

Air-Sea Interface

Break-out group 3

October 11, 2006
Afternoon session

Important Physical Processes: Understand physics → parameterize

- Energy Exchange
- Dissipation and generation of energy at the interface
- Physical limit on hurricane intensity due to interface processes
- Surface vs volume sources
- Length scales in ocean/atmosphere
- Question – what is required in flux coupler??? Where is the reasonable boundary between explicit modeling and parameterization of interfacial processes (e.g., waves in multiphase media)
- Resolution of 2D wave spectrum is crucial (including what happens to short waves)
- Coupled bubble and spray generation
- Effect of rain droplets on boundary layer dynamics
- Forecast should work for all wind speeds

Hypotheses, questions, issues

- Spray function characteristics
 - Vertical distribution
 - Intensity scaling (wind speed, u^* , wave diss)
 - Droplets are important for exchange
- Waves
 - 2-d spectral coupling to wind gives stress
 - Relating wave spectrum to breaking statistics
 - Link breaking stats to spray, bubbles, stress
- Bubbles – second order?
- Fundamental Interface reformulation?
 - Is this only intensity forecast issue?
 - Low level wind structure – wave, spray?
- Non droplet vs droplet C_k and bulk inputs
 - Hypoth1 – nondroplet scalar roughness R_r scaling
 - Hypoth2 – changes as in CFC
- K-H instability defines emulsion state threshold
- C_d remains constant with U above threshold