Main Conclusions

- There is much interest in REDD and carbon offsets; more information and better understanding is required:
  - Methods for measurement and algortihms
  - Baselines for REDD
  - What qualifies and what doesn’t
  - How to get started and engaged
  - Who is doing what right now

- Policy is ahead of science concerning REDD
  - Policy may proscribe methods with many built-in assumptions that enable a defensible, but less rigorous approach to REDD
  - For example, by ignoring some pools of carbon
- But there is a great opportunity for this region
  - Protocols can be developed that use scientific understanding and methods but are different from science approach

- Important to distinguish offsets from REDD
  - Former operates under markets, latter under the convention
- Not clear right now what the COP will agree to on REDD

Focused on REDD

- Reviewed REDD origins
  - Related to industrial cap and trade programs after recognizing that 20-30% of human-induced CO2 increase related to deforestation
- REDD scenarios
  - Reducing Emissions from Deforestation and Degradation in Developing Countries
  - No credits for changes (increases) in total carbon stocks
  - No credits for standing forests (carbon state)
  - Credits only for reducing the rate of deforestation
  - Brazil and Indonesia have the greatest potential for credits given their historic rates
  - REDD is not the same as carbon credit market, for example, no credits for planting trees
  - Not including standing carbon stocks could lead to international leakage of deforestation from high rate countries to low rate ones
- Need to establish a baseline rate of deforestation/degradation and demonstrate/quantify a reduction in this during subsequent reporting periods

REDD

- Issue: What is a forest, what is non-forest?
  - 1990 is the baseline, all land without forest in 1990 is not eligible
  - What is the forest domain – does use play a role?
  - Are intact, regrown, agroforestry tracts in 1990 all the same?
  - Are production forests included?
- Review of generic methods
  - In situ inventory approaches, which are largely insensitive to measure change since
    - They take very long to repeat
    - Are performed in a systematic sample, and change is spatially nonrandom
  - Physical modeling of the carbon cycle
    - Requires many parameters, many of which are not reliably estimated
    - Hard to validate and incorporate into policy
  - Remote sensing inference of changes in biomass
    - Direct observation of biomass not feasible over large areas, yet
    - Ignores pools of carbon other than aboveground biomass
    - However, given carbon stock reference data, can allow for synoptic monitoring of changes to forest cover and biomass
    - Change in biomass equals area of forest loss times carbon stock reference

REDD

- Methods – deforestation
  - Forested land that is converted to non-forest (~<10% canopy cover)
  - Deforestation mapping methods are fairly mature – Landsat the historic workhorse
  - Forest is defined by minimum cover and spatial extent, with some flexibility
- Methods – degradation
  - Forested land that loses carbon due to human extraction of biomass, but remains structurally a forest
  - Degradation mapping methods are not mature
  - Direct methods are not generically proven/implemented (direct per pixel characterization)
  - Indirect methods are simple, but not robust (inferring presence of degradation from nearby infrastructure such as logging roads)
  - There is no definitive definition of degradation, yet