CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

Pre-Solicitation Workshop:

Wetlands Restoration Greenhouse Gas Reduction Grant Program Solicitation

- **Please silence your cell phones, Thanks!**

Wetlands Restoration Greenhouse Gas Reduction Grant Program Pre-Solicitation Workshop

Facilitator:

Carol Smith

Manager, Office of Training and Development

California Department of Fish and Wildlife

WETLANDS RESTORATION GREENHOUSE GAS REDUCTION GRANT PROGRAM

Dan Yparraguirre

Deputy Director, Wildlife and Fisheries Division

California Department of Fish and Wildlife

- Welcome
- Purpose of this meeting: seek input
- Results of this meeting will be incorporated into the Solicitation

CONTEXT: AB 32, CAP & TRADE

Bailey Smith

Air Resources Engineer

Air Resources Board

Cap-and-Trade Auction Proceeds Investments Program Overview

September 11, 2014

California Environmental Protection Agency

Air Resources Board

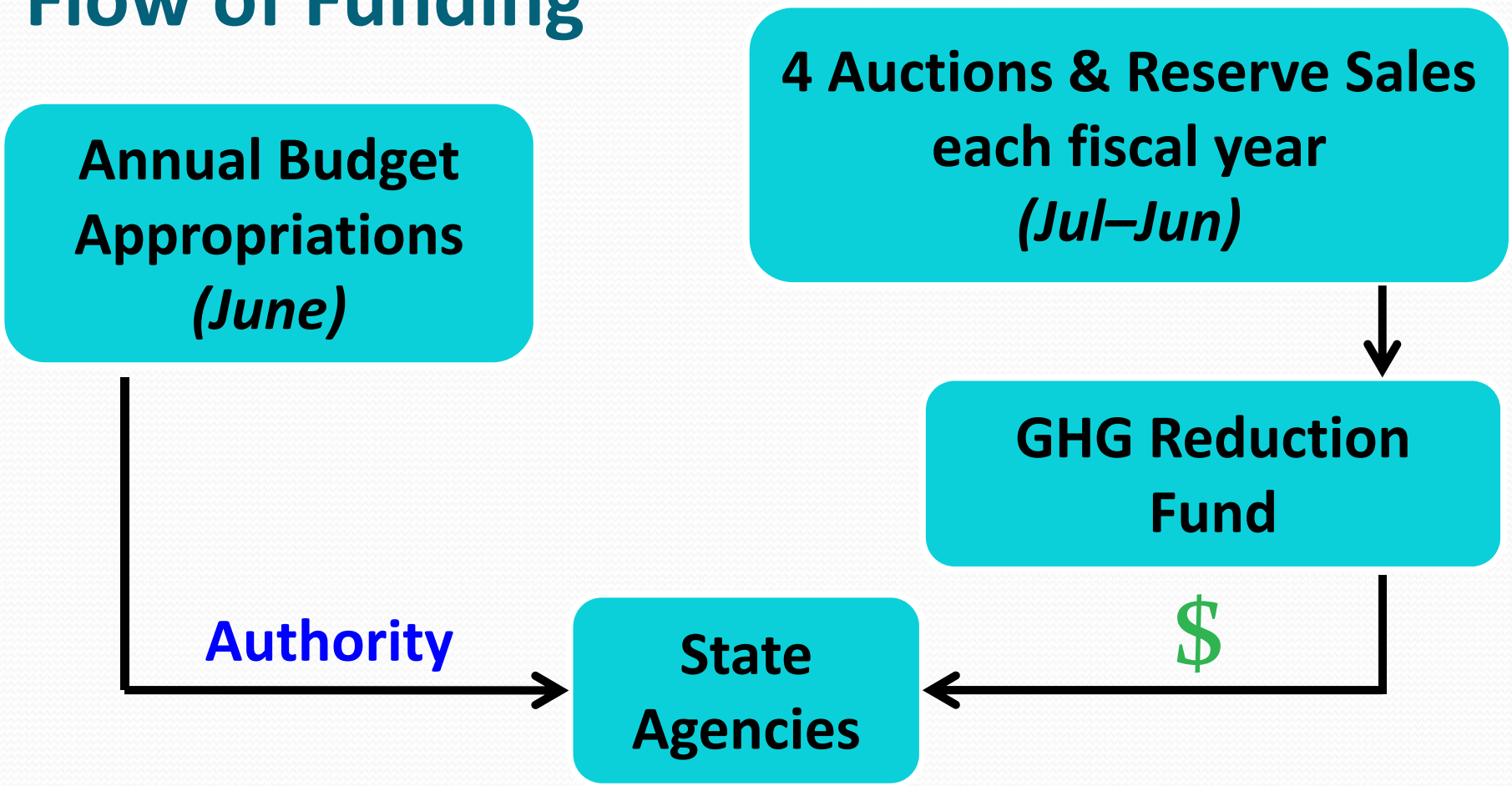
Cap-and-Trade Auction Proceeds

- Proceeds from State allowances issued under the Cap-and-Trade program.
- As of September 2014 auction $833M in proceeds.
- Investments of auction proceeds must further the purposes of AB 32.

Implementing Legislation

SB 1018 (2012)	• Established Greenhouse Gas Reduction Fund • Requires Expenditure Records
AB 1532 (Perez, 2012)	• 3-Year Investment Plan • Must further purposes of AB 32
SB 535 (DeLeón, 2012)	• Requires investments in disadvantaged communities
SB 862 (2014)	• ARB must develop funding guidelines • Disadvantaged community targets for some programs

