

Questions, Comments and Answers following the presentation

Quantitative characterisation of sky conditions on Paranal with the microwave radiometer LHATPRO – five years and learning
Florian Kerber

Masciadri: The reason for the homogeneity of PWV on a large FoV is given by the fact that the mixing ratio indicates that water vapor is concentrated close to the surface. It should be interesting to confirm that. To be done with the analysis we are doing in the context of MOSE.

Yes, from the profiles provided by LHATPRO we know that the scale height for the water vapour is 1 to 3 km, thus most of it is close to the ground. We're working on an analysis to quantify this and that is one explanation of the homogeneity. The other point is that also for PWV the frozen flow assumption seems to hold (just like for turbulence) in that variation is caused by moving air masses and not created locally by a "boiling" atmosphere.

Freudling: How often do these measurements agree with the FORS-based assessment of the photometric status of a night?

We find excellent agreement between FORS and LHATPRO. To be more specific we have not seen any cases where FORS and LHATPRO actually disagree. There are a number of aspects that need to be considered though: LHATPRO has a limited field of view (zenith), while the FORS observations are sparse in time. Thus there are cases when LHATPRO sees some clouds for a short period in its 2 h window of analysis while FORS didn't catch these because it was pointing elsewhere, or LHATPRO didn't measure clouds low in the sky that might be seen by FORS Standard star observations. But when comparing like for like the agreement is excellent.

Leibundgut: Since the field of view of LHATPRO is limited, one should slave one to each telescope to control each sight line. In the near future, we will have sources calibrated to about 1% (GAIA, LSST, EUCLID) essentially in every observed field of the VLT. At this point, we have a calibrator in each observation. We then only need to know the variation during the exposure.

I fully agree. We can expect a change of paradigm in terms of sky quality (currently PHOT is defined all-sky and over an extended period of time). What the astronomers need to know is the variation in their line-of-sight and during the duration of their observation. LHATPRO observations can provide exactly this: the variation [%] during a given observation if we introduce line-of-sight support.