PROGRAMME OF THE EUROPEAN UNION

Copernicus

European Commission

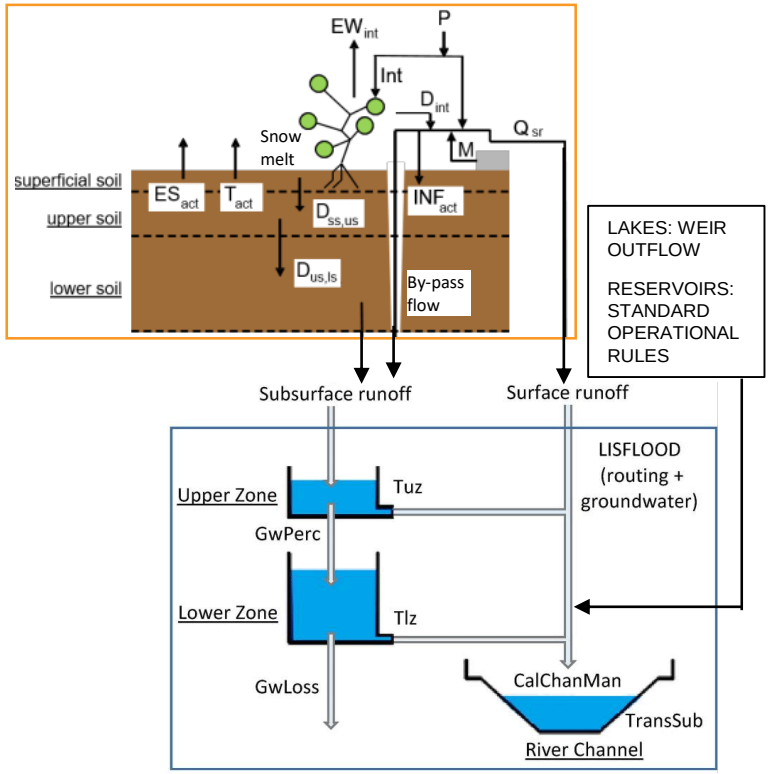
Open Source LISFLOOD hydrological model

UN-SPIDER / DLR / ZFL International Training Workshop
“Space technologies for flood management”

UN Bonn – 20 February 2023
(Supplementary material)

COPERNICUS
EMERGENCY
MANAGEMENT
SERVICE

OS LISFLOOD hydrological model



LISFLOOD-OS: Semi-distributed, physically based model

- 6 land cover fractions within a pixel;
- 3 soil layers;
- 2 groundwater storages;
- kinematic wave routing in channels and floodplains;
- lakes and dams;
- water abstraction for anthropogenic use.

COMPUTATIONALLY EFFICIENT!

- **Optimal management of large input.**
- **Parallel computations**.

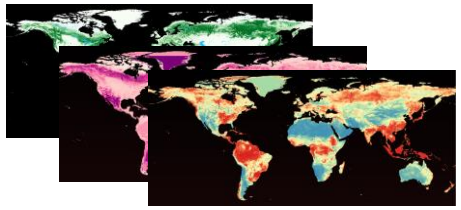
Open Source code and documentation:

https://github.com/ec-jrc/lisflood-code

https://ec-jrc.github.io/lisflood-model/

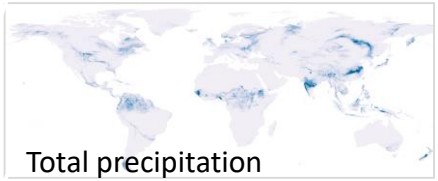
OS LISFLOOD hydrological model

INPUTS

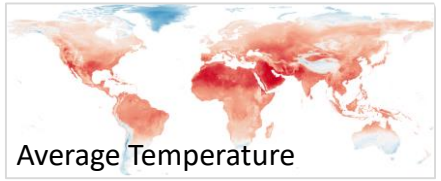


Information on catchments physical properties:
“STATIC” maps

METEO FORCINGS:



