



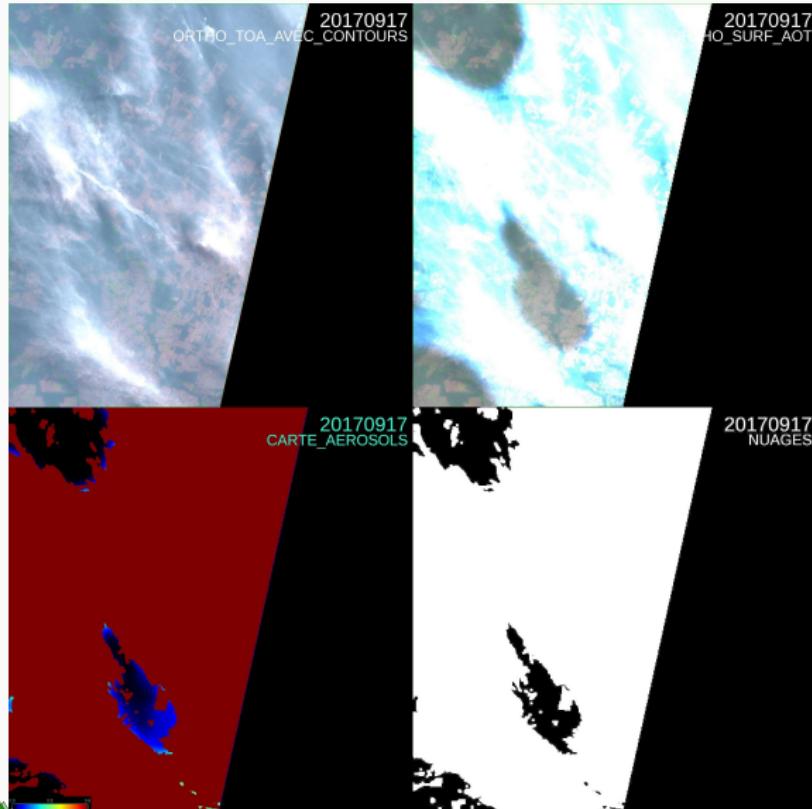
Point d'avancement MAJA du 7 novembre 2019

J. Colin¹ O. Hagolle¹

November 27, 2019

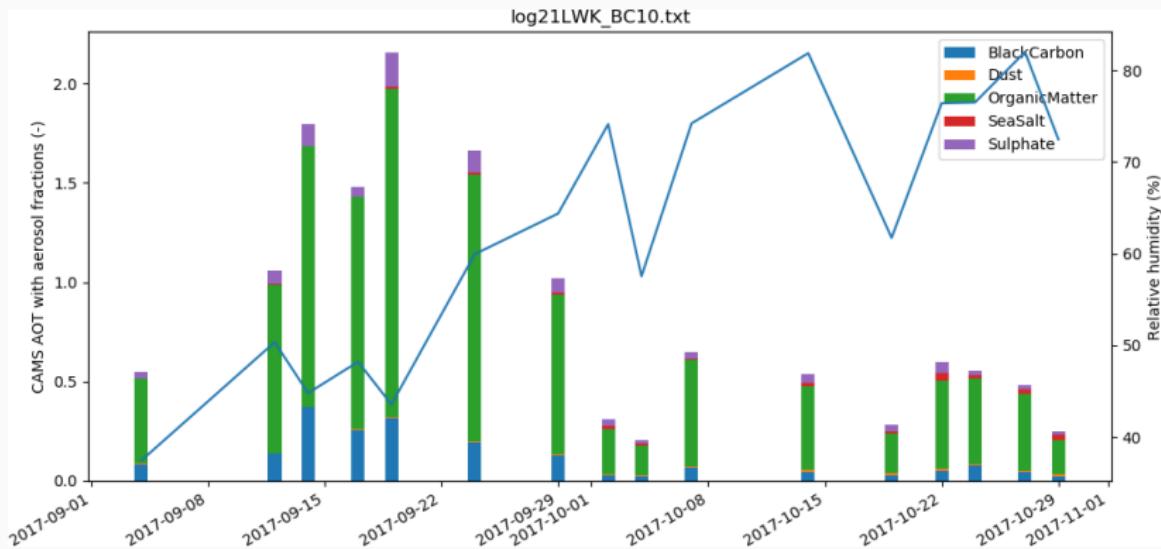
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Alta Floresta, 17 Sept. 2017



- 21LWK
2017-09-17(S2B)
- Simulation avec CAMS

Alta Floresta, 17 Sept. 2017

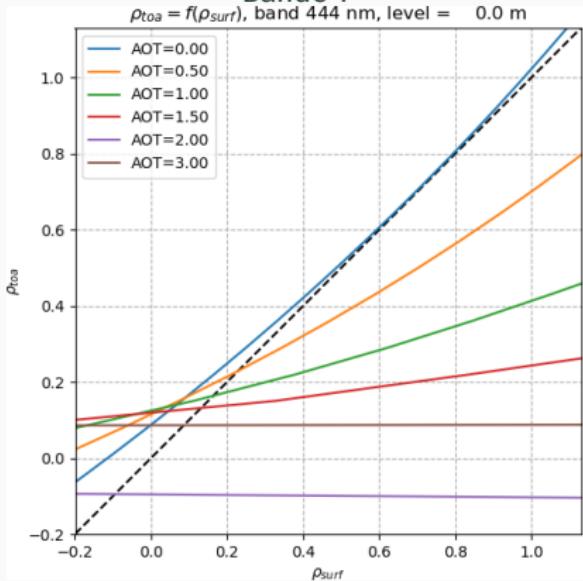


Proportion significative de Black Carbon ($m_r = 1.75$, $m_i = 0.20$)

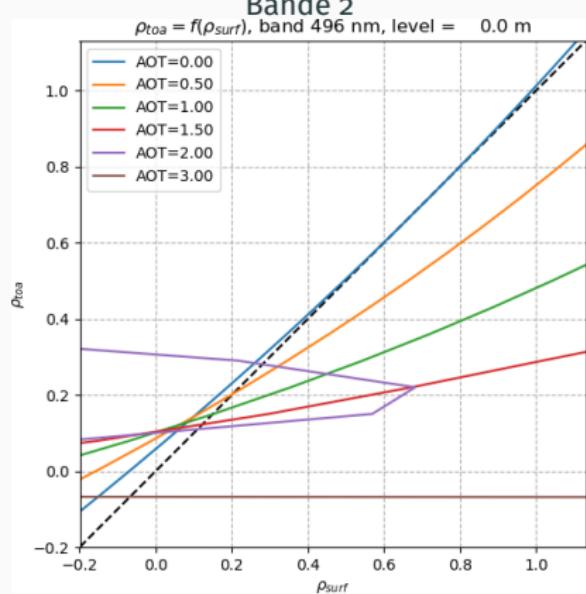
Organic Matter avec des RH plutôt faibles ($m_{i_{RH30}} = 0.009726$, $m_{i_{RH80}} = 0.00486$)

