

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.

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TECHNICAL CORRECTIONS (in order of appearance in the paper)

[$p_x.l_y$ indicates page x , line y .]

p1423:

I2: September 2002, an

I5: conditions, the

I7: 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: $J(NO_2)$, while

I15: frequency, with

I20: oktas), there

I29: flux, which

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p1425:

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:

I1: content, with
I2: radius, defined
I3: distribution, was
I4: measurements, with
I9: temperature-stabilised
I11: altitudes, the
I11: of the below surface was \Rightarrow of the surface below was
I19: single-scattering
I21–22: Temperature-dependent

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p1429:

I2: Table 1 is adopted \Rightarrow Table 1 are adopted
I8: 407.8 nm, the
I10: 419.9 nm, the solar
I10: Modtran \Rightarrow MODTRAN
I16: well-defined
I19: ground-based
I23: flux, a
I24: measurements, the

p1430:

I6: 500-nm
I10: spectroradiometer,
I13: instrument, a

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p1431:

I2: (1993), the
I4: thinner, with

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I7: radiation, the

I12–13: varies between 4–9 ⇒ varies over 4–9

I14: exemplified ⇒ exemplified

I16: *LWC* but

I18–19: shown in the right panel of Fig. 3. ⇒ shown in Figs. 3b and 3d.

I19: 257, the

I25: 257, the

I25: site, and

I26: 263, the

I27: Thus, on

I29: ground-based

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p1432:

I8: 257, the

I12: ground-based

I13: gives a ⇒ give a

I14: and is used ⇒ and are used

I19: days), see Table 3. ⇒ days) (see Table 3).

I23–24: condition, flights

I24: In addition,

p1433:

I3–4: 305–320 nm, left figure, and ⇒ 305–320 nm (Fig. 6a) and

I4–5: 380–400 nm, right figure. ⇒ 380–400 nm (Fig. 6b).

I8: bump ⇒ dip [“bump” to me connotes an momentary increase, whereas as “dip” suggests a reduction]

I8: clear-sky

I10: range, the

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I13: range, ATI
I15: spectra, as
I15: instruments,
I17: function, which
I18: instruments, respectively.
I21: latter, the
I22: aircraft-mounted
I24: simulations, it

p1434:

I2–3: 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)).

I14: similar ⇒ similarly
I19: spectra, the
I20: 58-m
I20: spectrum, the
I25: 58-m
I27: low-albedo
I27–28: low-altitude
I28: conditions, the

p1435:

I1: considerable, see Fig. 6 of Hofzumahaus et al. (2002). ⇒ considerable (see
Hofzumahaus et al., 2002, Fig. 6).

I2: correction depend ⇒ corrections depend or correction depends

I6: radiance, and

I11: single-scattering

I12: results and most those for ⇒ results the most for

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I19: Hence, the
I25: fluxes \Rightarrow fluxes
I27: increase the \Rightarrow increases, the
I27: increase due \Rightarrow increases due

p1436:

I7: 14 and 20 September \Rightarrow 14 and 20 September (days 257 and 263)
I8: Especially the 14 September \Rightarrow In particular, 14 September
I9: layer, see Table 3. \Rightarrow layer (see Table 3).
I13: situation, the
I15–16: homogeneous, and
I18: transmittance, right panel, Fig. 3. \Rightarrow transmittance in Figs. 3b and 3d.
I18: flight, the

p1437:

I6: above-cloud
I11: radiation, resulting
I11: below-cloud
I13: top, theory
I15: 257, it
I28: high-albedo
I28: snow, the

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p1438:

I2: incorporates \Rightarrow capture
I3: However, some
I3: evident and especially \Rightarrow evident, especially
I4: Fig. 4, the

I5: homogeneous, which
I7: 257, see Fig. 3. ⇒ 257 (see Fig. 3).
I7: inhomogeneities,
I8: below-cloud
I10: atmosphere, the
I20: 256, “cloud
I25: below, see Fig. 11. ⇒ below (see Fig.11).

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p1439:

I4: 256, the
I5: 12, as
I7: varies ⇒ vary
I9: simulations, shown
I12: is also ⇒ are also
I13: Note, however,
I17: ground less ⇒ ground, fewer
I20: 256, Fig. 11. ⇒ 256 (see Fig. 11).
I23: clouds is readily ⇒ clouds are readily
I25: days, the
I26: clouds reflect
I27: 256, the
I28: albedo, while

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p1440:

I1: thicker, with
I2: gaps. Thus the ⇒ gaps, thus producing the
I4: measurements, vertical
I5: inhomogeneous, it

I7: Instead, all
I11: parameterization, this
I13: earlier, this
I15: extension. \Rightarrow extent.
I15: near-adiabatic
I18: inland, ground
I18: ground-deduced
I19: 25, which,
I21: 15, the
I23: simulations, the
I24: earlier, day
I25: ground, it

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p1441:

I2: See, for
I3: example, the
I5–6: below-cloud
I6: measurements, Fig. 15. \Rightarrow measurements (see Fig. 15).
I6: cloud, the
I8: 261, the
I9: obviously has the \Rightarrow obviously have the
I10: W/m^2 , Fig. 12. \Rightarrow W/m^2 (see Fig. 12).
I14: 15, the
I20: 256, values
I24: 261, values
I26: 0.6, although
I26: below-cloud
I29: above-cloud

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p1442:

- I1: below-cloud
- I2: conditions, it
- I3: aircrafts. ⇒ aircraft.
- I3: Thus, the
- I5: 11, the
- I6: and values between 7–8 ⇒ and between 7 and 8
- I9: amounts, the
- I11: amount surface ⇒ amounts, surface
- I11–12: observations tends ⇒ observations tend
- I13: here, as
- I15: cloud, compared
- I15: allsky ⇒ all-sky
- I19: project, an
- I26: conditions, the

p1443:

- I3: homogeneous, the
- I5–6: Simultaneously, the
- I6: above-cloud
- I8: simulations, 1-D
- I9: above-cloud
- I9: Especially, the
- I10: below-cloud
- I11: above-cloud
- I12: below-cloud
- I13: top, the
- I13: maximum, which
- I15: broken-cloud

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I15: situations, the
I17: above-cloud
I17: below-cloud
I21: broken-cloud
I21: indicates that ⇒ indicate that
I22: more-complex
I24: project, a
I25: $50 \times 50\text{-km}^2$

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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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