



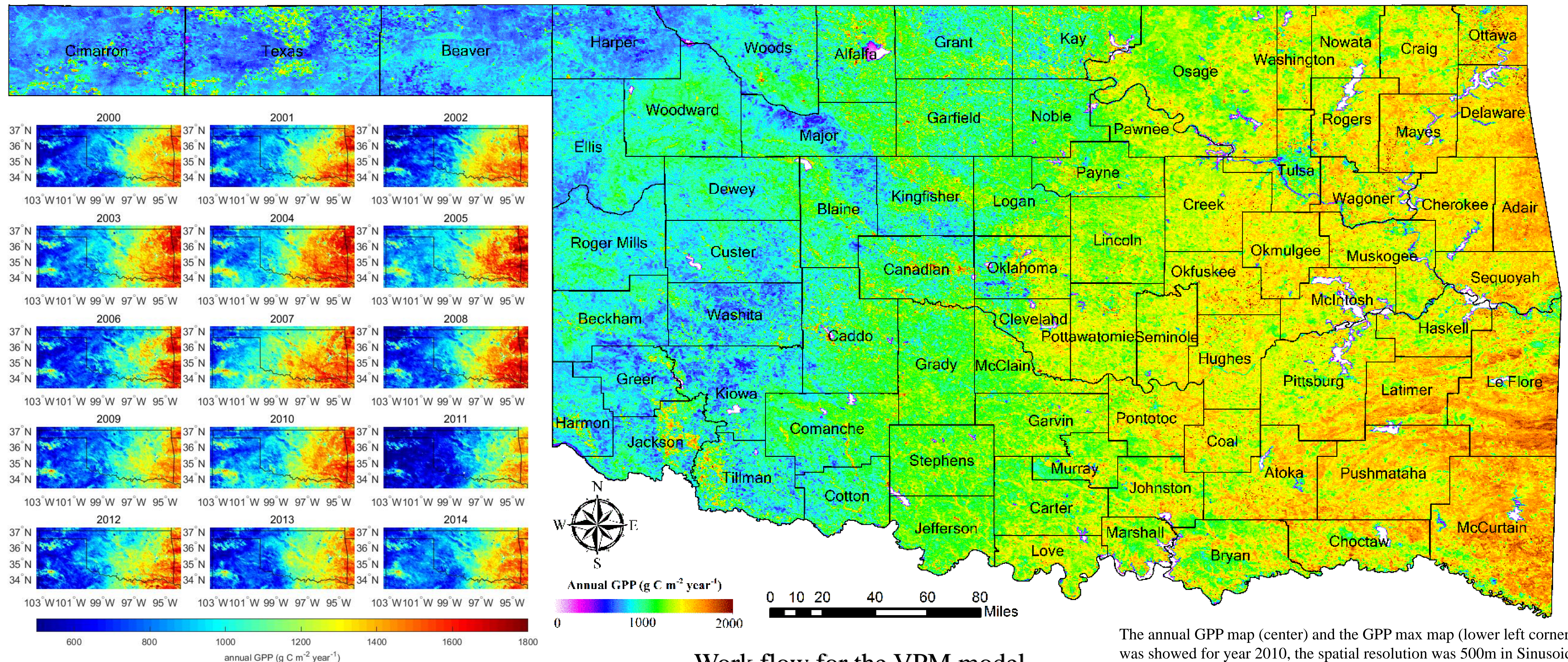
# Gross Primary Production in Oklahoma from 2000 to 2014



