R packages & Debugging

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May 2017

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github.com/brry

swc-bb.github.io/2017-05-17-r-workshop

Presentation template generated with `berryFunctions::createPres`

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Why R packages

Marvins Stuff here...

Good introductions linked here: github.com/brry/misc

Devtools for package structure creation

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dir.create("subfolder") # optional
setwd("subfolder")
library(devtools)

create("packageName")
setup() # if repos is initialized on github, see Appendix

check()
```

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Exercise 1: create the package structure

- Create a package for the linear storage cascade functions we provide.
- BONUS: Use git from the beginning (see Appendix)
- Check the package
- Now add the functions in bit.ly/swc_rfun to the R folder

Solution to Exercise 1: create the package structure

```
devtools::create("lsc")
devtools::check()
```

Roxygen for Documentation

Rstudio - Code - Insert Roxygen Skeleton (`CTRL` + `ALT` + `SHIFT` + `R`)

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devtools::document() # calls roxygen2::roxygenise()

check() # will also update documentation
install() # install the package locally
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Exercise 2: Document functions

- Document the nse function (we'll do this one together)
- Create datasets within the package (following instructions in data.R)
- Document the rmse function
- Check and install the package

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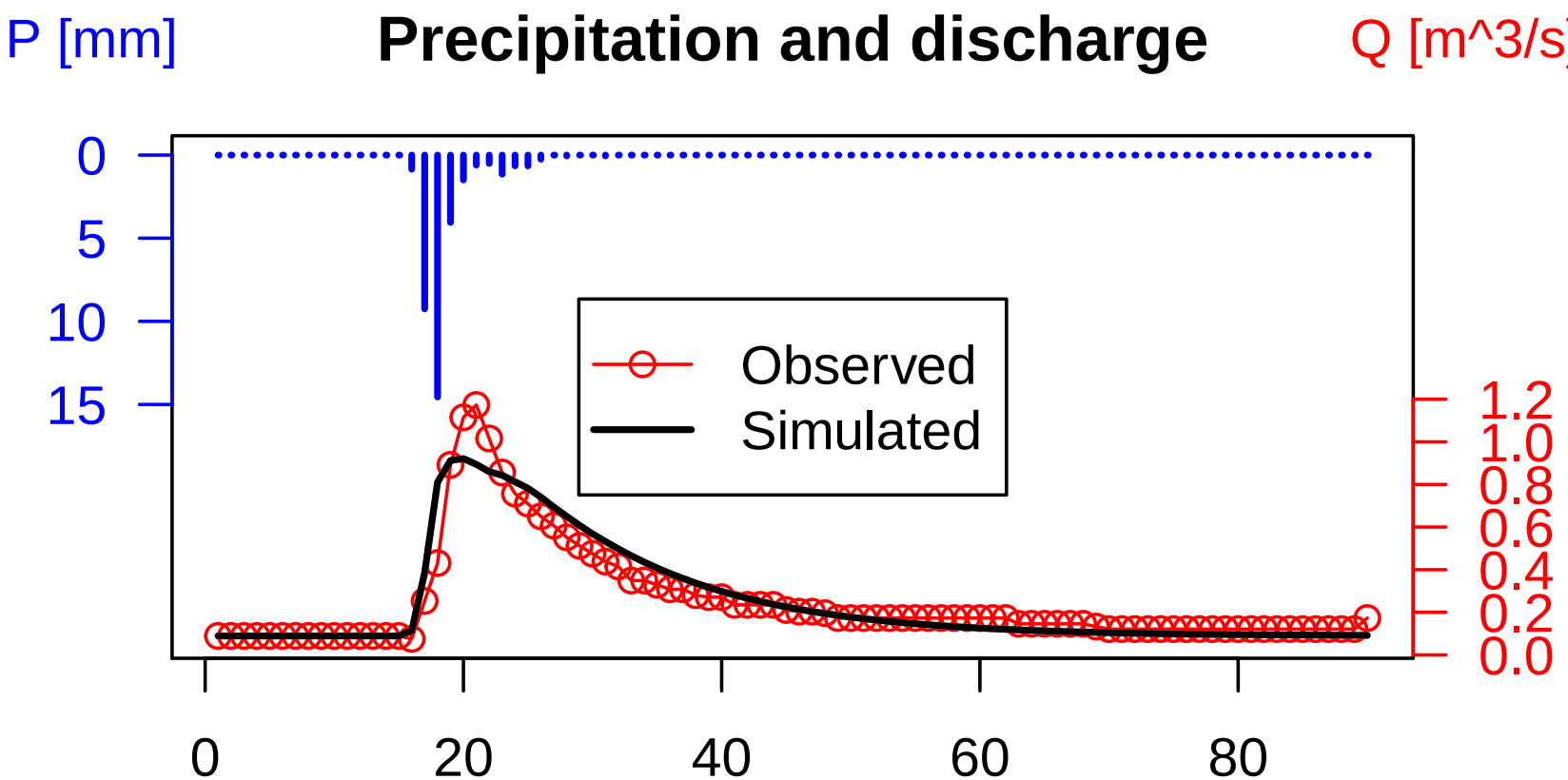
R. Peng (2002): Interactive Debugging Tools in R
D. Murdoch (2010): Debugging in R
H. Wickham (2015): Advanced R: debugging
Example: Pete Werner Blog Post (2013)

Exercise 3: Debugging

- Load your package and the datasets. Correct the functions until `lsc(calib$P, calib$Q, area=1.6)` returns the result below.
- BONUS: commit each change to git.



Solutions to Exercise 3: Debugging

- `stupid error you can easily remove` - traceback - find location of error - lsc#75 - just comment it out
- `harder to find but still stupid` - traceback - nse#22 - ditto
- `Error in plot:  need finite 'ylim' value` - debug/browser/options(error=recover) - lsc#107 - NAs in Q - range(Q, na.rm=TRUE) - also in other applicable locations
- `There were 50 or more warnings` - come from rmse being called in optimization - add argument quietNA (or similar) to lsc that is passed to rmse in lsc#81

Version control with github

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- Work. Commit. Push. Repeat.

More things

- ...