

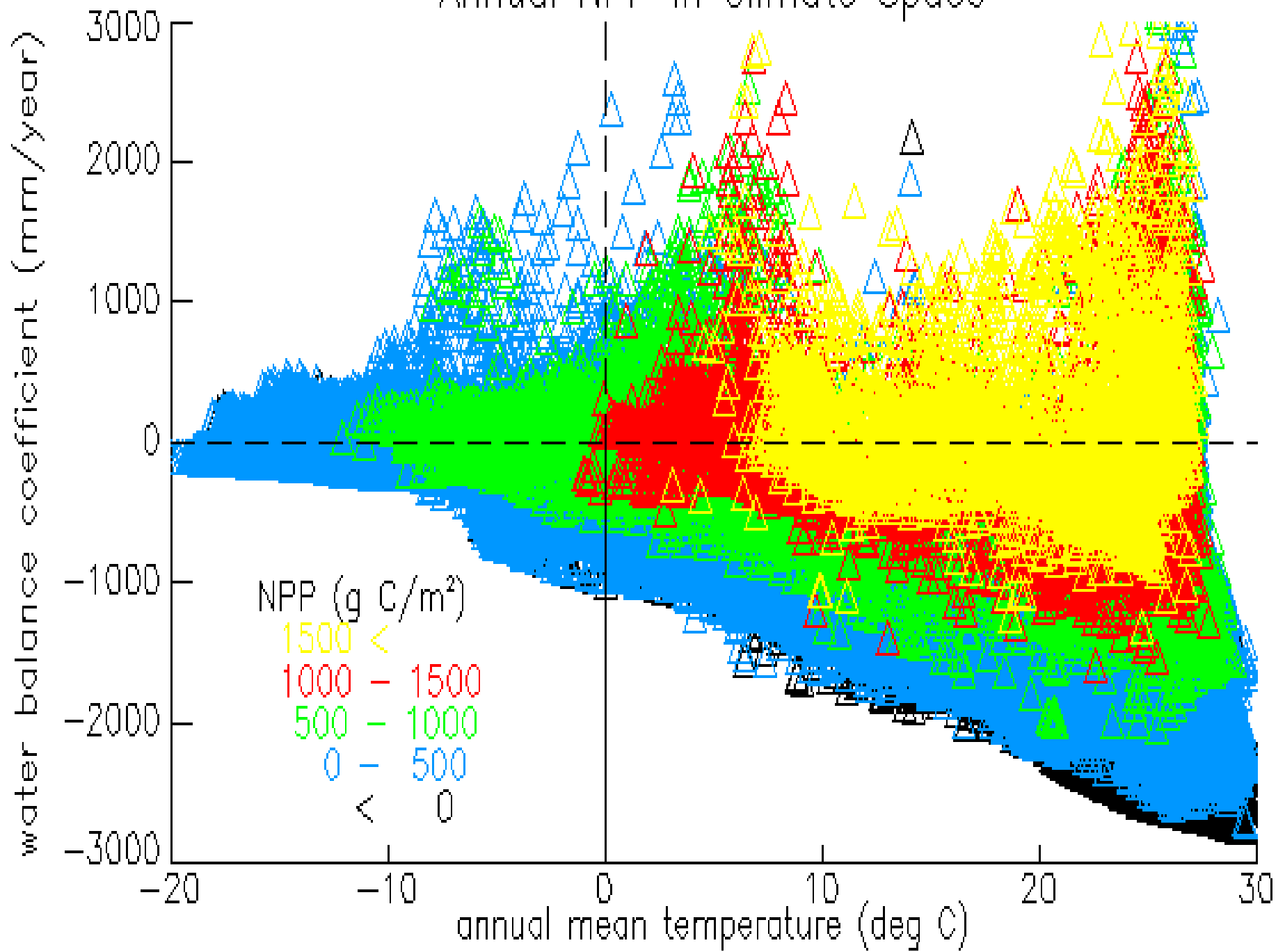


***A FIRST LOOK AT THE MODIS 8-DAY PSN
DATA FOR 2001***

MODIS Science Team Mtg
19 December 2001

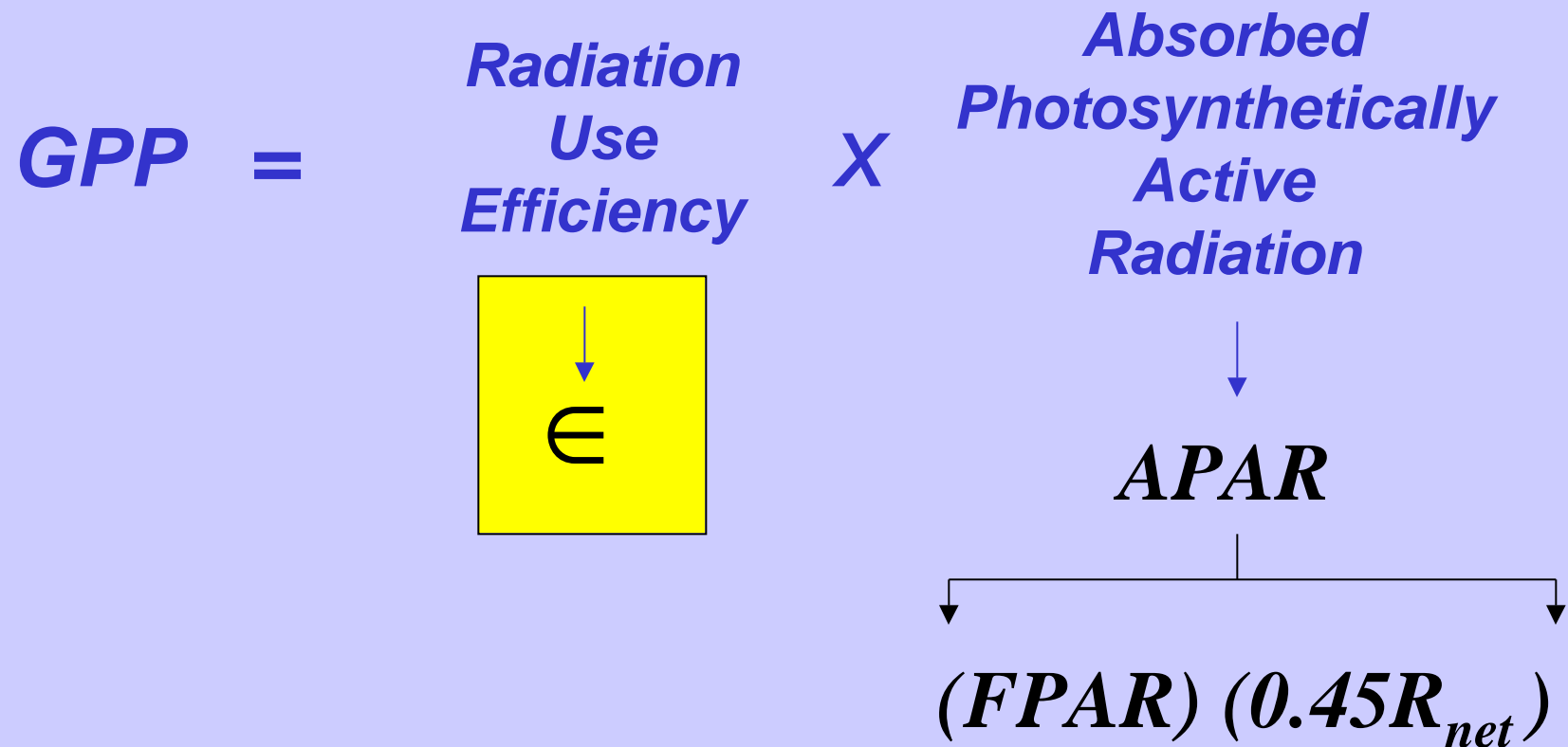
Steven W. Running
NTSG, Univ. of Montana

