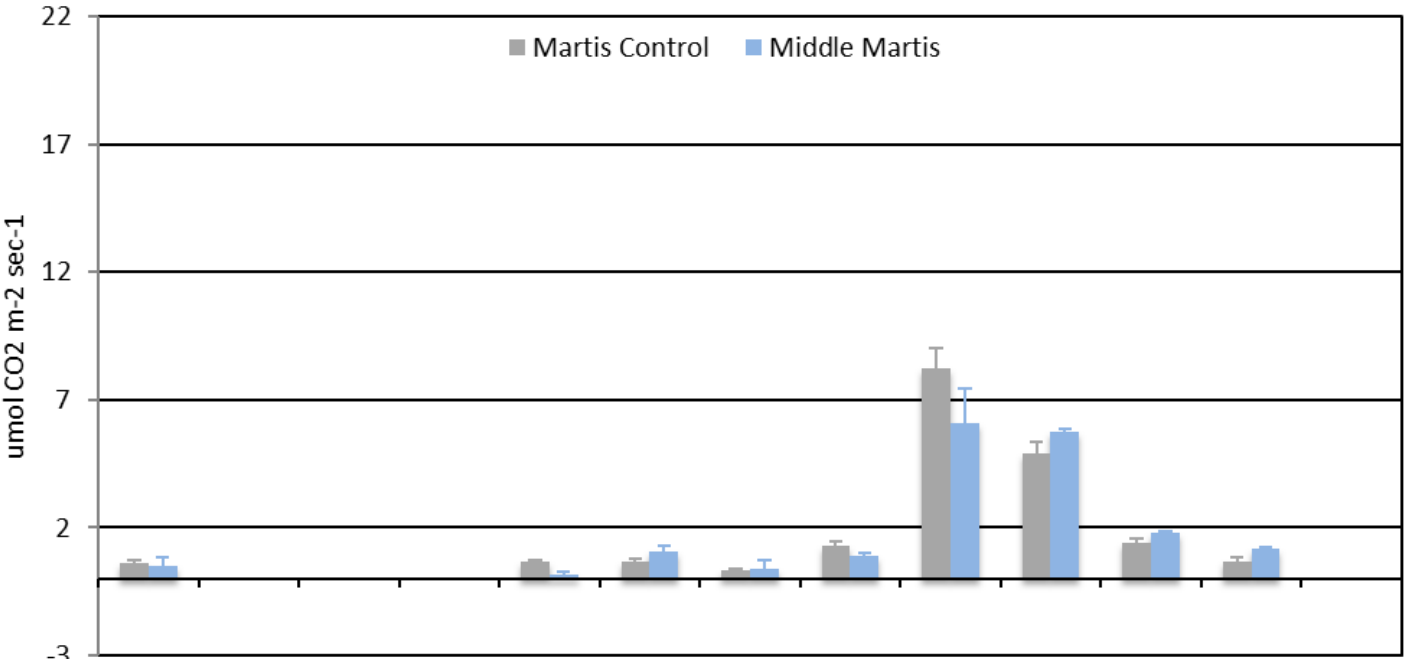


Summary of Martis Gap Year and Truckee Meadows Pre-Restoration GHG Fluxes



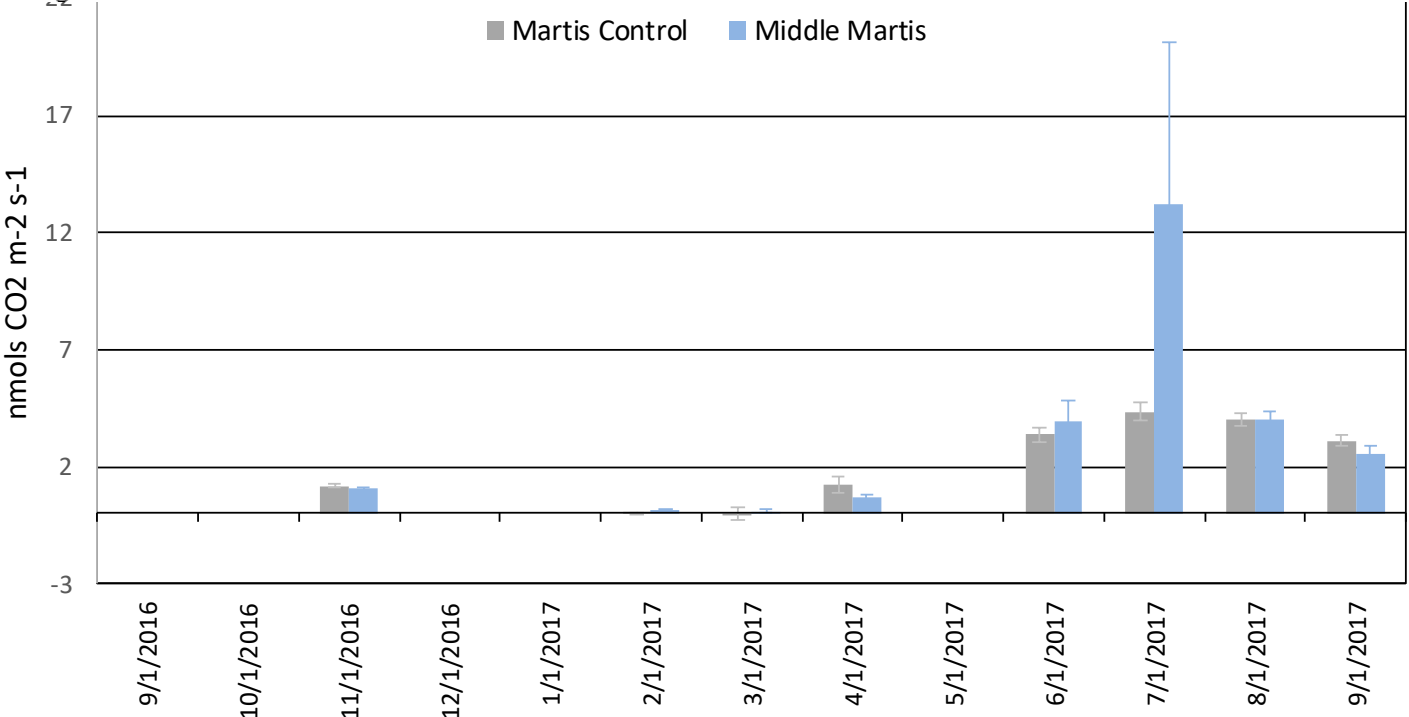
Martis CO₂ FLUX: Pre vs. Gap Yr Data

Pre-
Restoration
(2015-2016)



- Pre-Restoration Dates
- 9/18/2015
 - 1/22/2016
 - 2/16/2016
