

Supplementary Material

for

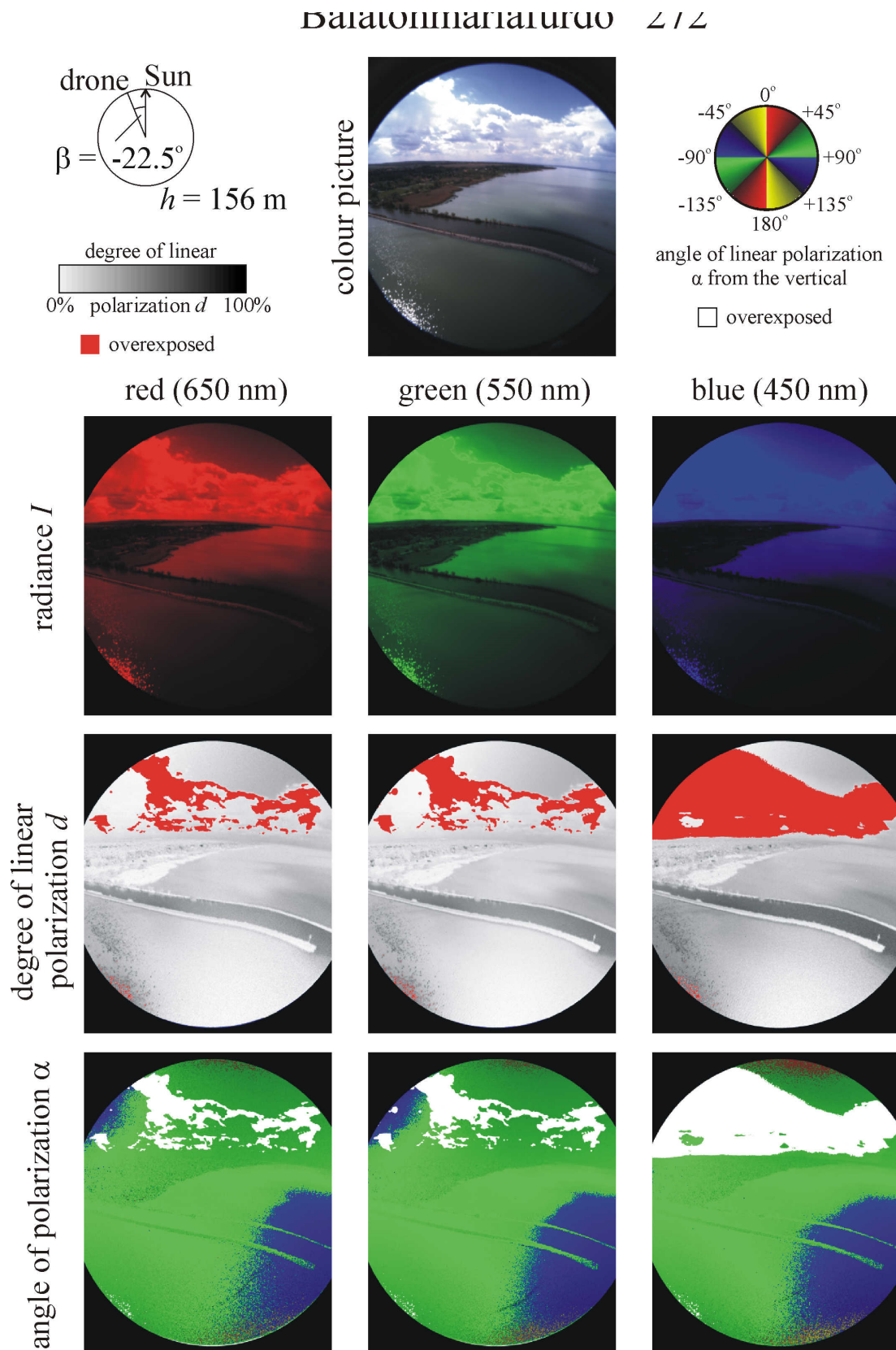
Drone-based imaging polarimetry of dark lake patches from the viewpoint of flying polarotactic insects with ecological implication

Dénes Száz, Péter Takács, Balázs Bernáth, György Kriska, András Barta, István Pomozi, Gábor Horváth^{1,*}

¹Environmental Optics Laboratory, Department of Biological Physics, ELTE Eötvös Loránd University, H-1117 Budapest, Pázmány sétány 1, Hungary,

