Application of Retrieved Cloud Properties to RT Fluxes and Uncertainty Analysis

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RO vs. RVOD

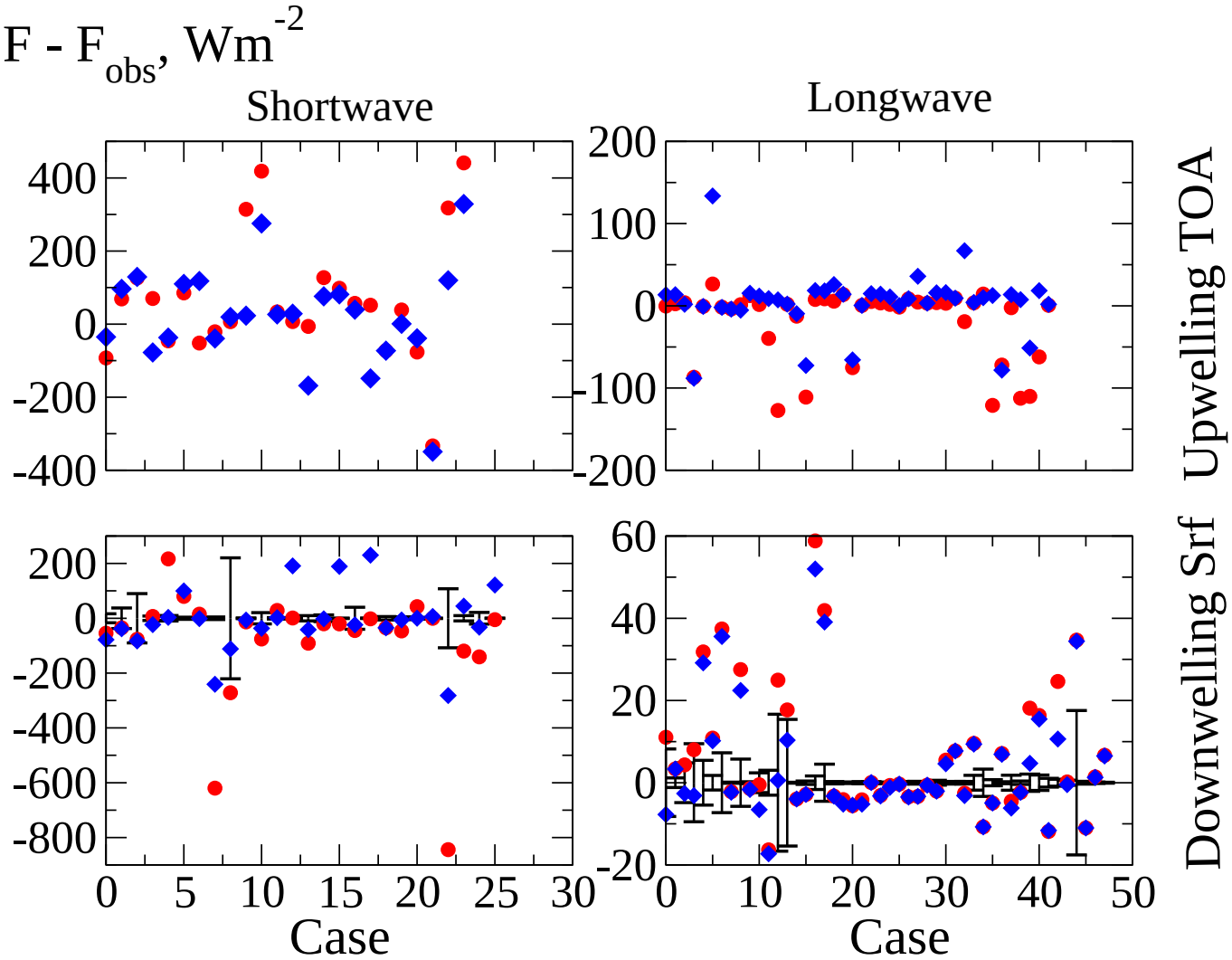
- Low-level clouds

	LW SRF	SW SRF	LW TOA	SW TOA
RO	6.33 (15.48)	-81.76 (211.5)	-19.33 (43.72)	65.05 (170.9)
RVOD	3.59 (14.07)	-5.94 (113.5)	4.08 (36.17)	21.07 (139.1)

