

Développement de workflows en R pour le nettoyage, la validation et la visualisation de données spatiales en écologie



Natasha DE MANINCOR



Jordan BENREZKALLAH



Kévin TOUGERON



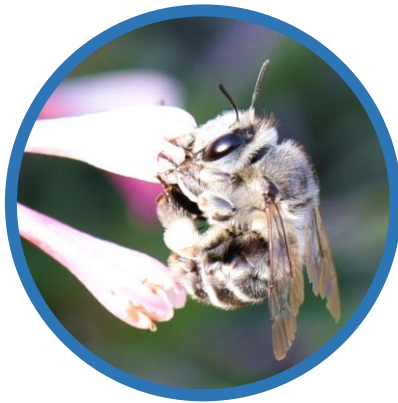
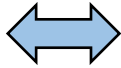
Ahlam SENTIL



Denis MICHEZ



Apis mellifera



Anthophora sp.



Anthidium manicatum



Eucera longicornis



Megachile parietina



+ 20 000 sp¹



+ 2 000 sp¹



+ 900 sp²



+ 400 sp³

¹Michener, 2007

²Reverté, S., Miličić *et al.* (2023)

³Drossart *et al.*, 2019



SAFEGUARD

Safeguarding European wild
pollinators
Sauvegarder les
pollinisateurs européens



PULSE

European bee Red List
assessment
Liste rouge des abeilles
européennes



Projets financés par l'Union Européenne

European Red List of Bees

