

VALIDATION OF LONGWAVE/WINDOW ADMs:
COMPARISON OF DIRECTLY INTEGRATED FLUXES
AND TRMM-DERIVED FLUXES

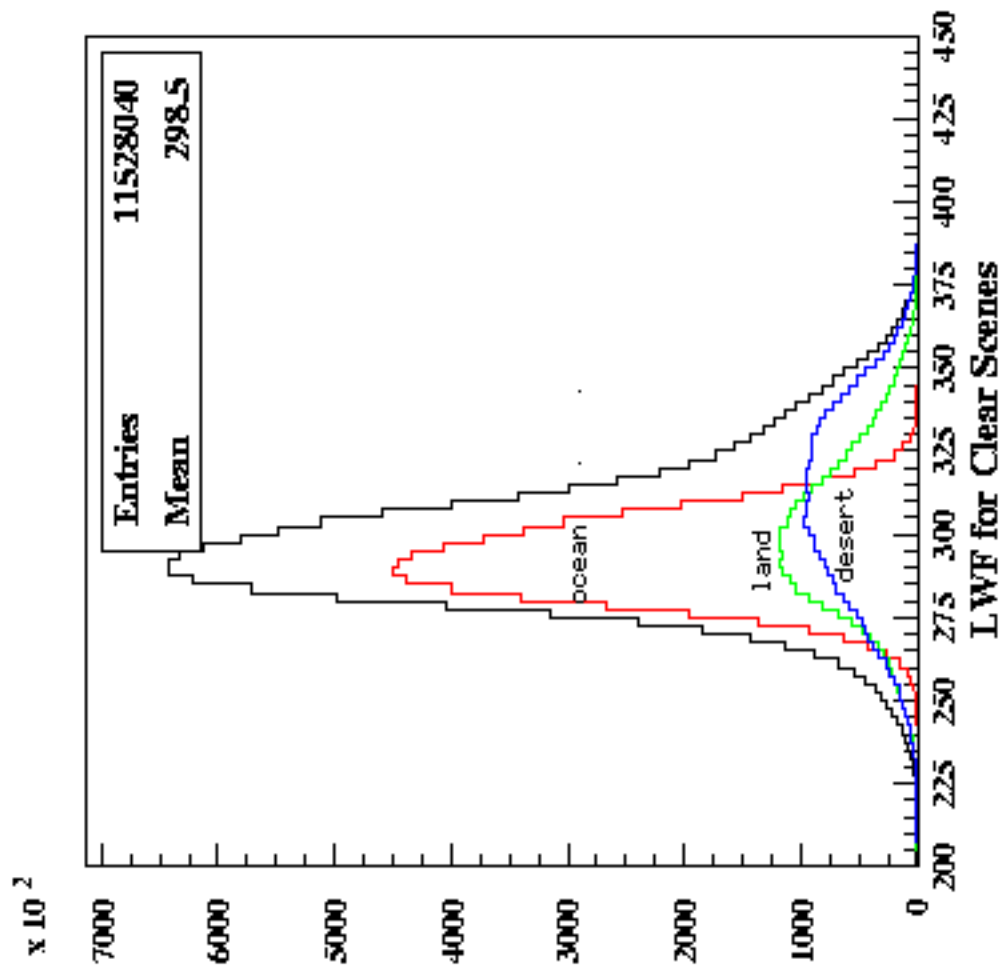
Natividad Manalo-Smith, Norman G. Loeb
Sandy Nolan and Konstantin Loukachine