Auction Proceeds: Flow of Funding



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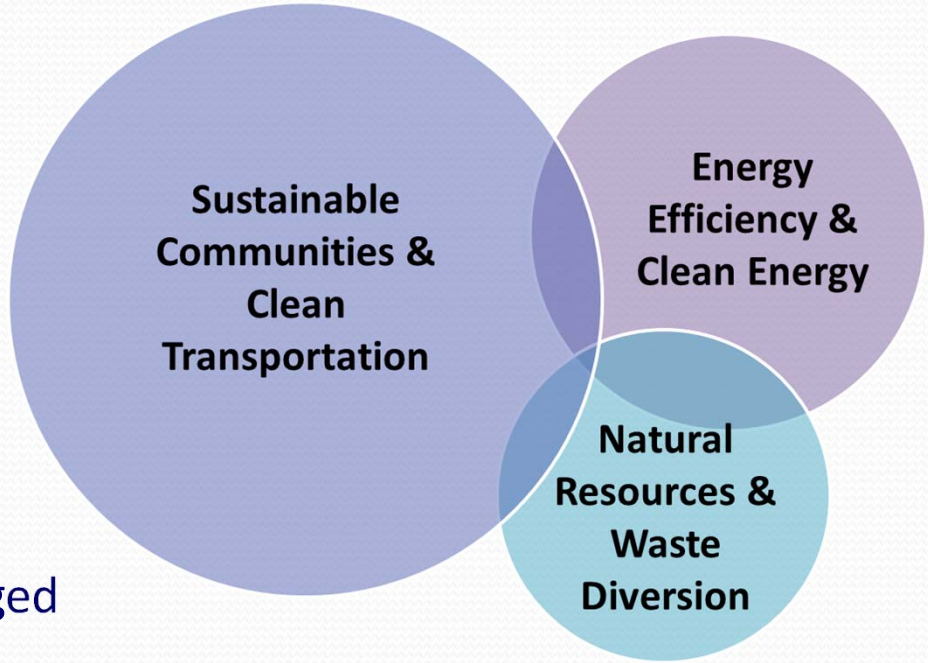
Auction Proceeds: Investment Plan

- Three-year investment plan completed in May 2013.
- Projects should:
  - Reduce GHG emissions
  - Further the purposes of AB 32
  - Provide benefits to disadvantaged communities
  - Invest in existing state programs.
- Supports research and development initiatives



FY 2014-15 Budget

- Sustainable Communities and Clean Transportation $630M
- Energy Efficiency and Clean Energy $110M
- Natural Resources and Waste Diversion $92M
  - Sequester carbon and protect natural resources

- *Restore and conserve wetlands and other natural lands to sequester carbon.*
- *Increase urban forests in disadvantaged communities*
- *Reduce fire risk and increase carbon sequestration in forests*
- *Expand infrastructure to divert organics and other wastes from landfills*

ARB Roles & Responsibilities

- Administer the Greenhouse Gas Reduction Fund
- Develop funding guidelines for agencies
  - Interim guidance: SB 1018 and SB 535
  - Methodologies for quantifying GHG reductions and co-benefits
  - Recordkeeping: Metrics to document benefits
  - Reporting
- Consult and implement some transportation investments
- Hold a public hearing on the triennial Investment Plan

Developing Guidance in Stages

- Agencies need guidance quickly to begin implementing programs and withdrawing moneys from the GGRF
- ARB is developing guidance in stages:
  - SB 1018 Expenditure Record Guidance (Aug 2014)
  - SB 535 Interim Guidance for Investments to Benefit Disadvantaged Communities (Sep 2014)
  - Full Funding Guidelines (mid-2015)

More Information

- Contact Bailey Smith, ARB (916) 324-5930 for questions
- Visit www.arb.ca.gov/auctionproceeds

WETLANDS RESTORATION GREENHOUSE GAS REDUCTION PROGRAM SOLICITATION

Helen Birss

Branch Chief, Habitat Conservation Planning Branch

California Department of Fish and Wildlife

WETLANDS RESTORATION GREENHOUSE GAS REDUCTION SOLICITATION OVERVIEW

- **Award information**
  - $21,618,000 available FY 14-15
  - $20,761,000 available in FY 15-16
- **Priorities of this Solicitation**
  - Reduce Greenhouse Gasses
  - Restore Wetlands
  - Provides ecological benefits
  - Located in/relevant to the coastal/Delta system or the mountain meadow system
  - Be a good investment of State funds
- **Focal Areas**
  - Delta and coastal wetlands
  - Mountain meadows

WETLANDS RESTORATION GREENHOUSE GAS REDUCTION SOLICITATION OVERVIEW-CONTINUED

- **Eligibility**
  - Public agencies,
  - Indian tribes,
  - Nonprofit entities

- **Proposal Review and selection process** – under development
  - Review process
  - Evaluation criteria

- **Anticipated Timeline**
  - Tentative release in Fall 2014
  - Review proposals in early 2015
  - Award contracts in mid-2015

GREENHOUSE GAS EMISSIONS FROM RESTORED FRESHWATER MARSHES IN THE SACRAMENTO SAN-JOAQUIN DELTA, CALIFORNIA

Bryan Brock

Senior Engineer, and Chief of the West Delta Program

Department of Water Resources

Greenhouse gas emissions from restored freshwater marshes in the Sacramento San-Joaquin Delta, California

Bryan Brock, P.E.
Department of Water Resources
Slides Prepared by
Sara Knox, Cove Sturtevant, Frank Anderson, Jaclyn Hatala, Joe Verfaillie, Dennis Baldocchi, Steve Deverel, and Patricia Yoshino Oikawa

University of California, Berkeley
U.S. Geological Survey

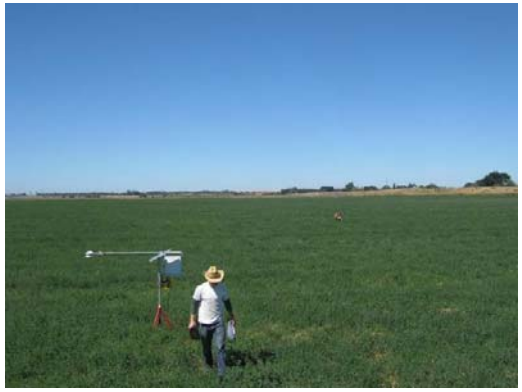
2014 ESA Annual Meeting
Sacramento, CA

The Sacramento-San Joaquin Delta

Map: CA Department of Water Resources

Six Contrasting Study Sites

Drained Peatland Pasture, BAU



Alfalfa, BAU

Corn, BAU

Newly Restored, Wetland

17+ Year Old, Restored Wetland

Seasonally-Flooded, Rice, Agricultural Option

The Delta is a Vulnerable Peatland Ecosystem via Drainage and Severe Land Subsidence

