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Article

Rapid assessment of crop status: An application of MODIS and SAR data to rice areas in Leyte, Philippines affected by Typhoon Haiyan

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Supplementary information

Figure S1:SAR data and field data in northern Leyte. SAR data footprints: for rice mapping in northwest Leyte (green box), northeast Leyte (blue box) and for flood detection (red box). Field data points: red points indicate location where harvest was not performed due to in-season damage from typhoon Haiyan.

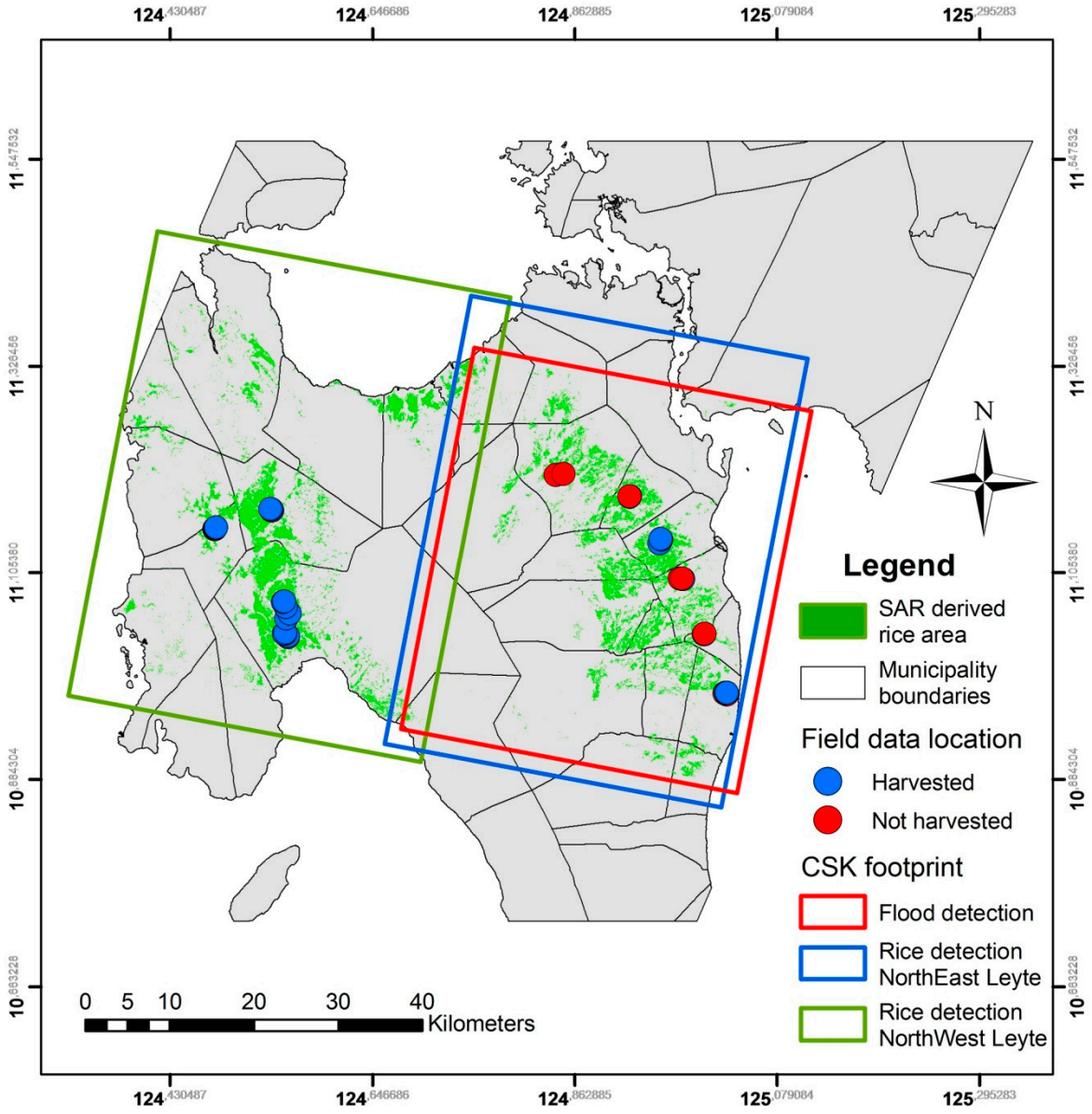

Table S1. Field data information available for Leyte West (top panel) and Leyte East (bottom panel) displayed in Figure S1

