Zhou-Cess Longwave Algorithm

$$SDLW = a + b*SULW + c*\ln(PWV) + d*[\ln(PWV)]^2 + e*\ln(1+f*LWP)$$

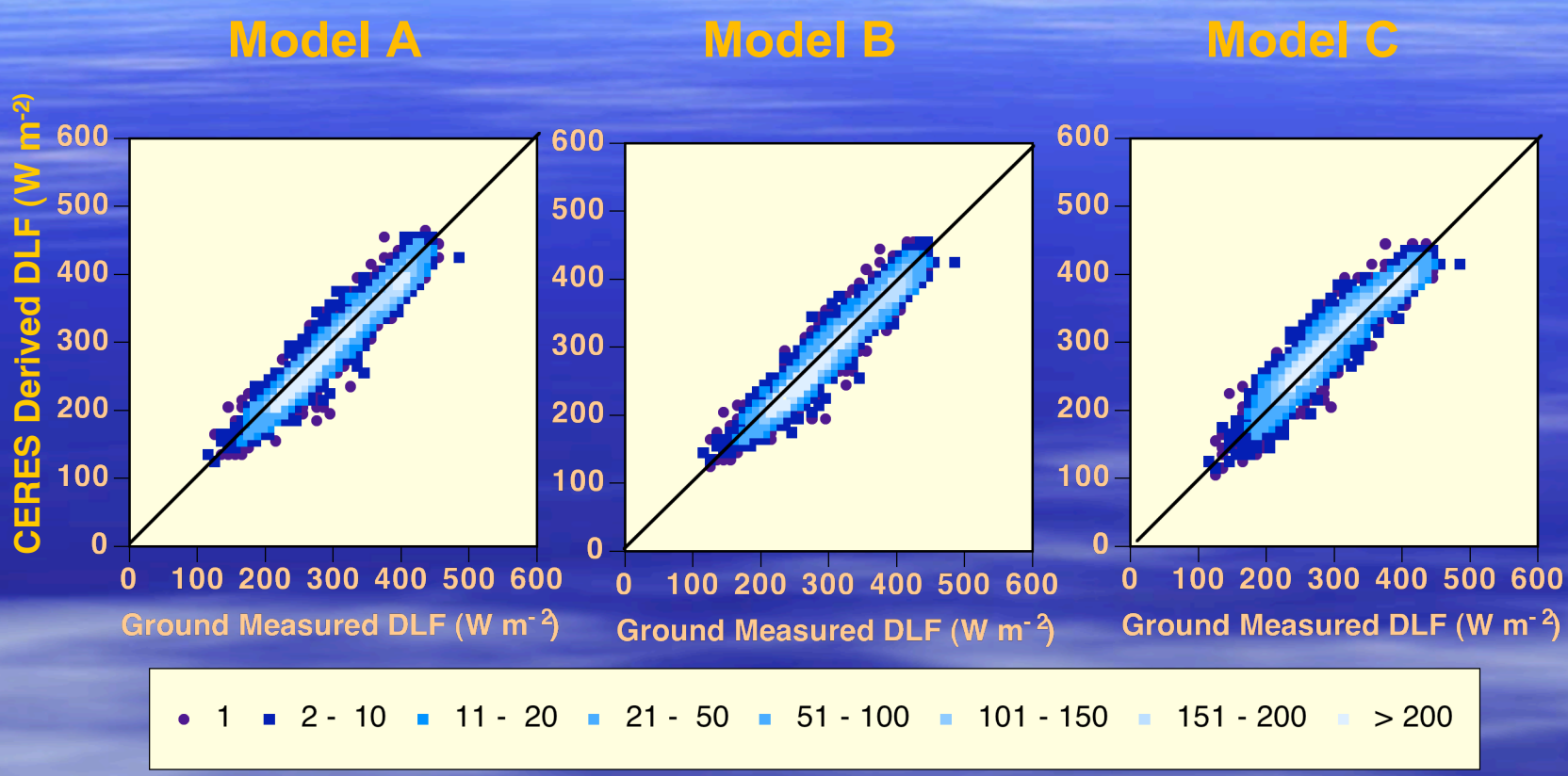
$$a = 123.86,\ b = 0.444,\ c = 56.16,$$