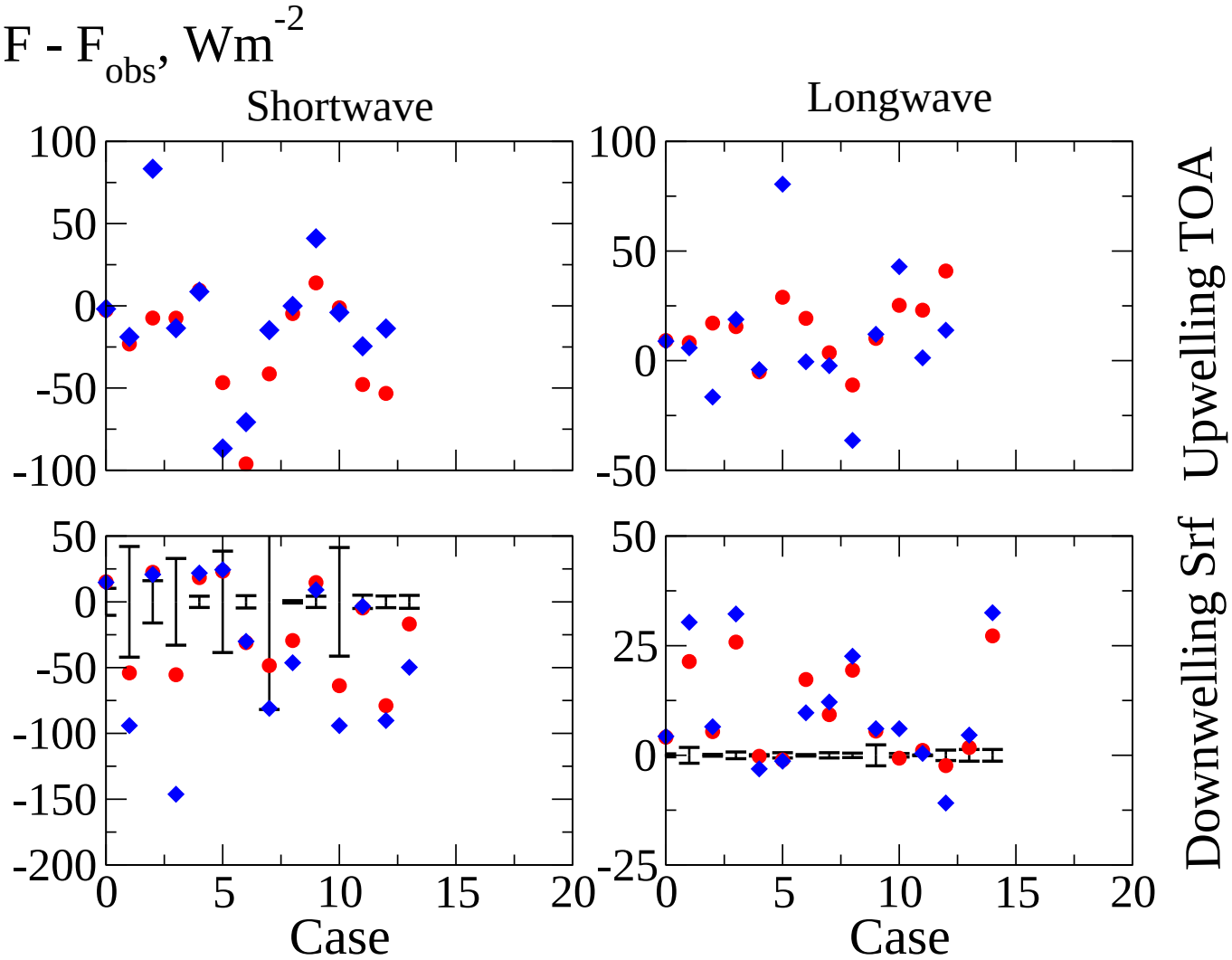
- High cloud

	LW SRF	SW SRF	LW TOA	SW TOA
RO	8.94 (10.41)	-17.42 (38.01)	13.01 (17.04)	-19.99 (34.54)
RVOD	10.20 (13.30)	33.96 (57.94)	6.76 (33.43)	-8.46 (45.44)

