

Introduction au langage R pour la géomatique

Florent Veillon - Ingénieur d'études - EspaceDev - IRD

Antananarivo - Madagascar - Octobre 2023



EspaceDEV
OBSERVATION SPATIALE, MODÈLES
ET SCIENCE IMPLIQUÉE



Institut de Recherche
pour le **Développement**
FRANCE

Langage R et RStudio





- R est un langage et un logiciel **libre** et **gratuit**.
- Contribution en créant des fonctions et en les distribuant à la communauté (**packages**).
- Très forte communauté => beaucoup de documentations
- R et Python => **sciences des données**
- Au départ R est un langage orienté vers **le traitement de données et l'analyse statistique**.



- **Ecrire et exécuter du code R** = Environnement de Développement (**IDE**)
- Le **plus utilisé** pour R
- D'autres IDE disponibles (ex : *PyCharm, plugins R Language for IntelliJ*)

Rappel installation

<https://cran.r-project.org/>

	Windows	Linux (Ubuntu)
	<ul style="list-style-type: none">> Download R for Windows> base> Click on Download R-4.3.1 for Windows	<pre>sudo apt install r-base sudo apt install r-base-dev</pre>
	<p>https://posit.co/download/rstudio-desktop/</p> <p>RSTUDIO-2023.06.2-561.EXE</p>	<p>RSTUDIO-2023.06.2-561-AMD64.DEB</p>

RStudio

The screenshot displays the RStudio integrated development environment (IDE) with a dark theme. The interface is divided into several panes:

- Source Editor:** The top-left pane shows an untitled R script file with a single line of code: `1`.
- Console:** The bottom-left pane shows the R version 4.3.1 (2023-06-16 ucrt) -- "Beagle Scouts" and copyright information. It also displays the R license text and instructions on how to use R.
- Environment:** The top-right pane shows the current environment, which is empty.
- Package Manager:** The bottom-right pane shows the installed and available packages. The "User Library" section lists several packages with their descriptions and versions.

The console output includes the following text:

```
R version 4.3.1 (2023-06-16 ucrt) -- "Beagle Scouts"
Copyright (C) 2023 The R Foundation for Statistical Computing
Platform: x86_64-m64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> |
```

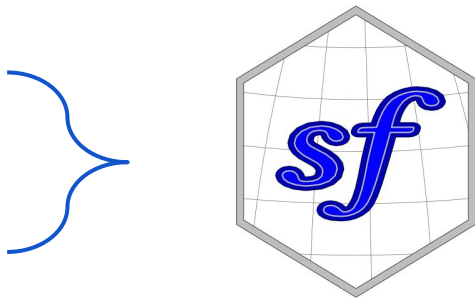
The package manager shows the following packages in the User Library:

Name	Description	Version
anytime	Anything to 'POSIXct' or 'Date' Converter	0.3.9
askpass	Password Entry Utilities for R, Git, and SSH	1.2.0
backports	Reimplementations of Functions Introduced Since R-3.0.0	1.4.1
base64enc	Tools for base64 encoding	0.1-3
BH	Boost C++ Header Files	1.81.0-1
bit	Classes and Methods for Fast Memory-Efficient Boolean Selections	4.0.5
bit64	A S3 Class for Vectors of 64bit Integers	4.0.5
blob	A Simple S3 Class for Representing Vectors of Binary Data ('BLOBs')	1.2.4
brew	Templating Framework for Report Generation	1.0-8
broom	Convert Statistical Objects into Tidy Tibbles	1.0.5
bsicons	Easily Work with 'Bootstrap' Icons	0.1.1
bslib	Custom 'Bootstrap' 'Sass' Themes for 'shiny' and	0.5.1

Les données spatiales dans R

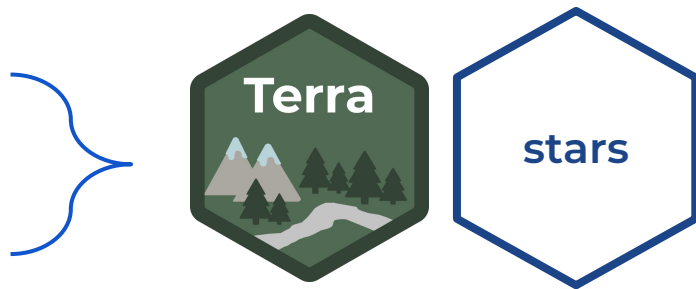
Données vectorielles

- **rgdal**^{*} : Import/Export données spatiales (.shp)
- **sp** : Structuration des données : table attributaire...
- **rgeos**^{*} : Opérations SIG classiques (intersection...)



Données raster

- **raster**^{*} : import, manipulation et modélisation de données raster

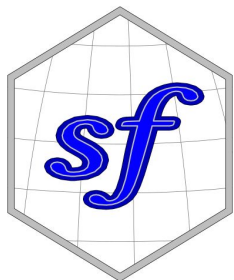


^{*}Packages obsolètes fin 2023

Plan de la matinée

Présentation de fonctionnalités des packages **sf** et **Terra**

- **Données vectorielles**
- **Raster**






Présentation du package **leaflet**







- **Cartes interactives**















Accès aux données







<https://github.com/floveil/FormationRMadagascar>


 floveil / FormationRMadagascar 









     


 Code  Issues  Pull requests  Actions  Projects  Security  Insights  Settings

 **FormationRMadagascar** Private   

 main  1 branch  0 tags   

 floveil Update README.md e8b8b11 now 6 commits

 .ipynb_checkpoints	initial commit	19 minutes ago
 Shiny	initial commit	38 minutes ago
 data	initial commit	38 minutes ago
 docs	initial commit	19 minutes ago
 www	initial commit	38 minutes ago
 Introduction_Leaflet.ipynb	initial commit	19 minutes ago
 Introduction_R_Geomatique.ipynb	initial commit	36 minutes ago
 README.md	Update README.md	now

README.md 

Formation R pour la géomatique





Florent Veillon - Ingénieur d'études - EspaceDev - IRD


Antananarivo - Madagascar - Octobre 2023


Ce dossier contient l'ensemble des données et des documents utilisés lors de la journée du 2 octobre 2023.


About


Données et documents de la présentation de R pour la géomatique à Madagascar - Octobre 2023


   

 Readme

 Activity

 0 stars

 1 watching

 0 forks

Releases

No releases published


[Create a new release](#)

Packages

No packages published

[Publish your first package](#)

Languages

 Jupyter Notebook 100.0%

Installation de packages

```
install.packages("sf")  
install.packages("terra")  
install.packages("osmdata")  
install.packages("maptiles")  
  
install.packages("leaflet")  
install.packages("leaflet.extras")  
install.packages("leaflet.extras2")  
install.packages("mapview")  
install.packages("mapedit")
```

Chargement du package

```
library("sf")  
...
```