Sea-ing Through Scattered Rays: Revisiting the Image Formation Model for Realistic Underwater Image Generation
Supplementary Material

a_c	b_c	β_{eff}/G_c	g	mu	phi	GRF
Reference model (second row of Fig. 4)						
$[0.72, 0.77, 1.00]$	$[9.5, 10.25, 13.25]$	$[10.22, 11.02, 14.25]$	1	1	0	$[0.3 - 1.7]$
$[1.06, 1.14, 1.47]$	$[15.58, 16.81, 21.73]$	$[16.64, 17.95, 23.20]$	1	1	0	$[0.3 - 1.7]$
$[1.39, 1.50, 1.94]$	$[21.66, 23.37, 30.21]$	$[23.05, 24.87, 32.15]$	1	1	0	$[0.3 - 1.7]$
$[1.56, 1.69, 2.18]$	$[24.70, 26.65, 34.45]$	$[26.26, 28.34, 36.63]$	1	1	0	$[0.3 - 1.7]$
Reference model with adjusted coefficients (third row of Fig. 4)						
$[0.72, 0.77, 1.00]$	$[9.5, 10.25, 13.25]$	$[2.62, 2.82, 3.65]$	0.2	0.2	0	$[0.3 - 1.7]$
$[1.06, 1.14, 1.47]$	$[15.58, 16.81, 21.73]$	$[4.17, 4.50, 5.82]$	0.2	0.2	0	$[0.3 - 1.7]$
$[1.39, 1.50, 1.94]$	$[21.66, 23.37, 30.21]$	$[5.73, 6.18, 7.99]$	0.2	0.2	0	$[0.3 - 1.7]$
$[1.56, 1.69, 2.18]$	$[24.70, 26.65, 34.45]$	$[6.50, 7.02, 9.07]]$	0.2	0.2	0	$[0.3 - 1.7]$
Ours (fourth row of Fig. 4)						
$[0.72, 0.77, 1.00]$	$[9.5, 10.25, 13.25]$	$[2.62, 2.82, 3.65]$	0.2	0.3	$0.3 \cdot mean(b)$	$[0.3 - 1.7]$
$[1.06, 1.14, 1.47]$	$[15.58, 16.81, 21.73]$	$[4.17, 4.50, 5.82]$	0.2	0.3	$0.3 \cdot mean(b)$	$[0.3 - 1.7]$
$[1.39, 1.50, 1.94]$	$[21.66, 23.37, 30.21]$	$[5.73, 6.18, 7.99]$	0.2	0.3	$0.3 \cdot mean(b)$	$[0.3 - 1.7]$
$[1.56, 1.69, 2.18]$	$[24.70, 26.65, 34.45]$	$[6.50, 7.02, 9.07]$	0.2	0.3	$0.3 \cdot mean(b)$	$[0.3 - 1.7]$

Table 1. Model parameters for results in Fig. 4 of the paper. Each row of the table corresponds to one of the turbid images. The first column in Fig. 4 shows the clean input image and as such is not included here. All images share: $d = 0.5$ and $z(x) = [0.3 - 0.7]$

d	z(x)	z gamma	g	mu	phi	GRF
1	[0.5 - 10]	5	0.3	0.3	$0.8 \cdot mean(b)$	$[0.3 - 1.7]$
1	[0.5 - 7]	4	0.3	0.3	$0.8 \cdot mean(b)$	$[0.3 - 1.7]$
1	[0.5 - 10]	4	0.3	0.3	$0.8 \cdot mean(b)$	$[0.3 - 1.7]$
1	[0.25 - 2]	2.5	0.3	0.3	$0.8 \cdot mean(b)$	$[0.3 - 1.7]$

Table 2. Model parameters for the example images in Fig. 7 of the paper. Each row corresponds to one of the images. The attenuation coefficients were chosen according to Jerlov water types.

