

Quantification and Mapping of Satellite Driven Surface Energy Balance Fluxes in Semi-arid to Arid Inter-Mountain Region

Bibek Acharya ¹, Vivek Sharma ^{1,*}, James Heitholt ², Daniel Tekiela ² and Fabian Nippgen ³

¹ Agricultural and Biological Engineering Department, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611, USA

² Department of Plant Sciences, College of Agriculture and Natural Resources, University of Wyoming, Laramie, 82071, USA

³ Department of Ecosystem Sciences and Management, College of Agriculture and Natural Resources, University of Wyoming, Laramie, 82071, USA

* Correspondence: Vivek Sharma, vsharma1@ufl.edu; Tel.: +1-352-294-6725

Supplement Material:

Table S1. Average seasonal crop evapotranspiration ET_c , seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Cody Canal Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET_c (mm)	Seasonal P (mm)	ET_c-P (mm)	% of irrigation contributing to ET_c
Cody Canal Irrigation District					
Sugar beet	2017	657	158	499	76
	2018	651	204	447	69
Dry bean	2017	566	158	408	72
	2018	529	204	325	61
Alfalfa	2017	726	158	568	78
	2018	683	204	479	70
Maize	2017	675	158	517	77
	2018	632	204	428	68

Table S2. Average seasonal crop evapotranspiration ET_c , seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Deaver Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	ET _c -P (mm)	% of irrigation contributing to ET _c
Deaver Irrigation District					
Sugar beet	2017	680	117	563	83
	2018	664	158.4	506	76
Dry bean	2017	516	117	399	77
	2018	439	158.4	281	64
Alfalfa	2017	680	117	563	83
	2018	623	158.4	464	75
Maize	2017	613	117	496	81
	2018	599	158.4	440	74

Table S3. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Greybull Valley Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	P	ET _c -P (mm)	% of irrigation contributing to ET _c
Greybull Valley Irrigation District						
Sugar beet	2017	593	125		467	79
	2018	610	162		448	73
Dry bean	2017	503	125		377	75
	2018	479	162		316	66
Alfalfa	2017	664	125		538	81
	2018	633	162		470	74
Maize	2017	563	125		438	78
	2018	622	162		459	74

Table S4. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for our major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Heart Mountain Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	ET _c -P (mm)	% of irrigation contributing to ET _c
Heart Mountain Irrigation District					
Sugar beet	2017	732	146.1	586	80
	2018	673	196.9	476	71
Dry bean	2017	529	146.1	383	72
	2018	489	196.9	292	60
Alfalfa	2017	761	146.1	615	81
	2018	711	196.9	514	72
Maize	2017	659	146.1	513	78
	2018	683	196.9	486	71

Table S5. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Hunt & Godfrey Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	ET _c -P (mm)	% of irrigation contributing to ET _c
Hunt & Godfrey Irrigation District					
Sugar beet	2017	643	124	519	81
	2018	561	177	384	68
Dry bean	2017	601	124	477	79
	2018	494	177	316	64
Alfalfa	2017	747	124	623	83
	2018	687	177	510	74
Maize	2017	684	124	560	82
	2018	595	177	417	70

Table S6. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Lovell Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal (mm)	ET _c	Seasonal (mm)	P	ET _c -P (mm)	% of irrigation contributing to ET _c
Lovell Irrigation District							
Sugar beet	2017	602		121.1		481	80
	2018	620		164.4		456	73
Dry bean	2017	579		121.1		458	79
	2018	554		164.4		389	70
Alfalfa	2017	734		121.1		613	83
	2018	675		164.4		510	76
Maize	2017	630		121.1		509	81
	2018	607		164.4		443	73

Table S7. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Shoshone Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal (mm)	ET _c	Seasonal (mm)	P	ET _c -P (mm)	% of irrigation contributing to ET _c
Shoshone Irrigation District							
Sugar beet	2017	638		125		512	80
	2018	645		167		478	74
Dry bean	2017	493		125		367	75
	2018	484		167		317	65
Alfalfa	2017	677		125		552	81
	2018	665		167		498	75
Maize	2017	565		125		439	78
	2018	676		167		508	75

Table S8. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Sidon Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	ET _c -P (mm)	% of irrigation contributing to ET _c
Sidon Irrigation District					
Sugar beet	2017	632	121.1	511	81
	2018	637	151.2	485	76
Dry bean	2017	530	121.1	408	77
	2018	529	151.2	378	71
Alfalfa	2017	663	121.1	542	82
	2018	652	151.2	501	77
Maize	2017	635	121.1	514	81
	2018	617	151.2	466	76

Table S9. Average seasonal crop evapotranspiration ET_c, seasonal precipitation (P) and Irrigation contribution to ET_c (ET_c-P) for four major crops i.e. Sugar beet, Dry bean, Alfalfa, and Maize within Will Wood Irrigation District for 2017 and 2018.

Crop Type	Year	Seasonal ET _c (mm)	Seasonal P (mm)	ET _c -P (mm)	% of irrigation contributing to ET _c
Will Wood Irrigation District					
Sugar beet	2017	641	124	516	81
	2018	698	153	545	78
Dry bean	2017	537	124	413	77
	2018	534	153	381	71
Alfalfa	2017	692	124	568	82
	2018	691	153	538	78
Maize	2017	625	124	501	80
	2018	712	153	559	78