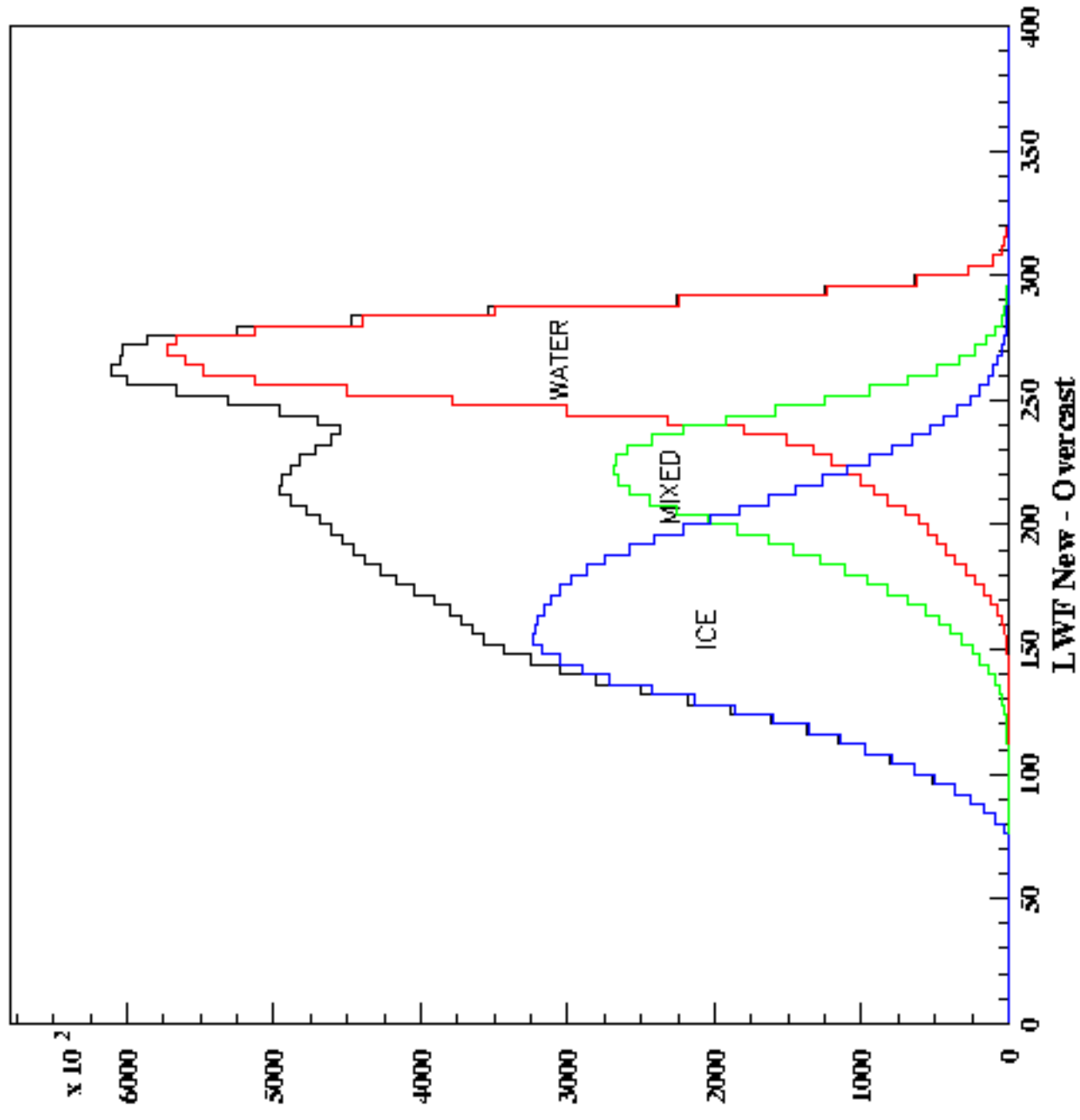
OVERVIEW

- ADM Scene Types
 - radiances stratified into fixed percentile intervals of atmospheric/cloud properties, surface and cloud cover conditions
 - ADMs available only for daytime (no nighttime cloud emissivities on SSF ED1)
- Validation of LW/WN Fluxes
 - LW Fluxes for Clear Sky, BCF and Overcast Scenes
 - VZA dependence of LW fluxes and cloud fraction
 - Comparison of LW/WN Fluxes (New ADMs and ED1) with fluxes derived by the direct integration method.

