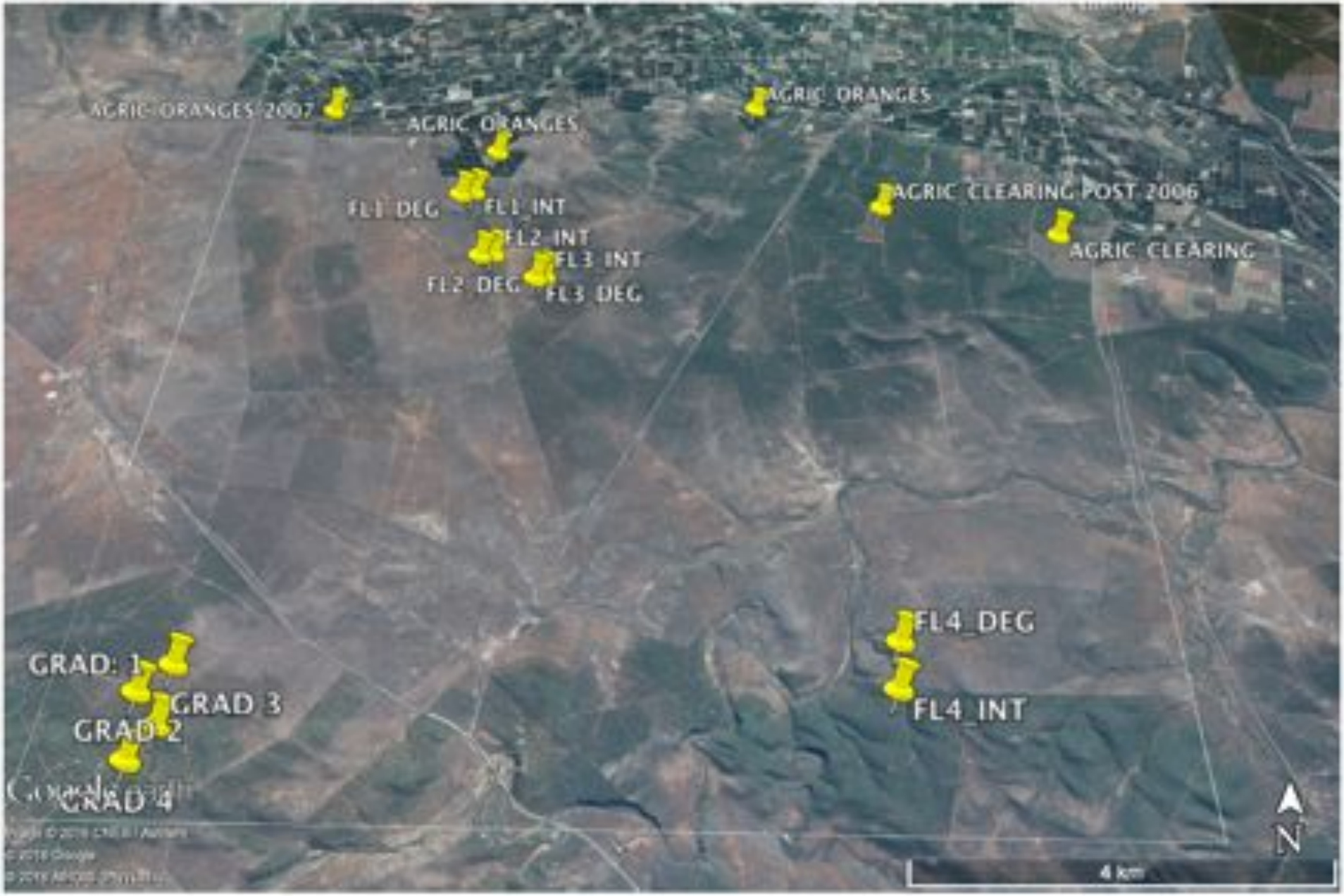

NDVI
time
Proteoid fynbos
NDVI
time
Degraded
NDVI
time
Renosterveld

How does NDVI vary between intact and degraded/ transformed vegetation?

Can we detect and date shifts from intact to degraded/ transformed vegetation using LANDSAT data?

Can we use this approach for monitoring at large scales and in a range of vegetation types?

Kirkwood
Uitenhage
Motherwell
Port Elizabeth
Humansdorp
Google earth
N
40 km


AGRIC ORANGES 2007
AGRIC ORANGES
AGRIC ORANGES
FL1 DEG
FL1 INT
FL2 INT
FL3 INT
FL2 DEG
FL3 DEG
AGRIC CLEARING POST 2006
AGRIC CLEARING
FL4 DEG
FL4 INT
GRAD 1
GRAD 3
GRAD 2
GRAD 4
N
4 km

How does NDVI vary between intact and degraded/transformed vegetation

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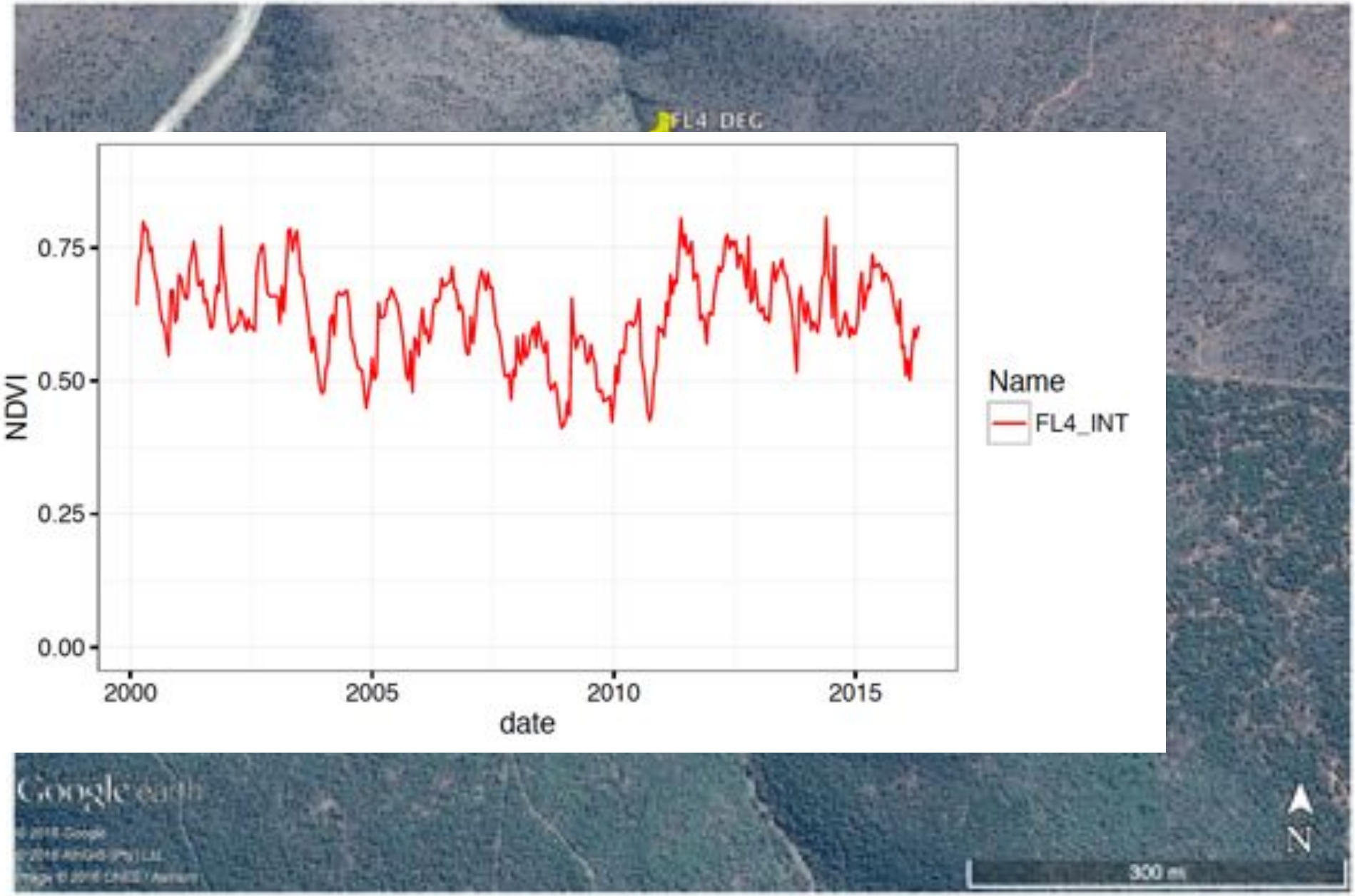