Annual NPP in Climate Space

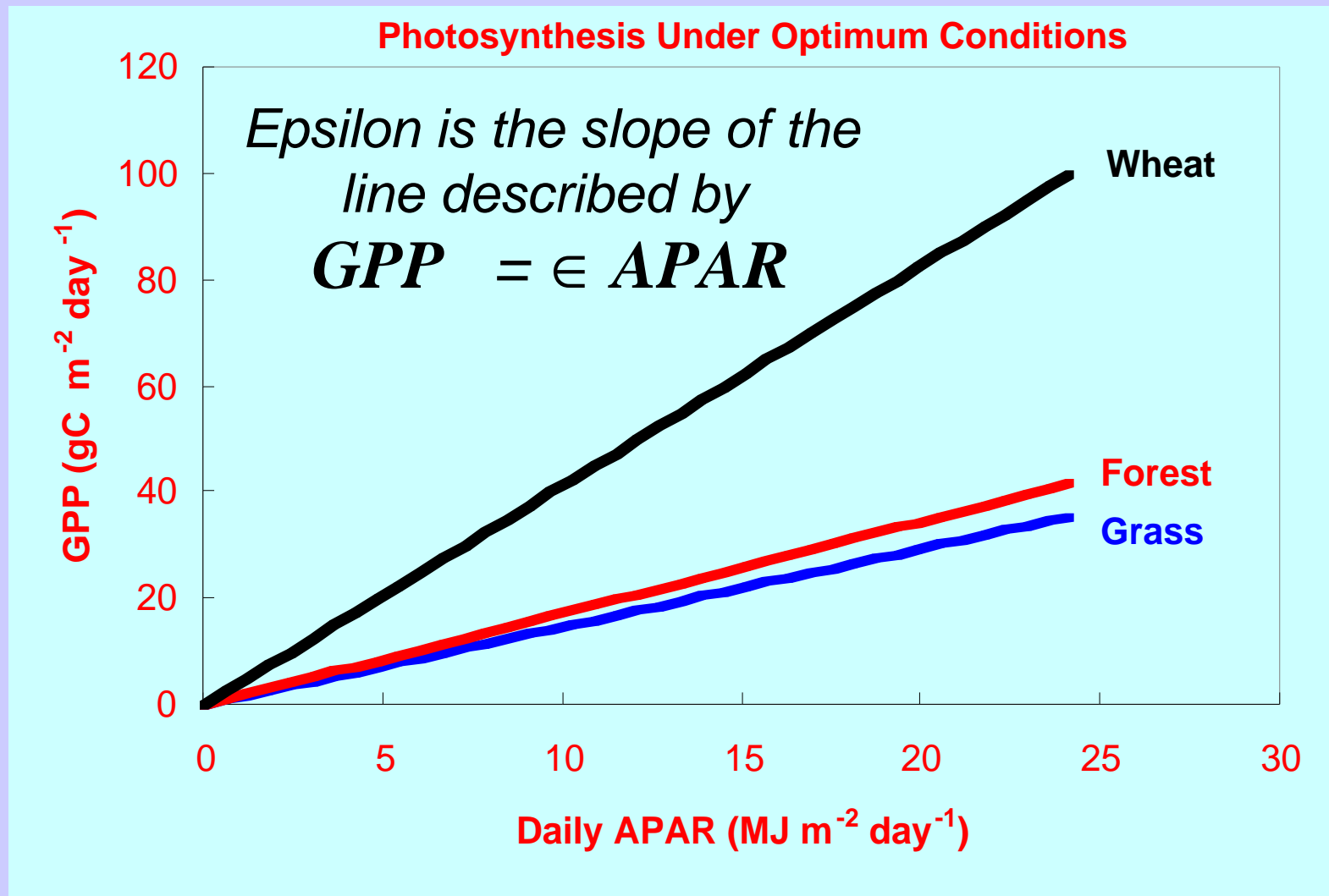


MODIS Photosynthesis

The Monteith equation....



