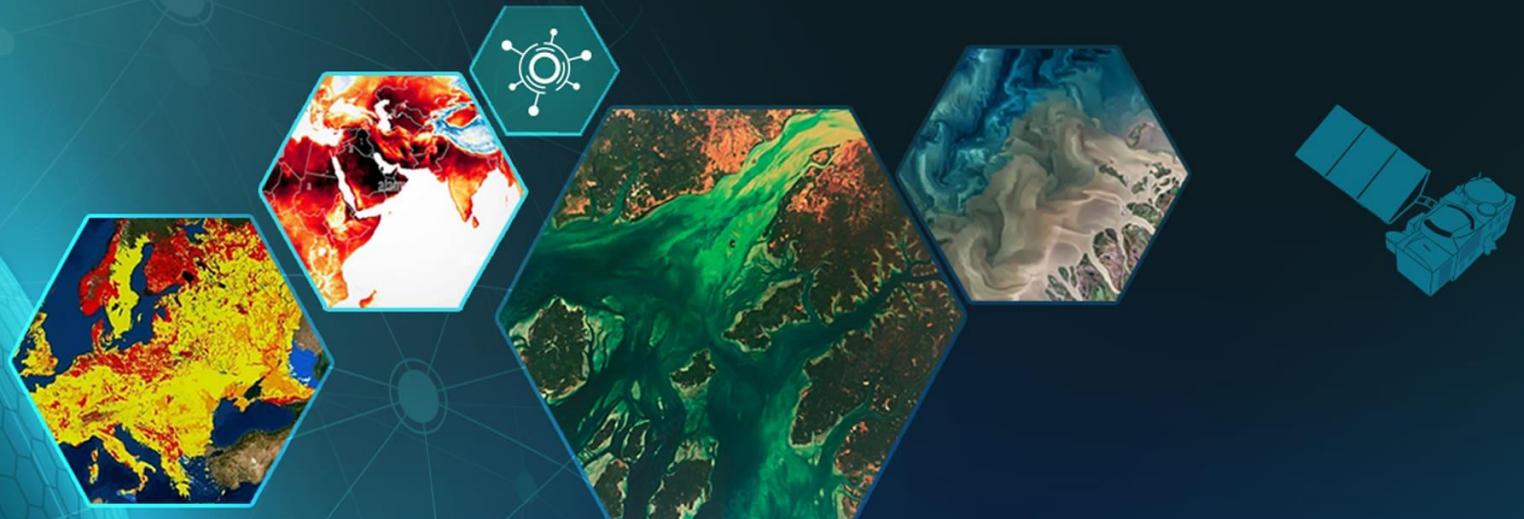


COPERNICUS EARTH OBSERVATION

DATA VISUALISATION WORKSHOP SERIES



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Copernicus
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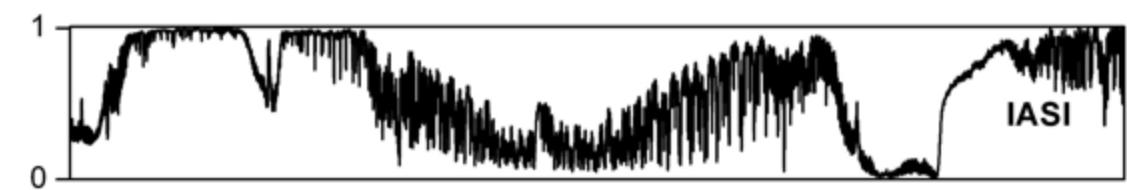
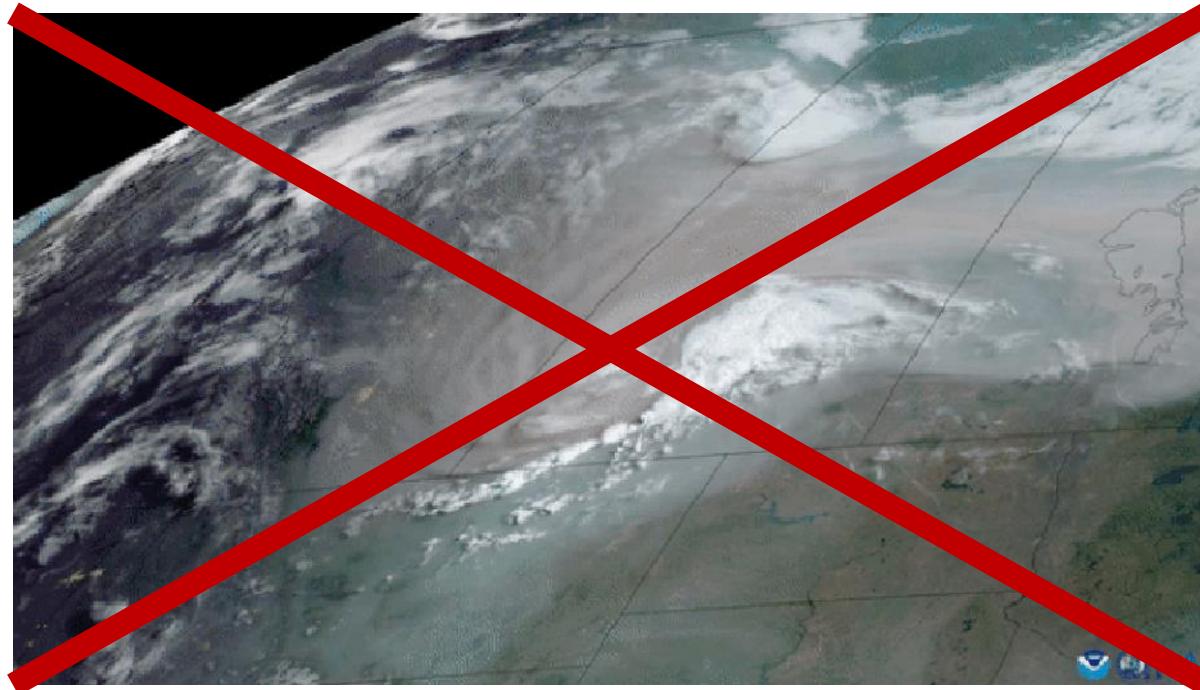


