

Atmospheric simulations in Prague

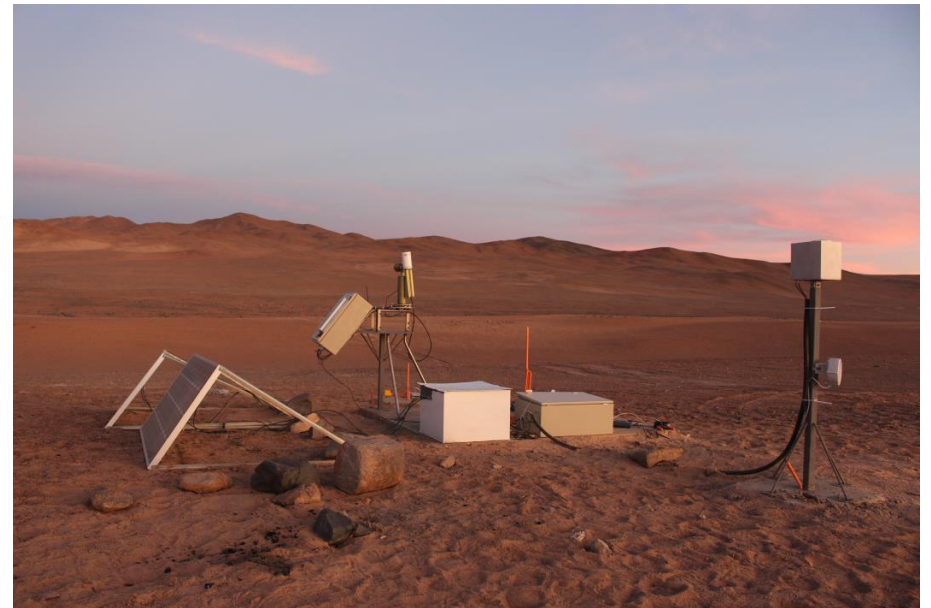
status, results and plans



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Barcelona 2016

Atmospheric Group in Prague

- Many people involved
 - Blazek J., Ebr J., Janecek P., Mandat D., Prouza M., Stefanik S., Vrstil M. and others
- Taking care of instruments
 - FRAMs (see talk *Status and plans for the FRAM*)
 - Ceilometers (see talk *Plans for the Ceilometers*)
 - Sun / Lunar photometers (see talk *Status and plans for Photometer*)
 - Satellites (see talk *Use of satellite data for climate characterization*)
 - All-Sky-Camera (see talk *All-Sky-Camera results*)
 - instruments for data correction
- Calibration using CTC
 - see talk *Status of CTC for CTA*
- Start working on atmospheric productions