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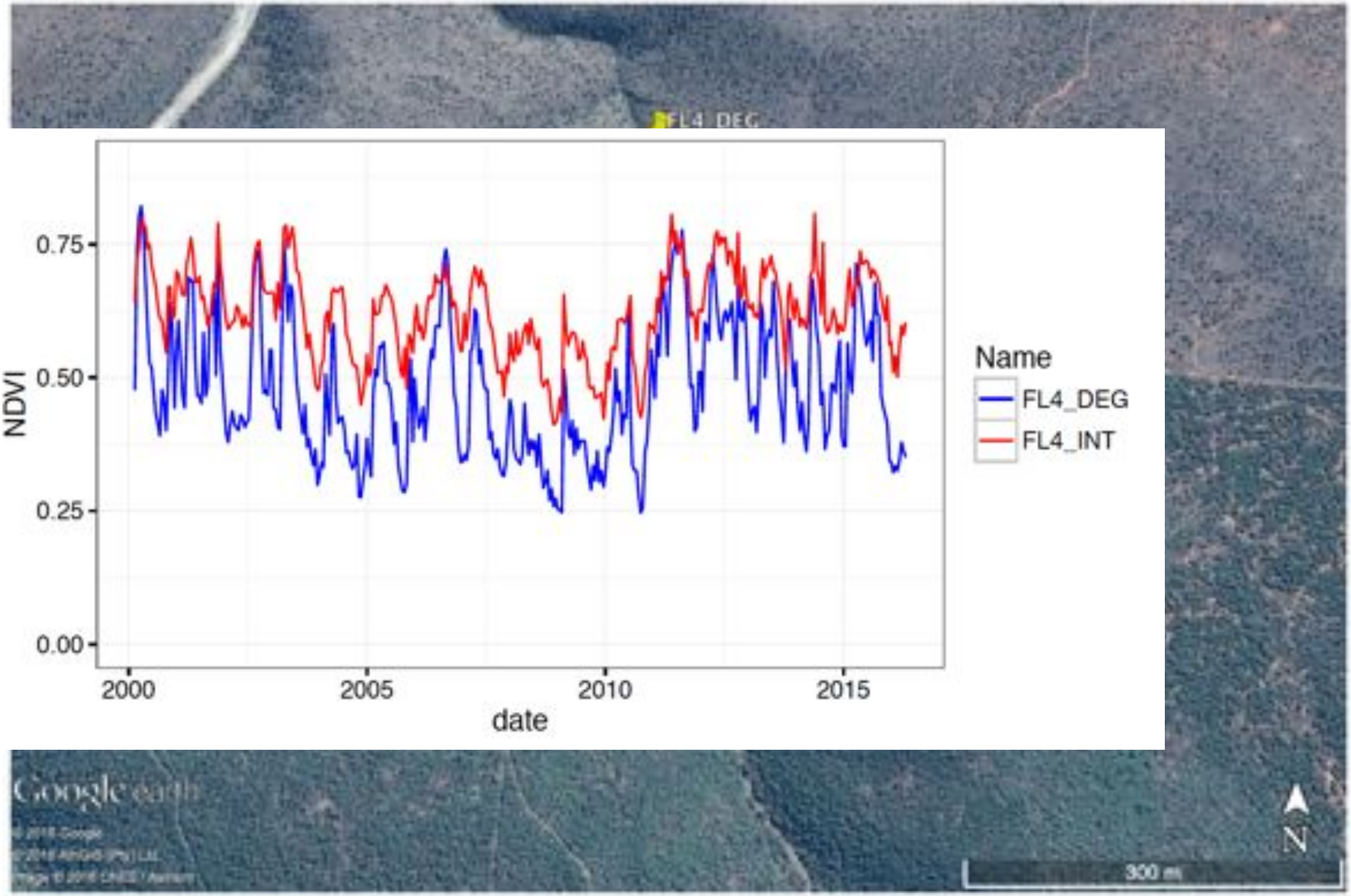

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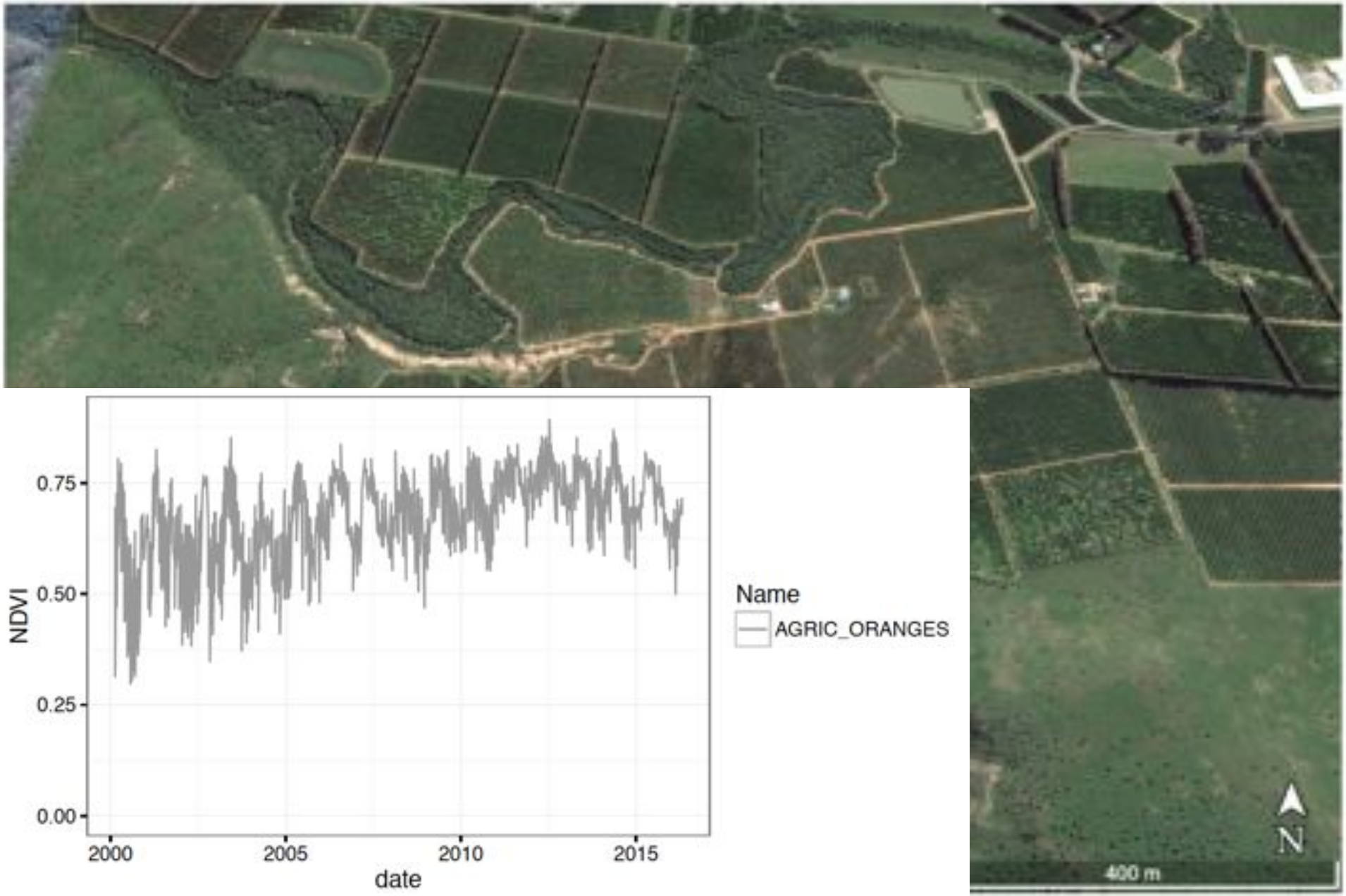