Air Quality and Wildfires

IASI observation for fires and AQ

Cathy Clerbaux

Infrared remote sensing

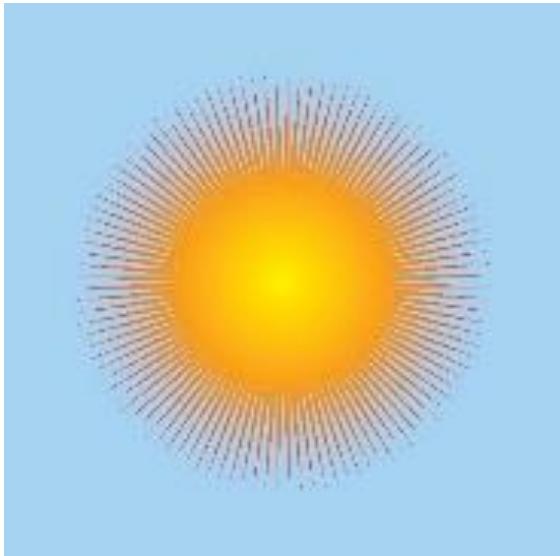


1.2 millions of radiance spectra
Per day
Per instrument

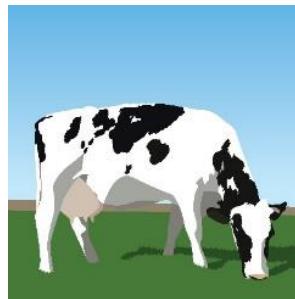


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Air Quality & Wildfires

The IASI infrared remote sensor



Weather forecasting



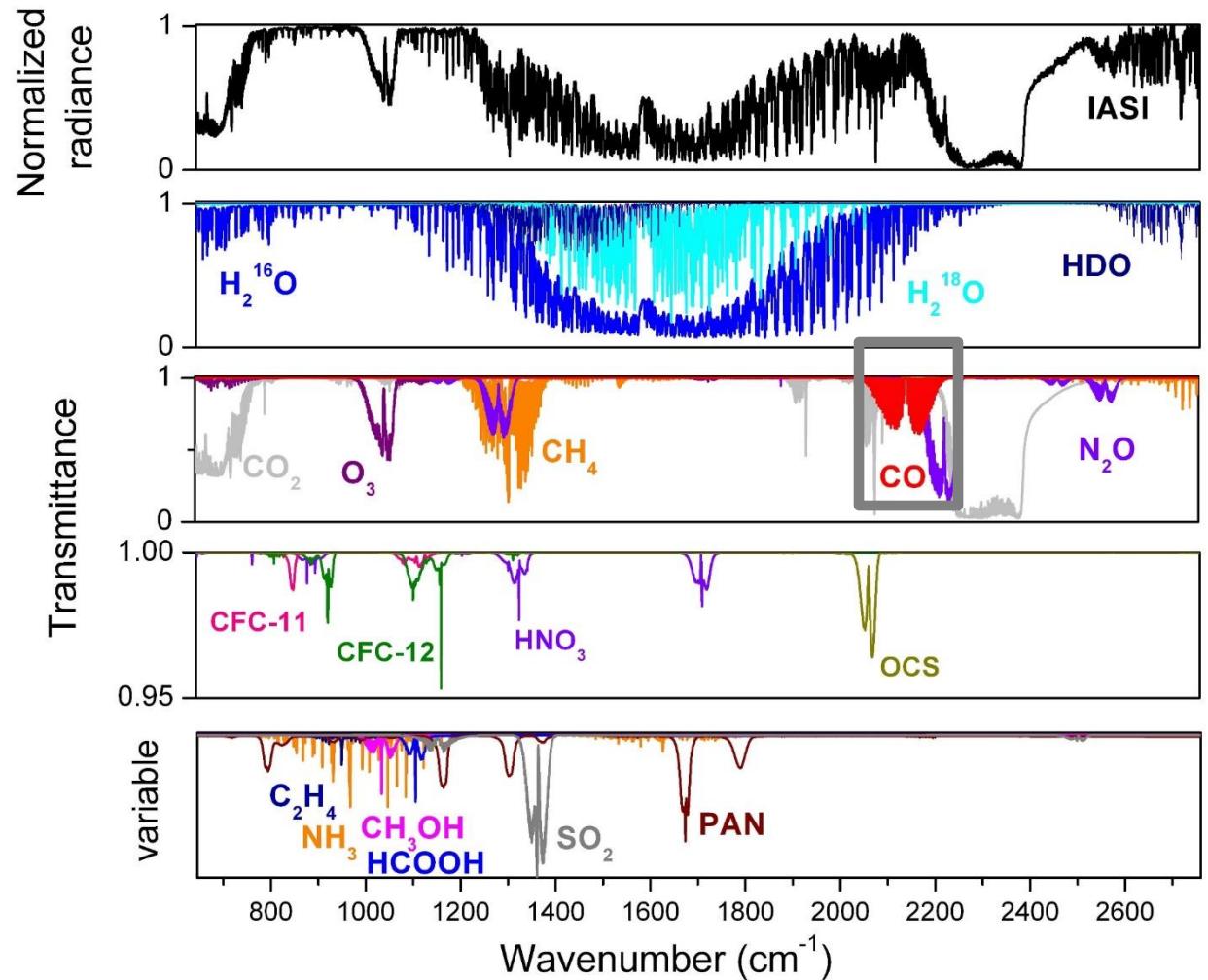
Atmospheric chemistry & climate





Fires (CO)

