NOAA FISHERIES

Northwest Fisheries Science Center

Lessons learned from the ss3sim project on sharing, hosting, and maintaining simulation code

Kelli F. Johnson and Kathryn Doering

Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA, Seattle, WA, USA

2.5% of surveyed companies completed 100.0% of their projects successfully.

Hardy-Vallee (2012)

Coming together is a beginning;
keeping together is progress;
working together is success.
Henry Ford

beginning

progress

success

beginning

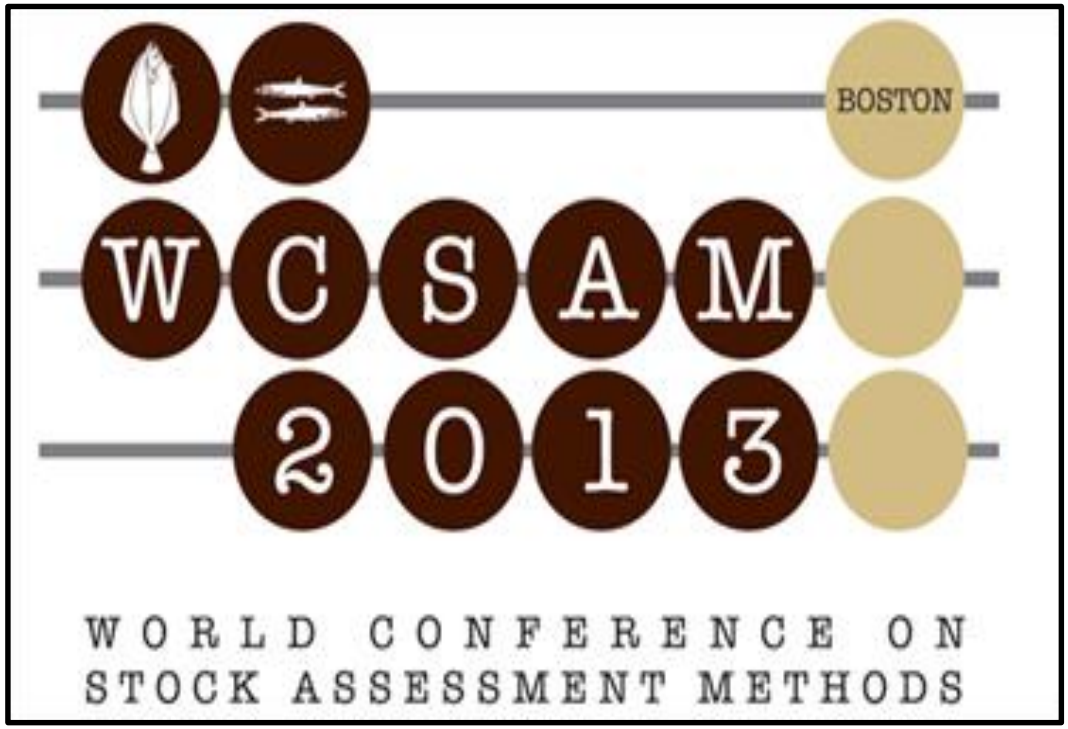
WCSAM 2013

WORLD CONFERENCE ON STOCK ASSESSMENT METHODS

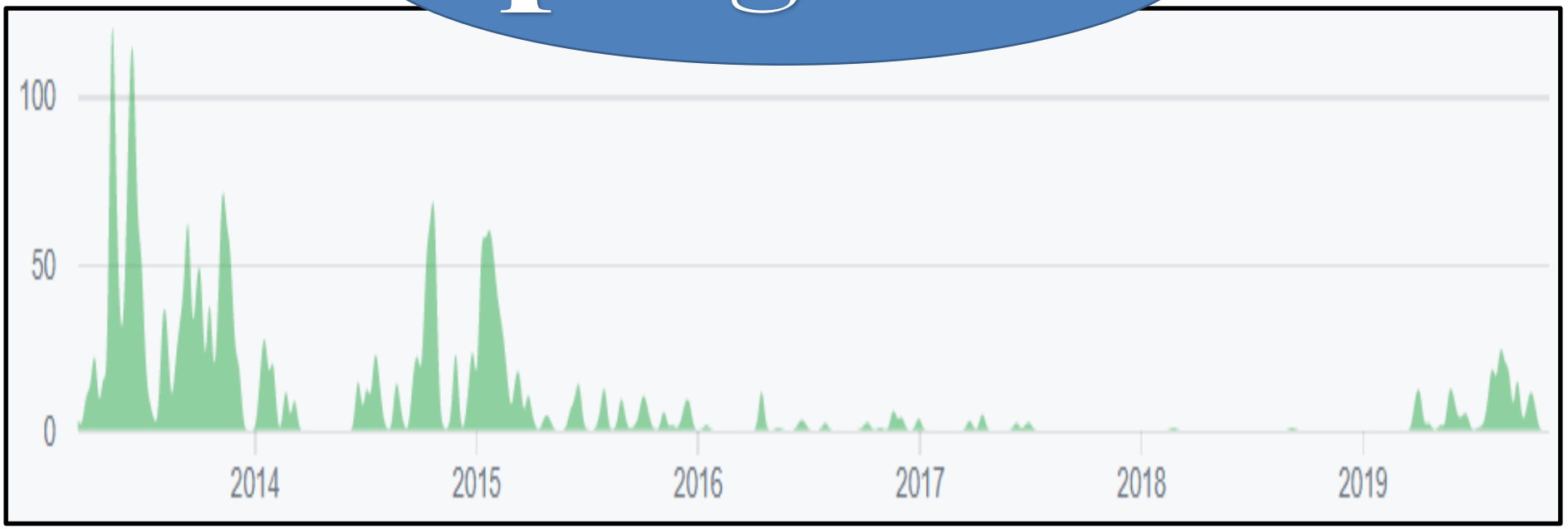
progress

success

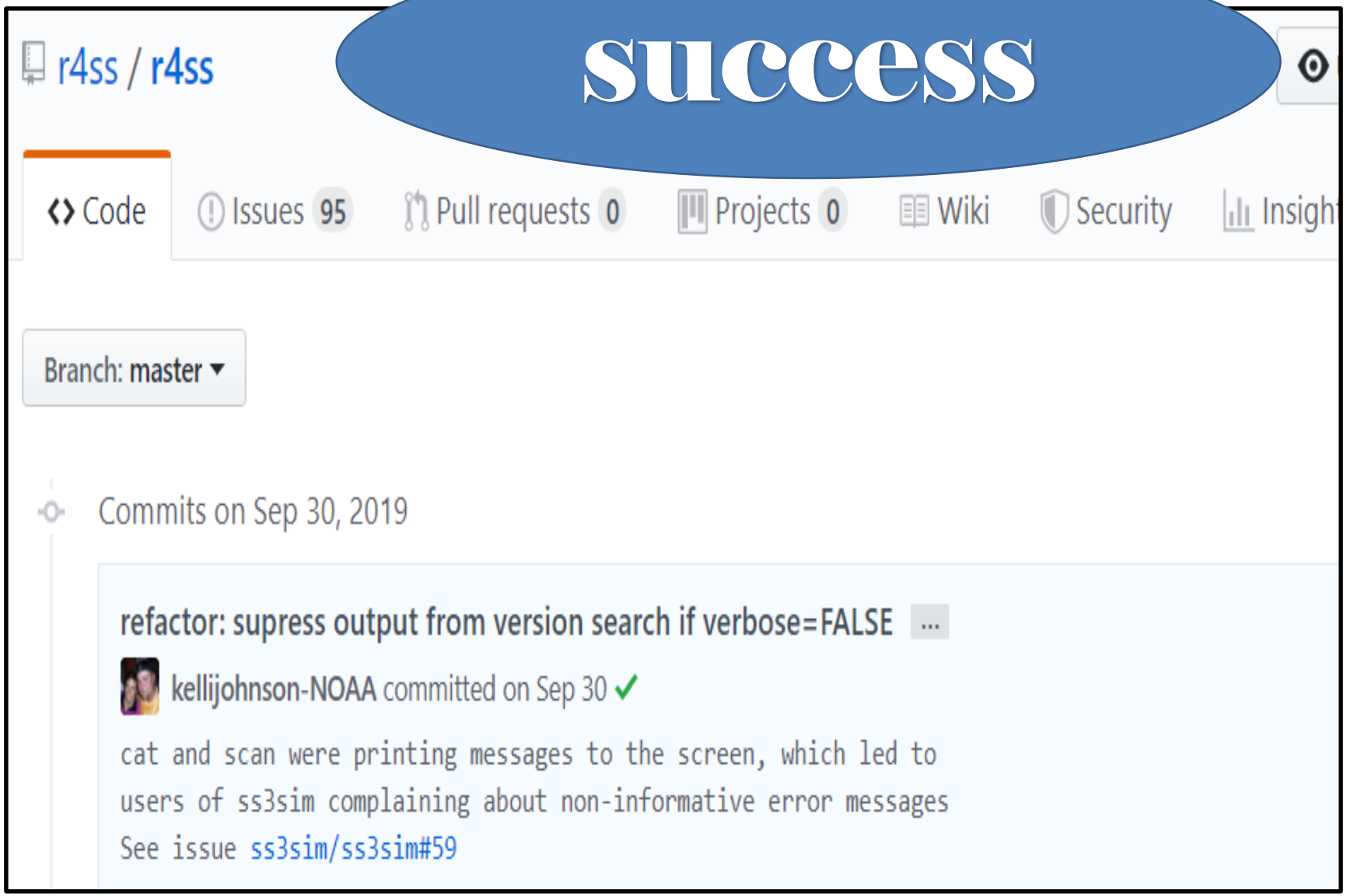
beginning


BOSTON
WCSAM
2013
WORLD CONFERENCE ON
STOCK ASSESSMENT METHODS

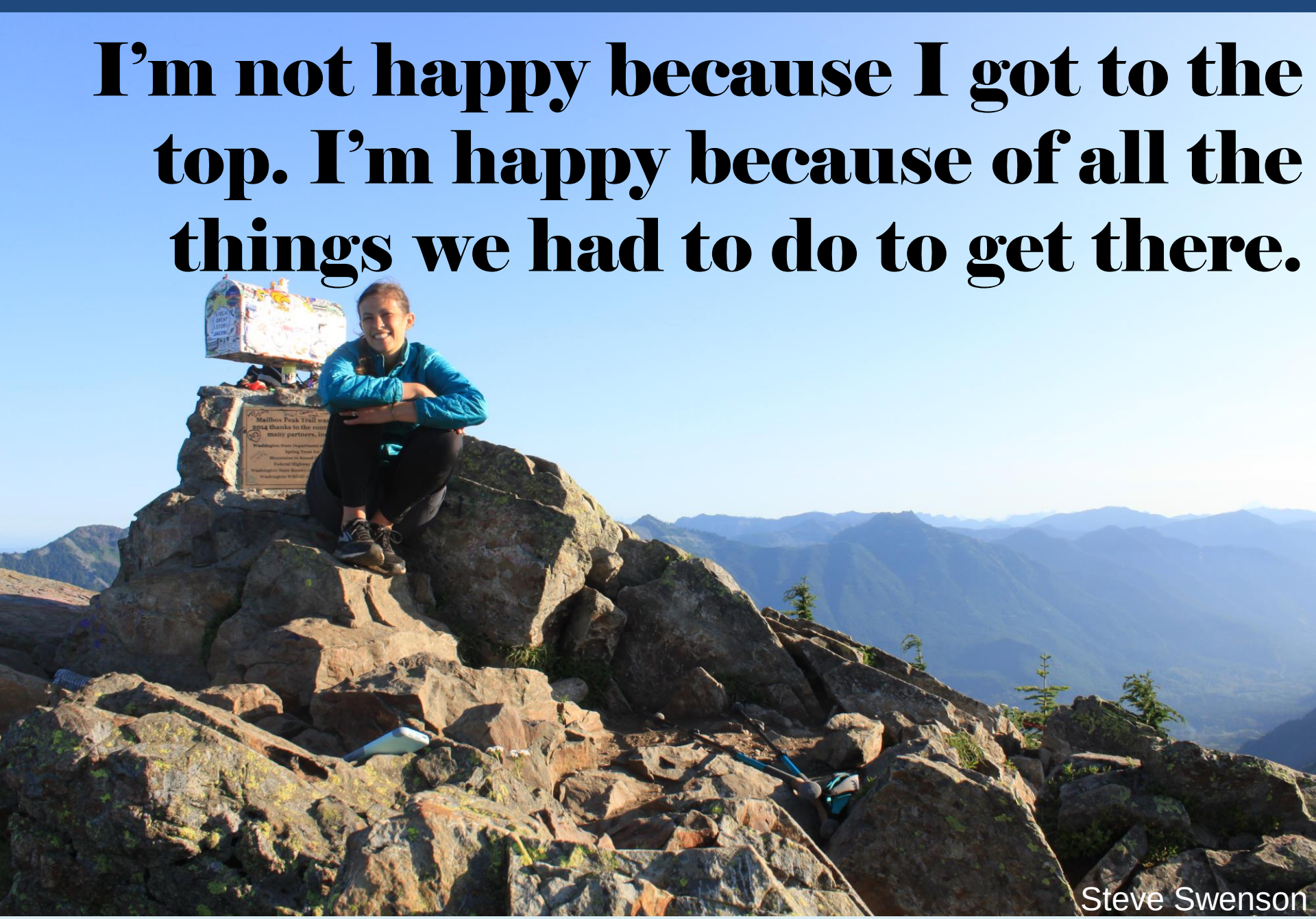
progress

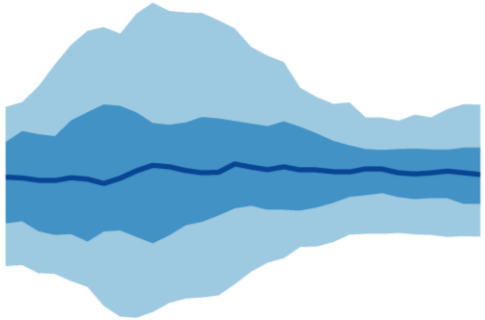


success


r4ss / r4ss
Code
Issues 95
Pull requests 0
Projects 0
Wiki
Security
Insigh
Branch: master
Commits on Sep 30, 2019
refactor: supress output from version search if verbose=FALSE
kellijohnson-NOAA committed on Sep 30
cat and scan were printing messages to the screen, which led to
users of ss3sim complaining about non-informative error messages
See issue ss3sim/ss3sim#59

I'm not happy because I got to the top. I'm happy because of all the things we had to do to get there.



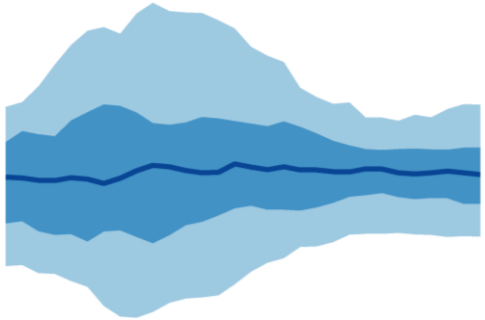


ss3sim

1. cheat sheet
2. testing

R code

3. hosting
4. dependencies



ss3sim

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ss3sim: : CHEAT SHEET

ss3sim in R

(1) simulate
(2) estimate
(3) summarize

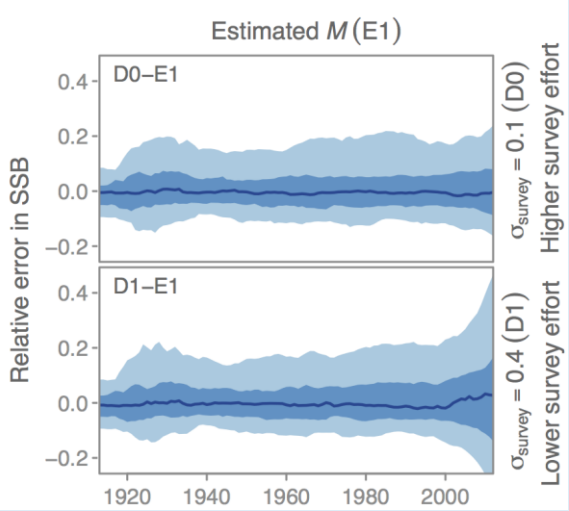
scenario availability

case	description
D	Age- and length-compositions CPUE
