

Supplementary Data

Table S1. Lists of forest fires newly tested as reference data provided by the Korea Forest Service and the results of the 3-step algorithm and the Collection 6 MODIS active fire data (M*D14).

Location	Ignition date	Ignition time (UTC)	Extinguished data	Extinguished time (UTC)	Cause	Damage d area (ha)	Detected by 3-step algorithm	Detected by MODIS
Jangan-eup, Gijang-gun, Busan metropolitan city	January 1 st , 2018	12:46	January 2 nd , 2018	10:00	Other	65	O	O
Yecheon-eup, Yecheon-gun, Gyeongsangbuk-do	January 3 rd , 2018	5:15	January 3 rd , 2018	7:30	Cigarette accidental fire	0.89	X	X
Yangyang-eup, Yangyang-gun, Gangwon-do	January 14 th , 2018	10:53	January 15 th , 2018	20:30	House fire spread	17.73	X	X
Jinbuk-myeon, Changwon-si, Gyeongsangnam-do	January 28 th , 2018	4:51	January 28 th , 2018	11:00	Other	1	O	O
Jonam-dong, Siheung-si, Gyeonggi-do	January 28 th , 2018	6:53	January 28 th , 2018	10:00	Waste incineration	3	O	O
Punggi-eup, Yeongju-si, Gyeongsangbuk-do	January 30 th , 2018	5:00	January 30 th , 2018	8:30	Other	1	O	X
Wondong-myeon, Yangsan-si, Gyeongsangnam-do	February 6 th , 2018	18:37	February 7 th , 2018	9:00	Other	1.2	O	X
Changsu-myeon, Yeongdeok-gun, Gyeongsangbuk-do	February 9 th , 2018	22:20	February 10 th , 2018	6:25	Other	13	X	X
Hoehwa-myeon, Goseong-gun,	February 10 th , 2018	14:47	February 11 th , 2018	2:00	Other	1.5	O	X

Gyeongsangnam-do								
Gogyeong-myeon, Yeongcheon-si, Gyeongsangbuk-do	February 11 th , 2018	5:30	February 11 th , 2018	7:32	Other	1	O	X
Nogok-myeon, Samcheok-si, Gangwon-do	February 11 th , 2018	7:14	February 13 th , 2018	12:00	House fire spread	161.14	O	O (The following day)
Dogye-eup, Samcheok-si, Gangwon-do	February 11 th , 2018	12:27	February 13 th , 2018	12:00	Other	76.46	O	O (The following day)
Yongmun-myeon, Yecheon-gun, Gyeongsangbuk-do	February 16 th , 2018	5:08	February 16 th , 2018	7:30	Ancestral tomb visitor accidental fire	0.81	X	X
Gwangui-myeon, Gurye-gun, Jeollanam-do	February 16 th , 2018	6:55	February 16 th , 2018	9:50	Ancestral tomb visitor accidental fire	3	O	X
Hwasan-myeon, Yeongcheon-si, Gyeongsangbuk-do	February 17 th , 2018	2:30	February 17 th , 2018	6:30	Other	1	X	X
Changsu-myeon, Yeongdeok-gun, Gyeongsangbuk-do	February 17 th , 2018	5:20	February 17 th , 2018	14:00	Other	7	O	X
Gahoe-myeon, Hapcheon-gun, Gyeongsangnam-do	February 21 th , 2018	7:29	February 22 th , 2018	0:00	Paddy field incineration	1	X	X
Moksadong-myeon, Gokseong-gun, Jeollanam-do	February 26 th , 2018	12:30	February 27 th , 2018	18:35	Other	0.8	O	O

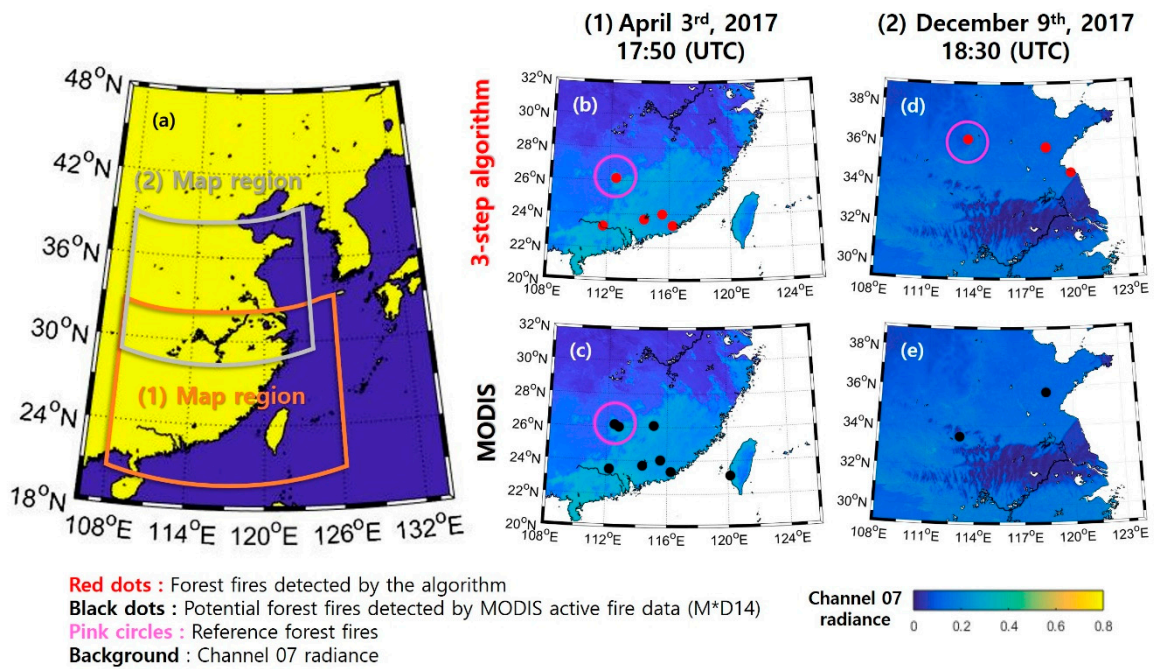


Figure S1. The maps of forest fires in the China detected by the 3-step algorithm in this study and the MODIS active fire data (M*D14). 1) the forest fire (Yizhang County, Chenzhou City, Hunan Province; on April 3rd, 2017) and 2) the forest fire (Pingshun County, Changzhi City; from 15:23 on 9th to 13:00 (UTC) on 11th February 2017). The red dots are the potential forest fire pixels detected by the proposed algorithm, pink circles show actual forest fire cases from the reference data, black dots are the potential forest fire pixels detected by the Collection 6 MODIS active fire data, and the band 7 radiance of Himawari-8 AHI of each image is used as a background image.