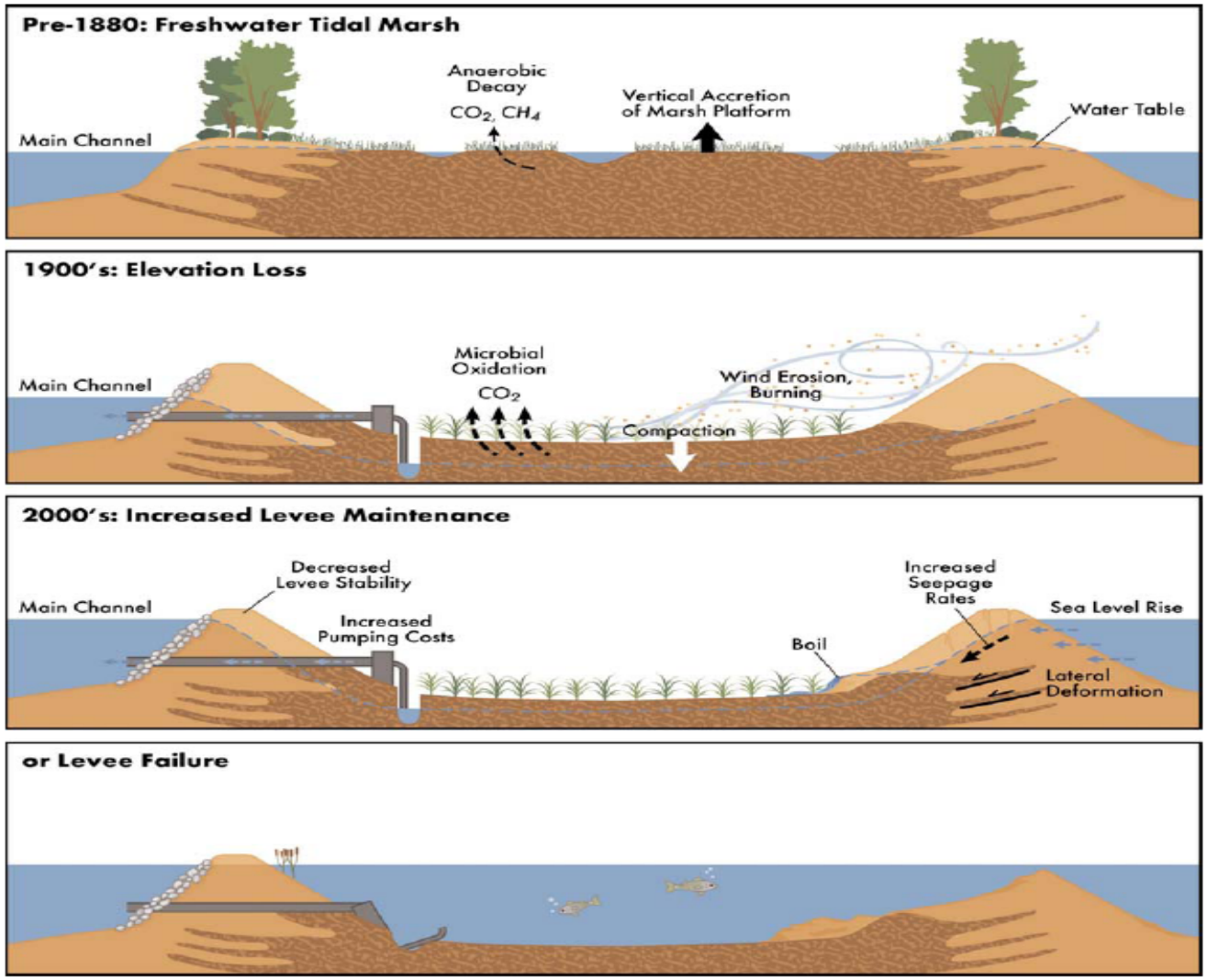
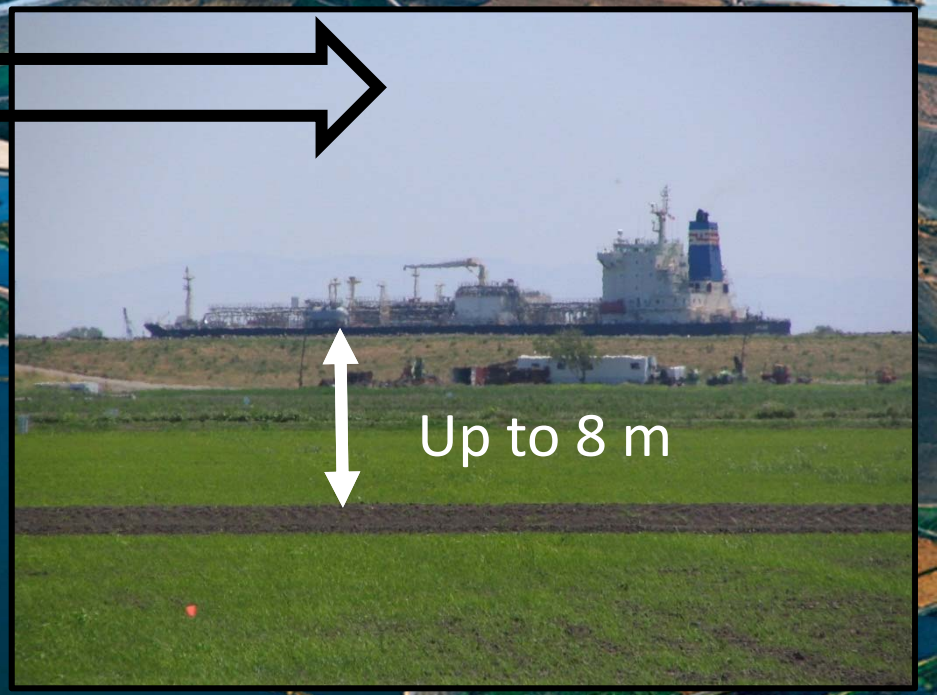


Figure 2. Conceptual diagram illustrating evolution of Delta islands due to levee construction and island subsidence. Modified from Ingebritsen et al. (2000).

