Base de Dados Navigator

DATAS ESTIMADAS DE CORTE

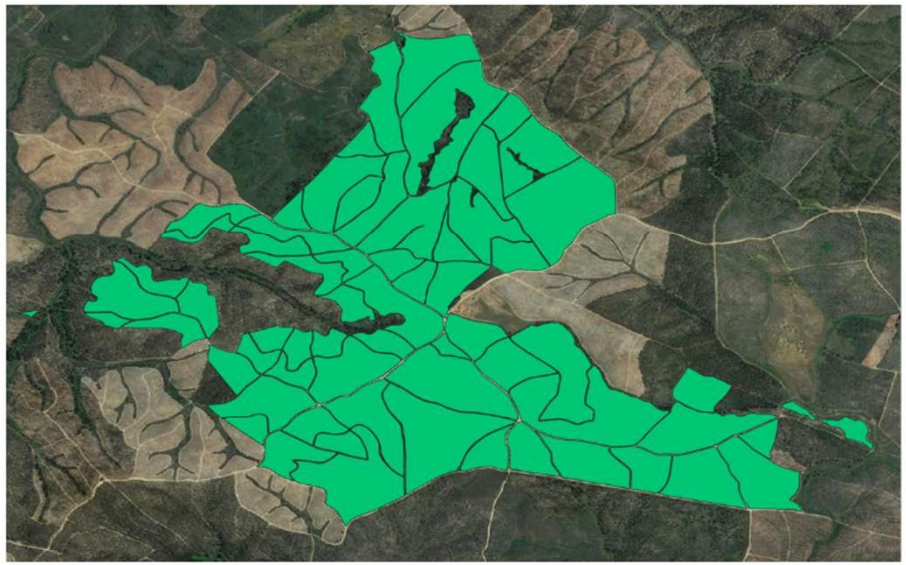
Datas de corte Navigator

Limitações

- Datas de corte não exactas - dia 15 de cada mês
- Maior área = maior incerteza nas datas de corte
    - Desfasamento de 1 / 1.5 semana

Desafio

- Associar data de corte a cada ‘sub talhão’



53002-T001_EG

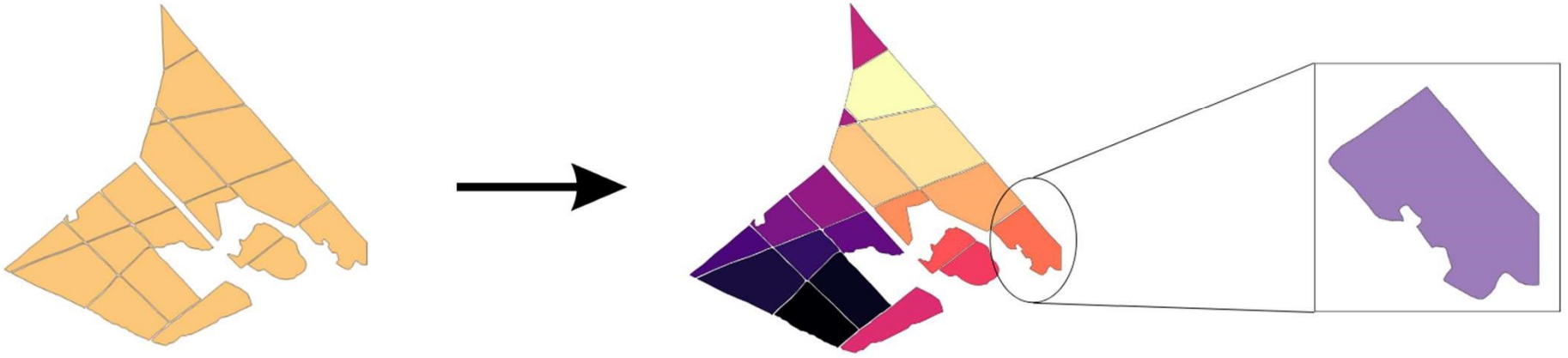
Estimar Datas de Corte

Ao nível do talhão

1. Converter shapefile from multipart to singlepart
2. Obter a primeira e última data de corte to talhão
3. Obter a mediana do NDVI para cada sub-talhão e cada data S2
4. Calcular a maior queda de NDVI e a respetiva data
5. Identificar a data de corte mais próxima da data da maior queda

Estimar Datas de Corte

1 - Converter o shapefile para singlepart com 'id' para cada sub-talhão 50445-T001_EG



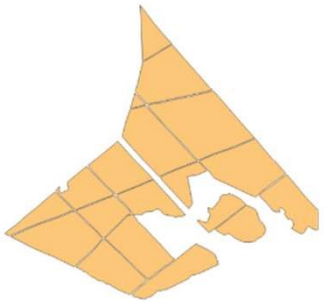
polígono multipart

polígono singlepart

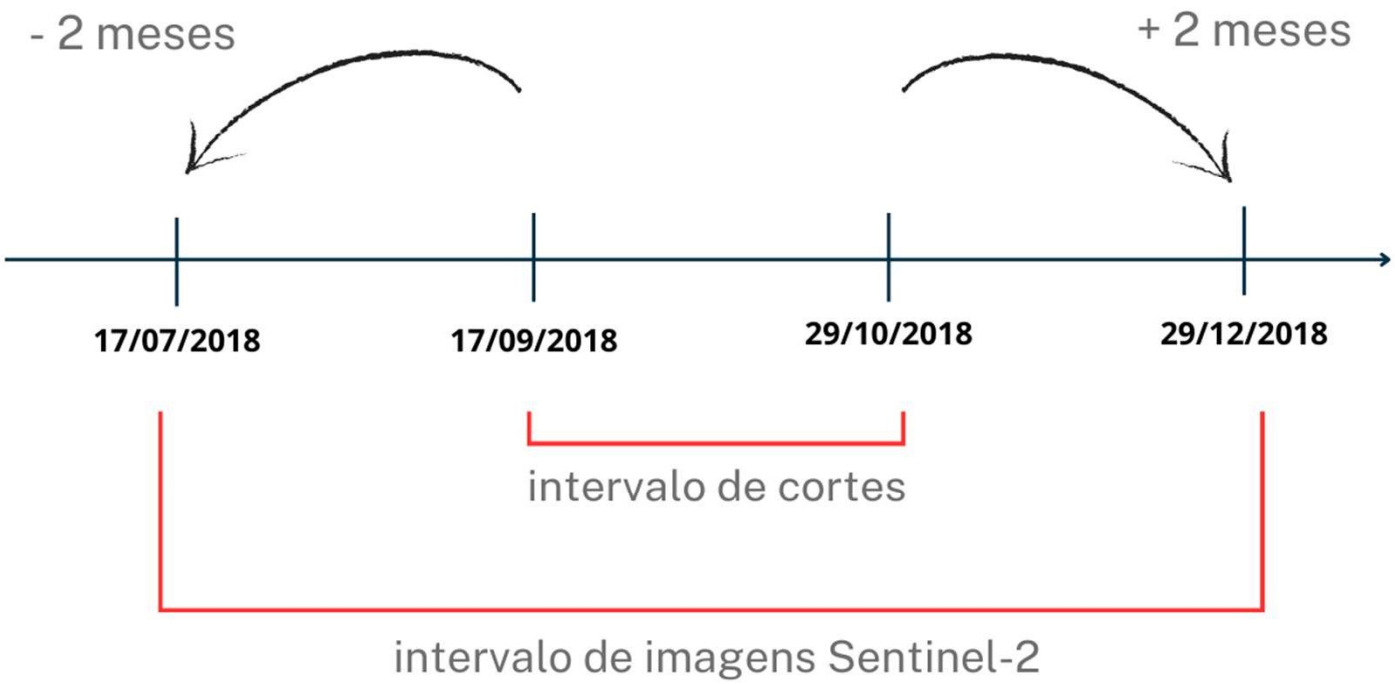
id
50445-T001_EG_14

Estimar Datas de Corte

2 - Obter a data de inicio e fim de corte da base de dados Navigator 50445-T001_EG



polígono multipart



Estimar Datas de Corte

3 - Obter a mediana do NDVI para cada sub-talhão, dentro do intervalo de imagens 50445-T001_EG

date	dt_plant	dt_referen	forma_plan	id	id_gleba	idade_plan	idade_ref	median	ocupacao
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_17	50445-T001...		2.9	0.431271894...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_16	50445-T001...		2.9	0.383107375...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_19	50445-T001...		2.9	0.37016494...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_18	50445-T001...		2.9	0.39143267...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_05	50445-T001...		2.9	0.43854620...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_04	50445-T001...		2.9	0.43024640...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_07	50445-T001...		2.9	0.43681092...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_06	50445-T001...		2.9	0.41565968...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_01	50445-T001...		2.9	0.436611710...	Eucalipto glo...
2018-07-19		2020-11-27	Seminal (indif...	50445-T001_EG_03	50445-T001...		2.9	0.40862214...	Eucalipto glo...