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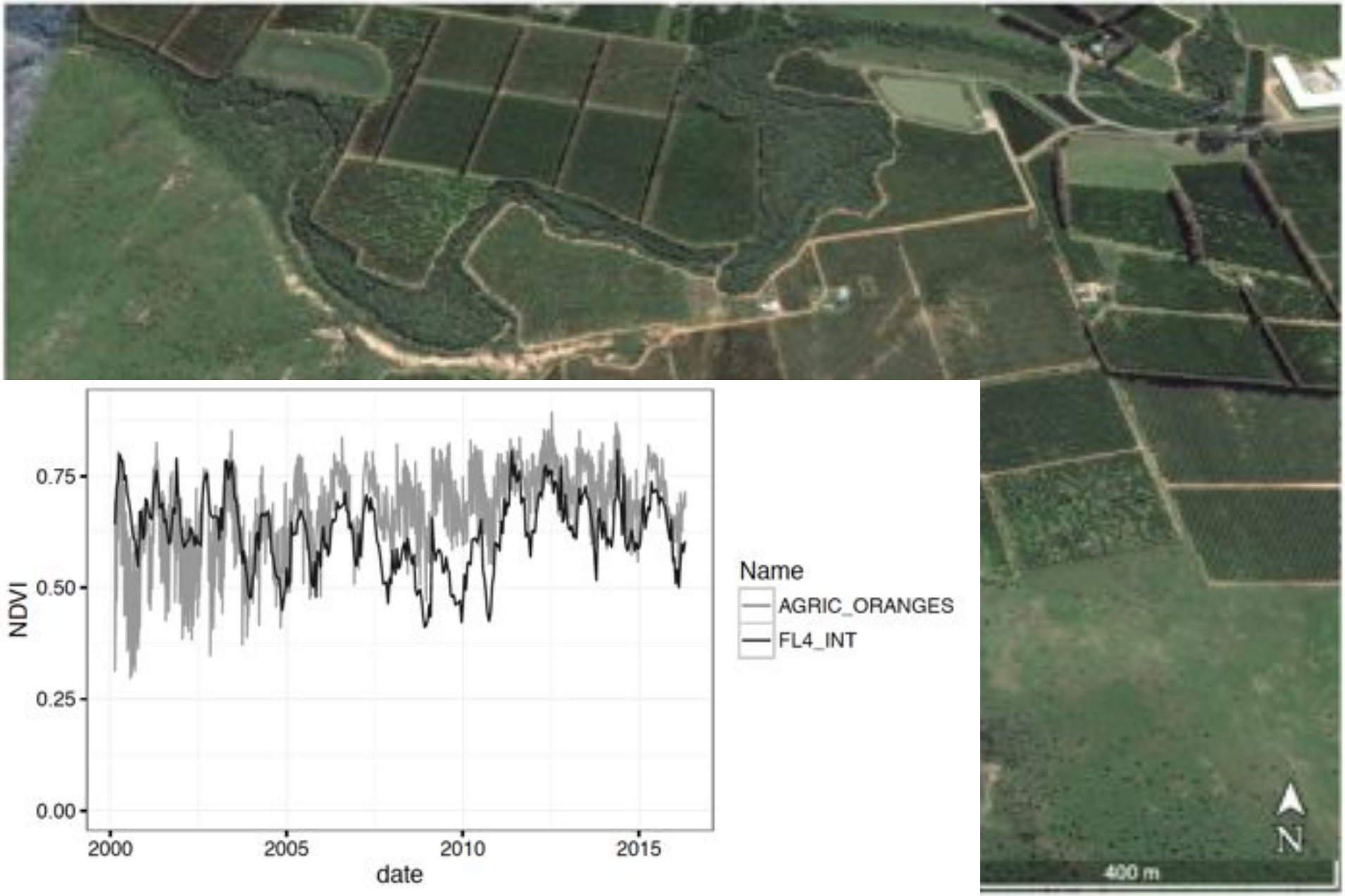
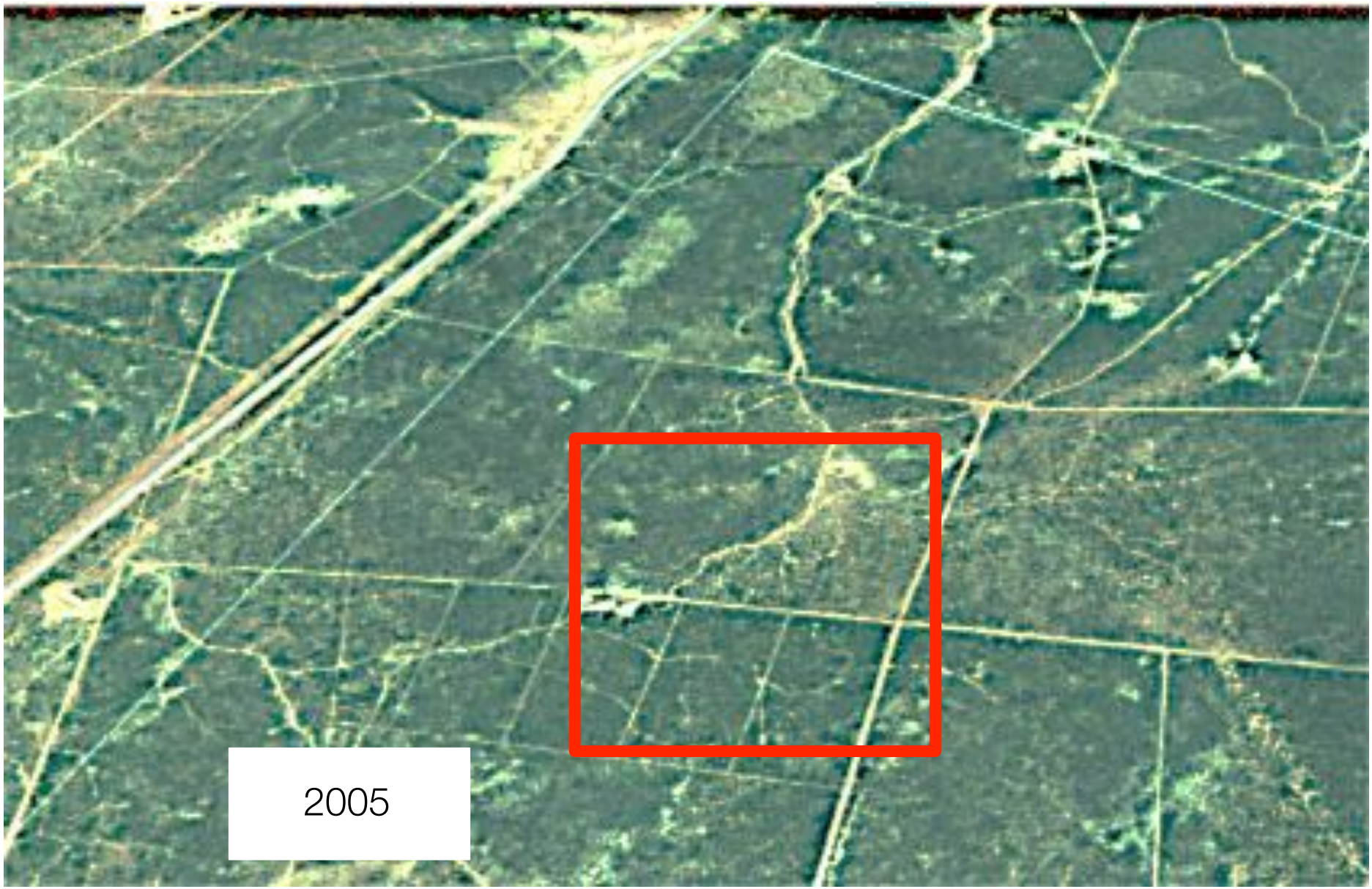


Can we detect and date shifts from intact to degraded/transformed vegetation using LANDSAT data?