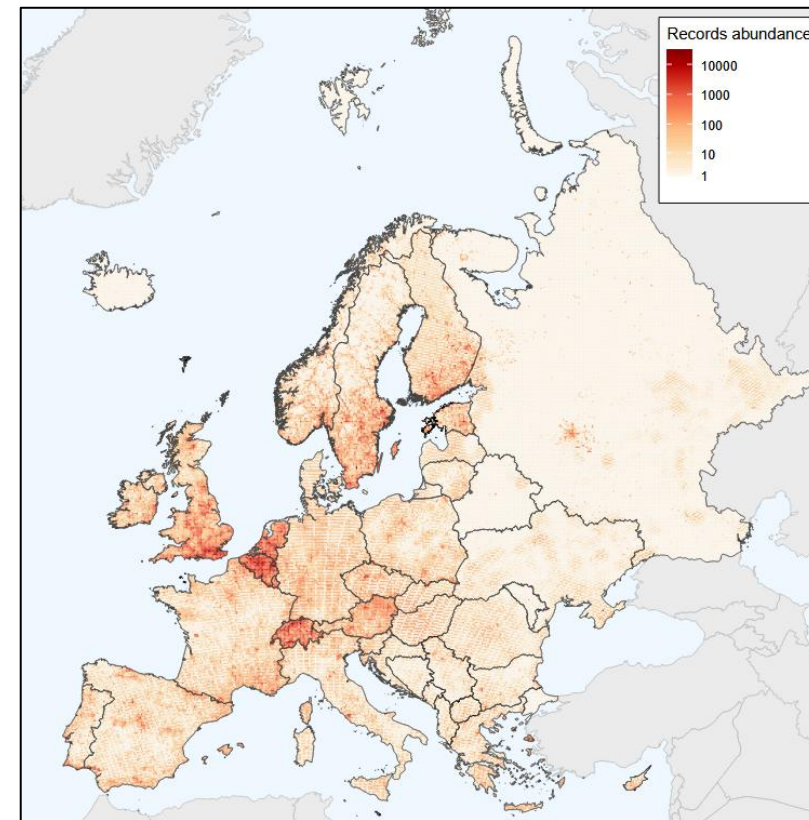
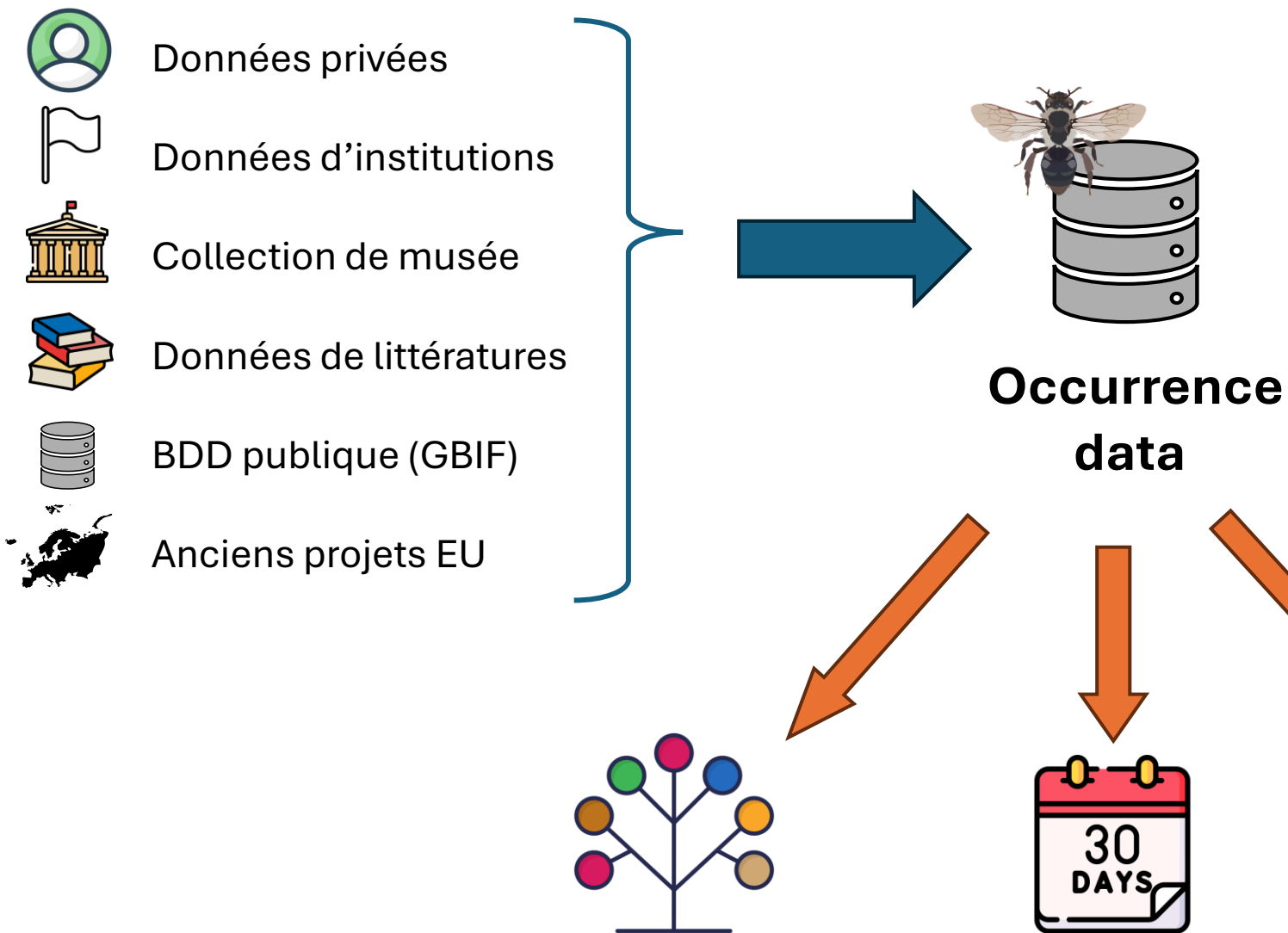
Ana Nieto, Stuart P.M. Roberts, James Kemp, Pierre Rasmont, Michael Kuhlmann,
Mariana García Criado, Jacobus C. Biesmeijer, Petr Bogusch, Holger H. Dathe, Pilar De la Rúa,
Thibaut De Meulemeester, Manuel Dehon, Alexandre Dewulf, Francisco Javier Ortiz-Sánchez,
Patrick Lhomme, Alain Pauly, Simon G. Potts, Christophe Praz, Marino Quaranta,
Vladimir G. Radchenko, Erwin Scheuchl, Jan Smit, Jakub Straka, Michael Terzo, Bogdan Tomozii,
Jemma Window and Denis Michez



European
Commission



69 jeux de données



**5,5 M
occurrences**



Taxonomie

- ✗ Bombuuus terrestris
 - ✓ Bombus terrestris
- Syntaxe*
-
- ✗ Apis bicornis
 - ✗ Apis rufa
 - ✗ Osmia rufa
 - ✓ Osmia bicornis
- Synonymie*