Alta Floresta, 17 Sept. 2017

Bande 1



Bande 2



Miniluts : ajustements non monotones pour AOT > 1.5

Piste 1: revoir le calcul des miniluts

- Dans les spécifications :

$$\rho_{surf(b, \rho_{toa}, \tau, z)} = \sum_{M=1}^n r_{M_n} \cdot \rho_{surf_M}(b, \rho_{toa}, \tau, z)$$

Hypothèse de linéarité, à l'évidence non vérifiée ici

- Test :

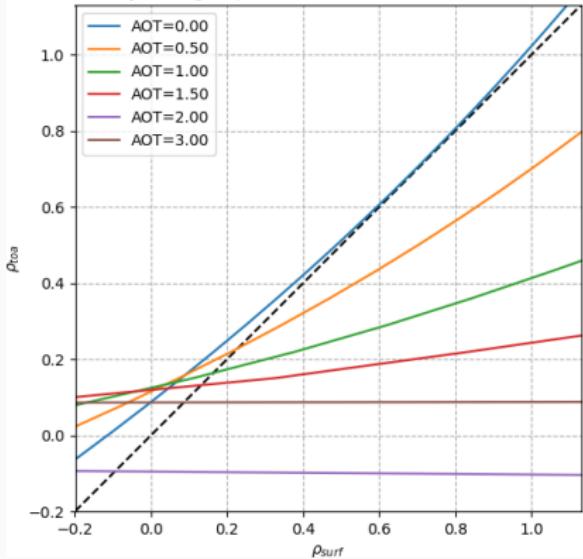
Ajout d'une pondération de τ par la proportion r_{M_n} de chaque modèle n d'aérosol M tel que :

$$\rho_{surf(b, \rho_{toa}, \tau, z)} = \sum_{M=1}^n r_{M_n} \cdot \rho_{surf_M}(b, \rho_{toa}, r_{M_n} \cdot \tau, z)$$

Piste 1

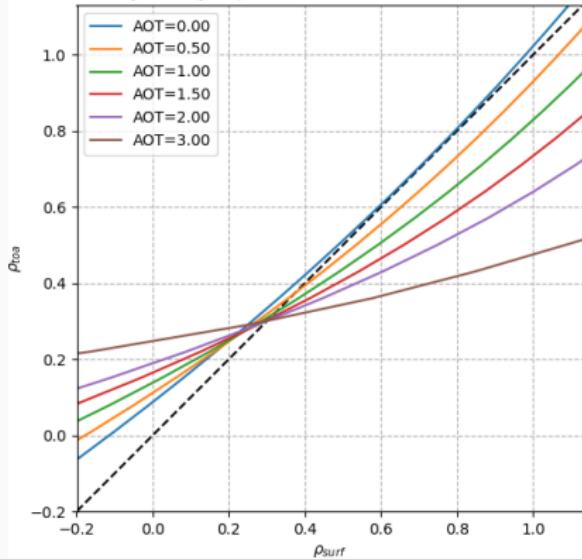
Minilut B1 "spéc"

$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 444 nm, level = 0.0 m



Minilut B1 "piste 1"

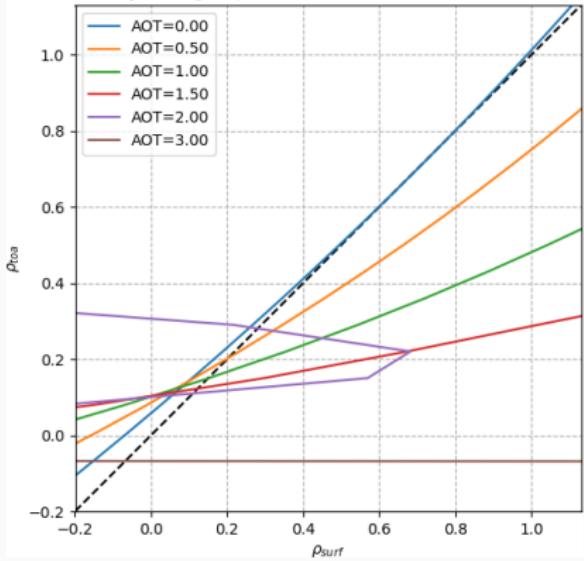
$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 444 nm, level = 0.0 m



Piste 1

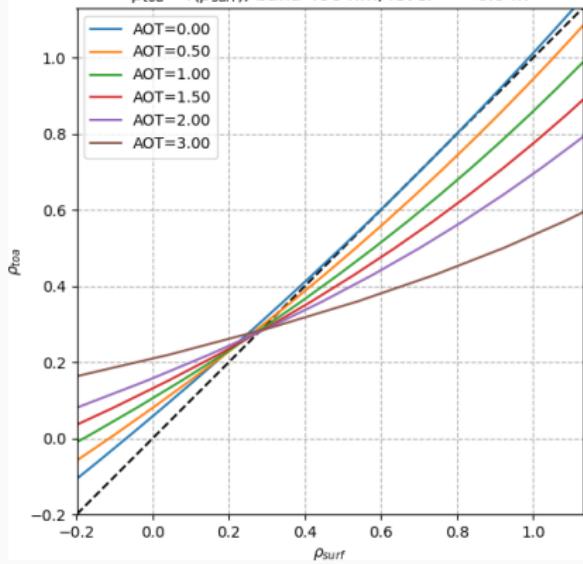
Minilut B2 "spéc"

$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 496 nm, level = 0.0 m



Minilut B2 "piste 1"

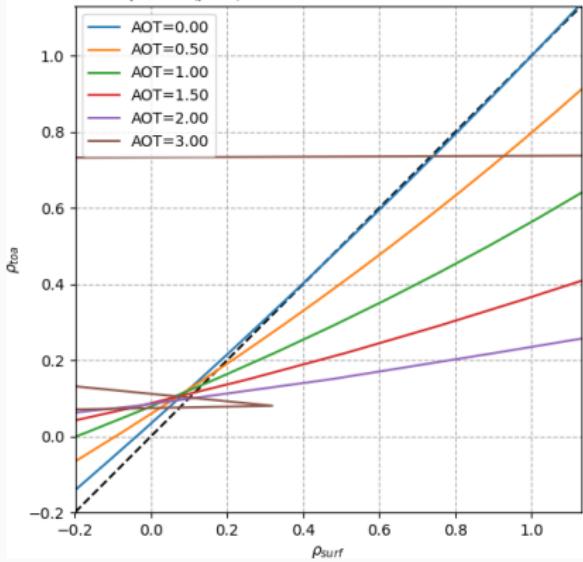
$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 496 nm, level = 0.0 m