MODIS Photosynthesis



Radiation Use Efficiency

*Maximum
Radiation Use Efficiency
under ideal conditions
for each biome*

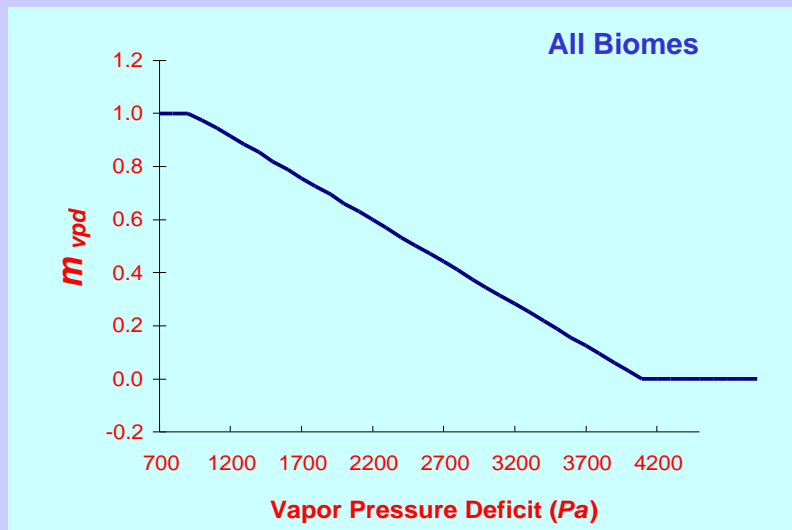
*Vapor Pressure Deficit
Coefficient*

$$\epsilon = \epsilon_{max} [m_{tmin}] [m_{vpd}]$$

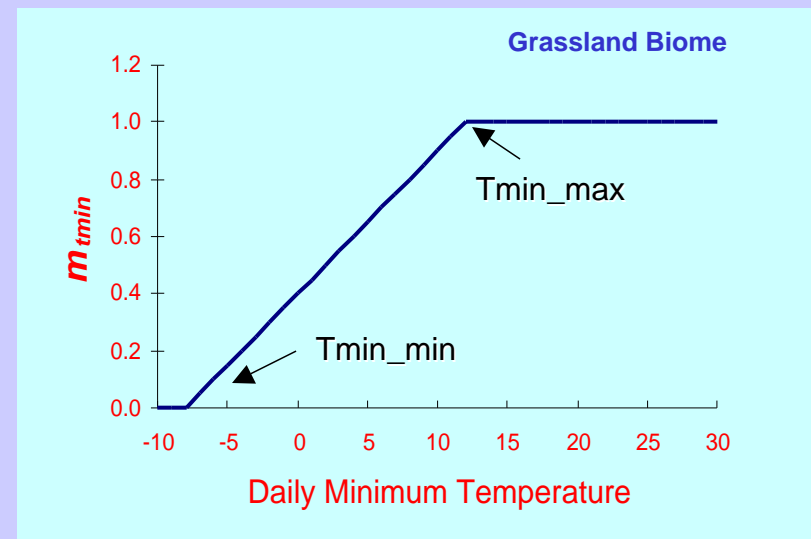
Temperature Coefficient for each biome

The coefficients are calculated from daily minimum and maximum air temperature which are therefore necessary inputs to the model

