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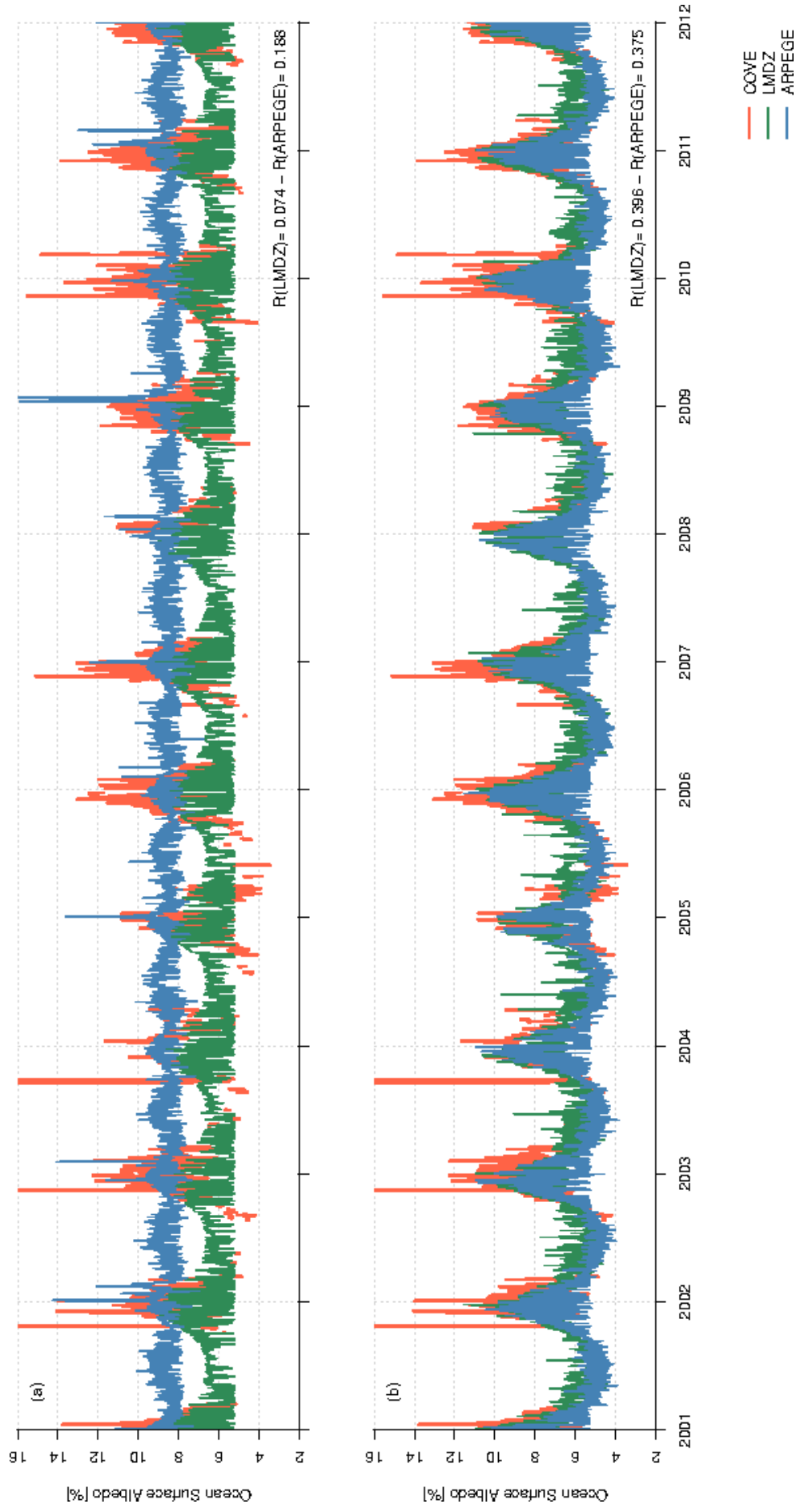
*Supplement of*

## **An interactive ocean surface albedo scheme (OSAv1.0): formulation and evaluation in ARPEGE-Climat (V6.1) and LMDZ (V5A)**