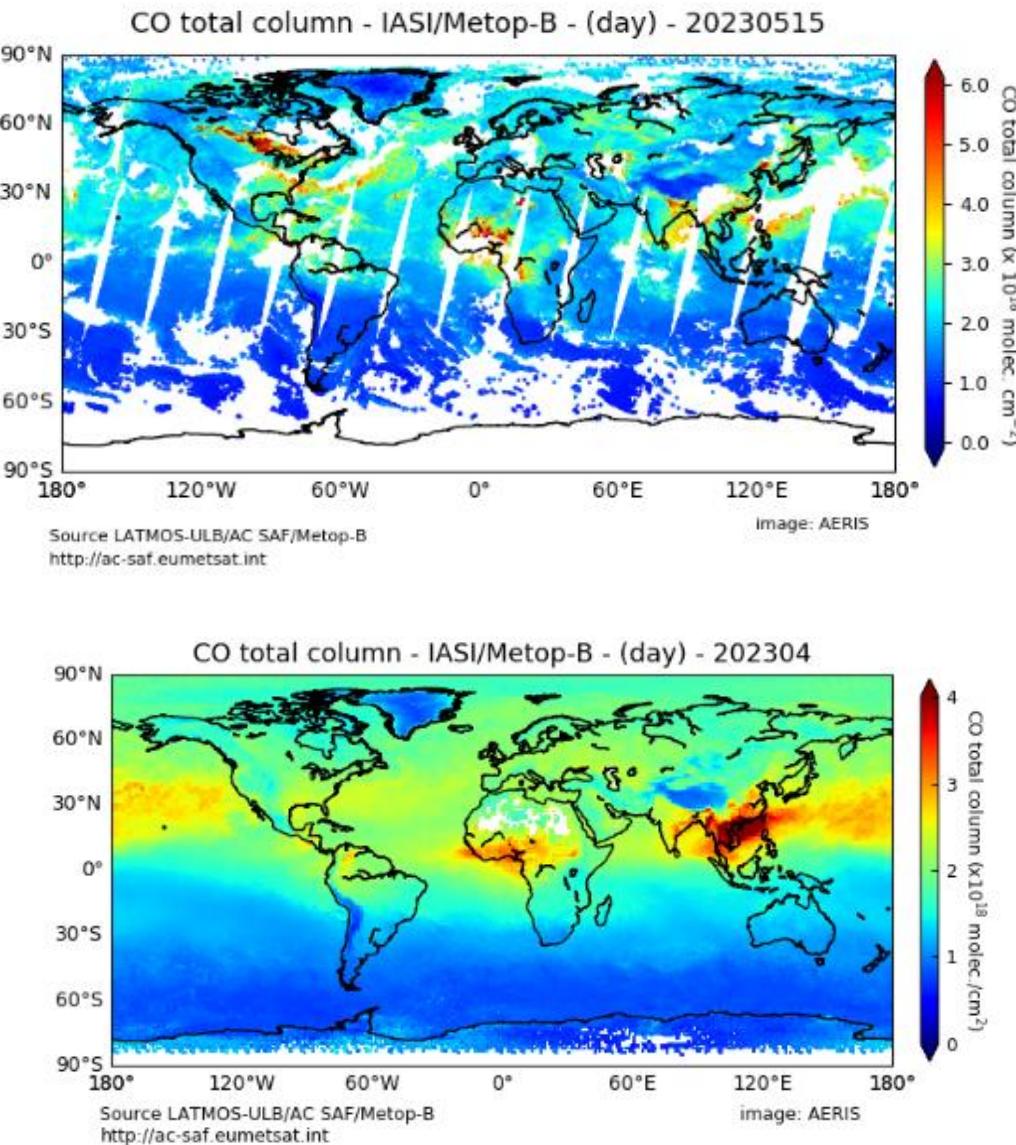
Des millions d'observations à analyser chaque jour...