$$d = -3.65,\ e = 5.30,\ f = 1226.0,$$

Zhou-Cess Longwave Algorithm CERES Data Timeframe

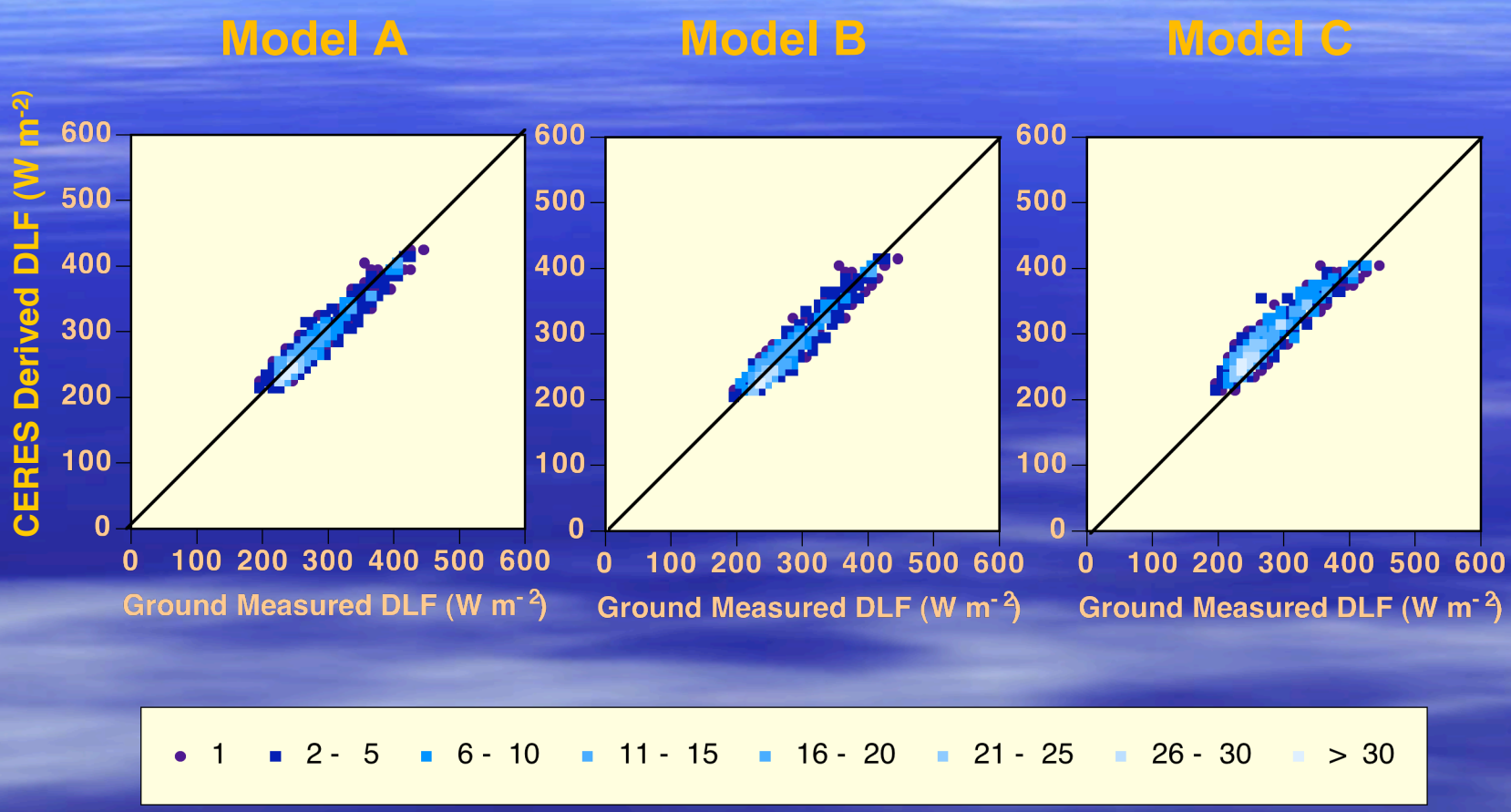
Terra 2B: March 2000 through December 2003