F	Fishing mortality
M, …	OM and EM values & phases
R	Retrospective years
spp	Conditioned model

dependencies

SS3 R4SS ggplot2

simulation results



example R code

```r
#·Install·the·package
install.packages("ss3sim")
library(ss3sim)
#·Run·a·simulation·with
#·constant·F·@·F_MSY·and·estimate·M
d·<-·system.file("extdata",·package·=·"ss3sim")
run_ss3sim(iterations·=·1:100,·
··scenarios·=·c("D0-E1-F0-cod",·"D1-E1-F0-cod"),·
··case_folder·=·file.path(d,·"eg-cases"),
··om_dir·=·file.path(d,·"models",·"cod-om"),
··em_dir·=·file.path(d,·"models",·"cod-em"))
get_results_all()
```


CC BY SA
Kelli F. Johnson • kelli.johnson@noaa.gov • 206-860-3490 • github.com/ss3sim

ss3sim: An R Package for Fisheries Stock Assessment Simulation with Stock Synthesis

Sean C. Anderson, Cole C. Monnahan, Kelli F. Johnson, Kotaro Ono, Juan L. Valero

Published: April 3, 2014 • https://doi.org/10.1371/journal.pone.0092725

Time-varying natural mortality in fisheries stock assessment models: identifying a default approach

FREE

Kelli F. Johnson, Cole C. Monnah
Sean C. Anderson, Curry J. Cunning
Melissa L. Muradian, Kotaro Ono ...

The importance of length and age composition data in statistical age-structured models for marine species

FREE

The effect of length bin width on growth estimation in integrated age-structured stock assess

Cole C. Monn
Ferro [b], Kelli F.
Valero [f]

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https://doi.org

An empirical weight-at-age approach reduces estimation bias compared to modeling parame growth in integrated, statistical stock assessme mode

Peter T. Kuriy
[c], Kelli F. John
[f]

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Looking in the rear-view mirror: bias and retrospective patterns in integrated, age-structured stock assessment models