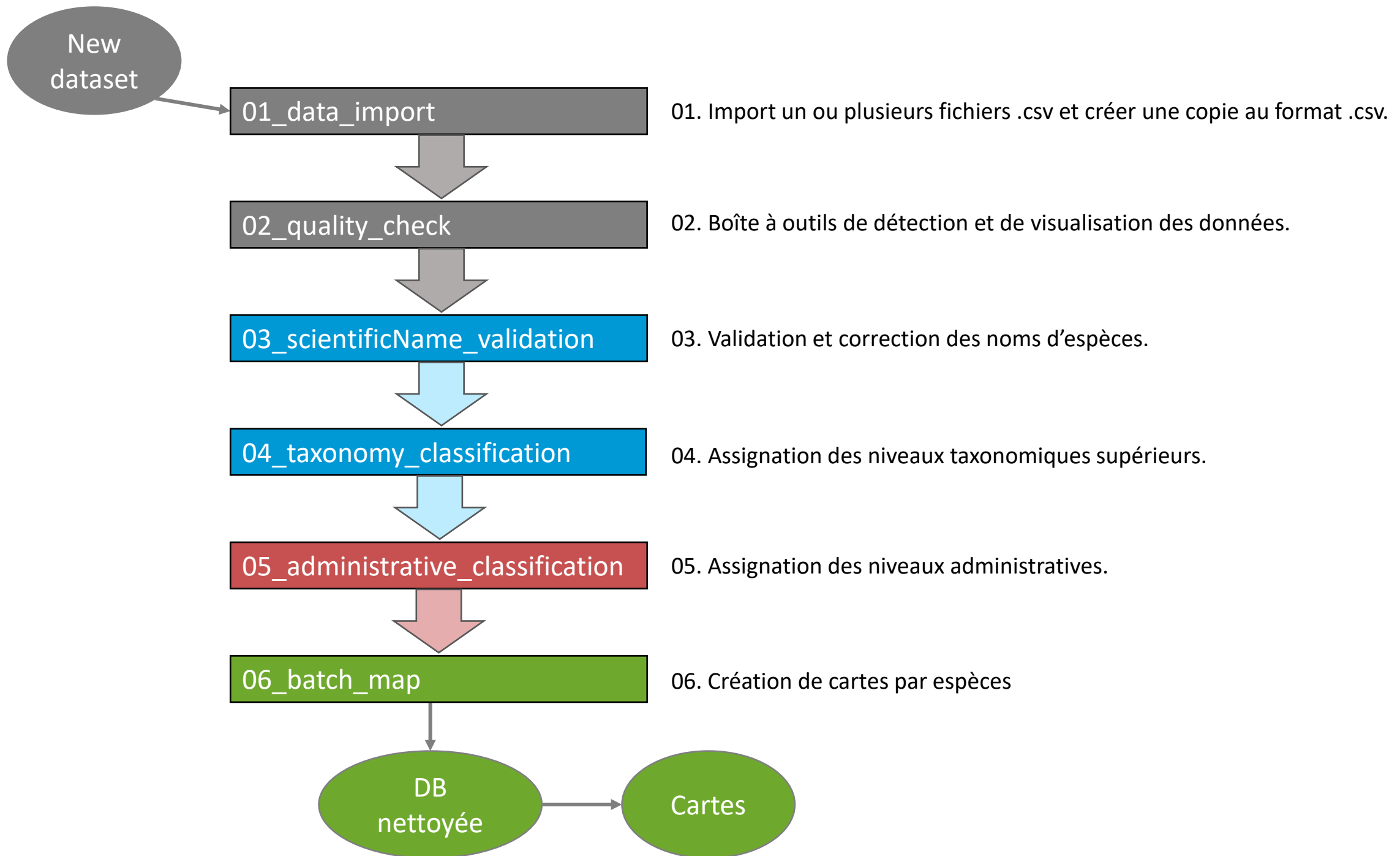
Temporalité

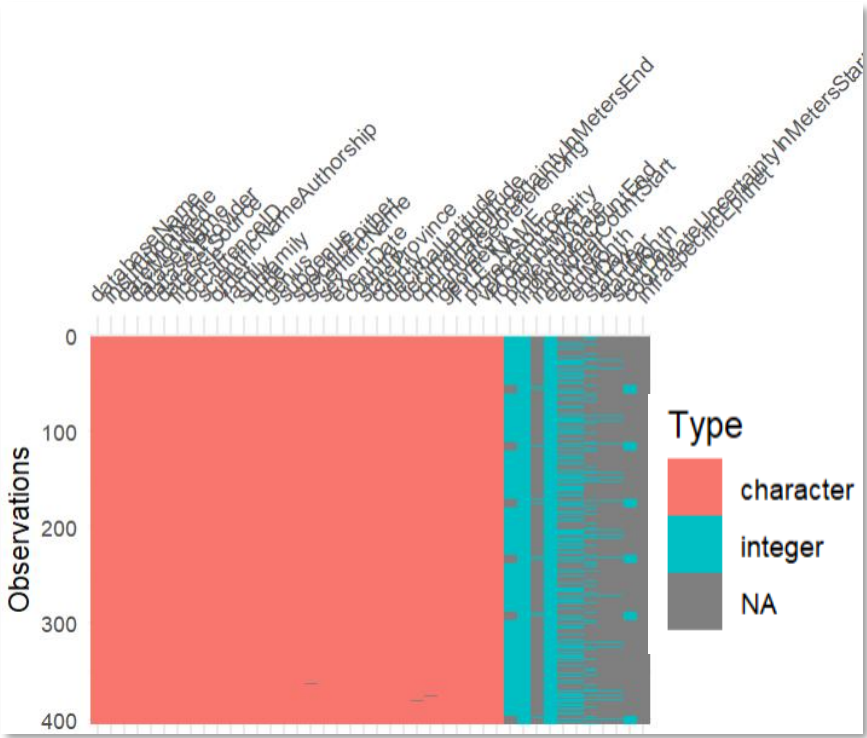
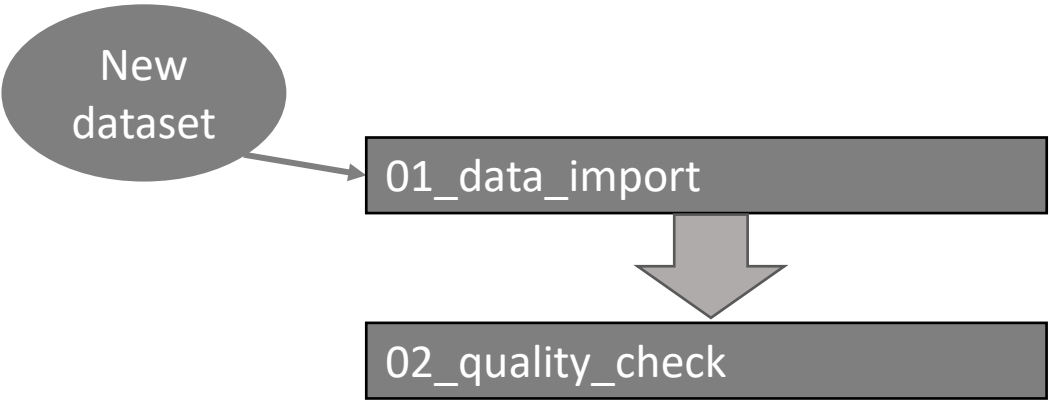
- ✗ Dienstag, 31. Dezember 2024
- ✗ NA-12-2024
- ✗ NA/NA/NA
- ✗ XXXX-12-31
- ✗ 31.12.2024
- ✗ 31122024
- ✗ Dec 12 2024
- ✗ 31-déc-24
- ✗ 31. Dezember 2024
- ✓ 2024-12-31



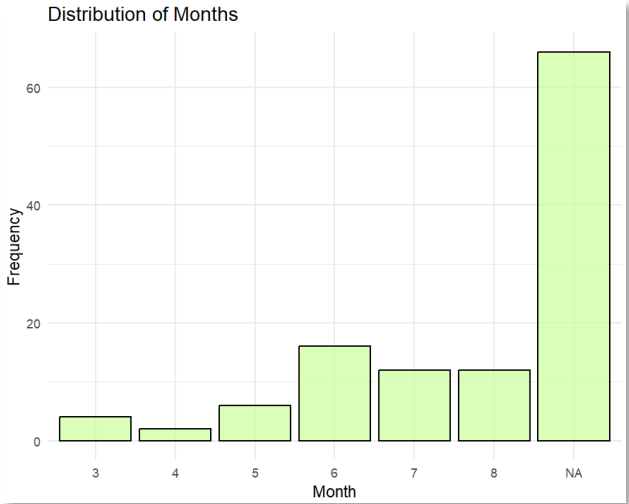
Géospatial

- ✗ Be
- ✗ BE
- ✗ België
