

Interactive comment on “Spectral actinic flux in the lower troposphere: measurement and 1-D simulations for cloudless, broken cloud and overcast situations” by A. Kylling et al.

Anonymous Referee #1

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TECHNICAL CORRECTIONS (in order of appearance in the paper)

[*px.ly* indicates page *x*, line *y*.]

p1423:

l2: September 2002, an

l5: conditions, the

l7: days, 1-D

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I9: Furthermore, the

I10: sky, with

I11: Similarly the below cloud \Rightarrow Correspondingly, the below-cloud [the effects above and below the cloud are in opposite directions, thus I feel “Correspondingly” is more accurate]

I12: top, the

I12: maximum which \Rightarrow maximum that

I14–15: above-cloud

I15: below-cloud

I18: Furthermore, their

I19: nature, clouds

I22: example, the

I23: troposphere, which

I25: surface, e.g. Mims and Frederick (1994). \Rightarrow surface (e.g., Mims and Frederick, 1994).

p1424:

I1: single, homogeneous

I2: limitations \Rightarrow limitation

I2: evident, especially

I3: broken-cloud

I4: variations, and

I8: $J(\text{NO}_2)$, while

I15: frequency, with

I20: oktas), there

I29: flux, which

p1425:

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I1: Ocean, photolysis
I4: Wavelength-dependent
I6: occluded, respectively.
I10: Also, they
I11: description \Rightarrow descriptive
I12: (1999), who
I18: aerosol-free
I24: SHDOM, and
I25: Increase \Rightarrow Increases

p1426:

I7: project, a
I9: following, the
I10: first, followed
I17: one-week

p1427:

I3: inland, while
I4: coast, see Table 1. \Rightarrow coast (see Table 1).
I6: use, Table 2. \Rightarrow use (see Table 2).
I8: campaign, an
I13: $\pm 10\%$, which
I15: VELIS was used \Rightarrow VELIS were used
I18: addition, VELIS
I21: campaign, the
I26: instrumentation, the

p1428:[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)

l1: content, with
l2: radius, defined
l3: distribution, was
l4: measurements, with
l9: temperature-stabilised
l11: altitudes, the
l11: of the below surface was \Rightarrow of the surface below was
l19: single-scattering
l21–22: Temperature-dependent

p1429:

l2: Table 1 is adopted \Rightarrow Table 1 are adopted
l8: 407.8 nm, the
l10: 419.9 nm, the solar
l10: Modtran \Rightarrow MODTRAN
l16: well-defined
l19: ground-based
l23: flux, a
l24: measurements, the

p1430:

l6: 500-nm
l10: spectroradiometer,
l13: instrument, a

p1431:

l2: (1993), the
l4: thinner, with

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l7: radiation, the
l12–13: varies between 4–9 ⇒ varies over 4–9
l14: exemplified ⇒ exemplified
l16: *LWC* but
l18–19: shown in the right panel of Fig. 3. ⇒ shown in Figs. 3b and 3d.
l19: 257, the
l25: 257, the
l25: site, and
l26: 263, the
l27: Thus, on
l29: ground-based

p1432:

l8: 257, the
l12: ground-based
l13: gives a ⇒ give a
l14: and is used ⇒ and are used
l19: days), see Table 3. ⇒ days) (see Table 3).
l23–24: condition, flights
l24: In addition,

p1433:

l3–4: 305–320 nm, left figure, and ⇒ 305–320 nm (Fig. 6a) and
l4–5: 380–400 nm, right figure. ⇒ 380–400 nm (Fig. 6b).
l8: bump ⇒ dip [“bump” to me connotes an momentary increase, whereas as “dip” suggests a reduction]
l8: clear-sky
l10: range, the

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l13: range, ATI
l15: spectra, as
l15: instruments,
l17: function, which
l18: instruments, respectively.
l21: latter, the
l22: aircraft-mounted
l24: simulations, it

p1434:

l2–3: e.g. Kylling et al. (2003b), their Figs. 1 and 2 and Eq. (7). ⇒
(e.g., Kylling et al., 2003b, in their Figs. 1 and 2 and Eq. (7)).

