**Standard Operating Procedure for ILSI Simulation Model: Continuous Mode**

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# Synopsis

This is an instruction for downloading and running the ILSI simulation model (continuous mode) in R Markdown.

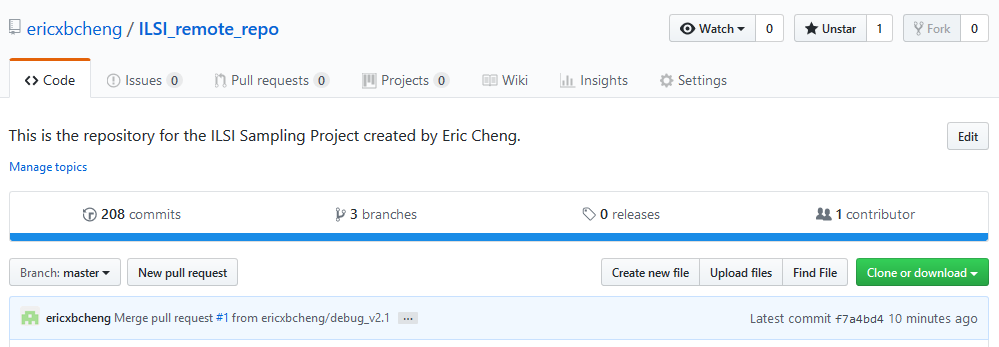
# Stable Versions

|  |  |  |
| --- | --- | --- |
| Version | Date | Brief Description |
| 1.0 | 2/1/2019 | * Continuous mode and discrete mode are inseparable |
| 2.0.1 | 4/25/2019 | * Continuous mode is separated from discrete mode * Decay functions include “exp”, “norm”, “unif” |
| 2.1.2 | 5/9/2019 | * Contamination types include point-source and area-based |
| 2.1.5 | 5/13/2019 | * Able to visualize binary results for enrichment |
| 2.1.7 | 6/12/2019 | * Able to do 2D STRS * Fix the bug of binomial process for enrichment |
| 2.2.5 | 7/5/2019 | * Fix the contamination point location with “seed” |
| 2.3.1 | 7/12/2019 | * Update the discrete mode with “seed” and new iteration structure |
| 2.4.1 | 7/18/2019 | * Add kernel grinding step into the discrete mode |

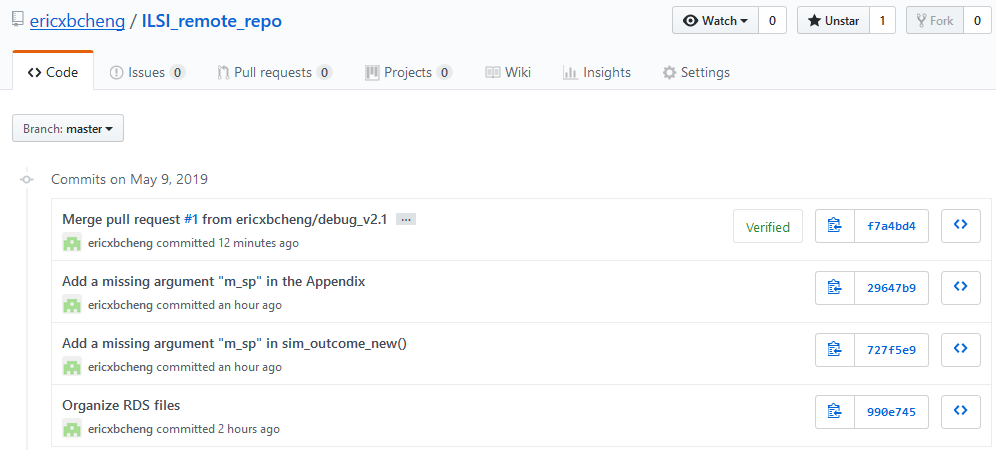
# Downloading

To run the simulation model, you need to download the correct version of R scripts and Markdown files. We will show the procedure of downloading model version 2.1.2 as an example. If you want other versions, just look up the table “Stable Versions” and find the corresponding date. Then just follow the instruction below, except for step 2.2 where you have to use the date you chose.

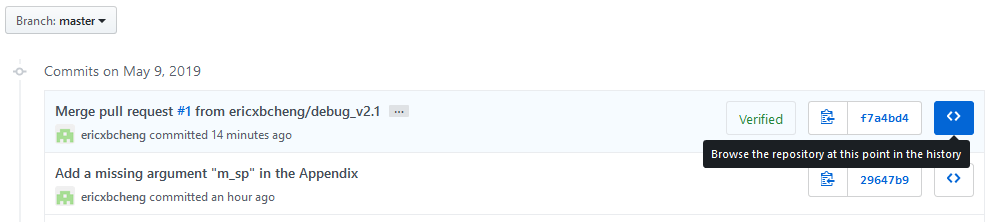
1. Open Eric Cheng’s GitHub page
   1. <https://github.com/ericxbcheng/ILSI_remote_repo>
2. Find the code for ILSI model version 2.1.2
   1. Click the button for “commits”.



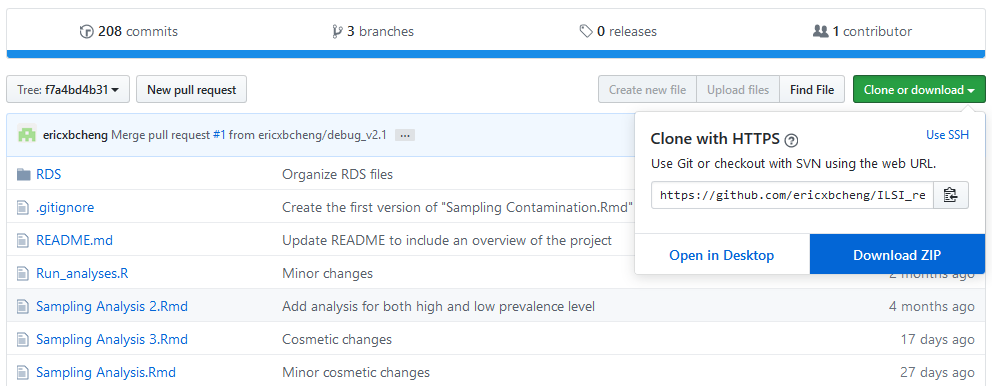
* 1. Find the commits made on May 9, 2019 from the **master** branch.



* 1. Browse the repository at this point in the history.



* 1. Download all the files.



1. Extract everything from the ZIP file and put them in a new folder.

# Installation

1. Installation of R and R Studio
   1. Install R first, then R Studio
2. Installation of R packages
   1. Open the R script **Sampling\_libraries.R**
   2. Install *ALL* the packages listed in this script.
      1. Option 1:
         1. Go to “Tools” 🡪 “Install Packages” 🡪 type in each package’s name
      2. Option 2:
         1. Navigate to the console.
         2. Use install.packages(…) to install the packages.
            1. For example: install.packages(“tidyverse”), …

# Model Running

1. Open the Markdown file **Sampling Continuous Mode.Rmd.**
2. Knit the Markdown file into an HTML file.
3. Open the HTML file you just knitted and read the instruction inside.
4. Adjust input parameters.

# Model Structure

For the purpose of debugging, function call graphs are presented to illustrate the model structure. Functions are denoted by rounded rectangles and IF-ELSE statements are denoted by diamonds. In terms of the function names, “cont” indicates continuous mode and “dis” indicates discrete mode. A function on the left, if ran by the user, will call functions on the right.