Piste 1

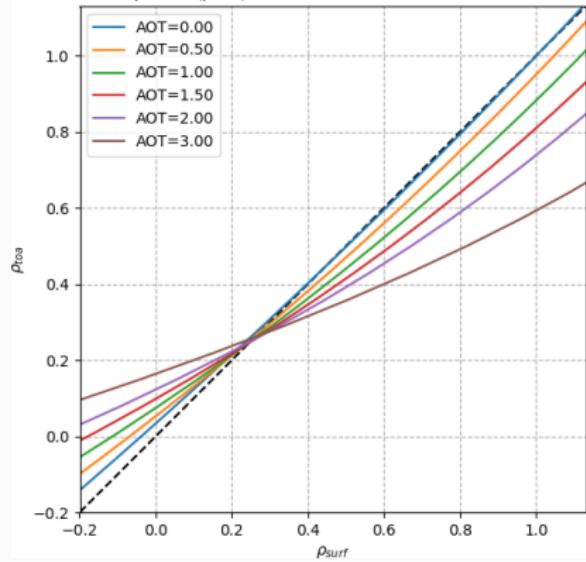
Minilut B3 "spéc"

$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 560 nm, level = 0.0 m



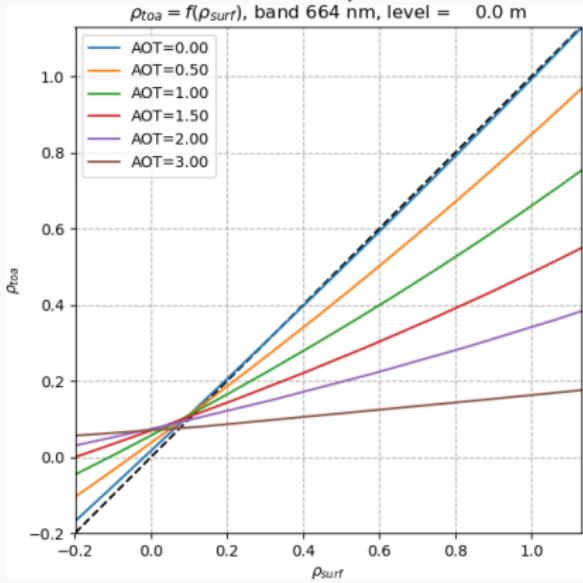
Minilut B3 "piste 1"

$\rho_{\text{toa}} = f(\rho_{\text{surf}})$, band 560 nm, level = 0.0 m

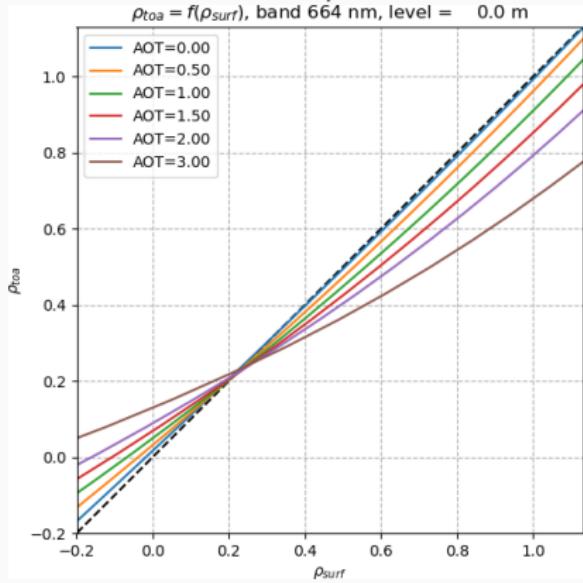


Piste 1

Minilut B4 "spéc"

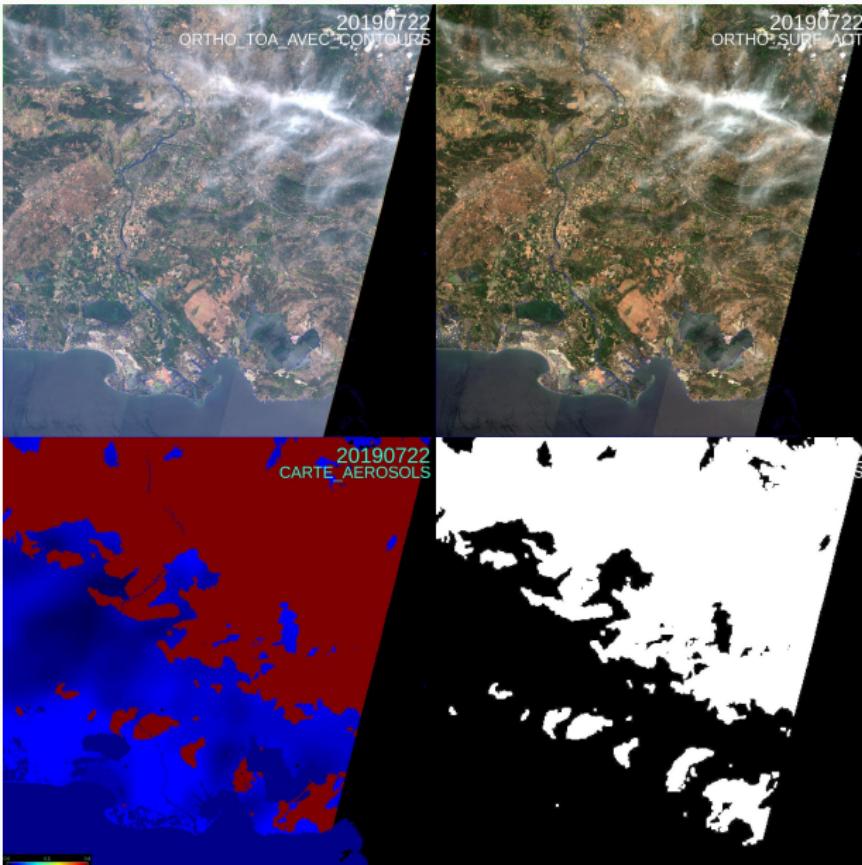


Minilut B4 "piste 1"