l14: similar ⇒ similarly

l19: spectra, the

l20: 58-m

l20: spectrum, the

l25: 58-m

l27: low-albedo

l27–28: low-altitude

l28: conditions, the

p1435:

l1: considerable, see Fig. 6 of Hofzumahaus et al. (2002). ⇒ considerable (see
Hofzumahaus et al., 2002, Fig. 6).

l2: correction depend ⇒ corrections depend *or* correction depends

l6: radiance, and

l11: single-scattering

l12: results and most those for ⇒ results the most for

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l19: Hence, the
l25: fkuxes ⇒ fluxes
l27: increase the ⇒ increases, the
l27: increase due ⇒ increases due

p1436:

l7: 14 and 20 September ⇒ 14 and 20 September (days 257 and 263)
l8: Especially the 14 September ⇒ In particular, 14 September
l9: layer, see Table 3. ⇒ layer (see Table 3).
l13: situation, the
l15–16: homogeneous, and
l18: transmittance, right panel, Fig. 3. ⇒ transmittance in Figs. 3b and 3d.
l18: flight, the

p1437:

l6: above-cloud
l11: radiation, resulting
l11: below-cloud
l13: top, theory
l15: 257, it
l28: high-albedo
l28: snow, the

p1438:

l2: incorporates ⇒ capture
l3: However, some
l3: evident and especially ⇒ evident, especially
l4: Fig. 4, the

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l5: homogeneous, which
l7: 257, see Fig. 3. ⇒ 257 (see Fig. 3).
l7: inhomogeneities,
l8: below-cloud
l10: atmosphere, the
l20: 256, “cloud
l25: below, see Fig. 11. ⇒ below (see Fig.11).

p1439:

l4: 256, the
l5: 12, as
l7: varies ⇒ vary
l9: simulations, shown
l12: is also ⇒ are also
l13: Note, however,
l17: ground less ⇒ ground, fewer
l20: 256, Fig. 11. ⇒ 256 (see Fig. 11).
l23: clouds is readily ⇒ clouds are readily
l25: days, the
l26: clouds reflect
l27: 256, the
l28: albedo, while

p1440:

l1: thicker, with
l2: gaps. Thus the ⇒ gaps, thus producing the
l4: measurements, vertical
l5: inhomogeneous, it

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l7: Instead, all
l11: parameterization, this
l13: earlier, this
l15: extension. \Rightarrow extent.
l15: near-adiabatic
l18: inland, ground
l18: ground-deduced
l19: 25, which,
l21: 15, the
l23: simulations, the
l24: earlier, day
l25: ground, it

p1441:

l2: See, for
l3: example, the
l5–6: below-cloud
l6: measurements, Fig. 15. \Rightarrow measurements (see Fig. 15).
l6: cloud, the
l8: 261, the
l9: obviously has the \Rightarrow obviously have the
l10: W/m^2 , Fig .12. \Rightarrow W/m^2 (see Fig. 12).
l14: 15, the
l20: 256, values
l24: 261, values
l26: 0.6, although
l26: below-cloud
l29: above-cloud

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p1442:

l1: below-cloud

l2: conditions, it

l3: aircrafts. ⇒ aircraft.

l3: Thus, the

l5: 11, the

l6: and values between 7–8 ⇒ and between 7 and 8

l9: amounts, the

l11: amount surface ⇒ amounts, surface

l11–12: observations tends ⇒ observations tend

l13: here, as

l15: cloud, compared

l15: allsky ⇒ all-sky

l19: project, an

l26: conditions, the

p1443:

l3: homogeneous, the

l5–6: Simultaneously, the

l6: above-cloud

l8: simulations, 1-D

l9: above-cloud

l9: Especially, the

l10: below-cloud

l11: above-cloud

l12: below-cloud

l13: top, the

l13: maximum, which

l15: broken-cloud

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l15: situations, the
l17: above-cloud
l17: below-cloud
l21: broken-cloud
l21: indicates that \Rightarrow indicate that
l22: more-complex
l24: project, a
l25: $50 \times 50\text{-km}^2$

p1455, Fig. 3: Add comma: “. . . Weybourne, and the black dashed. . .”

p1462, Fig. 10: The panel letters are mislabeled in the caption. It should read: “. . . days 257 (a) and (b), and 263, (b) and (d).”

p1463, Fig. 11: “All-sky. . .”

p1467, Fig. 15: Add commas:
day 256, black is
day 261, black is
all lines, the rightmost

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