uncertainty estimates, and examine changes in the structure of the seasonal cycle. We find this methodology provides a novel way to evaluate models used in climate projections.

**S5.4 Use of Space Retrievals of Solar-Induced Fluorescence to Improve GPP Modeling for Croplands**

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Sun-induced chlorophyll fluorescence (SIF) is a more direct signal to monitor vegetation dynamics. With very high spectral resolution instruments onboard satellite, retrievals of SIF have been made and allowed to obtain unprecedented information about the actual terrestrial photosynthetic activity. Several studies have compared SIF with state-of-the-art biogeochemistry models, and found a strong empirical correlation between SIF and gross primary production (GPP). Current most terrestrial biosphere models usually employed Farquhar's photosynthesis models in calculating GPP, in which the maximum rate of carboxylation (Vcmax) is a key control parameter on leaf photosynthesis. These models typically use fixed values of Vcmax for broad categories of plant function types (PFTs) although field studies have shown Vcmax changes over time with significant seasonal cycles. In this study, we focus on the estimations of seasonal Vcmax from SIF data retrieved from the GOME-2 instrument onboard the MetOp-A platform. To do this, SIF was assimilated into an integrated radiative transfer and energy balance model, the Soil-Canopy Observation of Photosynthesis and Energy (SCOPE) balance model over several crop flux sites with corn-soybean rotations in the Midwestern U.S. An empirical relationship between Vcmax and SIF from SCOPE simulations is derived for different vegetative growth stages during the growing season at each of these flux sites. The resulting relationships were used to determine seasonal Vcmax from GOME-2 SIF retrievals at a biweekly step. The effect of the updated parameterization of seasonal-varied Vcmax on simulated gross primary production (GPP) is tested by comparing to simulations with fixed Vcmax values. Validations against flux tower observations demonstrate benefit of using SIF to derive seasonal cycles of Vcmax to account for variations in maximum leaf photosynthetic capacity. The seasonal Vcmax estimated from the SIF retrievals, rather than a fixed PFT-specific value, significantly improved the agreement of GPP and SIF modelling results with observed tower fluxes. Our results support the use of SIF as a proxy for photosynthetic capacity and suggest the potential of using space measurements of fluorescence for constraining simulations of GPP.

**S5.5 Effects of Forest Fires and Post-Fire Regeneration in Algeria Analysis with Satellite Data and GIS**

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The use of remote sensing data multi-dates, combined with other types of data of various kinds on the environment and forest burned, opens up interesting perspectives for the management of post-fire regeneration. Indeed, development of remote sensing and geographic information systems (GIS) occurred in recent years has offered both environmentalists as managers, an opportunity for evaluation, monitoring and analysis of vegetation. The vegetation indices derived from radiometric data of remote sensing are widely used in programs to monitor the dynamics of vegetation around the globe. The forest environment has benefited greatly from this approach. In this study the use of multi-temporal remote sensing image Alsat-1 combined with other types of data concerning both background and burned down forest appears to be promising in evaluating and spatial and temporal effects of post fire regeneration. A spatial analysis taking into consideration the characteristics of the burned down site of Sebdou in the South Tlemcen in Algeria, allowed to better account new factors to explain the regeneration and its temporal and spatial variation. We intended to show the potential use of remote sensing data from satellite ALSAT-1, spatial resolution of 32 m, and derived