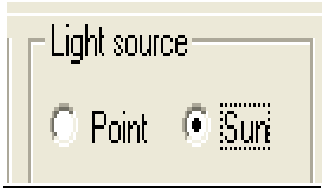
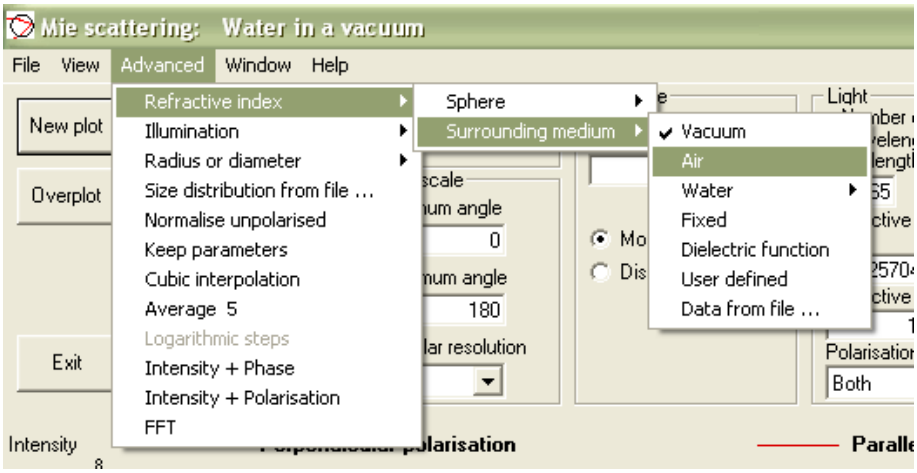
Suggested settings for MiePlot software G8AGN 18-2-2012

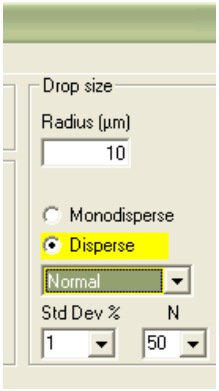
1. The light source should be set to Sun to simulate a finite-sized light source.



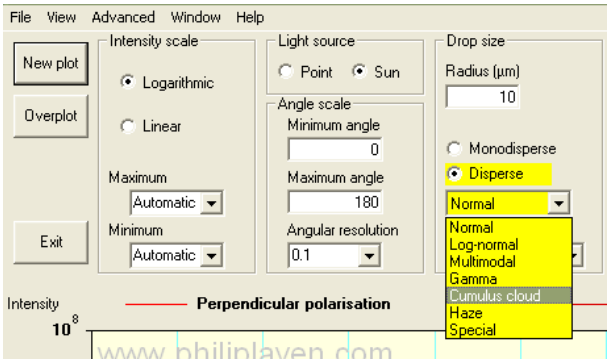
2. Set the medium surrounding the water drops to Air



3. Set the water drop size distribution to Disperse



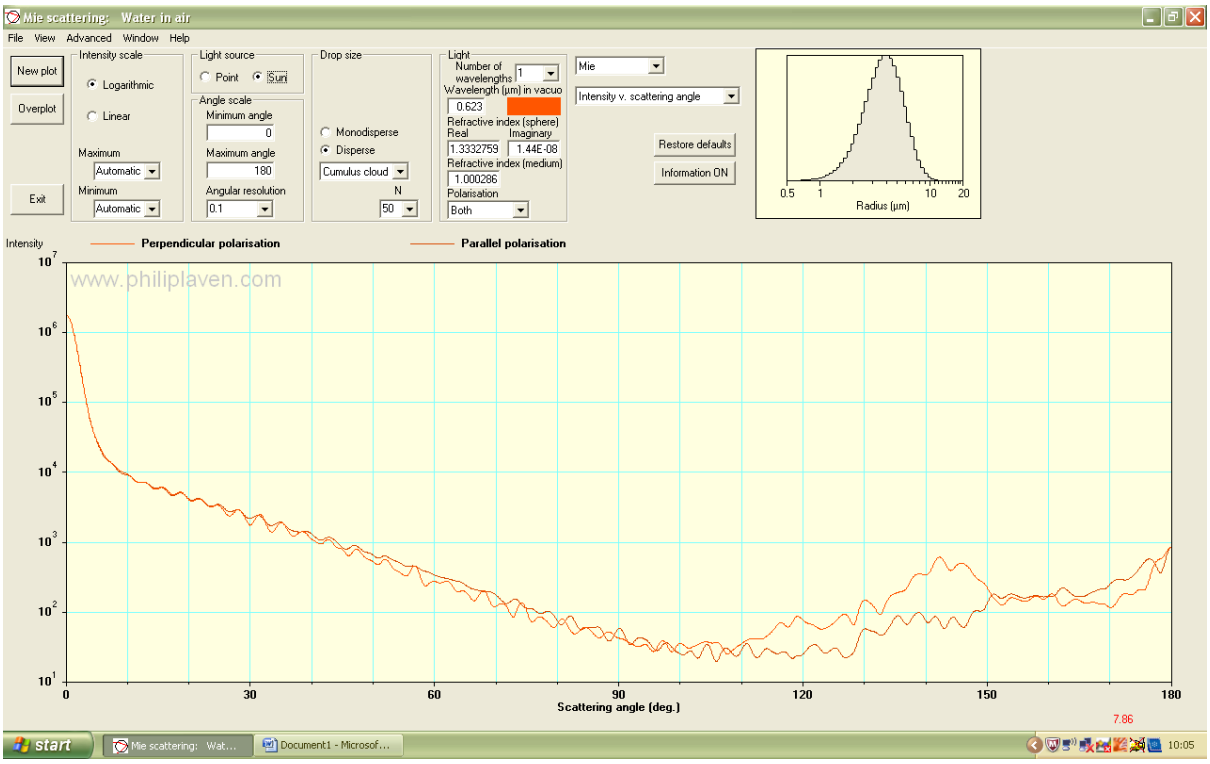
4. Choose the type of drop size distribution (I suggest Cumulus cloud)