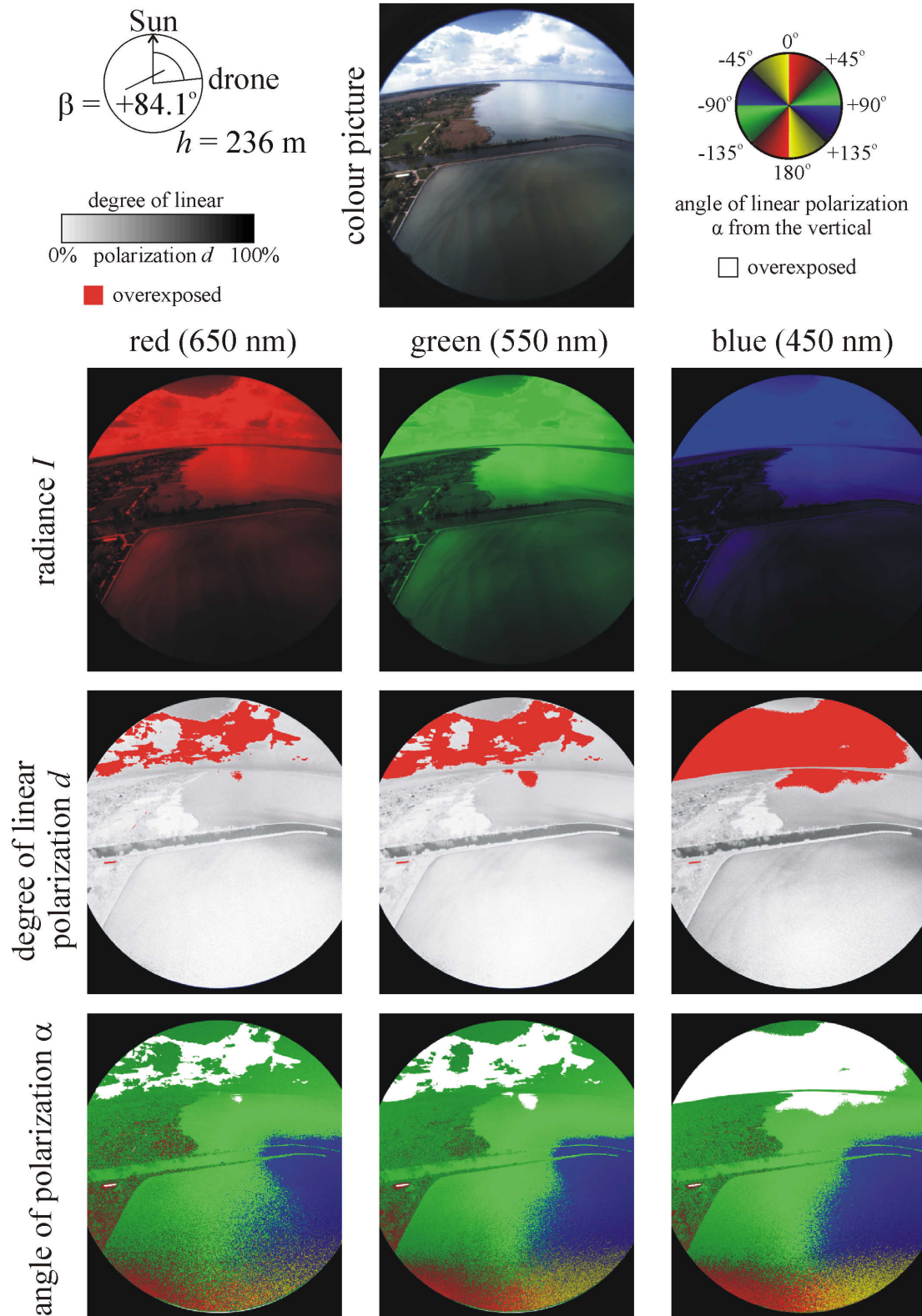
**Corresponding author: gh@arago.elte.hu*