 - 3/11/2016
 - 4/12/2016
 - 5/13/2016
 - 6/22/2016
 - 7/19/2016
 - 8/23/2016

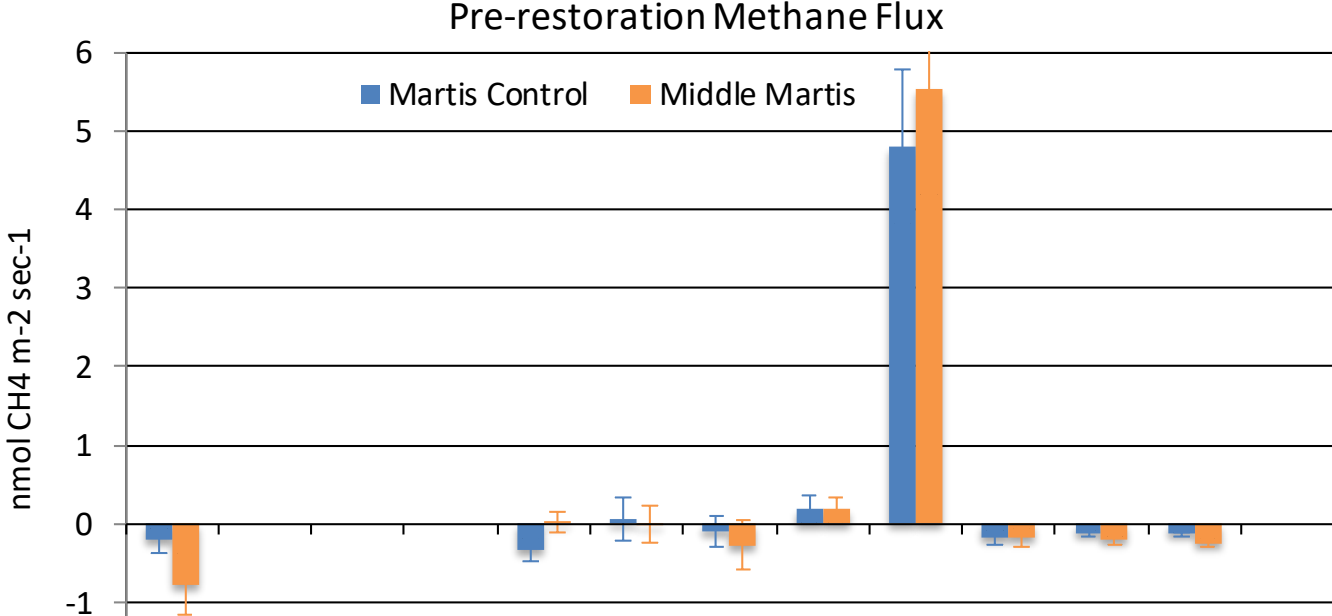
Y1 Post
Restoration
"Gap Year"
(2016-2017)



- Gap-Year Dates
- 11/11/2016
 - 2/9/2017
 - 3/6/2017
 - 4/27/2017
 - 6/6/2017
 - 7/6/2017
 - 8/8/2017
 - 9/12/2017