FREE

Felipe Hurtado-Ferro, Cody S. Szuwalski, Juan L. Valero, Sean C. Anderson, Curry J. Cunningham, Kelli F. Johnson, Roberto Licandeo, Carey R. McGilliard, Cole C. Monnahan, Melissa L. Muradian ... Show more
Author Notes

ICES Journal of Marine Science, Volume 72, Issue 1, January 2015, Pages 99–110, https://doi.org/10.1093/icesims/fsu198

Can autocorrelated assessment model

Kelli F. Johnson [a,*], Eliza
Richard D. Methot [d], An

[a] *School of Aquatic and Fishery Sciences,*
[b] *Fishery Resource Analysis and Monitor Atmospheric Administration, 2725 Mont*
[c] *Northeast Fisheries Science Center, 166*
[d] *NOAA Senior Scientist for Stock Assessr East, Seattle, WA 98112, USA*

How does growth misspecification affect management advice derived from an integrated fisheries stock assessment model?

Christine C. Stawitz [a], Melissa A. Haltuch [b], Kelli F. Johnson [b]

ss3sim: An R Package for Fisheries Stock Assessment Simulation with Stock Synthesis

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success

Time-varyi
assess

FREE

Kelli
Sean C.
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[b] Fishery Resource Analysis and Monitor
Atmospheric Administration, 2725 Mont
[c] Northeast Fisheries Science Center, 166
[d] NOAA Senior Scientist for Stock Assess
East, Seattle, WA 98112, USA

-structured

Cody S. Szuwalski, Juan L. Valero, Sean C. Anderson, Curry J. Cunningham, Kelli F. Johnson, Roberto Licandeo, Carey R. McGilliard, Cole C. Monnahan, Melissa L. Muradian ... Show more
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How does growth misspecification affect management advice derived from an integrated fisheries stock assessment model?