Longwave Clear-Sky, Continental

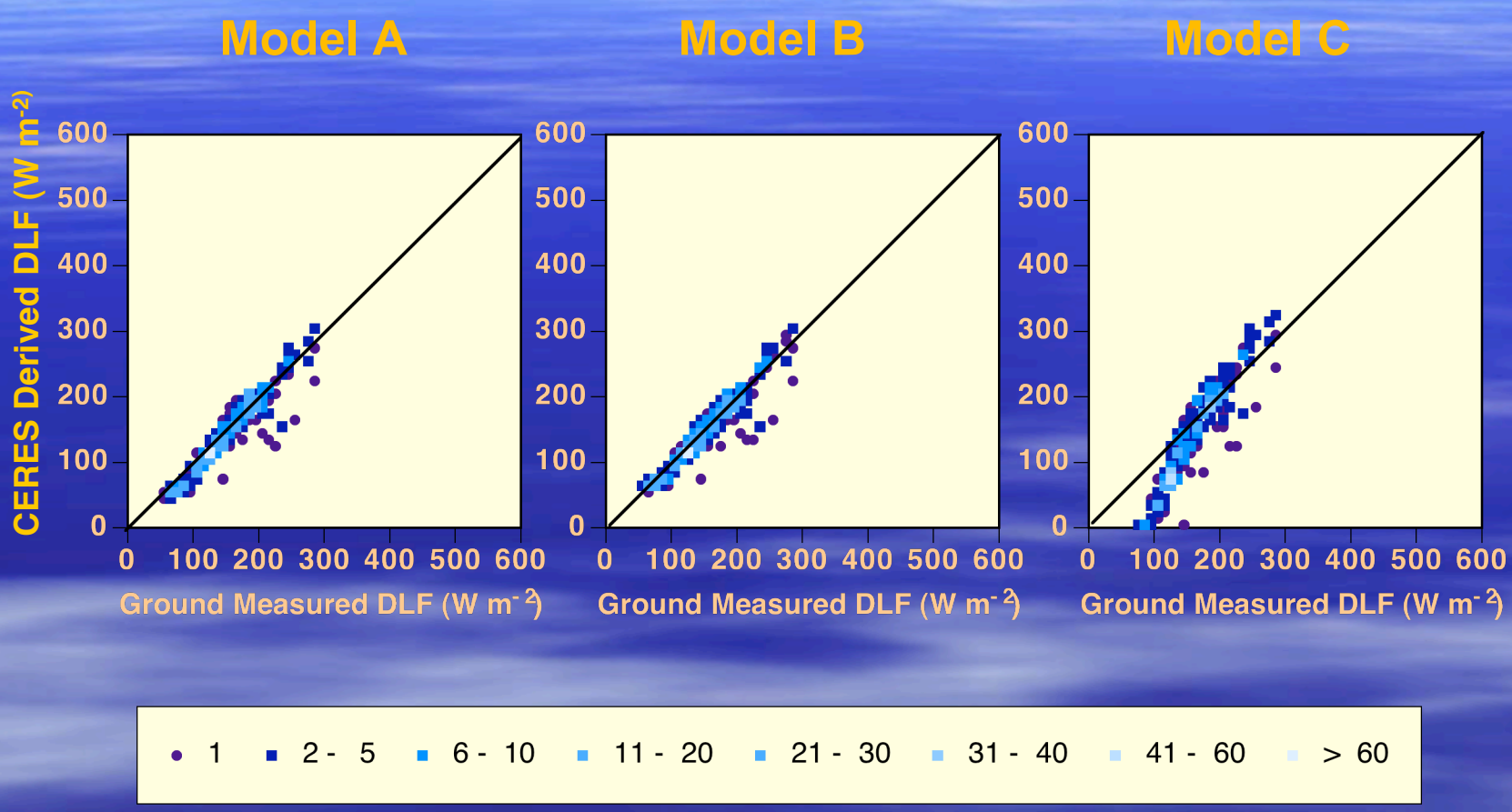


Terra 2B

Longwave Clear-Sky, Coastal

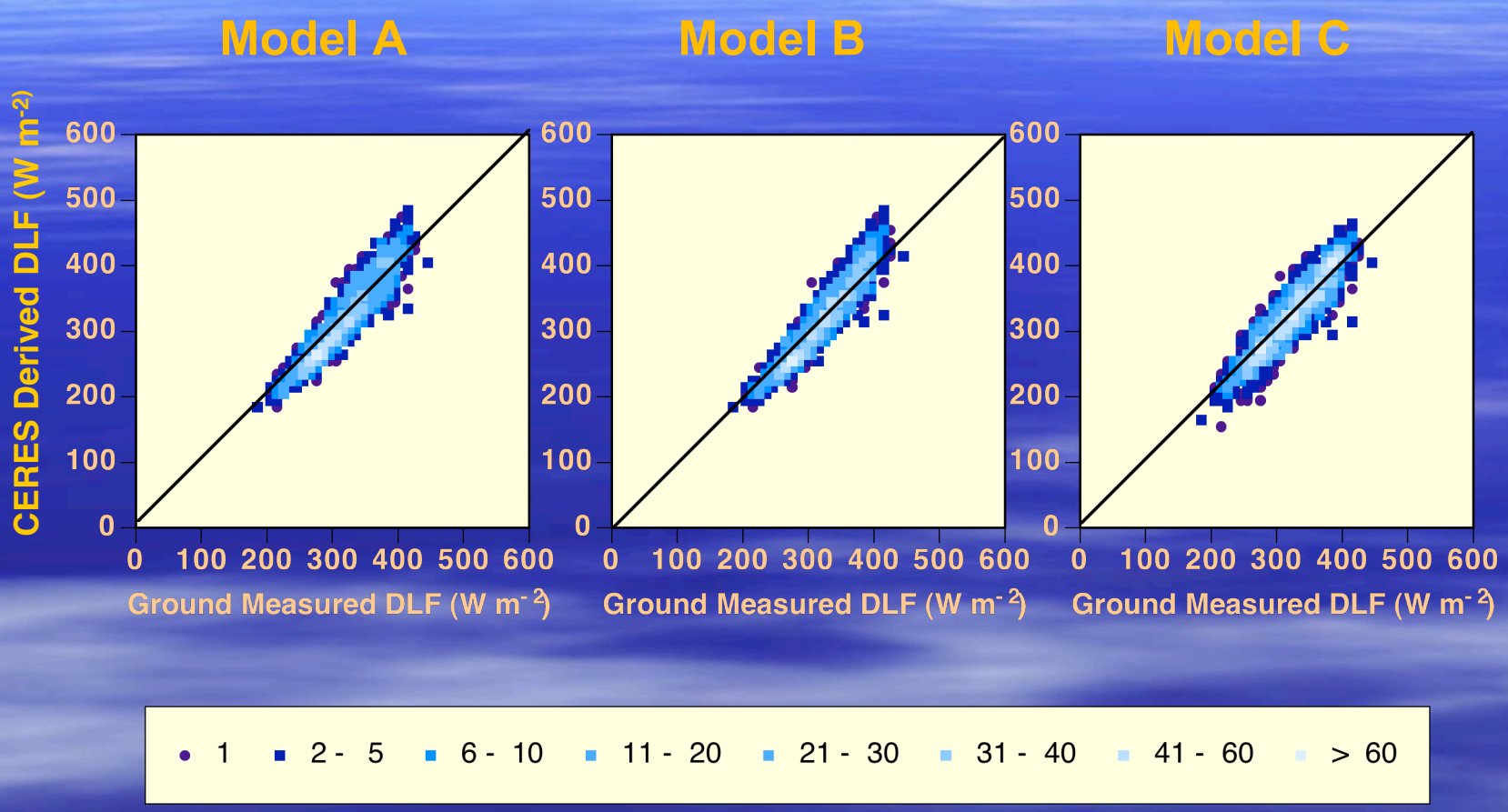


Longwave Clear-Sky, Ant-arctic



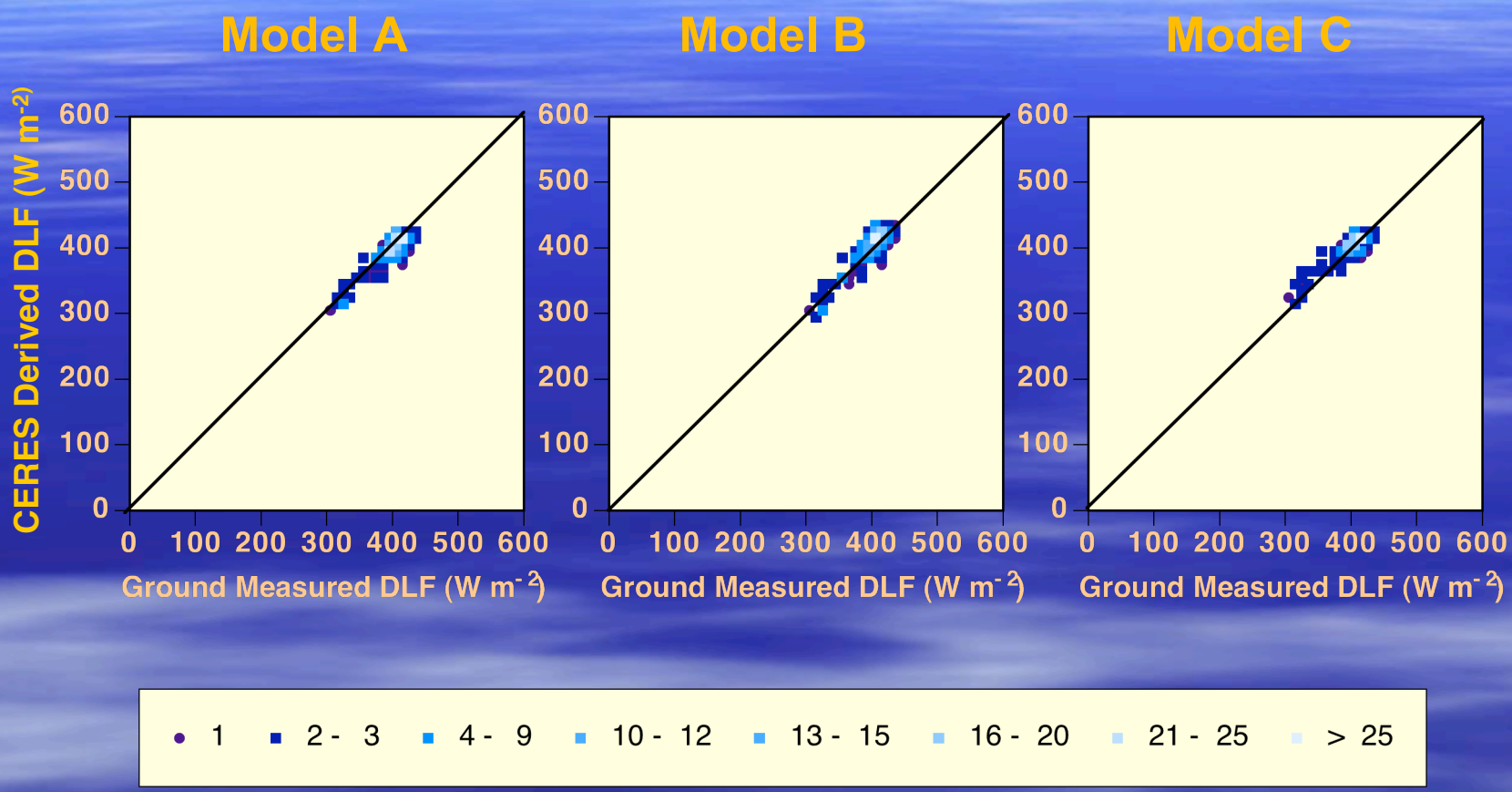
Terra 2B

Longwave Clear-Sky, Desert



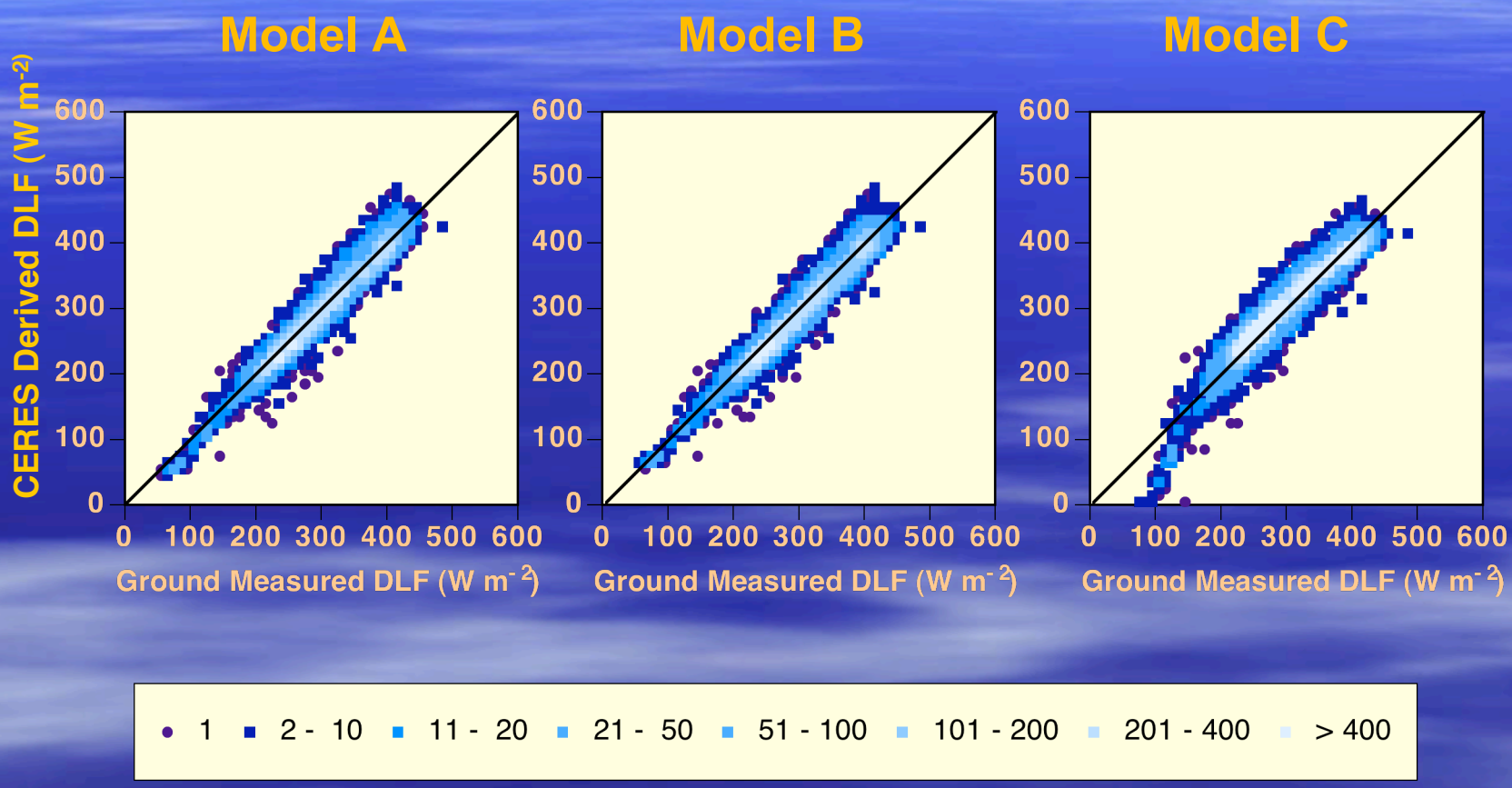
Terra 2B

