In [11]:
```
!cd $PERM/qlc_v01
```

In [10]:
```
ls README.md
```

```
README.md
```

# QLC = Quick Look CAMS/IFS results

==========

Caution: under development

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## Purpose

- QLC provides a standardized quick look to CAMS / IFS data.
- It combines data retrieval, post processing, plotting and compilation into tex pdf presentation.
- Some flexibility in complexity is given by adopting the configuration file to user specific needs.
- Don't expect too much, as we follow the KISS principle "Keep it simple, stupid!" ;-) ...

## Quick start

- execute the following (on ATOS/ECMWF):

```
ln -s  ~cysm/bin/qlc $HOME/bin/qlc
cp -rp ~cysm/.qlc    $HOME/.qlc
```

# Quick usage ¶

- qlc takes the following command line input: qlc exp1 exp2 startDate endDate
- start qlc with, e.g.:

```
qlc i5la i59h 2018-12-01 2018-12-07
```

# Usage (after installing qlc)

- start qlc by writing all command line output into a user defined log file, type e.g.:

```
$HOME/qlc/start.sh i89e i7rs 2018-12-16 2018-12-22 log001
```

- submit qlc with sbatch, type e.g.:

```
$HOME/qlc/start_batch.sh i89e i7rs 2018-12-16 2018-12-22
```

- make an alias or shortcut for sbatch, type e.g.:

```
ln -s $HOME/qlc/start_batch.sh   $HOME/bin/sqlc
```

- export bin PATH and/or source your .profile

```
export PATH="$HOME/bin:$PATH"
```

- source your .profile

```
source ~/.profile
```

- submit a qlc batch job with sqlc from anywhere, type e.g.:

```
sqlc i89e i87n 2018-12-16 2018-12-22
```

- submit sqlc batch job with dependency for plotting, type e.g.:

```
sqlc i89e i7rs 2018-12-16 2018-12-22 all
```

- view your outcome (single pdf) of this example using, e.g. xdg-open:

```
qlclastpdf="`ls -t $HOME/qlc/Presentations/CAMS2_35_i89e-i7rs_20181216-20181222_qlc_Z1-png_*.pdf
| head -n 1`"

/usr/bin/xdg-open $qlclastpdf
```

# How to get qlc

- get your qlc (beta) version from the developer (until available on GitHub)

# Installation

- change to your installation directory
- unzip latest version (currently qlc_v01.zip)
- link "qlc_version" to qlc in your home directory
- change to the qlc directory, copy and adopt the example configure file and save it as qlc.conf
- make sure all paths point to the right directories, especially scratch and working directory
- caution: qlc may require temporarily huge amount of space (depending in the data to be processed)
- caution: all paths defined in qlc.conf will be created automatically, in case they do not exist
- you may use symbolic links for "scratch" and "working directory" to match the example configure file
- hint: you may simply use the settings of the example configure file and execute the following commands:

```
cd $PERM
unzip qlc_v01.zip
ln -s $PERM/qlc_v01              $HOME/qlc
mkdir                            $HOME/.qlc
cp -p $HOME/qlc/qlc_example.conf $HOME/.qlc/qlc.conf
cp -p $HOME/qlc/README.md        $HOME/.qlc/
cp -p $HOME/qlc/LICENSE          $HOME/.qlc/
cp -p $HOME/qlc/nml/*            $HOME/.qlc/
mkdir -p                         $HOME/bin
ln -s ~cysm/bin/qlc_src          $HOME/bin/qlc_src
ln -s ~cysm/bin/qlc              $HOME/bin/qlc
ln -s $HOME/qlc/start_batch.sh   $HOME/bin/sqlc
export PATH="$HOME/bin:$PATH"
source ~/.profile
```

## configure

- a user specific configuration file is used throughout all qlc scripts:

```
CONFIG_DIR="$HOME/.qlc"
CONFIG_FILE="$CONFIG_DIR/qlc.conf"
```