PRELIMINARY SCENE TYPES FOR CERES-TRMM LW/WN ADMs

ADM Category		Scene Type Stratification	Total
CLEAR	Ocean	3 Precipitable Water	12
		4 Vertical Temperature Change	
	Land	3 Precipitable Water	12
		4 Vertical Temperature Change	
	Desert	3 Precipitable Water	12
		4 Vertical Temperature Change	
BROKEN CLOUD FIELD (4 cloud intervals)	Ocean/Land	3 Precipitable Water	288(O) 288(L)
		6 T(surface-cloud)	
		4 IR Emissivity	
OVERCAST	Ocean + Land	3 Precipitable Water	108
		6 T(surface-cloud)	
		6 IR Emissivity	

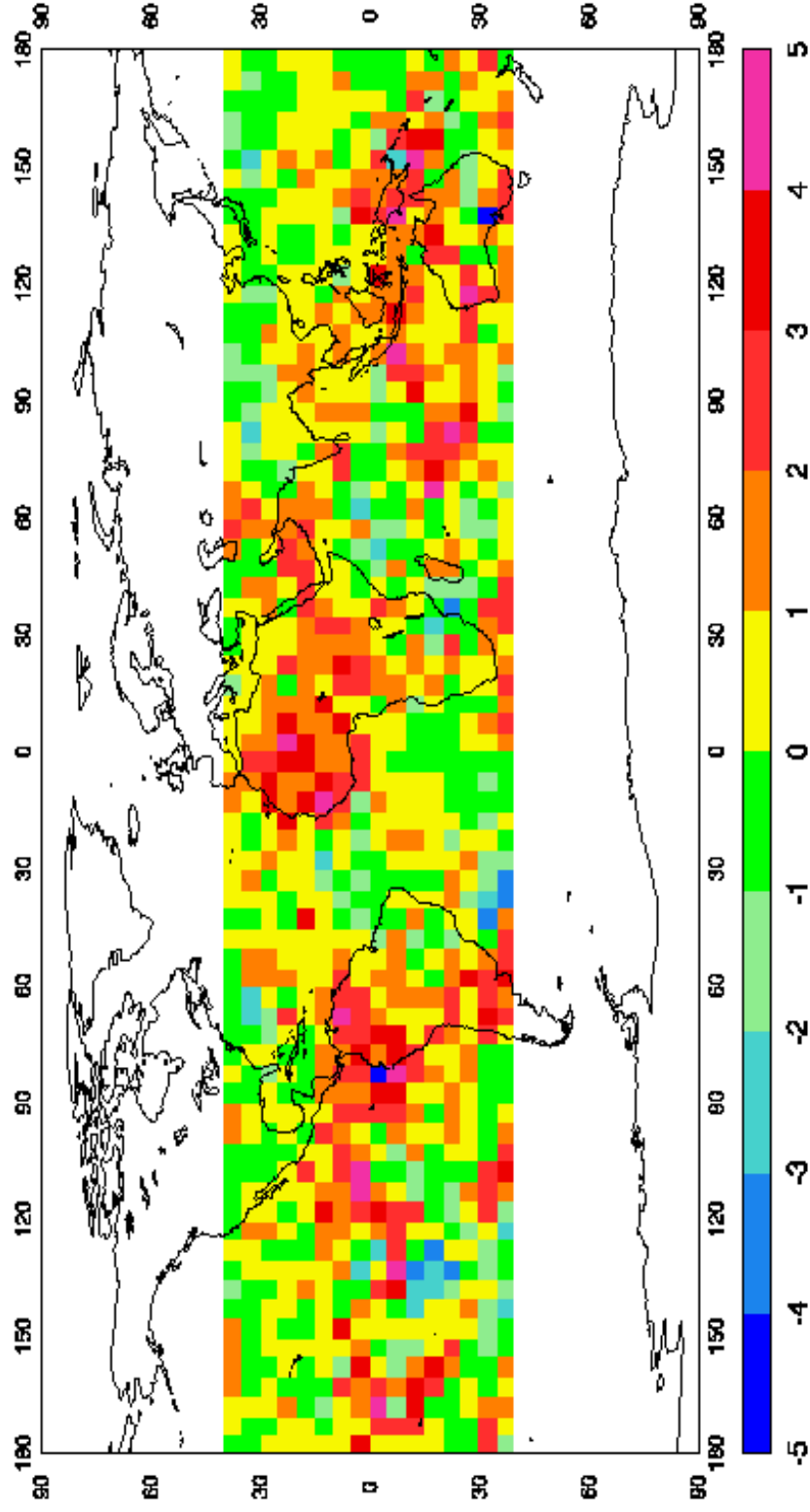




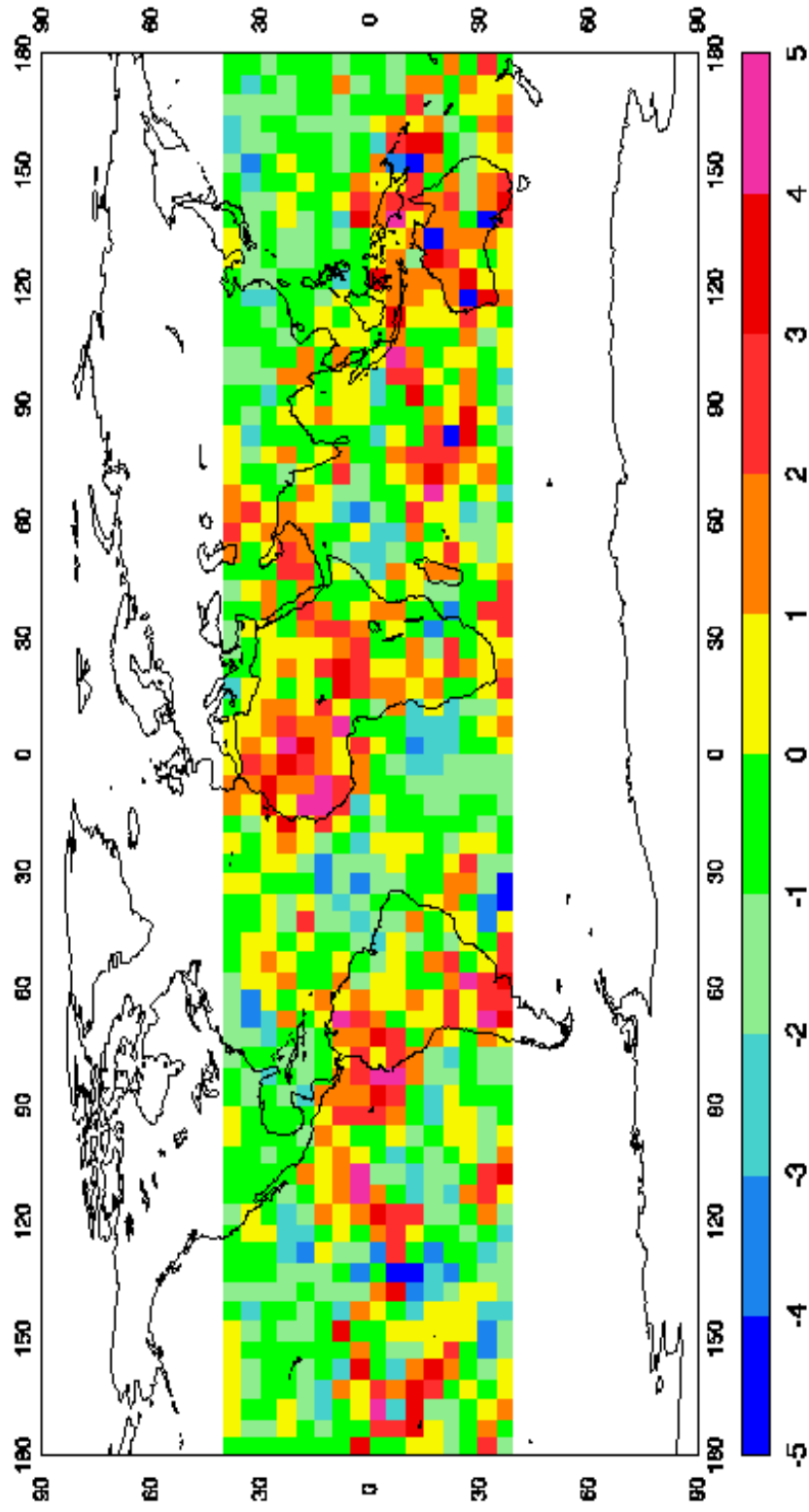
DIRECT INTEGRATION METHOD

- Daytime RAPS data
