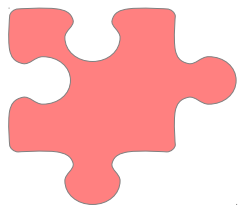


Empirical Statistical Downscaling

clim.pact



clim.pact



R-package:

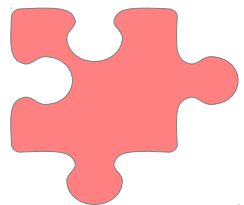
Computer code – R-functions

Manual pages – help

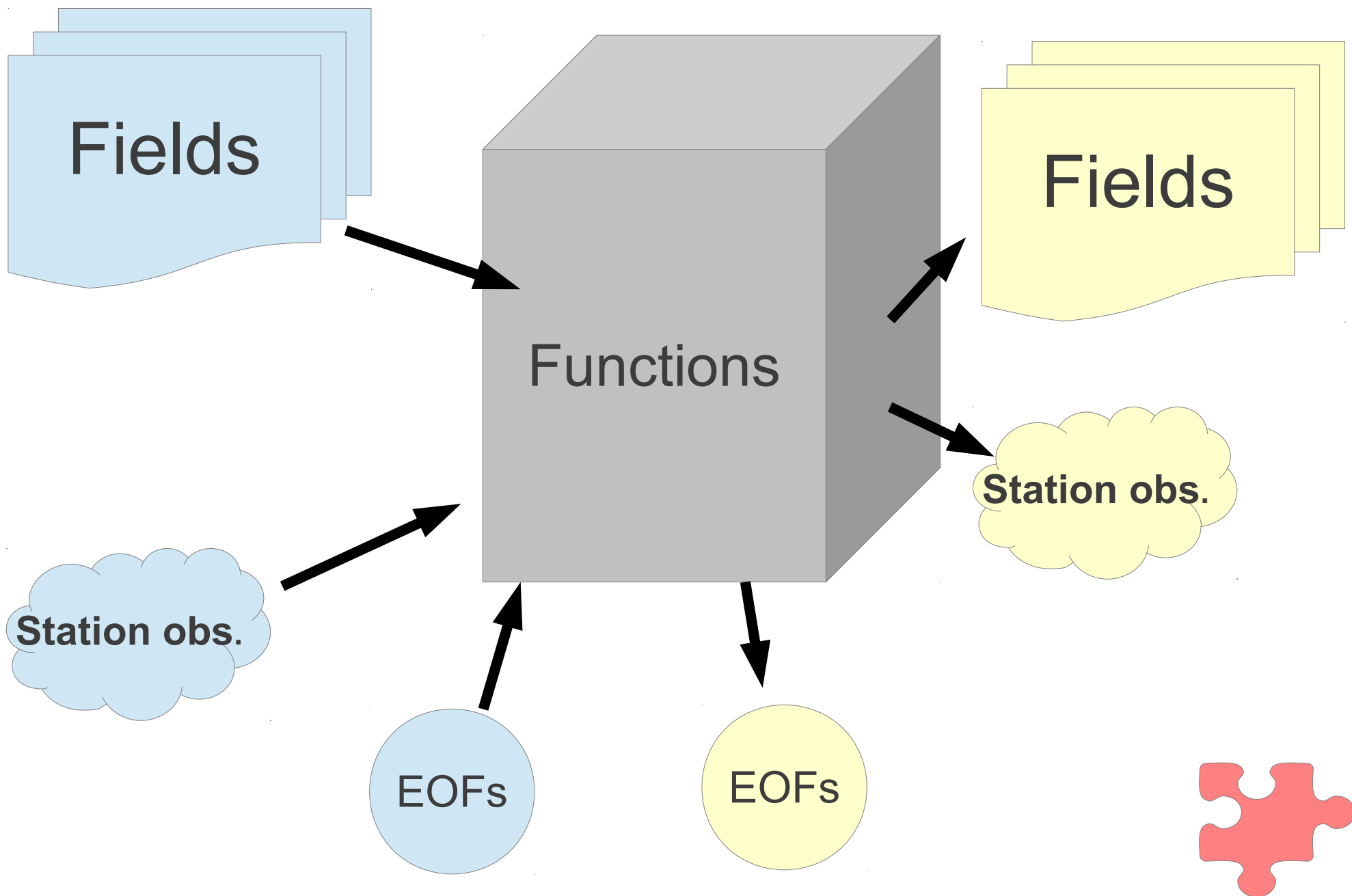
Data

Examples

Combine with a universe of packages & R in general.