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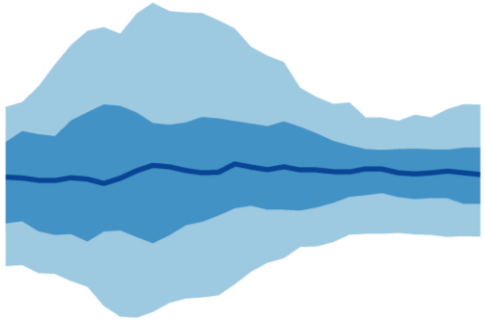

ss3sim

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testing

Image curtesy of Museum of Cannock Chase

testing: Simon Pitt

- you write code once
- you read code many times
- too many parts to hold in your mind at once
- need 100% test coverage
- can **never** know if you've tested everything

testing

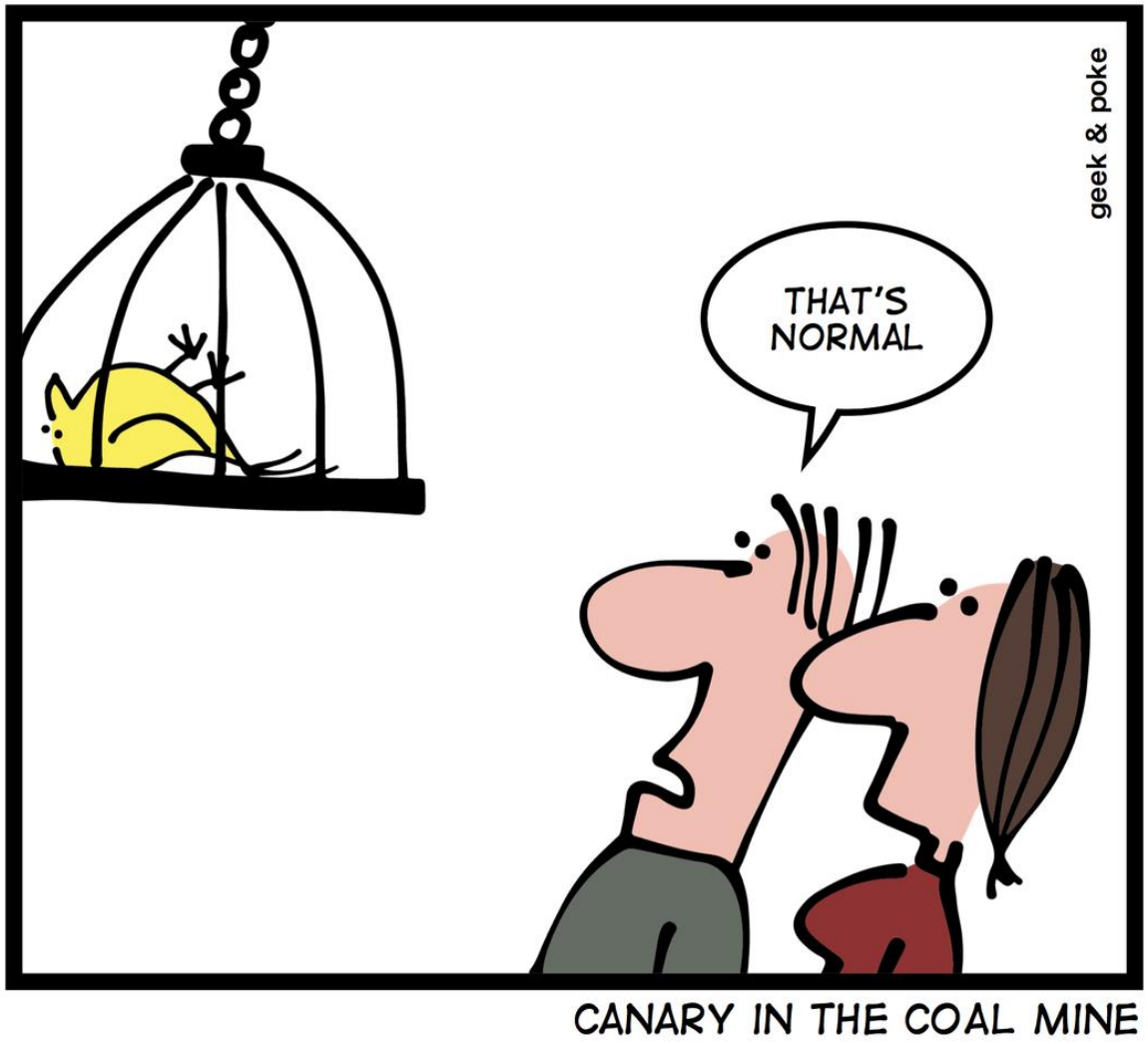
+

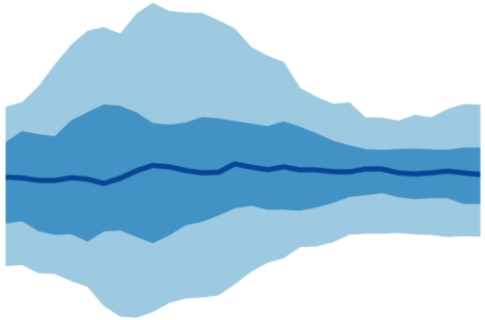
=

master:

development:

testing





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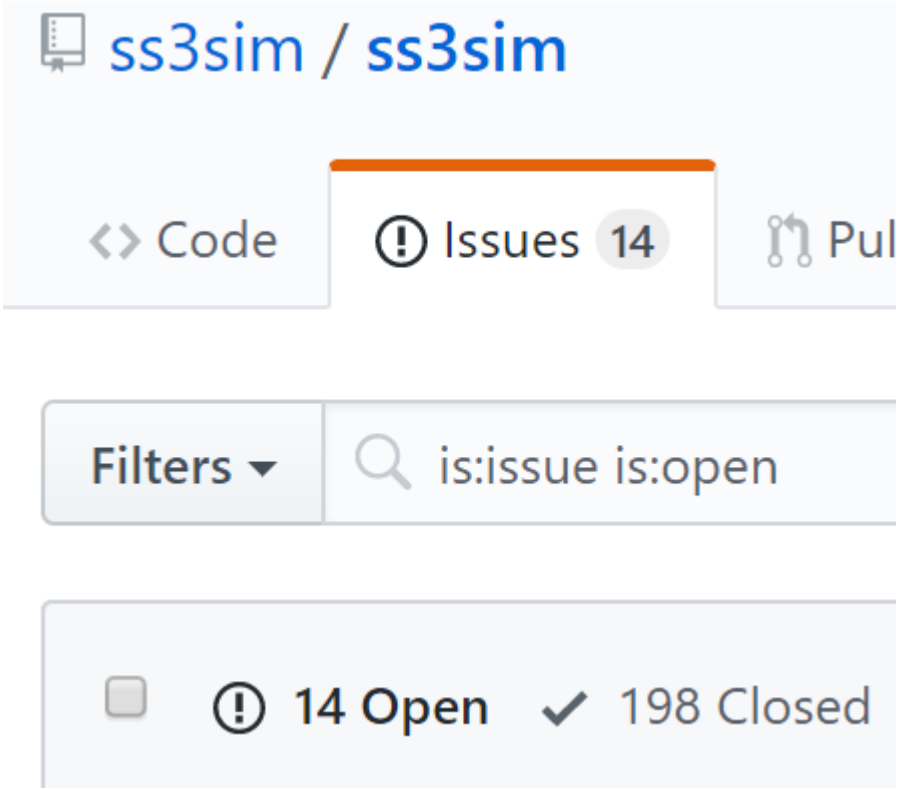
hosting @ github.com/ss3sim/ss3sim



hosting: feedback from users

Do not delete CompReport.sso #215

Closed **ElizabethCouncill** opened this issue on Jun 19, 2015 · 2 comments

ElizabethCouncill commented on Jun 19, 2015

I think the utility of the package is limited by having no option to access expected values or residuals or expected sample sizes, or likelihood contributions for the composition data, which is usually available in CompReport.sso file. Ss3sim deletes this file in the output folder currently.

kellijohnson-NOAA commented on Jun 20, 2015 Member

hosting: feedback from more users

Example for change_e fails #243

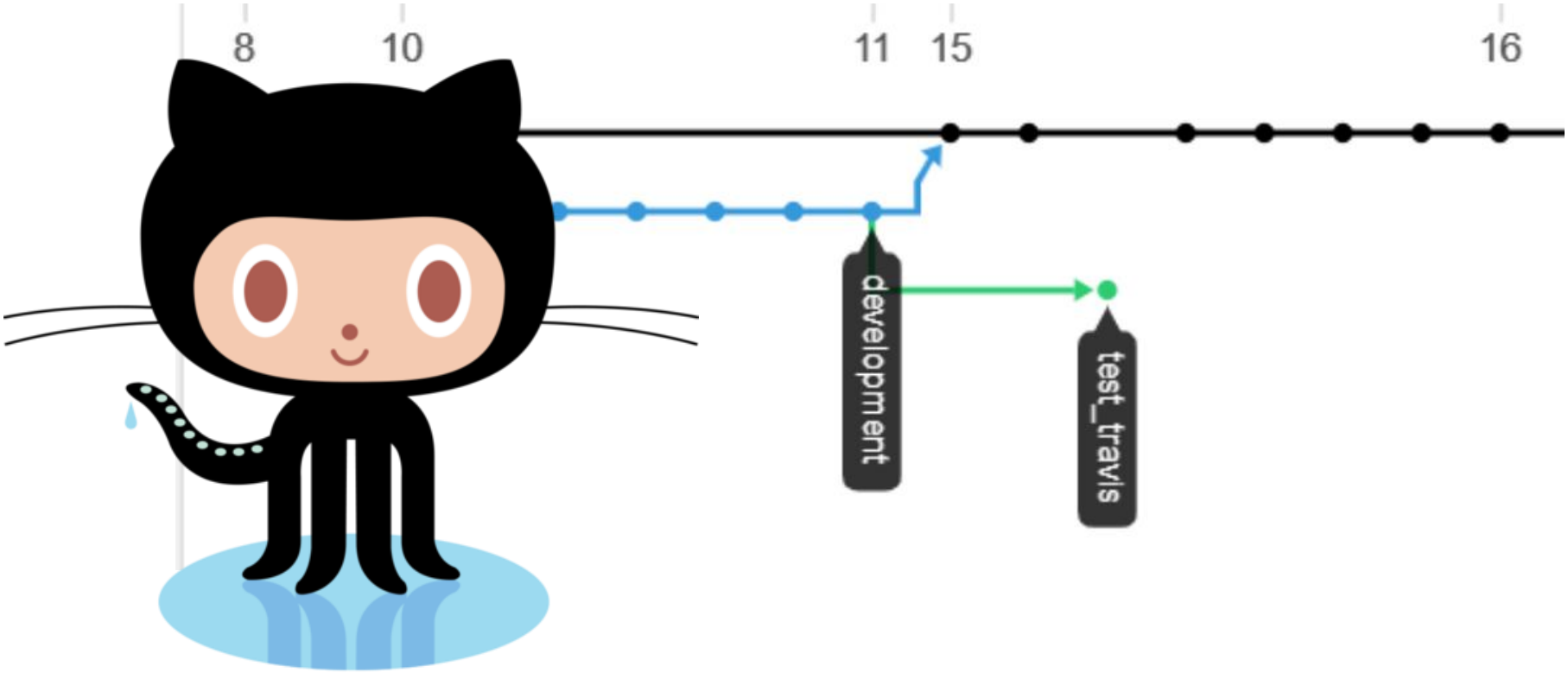
Closed **iagomosqueira** opened this issue on Jan 9, 2018 · 2 comments