Low cloud

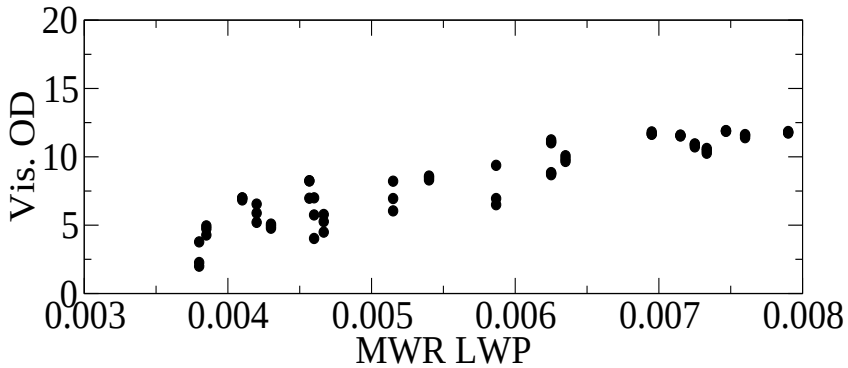

F - F_obs, Wm^-2
Shortwave
Longwave
Upwelling TOA
Downwelling Srf
Case
Case

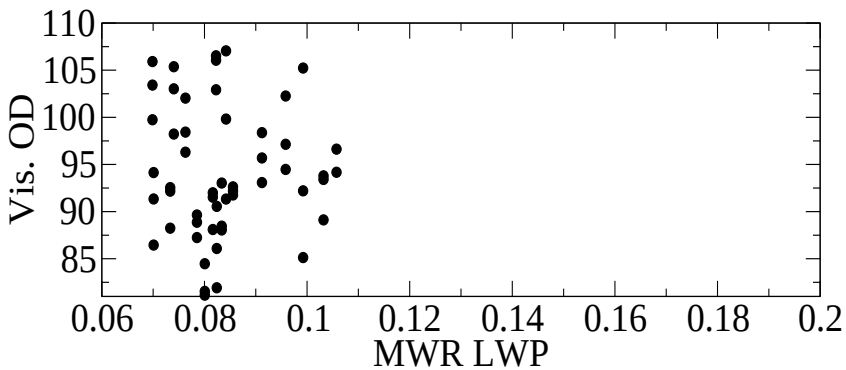
High cloud


F - F_obs, Wm^-2
Shortwave
Longwave
Upwelling TOA
Downwelling Srf
Case
Case

Screening for homogeneity

Kim et al. 2003

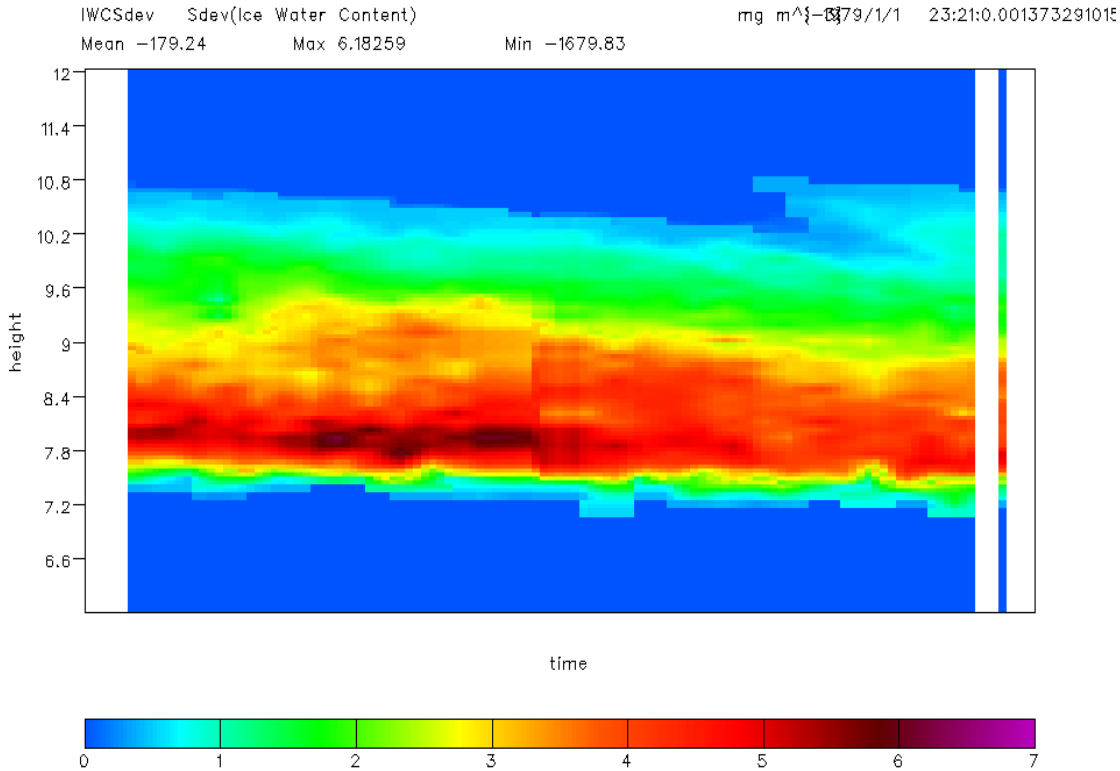


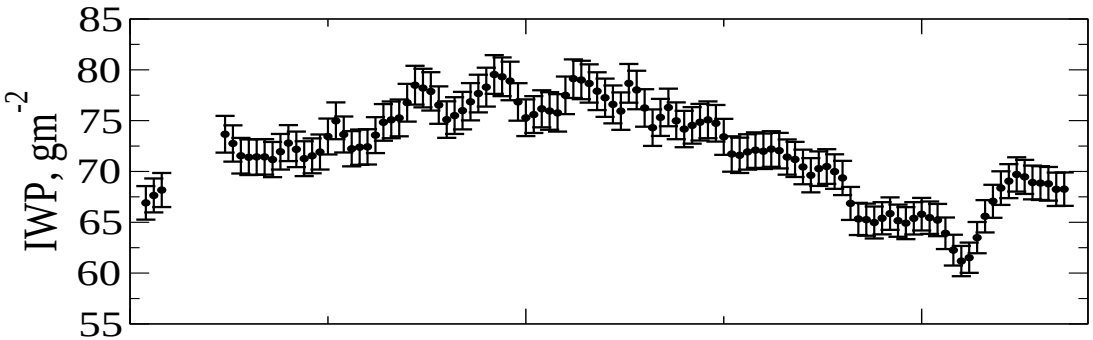


	LW SRF	SW SRF	LW TOA	SW TOA
RO	-0.16 (3.23)	0.82 (112.3)	-12.01 (31.07)	20.82 (52.74)
RVOD	-1.40 (3.89)	-16.01 (16.97)	-11.55 (26.80)	63.02 (47.03)