Longwave Clear-Sky, Island



Terra 2B

Longwave Clear-Sky, Global



Terra 2B

Longwave Clear-Sky

Sites # of Points		LWA	LWB	LWC
Continental	Bias Wm^{-2} (%)	-4.65 (-1.54)	-7.47 (-2.47)	4.54 (1.50)
16608	σ Wm^{-2} (%)	13.2 (4.4)	13.2 (4.4)	16.3 (5.4)
Coastal	Bias Wm^{-2} (%)	3.15 (1.12)	-2.99 (-1.06)	15.44 (5.48)
824	σ Wm^{-2} (%)	12.7 (4.5)	13.1 (4.6)	14.5 (5.1)
Ant-Arctic	Bias Wm^{-2} (%)	-8.79 (-5.87)	-5.89 (-3.93)	-29.14 (-19.45)
630	σ Wm^{-2} (%)	12.8 (8.6)	12.3 (8.2)	24.2 (16.2)
Desert	Bias Wm^{-2} (%)	2.28 (0.70)	-2.09 (-0.64)	2.10 (0.65)
2763	σ Wm^{-2} (%)	20.1 (6.2)	19.0 (5.8)	22.1 (6.8)
Island	Bias Wm^{-2} (%)	-0.50 (-0.13)	2.98 (0.76)	2.66 (0.67)
242	σ Wm^{-2} (%)	10.9 (2.8)	12.0 (3.0)	9.2 (2.3)
Global	Bias Wm^{-2} (%)	-3.51 (-1.17)	-6.42 (-2.13)	3.62 (1.20)
21067	σ Wm^{-2} (%)	14.9 (4.9)	14.7 (4.9)	20.2 (6.7)

Zhou-Cess Longwave Algorithm

Possible revision to prevent low water vapor runaway

$$SDLW = a + b*SULW + c*\ln(1+PWV) + d*[\ln(1+PWV)]^2 + e*\ln(1+f*LWP)$$