Hi Thien,

R version

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[https://github.com/AnthonyEbert/Conet1](https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_AnthonyEbert_Conet1&d=DwMFAw&c=WO-RGvefibhHBZq3fL85hQ&r=zlTZqbZMzVgDe4_AP4saA2DYM2cbxXv0W6SJWxPrEvE&m=YatkUvotDB8geEsUu1qtP5-Mnojd09-p3K2fsCZdzOY&s=6IHkPE4FGVqgsooFLyPDE9Kl0YQQ1X1sNhpkFsWGbTM&e=)

to install

1. install the remotes package `install.packages("remotes")`
2. install Conet1 `remotes::install\_github("AnthonyEbert/Conet1")`

use this script as an example: [https://github.com/AnthonyEbert/Conet1/blob/master/script/testing.R](https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_AnthonyEbert_Conet1_blob_master_script_testing.R&d=DwMFAw&c=WO-RGvefibhHBZq3fL85hQ&r=zlTZqbZMzVgDe4_AP4saA2DYM2cbxXv0W6SJWxPrEvE&m=YatkUvotDB8geEsUu1qtP5-Mnojd09-p3K2fsCZdzOY&s=vLA7IV3w7gfLdOMCahPOpAbrOkovrWue7wyHP97n4NQ&e=)

I'm not sure whether the parameter scaling is exactly correct for the R version compared to the original Matlab version, but the form of the model is the same. It might be that the parameters need to be divided by some number to get the equivalent Matlab parameters. I can look into this for you.

Matlab version

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The original Matlab code is here [https://github.com/AnthonyEbert/auto\_reg\_by\_country](https://urldefense.proofpoint.com/v2/url?u=https-3A__github.com_AnthonyEbert_auto-5Freg-5Fby-5Fcountry&d=DwMFAw&c=WO-RGvefibhHBZq3fL85hQ&r=zlTZqbZMzVgDe4_AP4saA2DYM2cbxXv0W6SJWxPrEvE&m=YatkUvotDB8geEsUu1qtP5-Mnojd09-p3K2fsCZdzOY&s=12gz4SEDAnVhSyUiwF2Dm5qnF4IJKe327NtmlsB0vT4&e=)

**JUNE 2020.**

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Dear Thien,

I am just making sure that you are aware of the R packages I built which can be used to replicate the results of Warne et al. (2020) "our paper".

The R package which implements the SEIR model is here: [https://github.com/AnthonyEbert/Conet1](https://urldefense.com/v3/__https:/github.com/AnthonyEbert/Conet1__;!!NVzLfOphnbDXSw!Q6QwfqaV2gw3rlpRdxLBv8nhDiBp_mmteukifqLgem0_pI-8sFT_yqxH10w9C3XLhtD9$)

An ABC package I developed which implements the Replenishment ABC (RABC) algorithm of Drovandi is here [https://github.com/AnthonyEbert/protoABC](https://urldefense.com/v3/__https:/github.com/AnthonyEbert/protoABC__;!!NVzLfOphnbDXSw!Q6QwfqaV2gw3rlpRdxLBv8nhDiBp_mmteukifqLgem0_pI-8sFT_yqxH10w9C9tZ2iuI$)

Install these packages as follows:

install.packages("remotes")

remotes::install\_github("AnthonyEbert/Conet1")

remotes::install\_github("AnthonyEbert/protoABC")

protoABC

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There's no reason you must use protoABC, other R packages which implement ABC are available. The only advantage is that implementing your own distance is relatively easy with protoABC (hopefully! Although people always say this about their own software).

The example in the last code block of [https://github.com/AnthonyEbert/protoABC/blob/master/README.md](https://urldefense.com/v3/__https:/github.com/AnthonyEbert/protoABC/blob/master/README.md__;!!NVzLfOphnbDXSw!Q6QwfqaV2gw3rlpRdxLBv8nhDiBp_mmteukifqLgem0_pI-8sFT_yqxH10w9C8Uyga7n$), uses RABC.

The philosophy of protoABC is that the ABC algorithm does not see the model output, only a computed distance for each parameter proposal. I did this to avoid the difficulty of handling complex model output within protoABC. The distance function handles all this internally, it generates a model realisation and then it computes a distance between this and the observed data. So the distance function in protoABC is really the generative model as well as the distance function between simulated and observed data. The observed data, as well as anything else the distance function might need, is supplied by the `inp` object.

If you supply a cluster object. `cl`,  to abc\_start, the algorithm will run in parallel. For example:

library(parallel)

cl <- makeCluster(detectCores())

abc\_post\_4 <- abc\_start(

  prior,

  distance,

  distance\_args = inp,

  cl = cl,

  control = list(n = 100)

)

Conet1

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Once you've installed Conet1, you can run this script [https://github.com/AnthonyEbert/Conet1/blob/master/script/testing.R](https://urldefense.com/v3/__https:/github.com/AnthonyEbert/Conet1/blob/master/script/testing.R__;!!NVzLfOphnbDXSw!Q6QwfqaV2gw3rlpRdxLBv8nhDiBp_mmteukifqLgem0_pI-8sFT_yqxH10w9C7WDu7je$) to generate model output.

Please contact me if you need any help at all.

Thanks

Anthony

https://github.com/AnthonyEbert/protoABC/blob/master/R/control.R

<https://github.com/AnthonyEbert/protoABC/blob/mas>

distance <- function(theta, inp){  h = Conet1::gen\_david(Conet1::names\_david, theta, 0, 3, inp$inp)  output = sum(abs(h - inp$h))  return(output) }