Total precipitation

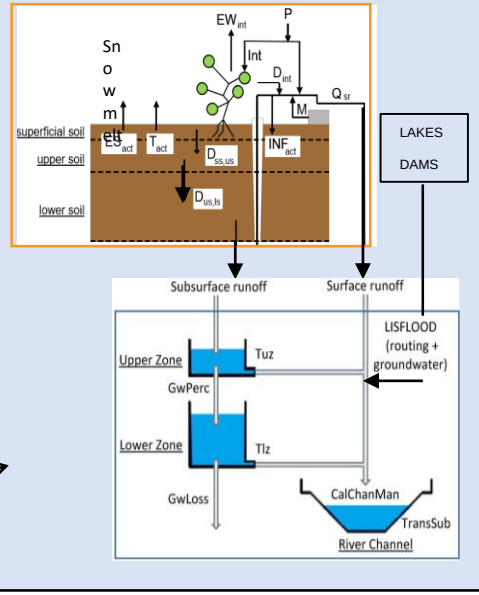


Average Temperature

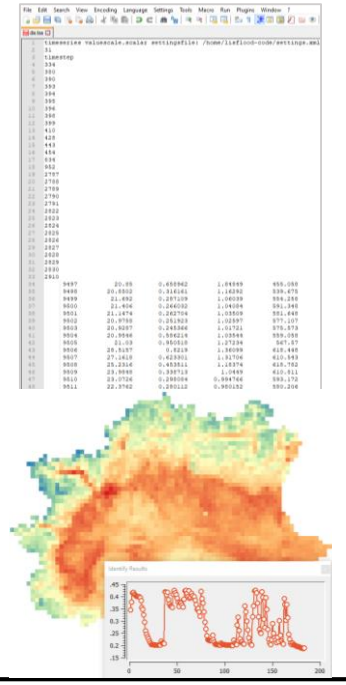
Evapotranspiration

SOFTWARE

LISFLOOD-OS



OUTPUTS



Command line: 1 argument = file .xml Settings

Paths to directories of the input maps and of the output maps.
Switches to select the modules, and the desired outputs.

How do I prepare the inputs?

How do I install the code on my laptop?

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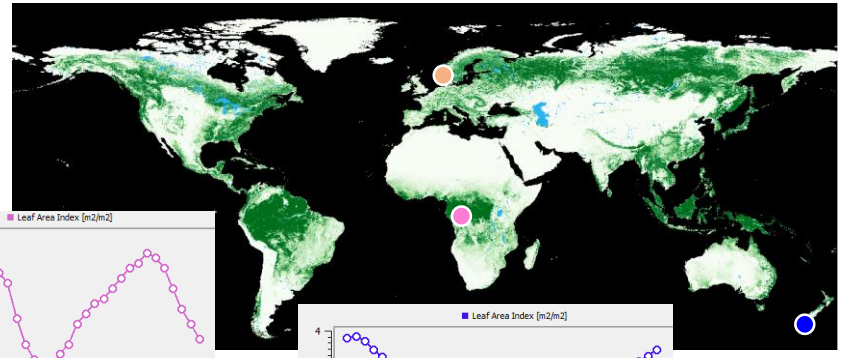
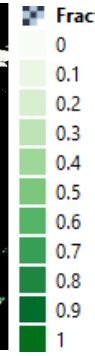
OS LISFLOOD static maps

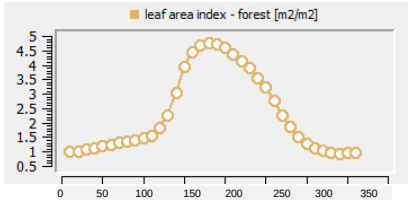
~100 maps providing information on catchments' morphology, land cover and land use, soil properties, water demand for human use.

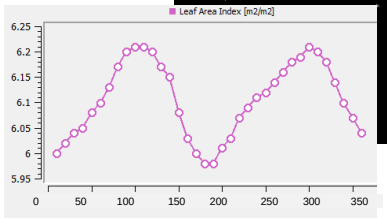
Examples:

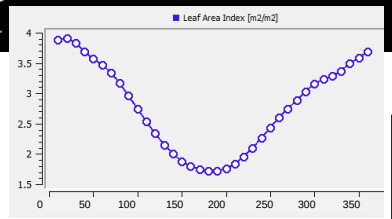
Land use fractions



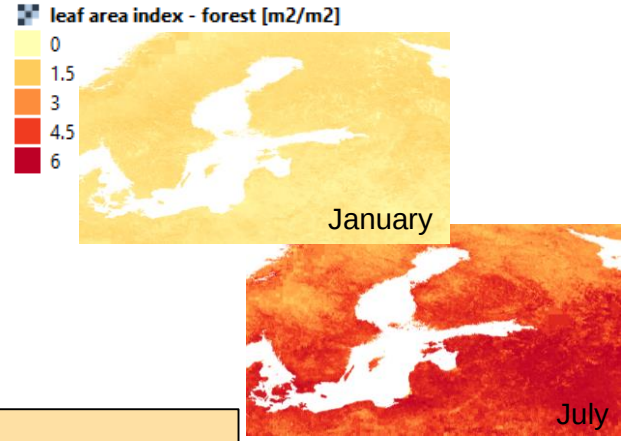








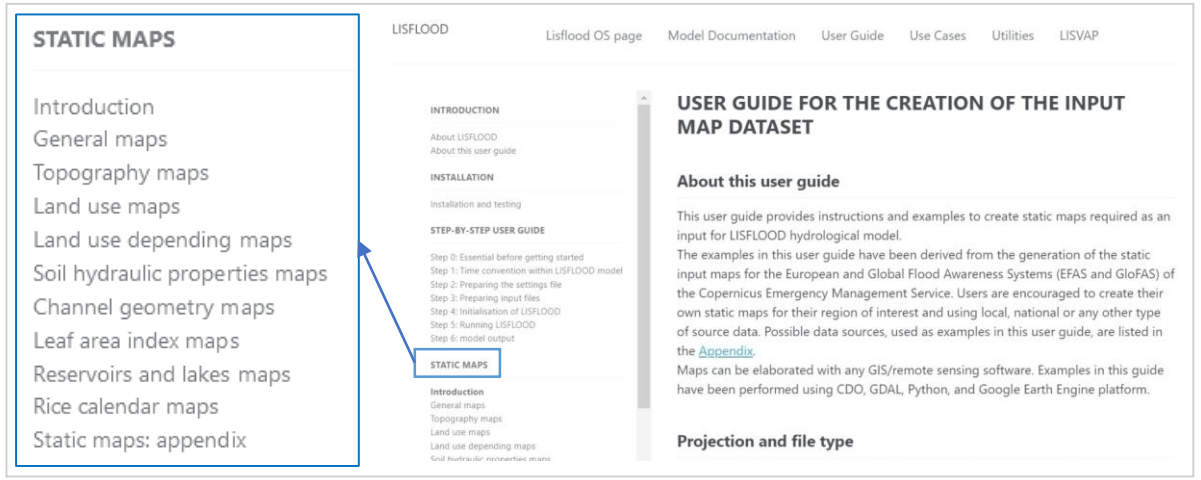
Leaf area index



Documentation about the static maps:

https://ec-jrc.github.io/lisflood-code/4_Static-Maps-introduction/

Scientific publication and release of the data set: work in progress!



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OS LISFLOOD installation

- How can I install LISFLOOD on my pc?

	pros	cons	For whom it is recommended
Docker	Easy to install and use for beginners, powerful for experts. One image file containing everything, including source code. Scalable	Large image size for a single application. Changes in container are not saved automatically	• Anyone who want to start testing without long installation steps. • Users that are more confident with docker and want to use the docker scalability features.
Pip package	Easy to install. Can be installed in conda environment	Can have some dependency issues. Source files not easy to handle (“hidden” in environment folders)	Anyone who just want to run the model in few steps and is more confident with conda environment.
Source code	Full control on the model source code.	Requires more steps and expertise to install and use. Can have same dependency issues as pip package	Expert users

OS LISFLOOD suite

ec-jrc.github.io/lisflood/

European Commission | Open Source Lisflood | Add-ons | Documents | How to contribute

Open Source Lisflood

Lisflood

LISFLOOD is a spatially distributed water resources model, developed by the Joint Research Centre (JRC) of the European Commission since 1997.

https://ec-jrc.github.io/lisflood/

Model Documentation | User Guide | Use Cases | Utilities | LISVAP

European Commission

LISFLOOD - a distributed hydrological rainfall-runoff model

LISFLOOD Model Documentation

https://github.com/ec-jrc/lisflood-code

ec-jrc / lisflood-code Public

Code | Issues 12 | Pull requests | Actions | Projects | Wiki | Security | Insights

master | 19 branches | 41 tags | Go to file | Add file | Code

doc78 Fixed typo in Readme — 51d0495 on 13 Jun — 495 commits

bin	new compress function	2 years ago
src	Updated requirements and authors	3 months ago
tests	set threads to 1 in test settings files	4 months ago

https://github.com/ec-jrc/lisflood-usecases

ec-jrc / lisflood-usecases Public

Code | Issues 1 | Pull requests | Actions | Projects | Wiki | Security | Insights