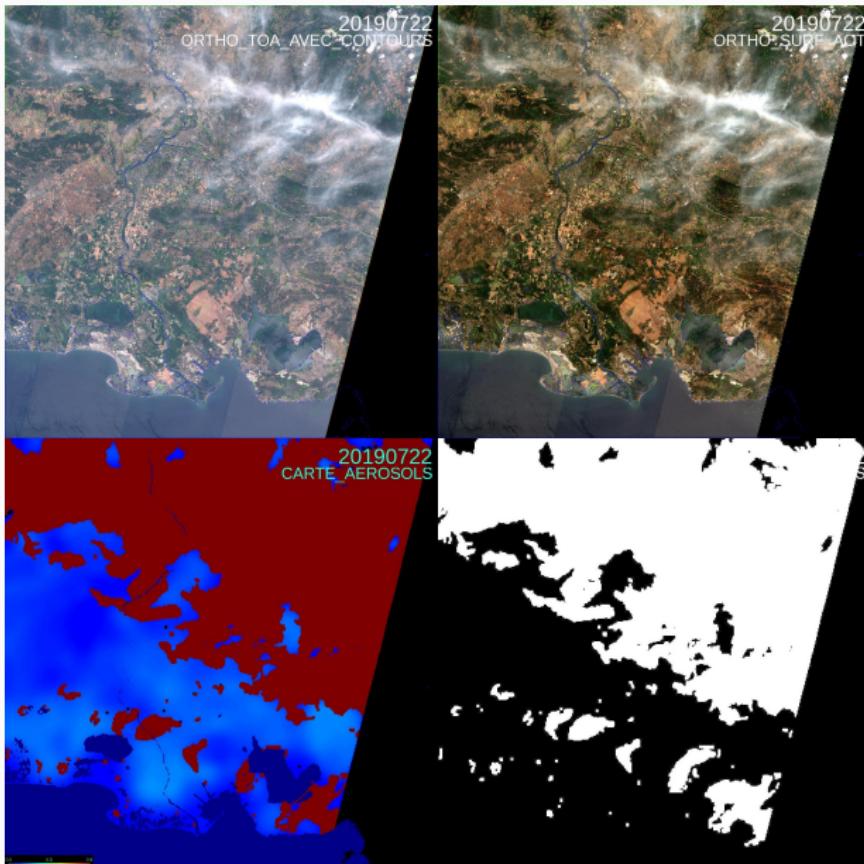


- Problème réglé en apparence, car trop peu de correction atmosphérique
- Sur le run Alta Floresta, le mode backward n'arrive pas à créer un composite car les épaisseurs optiques dépassent le seuil d' $AOT_{\max} = 0.5$ pour toutes les dates

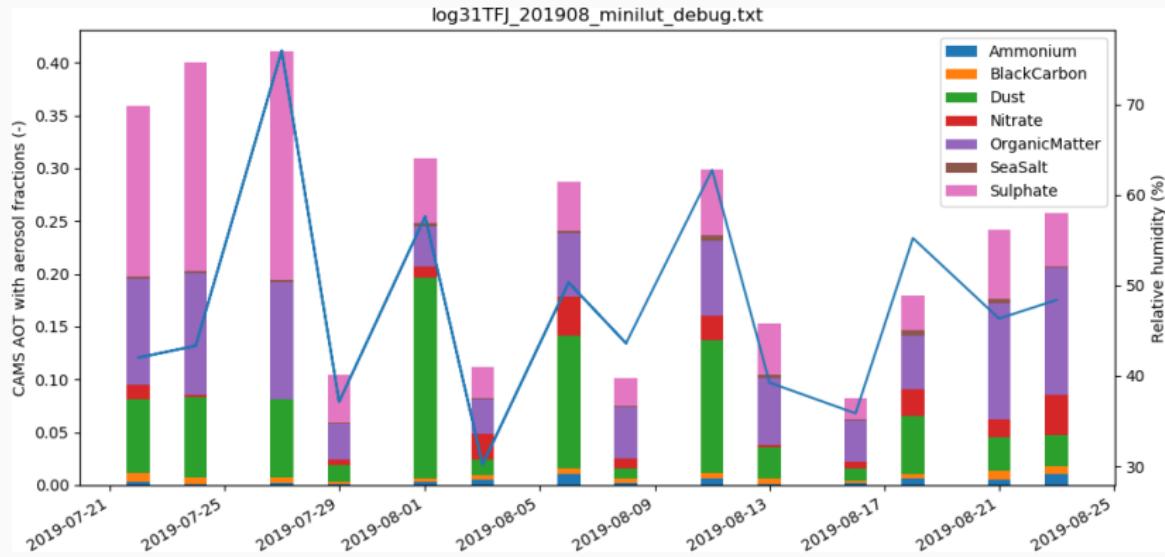
Exemple sur la Crau : sortie "spéc"



Exemple sur la Crau : sortie "piste 1"



Exemple sur la Crau : r_M et RH



L'implémentation "piste 1"

- génère bien un composite sur des tuiles avec moins de matières organiques et de matières carbonnées comme à la Crau (figure ci-dessus)
- mais ne règle pas le problème de départ...

Piste 2

Piste 2: jouer sur l'absorption du Black Carbon

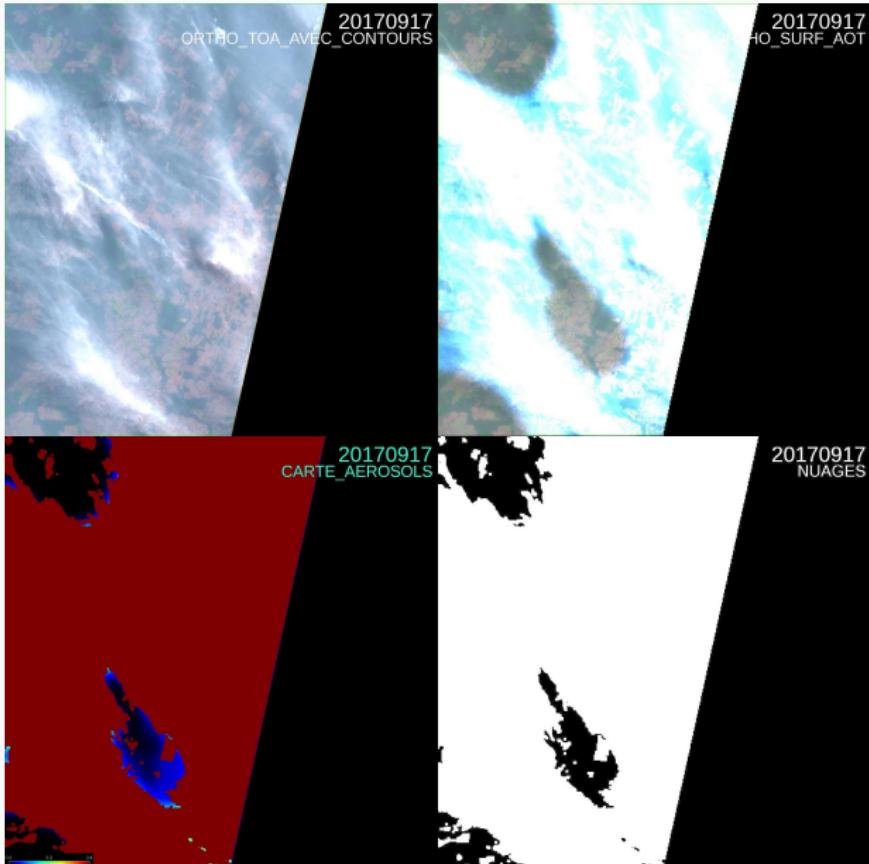
- Initialement, $m_i = 0.45$
- déjà ramenée à 0.20 dans les LUTs

Comparaison avec des LUTs telles que :