iagomosqueira commented on Jan 9, 2018

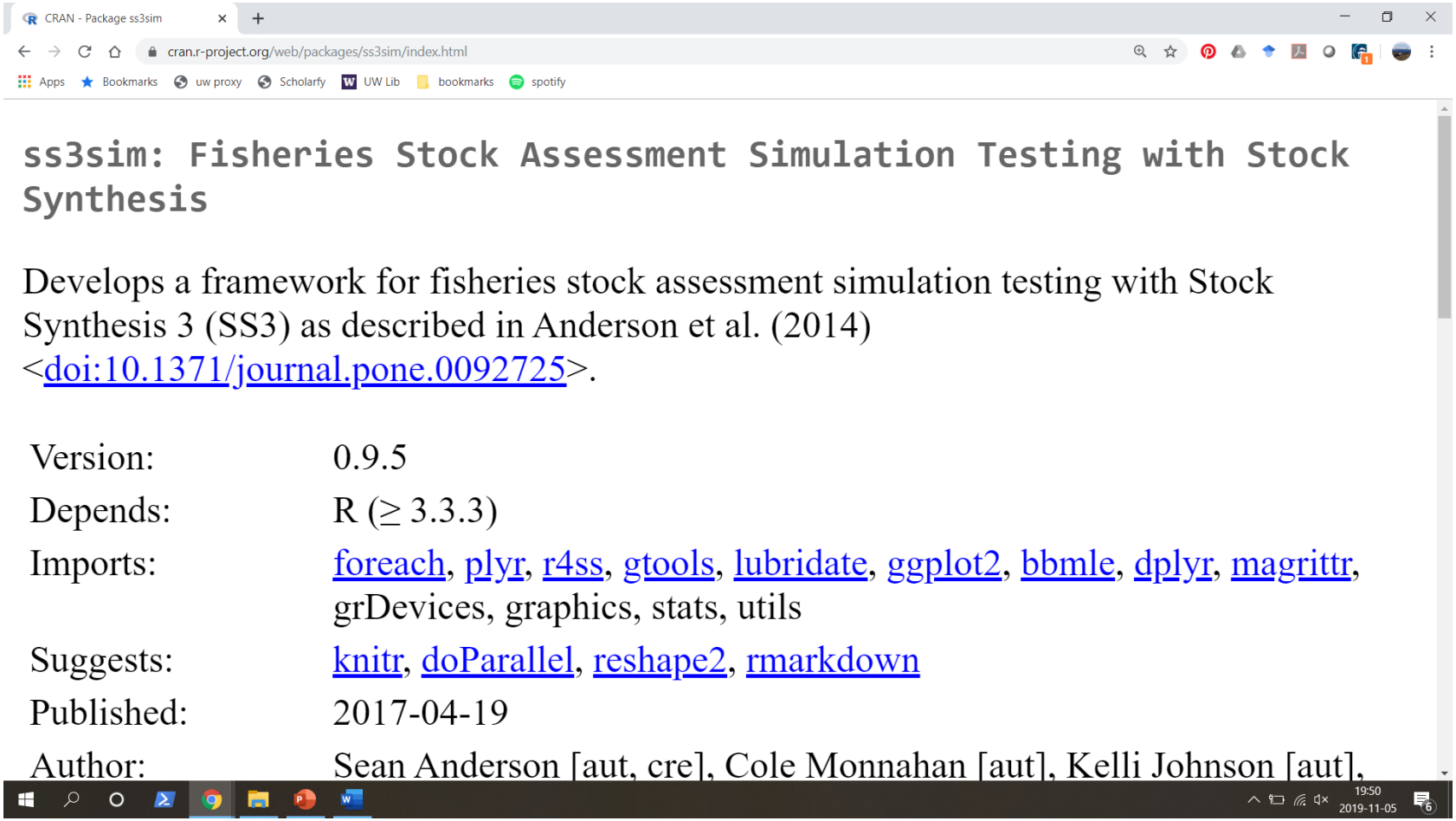
I was trying to run the example for change_e and got an error on the path being created to access the control file. After the first few lines of the example I get to

```
> change_e(ctl_file_in = ctl_file, ctl_file_out = "change_e.ctl",
+          dat_list = data.old, for_file_in = "forecast.ss",
+          natM_type = "n_breakpoints", natM_n_breakpoints = c(1, 4),
+          natM_lorenzen = NULL, natM_val = c(.2, 3, 0.4, 5),
+          par_name = c("_steep", "SizeSel_1P_1_Fishery"),
+          par_int = c(0.3, 40), par_phase = c(3, 2),
+          forecast_num = 0, run_change_e_full = TRUE )
```

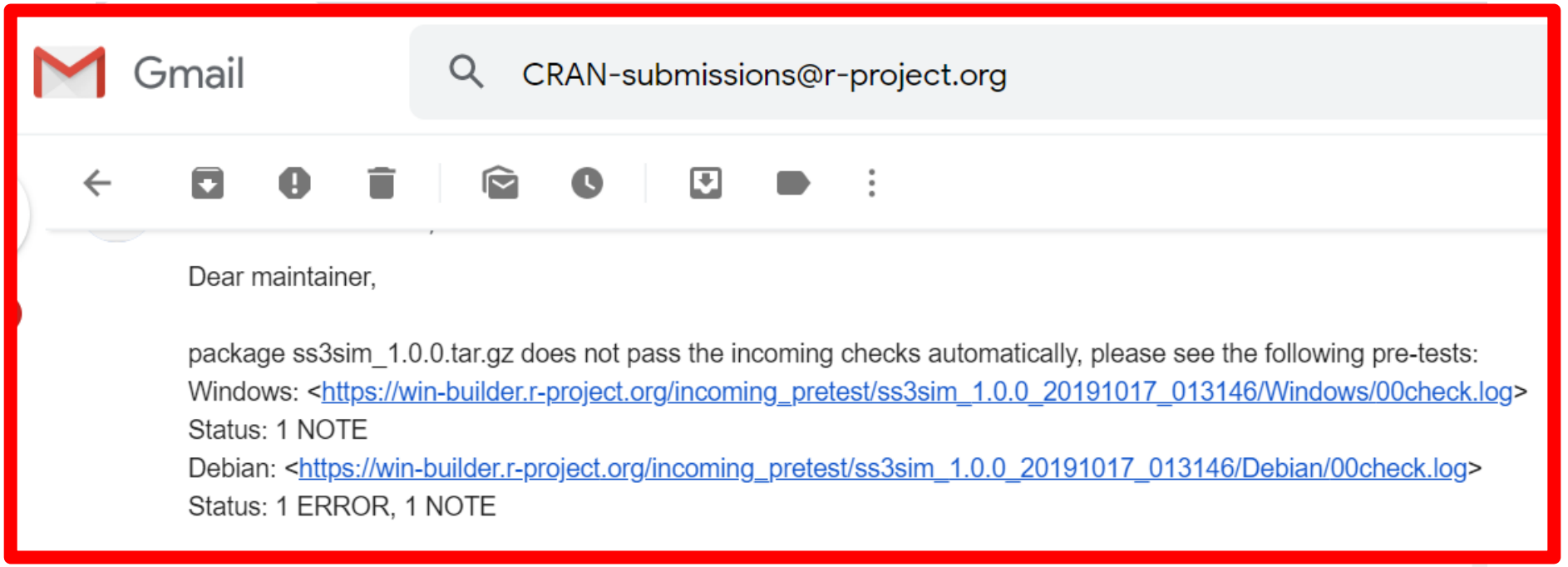
hosting @ github.com/ss3sim/ss3sim



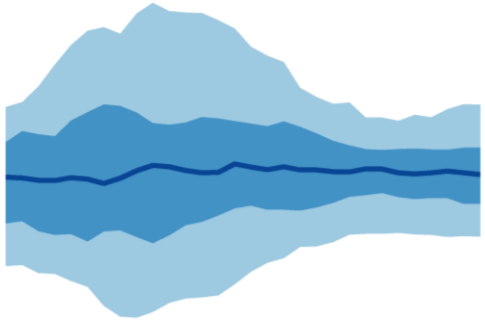
hosting: CRAN



hosting: CRAN



	grDevices, graphics, stats, utils
Suggests:	knitr, doParallel, reshape2, rmarkdown
Published:	2017-04-19
Author:	Sean Anderson [aut, cre], Cole Monnahan [aut], Kelli Johnson [aut],