Clerbaux et al, 2009

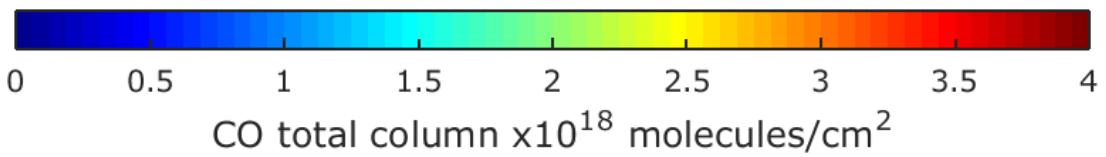
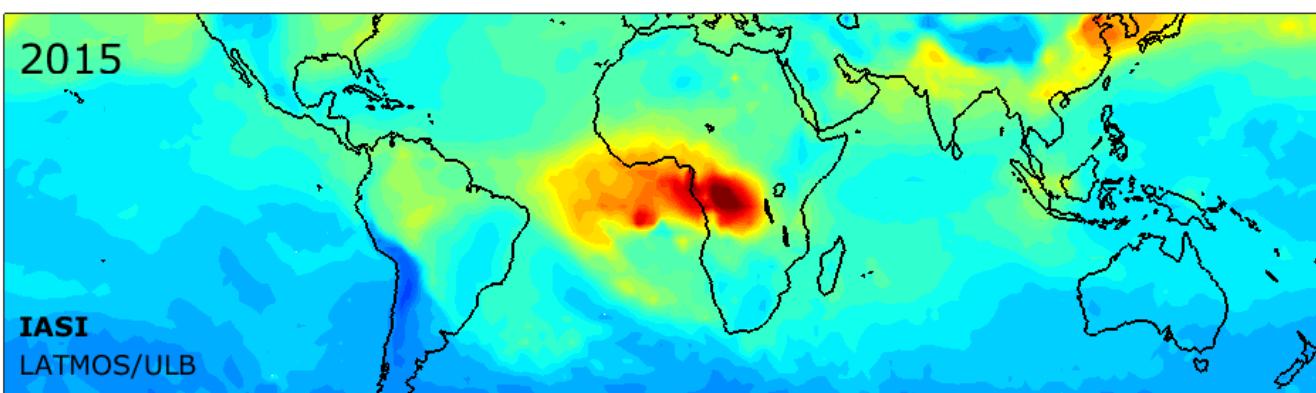
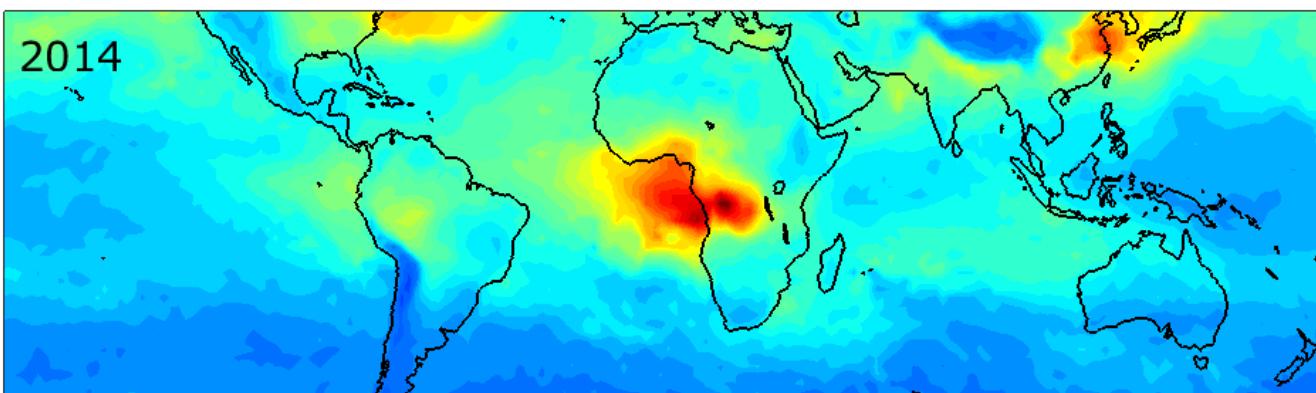
14/06/2023

IASI LATMOS - ULB



Feux – monoxide de carbone

AUG SEP OCT NOV

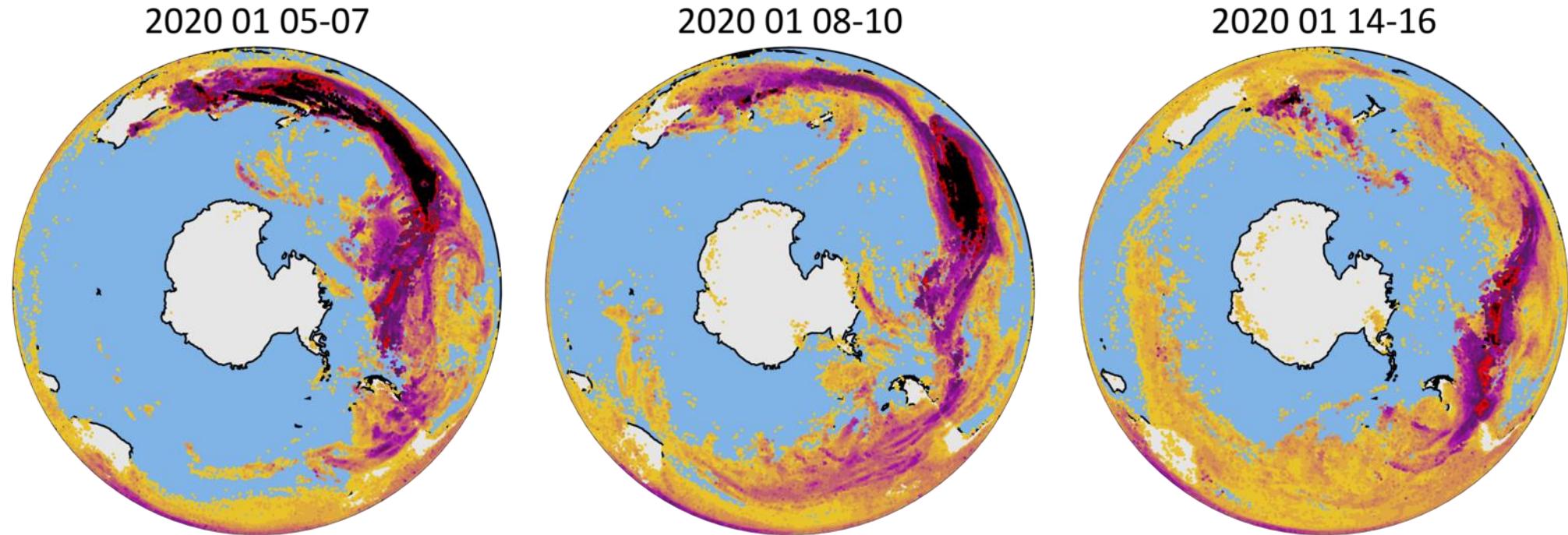


Janvier 2020 : Australia





Fires plumes have circumnavigated around the globe



Credit M. George/ C. Clerbaux (LATMOS)