- Jan/Feb/Mar, Apr/May, Jun/Jul/Aug
- Target Area: 5 x 5 deg
- $\Delta VZA = 5$ deg
- no scene type identification (all scenes)
- integrate bin mean radiances to obtain target area fluxes
- ΔF (NEW ADMs/ED1 ADMs - DIRECT INTEGRATION)

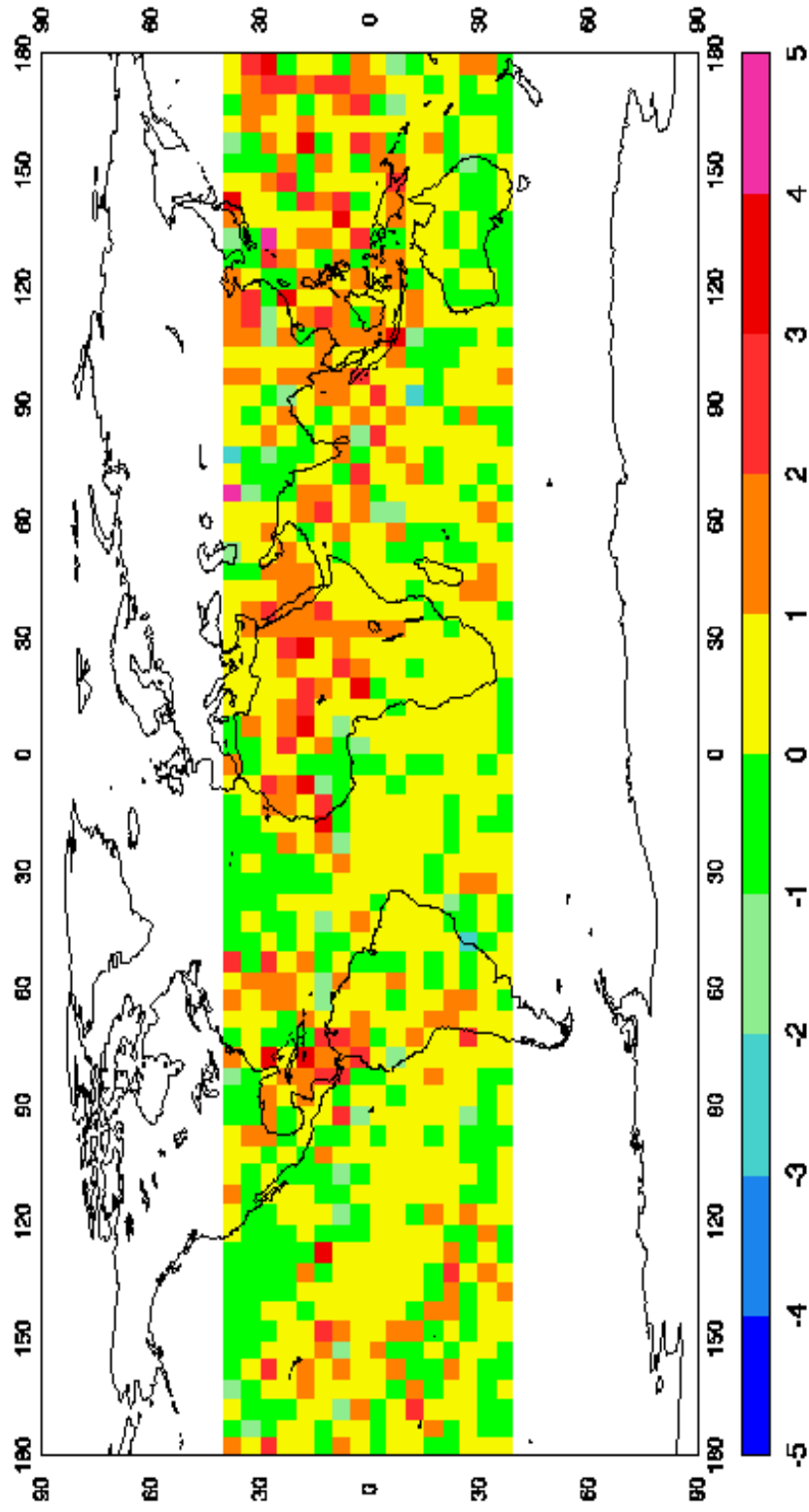
LW Flux Diff (NEW ADMS - DI) for Jan/Feb/Mar