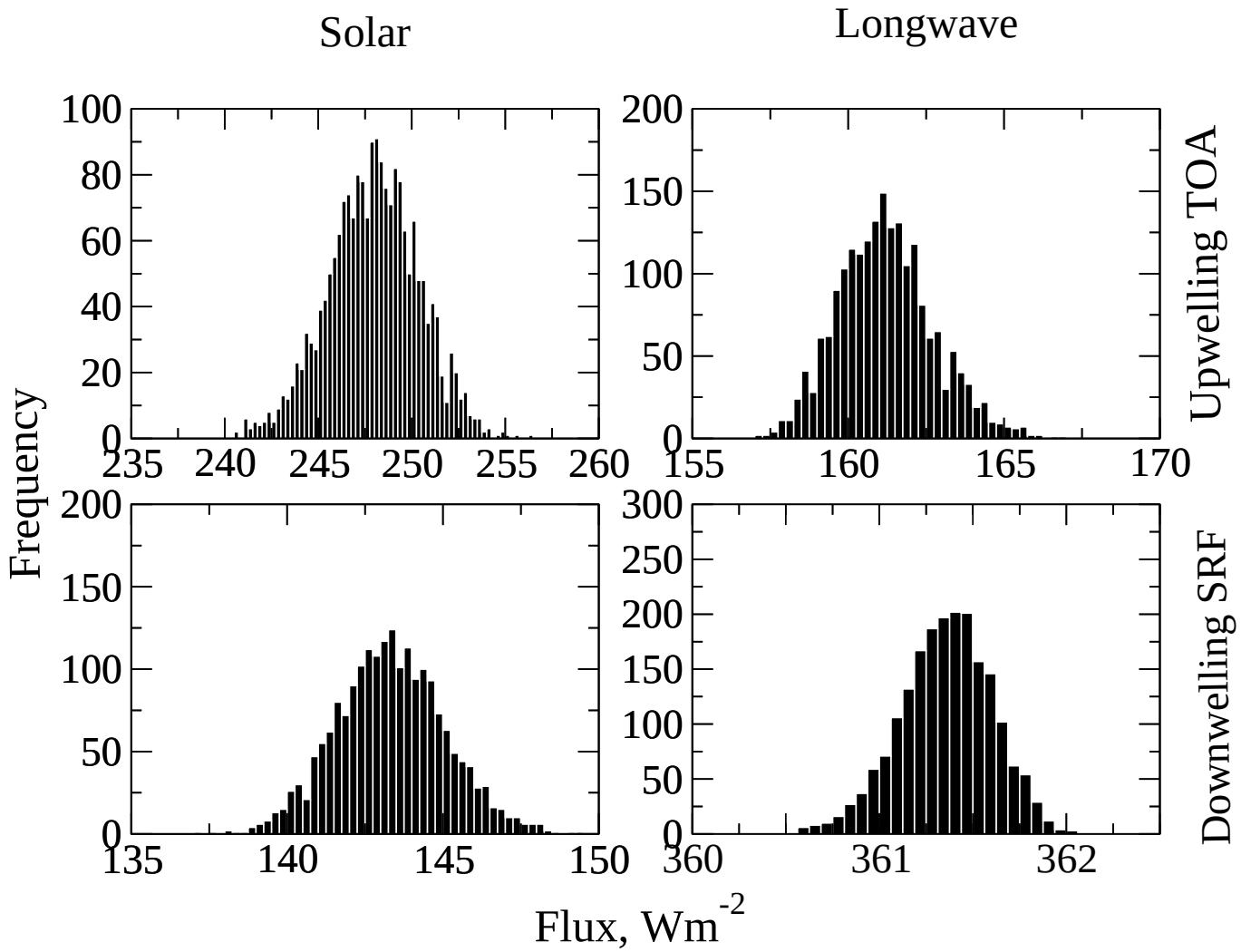
Simple example: uncertainty analysis

IWC Std. Dev.

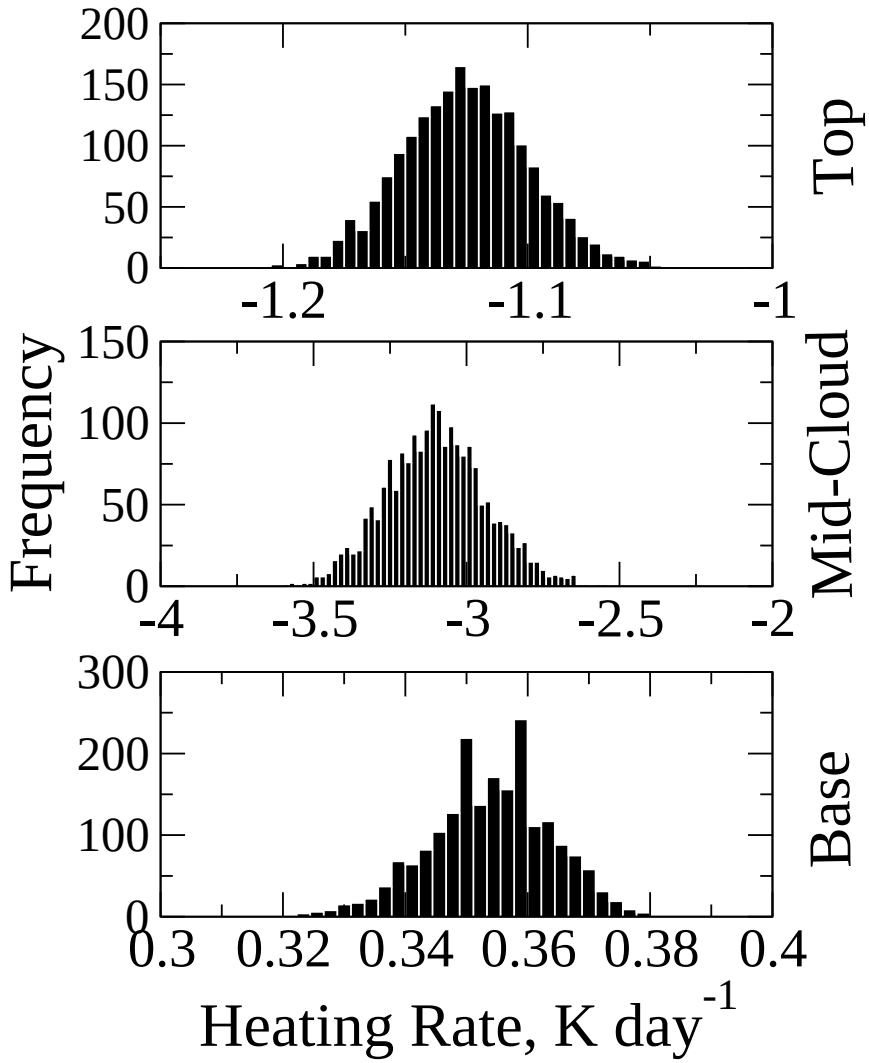




Fluxes:


Solar
Longwave
Upwelling TOA
Downwelling SRF
Frequency
Flux, Wm-2
100
80
60
40
20
0
235
240
245
250
255
260
200
150
100
50
0
155
160
165
170
200
150
100
50
0
135
140
145
150
300
250
200
150
100
50
0
360
361
362

Heating Rates:



Planned work

- Extension to drizzle cases, and comparison of flux characteristics
- Ice clouds: evaluation of RT OD vs. retrieval input
- Uncertainties
  - Spatial effects
  - Correlations