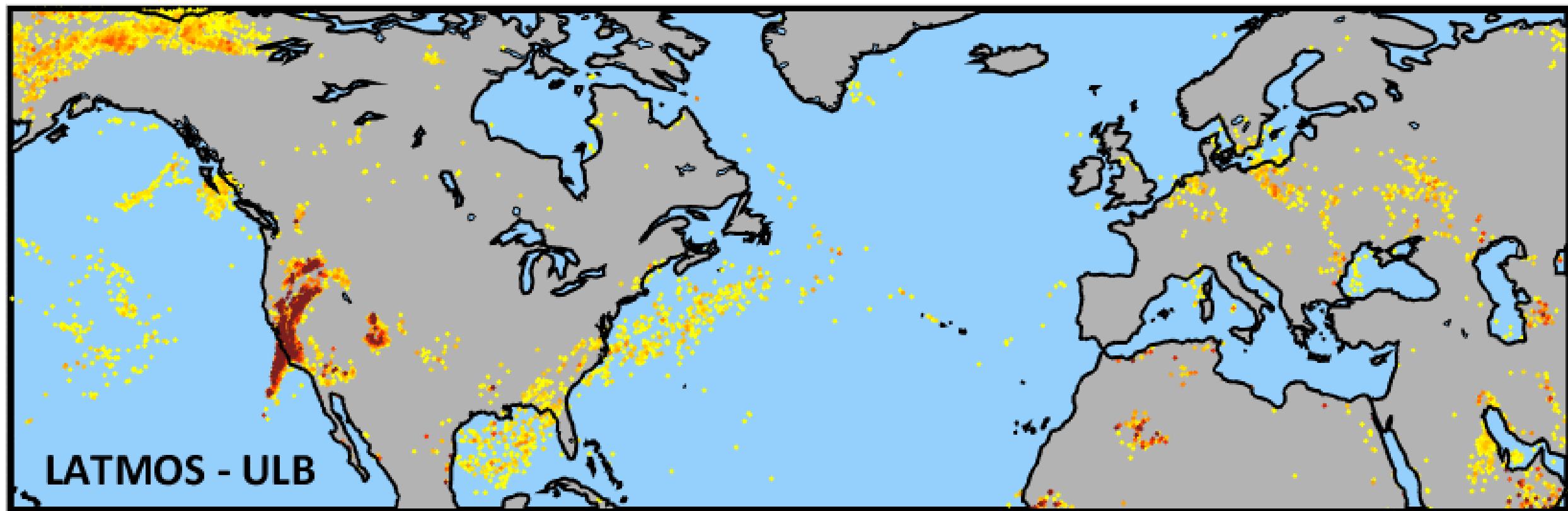
September 2020 : California

Remote sensing and model analysis of biomass burning smoke transported across the Atlantic during the 2020 Western US wildfire season

Xavier Ceamanos^{1,*}, Quentin Coopman², Maya George³, Jérôme Riedi^{4,5}, Mark Parrington⁶, and Cathy Clerbaux^{3,7}



2020 08 19



IASI CO total column ($\times 10^{18}$ molec./cm 2)



3

3.5

4

4.5

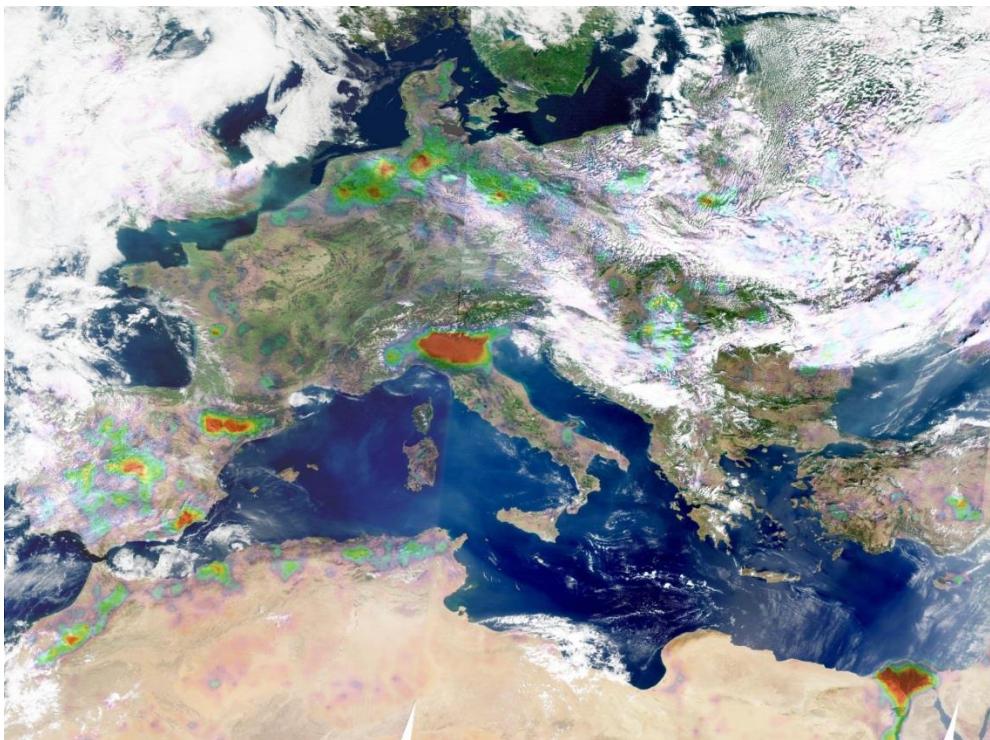
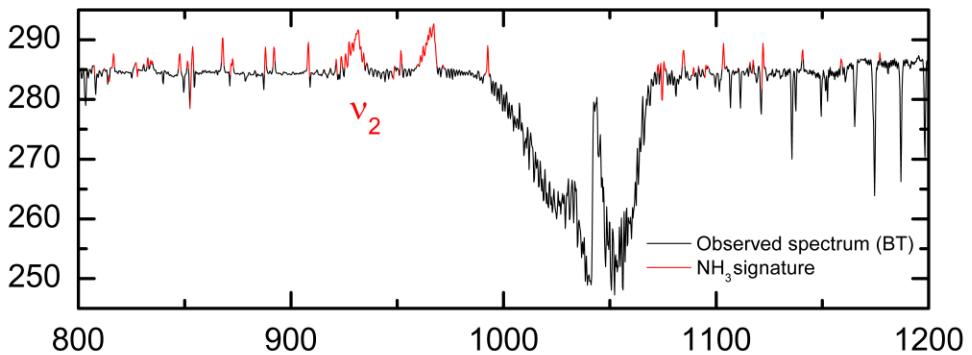
5