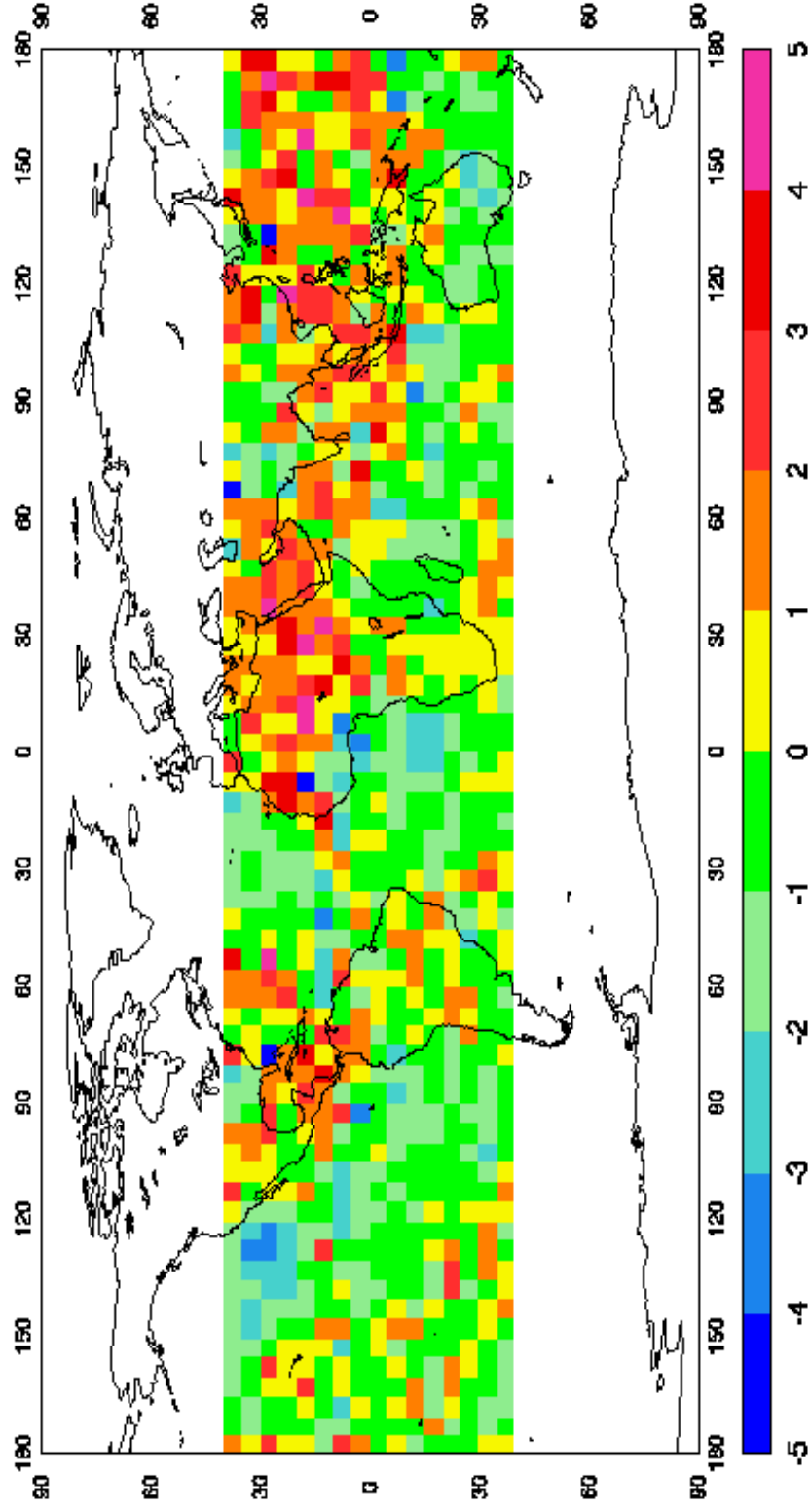
LW Flux Diff (ED1 ADMs - DI) for Jan/Feb/Mar