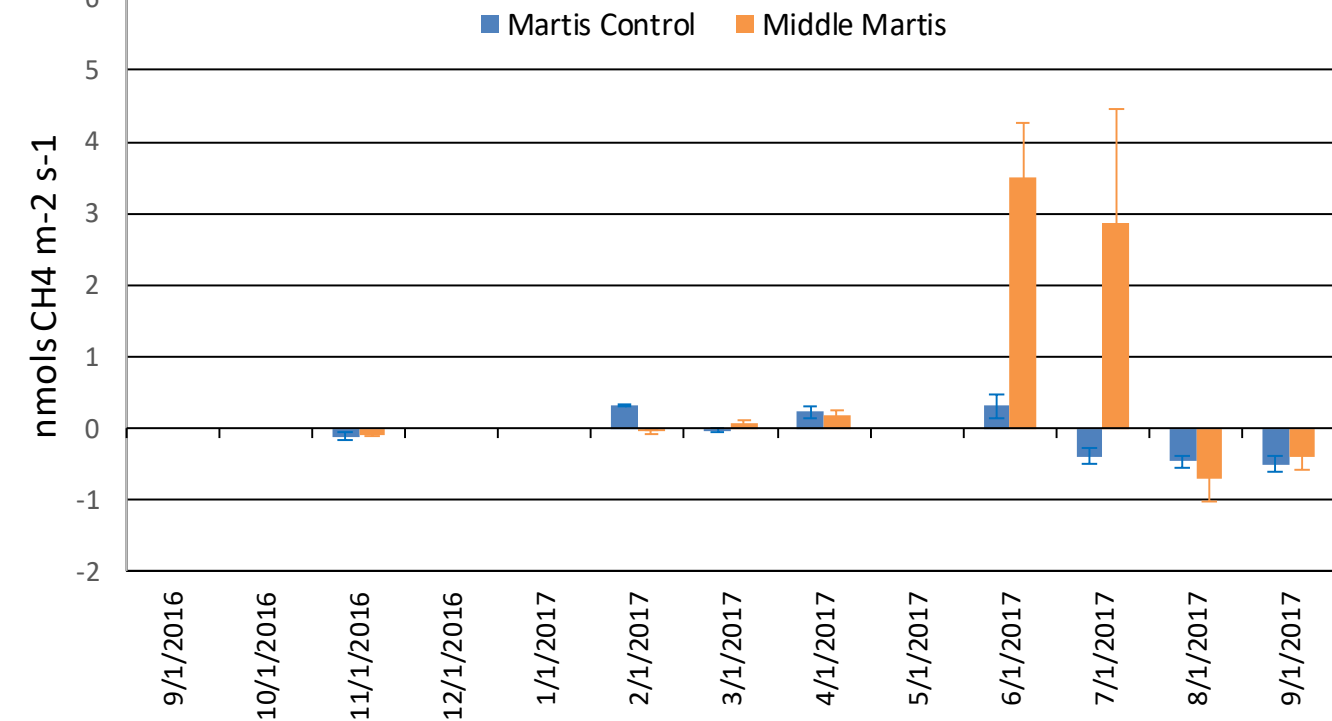
Martis CH₄ FLUX: Pre vs. Gap Yr Data

Pre-
Restoration
(2015-2016)



- Pre-Restoration Dates
- 9/18/2015
 - 1/22/2016
 - 2/16/2016
 - 3/11/2016
 - 4/12/2016
 - 5/13/2016
 - 6/22/2016
 - 7/19/2016
 - 8/23/2016

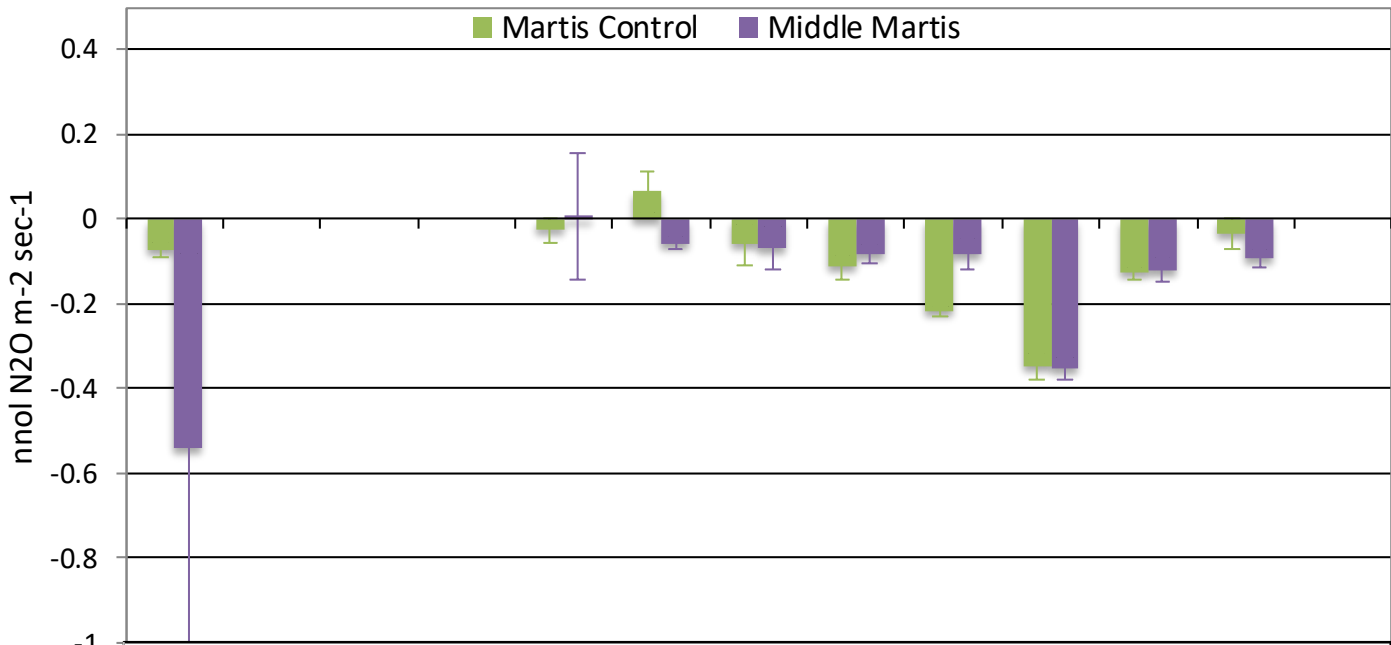
Y1 Post
Restoration
"Gap Year"
(2016-2017)



- Gap-Year Dates
- 11/11/2016
 - 2/9/2017
 - 3/6/2017
 - 4/27/2017
 - 6/6/2017
 - 7/6/2017
 - 8/8/2017
 - 9/12/2017

