

s2dverification

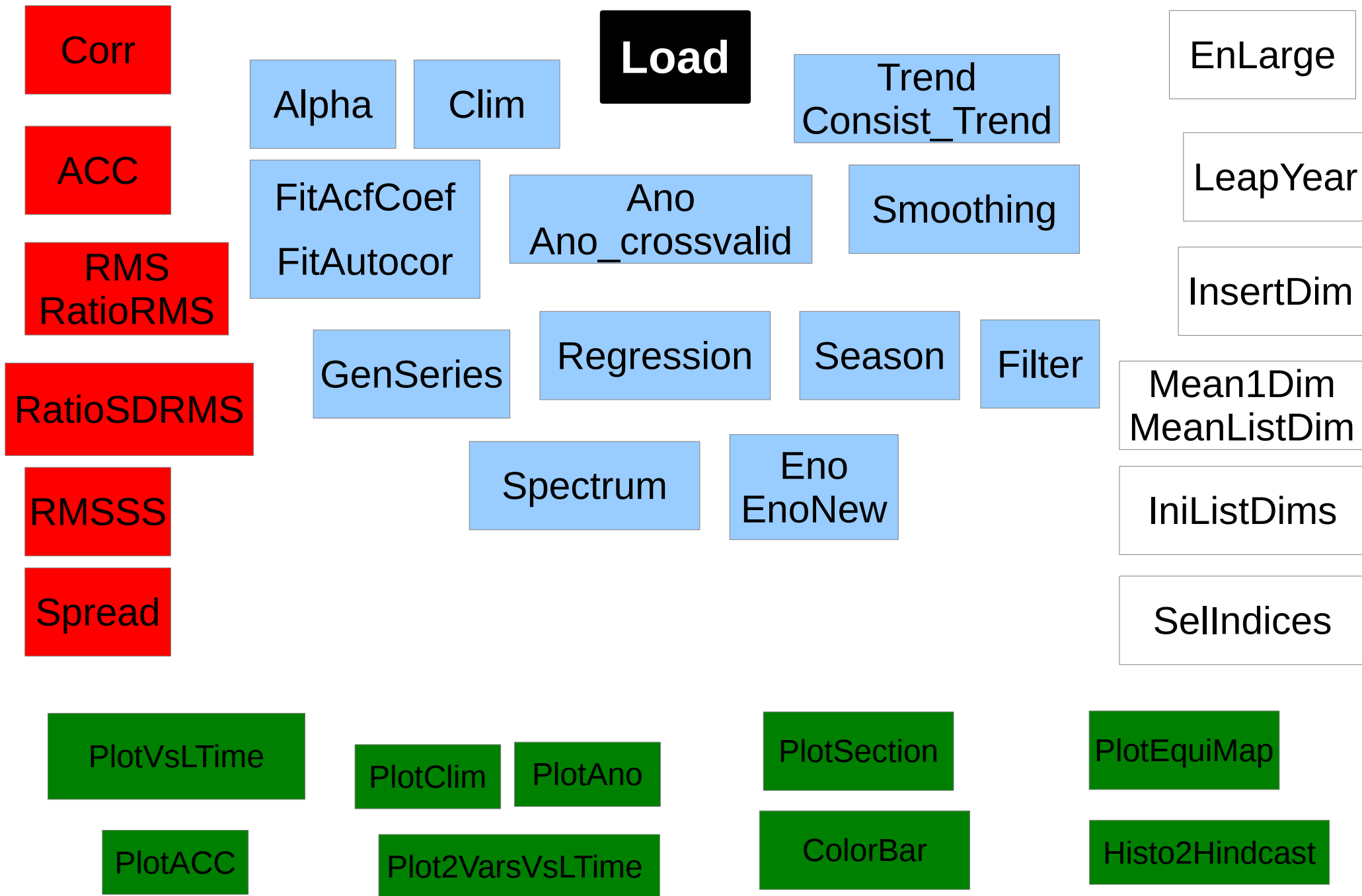
C. Prodhomme, V. Torralba

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Developers: Nicolau Manubens, Virginie Guemas, Javier García-Serrano,
Chloé Prodhomme, Veronica Torralba, Ludovic Auger, Isabel Andreu-Burillo,
Fabian Lienert