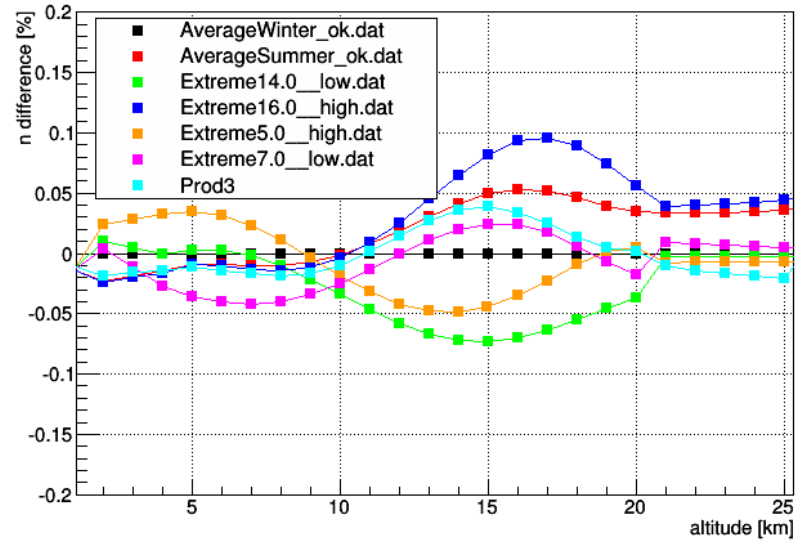
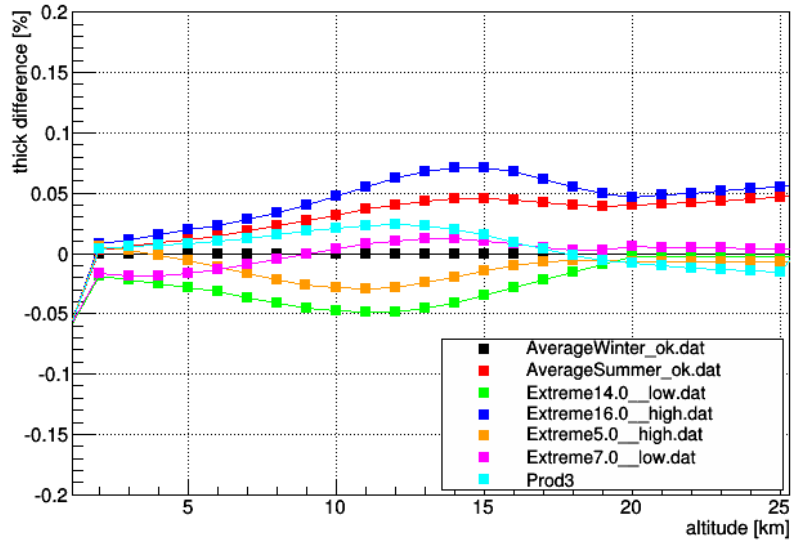
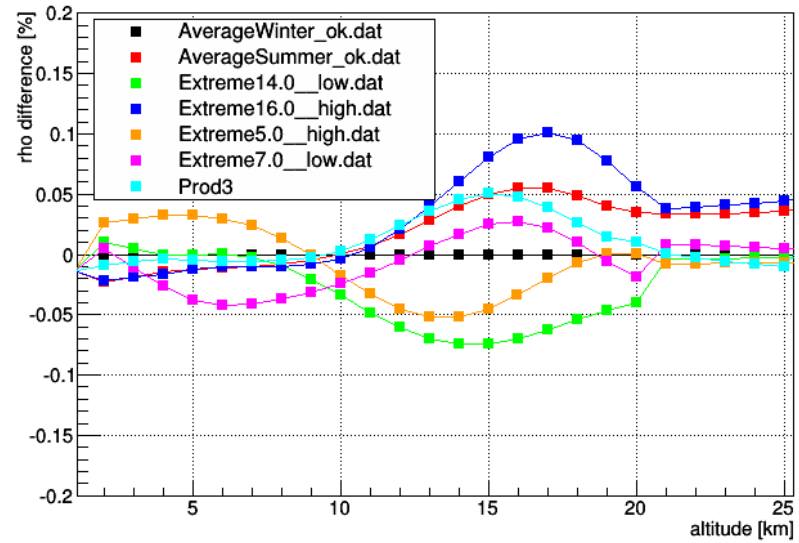
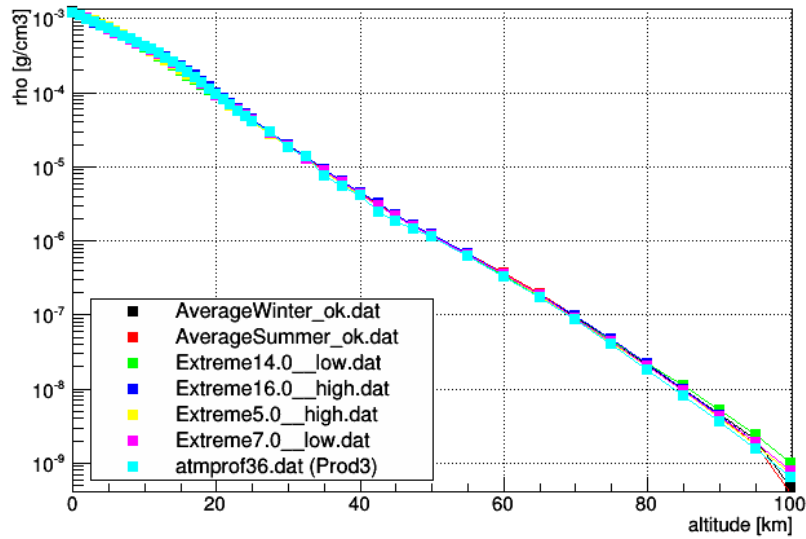
Status, Results and Plans



- Extreme Profiles
 - evaluation of the effects of the simulated atmospheric profile on the estimated performance of the Observatory
- Maintaining Simulations
 - monitoring and debugging errors at sites
 - developing tools for data management
- Atmospheric Production
 - preparing and following productions
- Atmospheric Studies
 - studying homogeneity of the atmosphere and azimuthal dependence of properties

