



Goddard Space Flight Center 2009 Sample Student Projects

Required Academic Level

Freshman/Sophomore
Undergraduate, Junior/Senior
Undergraduate

Category

Earth Sci

Subcategory

Climate Change

Project Title

Summer Institute In Earth Sciences: Food Appropriation & Security in a Changing Climate.

Project Description

Human population affects the Earth system production through levels of appropriation and consumption. A compelling measure of humanity's cumulative impact on the Earth system is the fraction of net primary productivity (NPP) appropriated for its use. NPP—the net amount of plant organic matter can be measured in units of elemental carbon and represents the primary energy source for the world's ecosystems. Human appropriation of net primary production alters the energy flows within food web and the provision of important ecosystem services. Based on a global map representing the amount of net primary production required by humans developed and published here at GSFC, we want to compute a balance of global food production-consumption at continental level and may be extend the computation to the water required to produce these products. The Intergovernmental Panel on Climate Change (IPCC) climate models project severe increase in temperature and decrease in precipitation over Africa for the next century. Where this happens it will reduce the level of net primary productivity and affects the amount of food available; altering thus the balance between the production and appropriation of this basic commodities. This short term project will examine the issue over the African continent, for which the latest IPCC report (AR4) indicates a decrease in precipitation along with an increase in mean temperature; both of which alter plant growth.

Mentor's Expectation of Student

The intern should : 1- Like the subject matter 2- Have some skill in computing (Excel, Linux, FORTRAN, C) or others. 3- Able to read short scientific articles and summarize their findings.

Discipline of Project and/or Background Needed to successfully complete the project

Biology; Earth Science

Skills

Excel, Computer Modeling/Simulation