VPD & Tmin Coefficients



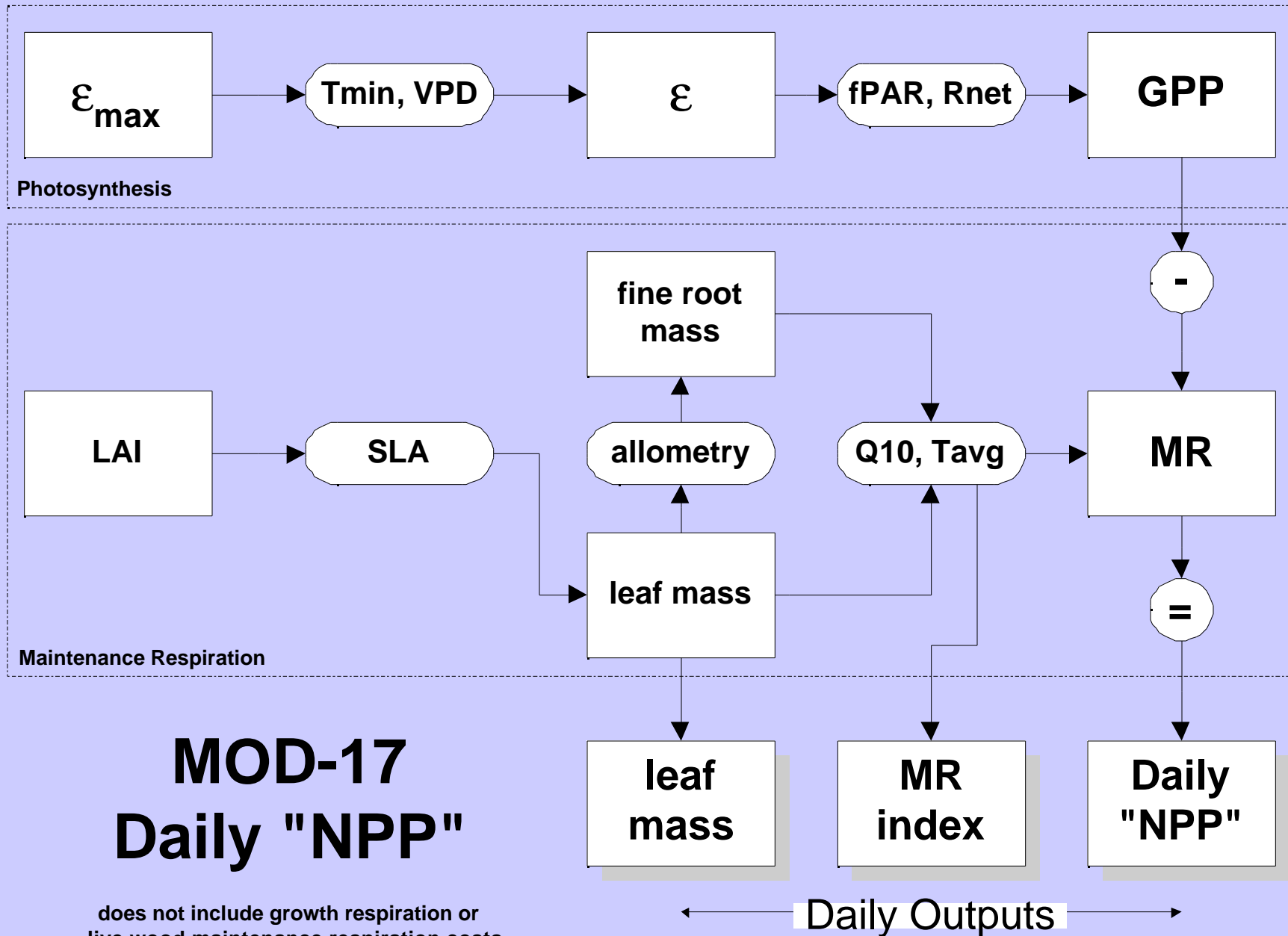
VPD



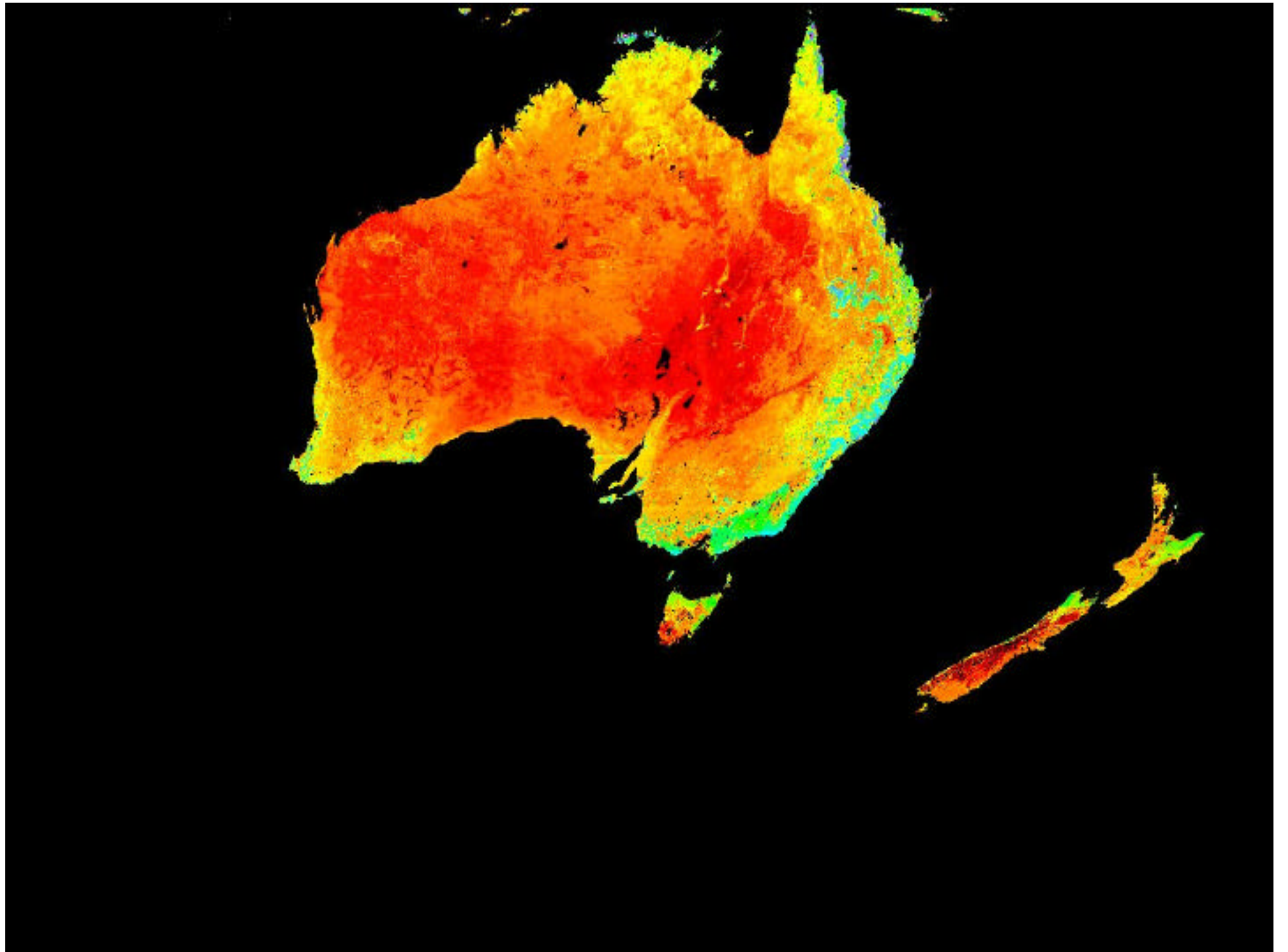