- ✗ Belgique
- ✓ Belgium

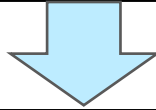




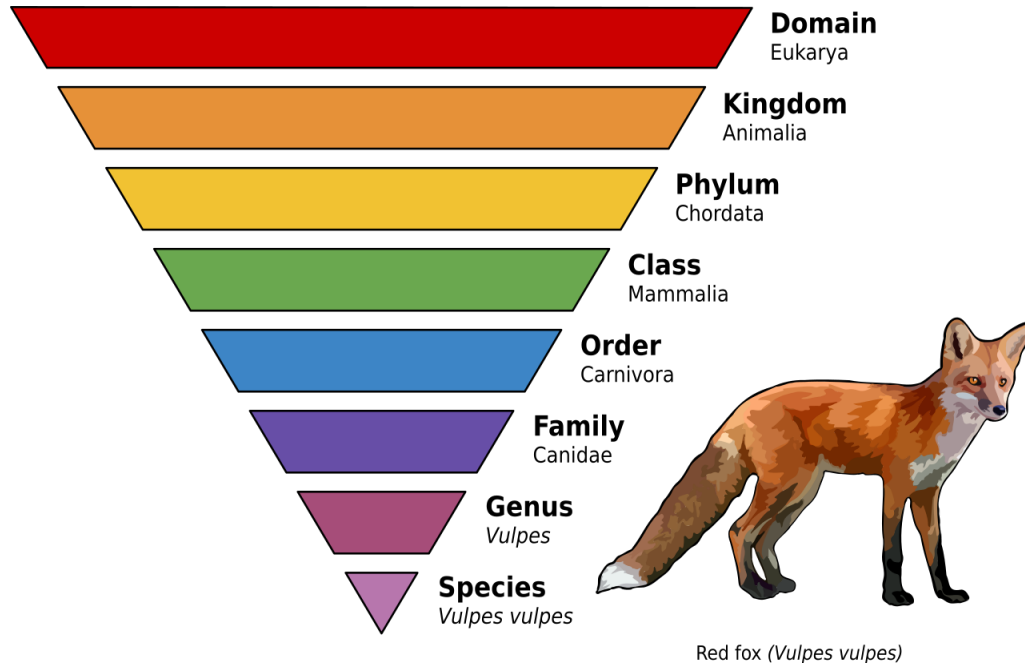
1. Belgium	68 (16.8%)	
2. U.K. of Great Britain and	68 (16.8%)	
3. Switzerland	55 (13.6%)	
4. Sweden	42 (10.4%)	
5. France	41 (10.1%)	
6. Ireland	21 (5.2%)	
7. Netherlands	21 (5.2%)	
8. Finland	14 (3.5%)	
9. Greece	14 (3.5%)	
10. Norway	14 (3.5%)	
[5 others]	46 (11.4%)	