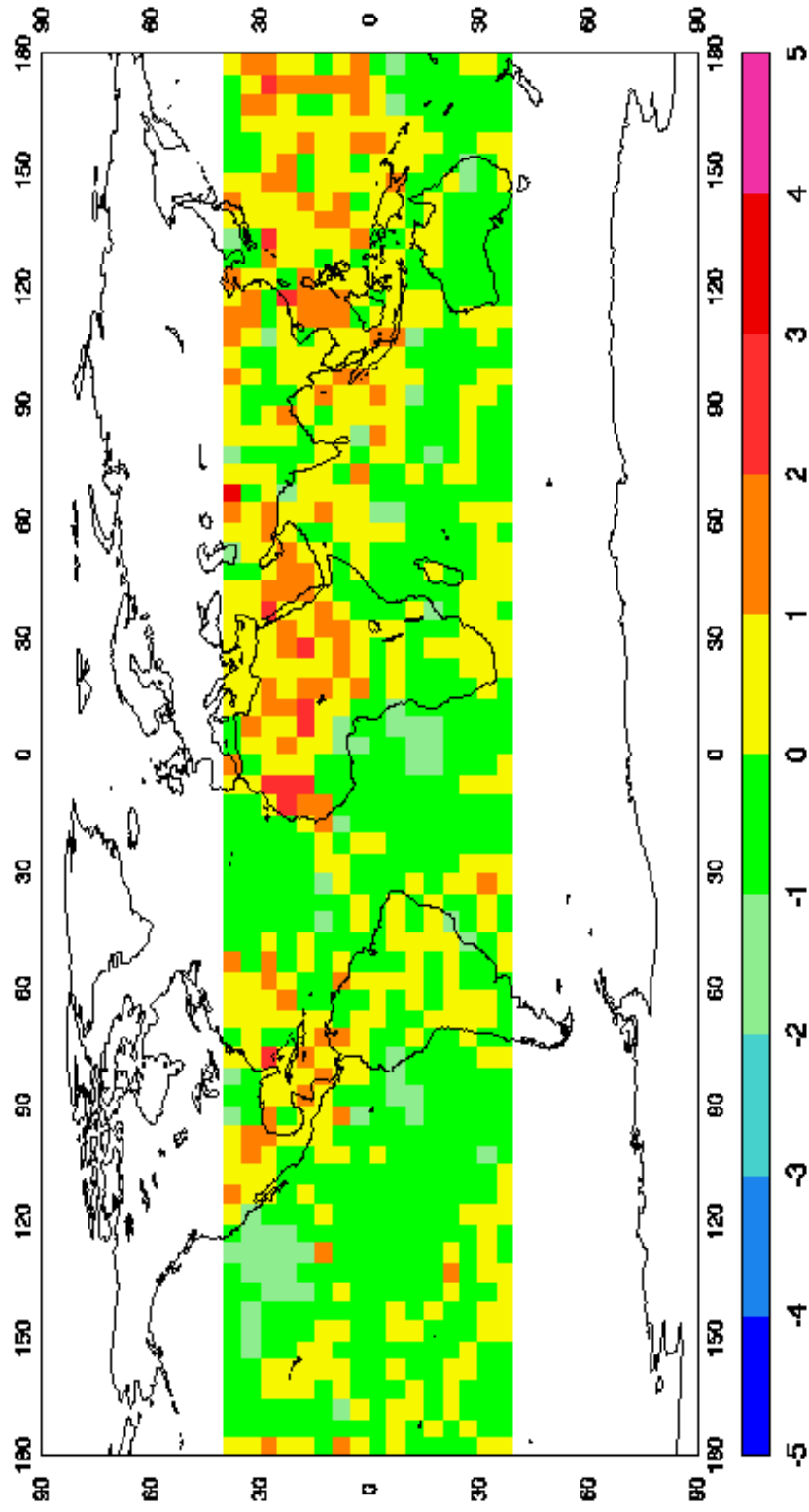
LW Flux Diff (NEW ADMS - DI) for Jun/Jul/Aug



