3 subgroup reports

1. Sed record: External (Milankovitch) forcing or internal dynamics?

- How is an external signal as it is filtered through transport systems that lead to the sedimentary record?
- What kinds of signals are generated by the system?
- Are there distinctive fingerprints that we can use to discern which of the two (autogenic, allogenic) alternatives is occuring?

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- Model Components
  - Reservoirs for input of material
    - Bedrock (weathering law, f(climate input))
    - Regolith (hillslope transport law: lin/nonlin diffusive creep)
  - Alluvial sediment transport (send material through system through transport laws, f(Q = discharge), channel geometry; Q = f(climate))
  - Deltaic processes (can deposit here, or bypass)
  - Final marine depositional record (final resting place, do we see anything here that corresponds to climate signal?)
- Test case (Green River Formation/Basin)
  - Spans several cycles of orbital variations – 10-100 ka climate variability (deposited between 50 and 40 Ma, classic interpretation = Milankovitch forcing)

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- Goals
  - See if autogenic processes can serve to filter signals in a way that produces a cyclic stratigraphy
  - Is an external climate forcing necessary for cyclic stratigraphy?
- CSDMS models
  - SEDFLUX could handle some parts of this problem already
  - Need new models to handle other components

2. Human influences on deltas

1. Changes in water (Q) and sediment flux (Q_s)
2. Avulsion dynamics and channel stabilization
   A. Levee dynamics and avulsion: turn off avulsions and see how areas of the delta that are starved of Q, Q_S, respond
   B. This response can be viewed with a marsh model
3. Consider tidal channels as well
4. Subsidence
5. Storm surge (wave influence, etc.)
6. Human dynamics
   1. Human influences on the system
   2. Human response to the changing deltaic system (management strategies)

3. Orographic Asymmetry: Does it matter to stay true to the hydrograph?

- Merge orographic asymmetry with landscape evolution
- Questions about:
  - Magnitude and frequency of events
  - Spatial and temporal variability and precip: upscaling problem. Does it matter, or does it average out?
  - Where can we find natural experiments to figure out importance of meteorology and hydrology
- Simple hydrographic model to stay true to hydrograph pattern
- Hawaii provides a nice natural experiments (b/c of prevailing winds and high topography)
- Simple solution: see differences in landscape after multiple runs of CHILD with multiple meteorological inputs
  - Calculate an erosional field from 1000 storms and then use that for the next ka.
  - Distill complex storm code via a multiple regression analysis, and use as input