Tmin

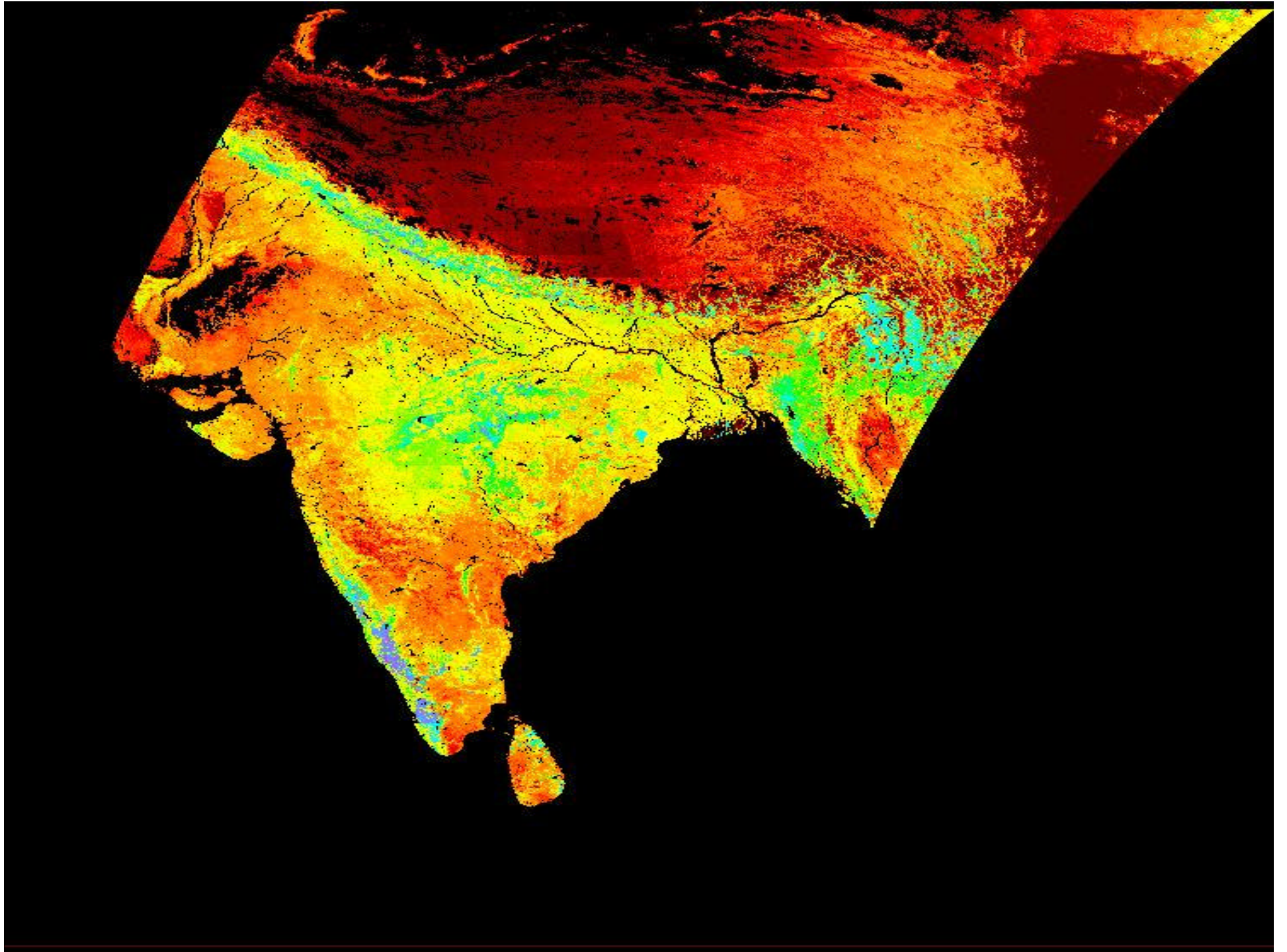
*Tmin_max & Tmin_min
are Tabulated by biome*