Leyte West

Id	Municipality	Barangay	Transplanting date	Soil condition, land status and rice crop growth stage per acquisition date (2013)									Harvesting date
				12/05	28/05	13/06	29/06	15/07	03/08	23/08	08/09	24/09	
1	Kananga	Tugbong	11/06	LL, WS	S	T	T	PI	He	M	Ha	Ha	02/09
2	Kananga	Tugbong	08/07	FP, DS	P, WS	H, WS	S	T	T	T	He	M	05/10
3	Kananga	Tugbong	29/06	FP, DS	P, WS	H, F	S	T	T	T	He	GF	30/09
4	Kananga	Tugbong	22/06	FP, DS	H, WS	LL, F	T	T	T	T	GF	Ha	11/09
5	Kananga	Tugbong	19/06	FP, DS	H, WS	LL, F	T	T	PI	B	GF	Ha	17/09
6	Matag-Ob	Bonoy	27/06	FP, DS	FP, DS	H, F	S	T	T	T	H	GF	02/10
7	Matag-Ob	Bonoy	27/06	FP, DS	FP, DS	H, F	S	T	T	T	Fl	GF	02/10
8	Matag-Ob	Bonoy	27/06	FP, DS	FP, DS	P, WS	S	T	T	T	Fl	GF	02/10
9	Matag-Ob	Bonoy	30/06	FP, DS	FP, DS	P, WS	S	T	T	PI	Fl	R	29/09
10	Matag-Ob	Bonoy	28/06	FP, DS	FP, WS	P, WS	LL, WS	S	S	T	T	B	21/10
11	Ormoc	Lilo-an	11/07	FP, DS	FP, DS	P, WS	LL, F	T	T	T	B	M	16/10
12	Ormoc	Lilo-an	06/07	FP, DS	FP, WS	P, WS	LL, WS	T	T	T	B	M	08/10
13	Ormoc	Lilo-an	08/07	FP, DS	FP, DS	P, WS	LL, WS	T	T	T	PI	M	17/10
14	Ormoc	Lilo-an	09/07	FP, DS	FP, WS	P, WS	LL, F	T	T	PI	B	Fl	11/10
15	Ormoc	Lilo-an	28/06	FP, DS	P, WS	H, WS	S	T	T	PI	Fl	R	25/09
16	Ormoc	So. San Vicente	10/07	FP, DS	FP, WS	P, WS	H, F	T	T	PI	PI	M	12/10
17	Ormoc	So. San Vicente	08/07	FP, DS	FP, WS	P, WS	H, WS	T	T	PI	Fl	GF	05/10
18	Ormoc	Labrador	20/06	FP, DS	P, WS	H, F	S	T	B	H	M	R	23/09
19	Ormoc	Labrador	26/06	FP, DS	P, WS	H, F	S	T	T	PI	Fl	Ha	18/09
20	Ormoc	Labrador	27/06	FP, DS	FP, WS	P, WS	S	T	T	PI	M	Ha	18/09