This file contains the following: Supplementary Figures S1-S8 with captions



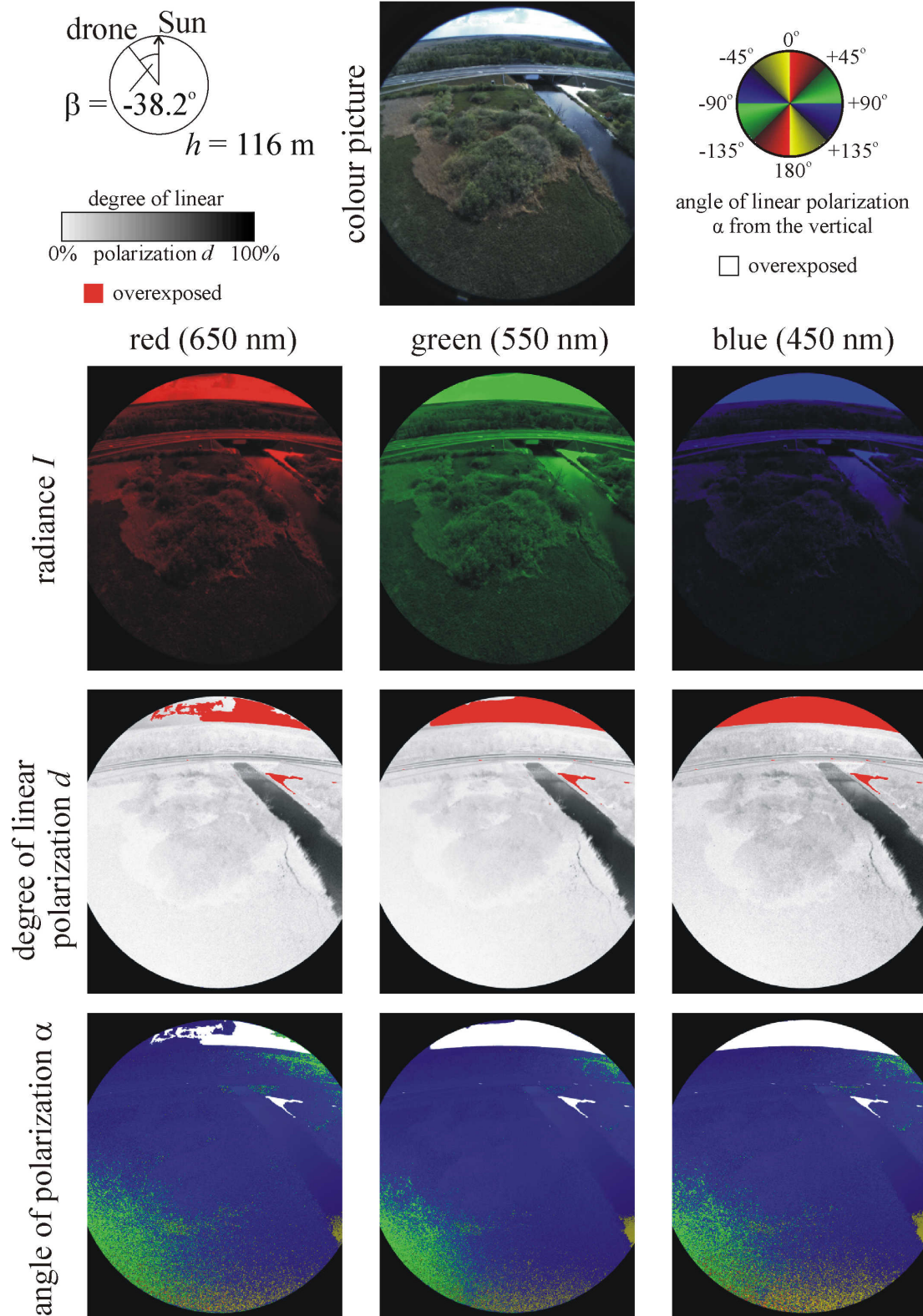
Supplementary Figure S1. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the harbour of Balatonmariafurdo ($46^\circ 42' 22'' \text{ N}$, $17^\circ 22' 14'' \text{ E}$) measured with drone-based imaging polarimetry from height $h = 156 \text{ m}$ in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 13:48:13 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = -22.5^\circ$ clockwise from the solar meridian.