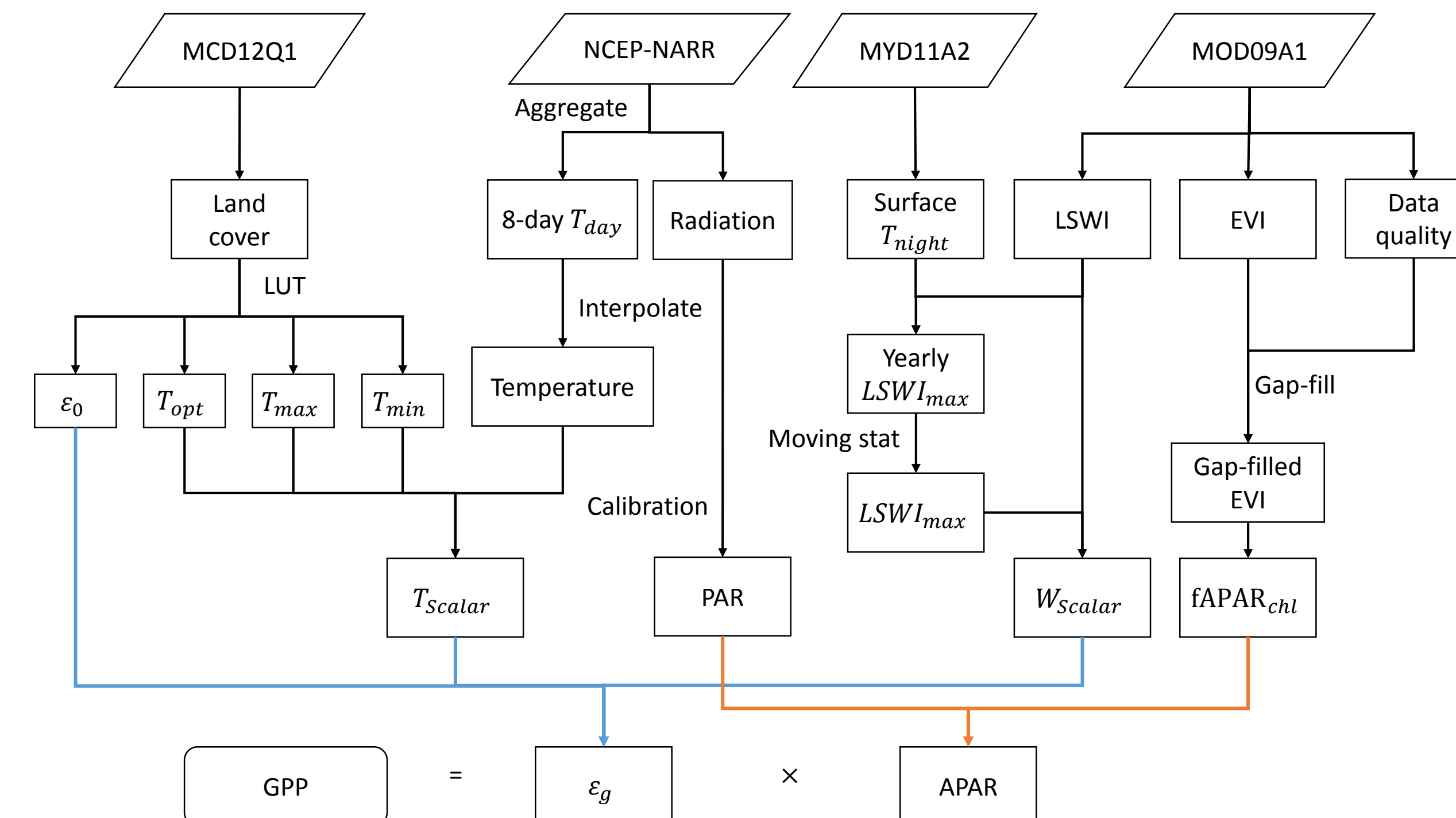
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**Abstract:** Carbon dioxide, one of the most important greenhouse gases (GHG), has continuously rise in atmosphere concentration ever since the beginning industrial revolution. Recent studies suggest the increasing CO<sub>2</sub> concentration has caused the global warming, increasing frequency of extreme climate events, and increasing plant growth. Gross primary production (GPP)--the carbon fixed by plant through photosynthesis--is one of the most important process and the major driver of the global carbon cycle. During the past decades, numerous approaches has been made to improve the predictability of the GPP through ground, atmospheric and space observations, but there still remains a large range of GPP estimates among different method. In this study, we present the most recent GPP estimates from the VPM model for Oklahoma, this GPP product has 500m spatial resolution and 8-day temporal resolution. It will be beneficial to understand the climate change impact on terrestrial carbon cycling and provide valuable information for decision makers.



## Work flow for the VPM model



The annual GPP map (center) and the GPP max map (lower left corner) was showed for year 2010, the spatial resolution was 500m in Sinusoidal projection, the climate data were from NCEP-NARR dataset and spatially interpolated into 500m using the method proposed by (Zhao et al 2005). The Vegetation Photosynthesis Model was developed by (Xiao et al, 2004a,b).

Xiao, X. et al. (2004a). Satellite-based modeling of gross primary production in an evergreen needleleaf forest. *Remote Sensing of Environment*, 89, 519-534  
Xiao, X. et al. (2004b). Modeling gross primary production of temperate deciduous broadleaf forest using satellite images and climate data. *Remote Sensing of Environment*, 91, 256-270  
Zhao, M., Heinsch, F.A., Nemani, R.R., & Running, S.W. (2005). Improvements of the MODIS terrestrial gross and net primary production global data set. *Remote Sensing of Environment*, 95, 164-176

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