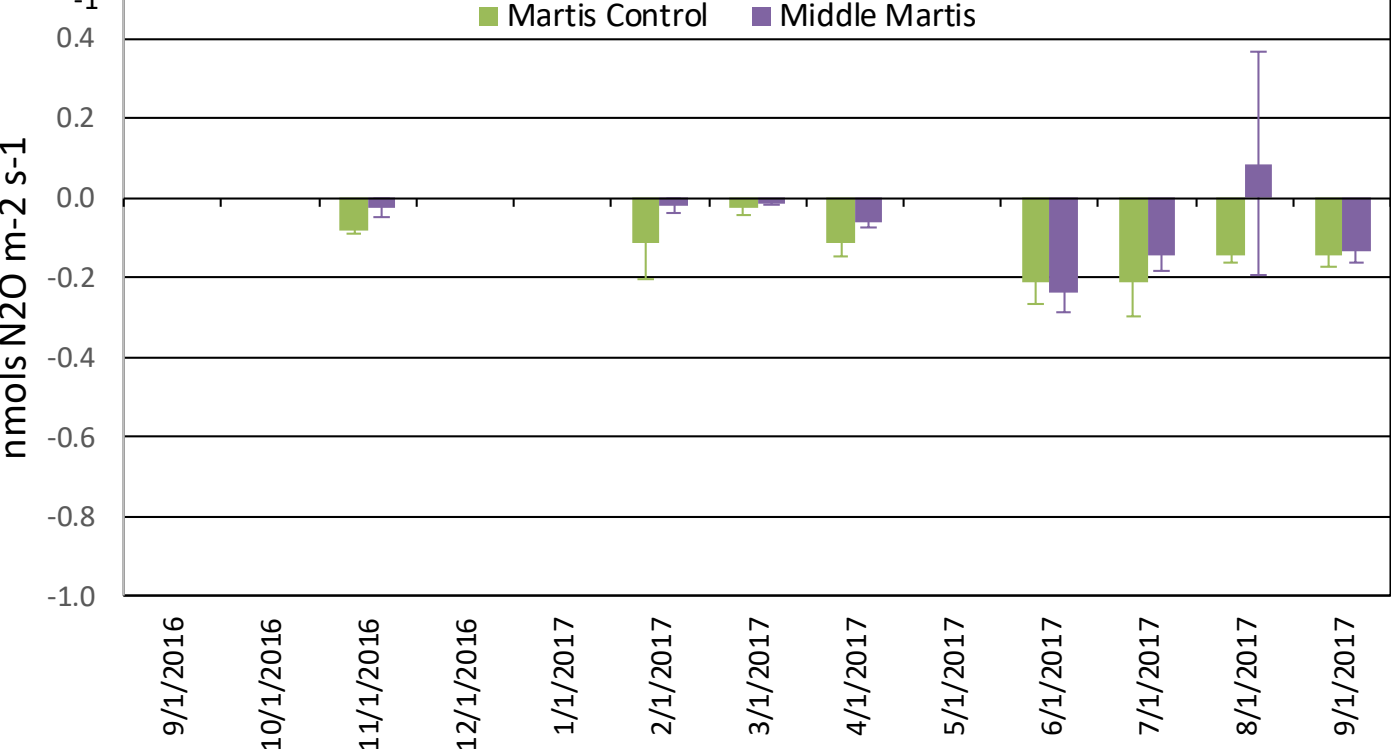
Martis N₂O FLUX: Pre vs. Gap Yr Data

Pre-
Restoration
(2015-2016)



- Pre-Restoration
Dates
- 9/18/2015
 - 1/22/2016
 - 2/16/2016
 - 3/11/2016
 - 4/12/2016
 - 5/13/2016
 - 6/22/2016
 - 7/19/2016
 - 8/23/2016

Y1 Post
Restoration
"Gap Year"
(2016-2017)



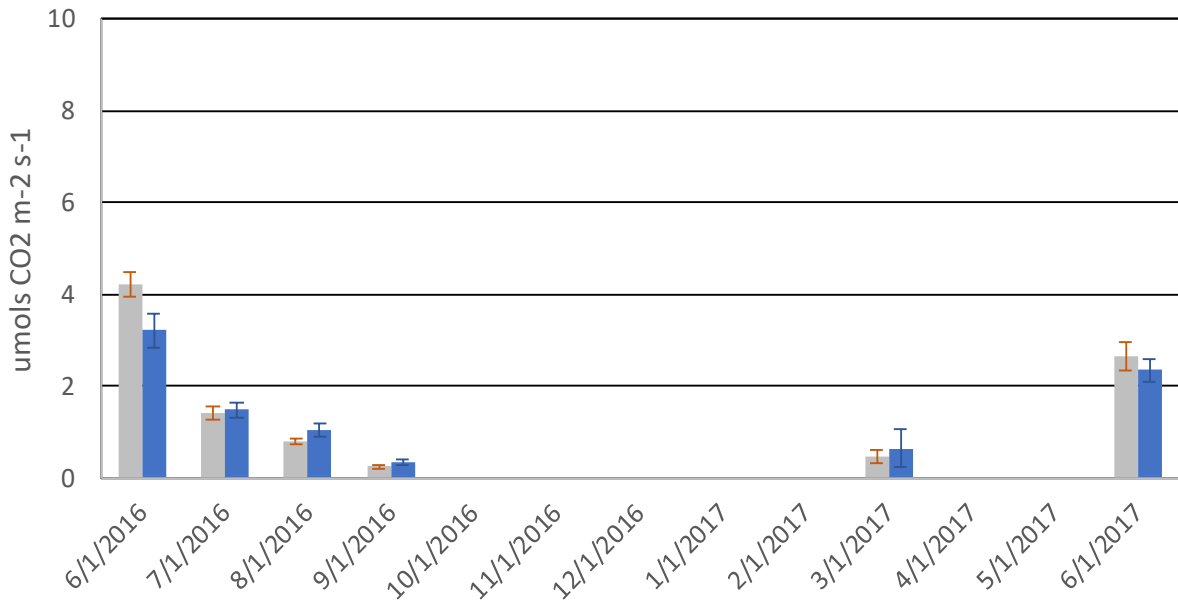
- Gap-Year Dates
- 11/11/2016
 - 2/9/2017
 - 3/6/2017
 - 4/27/2017
 - 6/6/2017
 - 7/6/2017
 - 8/8/2017
 - 9/12/2017