Balatonmariafurdo 097

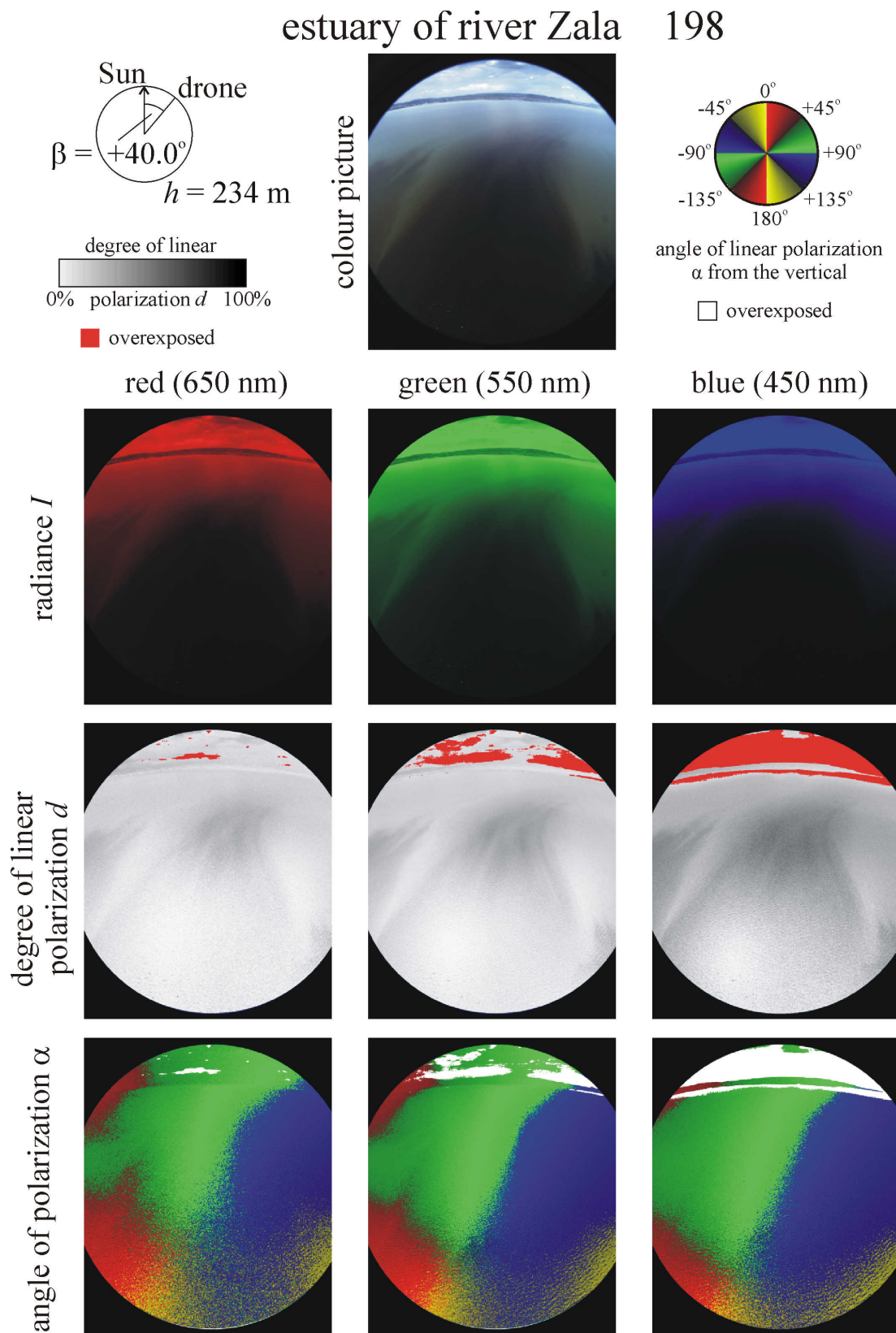


Supplementary Figure S2. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the harbour of Balatonmariafurdo ($46^\circ 42' 22'' \text{ N}$, $17^\circ 22' 14'' \text{ E}$) measured with drone-based imaging polarimetry from height $h = 236 \text{ m}$ in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 13:42:23 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = +84.1^\circ$ clockwise from the solar meridian.