Carbon loss and subsidence



San Joaquin Delta Land Reclamation Photographs, ca. 1904-1907, Bancroft Library Online Archive of California

Carbon cycling in drained peatlands vs. restored wetlands

Drained

CO_2 CO_2 CO_2 CH_4 O_2 O_2

Net CO_2 source = Carbon loss and subsidence & large GHG source

Restored wetland

CO_2 CO_2 CO_2 CH_4 O_2

Net CO_2 sink = Subsidence reversal but Enhanced CH_4 emissions

Implications for climate policy

Ecosystem Marketplace
A FOREST TRENDS INITIATIVE

NEWS ARTICLES

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Wetlands Carbon Credits Could Swim Into California Market

Author: Gloria Gonzalez

After overseeing the creation of a wetlands restoration p American Carbon Registry and partners are developing greenhouse gas emissions reductions from the restoratio wetlands and turn those into credits for both the voluntary

« Sewerage & Water Board of New Orleans Gains Rate Increase Approval

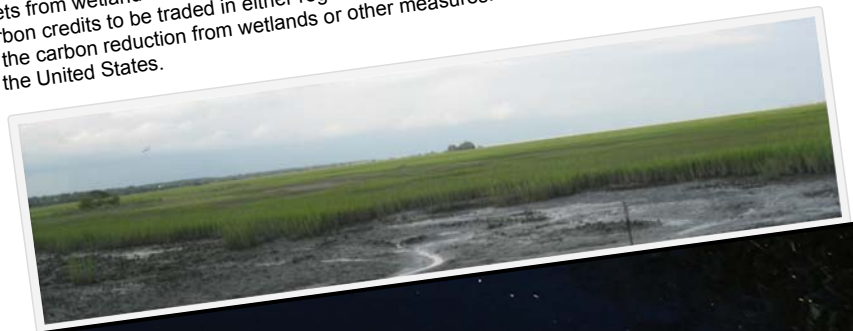
"Percent MHI" Indicator of Affordability of Residential Rates: Using the U.S. Census Bureau's Median Household Income Data »

Generating Carbon Credits from Wetlands

By Glenn Barnes, on January 22nd, 2013

Glenn Barnes is a senior project director at the Environmental Finance Center at the University of North Carolina. Glenn is the project manager of the ***Sustainable Finance for Wetland Programs project*** *funded by the U.S. Environmental Protection Agency.*

Carbon offsets from wetlands are now eligible to be traded in greenhouse gas markets in the United States. In order for carbon credits to be traded in either regulated or voluntary markets, there has to be an accepted protocol to measure the carbon reduction from wetlands or other measures. This past fall, two protocols were adopted, the first ever in the United States.