Estimar Datas de Corte

4 - Criar serie temporal para cada sub-talhão

50445-T001_EG

datas S2

id	20180619	20180624	20180709	20180719	20180729	20180808	20180813	20180818
50445-T001_EG_01	0.591855258...	0.56524389...	0.54433921...	0.538051164...	0.52657307...	0.54940699...	0.54810849...	0.55370258...
50445-T001_EG_02	0.575122075...	0.55095096...	0.534012113...	0.524847331...	0.52863263...	0.54598130...	0.54202264...	0.546195727...
50445-T001_EG_03	0.55166542...	0.52455142...	0.50872749...	0.50684664...	0.50889910...	0.52850588...	0.53025536...	0.52809818...
50445-T001_EG_04	0.587544122...	0.556501801...	0.539597315...	0.52874636...	0.53441402...	0.55519928...	0.54789004...	0.54958019...
50445-T001_EG_05	0.57294870...	0.53613253...	0.53534300...	0.54386133...	0.55126445...	0.572771504...	0.56395290...	0.567738162...
50445-T001_EG_06	0.56694082...	0.53945024...	0.520153164...	0.50869273...	0.50820960...	0.52431693...	0.52082922...	0.526459157...
50445-T001_EG_07	0.585197281...	0.55325753...	0.54539624...	0.54100039...	0.54470926...	0.56092384...	0.55643437...	0.545488911...

sub-talhões

Estimar Datas de Corte

4 - Calcular a maior queda de NDVI entre datas consecutivas e a respetiva data
50445-T001_EG

id	id_gleba	20181002	20181007	20181017	20181022	biggest_drop_NDVI	date_of_biggest_drop
50445-T001_EG_01	50445-T001_EG	0.46995975...	0.34255452...	0.27298325...	0.23389735...	-0.1274052363201...	2018-10-07
50445-T001_EG_02	50445-T001_EG	0.375729031...	0.314862149...	0.26482920...	0.23386344...	-0.1625304966187...	2018-10-02
50445-T001_EG_03	50445-T001_EG	0.55973492...	0.39769900...	0.277708766...	0.23652905...	-0.1620359217569...	2018-10-07
50445-T001_EG_04	50445-T001_EG	0.52660527...	0.362417711...	0.28008397...	0.24097007...	-0.1641875625829...	2018-10-07
50445-T001_EG_05	50445-T001_EG	0.63001966...	0.523015144...	0.313108770...	0.25352775...	-0.2099063747708...	2018-10-17

Estimar Datas de Corte

5 - Calcular a maior queda de NDVI entre datas consecutivas e a respetiva sua data
50445-T001_EG

id	id_gleba	20181002	20181007	20181017	20181022	biggest_drop_NDVI	date_of_biggest_drop
50445-T001_EG_01	50445-T001_EG	0.46995975...	0.34255452...	0.27298325...	0.23389735...	-0.1274052363201...	2018-10-07
50445-T001_EG_02	50445-T001_EG	0.375729031...	0.314862149...	0.26482920...	0.23386344...	-0.1625304966187...	2018-10-02
50445-T001_EG_03	50445-T001_EG	0.55973492...	0.39769900...	0.277708766...	0.23652905...	-0.1620359217569...	2018-10-07
50445-T001_EG_04	50445-T001_EG	0.52660527...	0.362417711...	0.28008397...	0.24097007...	-0.1641875625829...	2018-10-07
50445-T001_EG_05	50445-T001_EG	0.63001966...	0.523015144...	0.313108770...	0.25352775...	-0.2099063747708...	2018-10-17

0.46995 - 0.34255 = -0.1274

(02/10/2018) (07/10/2018)

Estimar Datas de Corte

5 - Calcular a maior queda de NDVI entre datas consecutivas e a respetiva sua data
50445-T001_EG

id	id_gleba	20181002	20181007	20181017	20181022	biggest_drop_NDVI	date_of_biggest_drop
50445-T001_EG_01	50445-T001_EG	0.46995975...	0.34255452...	0.27298325...	0.23389735...	-0.1274052363201...	2018-10-07
50445-T001_EG_02	50445-T001_EG	0.375729031...	0.314862149...	0.26482920...	0.23386344...	-0.1625304966187...	2018-10-02
50445-T001_EG_03	50445-T001_EG	0.55973492...	0.39769900...	0.277708766...	0.23652905...	-0.1620359217569...	2018-10-07
50445-T001_EG_04	50445-T001_EG	0.52660527...	0.362417711...	0.28008397...	0.24097007...	-0.1641875625829...	2018-10-07
50445-T001_EG_05	50445-T001_EG	0.63001966...	0.523015144...	0.313108770...	0.25352775...	-0.2099063747708...	2018-10-17

0.46995 - 0.34255 = -0.1274

(02/10/2018) (07/10/2018)

Estimar Datas de Corte

5 - Calcular a maior queda de NDVI entre datas consecutivas e a respetiva sua data
50445-T001_EG

id	id_gleba	20181002	20181007	20181017	20181022	biggest_drop_NDVI	date_of_biggest_drop
50445-T001_EG_01	50445-T001_EG	0.46995975...	0.34255452...	0.27298325...	0.23389735...	-0.1274052363201...	2018-10-07
50445-T001_EG_02	50445-T001_EG	0.375729031...	0.314862149...	0.26482920...	0.23386344...	-0.1625304966187...	2018-10-02
50445-T001_EG_03	50445-T001_EG	0.55973492...	0.39769900...	0.277708766...	0.23652905...	-0.1620359217569...	2018-10-07
50445-T001_EG_04	50445-T001_EG	0.52660527...	0.362417711...	0.28008397...	0.24097007...	-0.1641875625829...	2018-10-07
50445-T001_EG_05	50445-T001_EG	0.63001966...	0.523015144...	0.313108770...	0.25352775...	-0.2099063747708...	2018-10-17

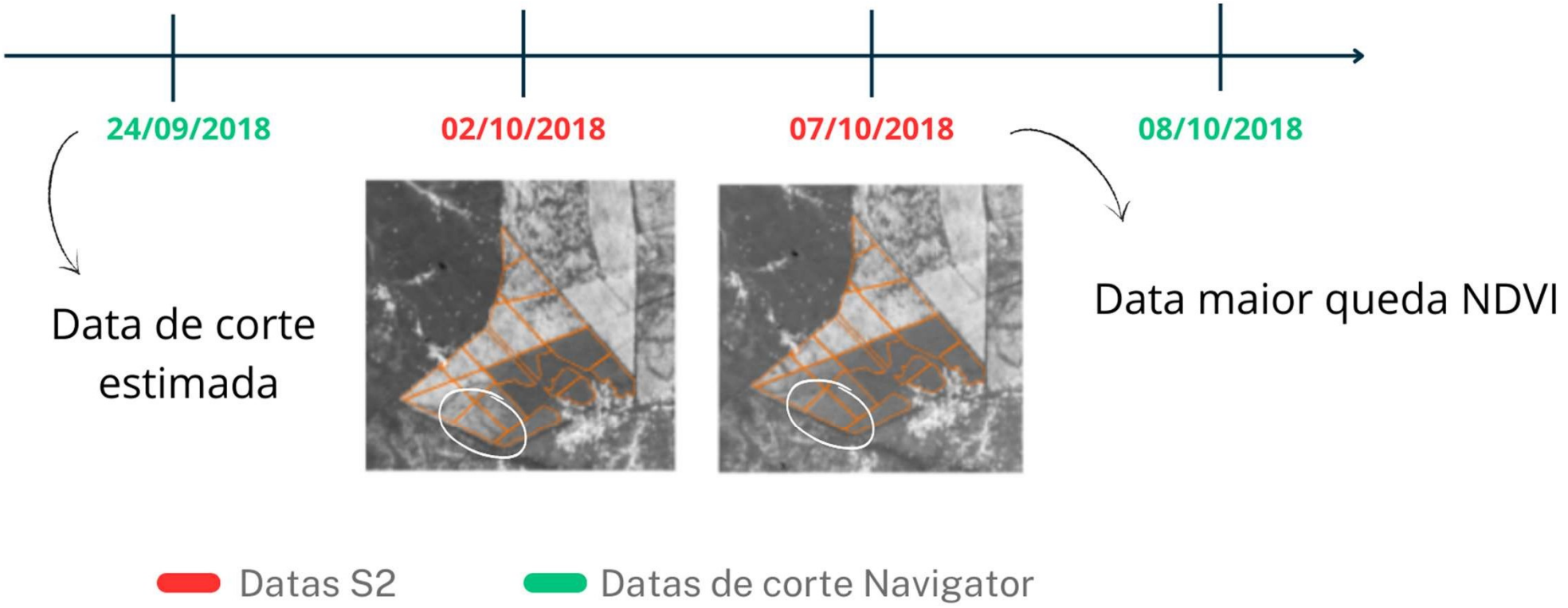
0.46995 - 0.34255 = -0.1274

(02/10/2018) (07/10/2018)

data de queda é a data mais recente

Estimar Datas de Corte

5 - Identificar a data de corte anterior mais próxima da data da queda de NDVI
50445-T001_EG



