Mini-Data Challenge for atmospheric calibration

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DESC-Photometric Correction Working Group

« atmospheric » data challenge

- **Setup methods to estimate atmospheric transmission for each LSST observation**
- **Different teams will Evaluate the performances of their methods**
- Evaluate the relative contribution of LSST alone config and (Auxiliary Telescope + LSST) config
  - Set requirements on Auxiliary Telescope
- On a fake but realistically simulated Dataset

Data Product

① ***Select one Field of View in Cadence***

② N_{vis} **visits** **(** i=1,…,N_{vis}) scheduled by minion16 cadence

③ N_{obj} **objects sampled from a catalog of SED selected** (j=1,…,N_{obj})

④ F_i is the filter used for visit ***i***

- F_i = U, G, R I, Z, Y according a cadence (minion16)

⑤ **Airmasses z_i of each visit *i* and the instrumental magnitude M_{ij}** for **each object *j*** in the field :

- **the dataset :** $\{ z_i, F_i, \{M_{ij}, \delta M_{ij}\}_j \}_I$

① **One spectrum (undelivered SED) of a reference star in the field** (to combine with auxiliary telescope data)

Status :
1) List of Task already done

- Selection of star catalog : Pickles → Done
- SED Sampling according the magnitude distribution in SNLS → Done
- Atmospheric parameters distribution according MERRA2 → Done
- Atmospheric transparency calculated by libradtran → Done
- True effective LSST Filter → Done

Status :
2) Last Task : Calculation of Magnitudes and errors

How to go from
cadence (z_{am}, sky) + SED + atm transm. +
$F_i \rightarrow$ ***$\{M_{ij}, \delta M_{ij}\}$?***

Two options can be used:

- saunerie (Nicolas R expert), python2
- **LSST_SIM_MAF** (python3)