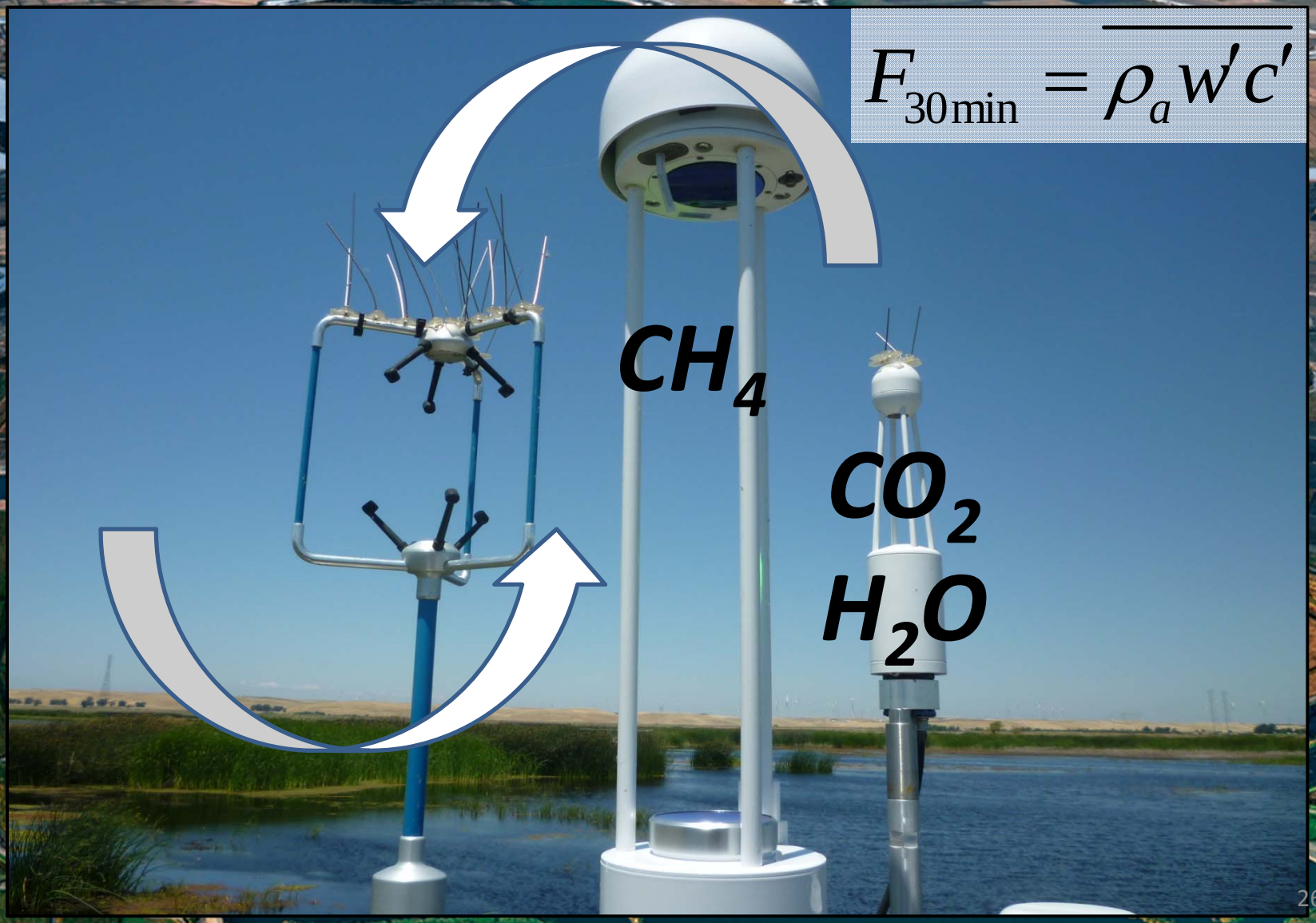


Field sites

Young wetland (2010) ~ 300 ac

Old wetland (1997) ~ 7 ac

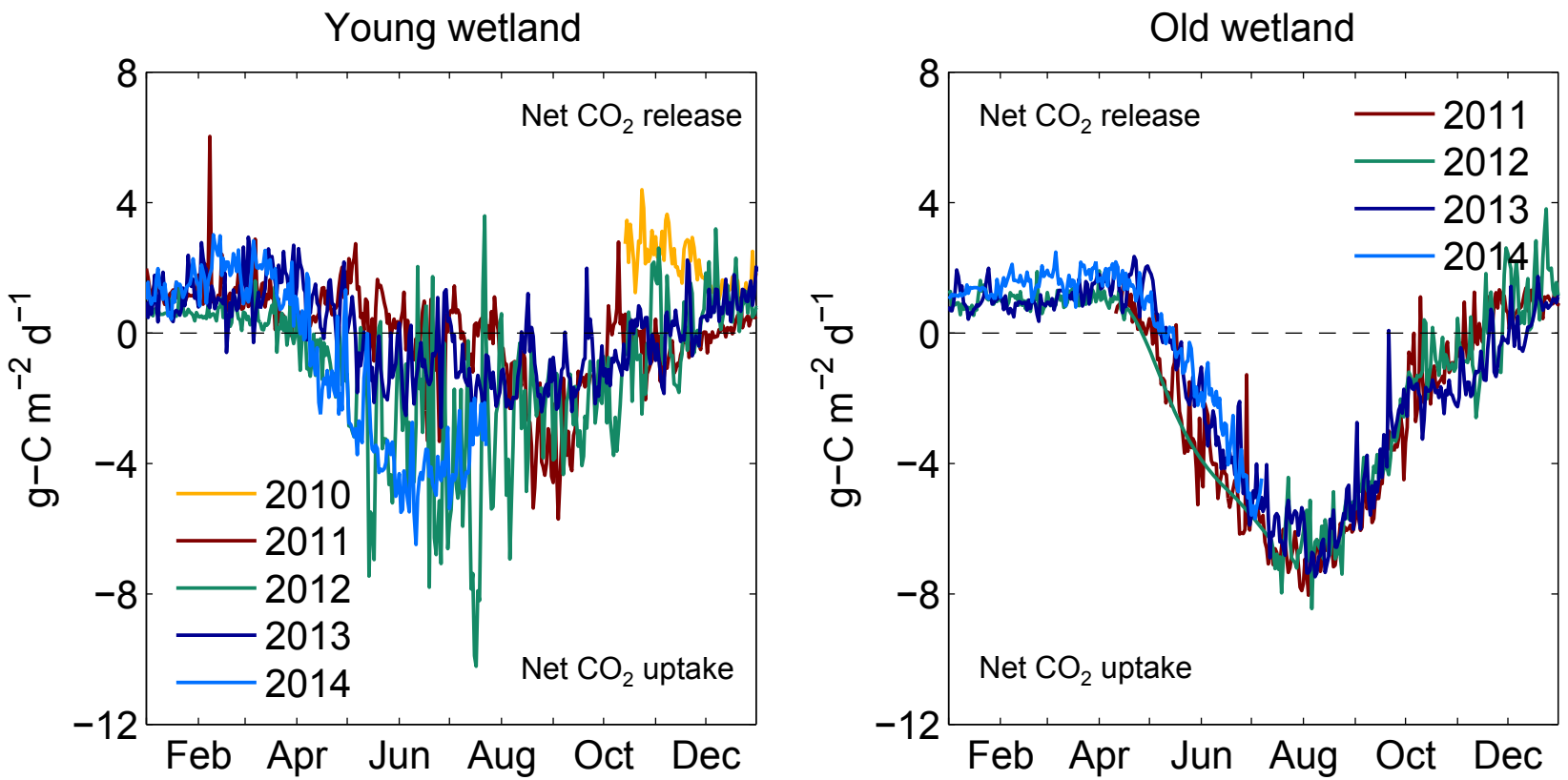
Eddy covariance method



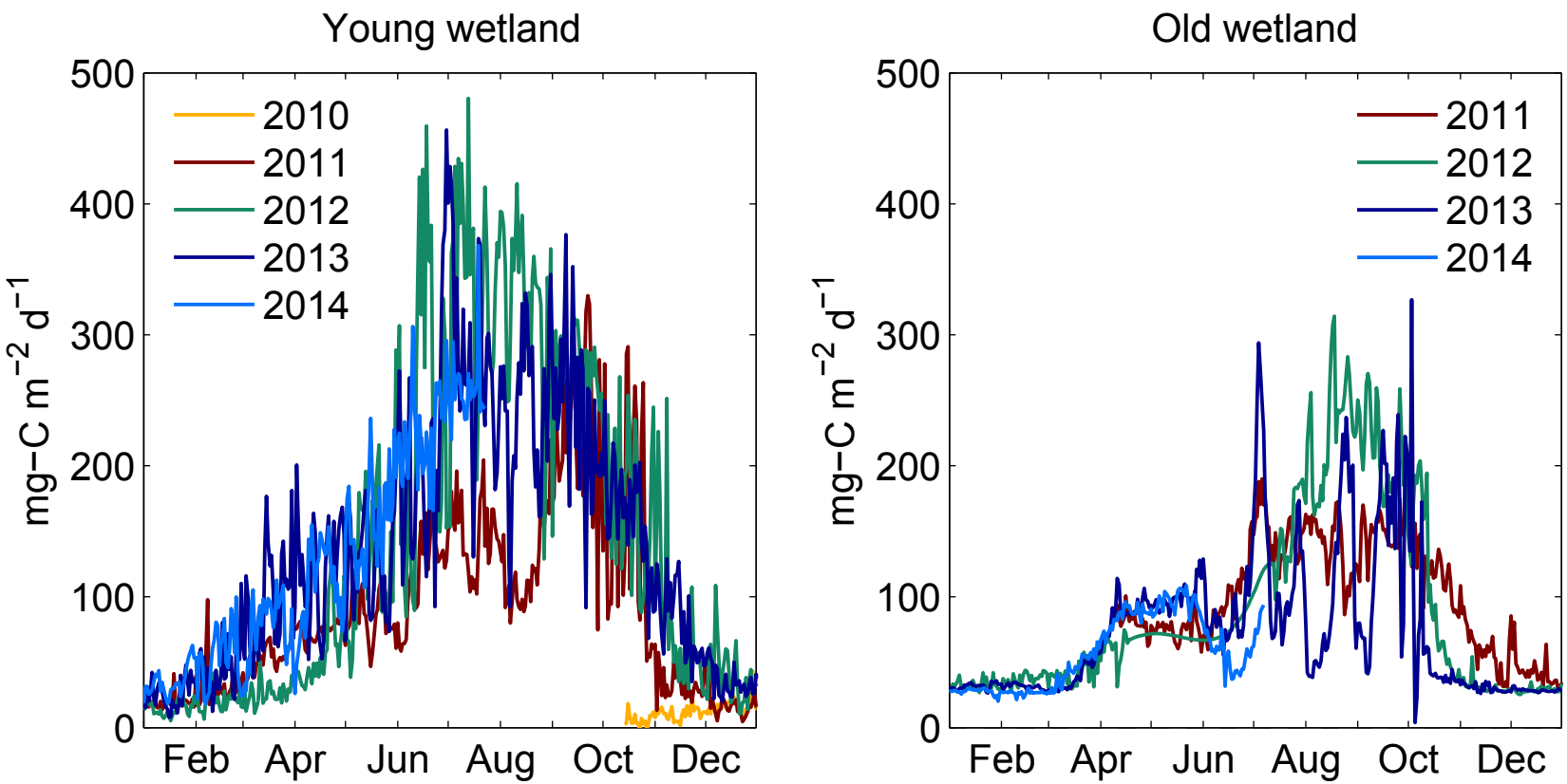
Research questions

1. What are the annual net fluxes of CO_2 and CH_4 at the different sites?