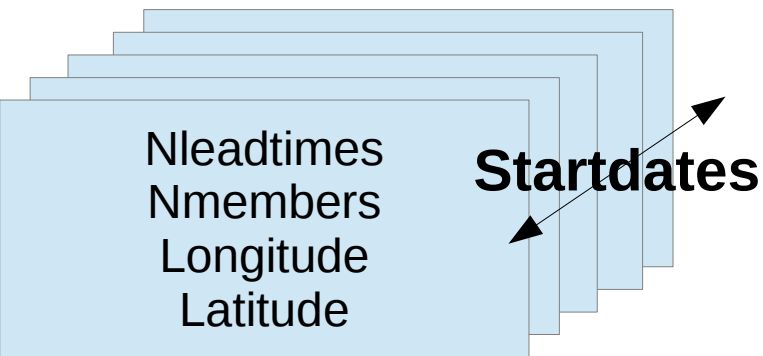
Objectives

- Compute basic statistics on seasonal and decadal forecasts (climatologies, anomalies, seasonal and regional mean...)
- Compute deterministic skill scores with their confidence interval and/or significance level
- Plot maps and time series

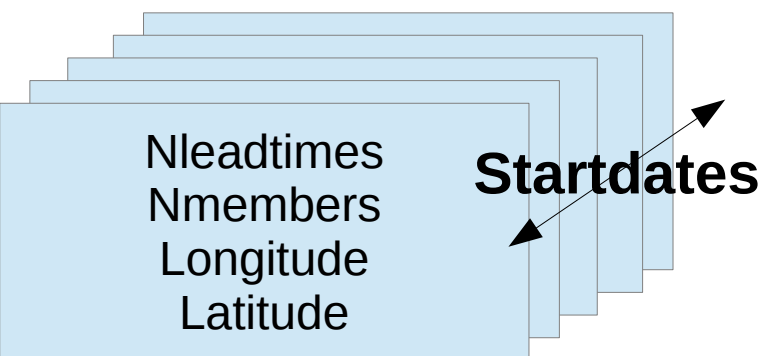


Input: ncdf files

Model 1

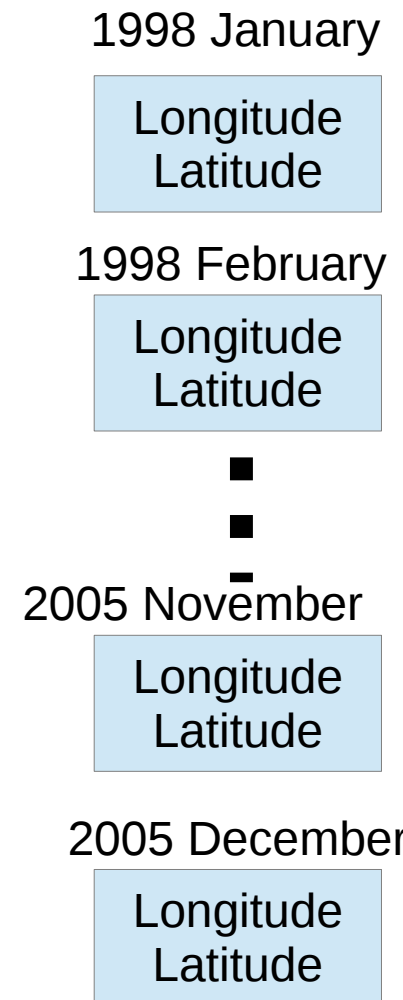


Model 2

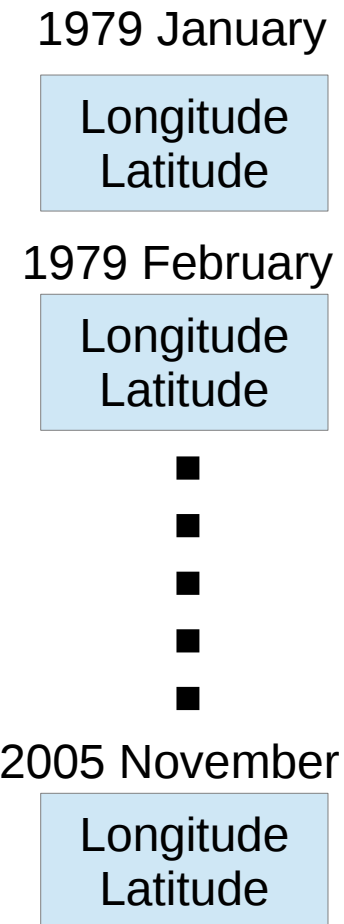


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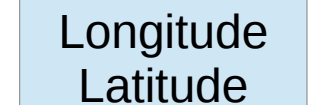
Observation 1