Truckee CO₂ FLUX: Pre-Restoration (2016-2017)

TRUCKEE

Carbon Dioxide Flux

Truckee Control Truckee Restoration



SUMMER

FALL

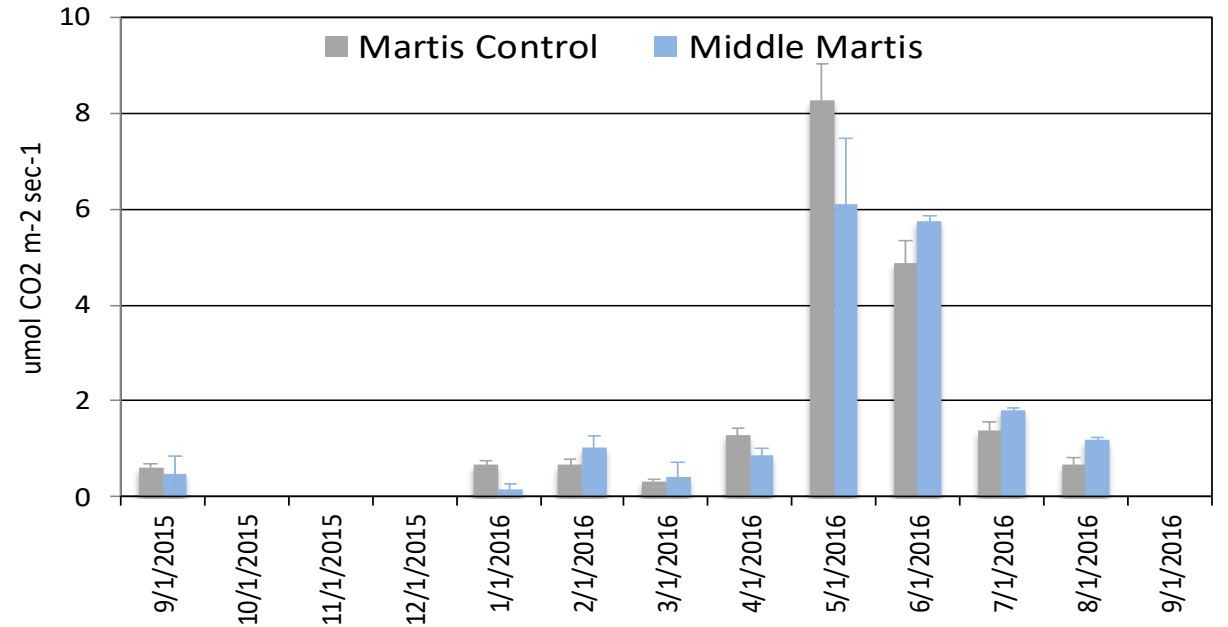
WINTER

SPRING

MIDDLE MARTIS

Carbon Dioxide Flux

Martis Control Middle Martis



FALL

WINTER

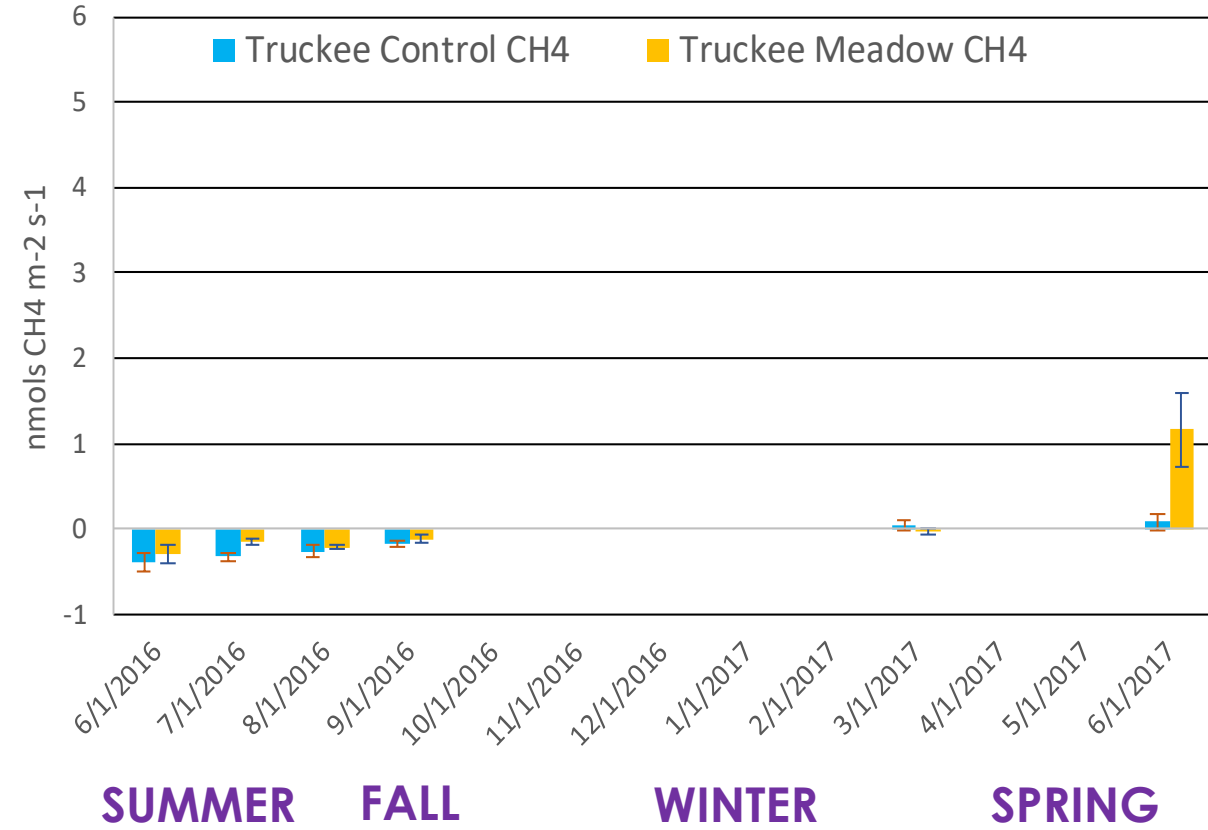
SPRING

SUMMER

Truckee CH₄ FLUX: Pre-Restoration (2016-2017)