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dependencies

"Good programmers
write good code;

great programmers
steal great code"

hashnode.com

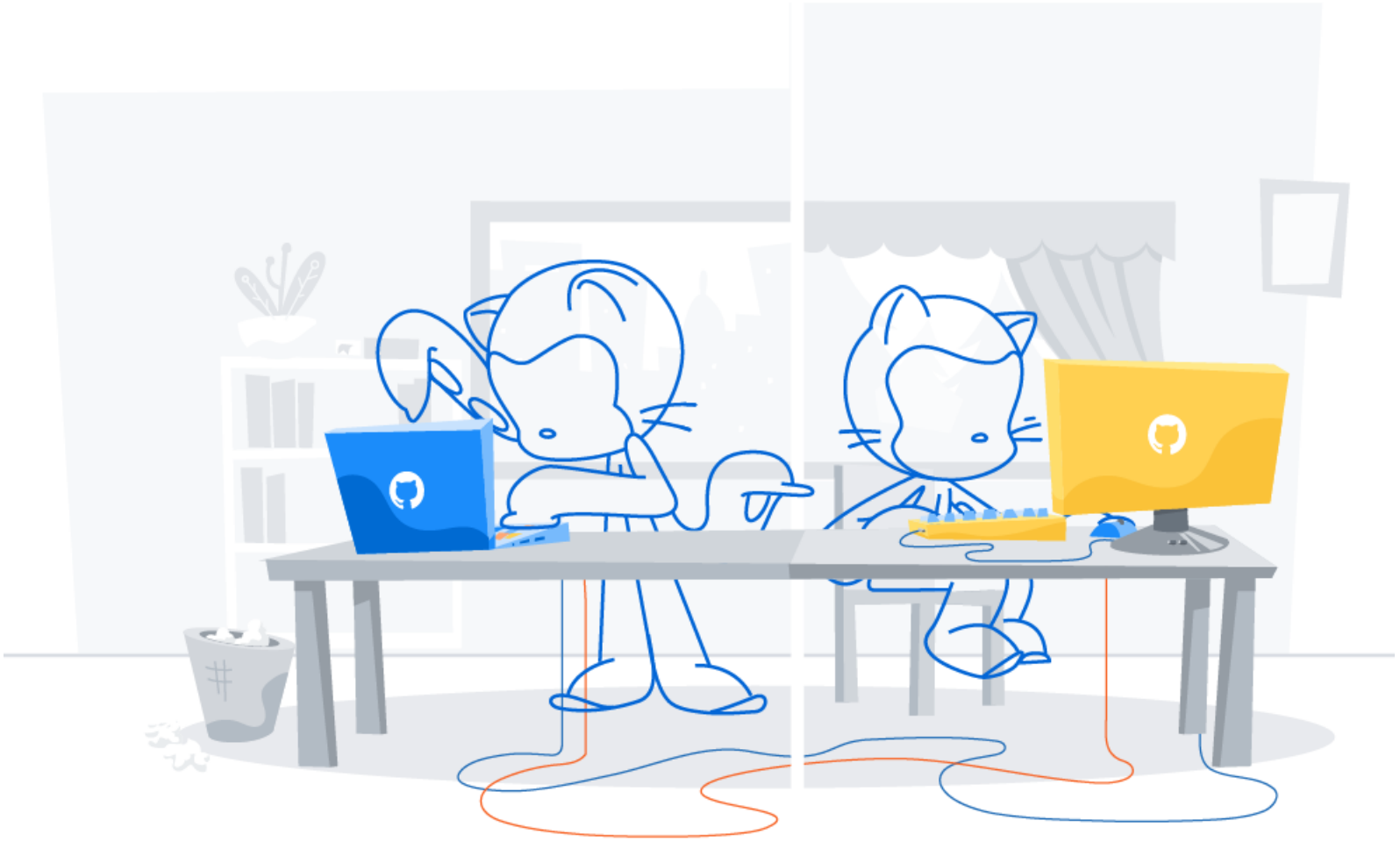
SS3

3.30.14

R4SS

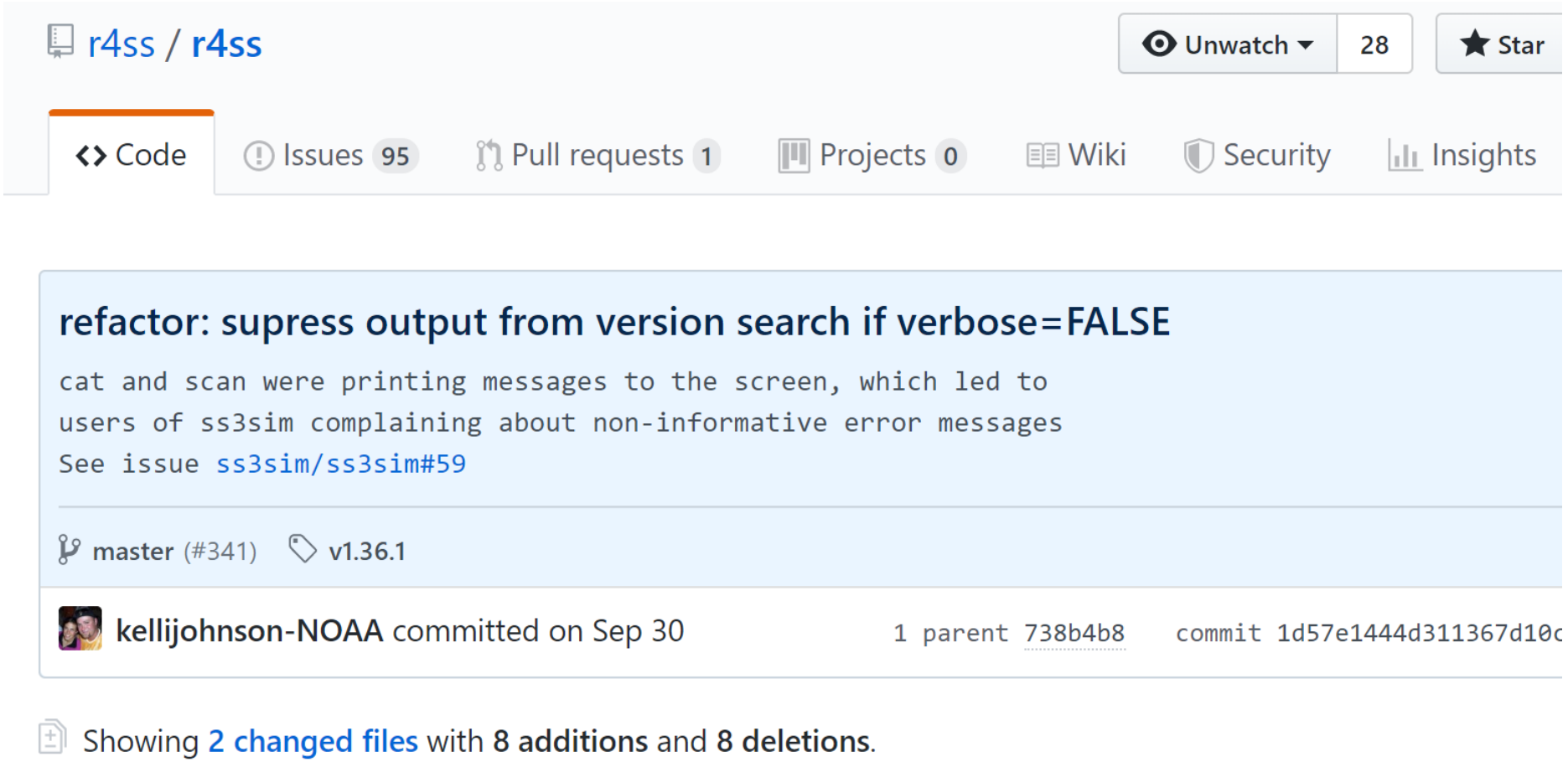
1.35.0

dependencies: working together



https://github.blog/2019-10-14-introducing-autolink-references/

dependencies: r4ss commit



dependenci

success

r4ss / r4ss

Star

Code | Issues 95 | Pull requests 1 | Projects 0 | Wiki | Security | Insights

refactor: supress output from version search if verbose=FALSE