estuary of river Zala 333

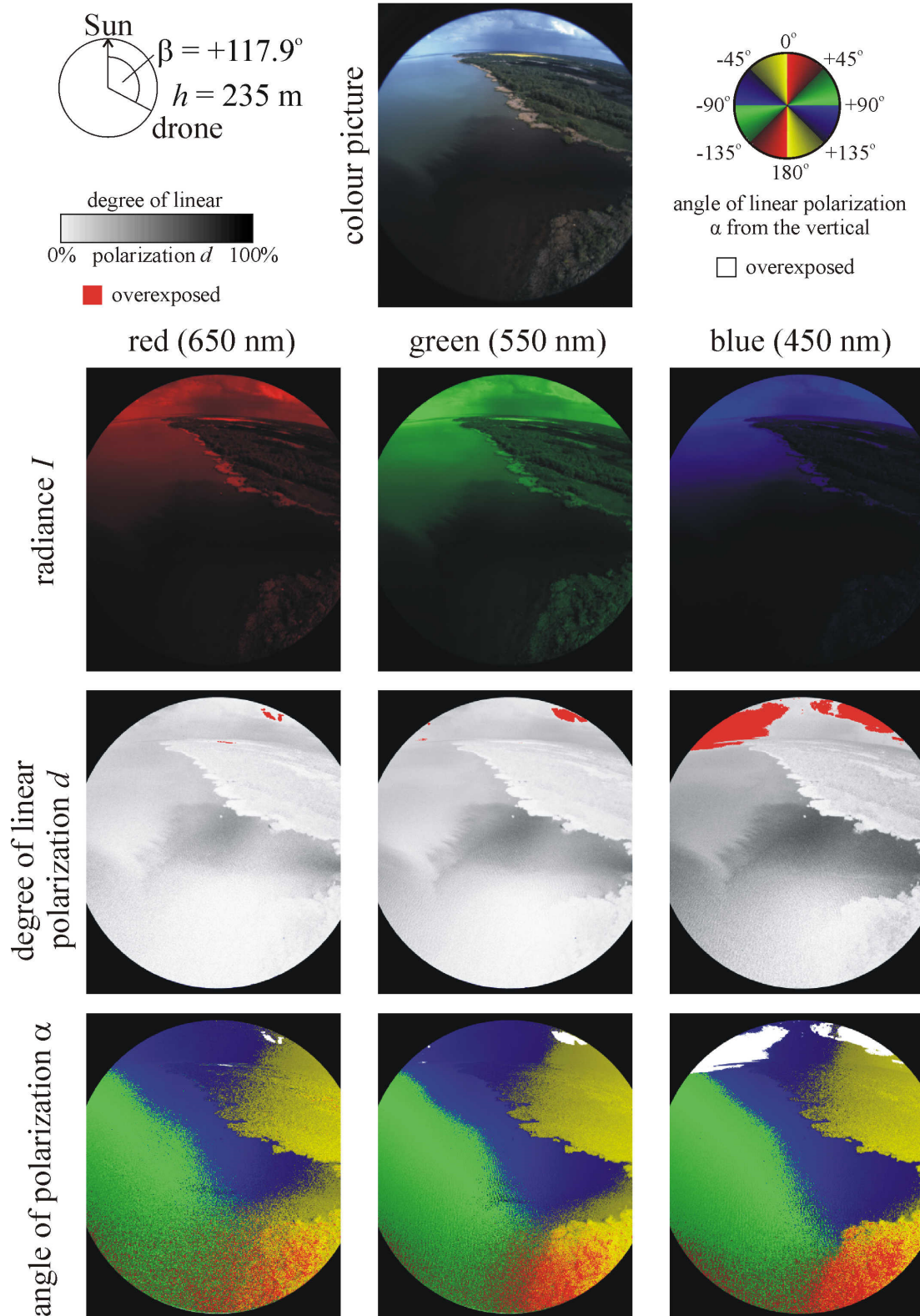


Supplementary Figure S3. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the estuary of river Zala ($46^\circ 42' 21'' \text{ N}$, $17^\circ 15' 53'' \text{ E}$) measured with drone-based imaging polarimetry from height $h = 116 \text{ m}$ in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 15:06:46 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = -38.2^\circ$ clockwise from the solar meridian.