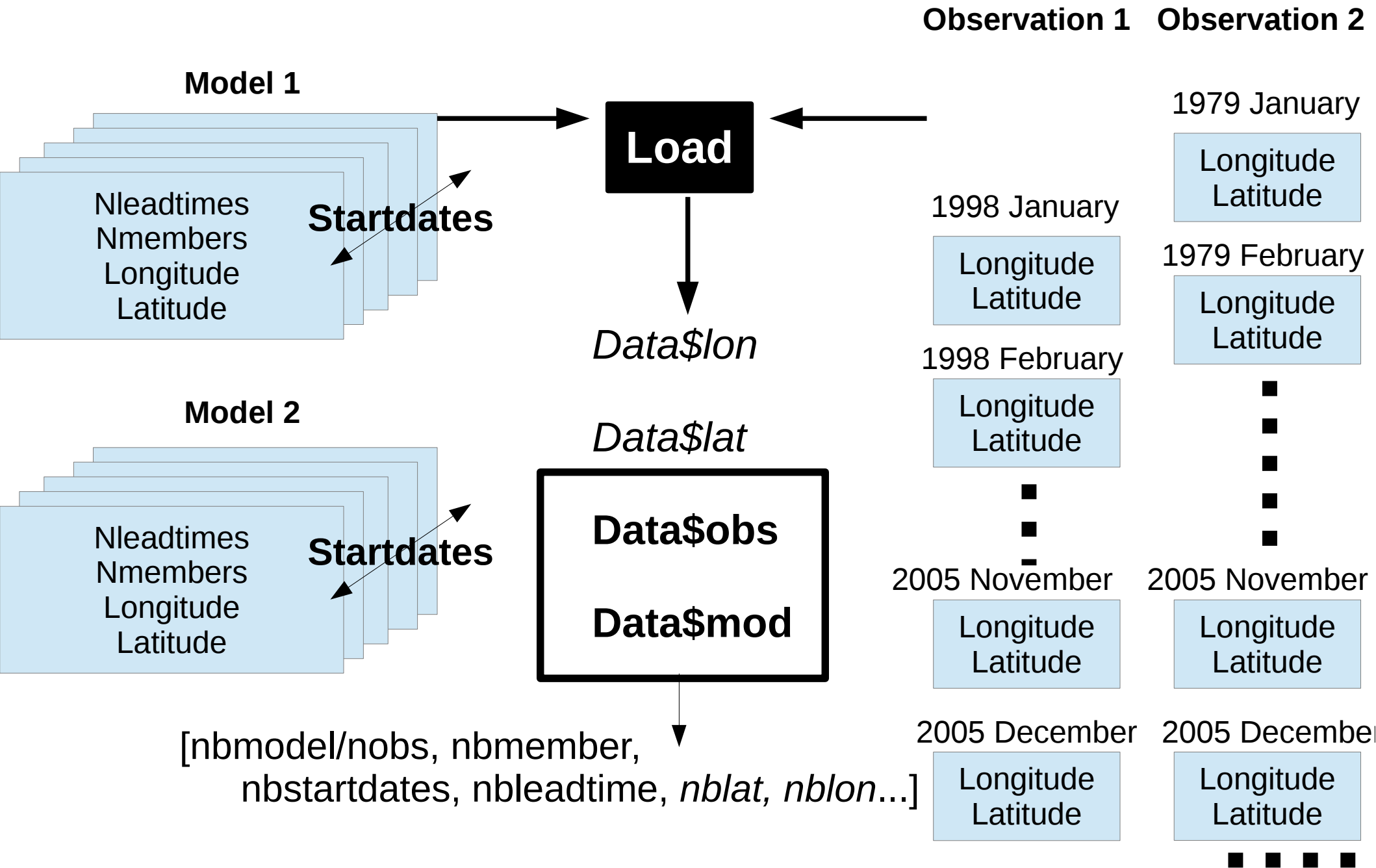


Observation 2



Observation 2





Load

Data\$lon

Data\$lat

Data\$nobs

Data\$mod



[nbmodel/nobs, nbmember,
nbstartdates, nbleadtime, *nblat*, *nblon*...]

