Atmos. Meas. Tech. Discuss., 2, C128–C129, 2009
www.atmos-meas-tech-discuss.net/2/C128/2009/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Stratospheric isotopic water profiles from a single submillimeter limb scan by TELIS" *by* A. de Lange et al.

Anonymous Referee #1

Received and published: 13 May 2009

A sensitivity study of the retrieval of water isotopologues for the TELIS sub-millimetre limb measurements is presented and performance with respect to instrument parameters is evaluated.

The paper is well presented and suitable for publication in AMT provided the following points are addressed.

p866, line 11: The text states the importance of radiative transfer above the maximum tangent height of 37km but this is not referred to again in the text.

p869, line 11: Error propagation for these unmeasured quantities is not taken into account. It would seem at least reasonable to assume an uncertainty in the temperature profile and carry out an error propagation for the sensitivity study.

p872, line 30 It is noted in the text that "the averaging kernel narrows when pointing information is retrieved". How does the requlariza tion parameter (gamma) change between the retrieval cases studied? The Tikhonov regularization can be set up so that a gamma value can be chosen set to provide an improved precision at the expense of a degraded (though still acceptable) vertical resolution. The L-curve (p867) determines the trade-off between retrieval precision and vertical resolution. Was this considered for the TELIS retrievals?

p872, line 18 and Fig 5: What is the explanation for the very large increase in retrieval error in going from a pointing offset of 5 arcmin to 10 arcmin?

Minor corrections and typos.

[text] add the text in brackets /text/ delete the text between slashes

p858, line 11: /as well/

p859, line 20: inter/-/connected

p863, line 26: or halfway [through] the limb

p864, line 3: isotopologue/s/

p865, line 15: the [modelled] atmospheric

p872, line 12 kernel /are/ below 20 km [are]

p873, line 19 super/-/imposed

p875, line 22: exten/d/[t]

p876, line 2: differ [by] less

p876, line 17: /up/ [as]

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 857, 2009.