Leyte East

Id	Municipality	Barangay	Transplanting date	Soil condition, land status and rice crop growth stage per acquisition date (2013)									Harvesting date
				15/05	31/05	16/06	02/07	18/07	07/07	19/07	04/08	20/08	
1	Alang-Alang	P.Barrantes	11/08	FP, DS	FP, DS	FP, WS	H	H	SS	T	T	T	no data
2	Alang-Alang	P.Barrantes	15/08	FP, DS	FP, DS	FP, WS	H	H	SS	SS	T	T	no data
3	Alang-Alang	P.Barrantes	21/07	FP, DS	FP, DS	FP, WS	H	LL, F	T	T	B	M	17/10
4	Sta. Fe	Zone III	17/07	FP, DS	FP, DS	P	H	SS	T	PI	B	M	11/10
5	Sta. Fe	Zone III	16/07	FP, DS	FP, DS	P	H	SS	T	PI	B	M	14/10
6	Sta. Fe	Zone III	29/07	FP, DS	FP, DS	P	H	LL, WS	T	T	B	M	17/10
7	Palo	Capirawan	09/08	FP, DS	FP, DS	FP, WS	FP, WS	P, WS	SS	T	T	T	no data
8	Palo	Capirawan	19/08	FP, DS	FP, DS	FP, WS	P	H, WS	SS	SS	T	T	no data
9	Palo	Capirawan	10/08	FP, DS	FP, DS	FP, WS	P	H, WS	SS	T	T	T	no data
10	Tanauan	Sta. Elena	22/07	FP, DS	FP, DS	P	H	H, F	T	T	B	He	18/10
11	Tanauan	Sta. Elena	15/08	FP, DS	FP, DS	FP, WS	P	H, F	SS	SS	T	T	no data
12	Tanauan	Sta. Elena	21/07	FP, DS	FP, DS	FP, WS	P	H, F	T	T	B	Fl	13/10
13	Tanauan	Sta. Elena	20/07	FP, DS	FP, DS	P	H	H, F	T	T	B	He	15/10
14	Tolosa	San Vicente	15/07	FP, DS	FP, DS	P	H	SS	T	T	B	GF	02/10
15	Tolosa	San Vicente	29/07	FP, DS	FP, DS	P	P	H, WS	SS	T	PI	PI	no data
16	Tolosa	San Vicente	14/07	FP, DS	FP, DS	P	H	SS	T	T	B	GF	01/10
17	Dulag	San Rafael	12/07	FP, DS	FP, DS	P	LL	SS	T	T	B	GF	no data
18	Dulag	San Rafael	22/08	FP, DS	FP, DS	FP, WS	FP, WS	P, WS	SS	SS	T	T	no data
19	Dulag	San Rafael	19/07	FP, DS	FP, DS	P	H	H, F	T	T	B	Fl	10/10
20	Dulag	San Rafael	16/07	FP, DS	FP, DS	P	H	SS	T	T	B	M	no data

Soil condition codes

wet soil	WS
dry soil	DS
Flooded	F

Pre and post crop land stats codes

Land levelling	LL	Harvested	Ha
Fallow period	FP		
Seeding	S		
Plowing	P		
Harrowing,	H		

Rice crop growth stage codes

Seedling stage	SS	Milking	M
Tillering	T	Flowering	Fl
Panicle initiation	PI	Grain Filling	GF
Heading	He	Ripening	R
Booting	B		

Harvesting

Reported
Not reported

Table S2. Criteria adopted to assess quality of MODIS pixel in the smoothing process from flag information provided in the MOD/MYD13Q1 products (https://lpdaac.usgs.gov/products/modis_products_table/mod13q1).

Panel a: first screening on the base of HDF VI Quality (Layer 3) and Pixel reliability - VI Usefulness (Layer 12)

		VI Quality bit 2-5 "VI Usefulness" (HDF layer 3)										
		Highest quality	*Lower quality*	*Decreasing quality*					*Lowest quality*	*Quality so low that it is not useful*	*L1B data faulty*	*Not useful for any other reason/not processed*
		0000	0001	0010	0100	1000	1001	1010	1100	1101	1110	1111
Pixel reliability (HDF layer 12 – Rank*)	0	0	0	0	0	0	0	0	2	2	2	2
	1	1	1	1	1	1	1	1	2	2	2	2
	2-3	2	2	2	2	2	2	2	2	2	2	2

*** 0 (Good Data → Clean); 1 (Marginal data → Contaminated), 2 (Snow/Ice → Cloudy) and 3(Cloudy)**

Panel b: second screening on the base Blue bands (Layer 6) values

		First screening from MODIS quality indicators		
		0	1	2
BLU band (HDF layer 6) Reflectance value	0.00 – 0.05	Clean	Contaminated	Cloudy
	0.05- 0.18	Contaminated	Contaminated	Cloudy
	> 0.18	cloudy	cloudy	Cloudy