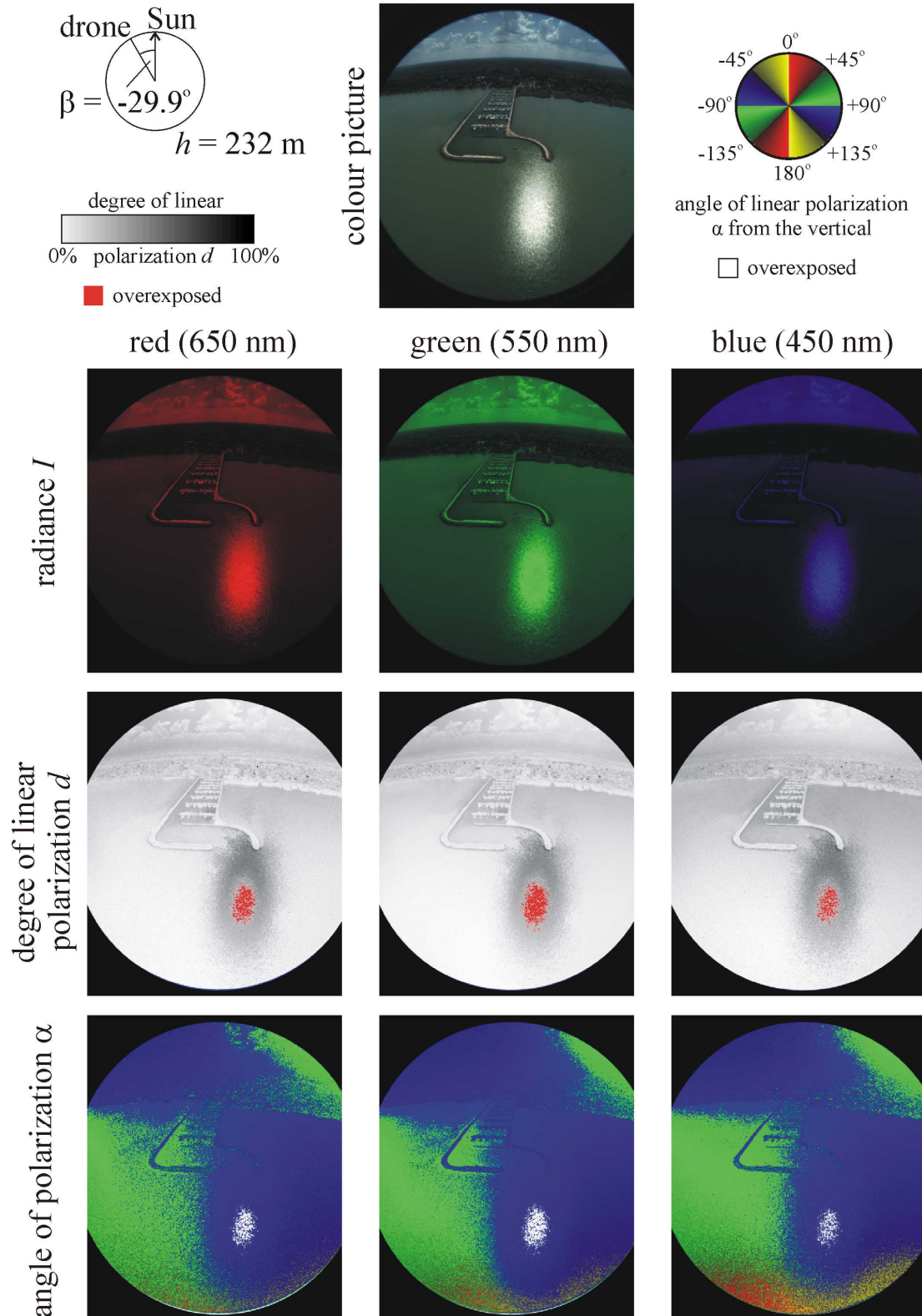
Supplementary Figure S4. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the estuary of river Zala ($46^\circ 42' 21''$ N, $17^\circ 15' 53''$ E) measured with drone-based imaging polarimetry from height $h = 234$ m in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 15:02:14 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = +40.0^\circ$ clockwise from the solar meridian.

