Tropical Meteorology - General Outline

1. Radiative-Convective Equilibrium
   1.1. General principles of radiative transfer
   1.2. Simple models without phase change
   1.3. General principles of moist convection
   1.4. Simple models with phase change
   1.5. Quantitative assessments of the equilibrium state - comparisons to observations

2. The Zonally-Averaged Circulation
   2.1. The observed climatology
   2.2. Breakdown of the radiative-convective equilibrium state
   2.3. Dry theory
   2.4. Moist theory
   2.5. Regulation of intensity

3. Asymmetric Steady Circulations
   3.1. Monsoons
      3.1.1. Development and onset of the Asian monsoon
      3.1.2. Monsoon breaks
      3.1.3. Nonlinear, asymmetric theory
   3.2. The Walker Circulation
      3.2.1. Observations
      3.2.2. Theory

4. Interannual Fluctuations of the Walker Circulation – ENSO
   4.1. Observed behavior
   4.2. Theory and modeling of ENSO

5. Intraseasonal Oscillations
   5.1. Observations
   5.2. GCM simulations
   5.3. Theory of equatorial waves
      5.3.1. Dry
      5.3.2. Moist
   5.4. WISHE
   5.5. Cloud-radiation interactions and ISOs

6. Higher Frequency Disturbances
   6.1. Monsoon depressions
   6.2. Equatorial waves
   6.3. Easterly waves

7. Tropical Cyclones
   7.1. Structure and climatology
   7.2. Steady-state physics
   7.3. Genesis
   7.4. Ocean interaction