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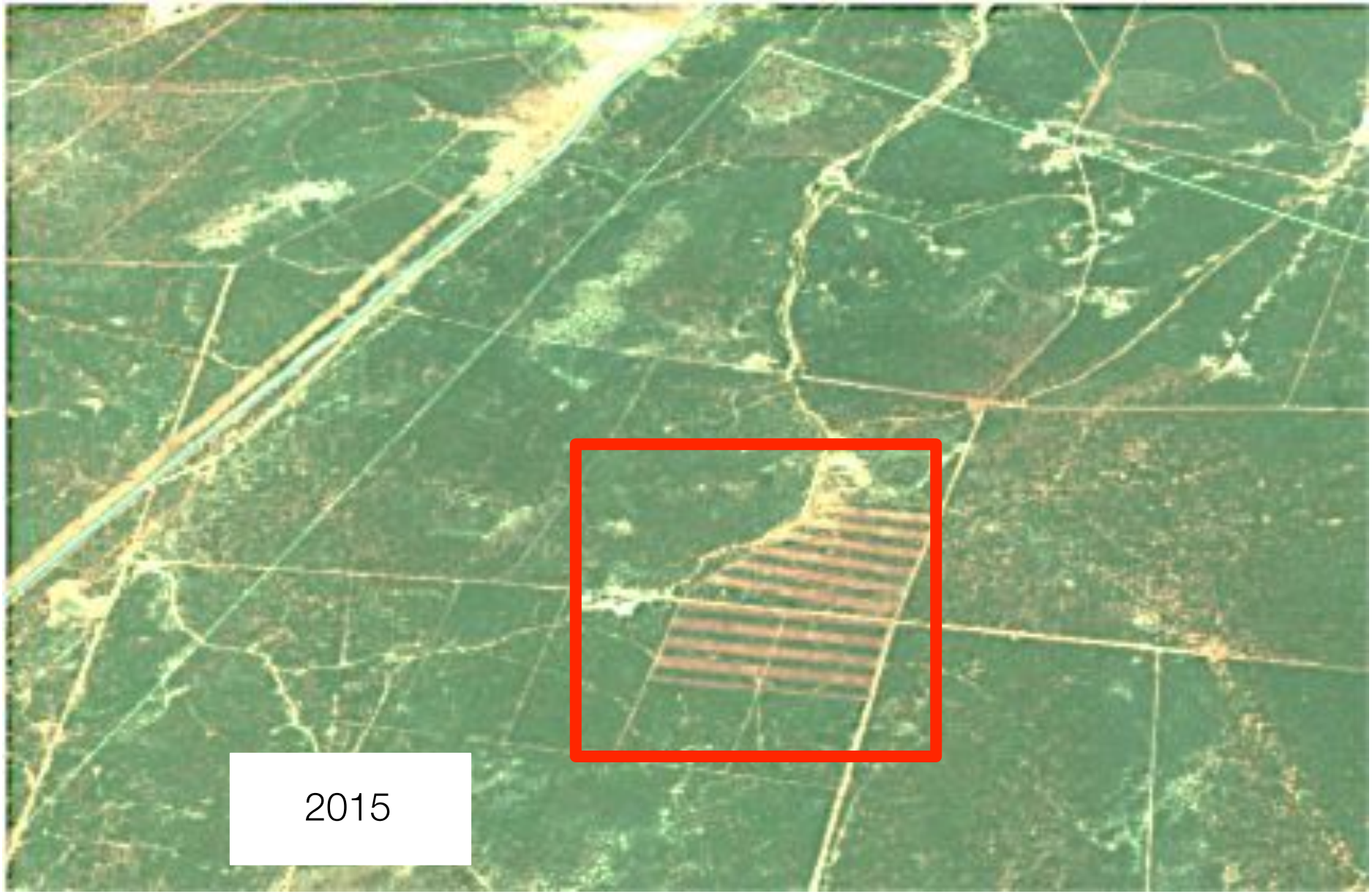

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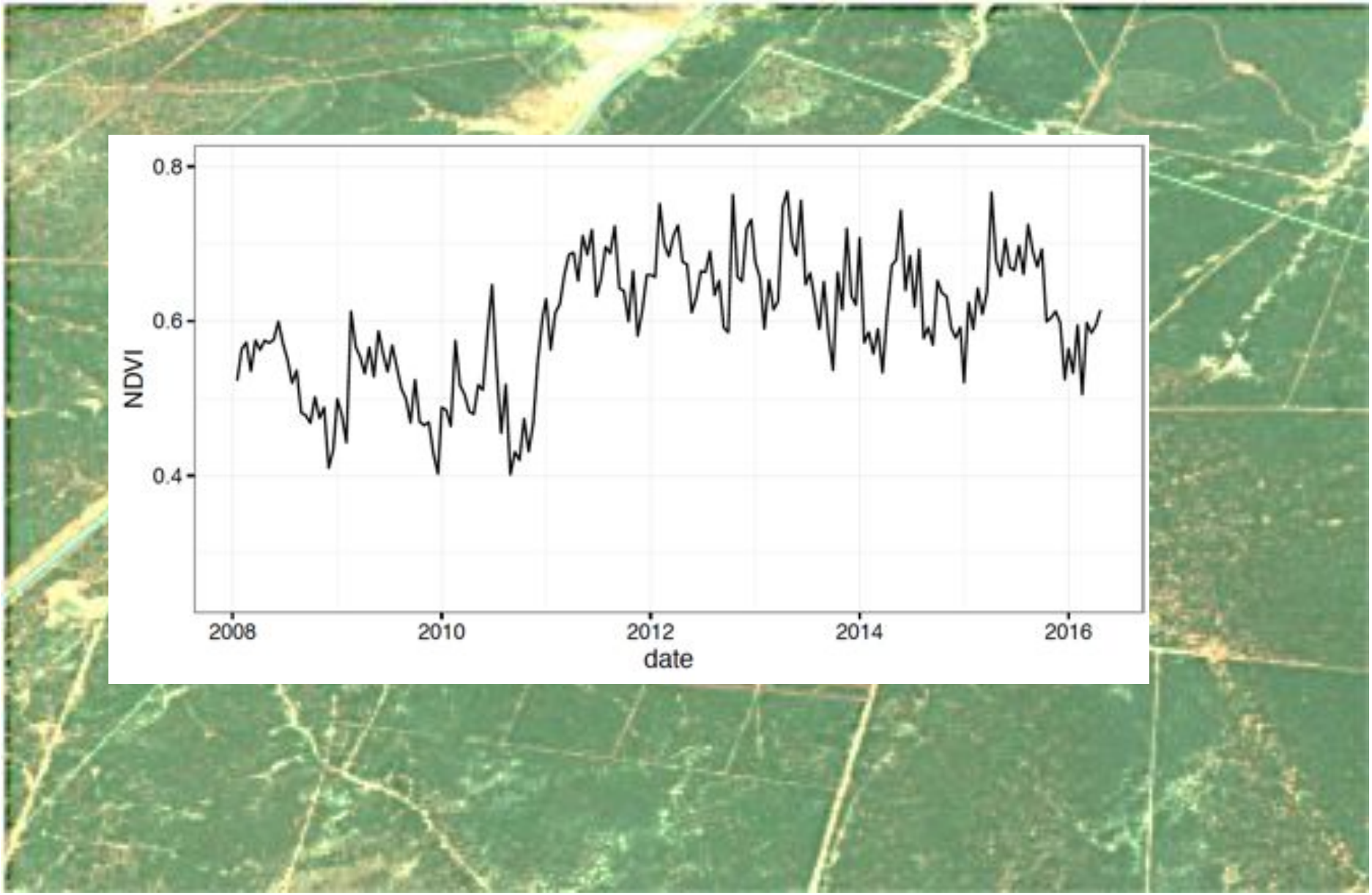