5. Specify light wavelength, e.g. 0.623um for a red PT-54 Phlatlight. The colour bar should change accordingly.

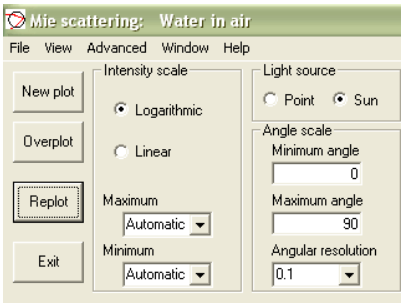
6. Press New plot

The Mieplot screen should now appear as

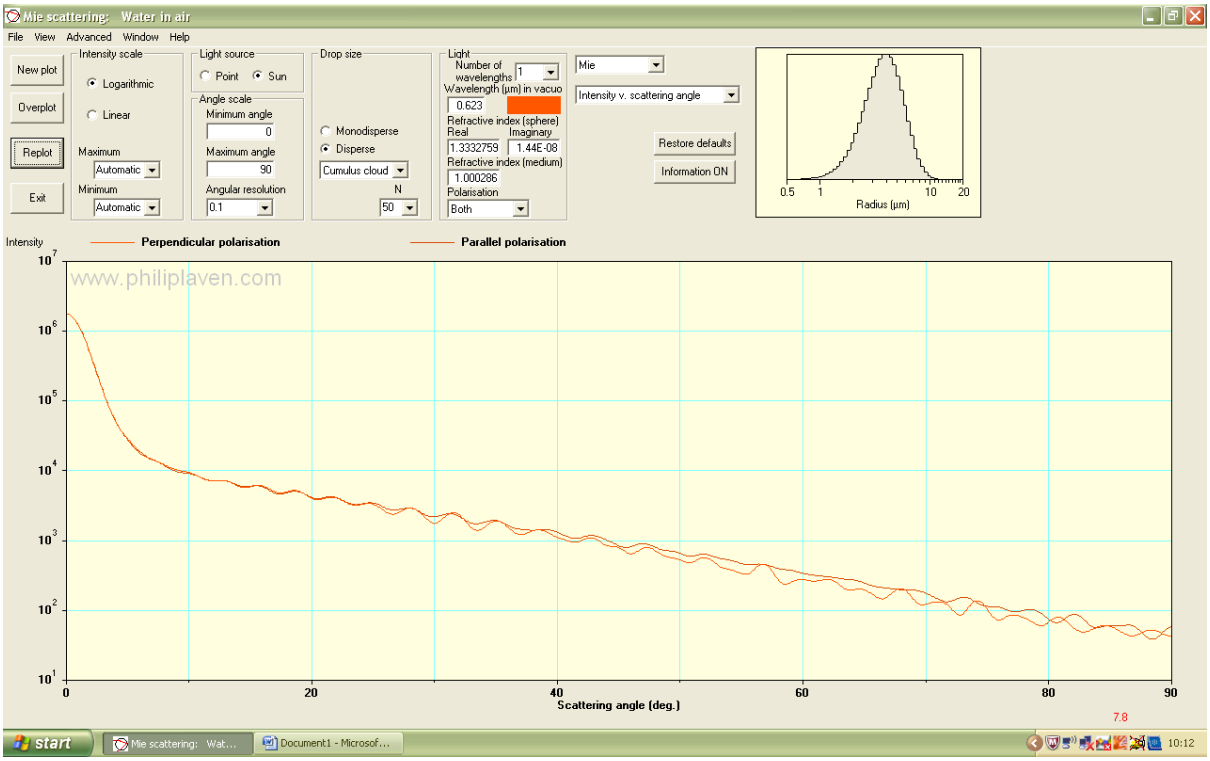


A scattering angle of 0 degrees indicates forward scatter and 180 degrees corresponds to back scatter. The two curves correspond to different wave polarisations.