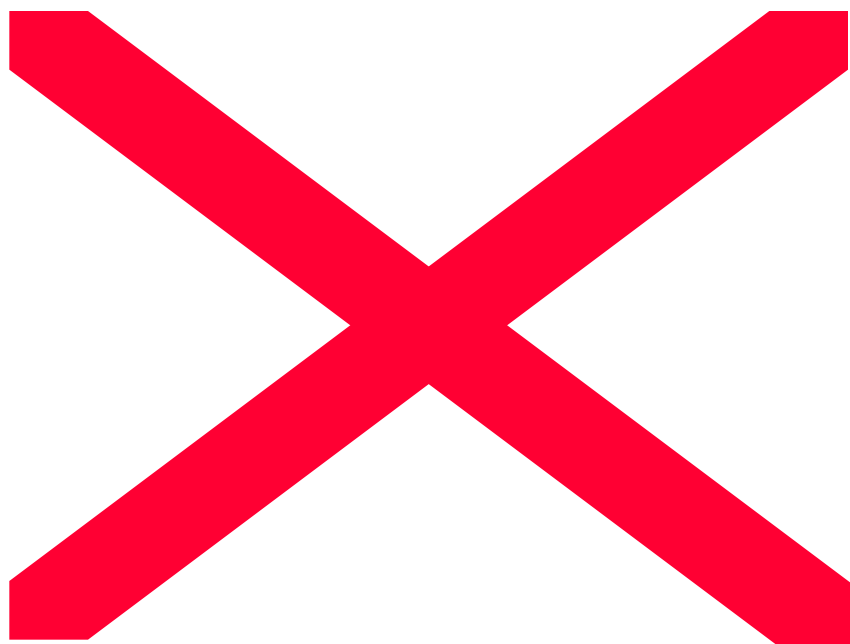
ESTIMATION OF DAILY NPP IN MOD17 ALGORITHM



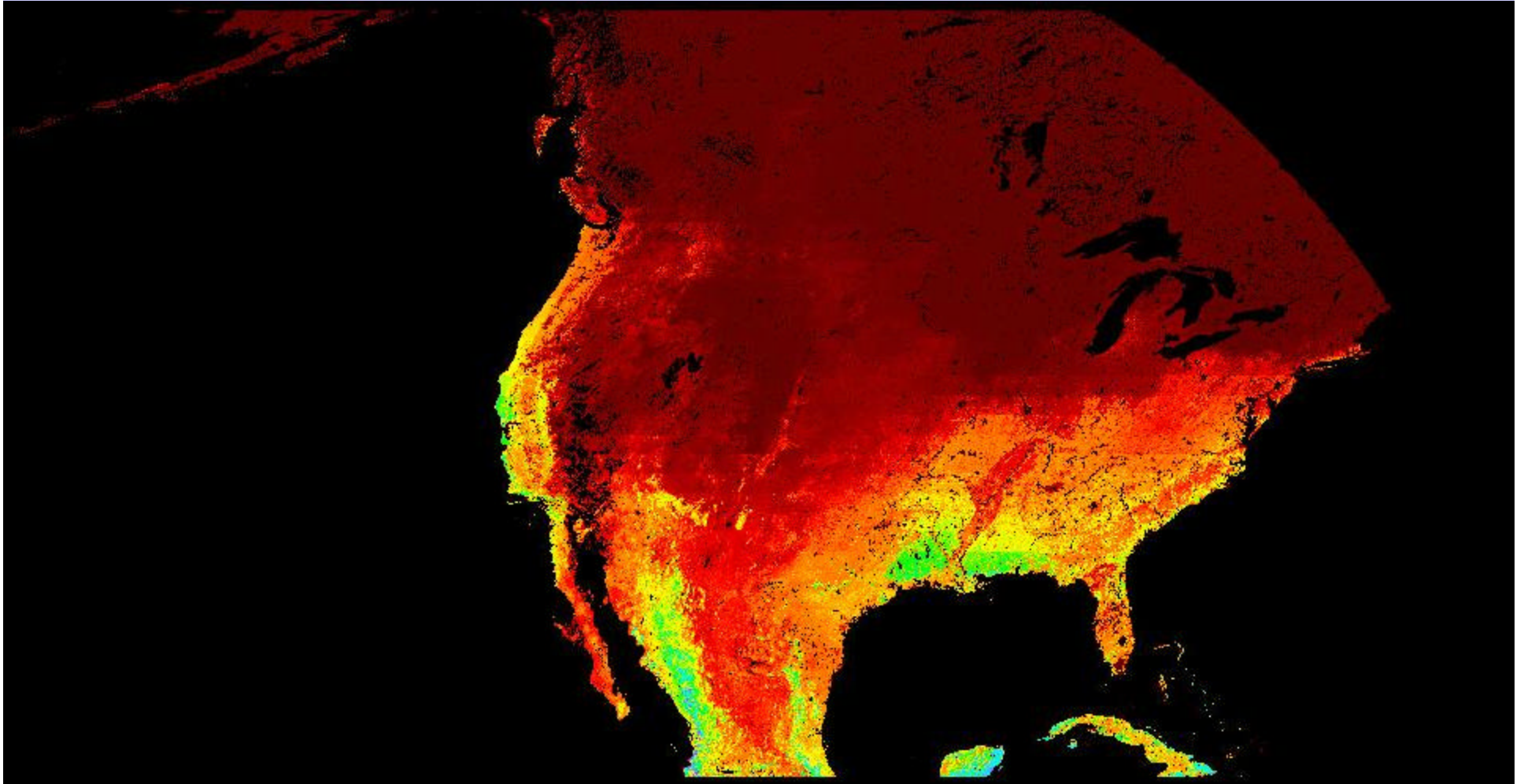
does not include growth respiration or live wood maintenance respiration costs