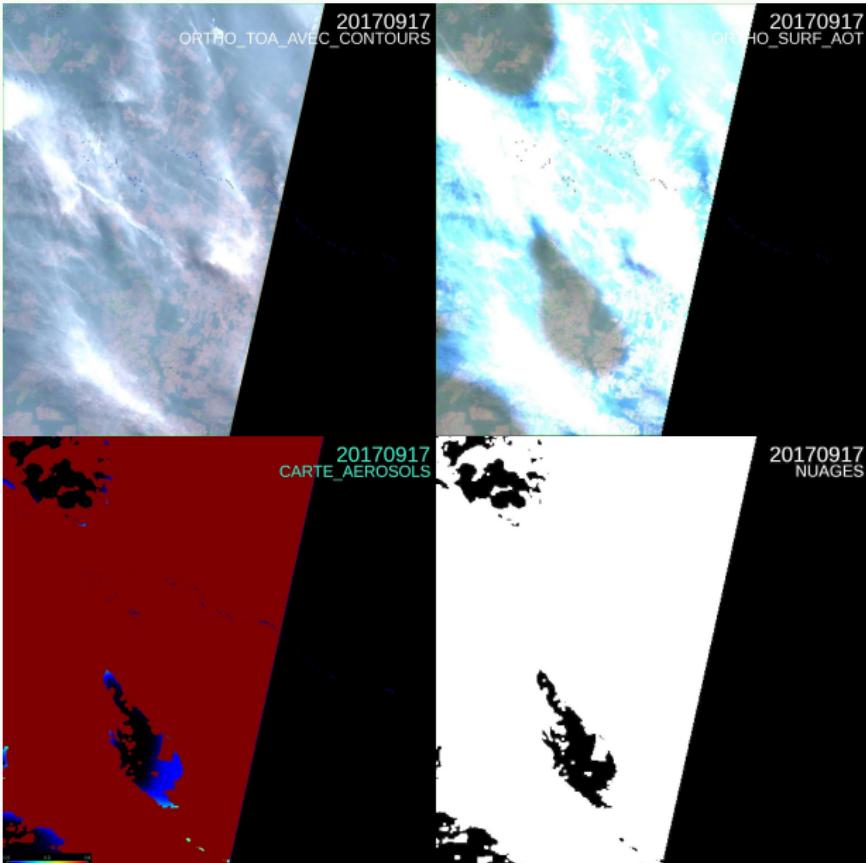
- $m_{i_{BlackCarbon}} = 0.10$ (BC10)
- $m_{i_{BlackCarbon}} = 0.15$ (BC15)
- $m_{i_{BlackCarbon}} = 0.20$ (BC20)

Toutes propriétés des autres aérosols restant inchangées

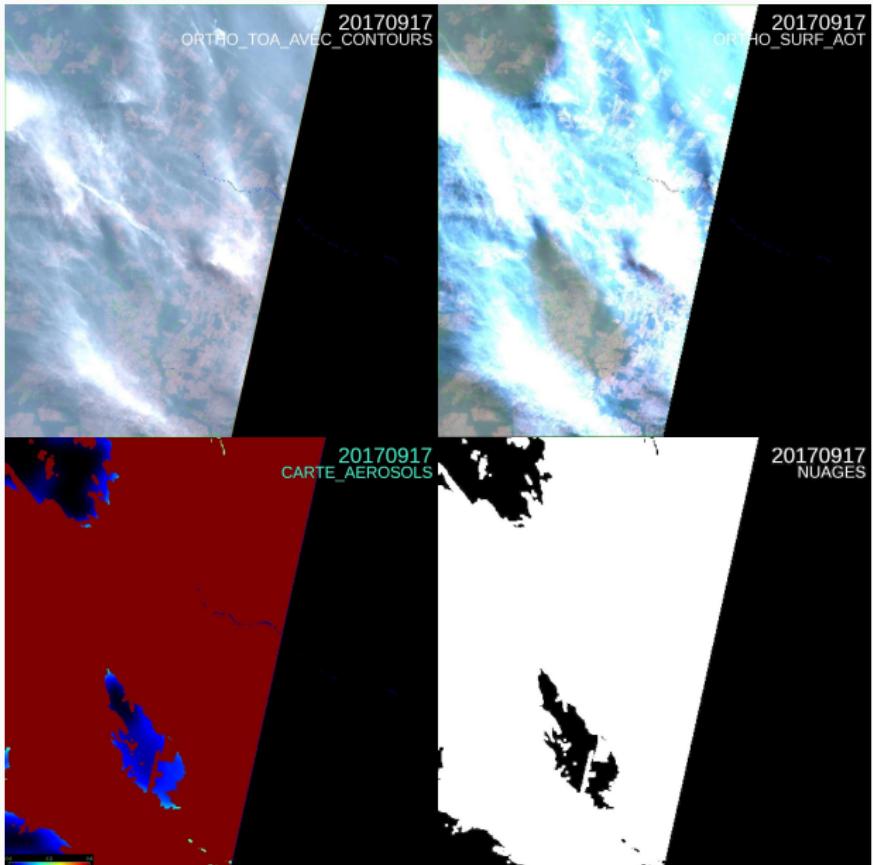
Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.20$



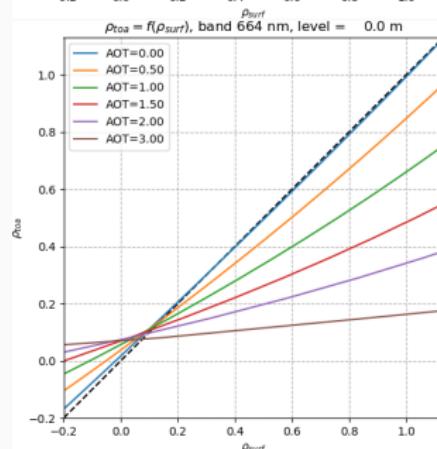
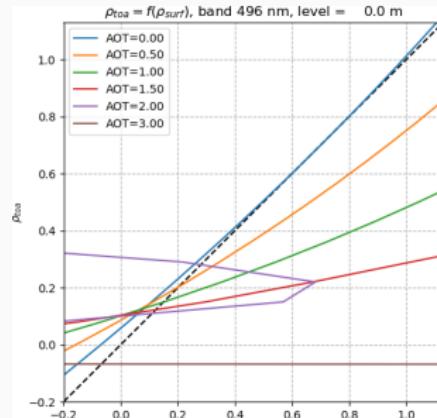
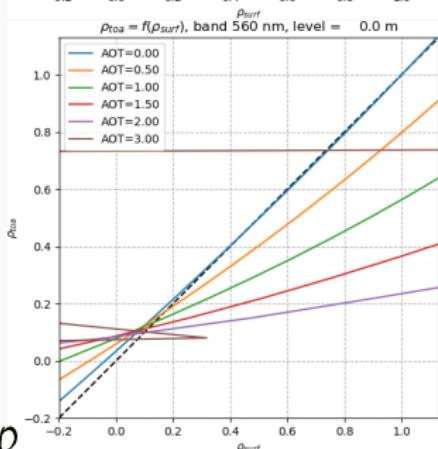
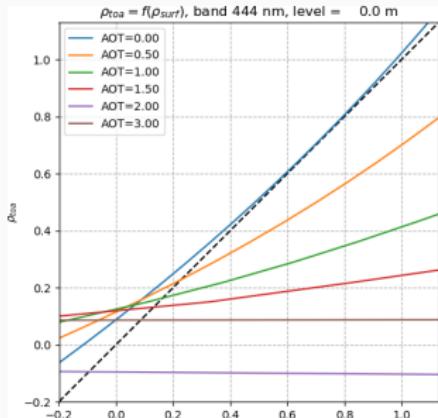
Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.15$