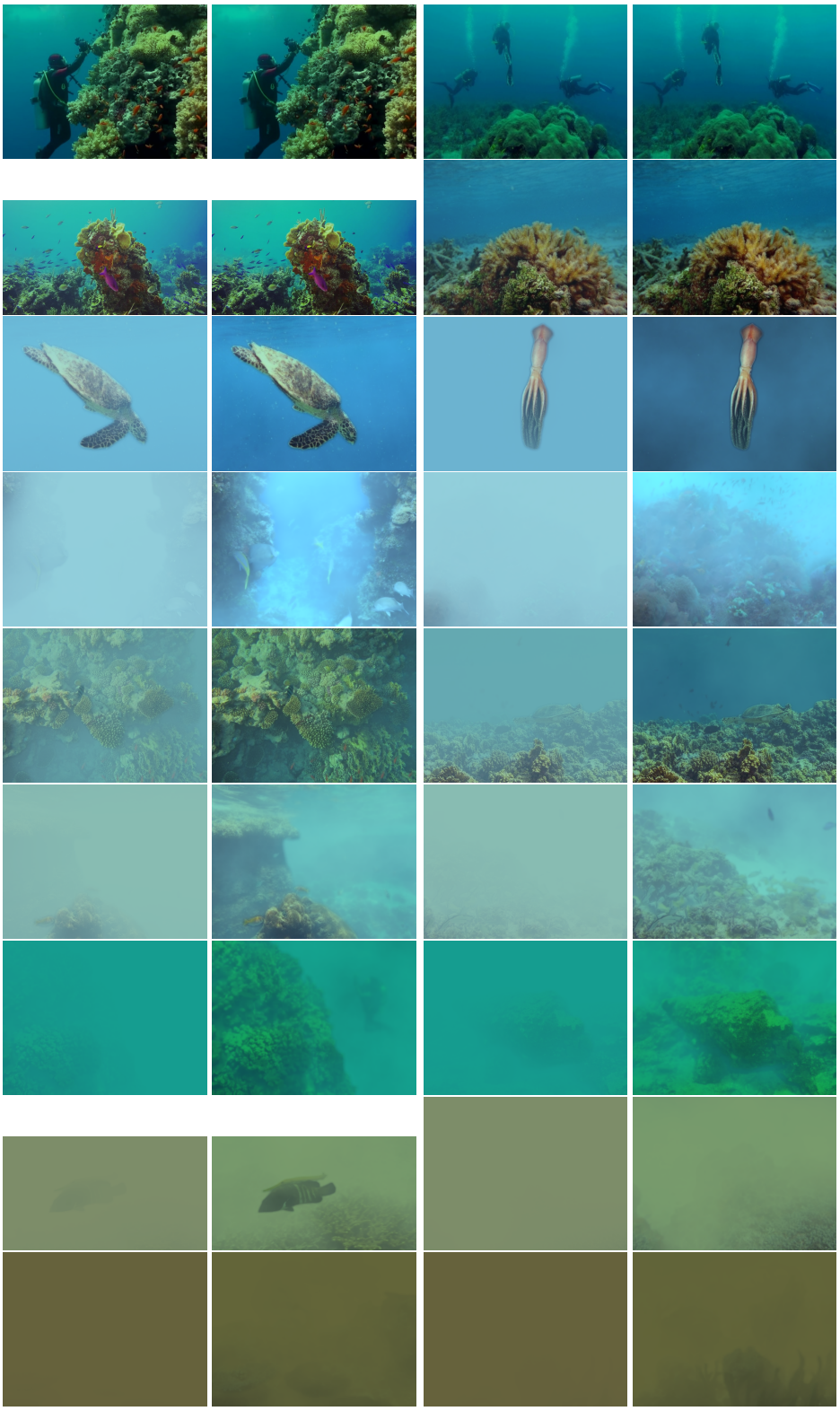

Figure 1. Survey images. Rows correspond to water types IA - 9C. For all images the following parameters were used: $g = 0.2$, $\mu = 0.3$, $\phi = 0.3 \cdot mean(b)$, $d = 1m$, $z(x) = [1 - 5m]$, $GRF = [0.7 - 1.3]$