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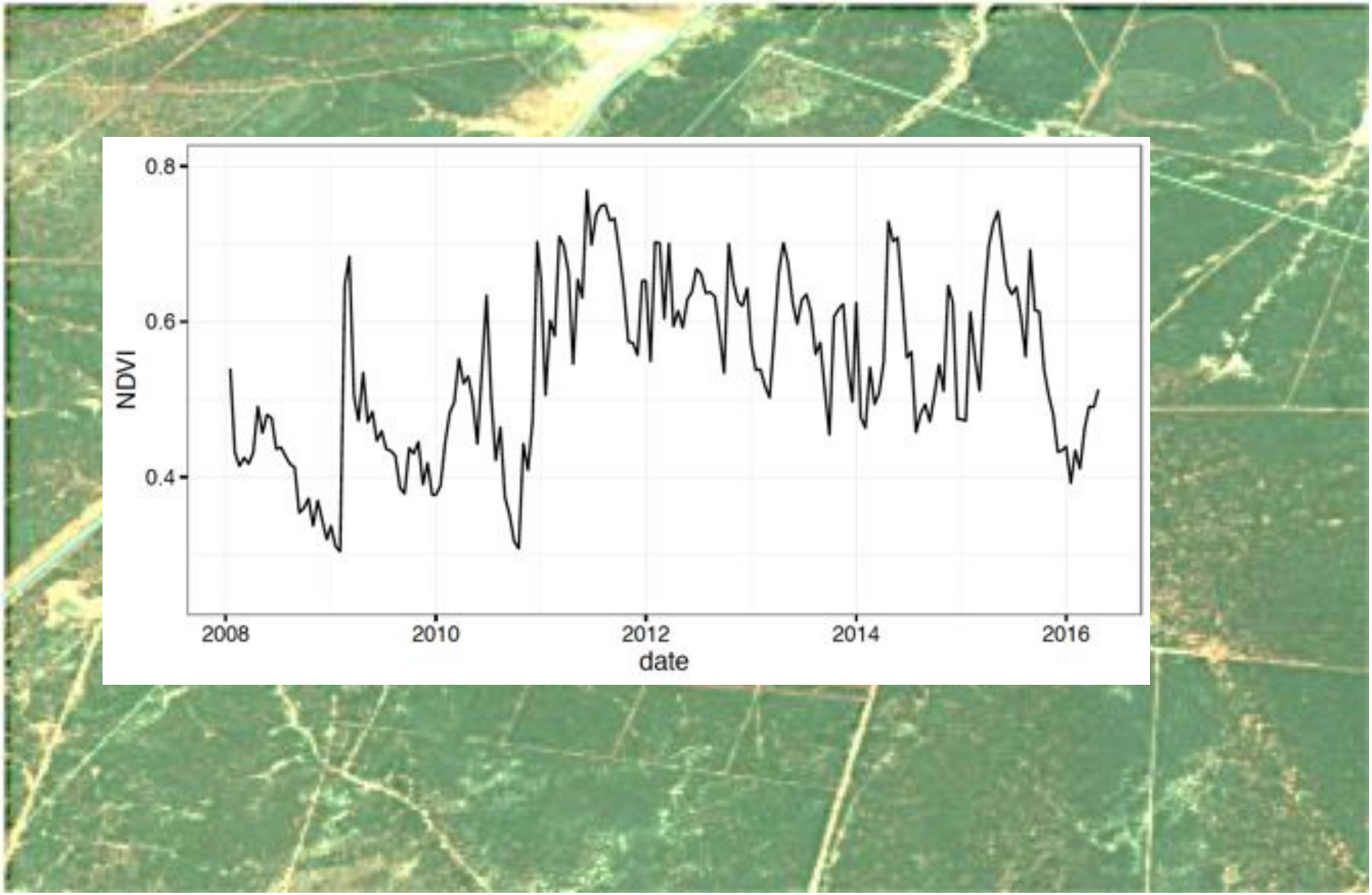

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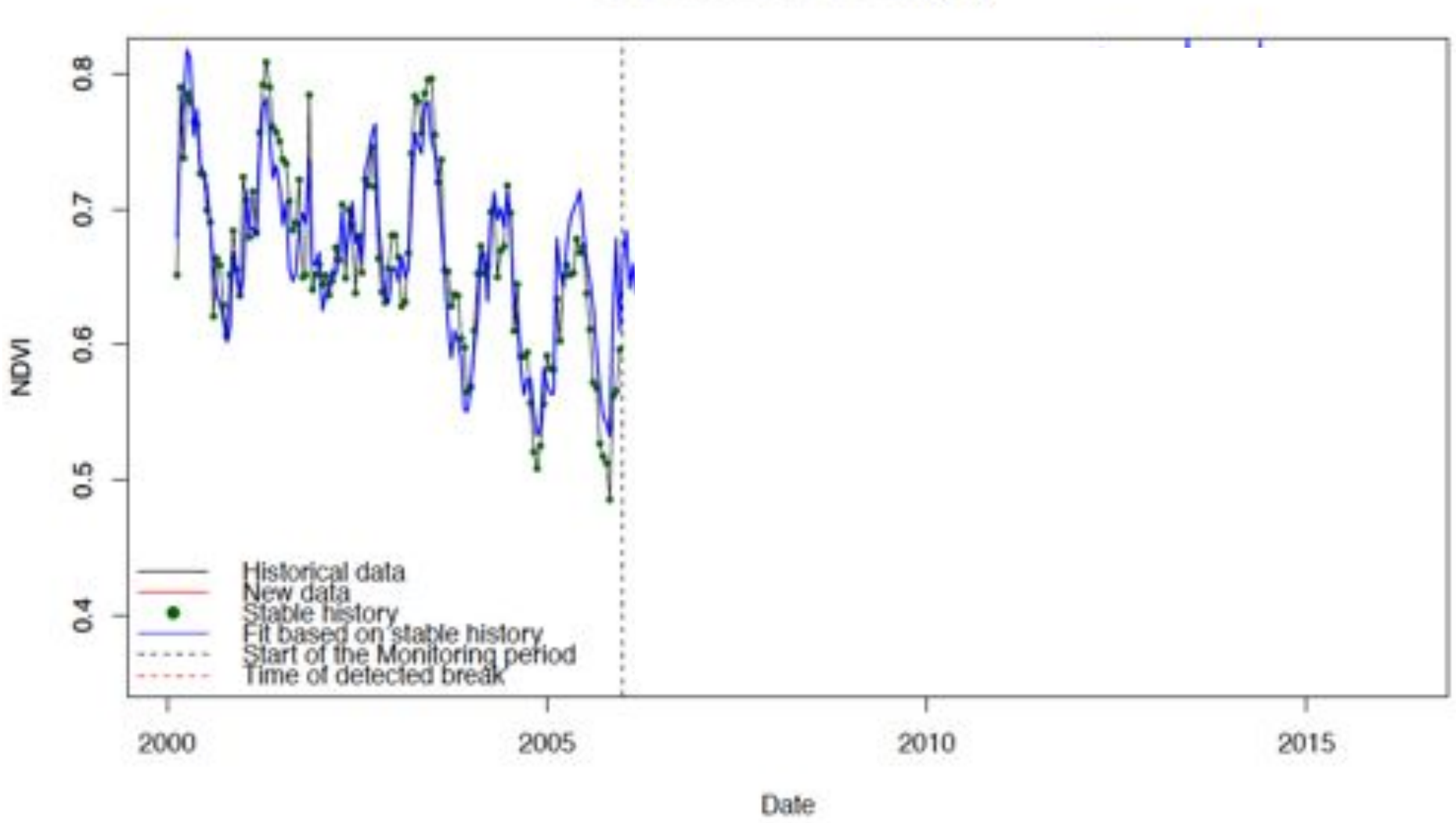