03_scientificName_validation



04_taxonomy_classification



Vérification du nom de
l'espèce (True/False)

```
base::merge(df1, df2)
```

+

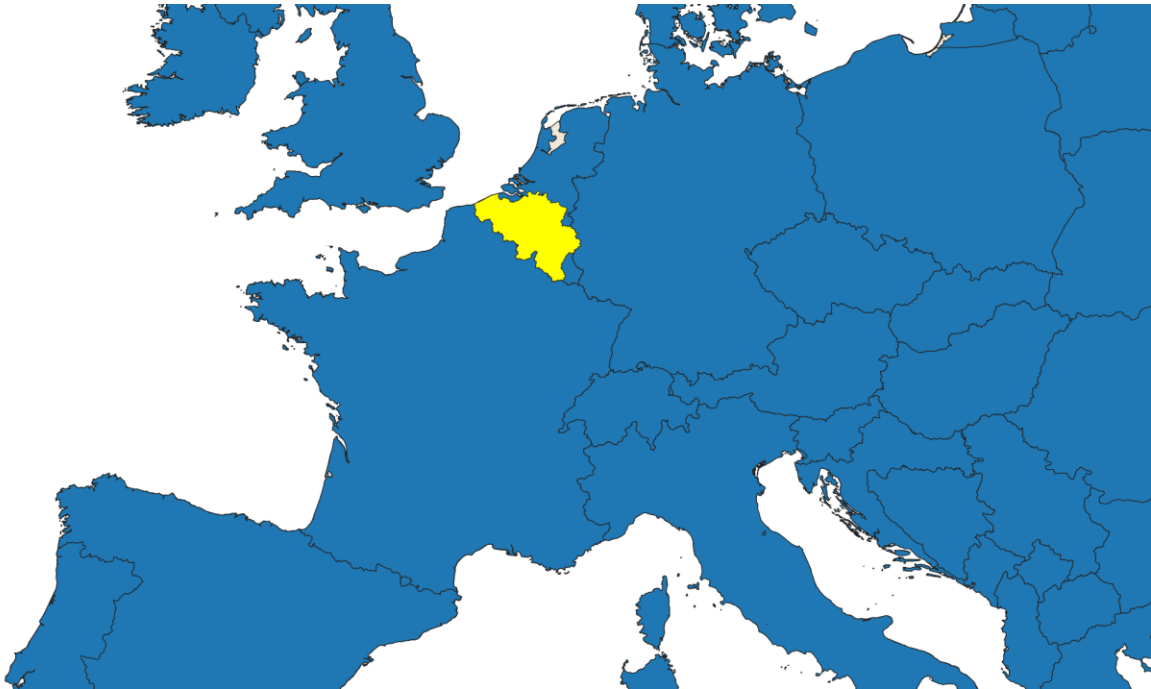
Fuzzy search (recherche
approximative)

```
> TAXON_fuzzy
# A tibble: 7 × 3
# Groups:   TAXON_TO_EVALUATED [6]
  TAXON_TO_EVALUATED TAXON_DICO      DISTANCE
  <chr>              <chr>          <dbl>
1 Bombuuus terrestris Bombus terrestris 0.0351
2 Bombus terrestre   Bombus terrestris 0.0600
3 Bombus terrestreux Bombus terrestris 0.0948
```

```
fuzzyjoin::stringdist_join(df1, df2)
```

05_administrative_classification

Assignation des niveaux administratives basées sur des shapefiles (.shp) de références.



