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► To cite this version:

Rimal Abeed, Sarah Safieddine, Lieven Clarisse, Martin Van Damme, Pierre-François Coheur, et al.. Ammonia-biosphere interaction from IASI and ERA5. EGU General Assembly 2020, May 2020, Online, Germany. 10.5194/egusphere-egu2020-8495 . insu-03018460

HAL Id: insu-03018460

<https://hal-insu.archives-ouvertes.fr/insu-03018460>

Submitted on 6 Dec 2020

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EGU2020-8495

Ammonia-Biosphere from IASi and ERA5

Rimal Abeed¹, Sarah Safieddine¹, Lieven Clarisse², Martin Van Damme², Pierre-François Coheur², and Cathy Clerbaux^{1,2}

1. LATMOS/IPSL, Sorbonne Université, UVSQ, CNRS, Paris, France
2. Université libre de Bruxelles (ULB), Spectroscopy, Quantum Chemistry and Atmospheric Remote Sensing (SQUARES), Brussels, Belgium

université PARIS-SACLAY

www.latmos.ipsl.fr

How does ammonia affect the environment?

Sources

MAIN SOURCES

OTHER SOURCES

United Nations, Department of Economic and Social Affairs

How will climate change affect the abundance of atmospheric ammonia?

Data used are from IASI (NH₃) and ERA5.

Atmosphere

Land

Ammonia/Land

in All the agricultural regions, NH_3 concentration increased proportionally with Skin Temperature in an exponential manner.

2008 to 2016 IASI NH_3 averaged per 3°C skin temperature bins

Ammonia/Land/Atmosphere

Air Temperature at 2m

Relative Humidity at 2m

Skin Temperature

Back-up Slides

iASI on the Metop Satellites

NH₃ Hotspots (iASI NH₃ 9year Mean *)

iASI brightness temperature spectrum

- First detection of ammonia from iASI in 2009
- More than 200 hotspots identified

*Van Damme M., Clarisse, L., Whitburn, S., Hadji-Lazaro, J., Hurtmans, D., Clerbaux, C., Coheur, P.-F. Nature, December 5, 2018. DOI: 10.1038/s41586-018-0747-1.

Ammonia/Land

iASI NH₃ vs. ERA5 Skin Temperature

iDAHO [42-43°N , 114-115° W], 2016

iASI NH₃ vs. ERA5 Soil Moisture - layer 1 (0 to 7cm of soil)

NH₃ volatilization is enhanced by high temperature and low soil moisture.