2. Do CH_4 emissions offset CO_2 uptake with respect to the overall GHG budget?
3. How do GHG fluxes from restored wetlands change as the wetland matures

Annual CO_2 budgets



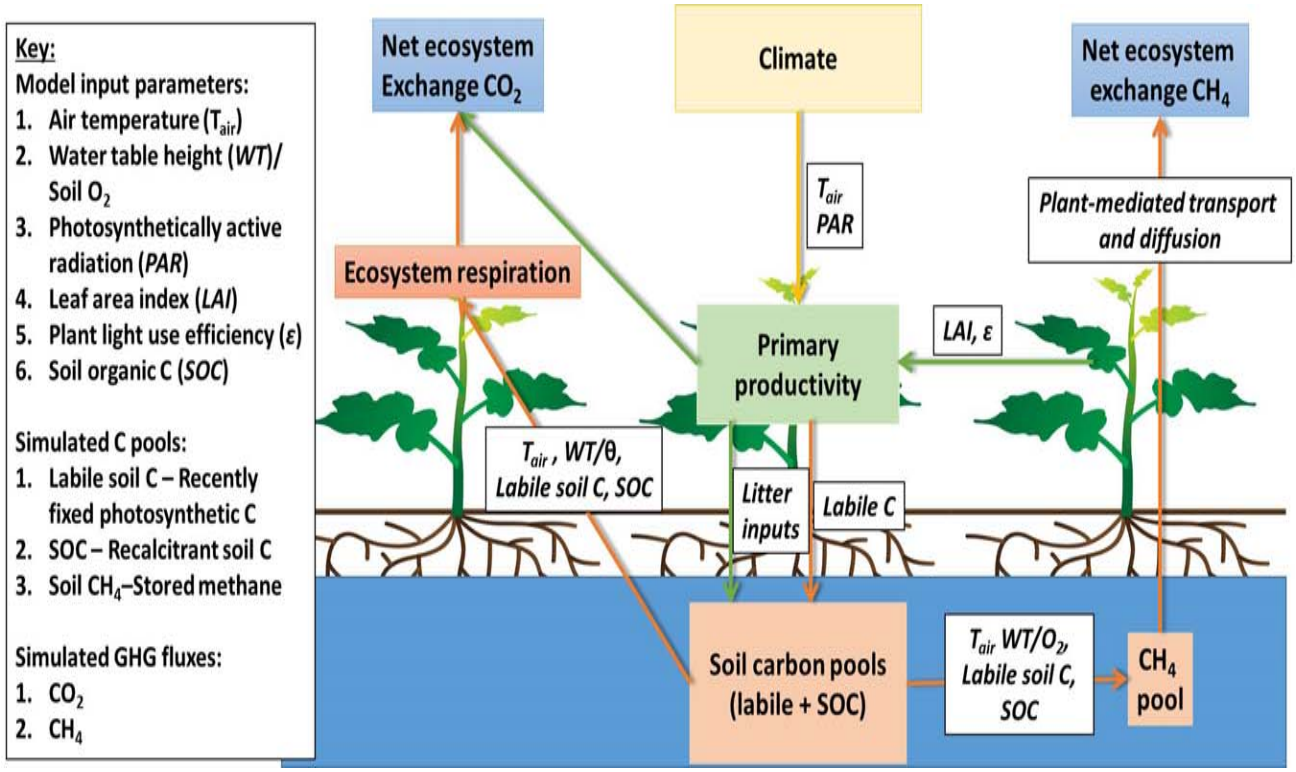
Annual CH_4 budgets



Greenhouse gas budgets

- Young wetland = Largely GHG source (but smaller GHG source than conventional drained agriculture)
- Old wetland = GHG sink