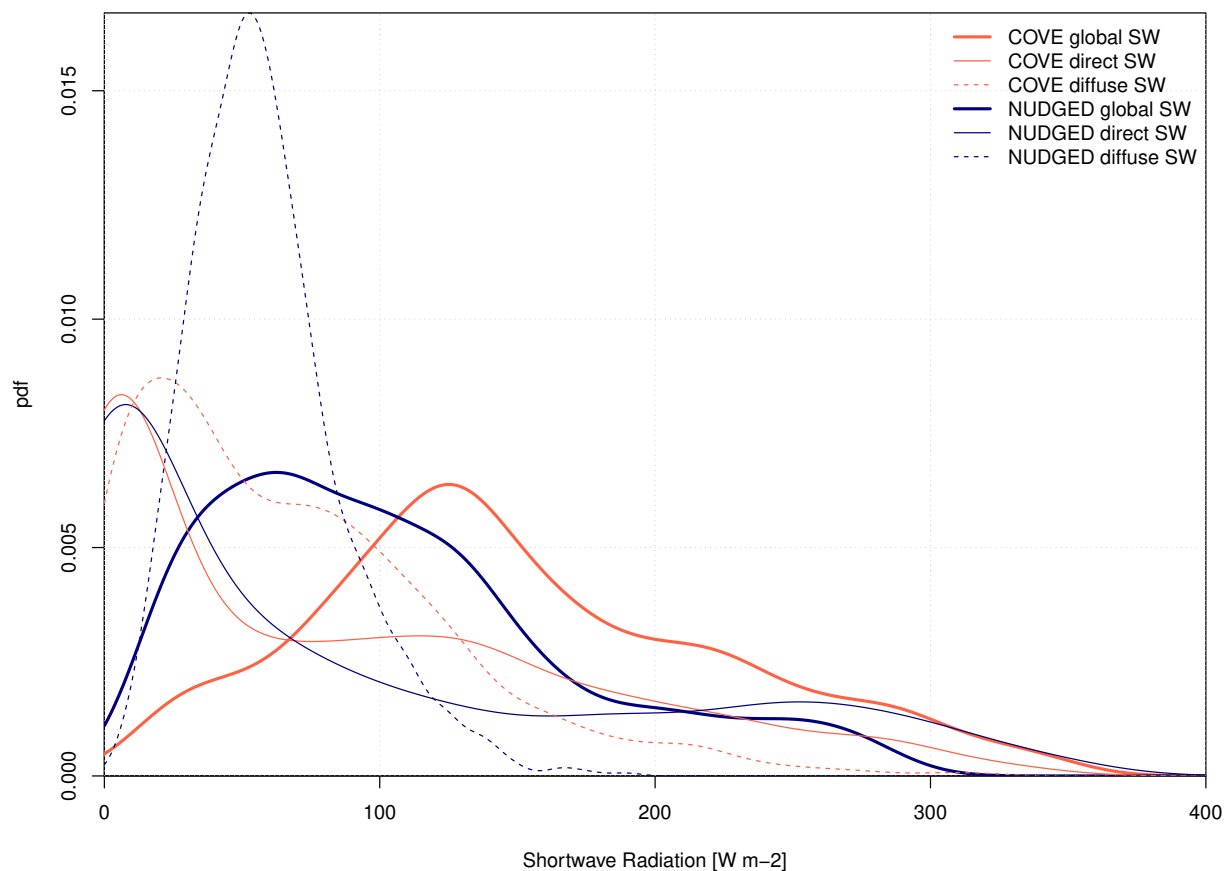
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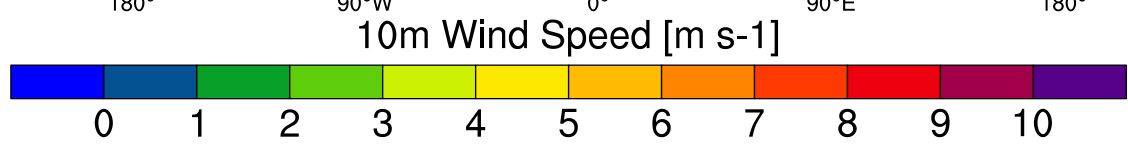
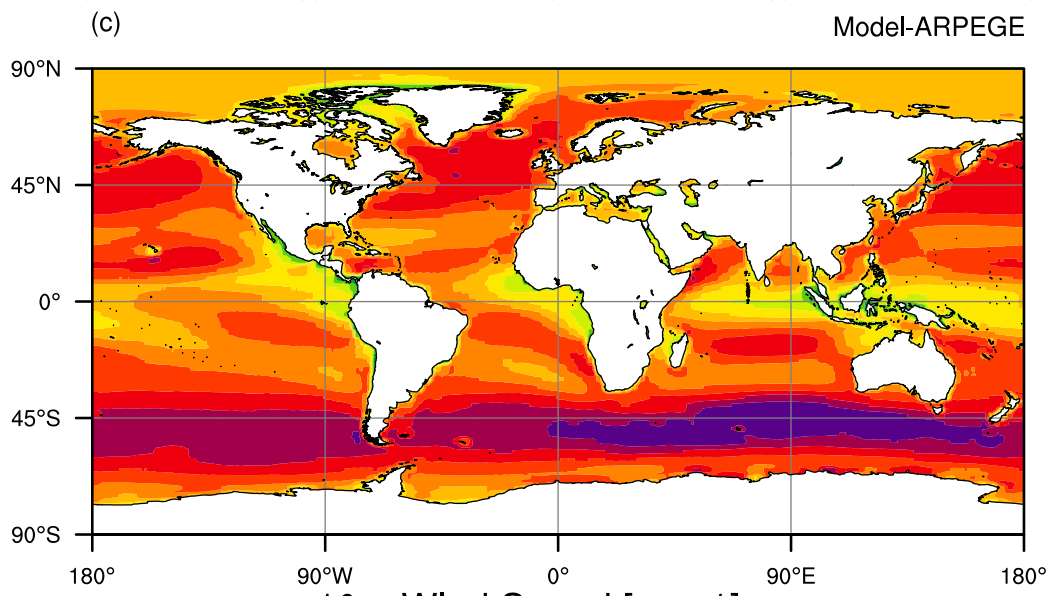
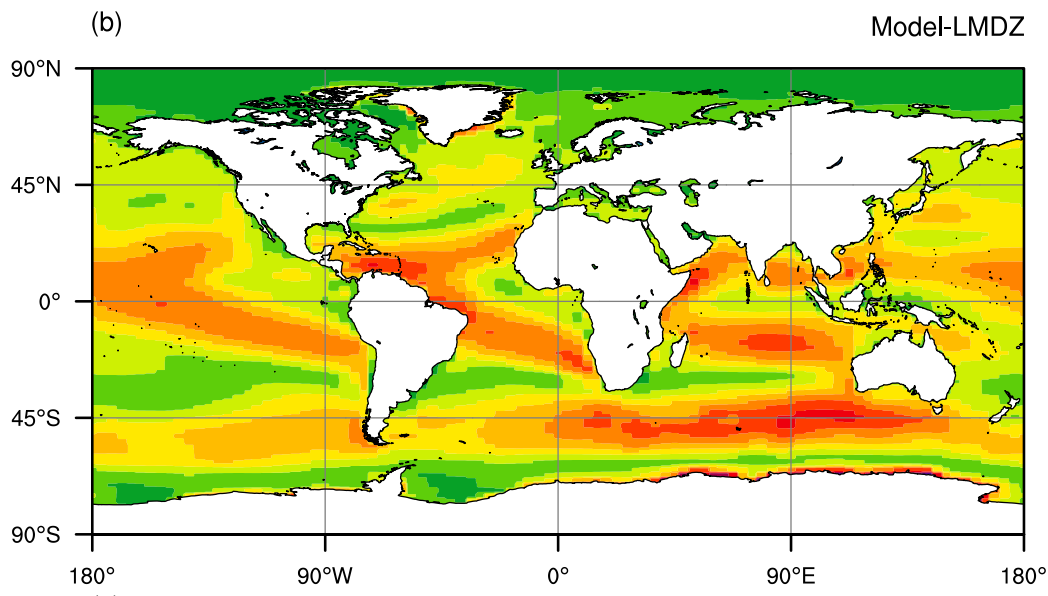
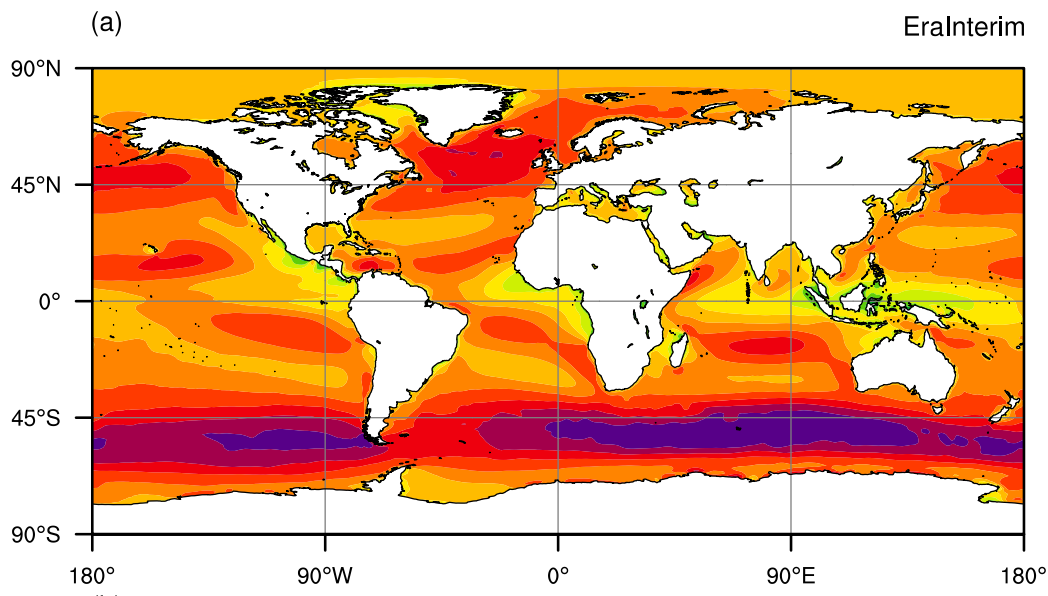
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**Supplementary Figure 1:** Daily-mean ocean surface albedo at COVE station (36.905°N, 75.713°W) from 2001 to 2012. Both panels compare ocean surface albedo as derived from ground-truth observations (in red) and as simulated by ARPEGE-Climat (in blue) and LMDZ (in green). In Panel (a), simulated ocean surface albedo relies on old scheme from (Taylor et al., 1996) and (Larsen and Barkstrom, 1977) for ARPEGE-Climat and LMDZ, respectively. Comparatively, in panel (b), both models employ the new interactive ocean surface albedo scheme.

