Exercise 4

–Addendum–

Installing and using R Shiny for PalLib

Installing `shiny`

In order to make sure everything works correctly, be aware that we have tested for `R 3.1`. Upon opening R, type the following:

```
> version
```

R will then output something similar to this:

```
               _
platform       x86_64-apple-darwin13.1.0
arch           x86_64
os             darwin13.1.0
system         x86_64, darwin13.1.0
status

major          3
minor          1.0


year           2014
month          04
day            10
svn rev        65387
language       R

version.string R version 3.1.0 (2014-04-10)
nickname       Spring Dance
```

The important things to check for are the `version.string` or the `major` and `minor` release numbers. If they are incorrect, please try to update. Next, install the `shiny` library via:

```
> install.packages("shiny")
```

You will need to select a `CRAN` mirror. Choosing `0-Cloud`, `Germany (Berlin)`, `Germany (Bonn)`, or `Germany (Goettingen)` will all work. I would recommend against choosing a server in another country as download times may increase. If there are any errors (usually from unresolved dependencies), install the required packages first before re-attempting to install `shiny`. R will tell you which package it cannot find. A successful installation should look something like this:

```
The downloaded binary packages are in
/var/folders/g9/rnnpj68x1zx4ttywdy67gnpw0000gp/T//RtmpExWkgS/downloaded_packages
```

Bear in mind that the directory will not be identical! You can test if `shiny` was installed correctly by giving:

```
> library(shiny)
>
```

This loads the `shiny` library, which you will need to do any time you wish to run a `shiny` program. If there are no errors, `shiny` is installed correctly.

Starting the GUI

To begin, make sure you have all the relevant files. In R, navigate to the correct directory and give a `dir()`.

```
> setwd("/Users/Gierz/Documents/Uni/Doktor/Teaching/Dynamics2/PalLib/shiny-project/")
> # Your's will be different!
> dir()
[1] "paleoLibrary"                "run shiny app (windows).cmd"
[3] "server.R"                    "standard.shiny.R"
[5] "ui.R"
```

Compare your `dir()` command, and make sure you have all of the `.R` files. If everything is there, you can proceed with:

```
> library(shiny)
> runApp(".")

    Listening on http://127.0.0.1:3599
```

The `runApp(''.'')` will probably fail, as you need to install some packages first. One is particularly tricky to install, `clim.pact`. To do so, install the package `devtools` first, load it (with the library(devtools) command), and download the `clim.pact_2.3-10.tar` file from the website. You can install devtools by using the `install_local(path-to-tar)` command. You may also need to install other packages. Look at the error messages R sends when trying the command `runApp(''.'')`.

Using the GUI

In the file `standard.shiny.R` you will need to adapt the data path to where you have put the unpacked `PalLib.tar.gz` folder. Save this file before proceeding with runApp.

`R` will launch a web browser. You can select a timeseries, a field variable, and a time frame. In the correlation tab, you can compute the correlation between the timeseries and the selected field variable. In the composite map tab, you can compute the composite +− map.

Other tips:

- Sometimes, the program will pause, especially when making the spatial plots. Check the R console and push enter (return) if necessary.
- You can select to show a plot, a histogram, and a summary of the file in the Choose Field
- You can also select which composite to show in the Composite Analysis tab.
- To download the tar.gz file, use ftp:
  - see the ftp-howto on the website.
  - the file is in `incoming/pgierz/PalLib_new.tar.gz`; if it has been deleted, email me and I will upload it again.

Notes on submission form of the exercises: *Students may work together in groups, but each student is responsible for her/his own solutions. The answers to the questions shall be send to paul.gierz@awi.de.*