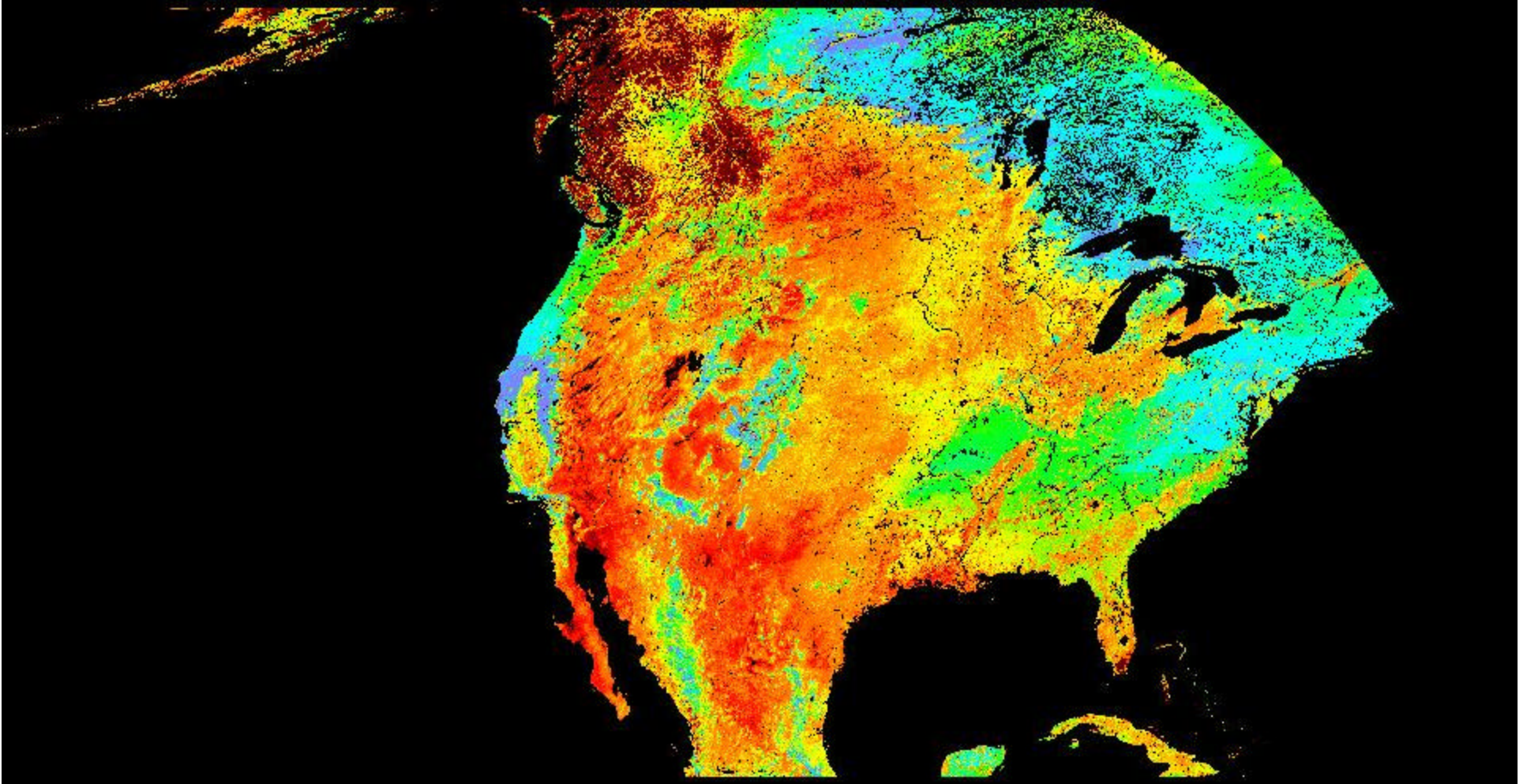




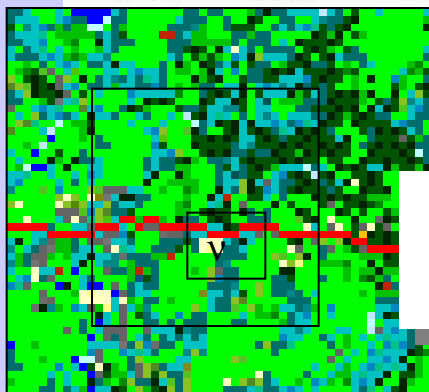
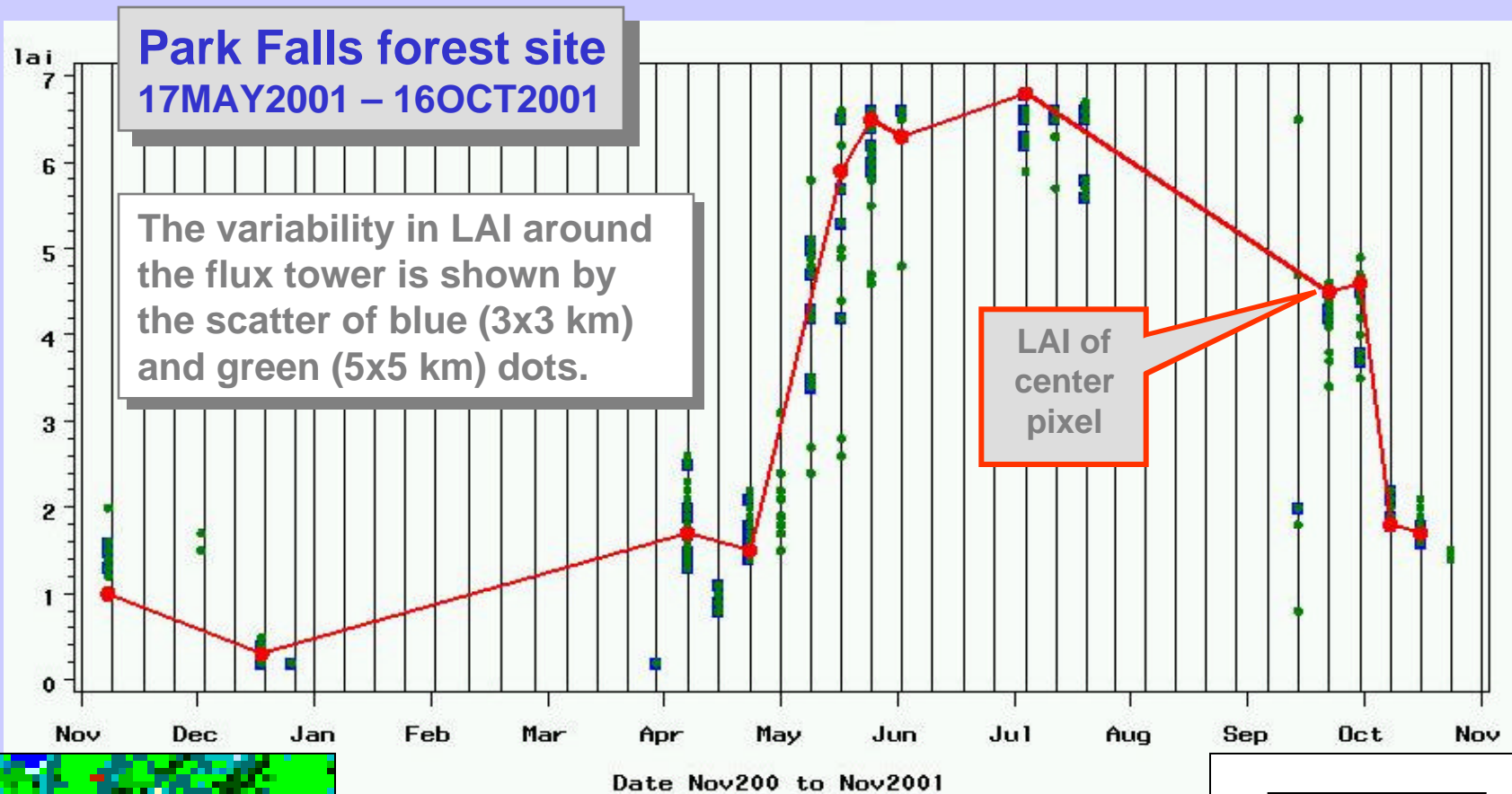
MODIS 8-day PSN Winter 2001



MODIS 8-DAY PSN SUMMER 2001

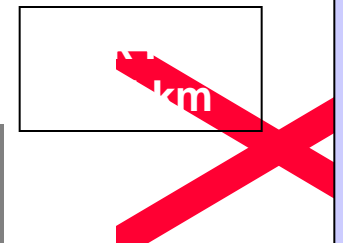


MODIS 8-day LAI Product

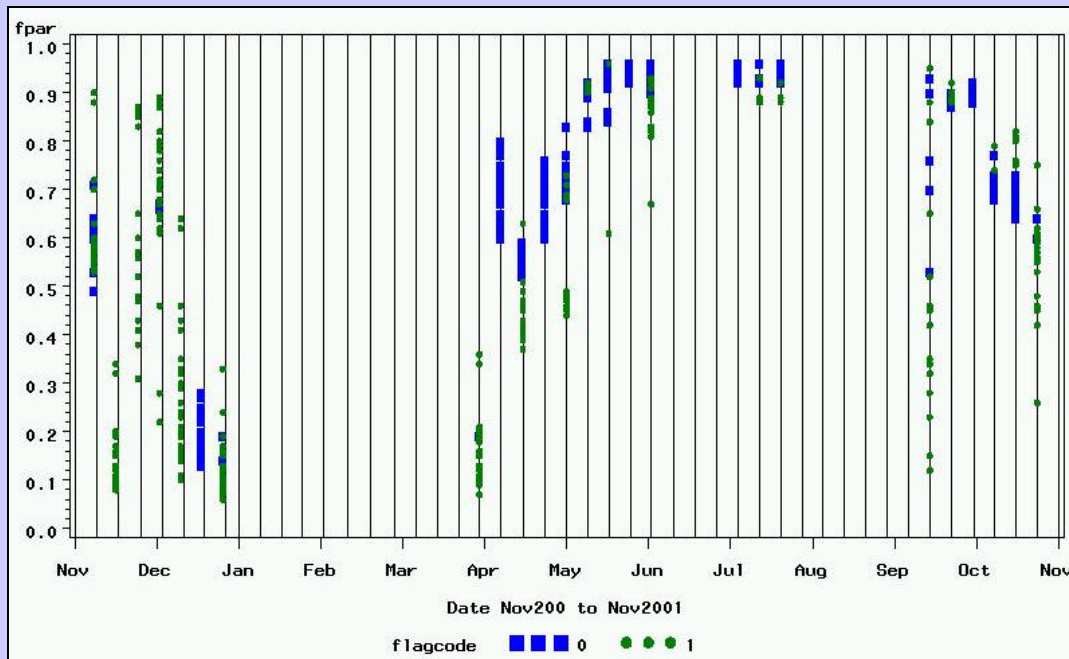


Land Cover
around tower
Davis et al.