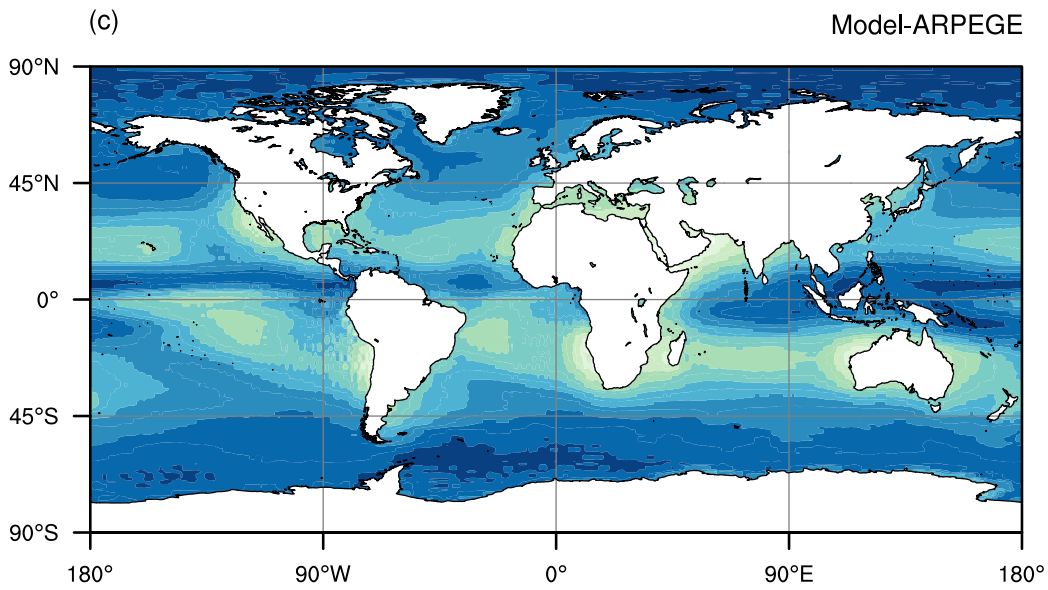
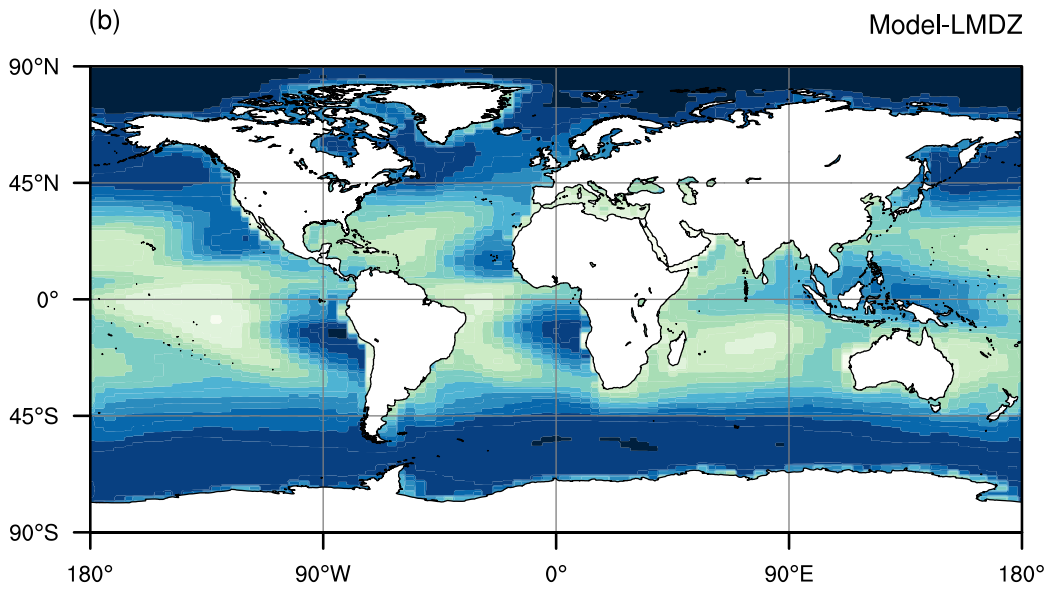
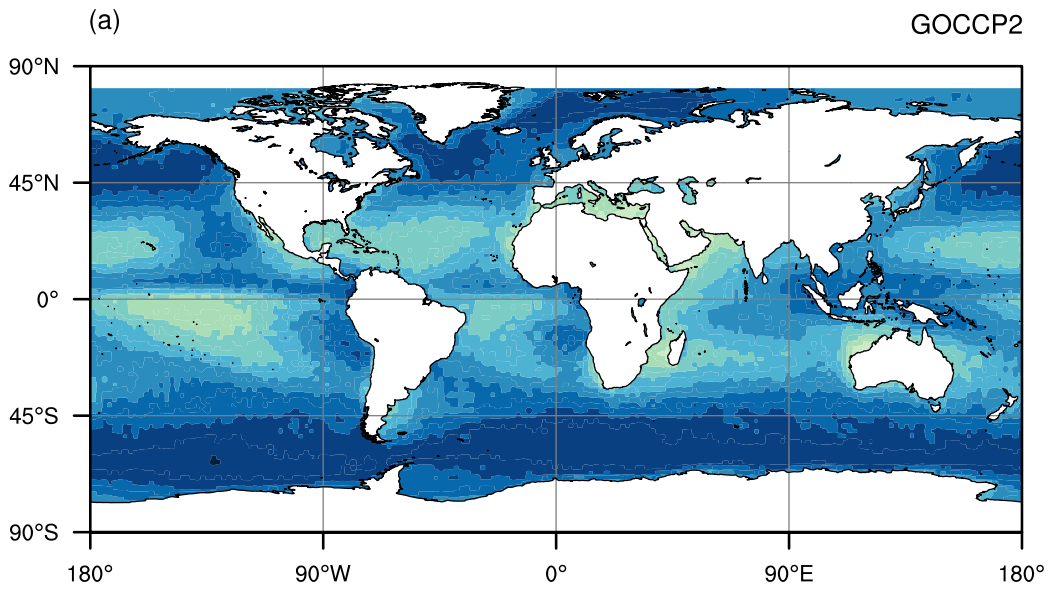


**Supplementary Figure 2:** Probability density function of daily-mean downwelling shortwave radiation at COVE station (36.905°N, 75.713°W) derived from daily-mean time series over years 2001 to 2013. Downwelling shortwave radiation measured at COVE and reconstructed with ARPEGE-Climat nudged toward EraInterim are given in red and dark blue, respectively. The partitioning between global, direct and diffuse radiation is indicated with bold solid, thin solid and thin dashed lines.

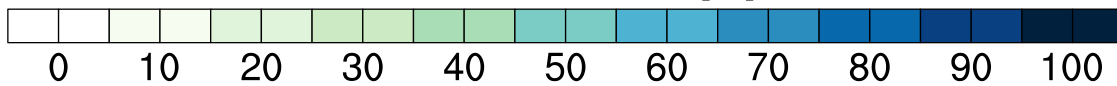




**Supplementary Figure 3:** Decadal-mean 10-m wind speed as (a) estimated from EraInterim (Dee et al., 2011) and as simulated by (b) LMDZ and (c) ARPEGE-Climat. Decadal-mean are estimated from years 2001 to 2014 for EraInterim reanalysis and both climates models.



Total Cloud Cover [%]



**Supplementary Figure 4:** Climatological cloud cover as (a) estimated from GOCCP2 (Chepfer et al., 2010) and as simulated by (b) LMDZ and (c) ARPEGE-Climat. Climatological cloud covers are estimated from years 2006 to 2012 for models and observations.

**Supplementary Table 1:** Tabulated values of coefficients as function of wavelength ( $\lambda$ , in nm).  $n(\lambda)$  and  $E(\lambda)$  are dimensionless and other coefficients are in  $\text{m}^{-1}$ .

$\lambda$	$E(\lambda)$	$n(\lambda)$	$a_{chl}(\lambda)$	$a_w(\lambda)$	$b_w(\lambda)$	$\alpha_{wc}(\lambda)$
2.000e+02	5.400e-05	1.452e+00	7.746e-01	3.067e+00	1.510e-01	0.000e+00
2.100e+02	2.058e-04	1.435e+00	7.523e-01	1.994e+00	1.190e-01	0.000e+00
2.200e+02	3.488e-04	1.421e+00	7.299e-01	1.309e+00	9.950e-02	0.000e+00
2.300e+02	3.841e-04	1.411e+00	7.076e-01	9.275e-01	8.200e-02	0.000e+00
2.400e+02	2.916e-04	1.402e+00	6.853e-01	7.183e-01	6.850e-02	0.000e+00
2.500e+02	4.430e-04	1.395e+00	6.630e-01	5.608e-01	5.750e-02	0.000e+00
2.600e+02	6.302e-04	1.389e+00	5.768e-01	4.552e-01	4.851e-02	0.000e+00
2.700e+02	1.970e-03	1.384e+00	5.011e-01	3.738e-01	4.150e-02	0.000e+00
2.800e+02	6.975e-04	1.379e+00	4.285e-01	2.879e-01	3.530e-02	0.000e+00
2.900e+02	4.432e-03	1.375e+00	3.946e-01	2.145e-01	3.050e-02	0.000e+00
3.000e+02	3.096e-03	1.371e+00	4.330e-01	1.416e-01	2.620e-02	0.000e+00
3.100e+02	4.587e-03	1.368e+00	5.310e-01	1.049e-01	2.290e-02	0.000e+00
3.200e+02	5.934e-03	1.365e+00	6.371e-01	8.412e-02	2.000e-02	0.000e+00
3.300e+02	7.488e-03	1.363e+00	7.297e-01	6.815e-02	1.750e-02	0.000e+00
3.400e+02	7.422e-03	1.360e+00	7.904e-01	5.585e-02	1.530e-02	0.000e+00
3.500e+02	7.739e-03	1.358e+00	8.097e-01	4.639e-02	1.340e-02	0.000e+00
3.600e+02	7.155e-03	1.356e+00	8.761e-01	3.791e-02	1.200e-02	0.000e+00
3.700e+02	8.395e-03	1.354e+00	9.381e-01	2.985e-02	1.061e-02	0.000e+00
3.800e+02	8.859e-03	1.353e+00	9.457e-01	2.234e-02	9.388e-03	0.000e+00
3.900e+02	9.191e-03	1.351e+00	9.258e-01	1.870e-02	8.416e-03	0.000e+00
4.000e+02	1.240e-02	1.350e+00	9.025e-01	1.737e-02	7.588e-03	1.987e-01
4.100e+02	1.129e-02	1.348e+00	9.253e-01	1.610e-02	6.805e-03	1.968e-01
4.200e+02	1.295e-02	1.347e+00	9.270e-01	1.531e-02	6.099e-03	1.956e-01
4.300e+02	8.365e-03	1.346e+00	9.996e-01	1.444e-02	5.501e-03	1.941e-01
4.400e+02	1.263e-02	1.345e+00	8.171e-01	1.437e-02	4.899e-03	1.940e-01
4.500e+02	1.580e-02	1.344e+00	5.354e-01	1.481e-02	4.503e-03	1.948e-01
4.600e+02	1.504e-02	1.343e+00	5.329e-01	1.518e-02	4.096e-03	1.954e-01