Pays = Belgique

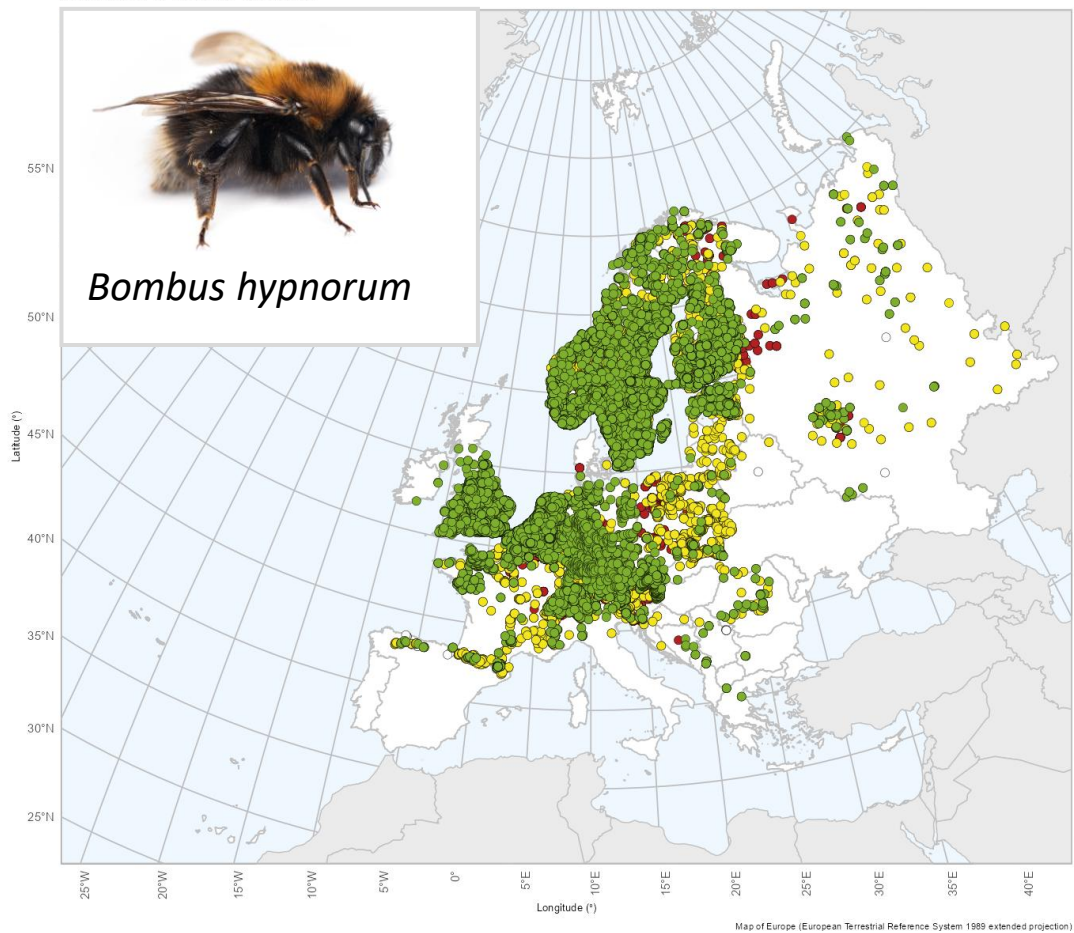


Région = Wallonie

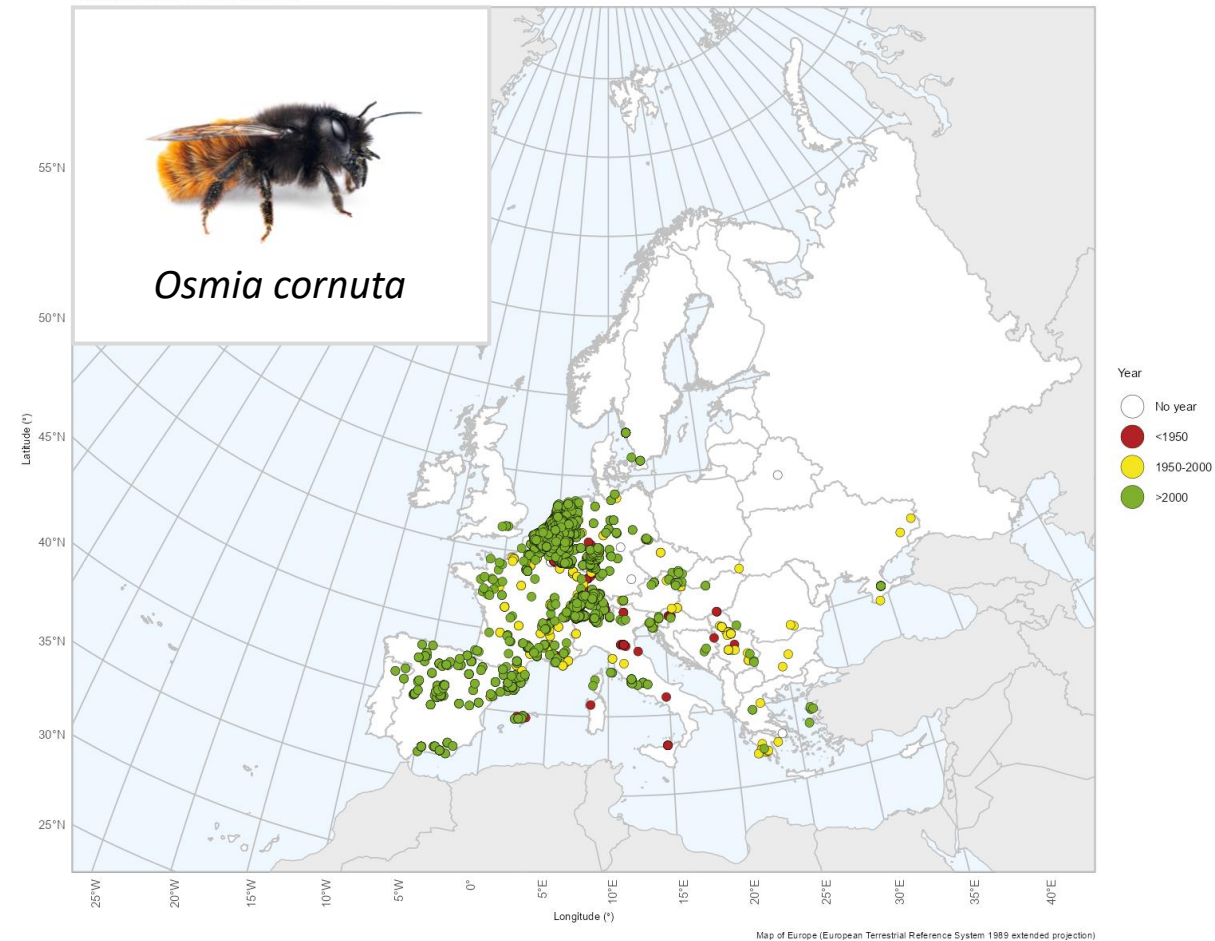
```
sf::st_intersection(df, country_shp)
```