- the following entries are required:

```
# ~/.qlc/qlc.conf - config file for QLC
SCRIPTS_PATH="$HOME/../cysm/bin/qlc_src"
QLC_DIRECTORY="$HOME/qlc"
WORKING_DIRECTORY="$SCRATCH/qlc"
MARS_RETRIEVAL_DIRECTORY="$SCRATCH/qlc/Results"
ANALYSIS_DIRECTORY="$PERM/qlc/Analysis"
PLOTS_DIRECTORY="$PERM/qlc/Plots"
```

```
TEX_DIRECTORY="$PERM/qlc/Presentations"
TEAM_PREFIX="CAMS2_35"
EVALUATION_PREFIX="EVAL"
MODEL_RESOLUTION="T511L137"
TIME_RESOLUTION="03hh"
#PLOTEXTENSION="pdf"
PLOTEXTENSION="png"
#SUBSCRIPT_NAMES=("A1" "B1" "B2" "C1" "D1" "E1" "F1" "G1" "Z1")
SUBSCRIPT_NAMES=("A1" "B1" "B2" "C1" "Z1")
#MARS_RETRIEVALS=("A"  "B"  "C"  "D"  "E"  "F"  "G")
#MARS_RETRIEVALS=("A"  "C"  "F")
MARS_RETRIEVALS=("F" "G")
param_A=("207.210" "72.210"  "73.210"  "74.210")
ncvar_A=("var207"  "var72"   "var73"   "var74")
myvar_A=("AOD"     "PM1"     "PM2.5"   "PM10")
param_B=("19.217"  "6.217"   "122.210" "203.210")
#ncvar_B=("var19"   "var6"    "var122"  "var203")
ncvar_B=("nh3"     "hno3"    "so2"     "go3")
myvar_B=("NH3"     "HNO3"    "SO2"     "O3")
param_C=("210247"  "210248"  "210249"  "210011")
ncvar_C=("aermr16" "aermr17" "aermr18" "aermr11")
myvar_C=("NO3a"    "NO3b"    "NH4"     "SO4")
param_D=("51.212"  "52.212")
ncvar_D=("var51"   "var52")
myvar_D=("pHcloud" "pHrain")
param_E=("210025")
ncvar_E=("aergn10")
myvar_E=("EQdiag")
param_F=("22.210")
ncvar_F=("aergn07")
```

```
myvar_F=("pHaer")
param_G=("22.210")
ncvar_G=("aergn07")
myvar_G=("AW")
```

- SCRIPTS_PATH <- you may keep this (cysm) as script source directory
- QLC_DIRECTORY <- keep default, or change / link path to your qlc installation directory
- WORKING_DIRECTORY <- keep default, or change / link path to your working directory
- MARS_RETRIEVAL_DIRECTORY <- keep default, or change / link path to your mars retrieval directory
- ANALYSIS_DIRECTORY <- keep default, or change / link path to your post processing directory
- PLOTS_DIRECTORY <- keep default, or change / link path to your plots output directory
- TEX_DIRECTORY <- keep default, or change / link path to your tex plots directory
- TEAM_PREFIX <- keep default, or change to your evaluation identifier (tex prefix)
- EVALUATION_PREFIX <- keep default, or change to your evaluation identifier (tex prefix)
- MODEL_RESOLUTION <- keep default, or define your model resolution
- TIME_RESOLUTION <- keep default, or define your IFS data output time step resolution
- PLOTEXTENSION <- keep default (png), or use pdf (for pyFerret 10 times larger file size)
- MARS_RETRIEVALS=("A" "B" "C") <- define / add your additional MARS retrieval namelists
  - MARS namelists are located in `$HOME/.qlc` and named e.g.: mars_A.nml, mars_B.nml, mars_C.nml, etc
  - where A,B,C, etc may denote different retrieval types (e.g., A=AOD(surface), B=NH3(3D), C=NH4, etc)
  - add additional namelists accordingly and/or adopt to your needs, except for:
  - EXP, SDATE, EDATE, MYPATH, MYFILE, which will be auto-replaced depending on your command line input
  - add your param_, ncvar_ and myvar_ to your `$HOME/qlc/qlc.conf` file
  - variable renaming will be done automatically by subscript qlc_C1.sh
  - make sure your MARS entries fit your exp type, e.g. check settings and redefine fixed entries in `mars_?.nml`:
    CLASS = rd,
    TYPE = fc,
    STREAM = oper,
    EXPVER = EXP,
- SUBSCRIPT_NAMES=("A1" "B1" "C1" "Z1") <- keep default, or choose the subscripts to be considered

- subscripts are currently to be provided by the developer (request any extensions)
- subscripts are located in `$HOME/bin/qlc_src` and named e.g.: qlc_A1.sh
- where the qlc_extensions denote:
  -- A1,2,... = mars retrieval scripts (user specific, except placeholders)
  -- B1,2,... = post processing scripts (grb2nc, chname, timavg, ...)
  -- C1,2,... = plot scripts using ferret (https://ferret.pmel.noaa.gov/Ferret/ (https://ferret.pmel.noaa.gov/Ferret/))
  -- D1,2,... = plot scripts using python (own developments, and/or user provided)
  -- E1,2,... = plot scripts using evaltools (https://opensource.umr-cnrm.fr/projects/evaltools (https://opensource.umr-cnrm.fr/projects/evaltools))
  -- F1,2,... = plot scripts using ver0D (ECMWF, Luke Jones)
  -- G1,2,... = plot scripts using Metview (ECMWF, https://metview.readthedocs.io/en/latest (https://metview.readthedocs.io/en/latest))
  -- Z1,2,... = tex scripts to assemble standardized plots in a single pdf presentation (with `$USER` name)

In [ ]:
```
1
```