



“Simpson’s Law” and the Spectral Cancellation of Climate Feedbacks

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Main results

Motivation

- Held and Shell 2012 argued that RH feedbacks are more physical from *thermodynamic* point of view
- Show here that RH feedbacks also more physical from *radiative* point of view

- RH-based feedbacks are manifestly simpler, from spectral point of view
- Conventional Planck, WV, LR feedbacks constrained to cancel throughout much of IR spectrum, due to “Simpson’s Law” (see manuscript for details)

- RH-based LR feedback is negligible

Methods

- 1D ‘global mean’ column (a’la Manabe RCE)
- Compute **spectrally-resolved feedbacks** λ_ν using line-by-line radiation with partial radiative perturbations to atmospheric column.