estuary of river Zala 154



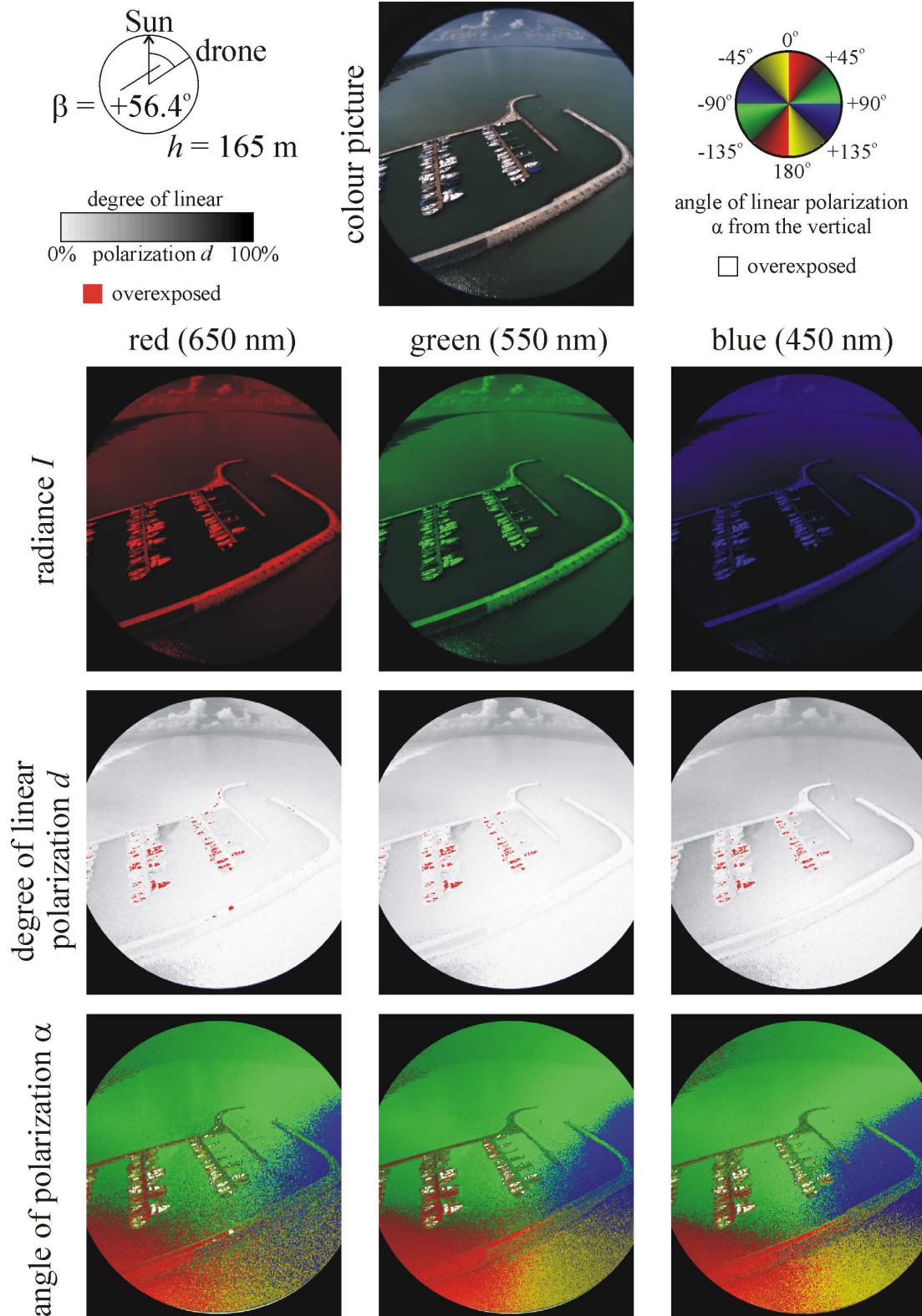
Supplementary Figure S5. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the estuary of river Zala ($46^\circ 42' 21'' \text{ N}$, $17^\circ 15' 53'' \text{ E}$) measured with drone-based imaging polarimetry from height $h = 235 \text{ m}$ in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 15:00:46 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = +117.9^\circ$ clockwise from the solar meridian.