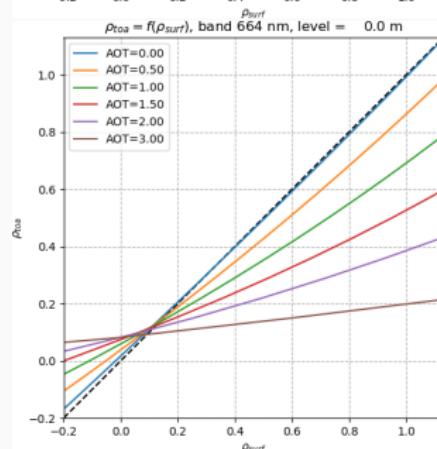
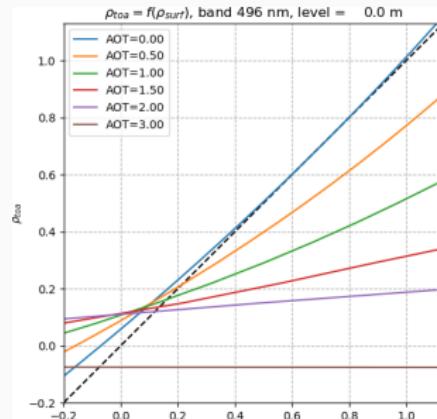
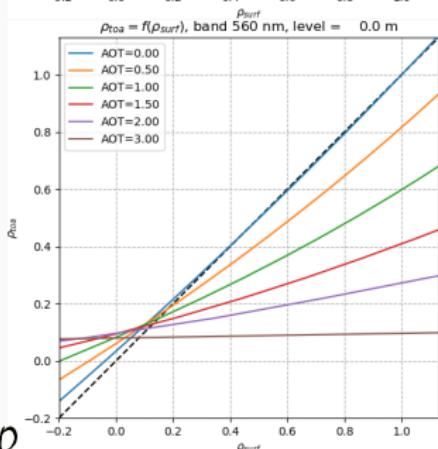
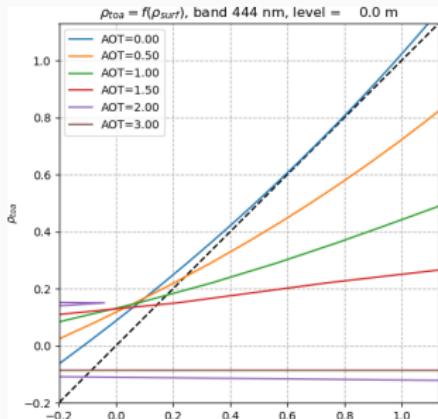
Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.10$



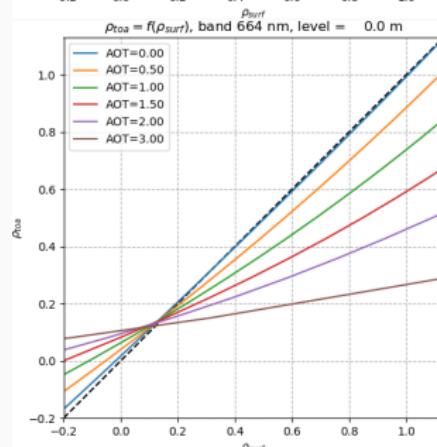
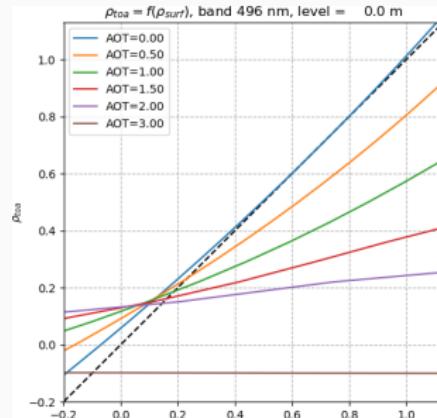
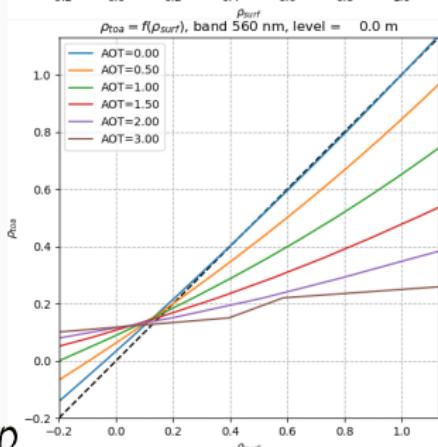
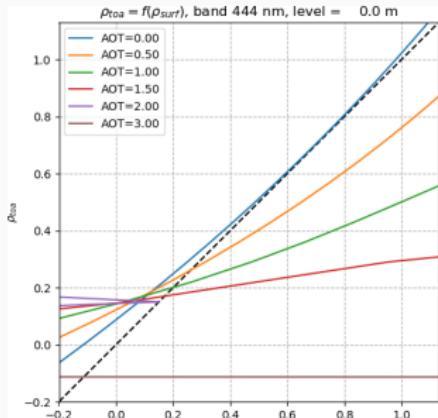
Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.20$



Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.15$

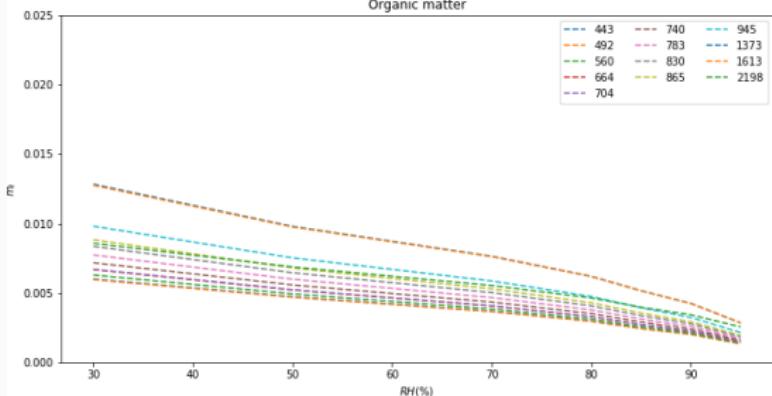
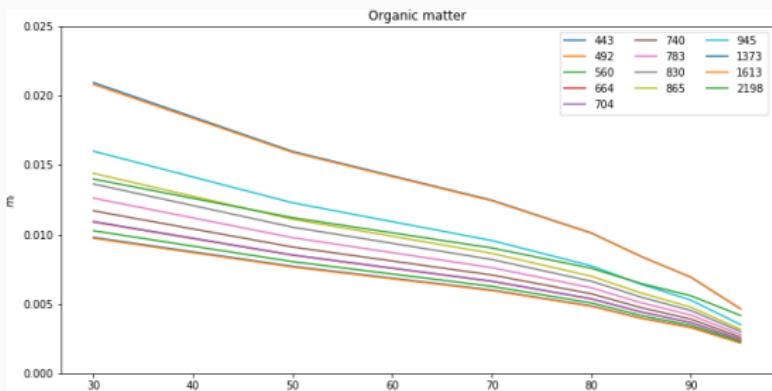