master | 1 branch | 0 tags | Go to file

doc78 Fixed typos in xml files

LF_ETRS89_UseCase	Fixed typos in xml files
LF_lat_lon_UseCase	Fixed typos in xml files
doc	Add Jupyter Notebook

https://github.com/ec-jrc/lisflood-utilities

ec-jrc / lisflood-utilities Public

Code | Issues 4 | Pull requests | Actions | Projects | Wiki | Security | Insights

master | 3 branches | 46 tags | Go to file | Add file | Code

doc78 Merge pull request #29 from ec-jrc/cutmaps_catchments — 01dccb3 on 9 Jun — 175 commits

bin	19-waterregions_utility	2 years ago
gfit	Merge branch 'master' of https://github.com/ec-jrc/lisflood-utilities	3 years ago
src/lisfloodutilities	Merge branch 'cutmaps_catchments' into bugfix/cftime	4 months ago
tests	Added flexible requirements for most package dependencies. Fixed unit...	5 months ago

https://github.com/ec-jrc/lisflood-lisvap

ec-jrc / lisflood-lisvap Public

Code | Issues 6 | Pull requests | Actions | Projects 1 | Wiki

master | 6 branches | 19 tags

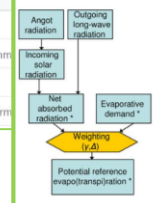
gnrgomes Merge pull request #54 from ec-jrc/refactor_formulas_selection

basemaps	Resolve Calendar managment
bin	add bin script lisvap; setup upload comm
src	Cosmetic
tests	Merge branch 'master' into refactor_form

European Commission

LISVAP - Evaporation Pre-Processor for the LISFLOOD Water balance and Flood Simulation Model

LISVAP User Manual



Joint Research Centre

https://github.com/ec-jrc/lisflood-calibration

ec-jrc / lisflood-calibration Public

Code | Issues 4 | Pull requests 1 | Actions | Projects | Wiki | Security | Insights

master | 8 branches | 3 tags | Go to file | Add file | Code

corentincarton Merge pull request #5 from ec-jrc/develop — bee7be2 on 5 Jul — 203 commits

bin	remove check for cache	4 months ago
integration	add deap options	3 months ago
liscal	minor change in restart function	3 months ago
tests	put seed in calibration object	7 months ago

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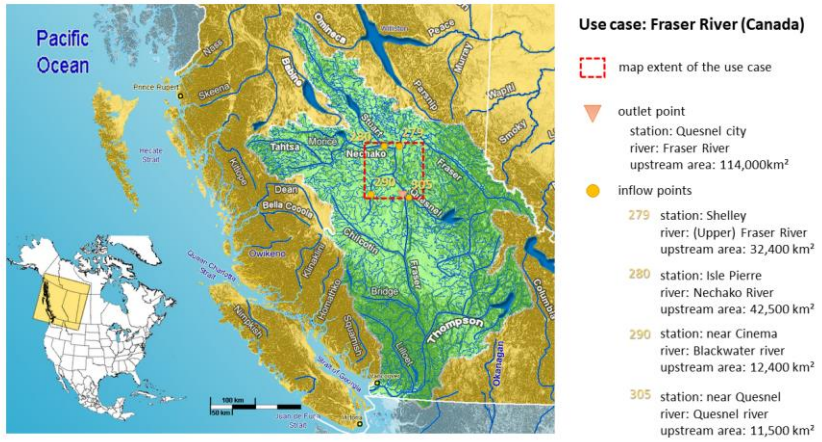
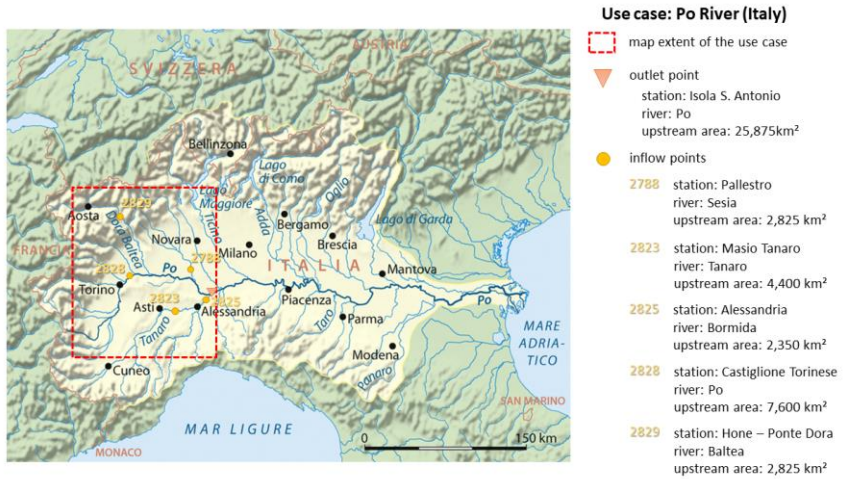
OS LISFLOOD user cases