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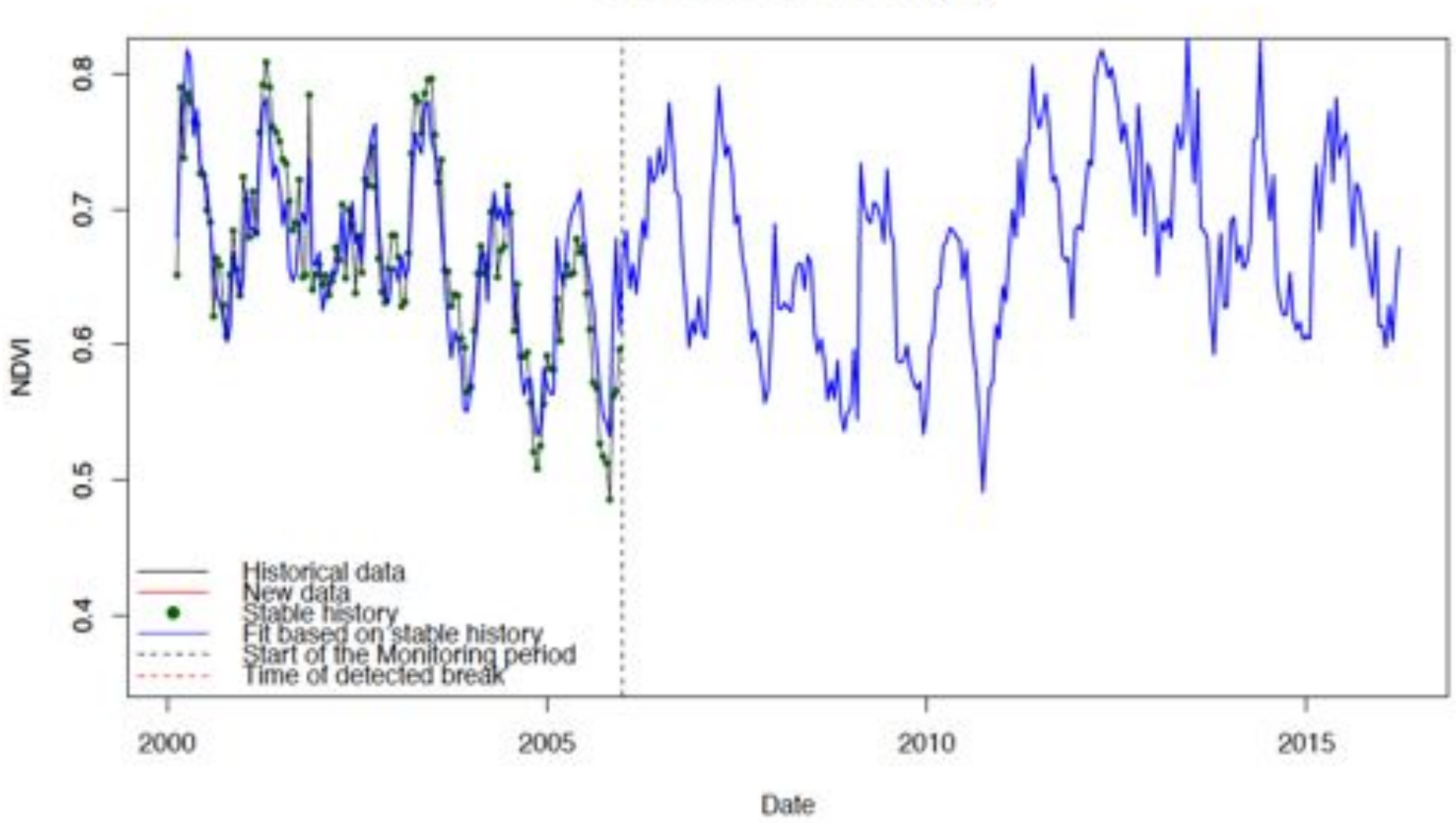

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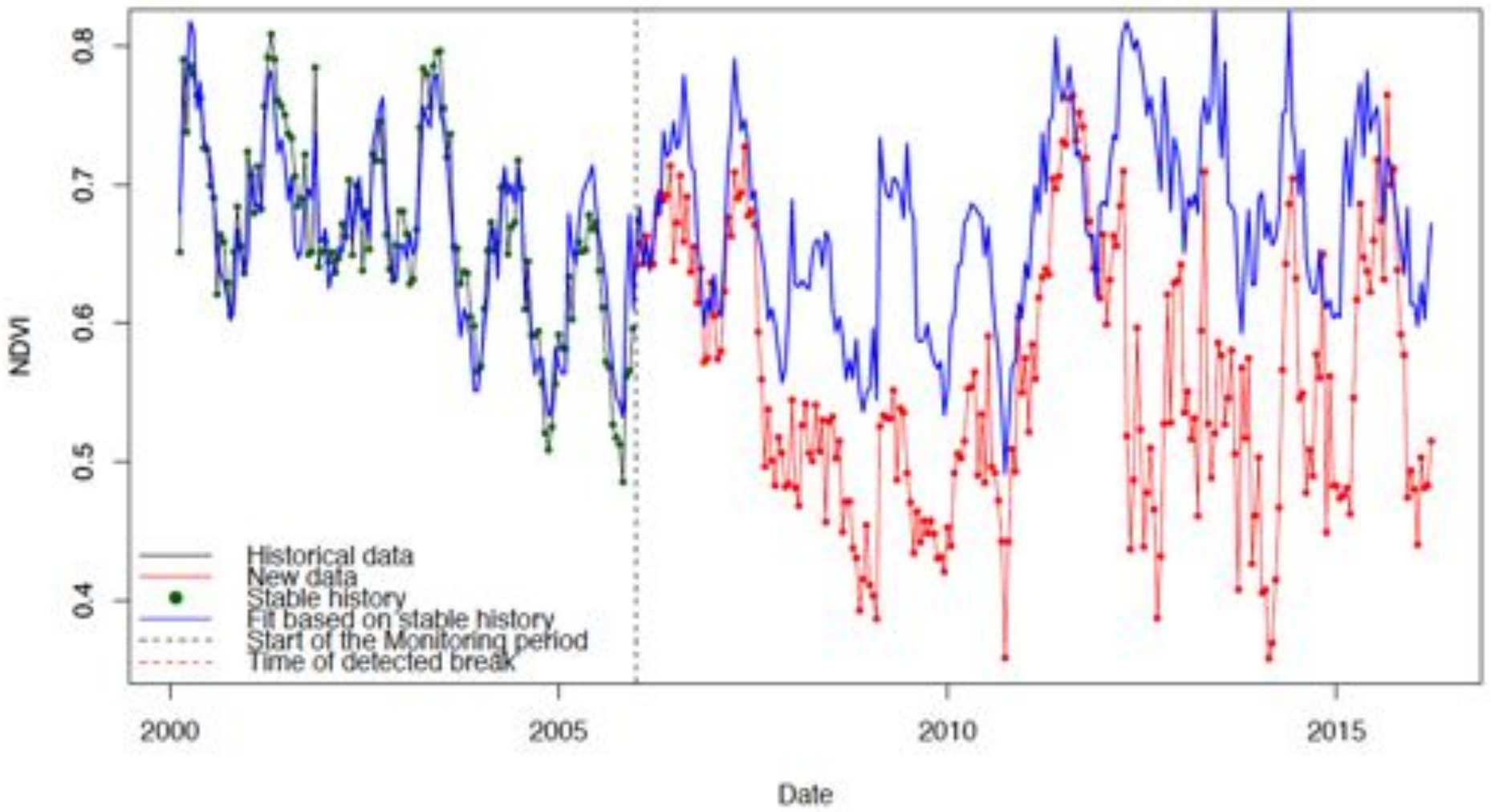