Modeling CO_2 and CH_4 emissions from wetlands

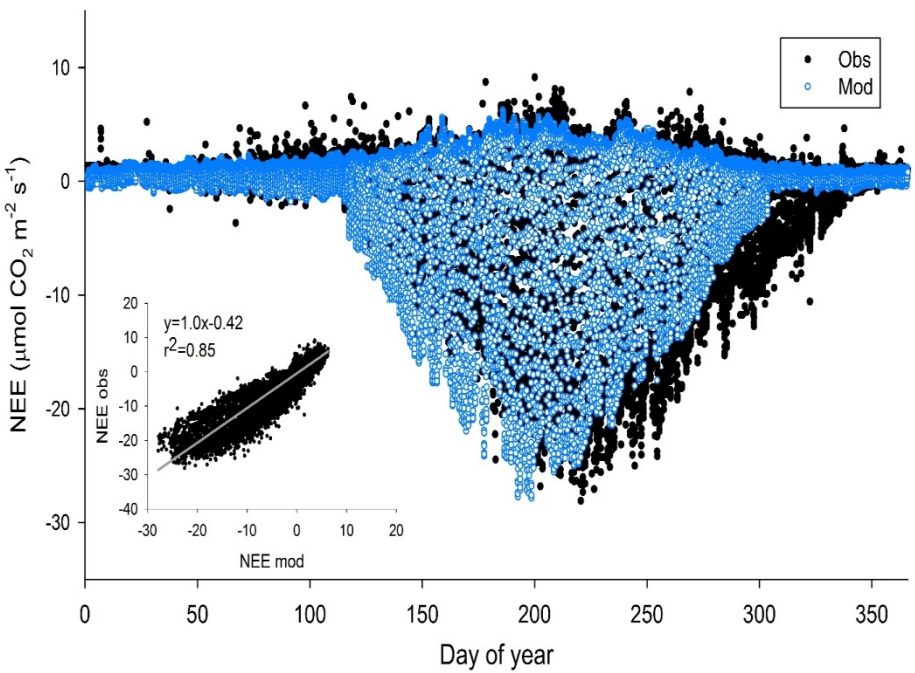


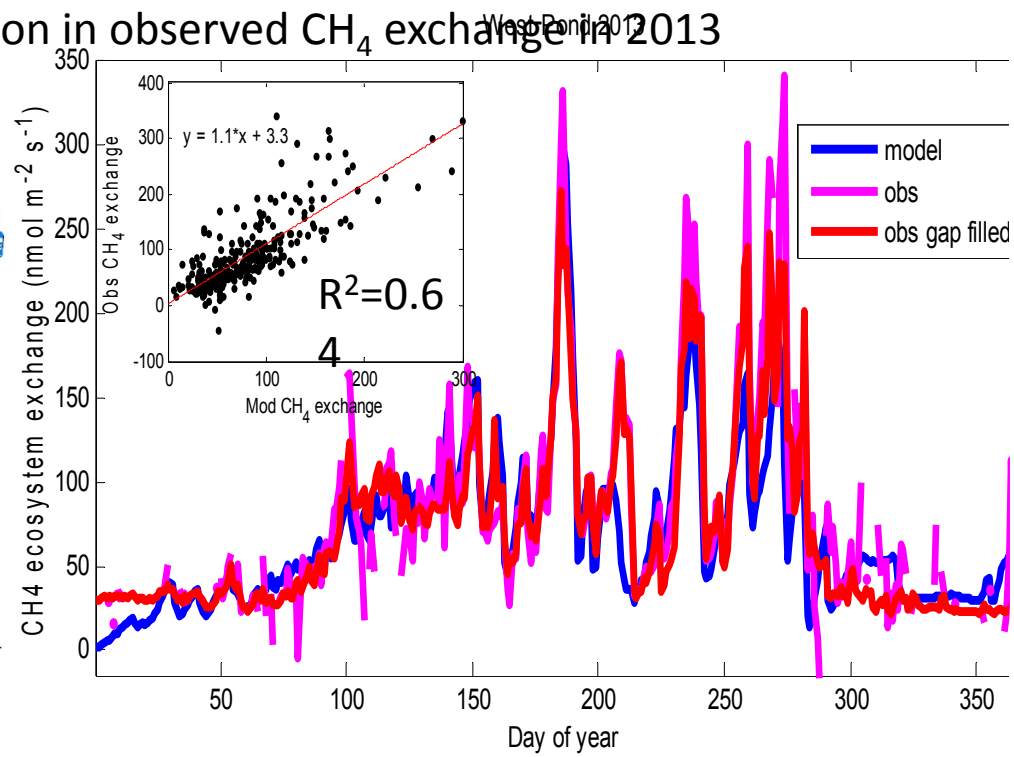
Key inputs to model:

1. Air temperature
2. In-coming radiation
3. Initial soil organic C
4. Water table height

Model Results

- The model allows accurate simulation of net CO_2 exchange (NEE) and CH_4 exchange in a mature wetland
- Modeled NEE explains 85% of the variation in observed NEE in 2013
- Modeled CH_4 explains 64% of the variation in observed CH_4 exchange in 2013