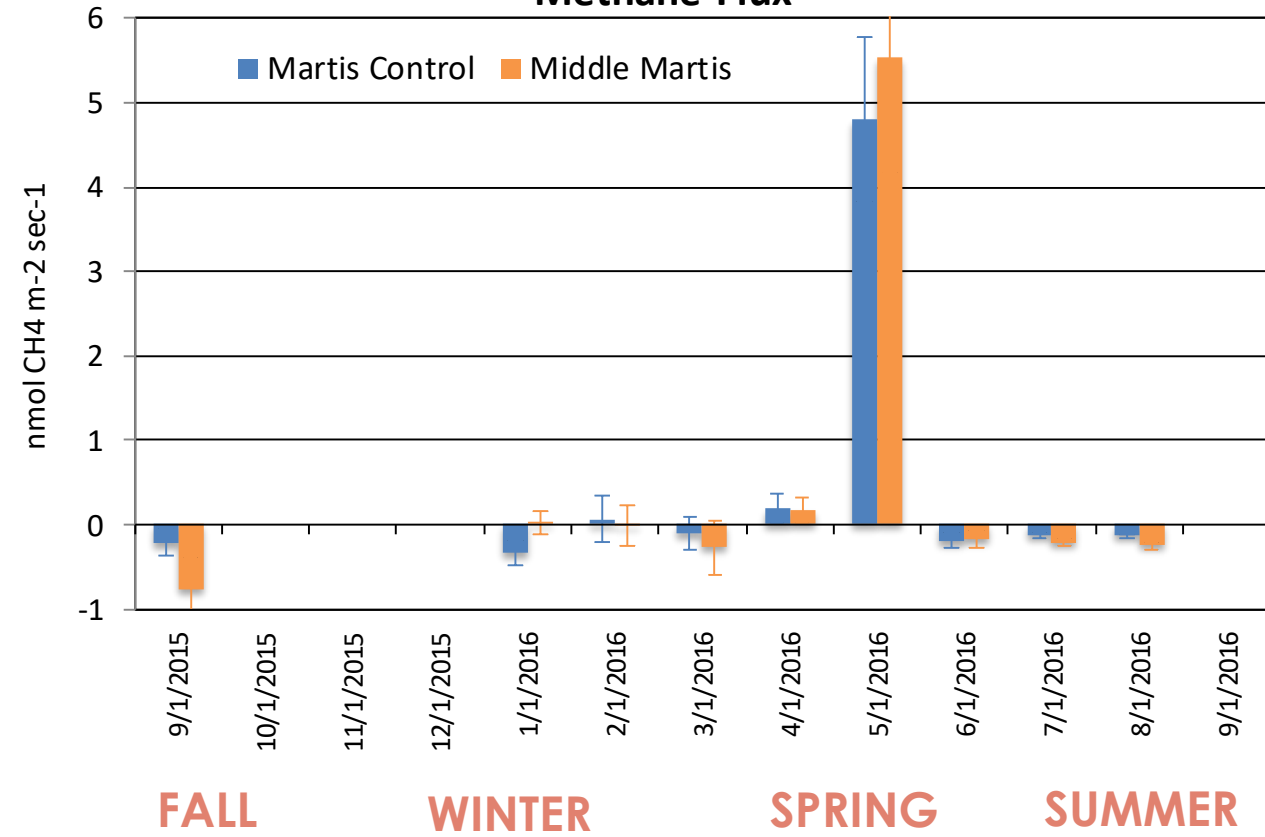
TRUCKEE

Methane Flux



MIDDLE MARTIS

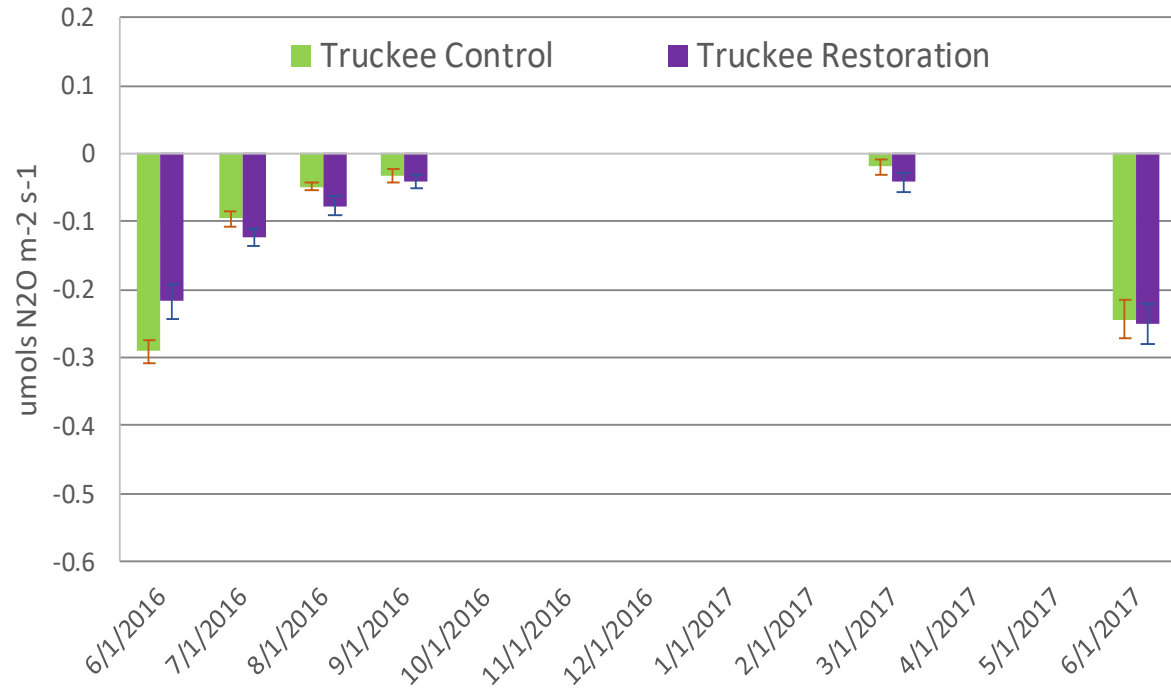
Methane Flux



Truckee N₂O FLUX: Pre-Restoration (2016-2017)

TRUCKEE

Nitrous Oxide Flux



SUMMER

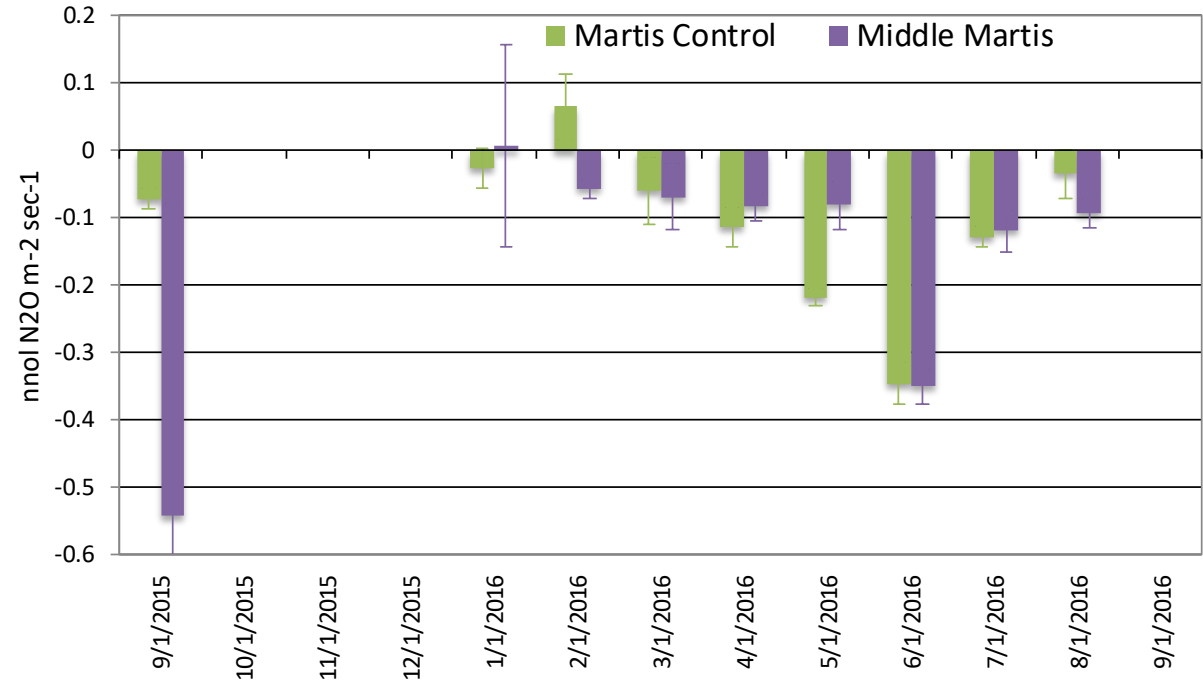
FALL

WINTER

SPRING

MIDDLE MARTIS

Nitrous Oxide Flux




FALL

WINTER

SPRING

SUMMER

Sierra Meadows Restoration and Research Partnership (SMRRP): Next Steps



Amy Merrill, Ph.D.
Stillwater Sciences



SMRRP Goals



▶ Create baseline Data on C Sequestration in Degraded Meadows



▶ Measure change in carbon sequestration with restoration



▶ Build empirically based model carbon sequestration rates with restoration in range of meadow types and conditions



▶ Develop protocol for assigning carbon credits for meadow restoration projects

Where are we in the process?