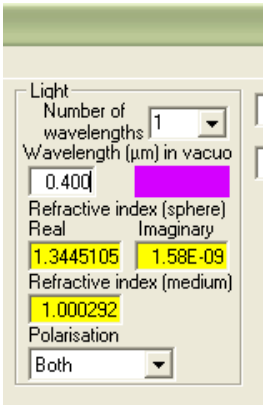
7. Change the Scattering angle range to home in on the forward scatter region



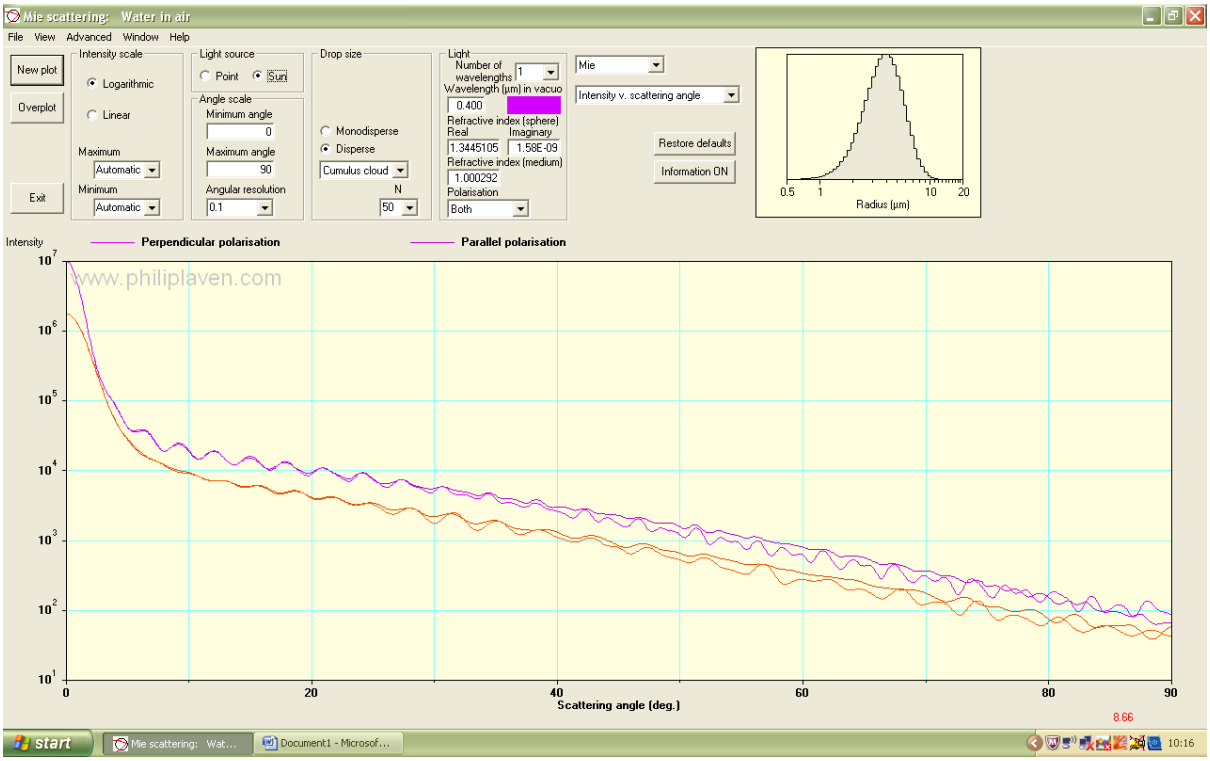
8. Press New plot to calculate the plot.



9. To see the effect of changing the light wavelength, change the wavelength to 0.400 um.



10. Press the Overplot button.



Notice that scattering is more pronounced at the blue end of the spectrum, as expected, but the path loss for blue light will be higher than that for red light.

NOTE: From the geometry of cloud-bounce, the scattering angle will be minimised if both Tx and Rx are aimed at a point on the underside of the cloud which is equi-distant from either end.