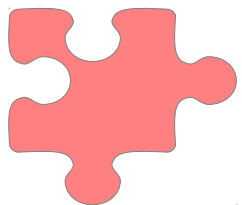


General parts



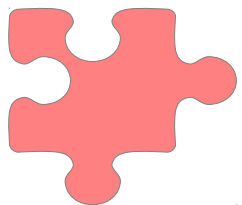
Examples

```
> data(oslo.t2m)
> data(DNMI.slp)
> X ← retrieve.nc(,v.nam="tas") # EOBS-TX
> x ← catFields(DNMI.slp,lon=c(-12,40),lat=c(55,65))
> eof1 ← EOF(DNMI.slp,mon=1,LINPACK=FALSE)
> DS(oslo.t2m,eof1) → ds
> data(DNMI.t2m)
> eof2 ← EOF(DNMI.t2m)
> cca ← CCA(eof1,eof2)
plotStation(oslo.t2m)
plotCCA(cca)
plotEOF(eof2)
```



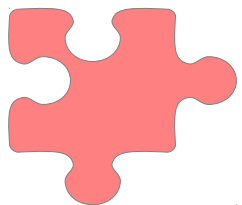
Classes of objects

- > class(oslo.t2m)
- > data(oslo.dm)
- > class(oslo.dm)
- > class(X)
- > class(eof1)



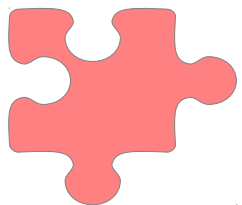
Contents of objects

- > `summary(oslo.t2m)`
- > `plot(oslo.t2m$yy,oslo.t2m$val[,1])`
- > `table(oslo.dm$yy)`



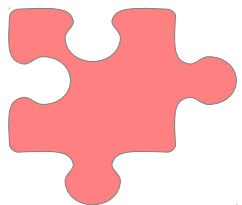
Common EOF

```
data(DNMI.slp)
SLP ← catFields(DNMI.slp,interval.1=c(1900,1970))
X ← catFields(DNMI.slp,interval.1=c(1971,2000))
> X2 ← catFields(SLP,X,mon=1)
> eof12 ← EOF(X2)
> ds12 ← DS(oslo.t2m,eof12)
> # Diagnostics:
> plotDS(ds12)
> plotEOF(eof12)
```



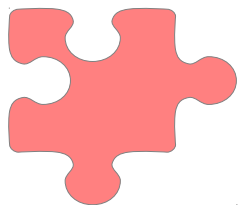
CatFields – care: anomalies and trends

- > X2 ← catFields(SLP,X,mon=1)
- > X3 ← catFields(SLP,X,demean=FALSE)
- > # Care when e.g. catFields is used to combine different section of GCM data



Supporting R-packages

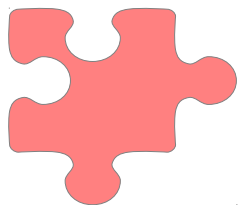
```
> # The analog model:  
> install.packages("anm")  
> # Post-processing ESD-results:  
> # e.g. gridding of results  
> install.packages("esd4all")  
DS(method="lm")
```



Daily data

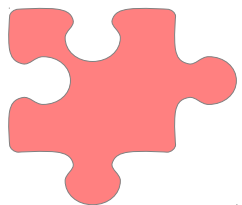
```
> #Organised in 4 seasonal sequences  
> data(eof.dc)  
> dsd ← DS(oslo.dm,eof.dc)  
> plotDS(dsd)
```

<ftp://ftp.met.no/users/rasmus/>



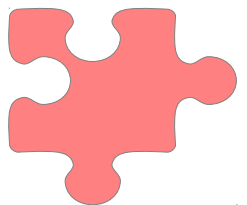
Basic downscaling

- > `DS(oslo.t2m,eof1,method="glm")`
- > `# can use own function or method='anm'`
- > `# use 'station.obj' to generate station objects.`



Good Practise

Always test the tool with known data where the answer is known a priori.



Adapting the code

3 different ways to a function.

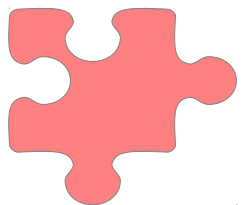
> DS()

> ?DS

> DS

help.start()

Source a new version to override old.

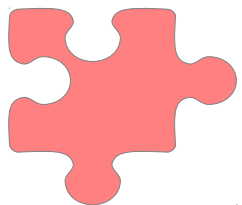


Forum

Facebook: R.ClimateAnalysis

<https://www.facebook.com/Rclimateanalysis>

For creating a network and mutual help with problems arising.



Further reading

- > ABC4ESD()
- > # New versions of clim.pact may be slightly different
- > # More streamlining and harmonised functions is planned – new R-package from the FP7 SPECS project?.

