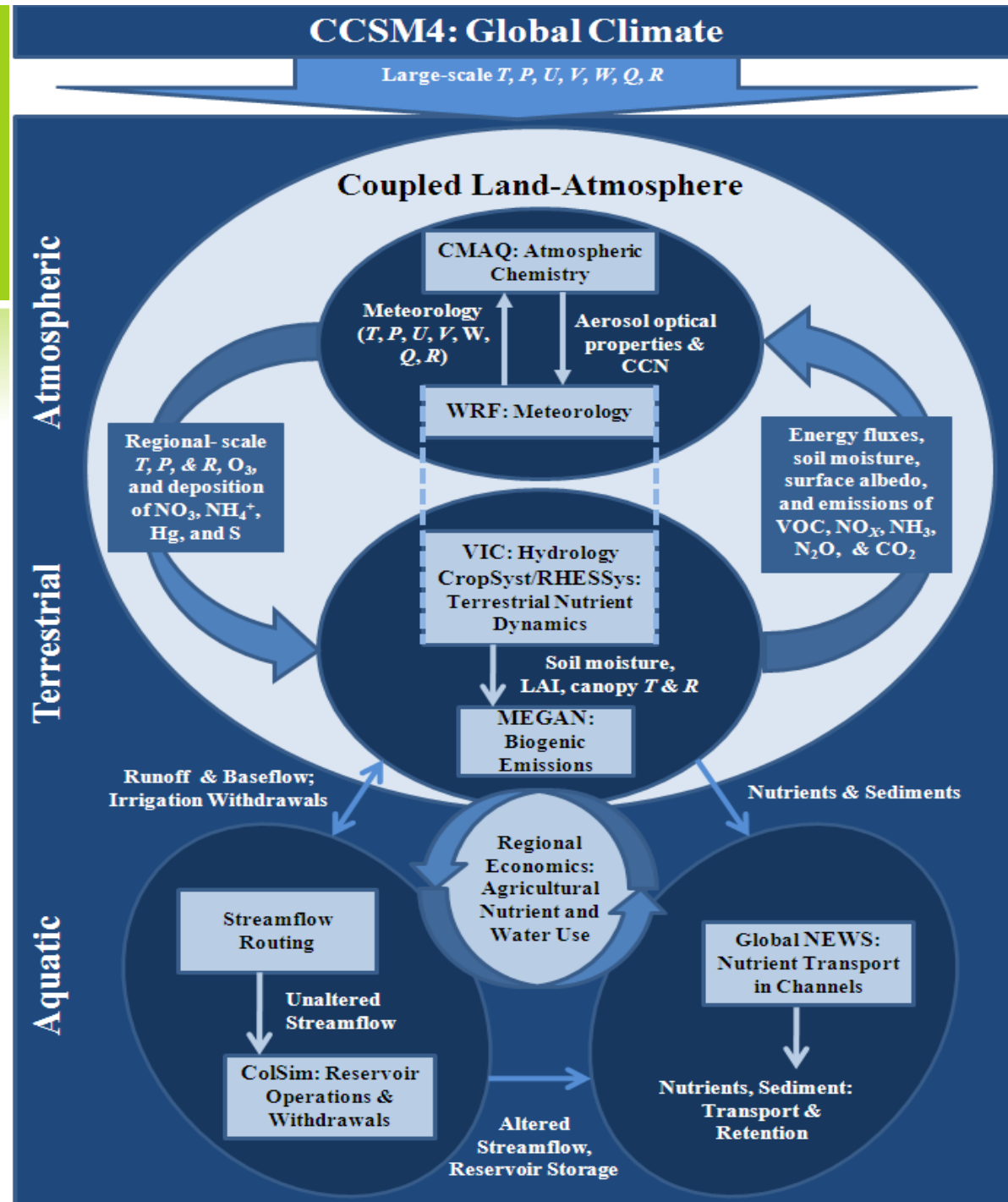


The background of the slide is composed of several rectangular blocks of color. On the left side, there is a tall, vertical yellow rectangle. Below this, there is a horizontal green rectangle that spans the width of the slide. At the bottom of the slide, there is a thin, light green horizontal bar.

