2010 PCC Summer Institute "Climate Feedbacks"

Start Date/Time: Wednesday, September 15, 2010, 12:00 PM
Ending Date/Time: Friday, September 17, 2010, 6:00 PM
Location: Friday Harbor Labs

Lead organizer: Dargan Frierson (Atmospheric Sciences)

Topic: Climate Feedbacks

How sensitive is climate to perturbations? This is a central scientific uncertainty in projecting human-induced climate change over the next century and beyond. State-of-the-art coupled ocean-atmosphere-land models predict that under 'business as usual' emission scenarios, global mean surface temperatures in the 2090s will be 2.4-6.4 K higher than the 1980-1999 average, with much greater warming in the Arctic.

Uncertainties in climate feedbacks, including clouds, water vapor, snow and ice albedo, and in ocean heat uptake efficiency lead to the large range in the predictions. There is even more scientific uncertainty in biospheric and ice sheet feedbacks, which are of primary importance for climate changes of the past, and are also important to longer-term predictions of the future. This year's Summer Institute focused on feedbacks in all parts of the Earth system which affect the global climate.

Agenda w/links to presentations
Wednesday, September 15
1:30 Check-in, packet, map and key pick-up; room assignments
3:00 Graduate student certificate discussion
Handout: UWHS/NASA Atmos 211 Curriculum Development Opportunities
Handout: Introduction to Program Evaluation
5:00 PM Reception and Poster Session
Poster Abstracts

An Introduction to Feedbacks, Forcings and Timescales
Tom Ackerman, Moderator
Gerard Roe (UW ESS)"Feedbacks and climate sensitivity"
KK Tung (UW Applied Math) "Climate Sensitivity: An Introduction"
Music

Thursday, September 16
Fast Feedbacks, Including Clouds, Water Vapor and Snow.
Dargan Frierson, Moderator
Dennis Hartmann (UW Atmos) "Water Vapor and Cloud Feedbacks"
Alex Hall (UCLA) "Constraining Climate Feedbacks with Observations"
David Schimel (National Ecological Observatory Network (NEON)) "Global Carbon Cycle Feedbacks: From Pattern to Process"

Slower Feedbacks, Including Ocean Heat Uptake, Carbon Cycle, and Biosphere
Irina Marinov (Univ. of Pennsylvania, Dept. of Earth and Environmental Sciences)"Ocean Biological Pump: sensitivity to climate change and impacts on atmospheric CO2"
Chris Bretherton (UW Atmos) "Separating forcing from feedback - more subtle than it seems"
LuAnne Thompson (UW Ocean) "Ocean heat transport and storage: the role of strong currents and eddies"

Friday, September 17
Slower + Deep Time Climate Feedbacks
Greg Johnson, (NOAA/PMEL) "Ocean Heat Uptake"
David Catling (UW Atmos) "Really Long-Term Feedbacks: Atmospheric Chemistry and Climate over Earth History* *All 4.5 billion years of it"
Ed Waddington (UW ESS) "Ice-sheet feedbacks".

Feedbacks in Models/Future of Feedbacks
Tom Ackerman (JISAO/UW Atmos)
Cecilia Bitz (UW Atmos) "Sea Ice is Everything"
Dargan Frierson (UW Atmos) "Latitudinal Structure of Feedbacks and Their Effect on Tropical Precipitation"