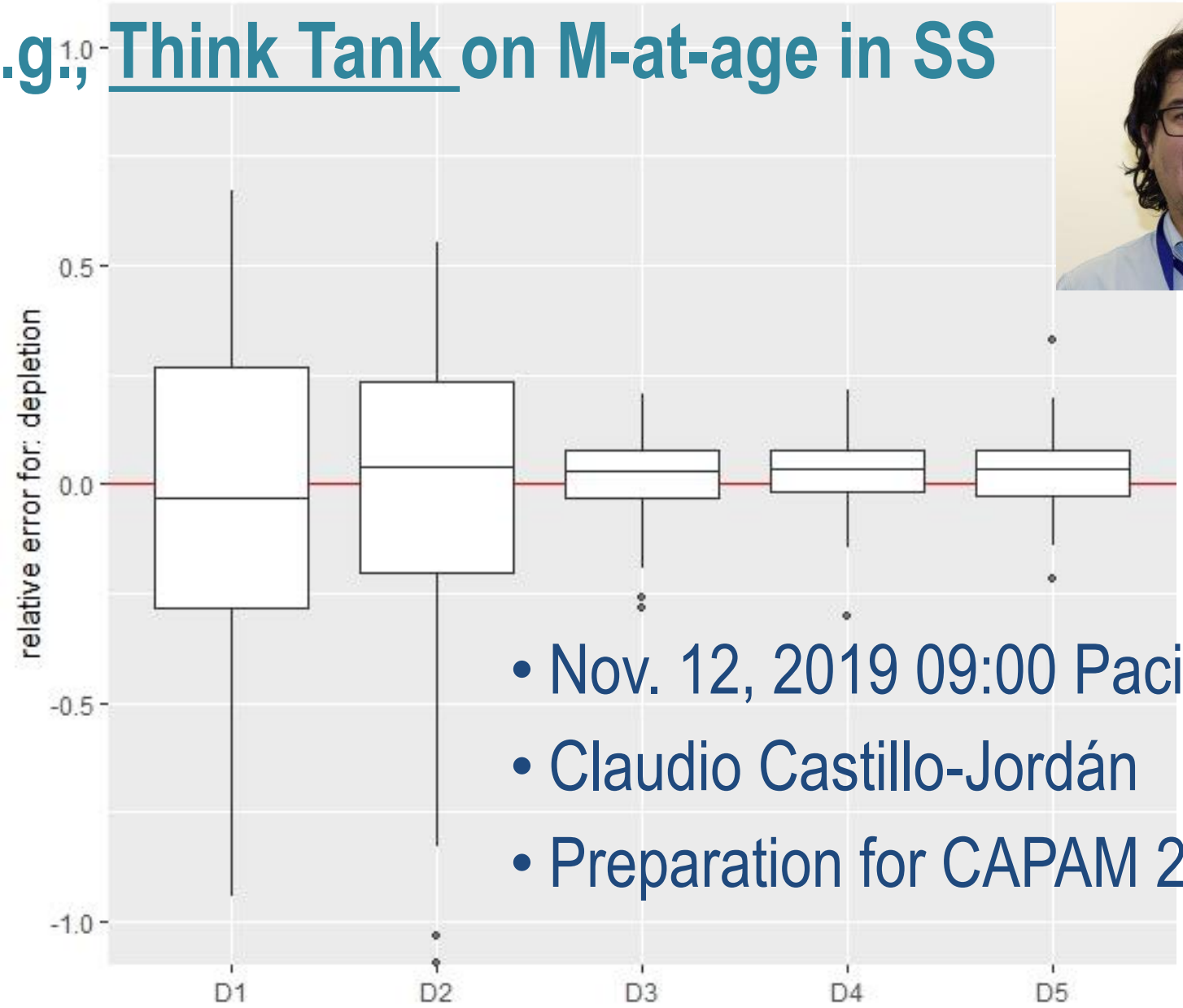
```
cat and scan were printing messages to the screen, which led to
users of ss3sim complaining about non-informative error messages
See issue ss3sim/ss3sim#59
```

master (#341) v1.36.1

kellijohnson-NOAA committed on Sep 30 1 parent 738b4b8 commit 1d57e1444d311367d10c

Showing 2 changed files with 8 additions and 8 deletions.

e.g., Think Tank on M-at-age in SS



- Nov. 12, 2019 09:00 Pacific Time
- Claudio Castillo-Jordán
- Preparation for CAPAM 2020

- sharing is caring
- strive for CRAN
- depend on a few CRAN packages

kelli.johnson@noaa.gov