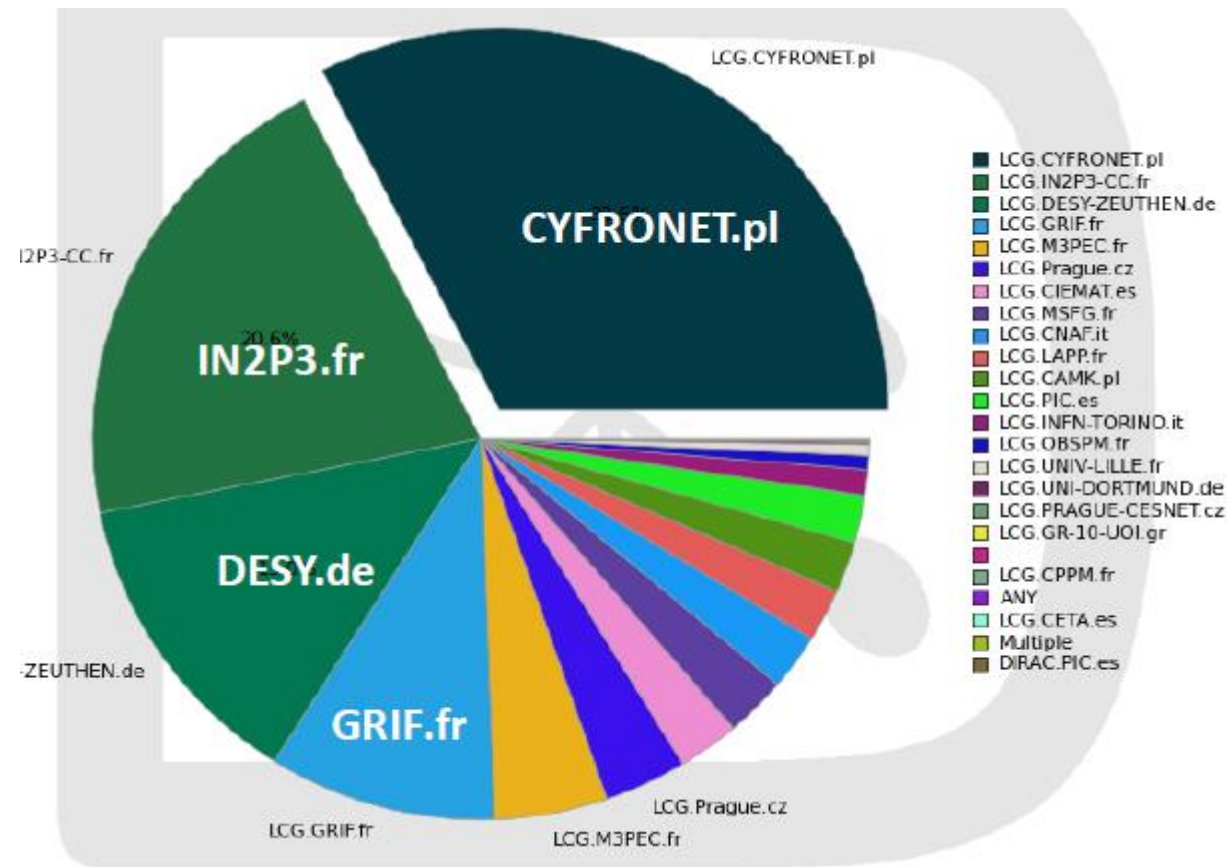
- Evaluation of the effects of the simulated atmospheric profile on the estimated performance of the Observatory
 - the effect of different atmospheric profiles on CTA performances (2 models simulated by our group)
 - effective area (energy threshold, flux), energy bias and resolution, angular resolution
 - the effect of aerosols (dust, clouds) under different conditions (different altitude and thickness)
 - the effect of atmospheric calibration uncertainties on reconstructed energy and flux uncertainties
 - same studies at different zenith angle
 - study the effects of the uncertainties of the currently foreseen CTA atmospheric measurements

Extreme Profiles



Maintaining Simulations

- CTA Computing GRID
 - Europe-wide computing clusters (including resources of Institute of Physics and CESNET)
- Help with the monitoring and debugging errors at sites
- Developing command line tools
 - missing monitoring tools
 - data management tools



Atmospheric Production



- GRID Pipeline
 - corsika, simtelarray, eventdisplay
 - shower simulation, detector response, analysis chain to calibrate and reconstruct data and simulations
- Simulation of the HB9 array layout
- Requirements from you
 - help with your simulations

Atmospheric model	Corsika	Sim_telarray	Evndisp (stereo rec)	Evndisp (LUT)
Prod3: with aerosols	Done 1.6 TB	Done 1.8 TB	Done 3.2 GB	Done 3.5 GB
Average winter	Done	Done	Done	Done
Average summer	Done	Done	Done	Done
Extreme_14.0_low	Done	Done	Done	Done
Extreme_16.0_high	Done	Done	Done	Done
Extreme_5.0_high	Done	Done	Done	Done
Extreme7.0_low	Done	Done	Done	Done

Summary



- Lots of people in Czech Republic involved in atmospheric studies
 - Prague, Olomouc
- Taking care of instruments
 - FRAM, All-Sky-Camera
 - other instruments to be studied
- Calibration using CTA data
 - CTC
- Getting involved in CCF Atmosim group
 - simulations of extreme profiles
 - MC atmosim production