4.700e+02	1.383e-02	1.342e+00	5.349e-01	1.593e-02	3.703e-03	1.966e-01
4.800e+02	1.500e-02	1.341e+00	3.805e-01	1.743e-02	3.398e-03	1.987e-01
4.900e+02	1.479e-02	1.340e+00	2.089e-01	1.967e-02	3.101e-03	2.015e-01
5.000e+02	1.369e-02	1.339e+00	1.109e-01	2.564e-02	2.898e-03	2.069e-01
5.100e+02	1.435e-02	1.339e+00	7.057e-02	3.599e-02	2.608e-03	2.125e-01
5.200e+02	1.350e-02	1.338e+00	6.340e-02	4.703e-02	2.380e-03	2.161e-01
5.300e+02	1.439e-02	1.337e+00	7.044e-02	5.145e-02	2.227e-03	2.171e-01
5.400e+02	1.304e-02	1.337e+00	8.183e-02	5.534e-02	2.080e-03	2.179e-01
5.500e+02	1.372e-02	1.336e+00	9.896e-02	6.401e-02	1.908e-03	2.193e-01
5.600e+02	1.358e-02	1.335e+00	1.267e-01	7.031e-02	1.798e-03	2.201e-01
5.700e+02	1.304e-02	1.335e+00	1.598e-01	8.173e-02	1.701e-03	2.212e-01
5.800e+02	1.355e-02	1.334e+00	1.993e-01	1.033e-01	1.600e-03	2.227e-01
5.900e+02	1.336e-02	1.334e+00	2.502e-01	1.639e-01	1.500e-03	2.248e-01
6.000e+02	1.287e-02	1.333e+00	3.026e-01	2.388e-01	1.400e-03	2.262e-01
6.100e+02	1.255e-02	1.333e+00	3.197e-01	2.908e-01	1.300e-03	2.270e-01
6.200e+02	1.278e-02	1.332e+00	2.918e-01	3.086e-01	1.201e-03	2.273e-01
6.300e+02	1.208e-02	1.332e+00	2.667e-01	3.193e-01	1.095e-03	2.275e-01
6.400e+02	1.190e-02	1.331e+00	3.315e-01	3.278e-01	1.017e-03	2.276e-01
6.500e+02	1.184e-02	1.331e+00	5.711e-01	3.523e-01	9.583e-04	2.280e-01
6.600e+02	1.158e-02	1.330e+00	7.452e-01	3.958e-01	8.559e-04	2.287e-01
6.700e+02	1.117e-02	1.330e+00	5.498e-01	4.326e-01	7.583e-04	2.293e-01
6.800e+02	1.100e-02	1.329e+00	2.407e-01	4.485e-01	7.174e-04	2.296e-01
6.900e+02	1.067e-02	1.329e+00	1.316e-01	5.016e-01	6.953e-04	2.305e-01
7.000e+02	1.022e-02	1.329e+00	1.198e-01	6.481e-01	7.013e-04	2.332e-01
7.100e+02	1.021e-02	1.328e+00	1.258e-01	8.409e-01	6.997e-04	2.370e-01
7.200e+02	9.810e-03	1.328e+00	1.367e-01	1.165e+00	6.001e-04	2.374e-01
7.300e+02	9.773e-03	1.328e+00	1.553e-01	1.811e+00	6.000e-04	2.314e-01
7.400e+02	9.272e-03	1.327e+00	1.936e-01	2.364e+00	6.000e-04	2.292e-01
7.500e+02	9.301e-03	1.327e+00	2.571e-01	2.479e+00	5.000e-04	2.288e-01
7.600e+02	9.117e-03	1.327e+00	3.363e-01	2.547e+00	5.000e-04	2.287e-01
7.700e+02	8.874e-03	1.327e+00	4.065e-01	2.511e+00	5.000e-04	2.288e-01
7.800e+02	8.749e-03	1.326e+00	4.289e-01	2.357e+00	4.000e-04	2.292e-01
7.900e+02	8.535e-03	1.326e+00	3.819e-01	2.164e+00	4.000e-04	2.298e-01
8.000e+02	8.417e-03	1.326e+00	2.987e-01	2.068e+00	4.000e-04	2.302e-01
8.100e+02	8.211e-03	1.326e+00	2.160e-01	2.334e+00	4.000e-04	2.293e-01
8.200e+02	7.960e-03	1.325e+00	1.344e-01	3.102e+00	3.988e-04	2.275e-01

8.300e+02	7.835e-03	1.325e+00	6.321e-02	3.716e+00	3.975e-04	2.267e-01
8.400e+02	7.665e-03	1.325e+00	2.241e-02	4.069e+00	3.963e-04	2.263e-01
8.500e+02	7.120e-03	1.325e+00	5.135e-03	4.055e+00	3.950e-04	2.263e-01
8.600e+02	7.348e-03	1.325e+00	-1.242e-03	3.662e+00	3.938e-04	2.268e-01
8.700e+02	7.184e-03	1.324e+00	-2.532e-03	3.266e+00	3.926e-04	2.273e-01
8.800e+02	7.042e-03	1.324e+00	-4.086e-03	3.338e+00	3.913e-04	2.272e-01
8.900e+02	7.024e-03	1.324e+00	-4.713e-03	4.351e+00	3.901e-04	2.261e-01
9.000e+02	6.750e-03	1.324e+00	-5.693e-03	6.776e+00	3.888e-04	2.244e-01
9.100e+02	6.571e-03	1.323e+00	-1.091e-02	1.093e+01	3.876e-04	2.220e-01
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1.030e+03	5.113e-03	1.321e+00	-4.865e-02	2.084e+01	3.727e-04	2.163e-01
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1.130e+03	4.166e-03	1.319e+00	-4.796e-02	5.378e+01	3.603e-04	2.002e-01
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1.160e+03	3.921e-03	1.319e+00	-4.854e-02	9.045e+01	3.566e-04	1.868e-01
1.170e+03	3.889e-03	1.319e+00	-4.849e-02	9.838e+01	3.553e-04	1.844e-01
1.180e+03	3.861e-03	1.318e+00	-4.841e-02	1.032e+02	3.541e-04	1.829e-01