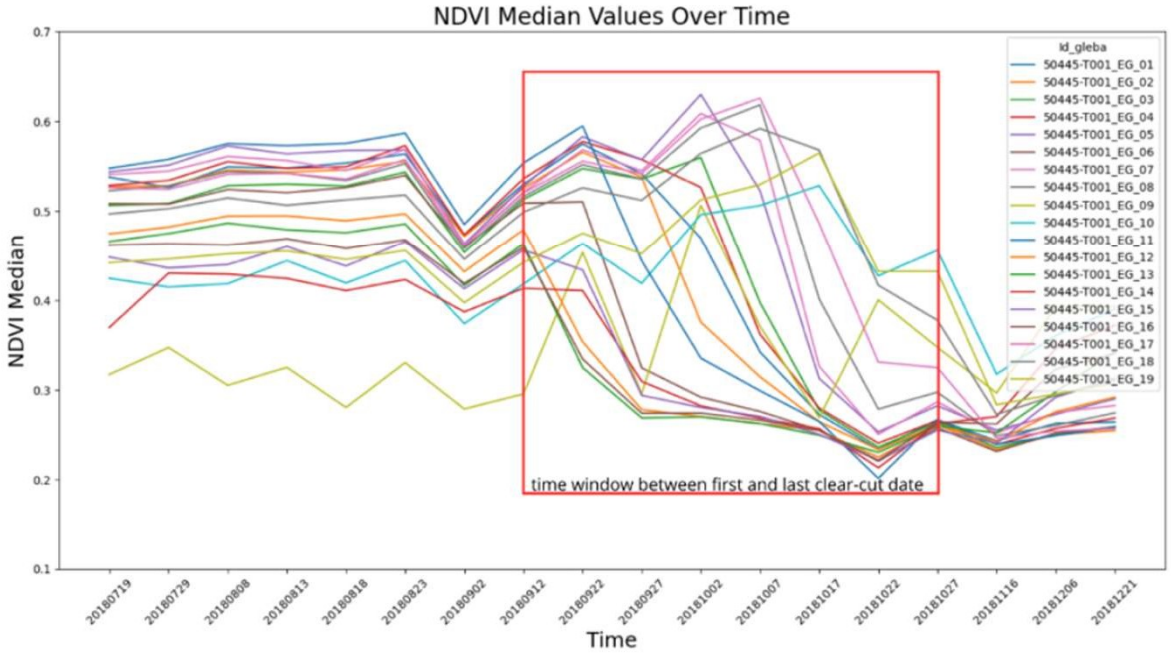
Estimar Datas de Corte

6 - Identificar a data de corte anterior mais próxima da data da queda de NDVI
50445-T001_EG

id	id_gleba	20181027	20181116	20181206	20181221	biggest_drop_NDVI	date_of_biggest_drop	estimated_date
50445-T001_EG_01	50445-T001_EG	0.26706620...	0.24357055...	0. 263073195...	0.264631062...	-0.1274052363201...	2018-10-07	2018-09-24
50445-T001_EG_02	50445-T001_EG	0.261415624...	0.23358956...	0.25055051...	0.254931529...	-0.1625304966187...	2018-10-02	2018-09-24
50445-T001_EG_03	50445-T001_EG	0.26404423...	0.236010185...	0.250467477...	0.259356141...	-0.1620359217569...	2018-10-07	2018-09-24
50445-T001_EG_04	50445-T001_EG	0.26624730...	0.23944619...	0.257377462...	0.268939391...	-0.1641875625829...	2018-10-07	2018-09-24
50445-T001_EG_05	50445-T001_EG	0.28257233...	0.25534907...	0.27309339...	0. 290249488...	-0.2099063747708...	2018-10-17	2018-10-15
50445-T001_EG_06	50445-T001_EG	0.25805630...	0.231778213...	0.252332214...	0.258839764...	-0.1856715247977...	2018-09-27	2018-09-24
50445-T001_EG_07	50445-T001_EG	0.286918155...	0.252166102...	0.275121347...	0.282853055...	-0.252280983848...	2018-10-17	2018-10-15
50445-T001_EG_08	50445-T001_EG	0.29775958...	0.24912896...	0. 260720371...	0.274661425...	-0.2165914705305...	2018-10-17	2018-10-15
50445-T001_EG_09	50445-T001_EG	0.347724317...	0.29683631...	0.39333136...	0.393402565...	-0.1785753736769...	2018-09-27	2018-09-24
50445-T001_EG_10	50445-T001_EG	0.456141715...	0.31780848...	0.36082701...	0.390581717...	-0.138333234803...	2018-11-16	2018-10-29
50445-T001_EG_11	50445-T001_EG	0.26695726...	0.23969098...	0.24925563...	0.258882158...	-0.150503354880...	2018-09-27	2018-09-24

