

Interactive comment on “Camtracker: a new camera controlled high precision solar tracker system for FTIR-spectrometers” by M. Gisi et al.

Anonymous Referee #2

Received and published: 22 December 2010

Camtracker: a new camera controlled high precision solar tracker system for FTIR spectrometers M. Gisi et al.

This paper describes a valuable development in solar trackers for remote sensing spectroscopy measurements, in which a ccd camera is used to record an image of the solar disk on the spectrometer entrance field stop, and analyses this image to provide feedback to the tracker pointing so that the solar disk and field stop each remain centred on the other. The authors demonstrate significantly improved pointing accuracy compared to the conventional quadrant diode systems commonly used. This work will be of considerable interest to anyone working with solar trackers, in particular the TCCON network where pointing accuracy is a significant source of error, and is well suited

C2327

to publication in AMT. I do not have any major structural comments, and recommend publication after the technical comments and one substantive suggestion listed below, mainly to improve clarity, are addressed.

Suggestion:

I would suggest, but not insist on, a new table at the end which summarises the magnitudes of sources of tracker pointing error, eg pixel size, refraction differences, stepper motor resolution, image analysis etc, all in a common unit (arc s) so that the reader can quickly see, in summary, what are the important and less important factors.

Technical corrections:

P4867 l20 This sentence is unclear: ... one gets a 10% air mass change per degree SZA change at SZA=80 degrees.

L24 "... an error (in what?) due to the tracking of smaller than 0.05% at SZA=80 is desirable

P4868 L1 ratioing not rationing This paragraph is not clear – the tracker pointing impact is reduced by ratioing to O₂ ONLY if the O₂ is also measured from the spectrum taken from the same tracker, not when it is calculated from atmospheric pressure. This point is not clear and the paragraph should be reworded.

L11 use m s⁻¹ not the small type m/s

L12 similar for delta v / v

L15 ... note that the mispointing in one dimension cannot be retrieved. ...

L19 both arc sec and " are used throughout – these are the same and one should be used consistently (I recommend arc sec or arc s).

P4871 L12 The meaning of "binary" is not really clear – would "black/white" be better? Also the use of "contours", should this be better as "outlines" of the solar disk and filed

C2328

stop images?

P4872 L3 replace "can't " with cannot

L19 "Systematic shifts which can easily occur with a quadrant diode setup are avoided.

L24 spatial not spacial

P4873 L6 Has LOS been defined? Simpler to spell out line of sight.

P4874 L7 Is the accuracy limited by pixel size? What is the angular size of one pixel in arc s?

L24 "frequently" is mis-spelt

P4875 L5 MIR and NIR have not been defined?

L10 The meaning of this sentence is not clear – is it that the air refractive index difference between tracker camera and IR to be analysed leads to a small offset in the pointing. Please clarify/reword.

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 4865, 2010.