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Statement: The focus of my PhD research was on estimating fire radiative energy emitted from biomass burning and the associated aerosol emissions and I continue to investigate this topic as a post-doc at UMD. My current work is primarily focused on assessing the performance of the forthcoming VIIRS active fire product and examining potential improvements. Given my research interests and current career path the 2010 ECSA forum should offer an opportunity to discuss related research, scientific issues, and spring board collaboration.

Title:

[A comparison of biomass burning emissions and deforestation in the Legal Amazon: 2001-2009.](#)

Abstract:

The occurrence and frequency of fires in the tropics is closely coupled with human activity, particularly land use such as agricultural and pasture maintenance practices and land cover change associated with deforestation. While Earth observing satellites have made significant contributions to wildfire detection, monitoring, and characterization for nearly three decades current satellite estimates of deforestation rates and associated emissions remain uncertain. Thus, the focus of the study being represented was to investigate CO₂ emissions from biomass burning and the associated trend in deforestation within the Brazilian Amazon between 2001 and 2009. Estimates of CO₂ emission were made using the remotely sensed metric fire radiative energy (FRE) which offers a new and complimentary approach to investigating biomass burning. Here I show that estimates of CO₂ emission from biomass burning in the Legal Amazon offers insight to the dynamics of fire, deforestation, and greenhouse gas (GHG) emissions.

The annual pattern of CO₂ emission mirrors that of deforestation in the Legal Amazon for most of the study time period (2001-2009) and on average was responsible for 9% of the annual global emission of CO₂ from biomass burning. However, 2007 was an anomalous year in Brazil as it was one of the highest years in CO₂ emitted from fire, but a relatively low year for deforestation. This discrepancy is a result of an abnormally dry year which resulted in a greater frequency of fires not directly associated with deforestation, but rather could likely be tied to agricultural and pastures maintenance fires. Therefore, any discussion of reducing GHG emissions from deforestation and degradation (REDD) should also consider the implications of fire as a tool for managing the land after deforestation has occurred.

Relevant Publications:

Ellicott, E., E. Vermote, L. Giglio, and G. Roberts (2009b), Estimating biomass consumed from fire using MODIS FRE, *Geophys. Res. Lett.*, 36, L13401, doi:10.1029/2009GL038581.

Vermote, E., **E. Ellicott**, O. Dubovik, T. Lapyonok, M. Chin, L. Giglio, and G. J. Roberts (2009), An approach to estimate global biomass burning emissions of organic and black carbon from MODIS fire radiative power, *J. Geophys. Res.*, 114, D18205, doi:10.1029/2008JD011188.