Estimar Datas de Corte

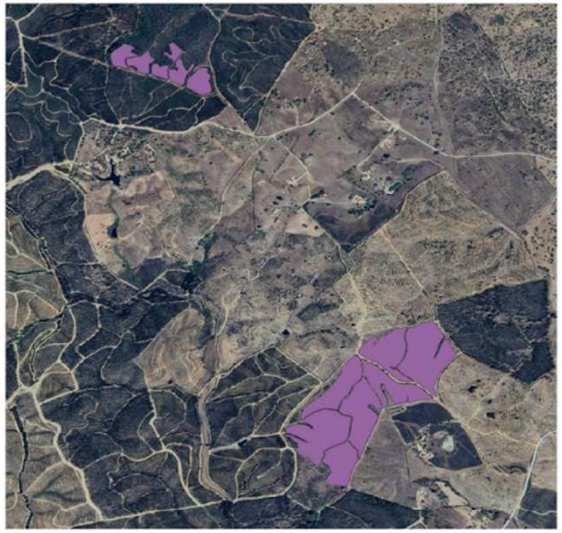
50445-T001_EG



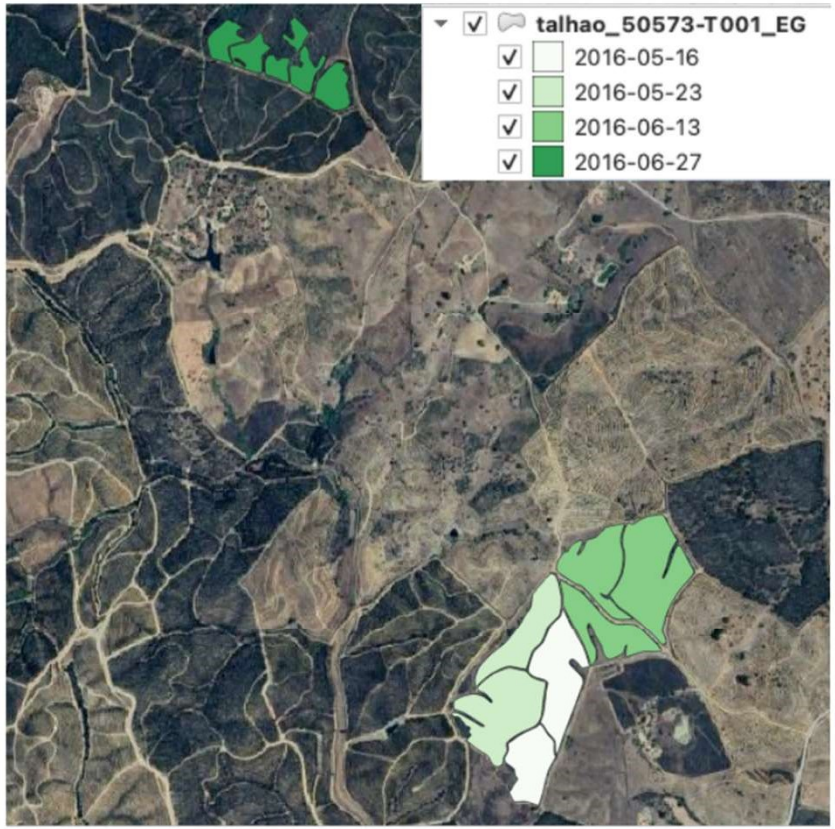
19 sub-talhões 7 datas de corte

Limitações

1 . Mais do que uma data de corte entre duas imagens Sentinel-2 50573-T001_EG

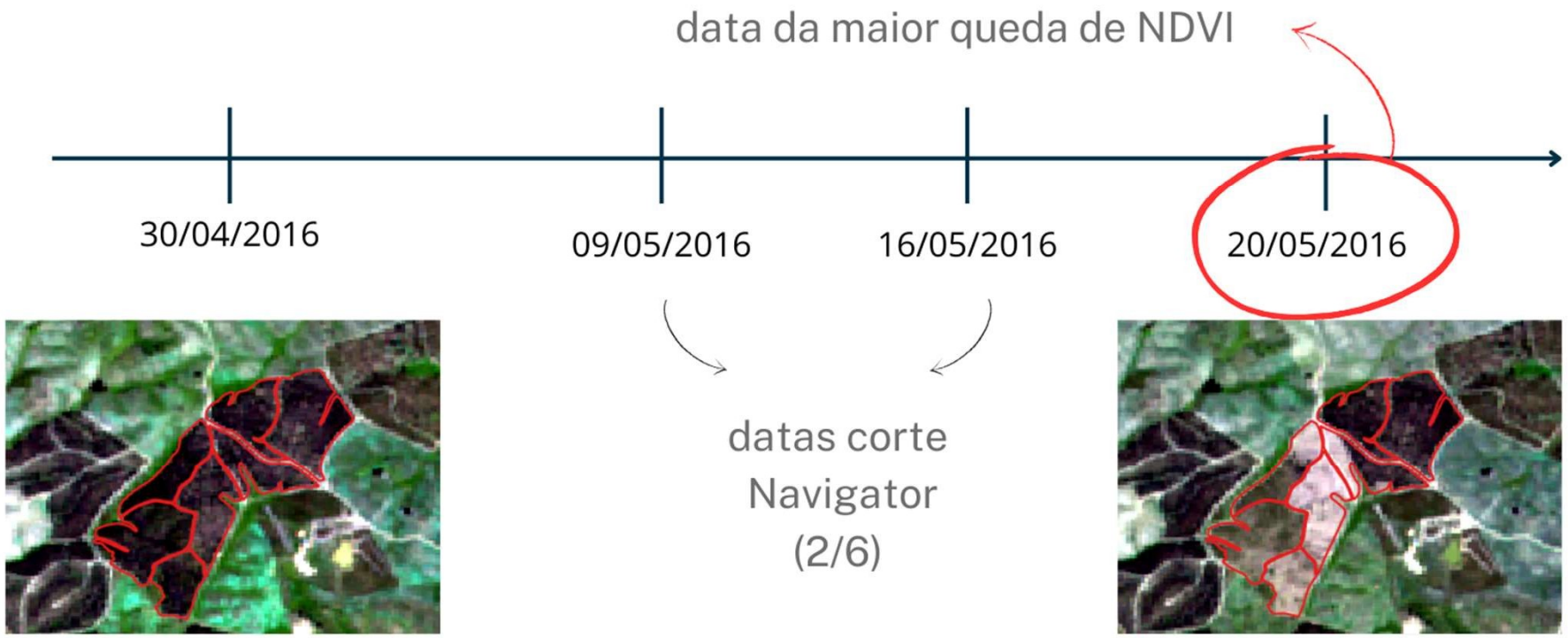


13 sub-talhões
6 datas de corte
cortes entre 09/05/2016 e 27/06/2016



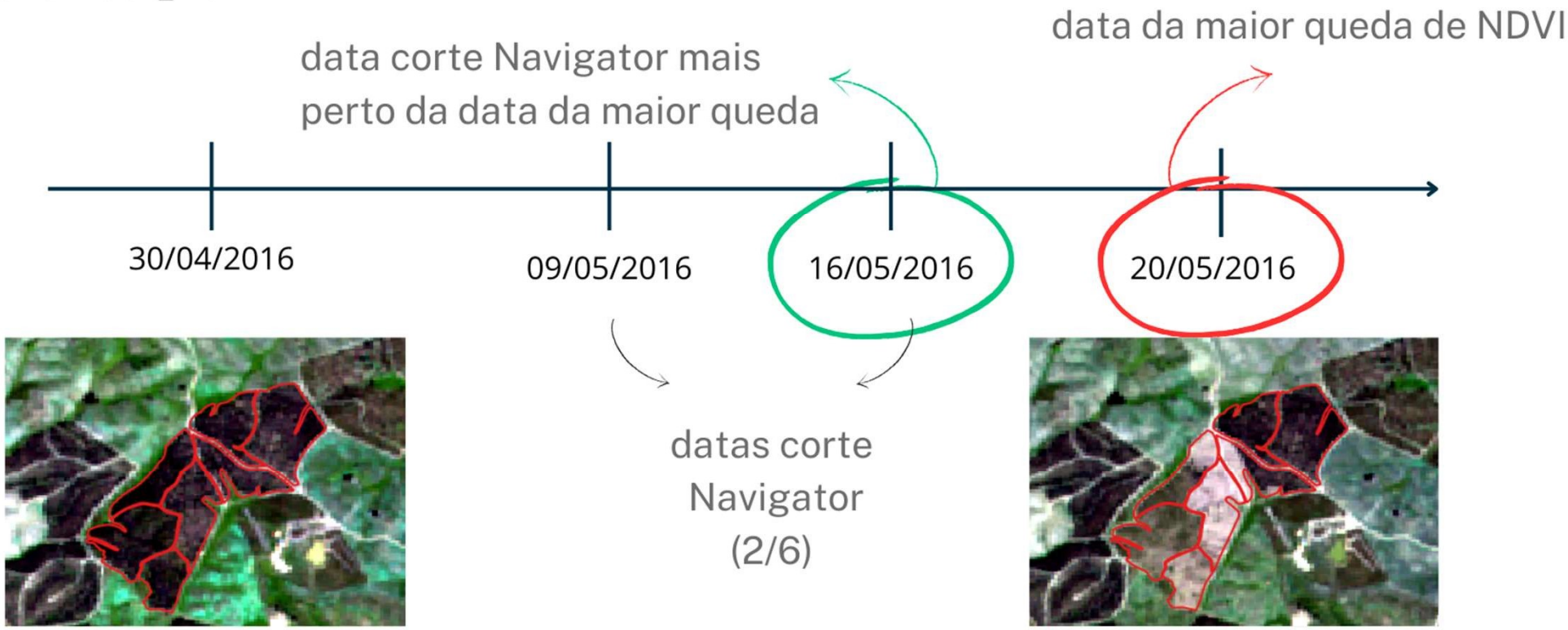
Limitações

1. Mais do que uma data de corte entre duas imagens Sentinel-2 50573-T001_EG



Limitações

1 . Mais do que uma data de corte entre duas imagens Sentinel-2 50573-T001_EG



Limitações

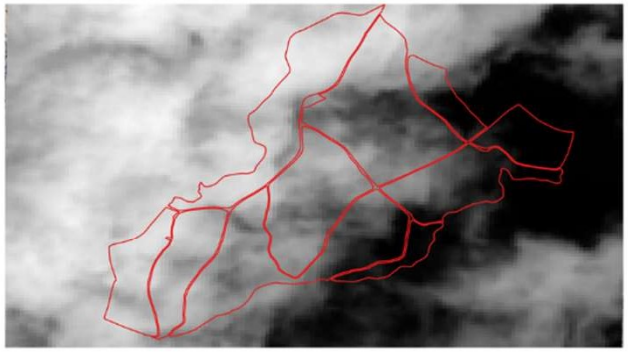
2. Imagens Sentinel-2 com nuvens
53010-T001_EG

id	id_gleba	date_20180331	date_20180405	date_20180417	date_20180510	date_20180512	date_20180515
53010-T001_...	53010-T001_...		0.46587803...	0.49304275...	0.36334576...		0.346910182...
53010-T001_...	53010-T001_...		0.43254452...	0.46690226...	0.32798489...		0.37379994...
53010-T001_...	53010-T001_...		0.44426641...	0.45221323...	0.31327268...		0.291877114...
53010-T001_...	53010-T001_...		0.46051309...	0.39708454...			0.28949360...
53010-T001_...	53010-T001_...		0.45424486...	0.455974715...			0.29788926...
53010-T001_...	53010-T001_...	0.26246753...	0.43254936...	0.37385935...		0.348025711...	0.28275746...
53010-T001_...	53010-T001_...	0.28613907...	0.411612043...	0.40855241...	0.37966537...	0.32900493...	0.42139515...
53010-T001_...	53010-T001_...		0.44628450...	0.47565935...	0.371761047...		0.419777017...
53010-T001_...	53010-T001_...		0.41099306...	0.381977922...	0.25678268...	0.23574468...	0.23926468...
53010-T001_...	53010-T001_...		0.43763036...	0.43351869...	0.20736994...	0.23428043...	0.25466873...