5.5

Fertilisers – animal farming : NH_3



The « bonus » molecule...



14/06/2023



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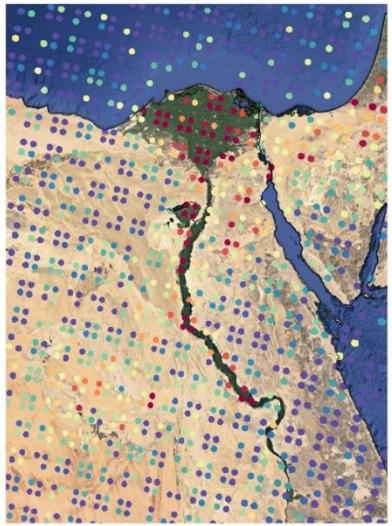
Clarisse et al., Nature Geo 2009

13

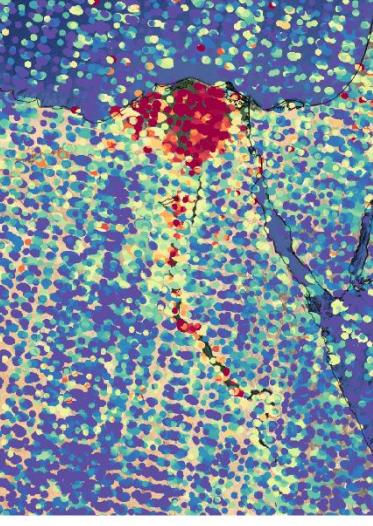
Ammonia (NH_3) – precursor of PM



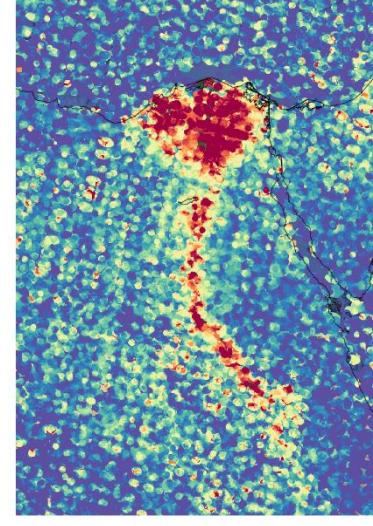
Infrared retrievals – Ammonia (NH_3)