This function depends on the data you are using:

- Path
- ncdf format
- system (Unix, windows)

We are working on a generalisation of the Load function.

Right now, you have to find your own way to Load your data and obtain the same structure.

Corr

Load

Trend

ACC

Smoothing

RMS
RatioRMS

Data\$lon

Season

RatioSDRMS

Data\$lat

Regression

RMSSS

Data\$nobs

Filter

Spread

Data\$mod

Ano
Ano_crossvalid

[nbmodel/nobs, nbmember,
nbstartdates, nbleadtime, nblat, nblon...]

Clim

Example

Load

Clim

PlotClim

Ano

Mean1Dim

Corr

PlotVsLTime

```
sampleTimeSeries <- Load('tos', c('i00k'), c('ERSST'),  
  c('19851101', '19901101', '19951101', '20001101', '20051101'),  
  nleadtime = 124, leaddtimemin = 1, leaddtimemax = 60,  
  sampleperiod = 1, output = 'areave', latmin = 30, latmax = 45,  
  lonmin = 0, lonmax = 40)
```

```
clim=Clim(sampleTimeSeries$mod, sampleTimeSeries$obs,  
  memb=FALSE)
```

```
PlotClim(clim$clim_exp, obs_clim=clim$clim_obs,  
  fileout = "plotclim.eps")
```

```
anomod=Ano(sampleTimeSeries$mod,clim$clim_exp)  
anoobs=Ano(sampleTimeSeries$obs,clim$clim_obs)
```

```
ensmeanmod=Mean1Dim(anomod,2)  
ensmeanobs=Mean1Dim(anoobs,2)
```

```
cor=Corr(ensmeanmod, ensmeanobs)
```

```
PlotVsLTime(cor)
```


Interaction between SpecsVerification and s2dverification

Issue

- The tools in SpecsVerification works with data for one grid point, one experiment, and one lead time.
- The structure of the data in s2dverification
[nbmodel/nobs, nbmember, nbstartdates, nbleadtime, nblat, nblon...]

→ *How to pass from one data structure to the other ?*

Methods

- Use a loop
- Reorganise the arrays
- Use apply

Caveats

- Not generic (only valid for 1 experiment and 1 observation)

Example

Load

Season

Mean1Dim

Rankhist

PlotRankhist

```
sampleMap <- Load('tos', c('i00k'), c('ERSST'), c('19851101', '19901101',
'19951101', '20001101', '20051101'), nleadtime = 124, leadtimemin = 1,
leadtimemax = 60, sampleperiod= 1, output = 'lonlat', latmin = 30, latmax = 45,
lonmin = 0, lonmax = 40)
```

```
nexp<-dim(sampleMap$mod)[1]; nmemb<-dim(sampleMap$mod)[2]
nsdates<-dim(sampleMap$mod)[3]; nlat<-dim(sampleMap$mod)[5];
nlon<-dim(sampleMap$mod)[6]
```

```
seamod<-Season(sampleMap$mod,posdim=4,11,12,2)
seaobs<-Season(sampleMap$obs,posdim=4,11,12,2)
```

```
smeanmod<-Mean1Dim(seamod,4)
smeanobs<-Mean1Dim(seaobs,4)
```

```
# the arrays are reorganised
# [nexp,nmemb,nsdates,nlat,nlon]--->[nexp,nmemb,nsdates*nlat*nlon]
sampleMod<-array(smeanmod,dim=c(nexp,nmemb,nsdates*nlat*nlon))
sampleObs<-array(smeanobs,dim=c(nexp,1,nsdates*nlat*nlon))
```

```
# the data of the model are transposed and the ones are deleted
ens<-t(drop(sampleMod))
obs<-drop(sampleObs)
RH<-Rankhist(ens,obs)
```

```
PlotRankhist(RH,mode='prob.paper')
```

Future plans

- Generalisation of the Load function (configuration file)
- Use of OPeNDAP
- Optimisation
- Parallelisation
- Bootstrap to test significance
- Interface with SpecsVerification (and probabilistic score)
- More plotting functions