# MODEL INTEGRATION VIA THE CESM FLUX COUPLER AND MODEL DOMAINS

February 2013, BioEarth All-Hand Meeting

# BIOEARTH



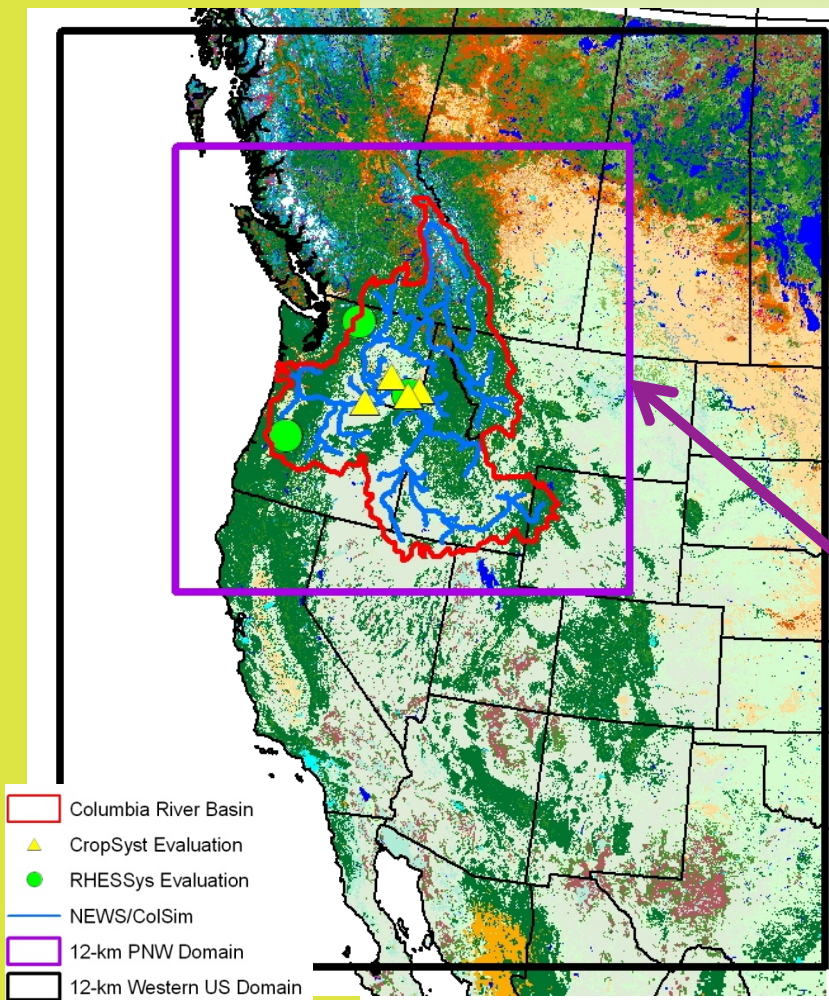
# SELECTVE DOMAINS

## Western US Domain:

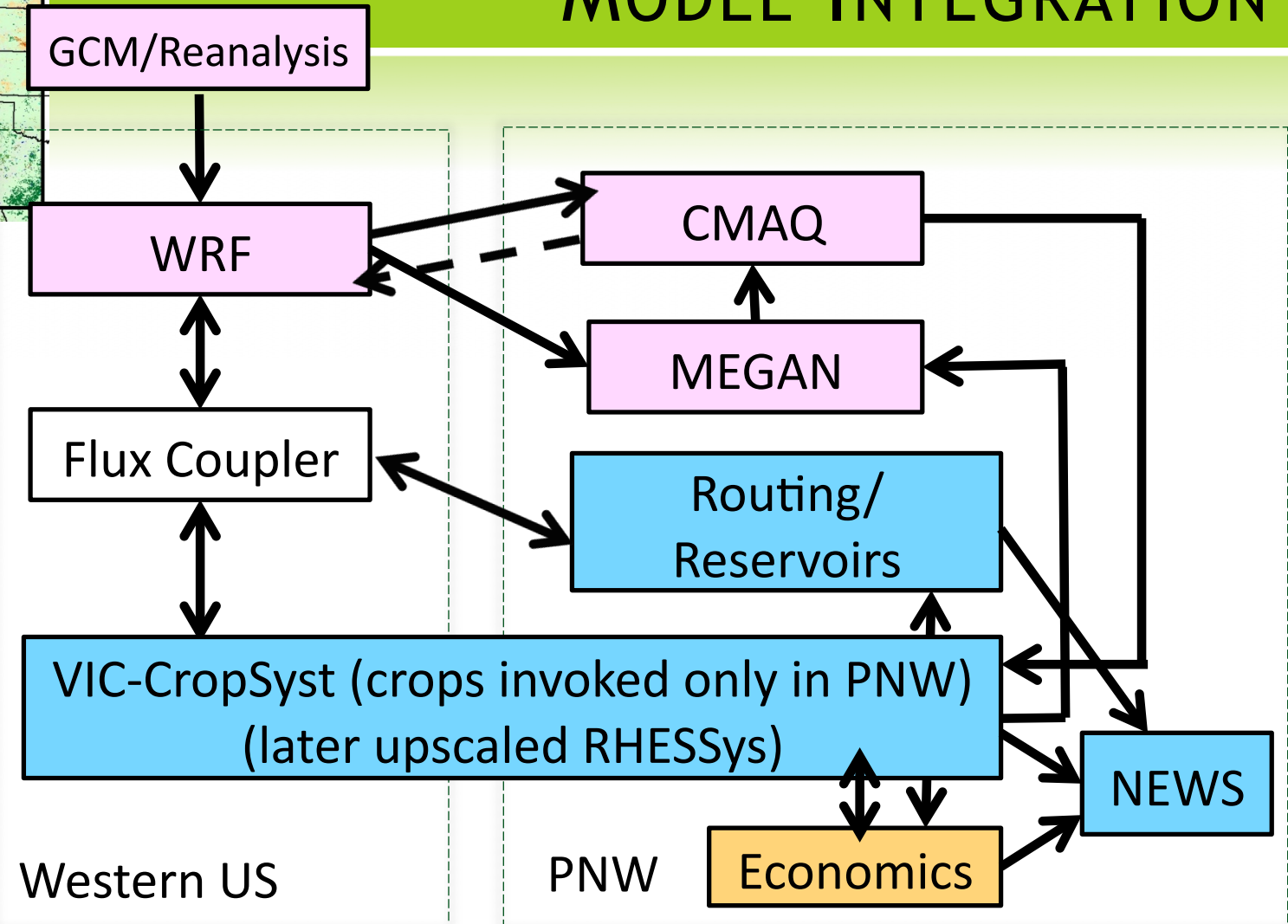
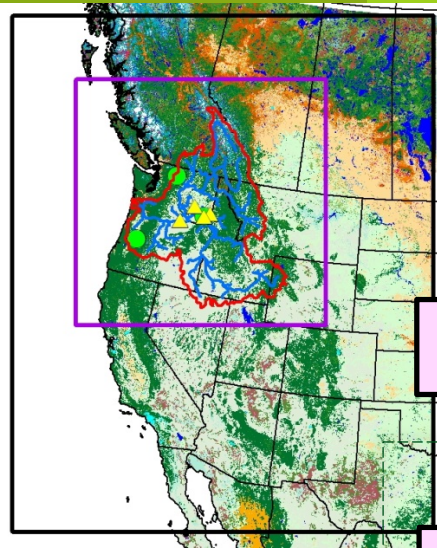
- 233 x 285 12 km x 12 km cells
- All WRF(-NOAH) and WRF-VIC runs
- Including the southeastern US allows for more comprehensive ENSO analysis
- Offline CMAQ simulations for a few weekly periods and possibly a few years

## PNW Domain

- Subset of 12 km x 12 km cells
- Coupled model simulations
- Long-term (~30 years) offline simulations