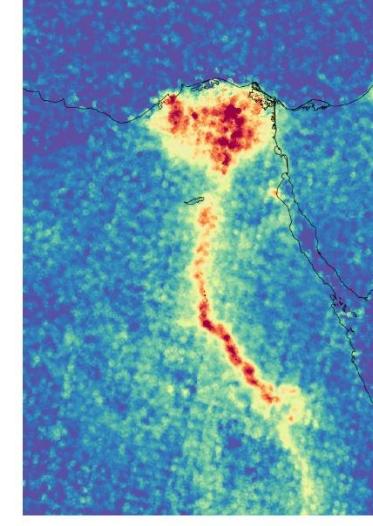
1 day



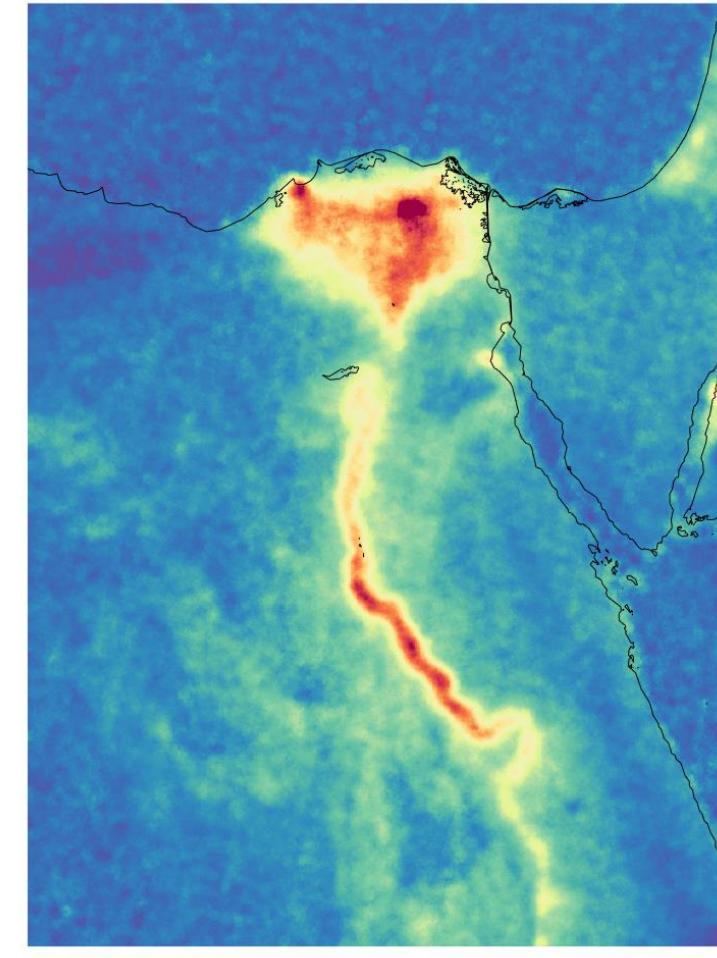
1 week



1 month



1 year

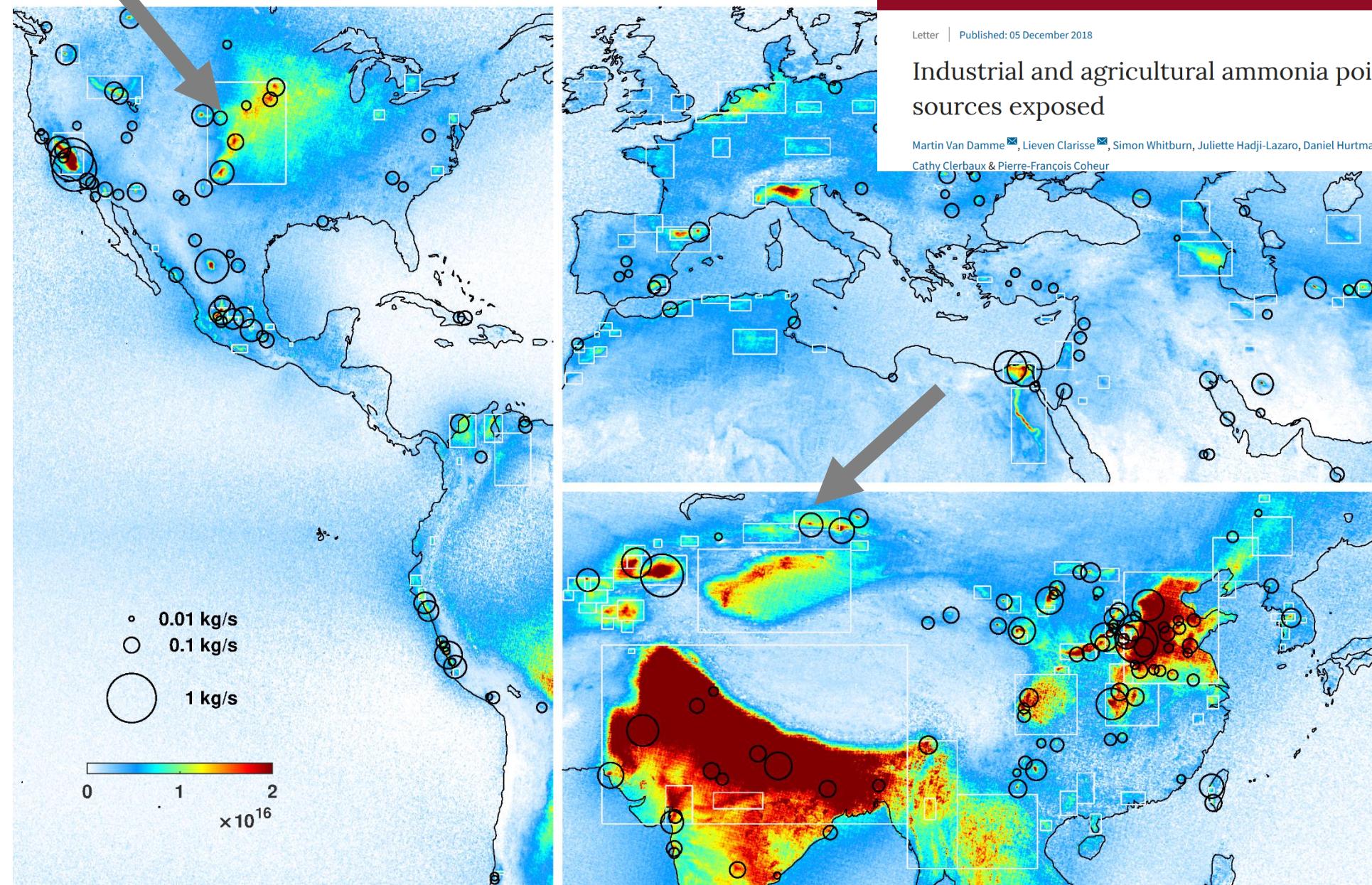


10 years

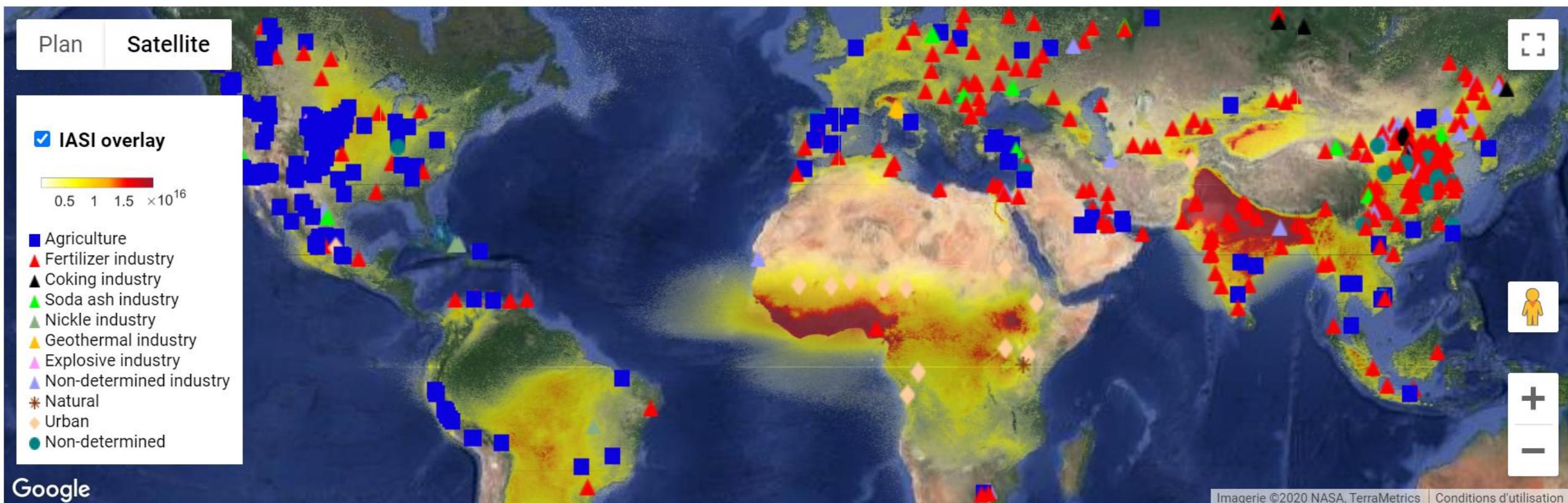
IASI-NH₃

(1 km²) distribution:

- >240 hotspots
- (+ >170 source regions)
- 3 classes:
 - Agriculture (83)