2015

2016

2017

2018

2019

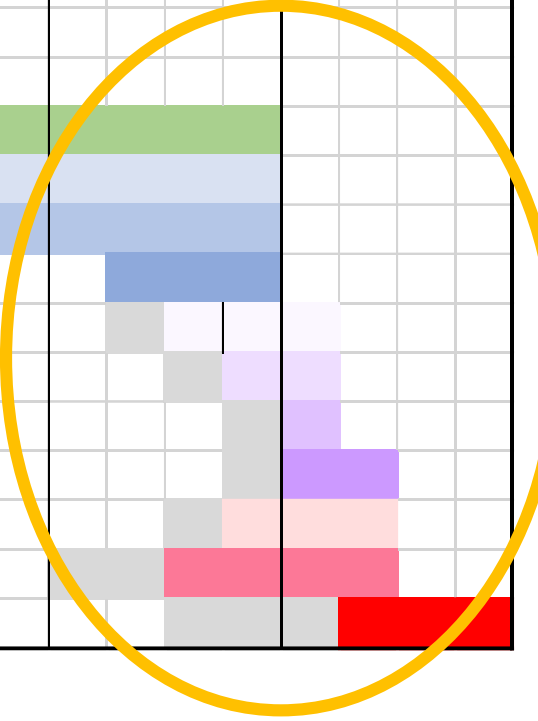
2020

- ▶ Summer 2015 to Summer 2016
 - Pre-implementation measurements
- ▶ Summer 2016 to Summer ~~2017~~ 2018
 - ▶ Implementation (summer 2016 & 2017)
 - ▶ Measure Gap Year ('consolidation': 2017-2018)
- ▶ Summer 2017 to Summer ~~2018~~ 2019
 - ▶ Post-restoration field measurements
 - ▶ Calculate and compare baseline and restored C sequestration values
- ▶ Summer ~~2018~~ 2019 to Spring ~~2019~~ 2020
 - ▶ Lab Analyses, Data Management, Data Analyses
 - ▶ Develop quantitative model for meadow C sequestration
 - ▶ Develop proxy protocol for meadows

Detail on Sampling and Restoration Dates per SMRRP Meadow

Meadow	Restoration Date (Incl Major Post- 2017 Repairs)	Post-Restoration Sampling Dates
Osa Complex	October 2016	Growing Season 2018
Lassen Meadows	October 2016	Growing Season 2018
Martis Meadows	October 2016	Growing Season 2018
Truckee Meadows	Sept 2017	Growing Season 2019
Bean Meadows	Oct 2016, Oct 2017	Growing Season 2019
Loney Meadows	October 2017	Growing Season 2019

Action Type	ACTIONS	2015			2016				2017				2018				2019				2020			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Project Set Up	Grants initiate and end	█												█	█	█	█	█	█	█	█	█	█	
	Develop Protocols, disseminate		█	█	█																			
	Field Training																							
Gather Data	Establish Control sites and Sampling Grids		█	█																				
	Pre-restoration Data Collection, lab analysis	█	█	█	█	█	█	█	█	█	█	█												
Restoration	Restoration Actions						█				█	█												
	Gap Year Data Collection (Martis, Bean, Osa)								█	█	█	█	█	█										
	Post-restoration Sample and Data Collection											█	█	█	█	█	█	█	█	█	█	█	█	█
Lab and Data Mgmt	Lab Analysis: gas, soil, biomass		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Data Management, Organize, QA/QC		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
	Annual Data Summaries																							
Develop Model	Data Analysis for Combined Site Model																							
	TAC Review of Model Structure and Assumptions																							
	Test Model on Independent Site(Truckee Meadow)																							
	Revise and Finalize Model																							
Quant Methods	Proposed Quantification Methods (Draft, Final)																							
	Protocol Text (Draft not including Model, Final)																							
	Publish post-restoration findings																							



FOCUS ON THE FINISH!

		2019						2020					
ACTION TYPES	ACTIONS	Q3			Q4			Q1			Q2		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	---->
Grants	CDFW Grants initiate and end										30-Apr		
Gather Data	Post-restoration Sample and Data Collection				15-Oct								
Lab Analyses	Lab Analysis: gas, soil, biomass					15-Nov							
Data Management	Data Management, Organize, QA/QC					30-Nov							
Analysis/Summaries	Annual Data Summaries						10-Dec						
Develop Model	Data Analysis for Combined Site Model (proposed, draft, final)			20-Sep			15-Dec	5-Jan					
TAC Review	TAC Review of Model Structure and Assumptions				15-Oct		15-Dec	15-Jan					
Test Model	Test Model on Independent Site(Truckee Meadow)							15-Feb					
Revise, Finalize	Revise and Finalize Model									20-Mar			
Quant Methods	Proposed Quantification Methods (QM; Draft, Final)					30-Nov				31-Mar	15-Apr		
Non-Quant Protocol	Protocol Text Draft (not including QM, Revision 1)	2-Jul		30-Sep			1-Dec						
Protocol Final	Protocol Text Final (Including QM)										25-Apr		
Publish	Publish post-restoration findings											15-May	15-Aug



Thank you!



We got more water in our first than in our second year

BIG, WET STORMS
JAN, FEB 2017

DWR 2017 publication "What a difference a year makes"

California Snow Water Content - Percent of April 1 Average, July 20, 2017