06_batch_map

Distribution of *Bombus hypnorum*

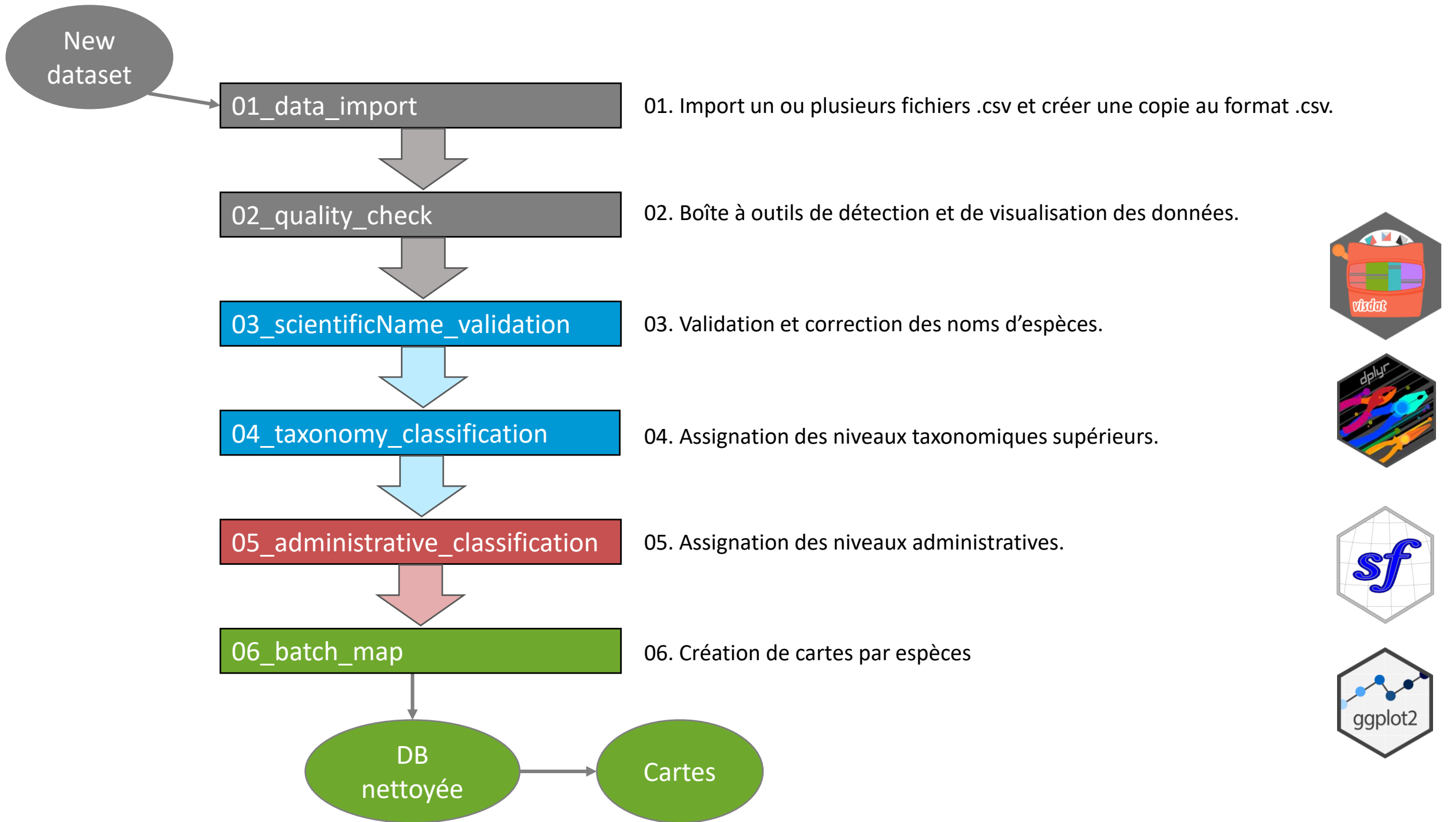


Distribution of *Osmia cornuta*



ggplot2::ggplot(df) + geom_sf()

Attribution d'images : BeeLibre project



Prochaines étapes



Supprimer les redondances entre jeux de données.



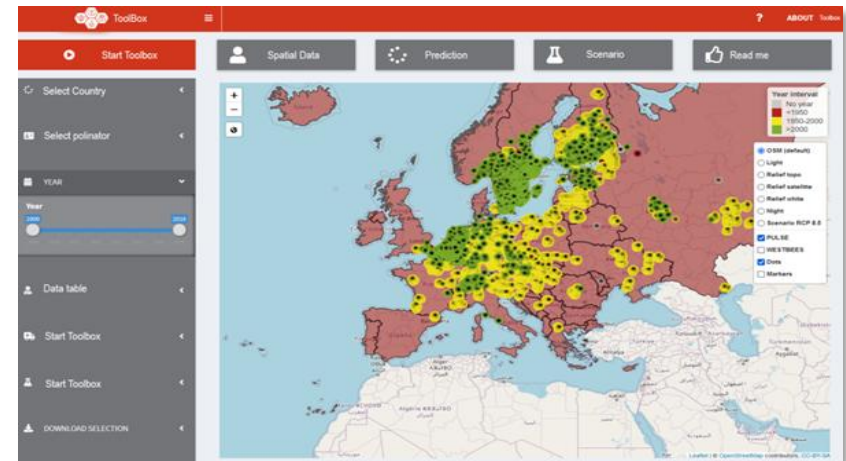
Automatiser les corrections sur les nouvelles données à intégrer.



Développer une application web pour visualiser les données.

Shiny App test :

<https://jack177.shinyapps.io/WESTBEES-R/>



Merci de votre attention !



Article en préparation !



<https://github.com/orgs/Safeguarding-European-wild-pollinators/repositories>



Jordan.benrezkallah@umons.ac.be



<https://www.linkedin.com/in/jordan-benrezkallah/>



<https://github.com/JordanBZK>



<https://www.researchgate.net/profile/Jordan-Benrezkallah>



Natasha
DE MANINCOR



Ahlam
SENTIL



Kévin
TOUGERON



Denis
MICHEZ



REFERENCES

Drossart, M., Rasmont, P., Vanormelingen, P., Dufrêne, M., Folschweiller, M., Pauly, A., ... & Michez, D. (2019). *Belgian red list of bees*. Presse universitaire de l'Université de Mons, Mons, Belgium.

(2023) National records of 3000 European bee and hoverfly species: A contribution to pollinator conservation. *Insect Conservation and Diversity*, 16(6), 758–775. Available from: <https://doi.org/10.1111/icad.12680>

Michener, C.D. The Bees of the World. John Hopkins University Press, 2007

Reverté, S., Miličić, M., Ačanski, J., Andrić, A., Aracil, A., Aubert, M. et al.

ATTRIBUTION D'IMAGE

S1: Anthidium manicatum, Frank Vassen , CC BY 2.0, <https://www.flickr.com/photos/42244964@N03/36595620352>

S1: Eucera longicornis, Will George, CC BY-NC 2.0, <https://www.flickr.com/photos/runnerwill/3438835013/>

S4 : Illustration d'*Andrena vaga* : projet [WildPosh](#)

S8 : By Annina Breen - Own work This file was derived from: Rotfuchs.svg, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=40559754>

S10 : Photographie provenant du projet [BeeLibre](#)

Icônes utilisés : 'image: Flaticon.com'. This cover has been designed using resources from Flaticon.com