1.190e+03	3.748e-03	1.318e+00	-4.856e-02	1.046e+02	3.528e-04	1.825e-01
1.200e+03	3.687e-03	1.318e+00	-4.828e-02	1.025e+02	3.516e-04	1.831e-01
1.210e+03	3.598e-03	1.318e+00	-4.907e-02	9.871e+01	3.503e-04	1.843e-01
1.220e+03	3.593e-03	1.318e+00	-4.823e-02	9.448e+01	3.491e-04	1.856e-01
1.230e+03	3.532e-03	1.317e+00	-4.818e-02	9.066e+01	3.479e-04	1.868e-01
1.240e+03	3.429e-03	1.317e+00	-4.855e-02	8.813e+01	3.466e-04	1.876e-01
1.250e+03	3.408e-03	1.317e+00	-4.876e-02	8.776e+01	3.454e-04	1.877e-01
1.260e+03	3.339e-03	1.317e+00	-4.863e-02	9.009e+01	3.441e-04	1.869e-01
1.270e+03	3.282e-03	1.317e+00	-4.843e-02	9.433e+01	3.429e-04	1.856e-01
1.280e+03	3.211e-03	1.317e+00	-4.836e-02	9.932e+01	3.417e-04	1.841e-01
1.290e+03	3.136e-03	1.316e+00	-4.913e-02	1.039e+02	3.404e-04	1.827e-01
1.300e+03	3.085e-03	1.316e+00	-4.884e-02	1.070e+02	3.392e-04	1.818e-01
1.310e+03	3.026e-03	1.316e+00	-4.864e-02	1.091e+02	3.379e-04	1.812e-01
1.320e+03	2.960e-03	1.316e+00	-4.865e-02	1.176e+02	3.367e-04	1.788e-01
1.330e+03	2.858e-03	1.315e+00	-4.821e-02	1.413e+02	3.354e-04	1.728e-01
1.340e+03	2.793e-03	1.315e+00	-4.881e-02	1.894e+02	3.342e-04	1.624e-01
1.350e+03	2.745e-03	1.315e+00	-4.887e-02	2.707e+02	3.330e-04	1.487e-01
1.360e+03	2.707e-03	1.315e+00	-4.868e-02	3.928e+02	3.317e-04	1.335e-01
1.370e+03	2.653e-03	1.315e+00	-4.862e-02	5.571e+02	3.305e-04	1.186e-01
1.380e+03	2.638e-03	1.314e+00	-4.807e-02	7.636e+02	3.292e-04	1.050e-01
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1.400e+03	2.526e-03	1.314e+00	-4.813e-02	1.303e+03	3.268e-04	8.258e-02
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1.430e+03	2.401e-03	1.313e+00	-4.867e-02	2.257e+03	3.230e-04	6.208e-02
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1.450e+03	2.349e-03	1.313e+00	-4.836e-02	2.593e+03	3.206e-04	5.757e-02
1.460e+03	2.326e-03	1.313e+00	-4.858e-02	2.570e+03	3.193e-04	5.785e-02
1.470e+03	2.286e-03	1.313e+00	-4.887e-02	2.436e+03	3.181e-04	5.956e-02
1.480e+03	2.261e-03	1.312e+00	-4.875e-02	2.227e+03	3.168e-04	6.253e-02
1.490e+03	2.222e-03	1.312e+00	-4.864e-02	1.981e+03	3.156e-04	6.660e-02
1.500e+03	2.219e-03	1.312e+00	-4.863e-02	1.735e+03	3.143e-04	7.143e-02
1.510e+03	2.172e-03	1.312e+00	-4.887e-02	1.520e+03	3.131e-04	7.647e-02
1.520e+03	2.112e-03	1.312e+00	-4.817e-02	1.339e+03	3.119e-04	8.149e-02
1.530e+03	2.038e-03	1.311e+00	-4.893e-02	1.187e+03	3.106e-04	8.636e-02
1.540e+03	2.012e-03	1.311e+00	-4.864e-02	1.062e+03	3.094e-04	9.100e-02

1.550e+03	2.000e-03	1.311e+00	-4.881e-02	9.573e+02	3.081e-04	9.534e-02
1.560e+03	1.977e-03	1.311e+00	-4.819e-02	8.708e+02	3.069e-04	9.936e-02
1.570e+03	1.949e-03	1.310e+00	-4.853e-02	7.979e+02	3.057e-04	1.031e-01
1.580e+03	1.953e-03	1.310e+00	-4.804e-02	7.348e+02	3.044e-04	1.066e-01
1.590e+03	1.773e-03	1.310e+00	-4.831e-02	6.774e+02	3.032e-04	1.101e-01
1.600e+03	1.851e-03	1.310e+00	-4.866e-02	6.217e+02	3.019e-04	1.138e-01
1.610e+03	1.769e-03	1.309e+00	-4.815e-02	5.659e+02	3.007e-04	1.179e-01
1.620e+03	1.746e-03	1.309e+00	-4.874e-02	5.164e+02	2.994e-04	1.218e-01
1.630e+03	1.764e-03	1.309e+00	-4.852e-02	4.818e+02	2.982e-04	1.248e-01
1.640e+03	1.667e-03	1.309e+00	-4.849e-02	4.709e+02	2.970e-04	1.258e-01
1.650e+03	1.675e-03	1.308e+00	-4.882e-02	4.922e+02	2.957e-04	1.239e-01
1.660e+03	1.655e-03	1.308e+00	-4.878e-02	5.340e+02	2.945e-04	1.204e-01
1.670e+03	1.640e-03	1.308e+00	-4.839e-02	5.284e+02	2.932e-04	1.208e-01
1.680e+03	1.533e-03	1.307e+00	-4.851e-02	4.880e+02	2.920e-04	1.242e-01
1.690e+03	1.551e-03	1.307e+00	-4.847e-02	4.504e+02	2.908e-04	1.277e-01
1.700e+03	1.521e-03	1.307e+00	-4.847e-02	4.533e+02	2.895e-04	1.274e-01
1.710e+03	1.484e-03	1.306e+00	-4.833e-02	5.220e+02	2.883e-04	1.214e-01
1.720e+03	1.469e-03	1.306e+00	-4.859e-02	6.326e+02	2.870e-04	1.131e-01
1.730e+03	1.462e-03	1.306e+00	-4.863e-02	7.489e+02	2.858e-04	1.058e-01
1.740e+03	1.404e-03	1.306e+00	-4.840e-02	8.346e+02	2.846e-04	1.012e-01
1.750e+03	1.369e-03	1.305e+00	-4.851e-02	8.536e+02	2.833e-04	1.002e-01
1.760e+03	1.350e-03	1.305e+00	-4.832e-02	7.823e+02	2.821e-04	1.039e-01
1.770e+03	1.320e-03	1.304e+00	-4.843e-02	6.487e+02	2.808e-04	1.120e-01
1.780e+03	1.294e-03	1.304e+00	-4.785e-02	4.932e+02	2.796e-04	1.238e-01
1.790e+03	1.277e-03	1.304e+00	-4.915e-02	3.564e+02	2.783e-04	1.375e-01
1.800e+03	1.252e-03	1.303e+00	-4.867e-02	2.790e+02	2.771e-04	1.475e-01
1.810e+03	1.243e-03	1.303e+00	-4.891e-02	2.974e+02	2.759e-04	1.449e-01
1.820e+03	1.176e-03	1.303e+00	-4.835e-02	4.307e+02	2.746e-04	1.296e-01
1.830e+03	1.184e-03	1.302e+00	-4.831e-02	6.940e+02	2.734e-04	1.091e-01
1.840e+03	1.151e-03	1.302e+00	-4.860e-02	1.102e+03	2.721e-04	8.942e-02
1.850e+03	1.139e-03	1.301e+00	-4.839e-02	1.671e+03	2.709e-04	7.284e-02
1.860e+03	1.108e-03	1.301e+00	-4.852e-02	2.415e+03	2.697e-04	5.984e-02
1.870e+03	1.111e-03	1.300e+00	-4.866e-02	3.349e+03	2.684e-04	5.023e-02
1.880e+03	1.078e-03	1.300e+00	-4.882e-02	4.488e+03	2.672e-04	4.366e-02
1.890e+03	1.050e-03	1.300e+00	-4.852e-02	5.848e+03	2.659e-04	3.977e-02
1.900e+03	1.030e-03	1.299e+00	-4.877e-02	7.443e+03	2.647e-04	3.822e-02

