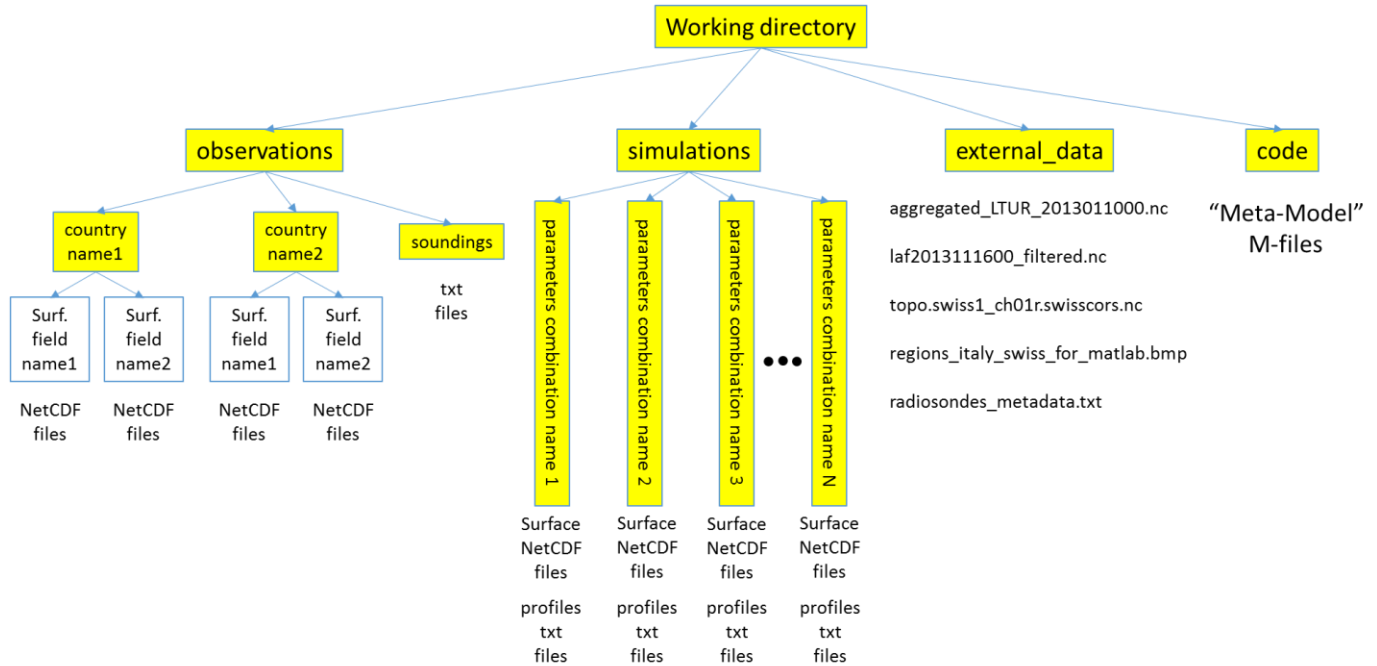The "Meta-Model" code is aimed to help the user to calibrate the COSMO model. For detailed explanation of the calibration method please refer to COSMO technical reports no. 25 and 31. The "Meta-Model" code itself is described in COSMO technical report no. 31 at pages 30-45.

The "Meta-Model" code structure is the following:

Before utilizing the "Meta-Model" code, the user has to perform the following steps:

a. First, define the parameters for tuning and their allowed ranges in namelist.m and sims_def.m.
b. Define the forecast fields to be verified and time periods for calibration in namelist.m.
c. Define geographical regions for calibration via image file external_data/regions_italy_swiss_for_matlab.bmp where each region has its color and adjust regions_bmp.m accordingly.
d. Perform at least 2N + 0.5N(N − 1) + 1 COSMO simulations (where N is the number of calibrated parameters) with specific parameters combinations (see COSMO technical report no. 25).
   The simulated surface fields should be located under "simulations/param_combination_name/" in NetCDF format files. In case atmospheric profiles are also verified, "simulations/param_combination_name/" should also contain simulated profiles in MeteoSwiss convention txt format files.
e. The gridded surface observations fields should be located under "observations/country_name/field_name/" in NetCDF format files. In case atmospheric profiles are also verified, "observations /soundings/" should also contain sounding profiles in MeteoSwiss convention txt format files.

external_data directory must contain:
1. aggregated_LTUR_2013011000.nc - any simulation file in NetCDF format – needed to obtain the model domain grid lat/lon;
2. laf2013111600_filtered.nc - any simulation analysis file in NetCDF format – needed to obtain the model domain altitude;
3. topo.swiss1_ch01r.swisscors.nc – NetCDF file which contains the altitude of the gridded observations;
4. regions_italy_swiss_for_matlab.bmp - image file which defines the geographical regions for calibration (each region has its color);
5. radiosondes_metadata.txt – metadata for soundings over the domain – format: lat lon station number.

In order to run the "Meta-Model" code, execute ./run_from_bash.sh or run main.m directly from Matlab.