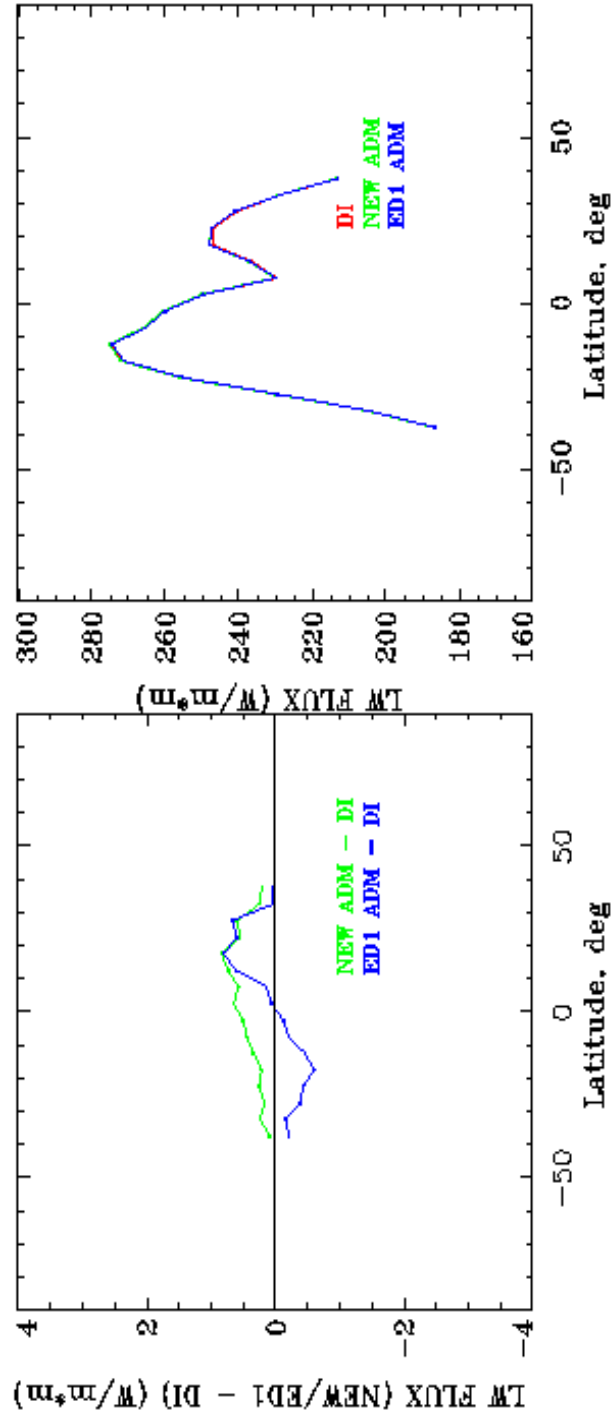
LW Flux Diff (ED1 ADMS - DI) for Jun/Jul/Aug



WN Flux Diff (ED1 ADMS - DI) for Jun/Jul/Aug



Zonal Daytime LW Mean Fluxes and Flux Differences for Jun/Jul/Aug (5x5)



SUMMARY OF RESULTS

RAPS Months	BIAS		RMS	
	NEW	ED1	NEW	ED1
LONGWAVE				
Jan/Feb/Mar	0.56	0.05	1.41	1.55
Jun/Jul/Aug	0.42	0.02	0.95	1.41
WINDOW				
Jan/Feb/Mar	0.29	0.04	0.67	0.74
Jun/Jul/Aug	0.24	0.02	0.49	0.68