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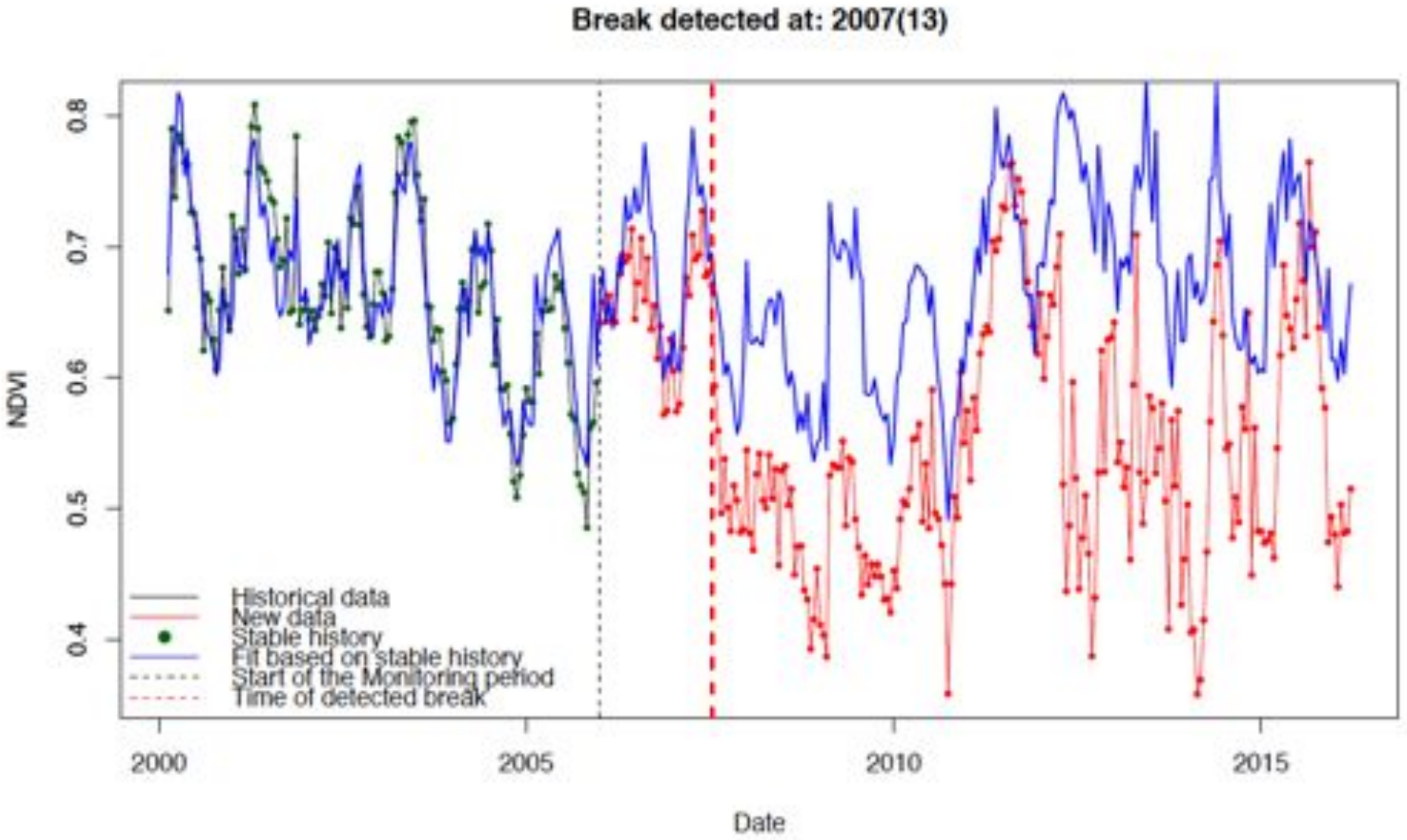

2006

2011

Google earth
Image © 2016 CNES / Astrium
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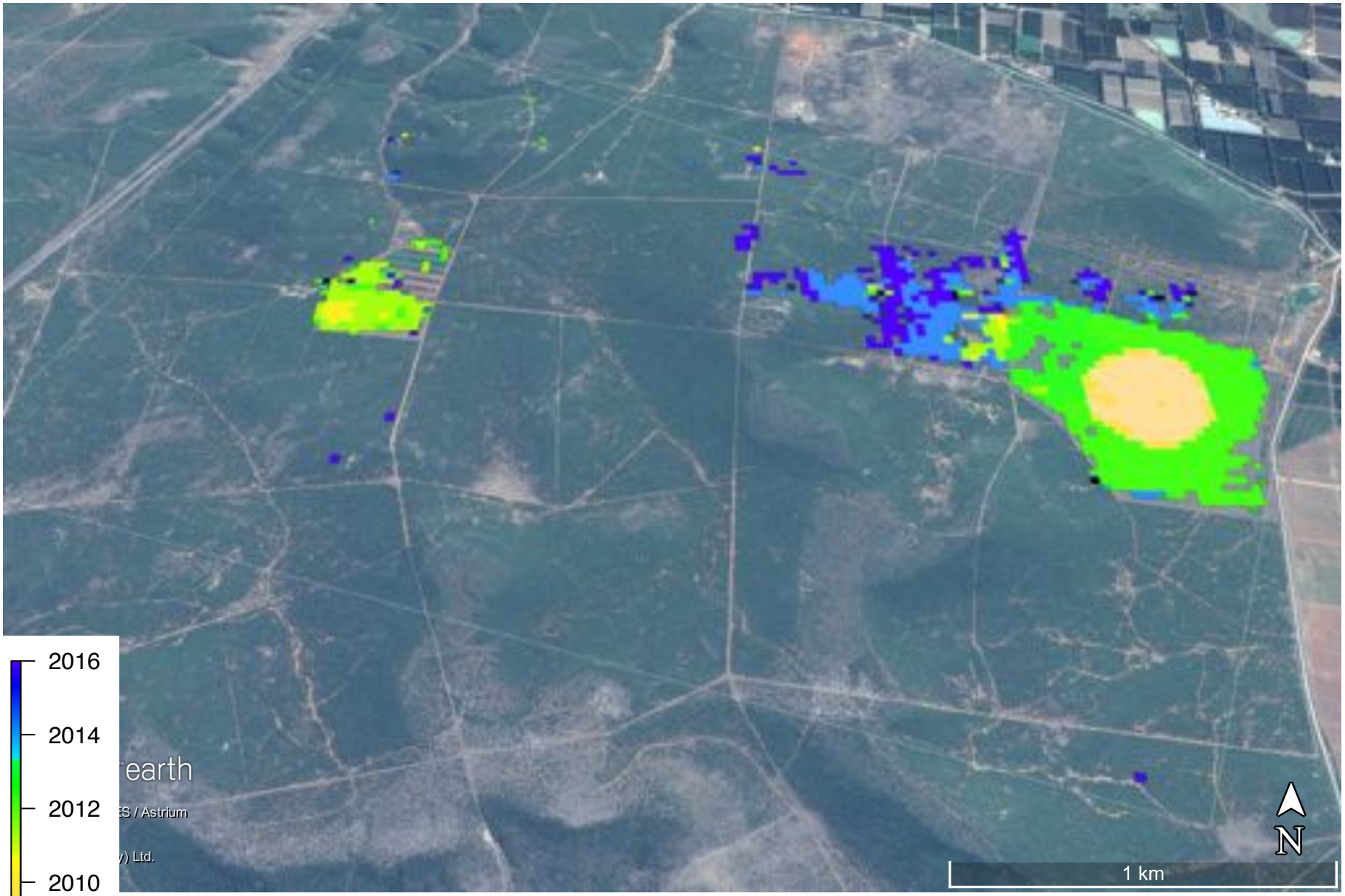
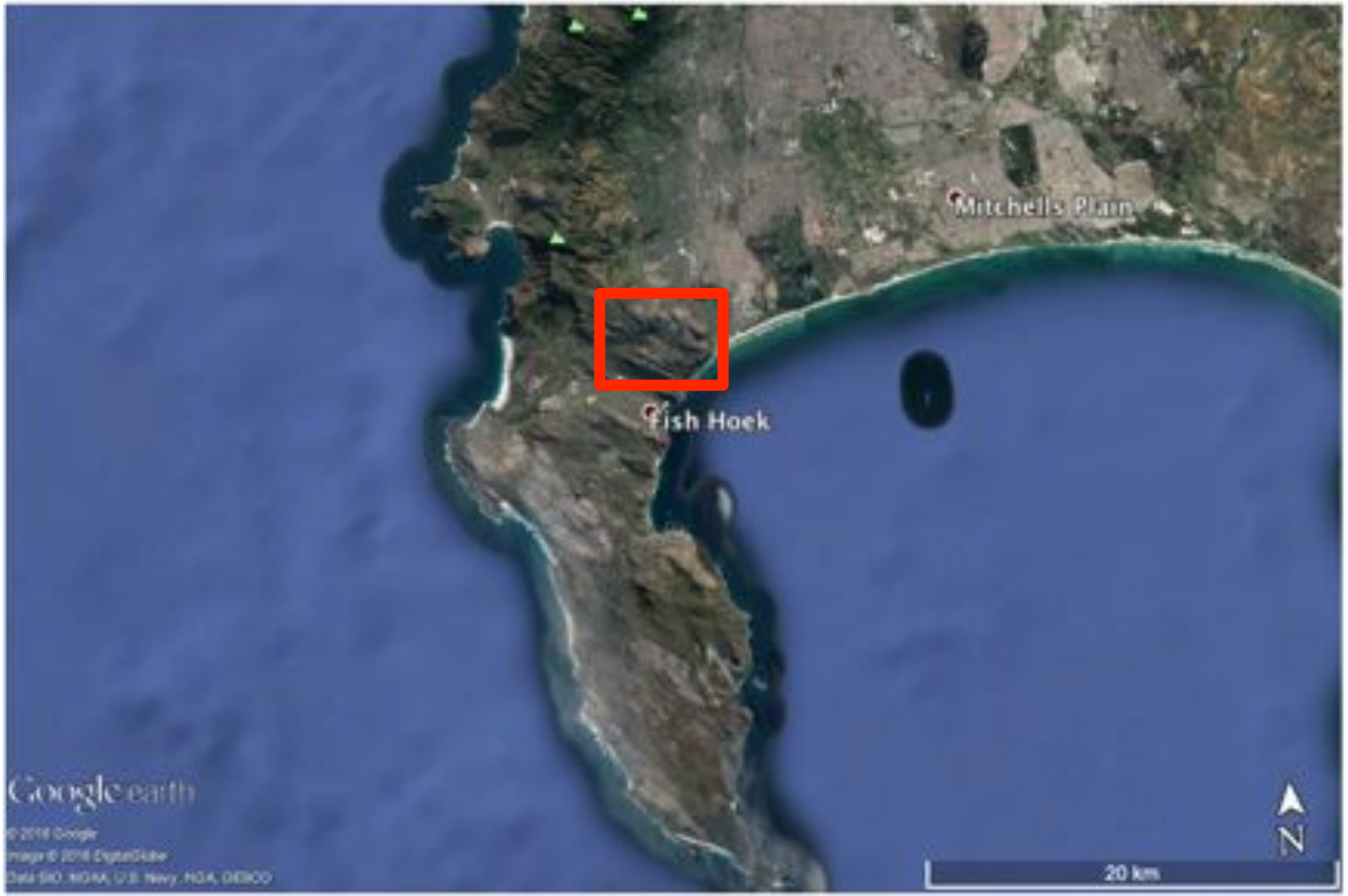
N
1 km