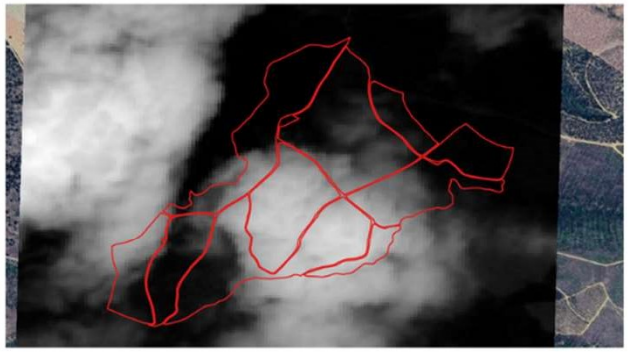
10 sub-talhões
6 datas de corte
cortes entre 30/04/2018 e 28/05/2018

Limitações

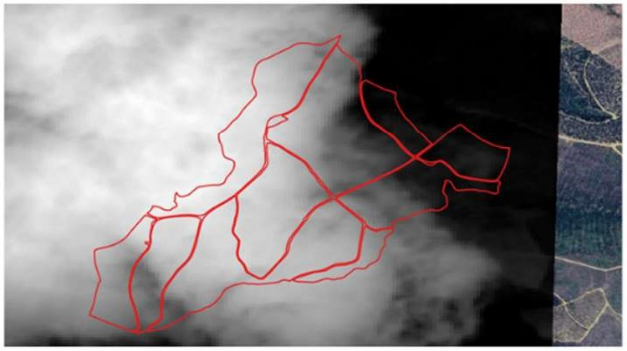
2. Imagens Sentinel-2 com nuvens
53010-T001_EG



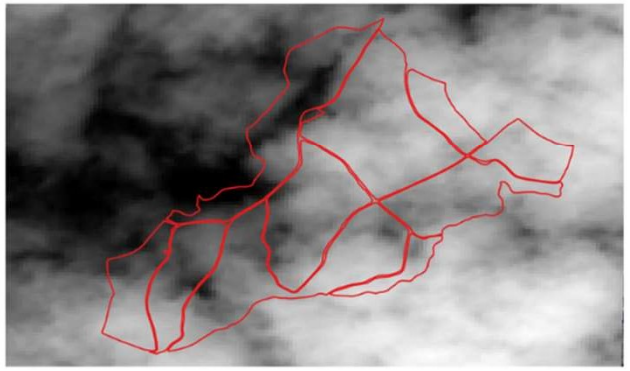
31/03/2018



10/05/2018



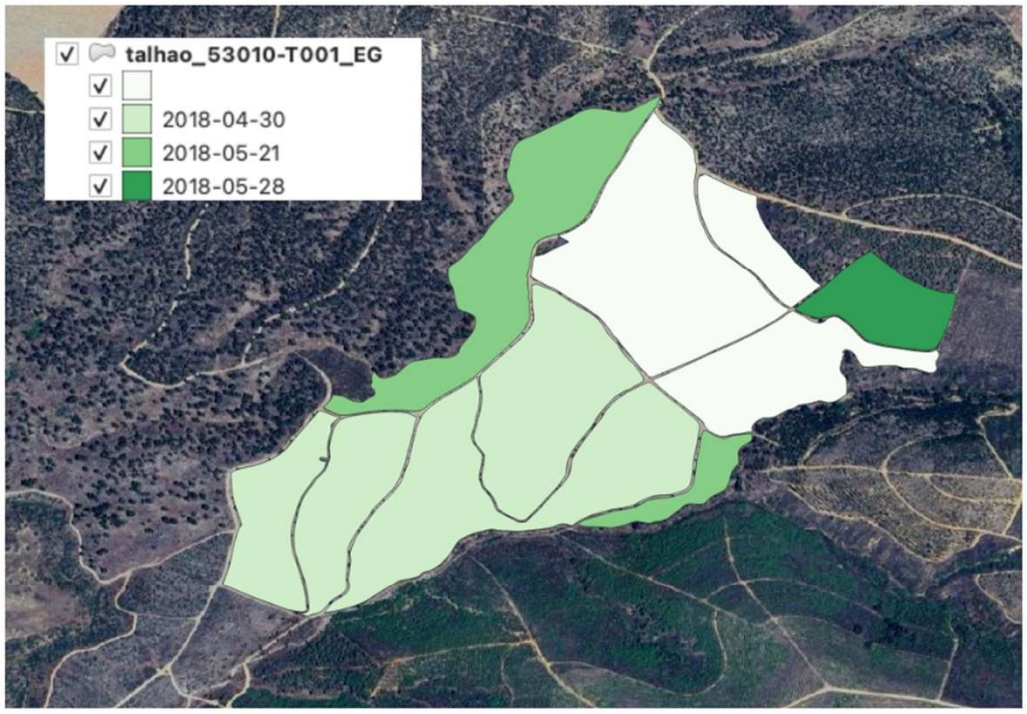
12/05/2018



11/06/2018

Limitações

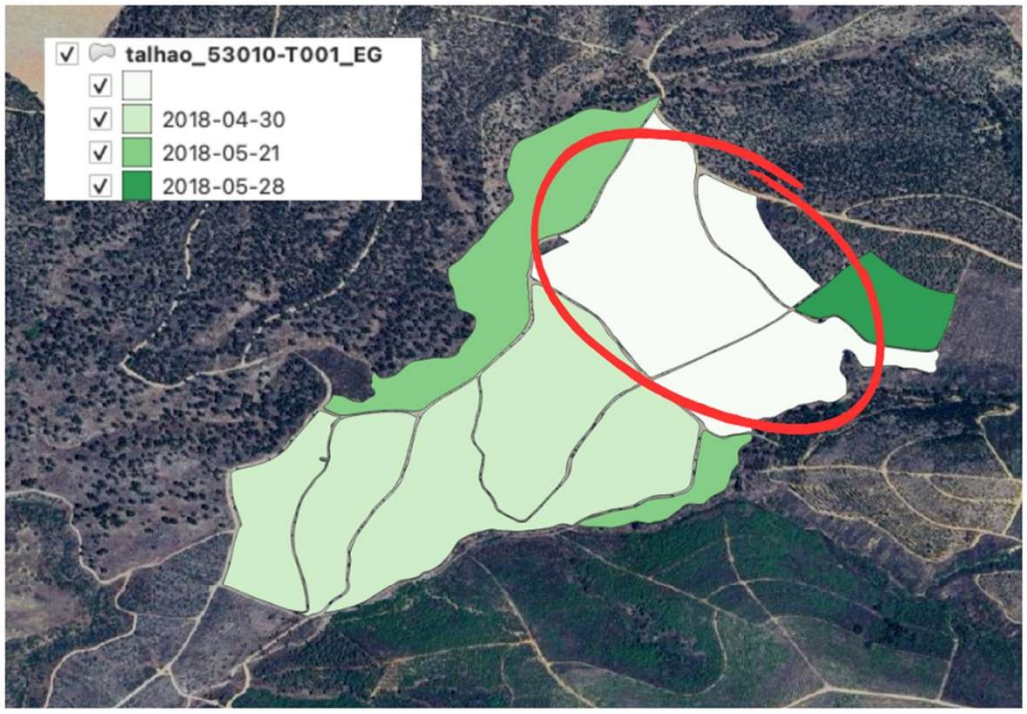
3. Data de queda de NDVI é anterior à primeira data de corte
53010-T001_EG