# FULLY-COUPLED BIOEARTH: SELECTIVE DOMAINS AND MODEL INTEGRATION






# YEAR 3 MILESTONES

## (PROJECT PERIOD 4/1/2011 - 3/31/2016)

- ◎ WRF-(VIC-CropSyst) using CESM flux coupler (by end of 2013)
  - ◎ Testing of WRF-VIC over western US domain using older VIC version – spring 2013 (PNNL)
  - ◎ Updating WRF-VIC using new VIC and testing over western US – spring and summer 2013 (UW/PNNL)
  - ◎ Completion of VIC-CropSyst coupling – spring 2013 (WSU)
  - ◎ Calibration of new VIC over western us with focused calibration of VIC-CropSyst over PNW using NLDAS2 land cover– spring and summer 2013 (WSU)
  - ◎ Incorporation of VIC-CropSyst via flux coupling and testing – summer and fall 2013 (WSU)
- ◎ WRF-(CMAQ-MEGAN)-(VIC-CropSyst)
  - ◎ Incorporate MEGAN online –summer 2013 (WSU)
  - ◎ Implement CMAQ (including SMOKE) – fall 2013 and spring 2014 (WSU)
  - ◎ Testing of fully-coupled model – summer 2014 (WSU)
  - ◎ For evaluation: nitrogen and oxygen isotopic analysis of historic NADP Samples – through fall 2013 (WSU)



# YEAR 3 MILESTONES

## (PROJECT PERIOD 4/1/2011 - 3/31/2016)

- ◎ RHESys upscaling
  - ◎ Forest ecosystem upscaling strategy – spring and summer 2013 (UCSB)
  - ◎ Grassland ecosystem upscaling strategy – spring through fall 2013 (WSU)
  - ◎ Incorporate subsurface thermodynamics and full energy balance snow model – summer through fall 2013 (WSU/UCSB)
  - ◎ Carbon stock initialization – spring and summer 2013 (WSU)
  - ◎ Implementation, calibration, and evaluation of regional-scale upscaled RHESys (fall 2013 through 2014) (WSU)
- ◎ Routing, reservoirs, and nutrient transport
  - ◎ Routing included into flux coupler – spring 2013 (UW)
  - ◎ Reservoir scheme developed and included – spring and fall 2013 (WSU)
  - ◎ Downscale, test, and apply NEWS-DIN at sub-basin scale, integrate an explicit wetland component into sub-basin NEWS-DIN model – through spring 2014 (WSU)





# YEAR 3 MILESTONES

## (PROJECT PERIOD 4/1/2011 - 3/31/2016)

### ⊙ Economics

- ⊙ Continue to fine tune the GAMS based non-spatially explicit partial equilibrium model.
  - Aggregation and disaggregation procedure for integration with biophysical models.
- ⊙ Settle on crop yield specific water and nitrogen parameters.
- ⊙ Identify data on future climate variability for stochastic model.
- ⊙ Identify how to test if simple Python based model works as a foundation for developing the agent based model.

### ⊙ Communications

- ⊙ Host 2 stakeholder workshops during year 3
- ⊙ Design electronic communication forum for interactions between scientists and stakeholders
- ⊙ Continue evaluation of stakeholder-researcher perceptions of model development process

# YEAR 3 MILESTONES

## (PROJECT PERIOD 4/1/2011 - 3/31/2016)

### ◎ Cyberinfrastructure

- ◎ Support for BioEarth Communications
  - Forum – largely abandoned due to lack of use
  - Teleconferencing – done
- ◎ Support for BioEarth Codes
  - Code acquisition: Next step is **for PIs to archive their codes as used in the underlying modeling experiment(s)**
  - Code storage via subversion: **Construct a training package by end of March and optionally conduct a *subversion* tutorial by May 2013**
  - Work-flow: **demonstrations and implementation spring/summer 2013**
- ◎ System support and maintenance
  - Aeolus connection to central HPC: **Report to the team the resolution of this issue and the plan and related timetable by the end of March.**
  - Aeolus upgrades: **Funds and specifications/requirements are being sorted out and the upgrade should occur by fall of 2013.**