Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08304, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08304
EGU General Assembly 2008

High spatial resolution fAPAR time course estimated from the combination of few SPOT images and frequent MERIS observations

J. Demarty (1), M. Weiss (1), F. Baret (1), P. Peylin (2), P. Rayner (2), C. Bacour (2), P. Prunet (3) and F. Gascon (4)

(1) Institut National de la Recherche Agronomique, Unité Environnement Méditerranéen et Modélisation des Agro-Hydrosystèmes (EMMAH), Avignon, France, (2) Laboratoire des Sciences du Climat et de l'Environnement, Gif sur Yvette, France, (3) Noveltis, France, (4) ESA/ESTEC, the Netherlands,

Medium spatial resolution (MSR) sensors provide observations over land surfaces at a daily frequency and spatial resolution in between 250m and few kilometres. Such a spatial resolution poses problems for regional earth surface studies in which the typical size of landscape patches are smaller than the sensor resolution. High spatial resolution (HSR) sensors (few meters to 50m) should better suit the requirements when their revisit frequency will be high enough as in the case of the future Venμs and Sentinel 2 missions. However, the benefit of such missions should be quantified more precisely because they will require very demanding ground segments as compared to those of current medium resolution sensors. This is the main objective of the CAMELIA project funded by ESA, with emphasis on carbon cycle modelling at regional to global scales. For this purpose, we developed a methodology to generate daily HSR satellite-estimated biophysical fAPAR products, combining HSR and MSR images in a 2-step procedure. The first step consists in deriving a consistent daily interpolation of the available satellite-derived HSR products. This is achieved by inverting a parametric model of fAPAR dynamics. This model, numerically efficient and easily applicable to various types of geographical zones, traduces our current knowledge of the seasonal evolution of the main ecosystems. The second step of the procedure consists in correcting the simulated interpolated HSR fAPAR to environmental and

anthropic impacts on dynamics, by analysing the observed time course of the frequent satellite-derived MSR fAPAR products. The procedure has been applied over a region of 100 km^2 in France for which many SPOT and MERIS images were available in 2003. Results fully demonstrated the potentials of the proposed approach.