1.910e+03	1.016e-03	1.299e+00	-4.873e-02	9.217e+03	2.634e-04	3.867e-02
1.920e+03	9.825e-04	1.299e+00	-4.826e-02	1.082e+04	2.622e-04	4.027e-02
1.930e+03	9.677e-04	1.299e+00	-4.852e-02	1.184e+04	2.610e-04	4.167e-02
1.940e+03	9.574e-04	1.299e+00	-4.867e-02	1.185e+04	2.597e-04	4.168e-02
1.950e+03	9.294e-04	1.298e+00	-4.878e-02	1.078e+04	2.585e-04	4.022e-02
1.960e+03	9.294e-04	1.298e+00	-4.830e-02	9.686e+03	2.572e-04	3.905e-02
1.970e+03	9.132e-04	1.298e+00	-4.827e-02	8.790e+03	2.560e-04	3.841e-02
1.980e+03	8.815e-04	1.298e+00	-4.870e-02	8.046e+03	2.548e-04	3.818e-02
1.990e+03	8.830e-04	1.297e+00	-4.903e-02	7.401e+03	2.535e-04	3.823e-02
2.000e+03	8.623e-04	1.297e+00	-4.871e-02	6.804e+03	2.523e-04	3.856e-02
2.010e+03	8.469e-04	1.296e+00	-4.854e-02	6.215e+03	2.510e-04	3.919e-02
2.020e+03	8.225e-04	1.296e+00	-4.868e-02	5.636e+03	2.498e-04	4.019e-02
2.030e+03	8.004e-04	1.296e+00	-4.824e-02	5.081e+03	2.486e-04	4.158e-02
2.040e+03	7.945e-04	1.295e+00	-4.856e-02	4.564e+03	2.473e-04	4.335e-02
2.050e+03	7.805e-04	1.294e+00	-4.876e-02	4.100e+03	2.461e-04	4.546e-02
2.060e+03	7.577e-04	1.294e+00	-4.846e-02	3.698e+03	2.448e-04	4.777e-02
2.070e+03	7.392e-04	1.294e+00	-4.887e-02	3.354e+03	2.436e-04	5.019e-02
2.080e+03	7.280e-04	1.293e+00	-4.860e-02	3.062e+03	2.423e-04	5.265e-02
2.090e+03	7.214e-04	1.292e+00	-4.810e-02	2.812e+03	2.411e-04	5.510e-02
2.100e+03	7.080e-04	1.292e+00	-4.823e-02	2.598e+03	2.399e-04	5.751e-02
2.110e+03	6.925e-04	1.291e+00	-4.838e-02	2.413e+03	2.386e-04	5.986e-02
2.120e+03	6.836e-04	1.291e+00	-4.856e-02	2.254e+03	2.374e-04	6.212e-02
2.130e+03	6.787e-04	1.290e+00	-4.867e-02	2.117e+03	2.361e-04	6.426e-02
2.140e+03	6.694e-04	1.290e+00	-4.838e-02	2.001e+03	2.349e-04	6.624e-02
2.150e+03	6.602e-04	1.289e+00	-4.876e-02	1.903e+03	2.337e-04	6.804e-02
2.160e+03	6.472e-04	1.288e+00	-4.813e-02	1.820e+03	2.324e-04	6.967e-02
2.170e+03	6.307e-04	1.288e+00	-4.821e-02	1.750e+03	2.312e-04	7.112e-02
2.180e+03	6.263e-04	1.287e+00	-4.904e-02	1.690e+03	2.299e-04	7.241e-02
2.190e+03	6.120e-04	1.286e+00	-4.872e-02	1.639e+03	2.287e-04	7.359e-02
2.200e+03	6.092e-04	1.286e+00	-4.853e-02	1.593e+03	2.274e-04	7.468e-02
2.210e+03	5.955e-04	1.285e+00	-4.860e-02	1.555e+03	2.262e-04	7.559e-02
2.220e+03	5.894e-04	1.284e+00	-4.846e-02	1.548e+03	2.250e-04	7.576e-02
2.230e+03	5.772e-04	1.284e+00	-4.837e-02	1.573e+03	2.237e-04	7.515e-02
2.240e+03	5.630e-04	1.283e+00	-4.875e-02	1.626e+03	2.225e-04	7.388e-02
2.250e+03	5.558e-04	1.282e+00	-4.874e-02	1.702e+03	2.212e-04	7.215e-02
2.260e+03	5.470e-04	1.281e+00	-4.851e-02	1.798e+03	2.200e-04	7.011e-02



2.270e+03	5.378e-04	1.280e+00	-4.851e-02	1.908e+03	2.188e-04	6.793e-02
2.280e+03	5.281e-04	1.280e+00	-4.902e-02	2.030e+03	2.175e-04	6.573e-02
2.290e+03	5.240e-04	1.279e+00	-4.836e-02	2.159e+03	2.163e-04	6.358e-02
2.300e+03	5.125e-04	1.278e+00	-4.881e-02	2.291e+03	2.150e-04	6.157e-02
2.310e+03	5.063e-04	1.277e+00	-4.853e-02	2.423e+03	2.138e-04	5.972e-02
2.320e+03	4.988e-04	1.276e+00	-4.899e-02	2.559e+03	2.126e-04	5.799e-02
2.330e+03	4.876e-04	1.275e+00	-4.813e-02	2.701e+03	2.113e-04	5.632e-02
2.340e+03	4.805e-04	1.274e+00	-4.833e-02	2.853e+03	2.101e-04	5.467e-02
2.350e+03	4.756e-04	1.273e+00	-4.847e-02	3.020e+03	2.088e-04	5.304e-02
2.360e+03	4.649e-04	1.272e+00	-4.846e-02	3.204e+03	2.076e-04	5.140e-02
2.370e+03	4.578e-04	1.271e+00	-4.844e-02	3.409e+03	2.063e-04	4.977e-02
2.380e+03	4.549e-04	1.270e+00	-4.836e-02	3.637e+03	2.051e-04	4.816e-02
2.390e+03	4.444e-04	1.269e+00	-4.893e-02	3.892e+03	2.039e-04	4.659e-02
2.400e+03	4.381e-04	1.268e+00	-4.854e-02	4.175e+03	2.026e-04	0.000e+00
2.410e+03	4.350e-04	1.266e+00	-4.874e-02	4.489e+03	2.014e-04	0.000e+00
2.420e+03	4.253e-04	1.265e+00	-4.832e-02	4.838e+03	2.001e-04	0.000e+00
2.430e+03	4.210e-04	1.264e+00	-4.854e-02	5.224e+03	1.989e-04	0.000e+00
2.440e+03	4.156e-04	1.262e+00	-4.848e-02	5.649e+03	1.977e-04	0.000e+00
2.450e+03	4.026e-04	1.261e+00	-4.850e-02	6.117e+03	1.964e-04	0.000e+00
2.460e+03	4.022e-04	1.260e+00	-4.844e-02	6.623e+03	1.952e-04	0.000e+00
2.470e+03	3.895e-04	1.258e+00	-4.819e-02	7.134e+03	1.939e-04	0.000e+00
2.480e+03	3.816e-04	1.257e+00	-4.874e-02	7.611e+03	1.927e-04	0.000e+00
2.490e+03	3.851e-04	1.255e+00	-4.847e-02	8.015e+03	1.914e-04	0.000e+00
2.500e+03	3.799e-04	1.254e+00	-4.865e-02	8.305e+03	1.902e-04	0.000e+00
2.510e+03	3.736e-04	1.252e+00	-4.854e-02	8.467e+03	1.890e-04	0.000e+00
2.520e+03	3.673e-04	1.250e+00	-4.859e-02	8.578e+03	1.877e-04	0.000e+00
2.530e+03	3.611e-04	1.248e+00	-4.873e-02	8.743e+03	1.865e-04	0.000e+00
2.540e+03	3.548e-04	1.246e+00	-4.822e-02	9.065e+03	1.852e-04	0.000e+00
2.550e+03	3.496e-04	1.244e+00	-4.844e-02	9.646e+03	1.840e-04	0.000e+00
2.560e+03	3.443e-04	1.241e+00	-4.870e-02	1.051e+04	1.828e-04	0.000e+00
2.570e+03	3.398e-04	1.239e+00	-4.882e-02	1.139e+04	1.815e-04	0.000e+00
2.580e+03	3.354e-04	1.236e+00	-4.865e-02	1.191e+04	1.803e-04	0.000e+00
2.590e+03	3.319e-04	1.233e+00	-4.871e-02	1.173e+04	1.790e-04	0.000e+00
2.600e+03	3.285e-04	1.230e+00	-4.860e-02	1.050e+04	1.778e-04	0.000e+00
2.610e+03	3.229e-04	1.226e+00	-4.834e-02	8.305e+03	1.766e-04	0.000e+00
2.620e+03	3.173e-04	1.222e+00	-4.860e-02	7.095e+03	1.753e-04	0.000e+00