- LISFLOOD-OS beginners can make use of two complete set-ups to
  1) test the installation of the code;
  2) get familiar with the code, the static maps, the meteorological forcings.

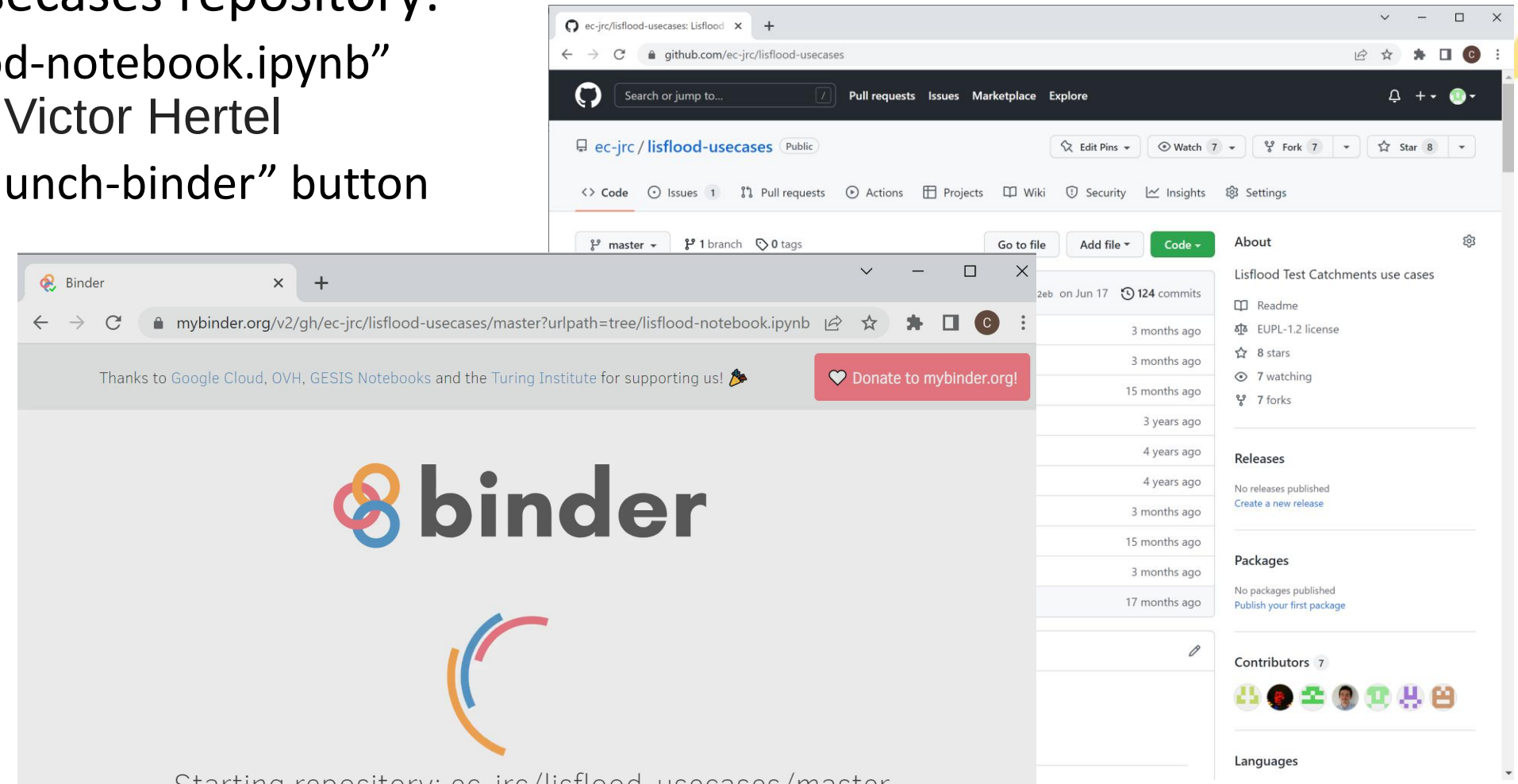
  Link to repository: https://github.com/ec-jrc/lisflood-usecases