CO_{2obs}= -495 g-CO_2-C m^{-2} yr^{-1}
CO_{2mod}= -442 g-CO_2-C m^{-2} yr^{-1}

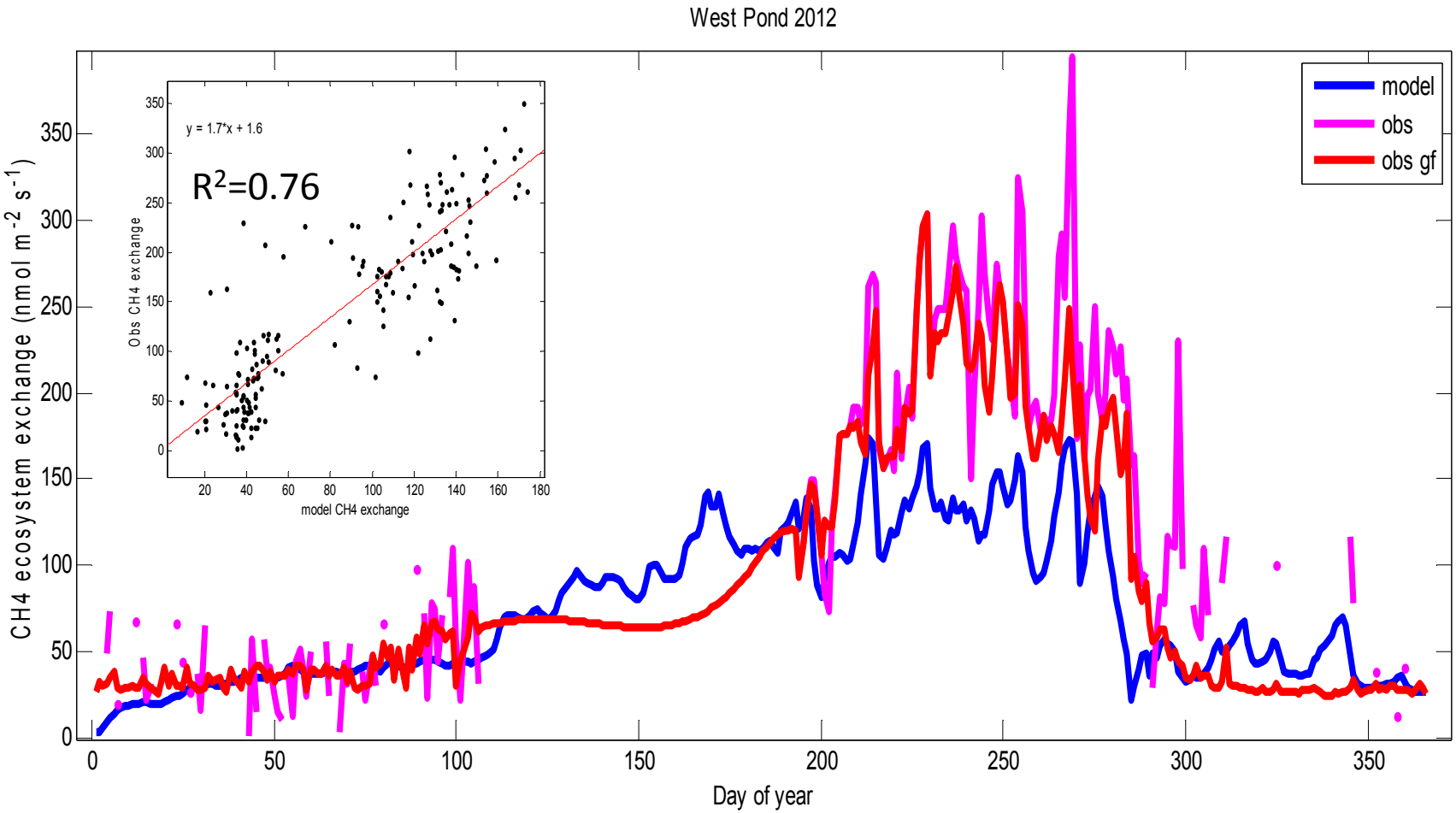
Model error= 10%

CH_{4obs}= 27 g-CH_4-C m^{-2} yr^{-1}
CH_{4mod}= 26 g-CH_4-C m^{-2} yr^{-1}

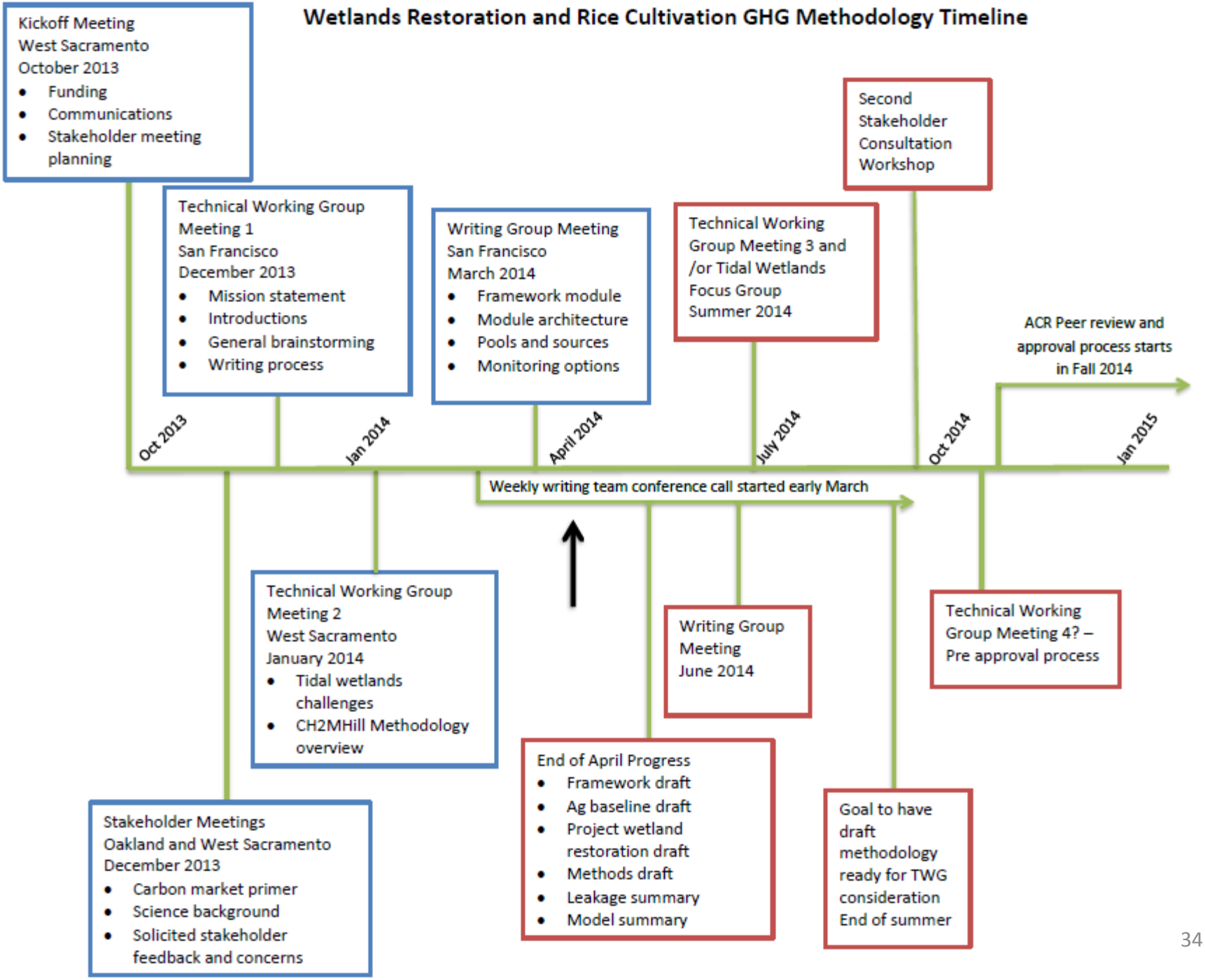
Model error= 3%

Validating model using 2012 West Pond data

CH_{4obs}= 32.4 g-CH_4-C m^{-2} yr^{-1}
CH_{4mod}= 27.7 g-CH_4-C m^{-2} yr^{-1}
Model error= -14.4%



Wetlands Restoration and Rice Cultivation GHG Methodology Timeline



Other Benefits of Restoration

QUESTIONS?

PUBLIC COMMENTS

- **Kinds of projects**

  What types of projects have been shown to sequester GHGs?

  How have these projects measured GHG reduction?

- **Scoring Criteria**

  What suggestions do you have to evaluate the potential for success of a project in reducing GHG and achieving co-benefits?

NEXT STEPS

- Submit written comments by **noon, September 18th** to:

California Department of Fish and Wildlife
Helen Birss
Re: Wetland Restoration Grant Program
1416 Ninth Street, Suite 1260
Sacramento, CA 95814
Via e-mail: Helen.Birss@wildlife.ca.gov
(Use "Public meeting comment" in subject line if e-mail)

- Input from this meeting will be incorporated into the final solicitation
- We will send the link to the solicitation to our e-mail list
- Thank you for coming

THANK YOU