Balatonfenyves 291



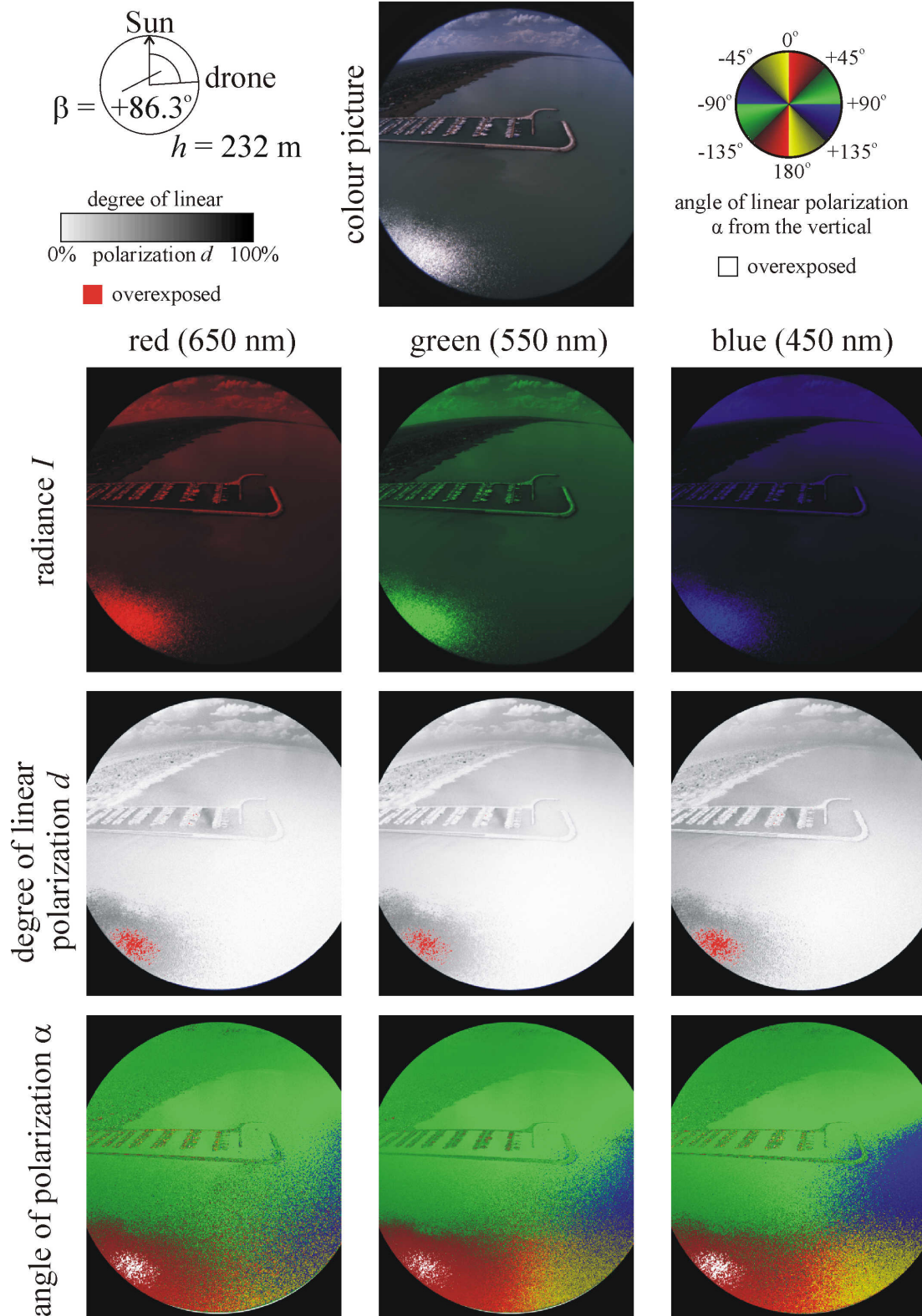
Supplementary Figure S6. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the harbour of Balatonfenyves ($46^\circ 42' 39'' \text{ N}$, $17^\circ 28' 40'' \text{ E}$) measured with drone-based imaging polarimetry from height $h = 232 \text{ m}$ in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 12:30:54 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = -29.9^\circ$ clockwise from the solar meridian.

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Supplementary Figure S7. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the harbour of Balatonfenyves ($46^\circ 42' 39''$ N, $17^\circ 28' 40''$ E) measured with drone-based imaging polarimetry from height $h = 165$ m in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 12:36:17 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = +56.4^\circ$ clockwise from the solar meridian.

Balatonfenyves 345



Supplementary Figure S8. Colour picture and patterns of the radiance I , degree of linear polarization d and angle of polarization α of lake Balaton at the harbour of Balatonfenyves ($46^\circ 42' 39''$ N, $17^\circ 28' 40''$ E) measured with drone-based imaging polarimetry from height $h = 232$ m in the red (650 nm), green (550 nm) and blue (450 nm) spectral ranges on 3 May 2022 at 12:32:42 (= UTC + 2 h). In the α -patterns the white bars show the local directions of polarization. The azimuth angle of the drone's optical axis is $\beta = +86.3^\circ$ clockwise from the solar meridian.