10 sub-talhões
6 datas de corte
cortes entre 30/04/2018 e 28/05/2018

Limitações

3. Data de queda de NDVI é anterior à primeira data de corte
53010-T001_EG

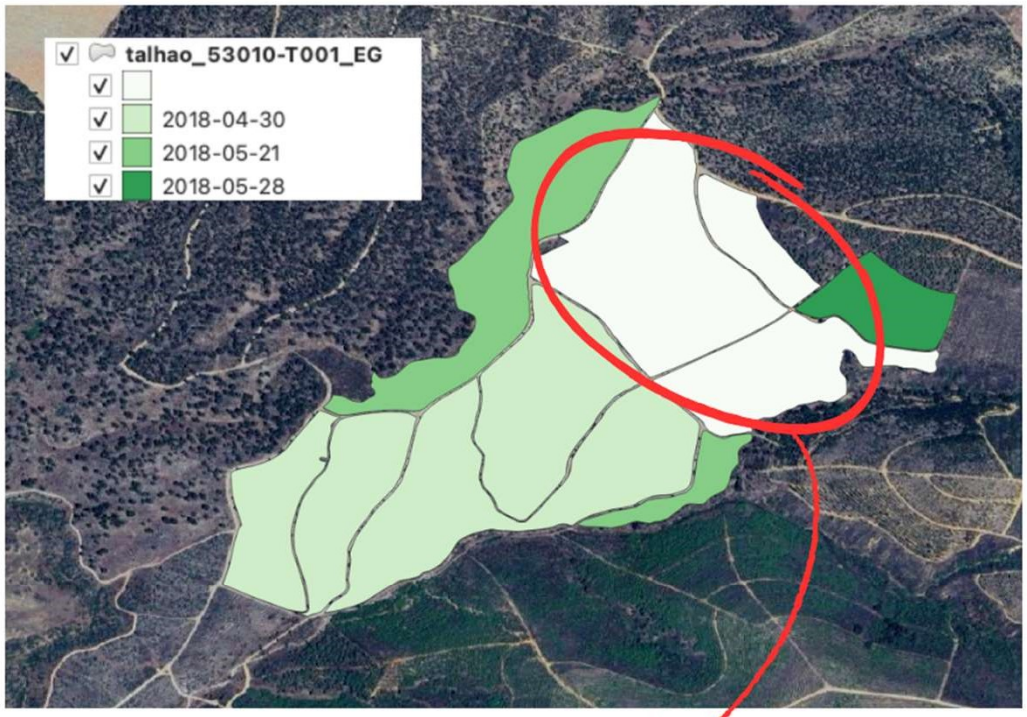


10 sub-talhões
6 datas de corte
cortes entre 30/04/2018 e 28/05/2018

Limitações

3. Data de queda de NDVI é anterior à primeira data de corte
53010-T001_EG

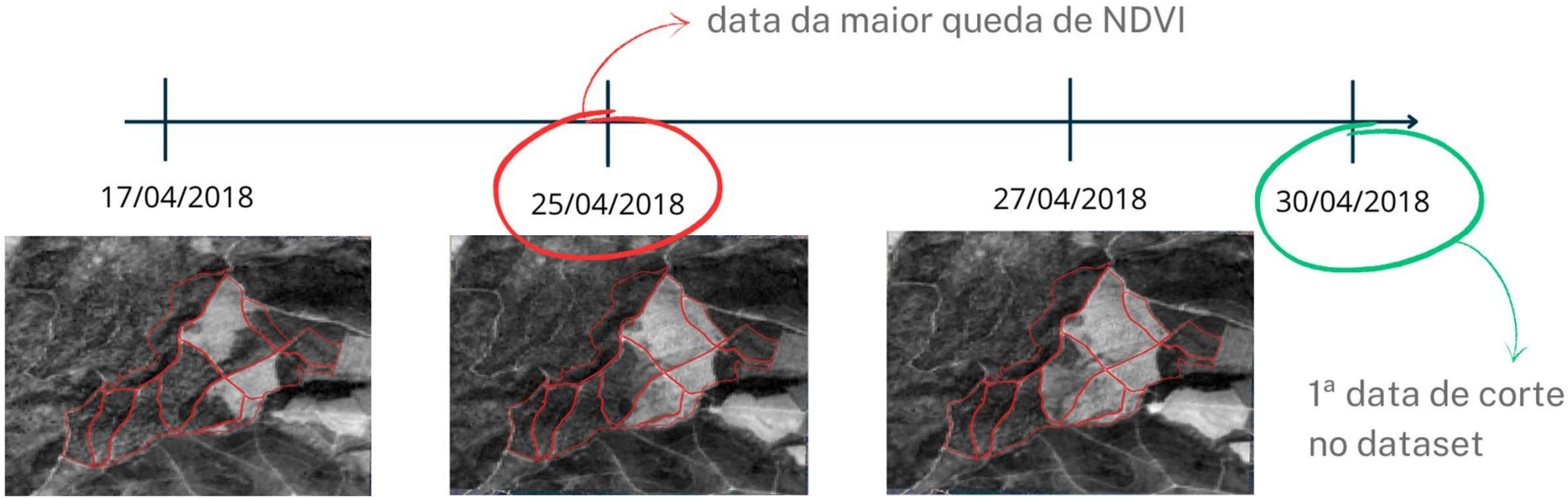
10 sub-talhões
6 datas de corte
cortes entre 30/04/2018 e 28/05/2018



Data da maior queda de NDVI
25/04/2018

Limitações

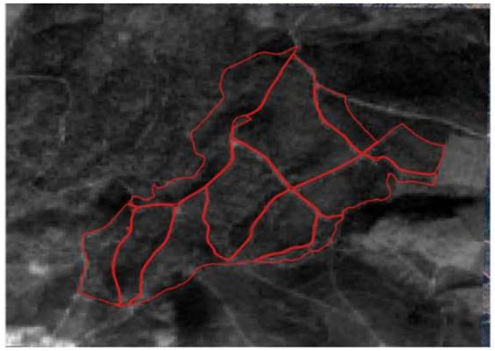
50573-T001_EG



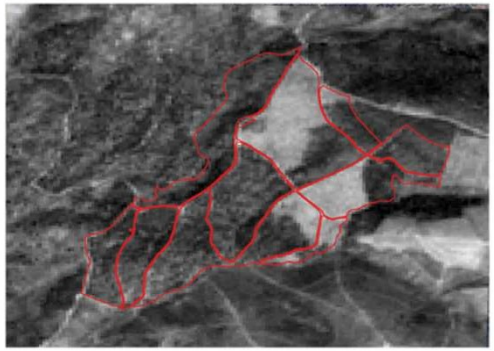
Incerteza das datas de corte da Navigator

