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Tab.1 : Nominal atmospheric optical conditions for the atmospheric corrections. The actual required inputs are in bold type. The standard inputs are defined in the documentation of CAM5S.

Tab.2 : Relative errors in the apparent surface BRF computed for uncorrected and atmospherically corrected cases in the visible and near-infrared regions. The quantity in brackets are the absolute differences. These relative and absolute errors representing the spectral averages of equations (10 (a)) and (10 (b)) were applied to the 8 sets of spectral curves in Figures 6 and 7.

Tab.3 : Spectrally averaged relatives errors in the apparent surface BRF computed for uncorrected and atmospherically corrected cases in the visible and near-infrared regions. This table has the same meaning as Table 2 except that in this case the atmospheric corrections were performed using apparent BRF rather than normalized radiance as input to the atmospheric correction model.

Fig. A-1 : (a) Surface measured BRF for all tarmac stations and all data acquisition dates as a function of scattering angle between the illumination and viewing directions and the best fit Henyey-Greenstein function, at 500 nm nominal wavelength ($K = 0.034$; $g = 0.206$). (b) Residual errors between the BRF measurements and the BRF fitted.

Parameters	***Value at 550nm or label***	***Comments***
Pressure, temperature, relative humidity profile	**US Standard 62**	*standard meteorological parameters defined in CAM5S*
Aerosol phase function	**Continental**	*standard aerosol mixture defined in CAM5S*
Aerosol optical depth (τ atmosphere)	**0.1**	
Rayleigh optical depth	0.098	
Molecular absorption optical depth	0.031	
Total optical depth (τ_o)	0.198	
Aerosol boundary layer scale height (km)	2	*exponential profile for aerosol number density.*
Nominal wavelength	**72 CASI bands**	*CASI trapezoidal diode filter function of 7.9 nm FWHM*
Environment background	$\rho_e = \rho_c$ or $\rho_e \neq \rho_c$	*standard «vegetation» environment of CAM5S*
Target and environment BRF (inputs to equation A-1)	**Lambertian* BRF**	*Lambertian in the sense that:* $R_{sur}(\mu,\phi,-\mu_o,\phi_o+\pi)=\bar{R}_{sur}(\mu,\phi)=\rho$
Target size (R in km)	**0**	*varied for particular cases*

Table 1: *Nominal atmospheric optical conditions for atmospheric corrections. The actual required inputs are in bold type. The standard inputs are defined in the documentations of 5S, CAM5S and 6S atmospheric models.*

* This does not imply that the surface BRF retrieval is Lambertian. Rather it represents an algorithmic approximation where the downwelling surface irradiance effectively appears to be concentrated in the direction of the solar beam and the (second order) BRF effects of the downwelling sky radiance incident on the target are effectively clumped into the solar beam BRF. One must keep in mind that in the absence of an atmosphere the CAM5S "Lambertian" approximation would return the correct BRF surface value (it would simply transform normalized radiance into surface BRF).

Normalized Radiances	**VISIBLE**			**NEAR-INFRARED**		
Type of target	***uncorrected***	***corrected*** $\rho_e = \rho_c$	***corrected*** $\rho_e \neq \rho_c$	***uncorrected***	***corrected*** $\rho_e = \rho_c$	***corrected*** $\rho_e \neq \rho_c$
Black Spruce target	41% *(1.0%)*	15% *(0.5%)*	15% *(0.5%)*	7% *(1.1%)*	8% *(1.3%)*	9% *(1.4%)*
Cut-over	59% *(2.8%)*	23% *(1.1%)*	16% *(0.8%)*	4% *(0.8%)*	5% *(1.2%)*	6% *(1.4%)*
Grass	31% *(1.6%)*	12% *(0.7%)*	11% *(0.6%)*	6% *(1.4%)*	10% *(2.4%)*	7% *(1.8%)*
Runway	3% *(0.6%)*	5% *(0.8%)*	4% *(0.6%)*	10% *(2.1%)*	7% *(1.4%)*	5% *(1.1%)*
Sand	15% *(2.1%)*	5% *(0.7%)*	3% *(0.5%)*	2% *(0.5%)*	5% *(1.3%)*	6% *(1.4%)*
Tarmac	25% *(1.4%)*	13% *(0.8%)*	7% *(0.4%)*	20% *(1.3%)*	34% *(2.2%)*	14% *(0.9%)*
Water (WGL)	38% *(1.5%)*	10% *(0.5%)*	14% *(0.8%)*	71% *(0.8%)*	41% *(0.4%)*	109% *(1.5%)*
Water (WSL)	274% *(1.6%)*	31% *(0.2%)*	124% *(0.6%)*	348% *(0.7%)*	125% *(0.3%)*	819% *(1.6%)*

Table 2: *Relative errors in the apparent surface BRF computed for uncorrected and atmospherically corrected cases in the visible and near-infrared regions. The quantity in brackets are the absolute differences. These relative and absolute errors represent spectral averages of equations (10 (a)) and (10 (b)) were applied to the 8 sets of spectral curves in Figures 6 and 7.*

BRFs	**VISIBLE**			**NEAR-INFRARED**		
Type of target	***uncorrected***	***corrected*** $\rho_e = \rho_c$	***corrected*** $\rho_e \neq \rho_c$	***uncorrected***	***corrected*** $\rho_e = \rho_c$	***corrected*** $\rho_e \neq \rho_c$
Black Spruce target	41% *(1.0%)*	6% *(0.2%)*	6% *(0.2%)*	7% *(1.1%)*	4% *(0.6%)*	4% *(0.7%)*
Cut-over	59% *(2.8%)*	40% *(2.0%)*	32% *(1.6%)*	4% *(0.8%)*	7% *(1.6%)*	3% *(0.6%)*
Grass	31% *(1.6%)*	16% *(0.9%)*	11% *(0.6%)*	6% *(1.4%)*	2% *(0.4%)*	4% *(1.0%)*
Runway	3% *(0.6%)*	4% *(0.7%)*	3% *(0.5%)*	10% *(2.1%)*	5% *(1.1%)*	10% *(2.0%)*
Sand	15% *(2.1%)*	13% *(1.9%)*	15% *(2.4%)*	2% *(0.5%)*	9% *(1.9%)*	5% *(1.1%)*
Tarmac	25% *(1.4%)*	13% *(0.8%)*	9% *(0.5%)*	20% *(1.3%)*	22% *(1.5%)*	6% *(0.4%)*
Water (WGL)	38% *(1.5%)*	16% *(0.6%)*	9% *(0.4%)*	71% *(0.8%)*	54% *(0.5%)*	94% *(1.3%)*
Water (WSL)	274% *(1.6%)*	69% *(0.4%)*	83% *(0.3%)*	348% *(0.7%)*	150% *(0.3%)*	789% *(1.6%)*

Table 3: *Spectrally averaged relatives errors in the apparent surface BRF computed for uncorrected and atmospherically corrected cases in the visible and near-infrared regions. This table has the same meaning as Table 2 except that in this case the atmospheric corrections were performed using apparent BRF rather than normalized radiance as input to the atmospheric correction model.*