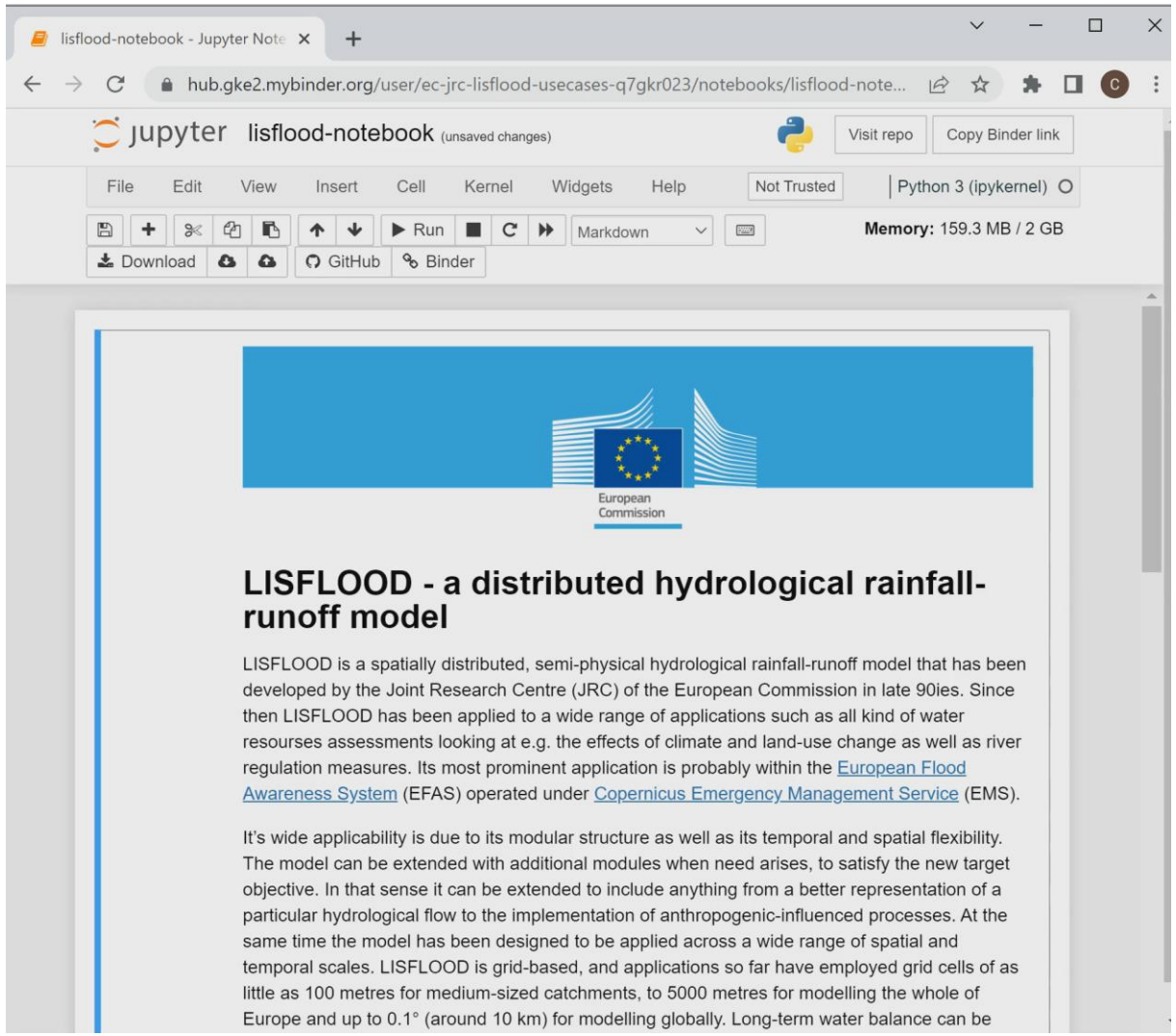


- Jupyter notebook

- In lisflood-usecases repository:
  - File “lisflood-notebook.ipynb” created by Victor Hertel
  - Click on “launch-binder” button



- Jupyter notebook in binder (by Victor Hertel)



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EVENTS, ONLINE, and MAP VIEWERS

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activations.emergency.copernicus.eu