

Update on Geostationary Active Fire & FRP Products produced in Europe and the forthcoming Sentinel-3 AF & FRP Products.

Presented by Martin Wooster – contributions from W. Xu, J. He, G. Roberts, H. Nguyen King's College London and

NERC National Centre for Earth Observation





Meteosat Second Generation FRP-PIXEL Product Produced at EUMETSAT LSA SAF





Available at the EUMETSAT LSA SAF (https://landsaf.ipma.pt/en/products/fire-products/frppixel/





Meteosat 2nd Generation (FRP Reprocessing)





Total Particulate Matter Emissions



Mota and Wooster (2018) *Remote Sensing of Environment*





Meteosat 2nd Generation (FRP Reprocessing)









Meteosat Second Generation [IODC Coverage]



Meteosat-11Meteosat-8[Operational][Indian Ocean Covera

Courtesy of Hannah Nguyen

(King's College London PhD Candidate)



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SEVIRI FRP-Pixel – Intercomparison



LSA SAF Meteosat FRP products-Part 1 : Algorithms, product contents, and analysis. / Wooster, M. J.; Roberts, G.; Freeborn, P. H.; Xu, W.; Govaerts, Y.; Beeby, R.; He, J.; Lattanzio, A.; Fisher, D.; Mullen, R. In: Atmospheric Chemistry and Physics, Vol. 15, No. 22, 30.11.2015, p. 13217-13239.







Xu et al. (2017) Major advances in geostationary fire radiative power..., *Remote Sensing of Environment*

GOES-ABI processed at LSA SAF in Spring 2019 using port of SEVIRI algorithm adapted to Himawari \rightarrow NRT processing / eval



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KING'S College LONDON **GOES-R and Himawari Geostationary Fire Algs.** GFASv1.2 mean PM2.5 emissions, September 2015 GFASv1.2 mean PM2.5 emissions, October 2015 September October **GFAS** 3°N 1°N 1.70 Tg 0.76 Ta 0.85 Tc 0 77 PM2.5 [gm² PM2.5 [gm GFEDv4.1s mean PM2.5 emissions October 2015 GFEDv4.1s mean PM2.5 emissions September 2015 3°S 2 **GFED** 3.2 Tg 3.1 Tg 106°E 112°E 114°E 116°E 118°E 106°E 110°E 110°F 112°E 25 100

PM2.5

1.31 Ta

- Himawari Algorithm ready to be operationalised (April 19 \rightarrow)
- Subsequent to GOES ABI processing being commenced

PM2.5 [$g m^{-2}$]



1.88 Tg



0.38 Tg

0.59 Ta

PM2.5 [g m-2]

Sentinel-3 SLSTR Active Fire & FRP Product



- Two satellites now in orbit Sentinel-3A and Sentinel-3B
- Product Processing Prototype Exists Similar to Terra MODIS Overpass Time



S7 (3.7 μm) – S8 (10.8 μm) BT Difference





Recap – Spatial Offset Example (ortho-geolocated)



- 1-2 pixels spatial offset between fire pixels in F1 and S7
- Shape of fire pixel cluster also different
- There are "cosmetically filled" pixels in the fire.









Night & "Classic' Daytime – Expected Commisioning by Oct/Nov 2018



Validation Campaign UK Test May 2018









MWIR



ONCA

LWIR Narrowband

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LWIR Wideband



Optris





Validation Campaign August 2018







NATURAL ENVIRONMENT RESEARCH COUNCIL





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Night-time

ondon



Campaign 10 – 24 Aug 2018 [28 hrs flying]

Evening of 15th Aug local time SLSTR imagery

Lake Winnipeg

Fire 1

Fire 2

Sentinel 3A & 3B Under Flights [also GOES-R & some MODIS/BIROS]

Fire 1

Fire 2