Piste 2 : LUT avec $m_{i_{BlackCarbon}} = 0.10$

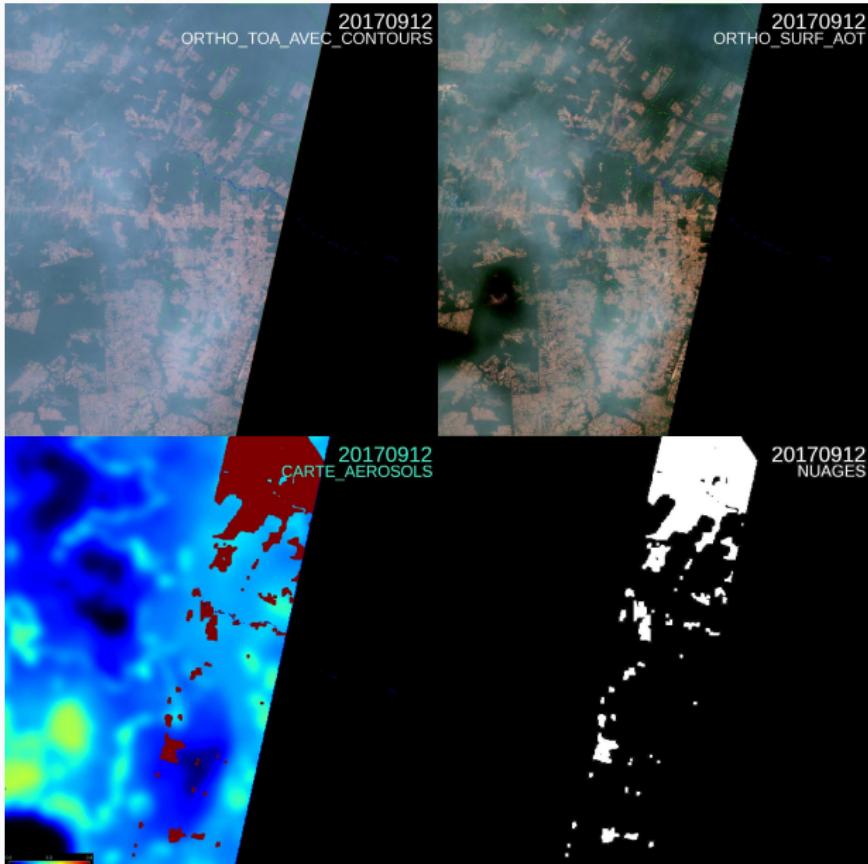


Piste 3 : Changement de la LUT Organic Matter

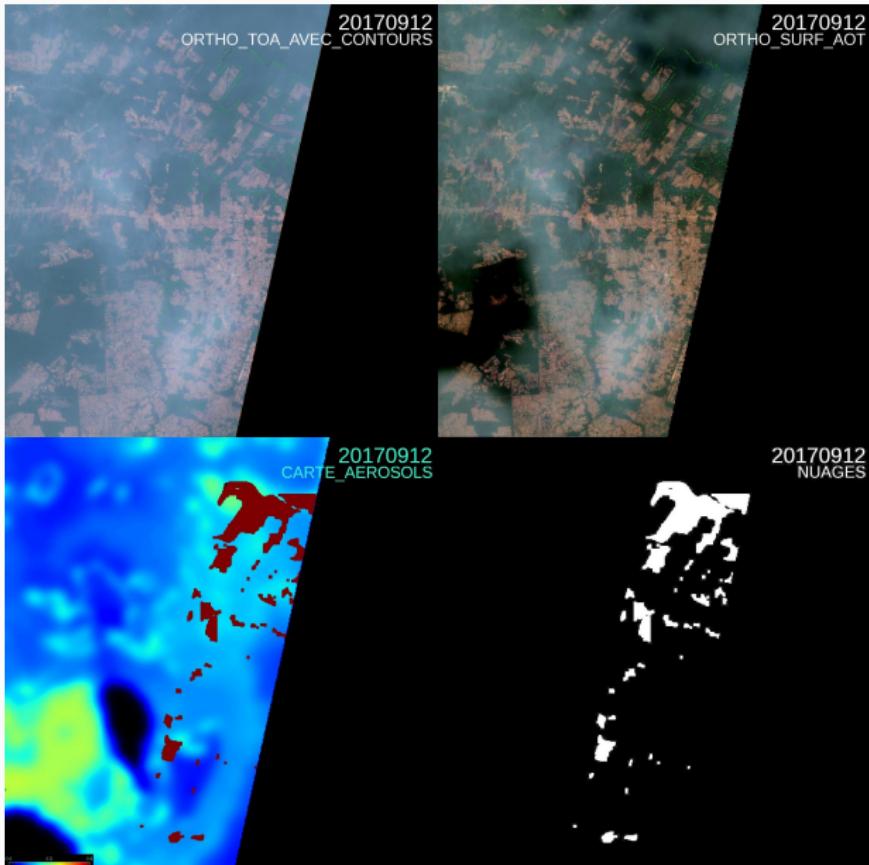
- Plafonner
 $m_{i_{OrganicMatter}}$ à 0.006
pour la bande 1
- Conserver
 $m_{i_{BlackCarbon}} = 0.10$