2016


2016
2014
2012
2010
2008
earth
ES / Astrium
) Ltd.
N
1 km


Mitchells Plain
Fish Hoek
Google earth
20 km
N

Fynbos_Cleared_6
Fynbos_Invaded_4
Fynbos_Invaded_47
Fynbos_No Aliens_2
Fynbos_No Aliens_5
Fynbos_No Aliens_3
Fynbos_No Aliens_1
hoek
Fynbos_Cleared_7
Fynbos_No Aliens_4
Fynbos_Invaded_8
Google earth
© 2016 Google
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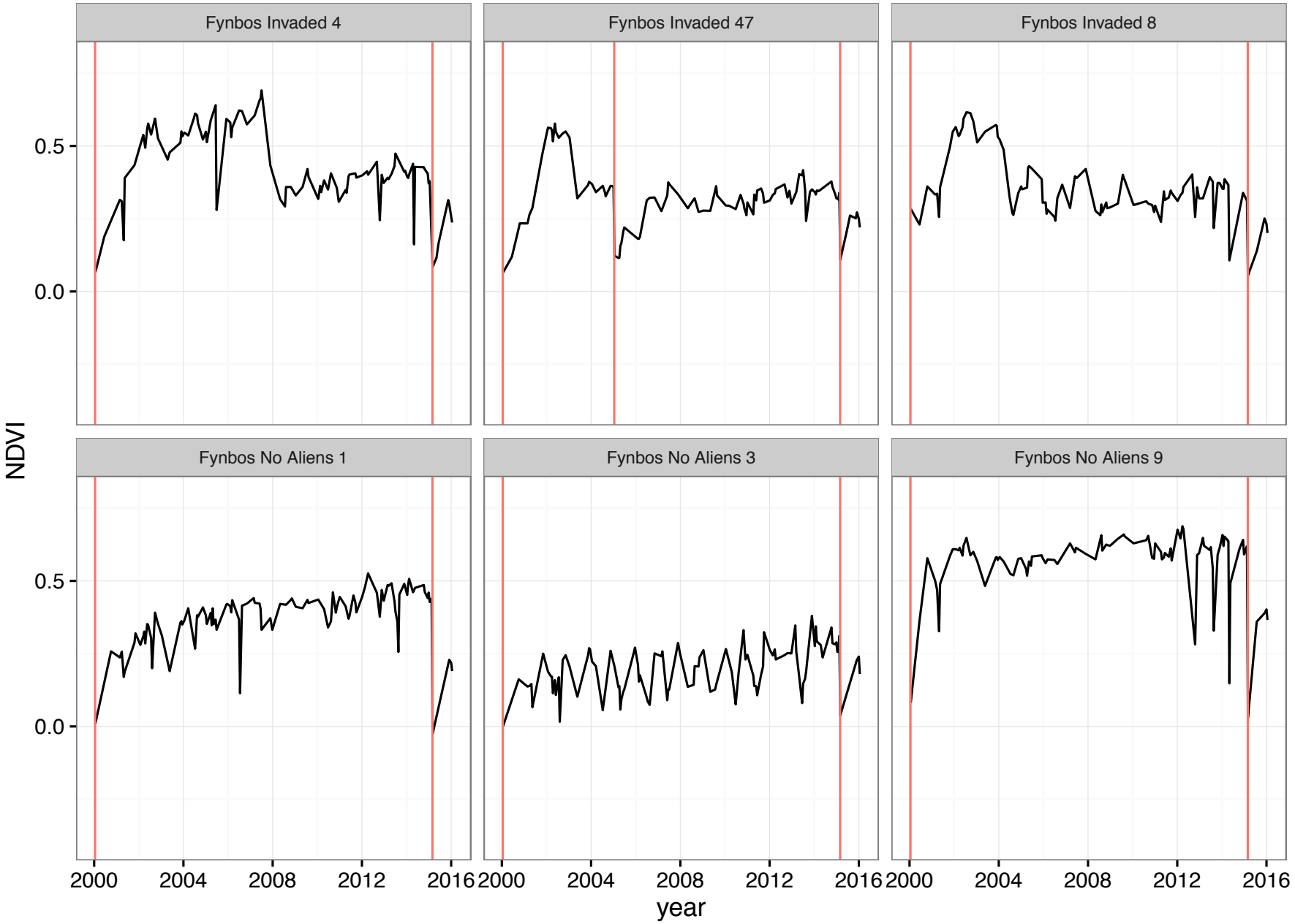
Image © 2016 DigitalGlobe
N
1 km


Fynbos Invaded 4
Fynbos Invaded 47
Fynbos Invaded 8
Fynbos No Aliens 1
Fynbos No Aliens 3
Fynbos No Aliens 9
NDVI
0.5
0.0
2000
2004
2008
2012
2016
year

Can we make this operational?

Great potential for monitoring and enforcement

Reference sites needed

IT nightmare ~ CFR is about 1 000 000 000 000 pixels at 30m resolution