MSG/SEVIRI potential for fire applications

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SEVIRI Added Value?

- SEVIRI characteristics
- For fire information retrieval?
- For the users?
- Conclusions

SEVIRI characteristics added value?

- λ : 1.6 μm continuous channel
  - MODIS > **SEVIRI** > AVHRR > GOES > TM
- t : 15 min cycle (global scan)
  - **SEVIRI** < GOES < MODIS, AVHRR < TM
- x : Limitation: 3km
  - TM < MODIS < AVHRR < **SEVIRI** < GOES
- Near real-time dissemination of products

Added value for fire information *retrieval*

Fire Information	Approach	15 min	λ	>3km	Added value
Fire location (detection)	Contextual	time detection	-	Limitation	★
Fire radiative power [Js^{-1}]	MODIS, Wooster	time detection	Saturation?	Limitation ?	★
Burned areas	Various	time detection	-	Limitation	★
Fuel moisture	EWT (Ceccato)	inversion	Require 1.6μm	-	★
Fuel load	FAPAR, NPP, Albedo...	inversion	-	-	★

Added value
for fire information *retrieval*

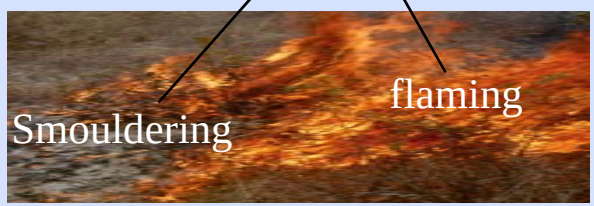
Fire Radiative Power [Js^{-1}] or [W]
at pixel level

fire exitance

fire spectral exitance

$$FP_{pix} = A_{pix} \int \{ \Sigma_i A_i \varepsilon_i B(T_i) \}_\lambda \, d\lambda$$

fire comp. *i*
spectral exitance



Added value for the user?

Fire Radiative Power [Js-1] or [W]

$$FP_{pix} = A_{pix} \int \{ \Sigma_i \, \varepsilon_i \, A_i \, B(T_i) \}_\lambda \, d\lambda$$

Fire Radiative Energy [J] or [Ws]

$$FRE = \int FP_{pix} \, dt$$

Added value for the user?

		15 min	>3km	Real time	added value
Fire Management					
Fire danger	Fuel load				- -
	Fuel moisture				- -
Fire fighting	Fire location				★ -
Monitoring & evaluation	Burned areas			n/a	- -
Global Change: gas and particles emissions: $M = BB * E_f$					
$BB = BA*FL$	Burned areas			n/a	-
	Fuel load			n/a	-
$BB \cong f(FRE)$	Fire Radiative Energy [J]			n/a	★★★
E_f	Fuel moisture			n/a	-

Where SEVIRI can potentially make a difference?

- 1st assessment:
  - Total Fire Radiative Energy [J]

    for Global Change Community

- What do the end-users say?