Limitações

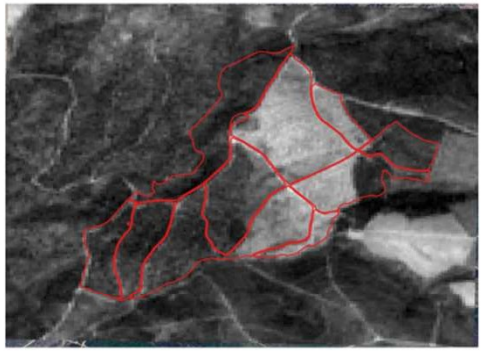
53010-T001_EG



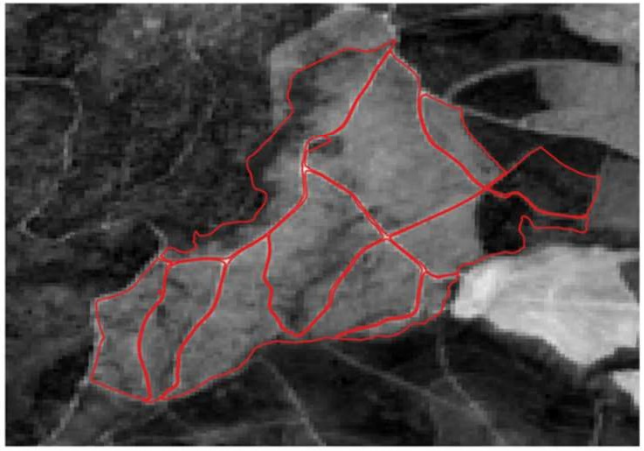
05/04/2018



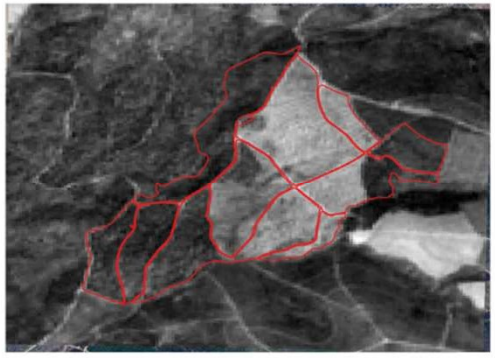
17/04/2018



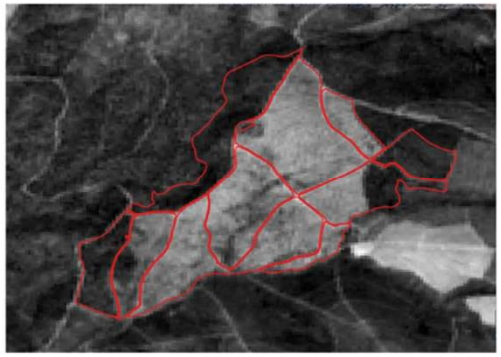
25/04/2018



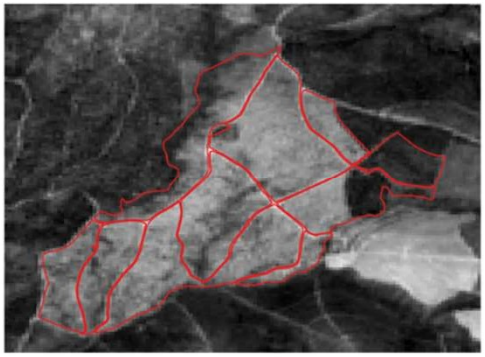
01/06/2018



27/04/2018



05/05/2018



15/05/2018

Limitações

4. Poucas imagens Sentinel-2 para o intervalo de cortes 50161-T001_EG

51 sub-talhões
13 datas de corte
cortes entre 21/02/2017 e 15/05/2017

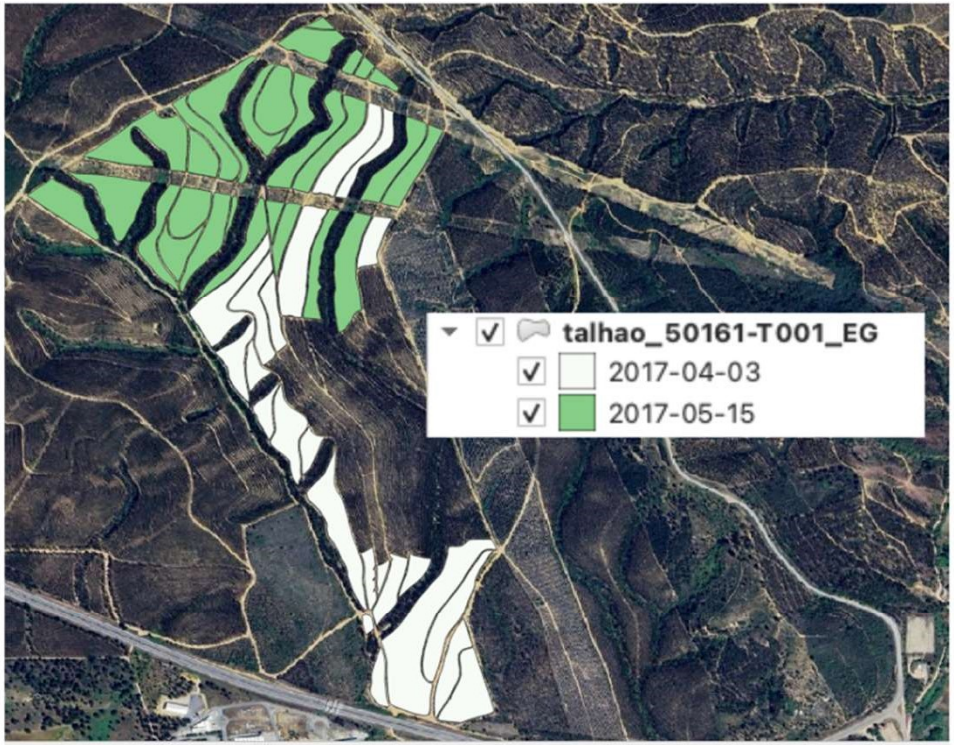
25 jan *24 fev* *5 abril* *25 maio*

date_20170125	date_20170224	date_20170405	date_20170525	ıte_of_biggest_dr(	estimated_date
0.53275926...	0.48292295...	0.21496598...	0. 179905963...	2017-04-05	2017-04-03
0. 553600710...	0.49755983...	0.27093446...	0.20061466...	2017-04-05	2017-04-03
0.54037276...	0.48607458...	0.22688226...	0.181951383...	2017-04-05	2017-04-03
0.521513595...	0.46821295...	0.43305590...	0.191132224...	2017-05-25	2017-05-15
0.55930766...	0.50828560...	0.49735099...	0.187090002...	2017-05-25	2017-05-15
0.550618722...	0.50050363...	0.49278059...	0.196674584...	2017-05-25	2017-05-15
0.56360587...	0.509127778...	0.51032457...	0.20134403...	2017-05-25	2017-05-15
0.57427604...	0.50342726...	0.53589933...	0.196428571...	2017-05-25	2017-05-15
0.51352436...	0. 467695178...	0.45302048...	0. 184429901...	2017-05-25	2017-05-15
0.56090705...	0.51060008...	0.50940993...	0.218420718...	2017-05-25	2017-05-15

Limitações

4. Poucas imagens Sentinel-2 para o intervalo de cortes 50161-T001_EG

51 sub-talhões
13 datas de corte
cortes entre 21/02/2017 e 15/05/2017



Limitações

5. Não há imagens Sentinel-2 para o intervalo de cortes 50002-T007_EG

id	ɔiggest_drop_NDV	ıte_of_biggest_drc	estimated_date
50002-T007_EG_01	-0.4229555...	2020-12-20	
50002-T007_EG_02	-0.42414943...	2020-12-20	
50002-T007_EG_03	-0.3864228...	2020-12-20	
50002-T007_EG_04	-0.43985641...	2020-12-20	
50002-T007_EG_05	-0.4634998...	2020-12-20	
50002-T007_EG_06	-0.37833673...	2020-12-20	

6 sub-talhões
2 datas de corte
cortes entre 15/01/2021 e 25/01/2021 → 2 datas de corte com intervalo de 10 dias