2.630e+03	3.138e-04	1.218e+00	-4.840e-02	9.142e+03	1.741e-04	0.000e+00
2.640e+03	3.104e-04	1.214e+00	-4.853e-02	1.398e+04	1.728e-04	0.000e+00
2.650e+03	3.055e-04	1.209e+00	-4.865e-02	1.839e+04	1.716e-04	0.000e+00
2.660e+03	3.006e-04	1.203e+00	-4.864e-02	1.986e+04	1.703e-04	0.000e+00
2.670e+03	2.965e-04	1.197e+00	-4.902e-02	1.909e+04	1.691e-04	0.000e+00
2.680e+03	2.925e-04	1.191e+00	-4.832e-02	1.759e+04	1.679e-04	0.000e+00
2.690e+03	2.887e-04	1.185e+00	-4.890e-02	1.687e+04	1.666e-04	0.000e+00
2.700e+03	2.850e-04	1.178e+00	-4.881e-02	1.845e+04	1.654e-04	0.000e+00
2.710e+03	2.812e-04	1.169e+00	-4.856e-02	2.384e+04	1.641e-04	0.000e+00
2.720e+03	2.773e-04	1.156e+00	-4.853e-02	3.455e+04	1.629e-04	0.000e+00
2.730e+03	2.737e-04	1.149e+00	-4.818e-02	5.210e+04	1.617e-04	0.000e+00
2.740e+03	2.700e-04	1.143e+00	-4.795e-02	7.799e+04	1.604e-04	0.000e+00
2.750e+03	2.657e-04	1.135e+00	-4.835e-02	1.137e+05	1.592e-04	0.000e+00
2.760e+03	2.614e-04	1.132e+00	-4.811e-02	1.603e+05	1.579e-04	0.000e+00
2.770e+03	2.585e-04	1.132e+00	-4.862e-02	2.162e+05	1.567e-04	0.000e+00
2.780e+03	2.556e-04	1.131e+00	-4.873e-02	2.794e+05	1.554e-04	0.000e+00
2.790e+03	2.525e-04	1.128e+00	-4.814e-02	3.479e+05	1.542e-04	0.000e+00
2.800e+03	2.495e-04	1.129e+00	-4.894e-02	4.196e+05	1.530e-04	0.000e+00
2.810e+03	2.462e-04	1.129e+00	-4.881e-02	4.928e+05	1.517e-04	0.000e+00
2.820e+03	2.430e-04	1.125e+00	-4.903e-02	5.664e+05	1.505e-04	0.000e+00
2.830e+03	2.398e-04	1.127e+00	-4.835e-02	6.394e+05	1.492e-04	0.000e+00
2.840e+03	2.365e-04	1.135e+00	-4.865e-02	7.110e+05	1.480e-04	0.000e+00
2.850e+03	2.332e-04	1.142e+00	-4.854e-02	7.802e+05	1.468e-04	0.000e+00
2.860e+03	2.299e-04	1.148e+00	-4.842e-02	8.463e+05	1.455e-04	0.000e+00
2.870e+03	2.267e-04	1.161e+00	-4.870e-02	9.083e+05	1.443e-04	0.000e+00
2.880e+03	2.235e-04	1.174e+00	-4.900e-02	9.652e+05	1.430e-04	0.000e+00
2.890e+03	2.211e-04	1.185e+00	-4.856e-02	1.016e+06	1.418e-04	0.000e+00
2.900e+03	2.188e-04	1.201e+00	-4.825e-02	1.061e+06	1.406e-04	0.000e+00
2.910e+03	2.159e-04	1.218e+00	-4.838e-02	1.098e+06	1.393e-04	0.000e+00
2.920e+03	2.130e-04	1.234e+00	-4.872e-02	1.127e+06	1.381e-04	0.000e+00
2.930e+03	2.103e-04	1.250e+00	-4.874e-02	1.148e+06	1.368e-04	0.000e+00
2.940e+03	2.076e-04	1.268e+00	-4.868e-02	1.162e+06	1.356e-04	0.000e+00
2.950e+03	2.052e-04	1.284e+00	-4.883e-02	1.167e+06	1.343e-04	0.000e+00
2.960e+03	2.027e-04	1.301e+00	-4.870e-02	1.165e+06	1.331e-04	0.000e+00
2.970e+03	2.002e-04	1.315e+00	-4.875e-02	1.156e+06	1.319e-04	0.000e+00
2.980e+03	1.977e-04	1.328e+00	-4.836e-02	1.141e+06	1.306e-04	0.000e+00

2.990e+03	1.951e-04	1.341e+00	-4.863e-02	1.120e+06	1.294e-04	0.000e+00
3.000e+03	1.925e-04	1.354e+00	-4.876e-02	1.095e+06	1.281e-04	0.000e+00
3.010e+03	1.901e-04	1.366e+00	-4.874e-02	1.067e+06	1.269e-04	0.000e+00
3.020e+03	1.877e-04	1.378e+00	-4.847e-02	1.037e+06	1.257e-04	0.000e+00
3.030e+03	1.847e-04	1.390e+00	-4.868e-02	1.003e+06	1.244e-04	0.000e+00
3.040e+03	1.817e-04	1.402e+00	-4.836e-02	9.679e+05	1.232e-04	0.000e+00
3.050e+03	1.801e-04	1.414e+00	-4.828e-02	9.308e+05	1.219e-04	0.000e+00
3.060e+03	1.785e-04	1.422e+00	-4.860e-02	8.924e+05	1.207e-04	0.000e+00
3.070e+03	1.764e-04	1.430e+00	-4.862e-02	8.531e+05	1.194e-04	0.000e+00
3.080e+03	1.742e-04	1.438e+00	-4.865e-02	8.132e+05	1.182e-04	0.000e+00
3.090e+03	1.721e-04	1.446e+00	-4.845e-02	7.733e+05	1.170e-04	0.000e+00
3.100e+03	1.700e-04	1.453e+00	-4.904e-02	7.336e+05	1.157e-04	0.000e+00
3.110e+03	1.677e-04	1.456e+00	-4.843e-02	6.945e+05	1.145e-04	0.000e+00
3.120e+03	1.655e-04	1.459e+00	-4.867e-02	6.562e+05	1.132e-04	0.000e+00
3.130e+03	1.638e-04	1.462e+00	-4.900e-02	6.186e+05	1.120e-04	0.000e+00
3.140e+03	1.620e-04	1.464e+00	-4.864e-02	5.818e+05	1.108e-04	0.000e+00
3.150e+03	1.600e-04	1.466e+00	-4.844e-02	5.460e+05	1.095e-04	0.000e+00
3.160e+03	1.580e-04	1.466e+00	-4.838e-02	5.111e+05	1.083e-04	0.000e+00
3.170e+03	1.563e-04	1.464e+00	-4.856e-02	4.772e+05	1.070e-04	0.000e+00
3.180e+03	1.545e-04	1.463e+00	-4.875e-02	4.444e+05	1.058e-04	0.000e+00
3.190e+03	1.527e-04	1.462e+00	-4.906e-02	4.128e+05	1.046e-04	0.000e+00
3.200e+03	1.509e-04	1.461e+00	-4.865e-02	3.823e+05	1.033e-04	0.000e+00
3.210e+03	1.492e-04	1.459e+00	-4.835e-02	3.531e+05	1.021e-04	0.000e+00
3.220e+03	1.474e-04	1.457e+00	-4.869e-02	3.251e+05	1.008e-04	0.000e+00
3.230e+03	1.456e-04	1.454e+00	-4.858e-02	2.986e+05	9.959e-05	0.000e+00
3.240e+03	1.438e-04	1.452e+00	-4.878e-02	2.735e+05	9.834e-05	0.000e+00
3.250e+03	1.422e-04	1.450e+00	-4.864e-02	2.498e+05	9.710e-05	0.000e+00
3.260e+03	1.406e-04	1.446e+00	-4.849e-02	2.277e+05	9.586e-05	0.000e+00
3.270e+03	1.387e-04	1.443e+00	-4.837e-02	2.072e+05	9.462e-05	0.000e+00
3.280e+03	1.369e-04	1.440e+00	-4.850e-02	1.884e+05	9.338e-05	0.000e+00
3.290e+03	1.349e-04	1.437e+00	-4.887e-02	1.712e+05	9.214e-05	0.000e+00
3.300e+03	1.328e-04	1.434e+00	-4.905e-02	1.559e+05	9.090e-05	0.000e+00
3.310e+03	1.316e-04	1.430e+00	-4.872e-02	1.423e+05	8.966e-05	0.000e+00
3.320e+03	1.303e-04	1.427e+00	-4.810e-02	1.305e+05	8.841e-05	0.000e+00
3.330e+03	1.292e-04	1.424e+00	-4.806e-02	1.200e+05	8.717e-05	0.000e+00
3.340e+03	1.280e-04	1.420e+00	-4.874e-02	1.109e+05	8.593e-05	0.000e+00

