Extensible list of basic **climate variables** in the **Climate Toolbox**:

| ID	Name	Content in the CIS	Climatic group
Tmax, Tmean, Tmin	Maximum, minimum and average of daily temperature	Annual and monthly averages and linear trends	temperature
Prec	Sums of daily precipitation	Annual, monthly and 10-day sums and linear trends	precipitation
Sun	Averages of daily sunshine duration	Annual and monthly averages and linear trends	Sunshine duration
RH	Daily average of relative humidity	Annual and monthly averages and linear trends	humidity
AT	Apparent temperature, derived from daily Tmax and RH	Annual and monthly averages and linear trends	temperature

Extensible list of derived **climate indices** in the **Climate Toolbox**: Annual values and linear trends of all indices are computed. Monthly values are provide for some.

ID	Name	Climatic group	ID	Name	Climatic group
TNn	Min TN	cold extreme	TXx	Max TX	warm extreme
FD0	Frost days 0	cold extreme	WSDI	Warm spell duration, indicator	warm extreme
ID0	Ice days	cold extreme	SU25	Summer days	warm extreme
CSDIn	User-defined CSDI	cold extreme	TR20	Tropical nights	warm extreme
TXn	Min Tmax	cold extreme	TNx	Max Tmin	warm extreme
TN10p	Cool nights	cold extreme	TN90p	Warm nights	warm extreme
CDD	Consecutive dry Days	drought	TX90p	Warm days	warm extreme
SPIflex	Standardised Precipitation Index	drought	TR25	Very tropical nights	warm extreme
PRCPTOT	Annual total wet-day precipitation	precipitation	HNHD	Hot night and days	warm extreme
CWD	Consecutive wet days	precipitation	HHI	Hot heat index	warm extreme
ONWS	Onset wet season	seasonal	R20mm	Number of very heavy precipitation days	wet extreme
ONDS	Onset dry season	seasonal	R95pTOT	Contribution from very wet days	wet extreme
LDS	Length of dry season	seasonal	RX1day	Max 1-day precipitation amount	wet extreme
LWS	Length of wet season	seasonal	SDII	Simple daily intensity index	wet extreme
GSL	Growing season, Length	temperature	R10mm	Number of heavy precipitation days	wet extreme
DTR	Diurnal temperature range	temperature	RQ95	Number of very wet days	wet extreme
			R99pTOT	Contribution from extremely wet days	wet extreme

Why build another web-based climate information service if you can use an existing one?

open climability Suite

The open source, transferrable, customizable and extensible climate information system.
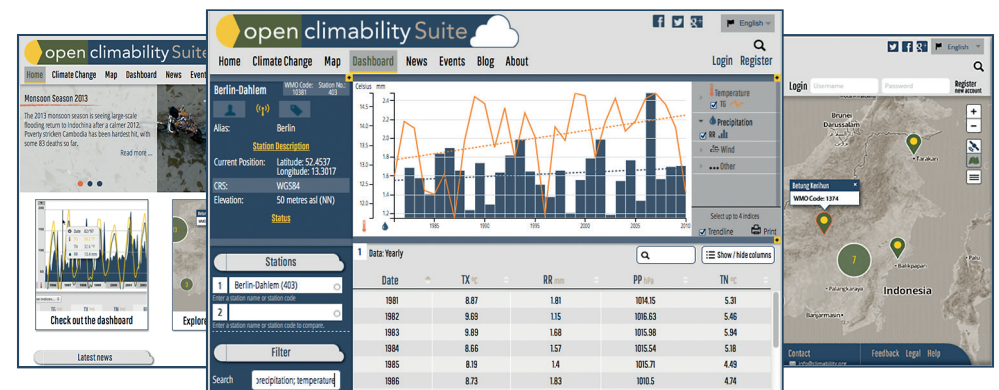
The project: DATACLIM

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Deutscher Wetterdienst
Wetter und Klima aus einer Hand

CLIMATE-BABEL

In cooperation with:

BMKG

Implemented by:

giz
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

of the Federal Republic of Germany

The **open climability suite** provides extensible products and a wealth of features you can use and customize to meet the needs for a powerful climate information system.
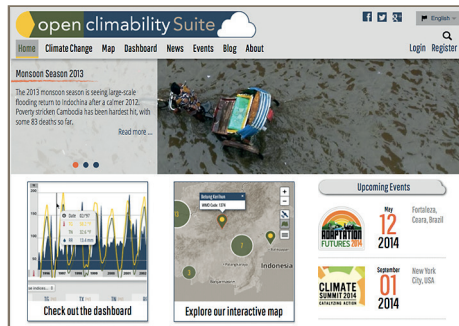
The two key products are the **Climability Dashboard** and the **Climate Toolbox**.

The **Climate Toolbox** is a state-of-the-art set of routines for the automated computation of climate information products from weather station data.
It relies on the established open-source language "R" to ensure a transparent, automatable and customizable workflow.

The **Climate Toolbox's** valuable set of existing routines is readily extensible. For example, you can include additional indicators important for sectors and regional conditions of your project.

Climability Dashboard
Manage, explore, and visualize climate data

The elaborate **Dashboard** allows your project to truly get behind the wheel of its climate data and go beyond static and standard map and data exploration features in climate information services. Its features include, but are not restricted to:

Mapping tools
Map and animate, and your geoferenced data. Adapt the map design and graphic representation.

Metadata
Enter, display, and query climate station metadata. Add additional types, such as station photos, interpretations, or guidelines.

Data management
Import climate stations and climate data into the flexible database architecture. Manage data entry and user access to data.

Graphs
Display climate information in graphs with flexible and relevant display options including trends, time range selection, and station comparisons.


```
tng=climatologies.running$clims[[per]][[tsmean]]$tmin,
##
txn=climatologies.running$clims[[per]][[tsmin]]$tmax,
txx=climatologies.running$clims[[per]][[tsmax]]$tmax,
txg=climatologies.running$clims[[per]][[tsmean]]$tmax
)
df <- apply(df,2,as.numeric)
if (is.finite(max(df,na.rm=TRUE)))
    df <- apply(df,1:2,formatC,format="f",digits=2)

my.index <- index(climatologies.running$clims[[per]][[tsmean]])
out.df <- data.frame(start=makeIsoDateDay(my.index),
                     end=makeIsoDateDay(my.index+
                        agg.windows[[timescale]]-1),
                     marker=yday(my.index),
                     df)
names(out.df)[3] <- timescale

write.table(out.df,quote=FALSE,file=filename,col.names=TRUE,
            row.names=FALSE,sep=",")

}##loop over clim.periods
}##loop over timescales
```

Add to routines for over 40 climate indices and standard meteorological parameters including:

- 27 core indices of climatic extreme events with regard to temperature and precipitation extremes from the Expert Team on Climate Change Detection and Indices (ETCCDI) under the World Climate Research Program (WCRP).

- Several sector-tailored indices as defined by the Expert Team on Climate Risk and Sector-specific Climate Indices (ETCRSCI) of the World Meteorological Organisation (WMO).

Ensure quality, meaningful climate data
Check, clean and evaluate climate data. Calculate ind ices, parameters and trends for various time frames.

Visualize your climate data time series
Build on included routines to produce graphic representations of your climate data, such as Walter-Lieth climate diagrams.