LAI field data
Co-Kriged
Aug 2000
Gower et al.

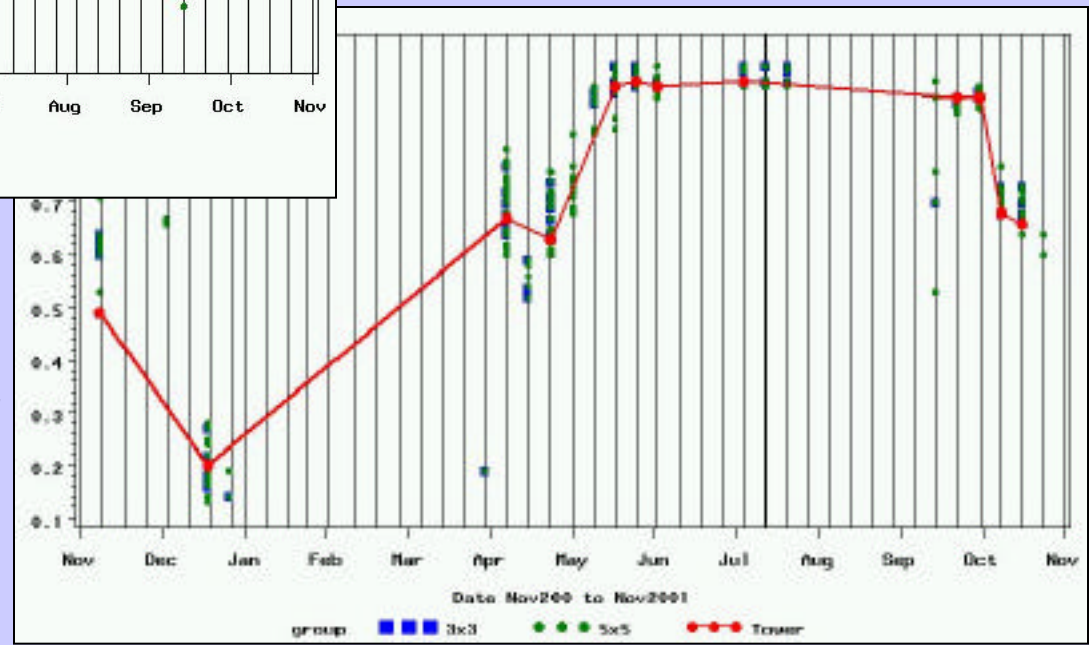


MODIS Cutouts: fPAR for Park Falls

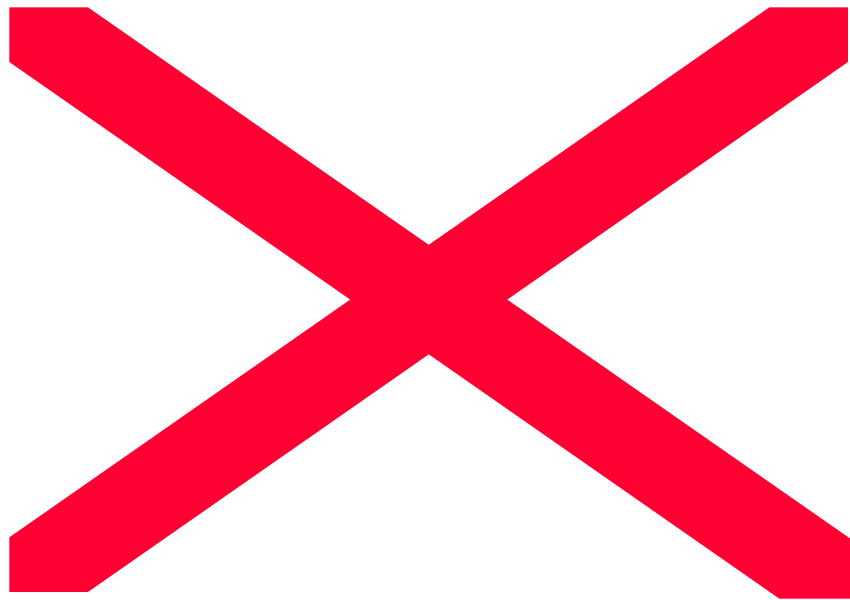


All pixels in 5x5 cutout
Green=rejected
Blue=accepted

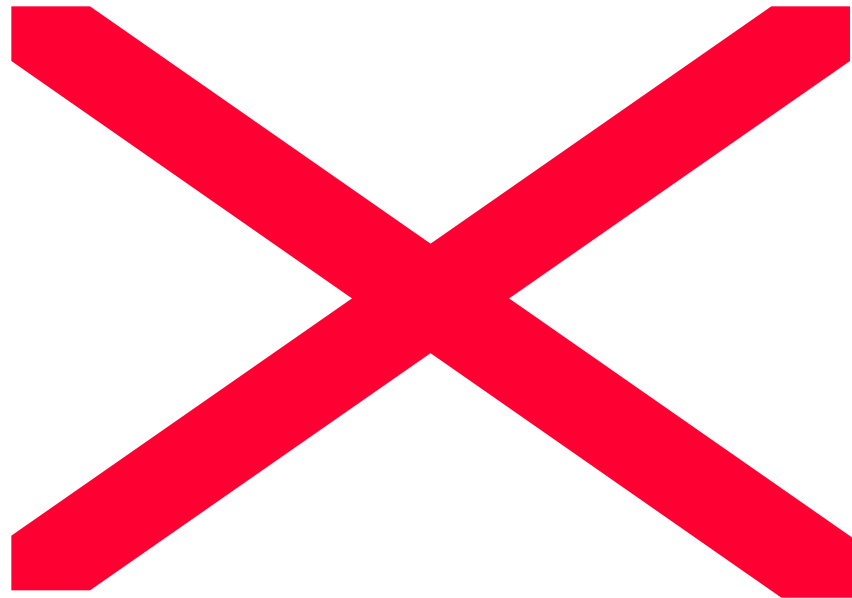
Accepted pixels



FLUXNET GRASSLAND SITES



FLUXNET FOREST SITES



SUMMARY

3 Sources of variability of MODIS PSN

1. Radiometric – MODIS FPAR and LAI
2. Meteorological – DAO IPAR and Temps
3. Ecological – MOD 17 representation of plant physiology

Each require a different mode of validation