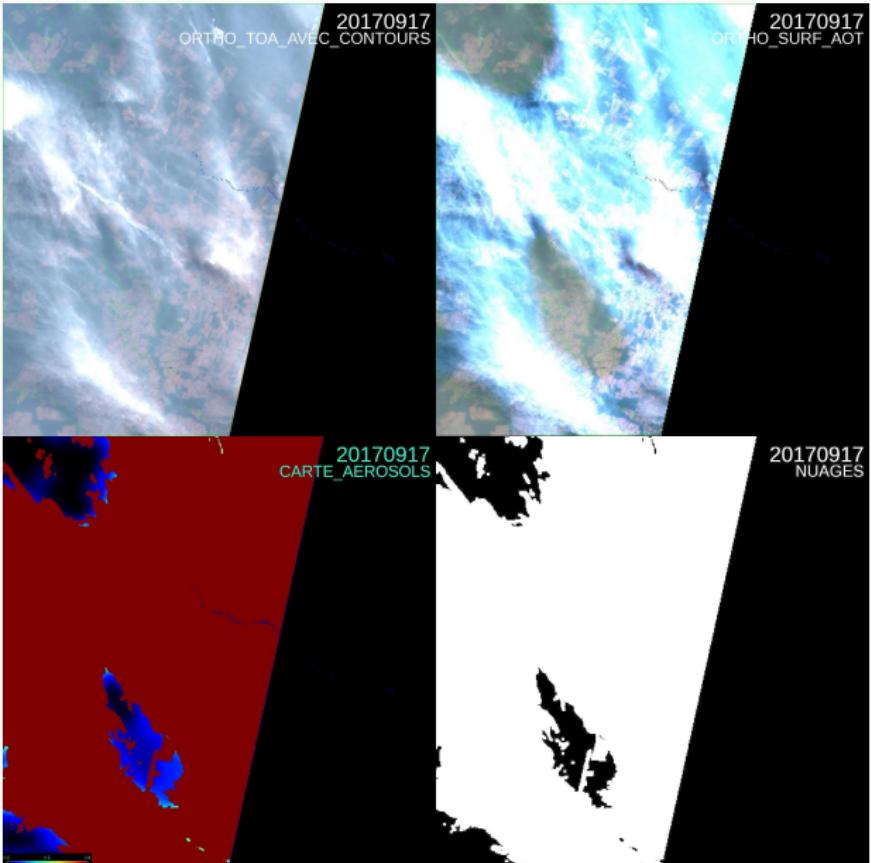
Piste 3 : LUT avec $m_{i_{BC}} = 0.10$



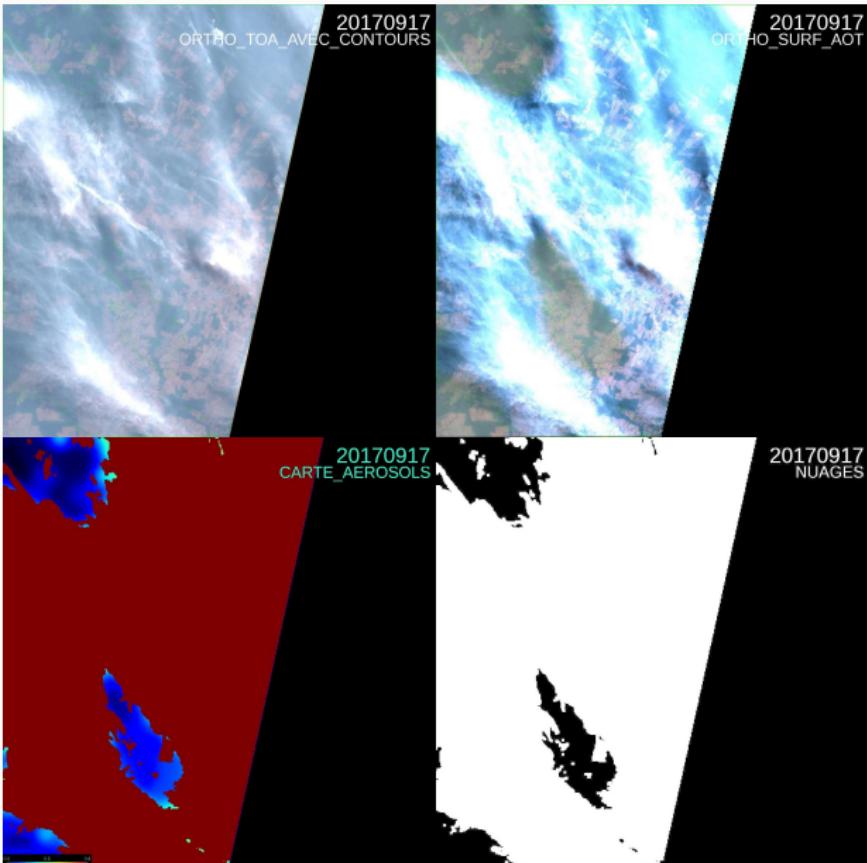
Piste 3 : LUT avec $m_{i_{BC}} = 0.10$ ET $m_{i_{OM}}$ plafonné



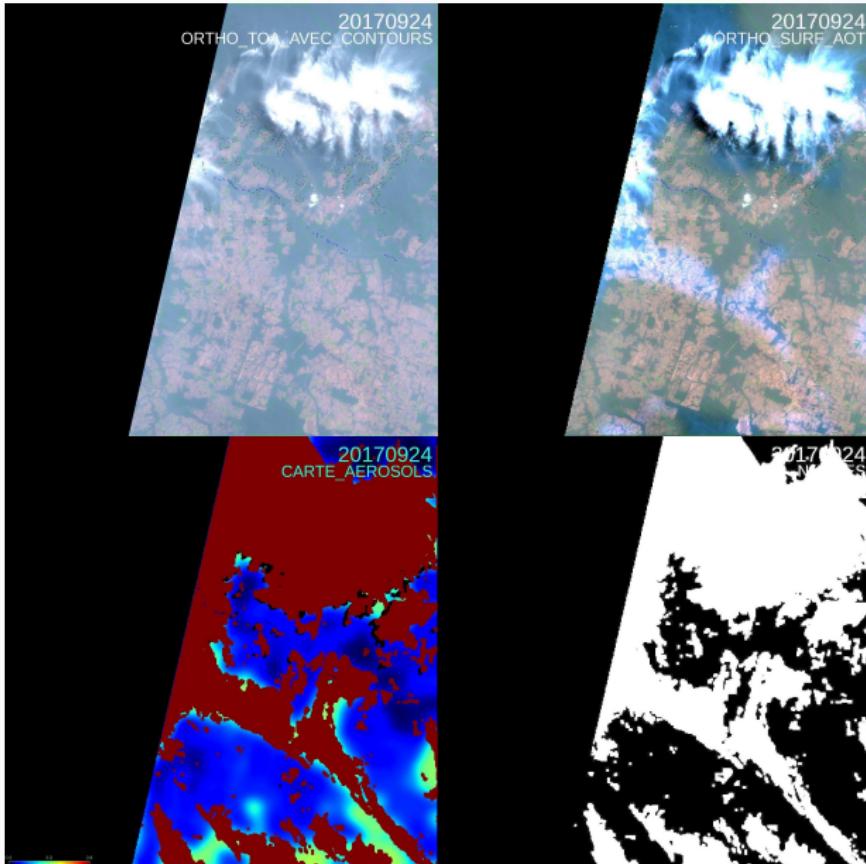
Piste 3 : LUT avec $m_{i_{BC}} = 0.10$



Piste 3 : LUT avec $m_{i_{BC}} = 0.10$ ET $m_{i_{OM}}$ plafonné



Piste 3 : LUT avec $m_{i_{BC}} = 0.10$



Piste 3 : LUT avec $m_{i_{BC}} = 0.10$ ET $m_{i_{OM}}$ plafonné