 - Industries (158)
 - Naturelle (1)



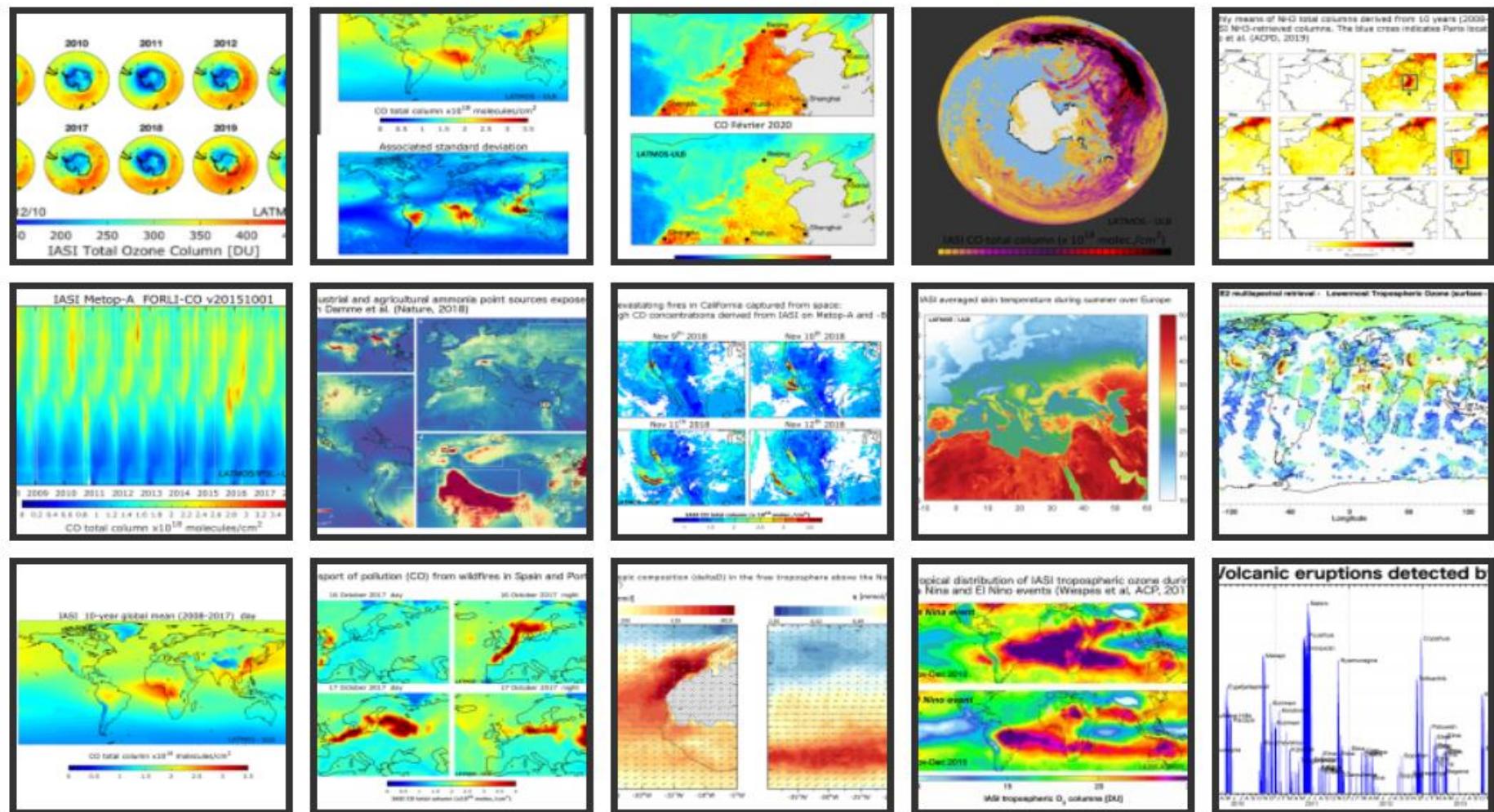
Infrared retrievals – Ammonia (NH_3)



Global ammonia point sources as seen by IASI satellite instruments

<https://www2.ulb.ac.be/cpm/NH3-IASI.html>

IMAGES



Questions ?



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