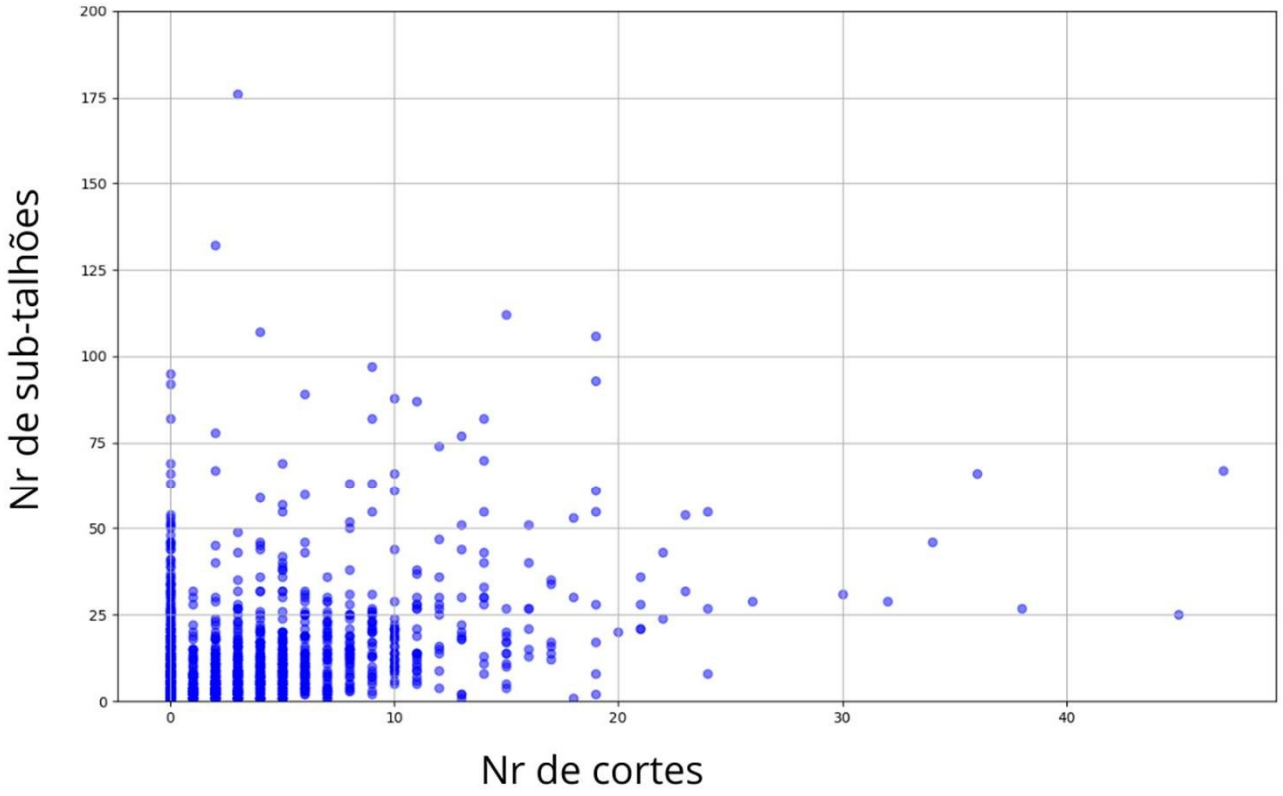
Limitações

6. Mais datas de corte do que sub-talhões
56001-T012_EG

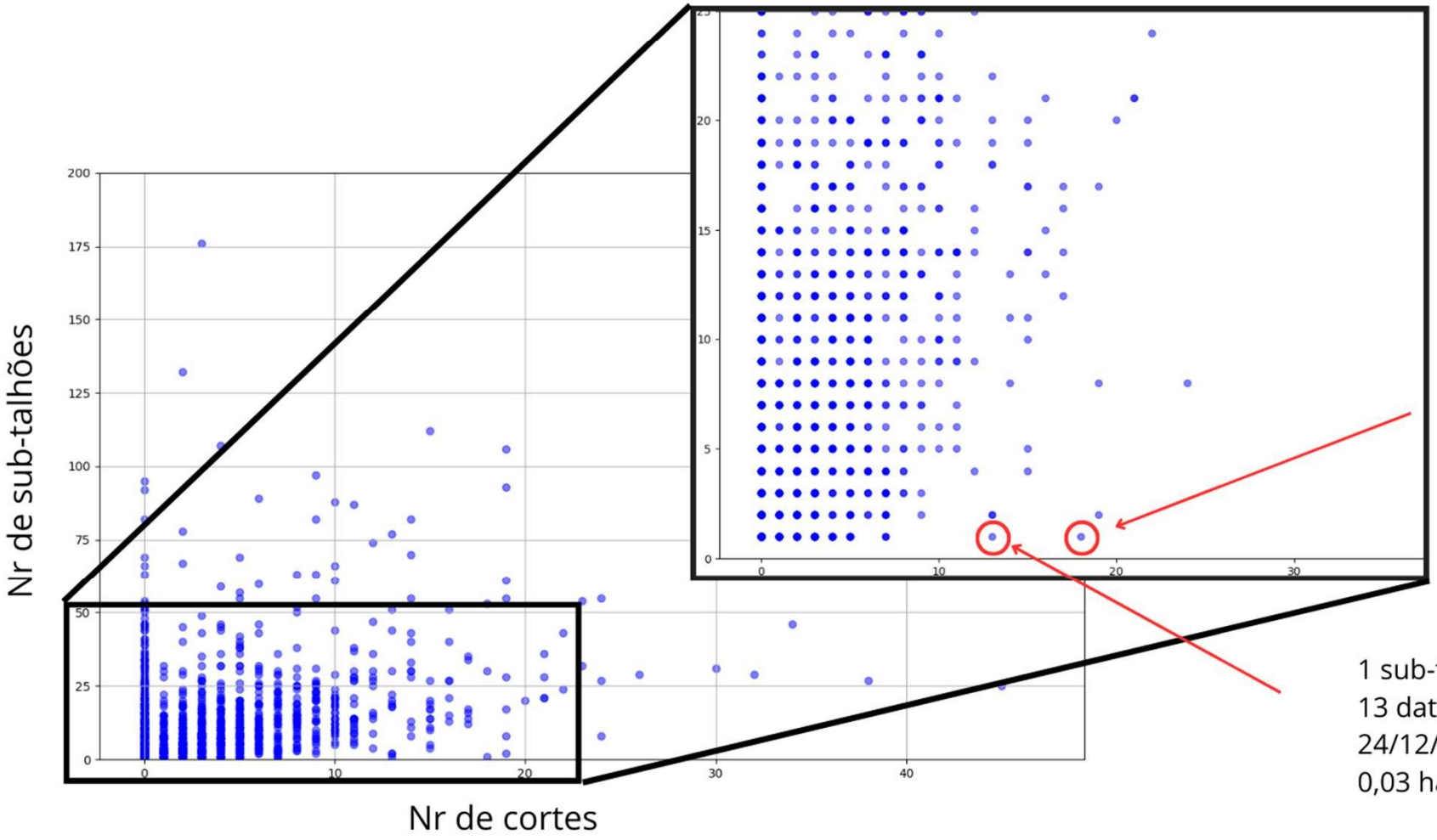
3 sub-talhões
8 datas de corte
cortes entre 16/06/2019 e 29/07/2019

Limitações

6. Mais datas de corte do que sub-talhões



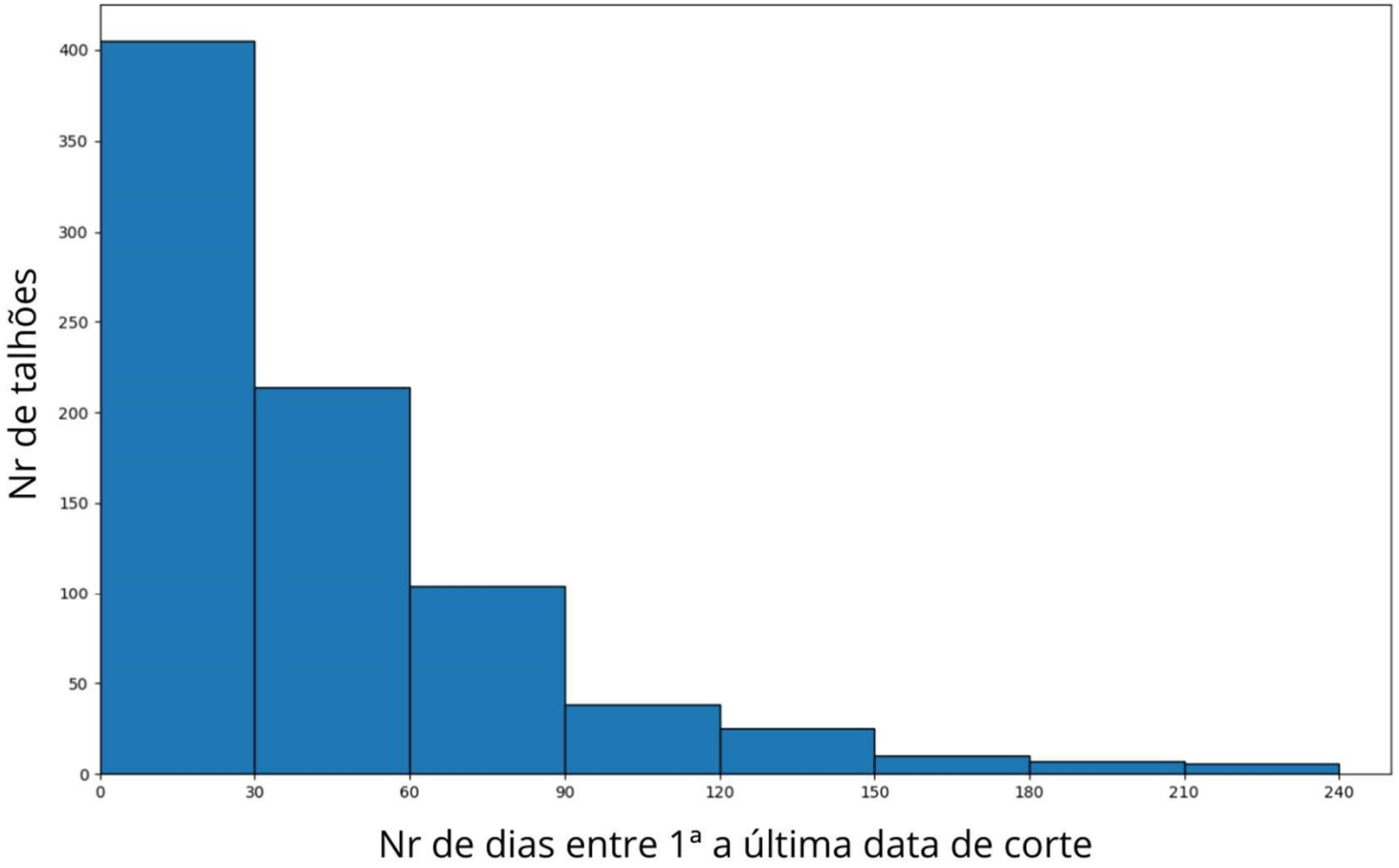
Limitações



1 sub-talhão
11 datas de corte (18/07/2016 - 05/09/2016)
7 datas de corte (15/05/2023 - 16/06/2023)
1,005 ha

1 sub-talhão
13 datas de corte (15/10/2018 - 24/12/2018)
0,03 ha

Limitações



Nr. talhões total: 1583

- 847 talhões representados
- 614 sem atividades de corte
- 111 com 1 atividade de corte
- 10 com 2 atividades de corte

Em conclusão

Limitações

Sentinel-2

- Imagens com nuvens
- Falta de imagens para certos periodos de tempo

Base de Dados Navigator

- Incerteza nas datas de corte, o que leva a datas estimadas incorretas

Sugestão

Estabelecer um intervalo de datas em vez de uma data fixa para cada sub-talhão