3.350e+03	1.265e-04	1.417e+00	-4.819e-02	1.029e+05	8.469e-05	0.000e+00
3.360e+03	1.251e-04	1.414e+00	-4.862e-02	9.590e+04	8.345e-05	0.000e+00
3.370e+03	1.237e-04	1.412e+00	-4.872e-02	8.962e+04	8.221e-05	0.000e+00
3.380e+03	1.223e-04	1.409e+00	-4.839e-02	8.393e+04	8.097e-05	0.000e+00
3.390e+03	1.207e-04	1.407e+00	-4.878e-02	7.864e+04	7.972e-05	0.000e+00
3.400e+03	1.190e-04	1.404e+00	-4.906e-02	7.359e+04	7.848e-05	0.000e+00
3.410e+03	1.179e-04	1.402e+00	-4.861e-02	6.862e+04	7.724e-05	0.000e+00
3.420e+03	1.167e-04	1.400e+00	-4.812e-02	6.375e+04	7.600e-05	0.000e+00
3.430e+03	1.156e-04	1.398e+00	-4.873e-02	5.900e+04	7.476e-05	0.000e+00
3.440e+03	1.145e-04	1.396e+00	-4.892e-02	5.441e+04	7.352e-05	0.000e+00
3.450e+03	1.133e-04	1.394e+00	-4.890e-02	5.002e+04	7.228e-05	0.000e+00
3.460e+03	1.120e-04	1.392e+00	-4.818e-02	4.587e+04	7.103e-05	0.000e+00
3.470e+03	1.108e-04	1.390e+00	-4.847e-02	4.200e+04	6.979e-05	0.000e+00
3.480e+03	1.095e-04	1.388e+00	-4.841e-02	3.843e+04	6.855e-05	0.000e+00
3.490e+03	1.084e-04	1.386e+00	-4.821e-02	3.522e+04	6.731e-05	0.000e+00
3.500e+03	1.073e-04	1.384e+00	-4.847e-02	3.240e+04	6.607e-05	0.000e+00
3.510e+03	1.062e-04	1.382e+00	-4.869e-02	2.999e+04	6.483e-05	0.000e+00
3.520e+03	1.050e-04	1.381e+00	-4.910e-02	2.795e+04	6.359e-05	0.000e+00
3.530e+03	1.038e-04	1.379e+00	-4.864e-02	2.625e+04	6.234e-05	0.000e+00
3.540e+03	1.027e-04	1.377e+00	-4.832e-02	2.485e+04	6.110e-05	0.000e+00
3.550e+03	1.015e-04	1.376e+00	-4.807e-02	2.369e+04	5.986e-05	0.000e+00
3.560e+03	1.004e-04	1.374e+00	-4.877e-02	2.273e+04	5.862e-05	0.000e+00
3.570e+03	9.935e-05	1.373e+00	-4.883e-02	2.193e+04	5.738e-05	0.000e+00
3.580e+03	9.832e-05	1.371e+00	-4.808e-02	2.124e+04	5.614e-05	0.000e+00
3.590e+03	9.733e-05	1.370e+00	-4.848e-02	2.063e+04	5.490e-05	0.000e+00
3.600e+03	9.633e-05	1.369e+00	-4.849e-02	2.003e+04	5.366e-05	0.000e+00
3.610e+03	9.537e-05	1.367e+00	-4.865e-02	1.943e+04	5.241e-05	0.000e+00
3.620e+03	9.441e-05	1.366e+00	-4.824e-02	1.881e+04	5.117e-05	0.000e+00
3.630e+03	9.331e-05	1.365e+00	-4.867e-02	1.818e+04	4.993e-05	0.000e+00
3.640e+03	9.220e-05	1.363e+00	-4.870e-02	1.755e+04	4.869e-05	0.000e+00
3.650e+03	9.113e-05	1.362e+00	-4.837e-02	1.692e+04	4.745e-05	0.000e+00
3.660e+03	9.007e-05	1.361e+00	-4.900e-02	1.630e+04	4.621e-05	0.000e+00
3.670e+03	8.900e-05	1.360e+00	-4.904e-02	1.569e+04	4.497e-05	0.000e+00
3.680e+03	8.793e-05	1.359e+00	-4.913e-02	1.509e+04	4.372e-05	0.000e+00
3.690e+03	8.679e-05	1.358e+00	-4.822e-02	1.452e+04	4.248e-05	0.000e+00
3.700e+03	8.564e-05	1.357e+00	-4.833e-02	1.397e+04	4.124e-05	0.000e+00

3.710e+03	8.502e-05	1.356e+00	-4.832e-02	1.346e+04	4.000e-05	0.000e+00
3.720e+03	8.439e-05	1.355e+00	-4.840e-02	1.299e+04	3.876e-05	0.000e+00
3.730e+03	8.303e-05	1.354e+00	-4.852e-02	1.256e+04	3.752e-05	0.000e+00
3.740e+03	8.166e-05	1.353e+00	-4.898e-02	1.218e+04	3.628e-05	0.000e+00
3.750e+03	8.122e-05	1.352e+00	-4.829e-02	1.185e+04	3.503e-05	0.000e+00
3.760e+03	8.078e-05	1.351e+00	-4.885e-02	1.158e+04	3.379e-05	0.000e+00
3.770e+03	8.012e-05	1.350e+00	-4.827e-02	1.137e+04	3.255e-05	0.000e+00
3.780e+03	7.945e-05	1.349e+00	-4.828e-02	1.121e+04	3.131e-05	0.000e+00
3.790e+03	7.868e-05	1.348e+00	-4.864e-02	1.111e+04	3.007e-05	0.000e+00
3.800e+03	7.790e-05	1.348e+00	-4.829e-02	1.104e+04	2.883e-05	0.000e+00
3.810e+03	7.720e-05	1.347e+00	-4.898e-02	1.103e+04	2.759e-05	0.000e+00
3.820e+03	7.650e-05	1.346e+00	-4.856e-02	1.105e+04	2.634e-05	0.000e+00
3.830e+03	7.580e-05	1.345e+00	-4.856e-02	1.112e+04	2.510e-05	0.000e+00
3.840e+03	7.510e-05	1.344e+00	-4.858e-02	1.121e+04	2.386e-05	0.000e+00
3.850e+03	7.434e-05	1.344e+00	-4.828e-02	1.134e+04	2.262e-05	0.000e+00
3.860e+03	7.358e-05	1.343e+00	-4.847e-02	1.150e+04	2.138e-05	0.000e+00
3.870e+03	7.284e-05	1.342e+00	-4.860e-02	1.169e+04	2.014e-05	0.000e+00
3.880e+03	7.210e-05	1.341e+00	-4.906e-02	1.190e+04	1.890e-05	0.000e+00
3.890e+03	7.142e-05	1.341e+00	-4.854e-02	1.213e+04	1.766e-05	0.000e+00
3.900e+03	7.075e-05	1.340e+00	-4.863e-02	1.237e+04	1.641e-05	0.000e+00
3.910e+03	7.011e-05	1.339e+00	-4.849e-02	1.263e+04	1.517e-05	0.000e+00
3.920e+03	6.948e-05	1.339e+00	-4.869e-02	1.290e+04	1.393e-05	0.000e+00
3.930e+03	6.877e-05	1.338e+00	-4.849e-02	1.318e+04	1.269e-05	0.000e+00
3.940e+03	6.805e-05	1.337e+00	-4.866e-02	1.346e+04	1.145e-05	0.000e+00
3.950e+03	6.731e-05	1.337e+00	-4.847e-02	1.375e+04	1.021e-05	0.000e+00
3.960e+03	6.657e-05	1.336e+00	-4.876e-02	1.403e+04	8.966e-06	0.000e+00
3.970e+03	6.592e-05	1.336e+00	-4.807e-02	1.431e+04	7.724e-06	0.000e+00
3.980e+03	6.528e-05	1.335e+00	-4.868e-02	1.459e+04	6.483e-06	0.000e+00
3.990e+03	6.459e-05	1.335e+00	-4.888e-02	1.485e+04	5.241e-06	0.000e+00
4.000e+03	6.389e-05	1.334e+00	-4.845e-02	1.510e+04	4.000e-06	0.000e+00