Description of model coefficient files

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There are three files containing tables of the model coefficients described in Park and Ruddick, 2005 (PR05).

- 'AboveRrs_gCoef_w0.dat' for wind speed 0 m/s
- 'AboveRrs_gCoef_w5.dat' for wind speed 5m/s
- 'AboveRrs_gCoef_w10.dat' for wind speed 10m/s

These files can be downloaded at
http://www.mumm.ac.be/OceanColour/Products/Models/bidirWeb.zip

Each file contains the coefficients $g_i(\theta_0, \theta, \Delta\phi, \gamma_b)$ in Eq. (6) of PR05 for the grid values:

7 solar zenith angles, θ_0: 0°, 15°, 30°, 45°, 60°, 75° and 85°

10 sensor zenith angles, θ: 0°, 10°, 20°, 30°, 40°, 50°, 60°, 70°, 80° and 87.5°

13 relative azimuth angles, $\Delta\phi$: 0 - 180° at 15° intervals

8 values of the γ_b parameter: 0, 0.2, 0.4, 0.6, 0.7, 0.8, 0.9, 0.99

The coefficients were based on simulations made under assumptions of homogeneous deep water column, cloud-free sky and no trans-spectral interaction. More on the simulation can be found on PR05.

[File format]

- After the first 5 lines, there is a block that consists of 9 lines:

1st line of three numbers - indicating the three angles (θ_0=0, θ=0, $\Delta\phi$=0)

θ_0 θ $\Delta\phi$

2nd – 9th lines (8 rows by 4 columns)- g coefficients:

$g_1(\gamma_b=0)$	$g_2(\gamma_b=0)$	$g_3(\gamma_b=0)$	$g_4(\gamma_b=0)$
$g_1(\gamma_b=0.2)$	$g_2(\gamma_b=0.2)$	$g_3(\gamma_b=0.2)$	$g_4(\gamma_b=0.2)$
	….		
	….		
$g_1(\gamma_b=0.99)$	$g_2(\gamma_b=0.99)$	$g_3(\gamma_b=0.99)$	$g_4(\gamma_b=0.99)$

- Followed by repetitions of the same 9-line blocks but for other combinations of (θ_0, θ, $\Delta\phi$):

2nd block for θ_0=0, θ=0, $\Delta\phi$=15

3rd block for θ_0=0, θ=0, $\Delta\phi$=30

…

13rd block for θ_0=0, θ=0, $\Delta\phi$=180

14th block for θ_0=0, θ=10, $\Delta\phi$=0

…

26th block for θ_0=0, θ=10, $\Delta\phi$=180

…

…

7*10*13rd block for θ_0=85, θ=87.5, $\Delta\phi$=180

In total, there are 5+7*10*13*9 lines in each file.

[How to use the table]

Idl source files are provided to show an example of how to read the model coefficients.

-'readLut.pro' to read the coefficient look-up table

-'example.pro' to output interpolated coefficients for given inputs of (θ_0, θ, $\Delta\phi$, γ_b).

These files can also be downloaded at
http://www.mumm.ac.be/OceanColour/Products/Models/bidirWeb.zip

To run the idl programs, compile the two files, and run the procedure 'test'. You can change the values of θ_0, θ, $\Delta\phi$, γ_b in the 'test' procedure. In these idl programs, interpolation function for wind speed is

not included although three different wind speeds are selected by switching the filename of the look-up table in the 'test' procedure.