

Department of Atmospheric Sciences

COURSE ANNOUNCEMENT – SEMESTER I – 2004 – 2005

ATMS 491: Topics in Atmospheric Science

L: Integrated Assessment of Climate Change

Call number: 39849

Instructor: Prof. Atul Jain, 215 Atmospheric Science Bldg., 333-2128

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Room and Time: 109 Atmospheric Science Bldg.; 9:00 – 10:15 a.m. T R

Credit: 3 hours

Prerequisites: Consent of instructor

Much study of the Earth System is carried out using computer models. Models are used to interpret data, test ideas about mechanisms, and make predictions. Students are often shown the results of models, but rarely do they have much idea of what a model really is, how models are built, and how they work. The purpose of this course is to enable non-specialist undergraduates/graduates to perform calculations and produce model scenarios using web interface for our *Integrated Science Assessment Model* (ISAM). ISAM is a state-of-the-art model that takes projections of human emissions of CO₂, other greenhouse gases, and atmospheric particulates, and generates predictions of future greenhouse gas and aerosol concentrations, global climate change, and the impacts of climate change such as the expected rise in sea level. Students will be able to run ISAM over the web and see the direct and tangible results of policy decisions regarding energy consumption, choices of energy sources, and agricultural and land-use practices. The goal of this course will be to integrate the non-specialist human user into a climate modeling system; to enable the user to test hypotheses, develop scenarios, and learn about the implications of various structures of the modeled system; and to allow the user to evaluate the climatic impact of anthropogenic emissions, and the role of climate sensitivity in global climate response. The focus will be on a small number of modeling projects related to global and regional climate, the global carbon cycle, the interaction of climate and carbon cycle.

Text: *Global Warming: The Complete Briefing*, by John Houghton, Oxford University Press, 2nd Edition (Required).

Global Warming: The Hard Science, by Danny Harvey, Prentice Hall, (Recommended)