Supplemental Information

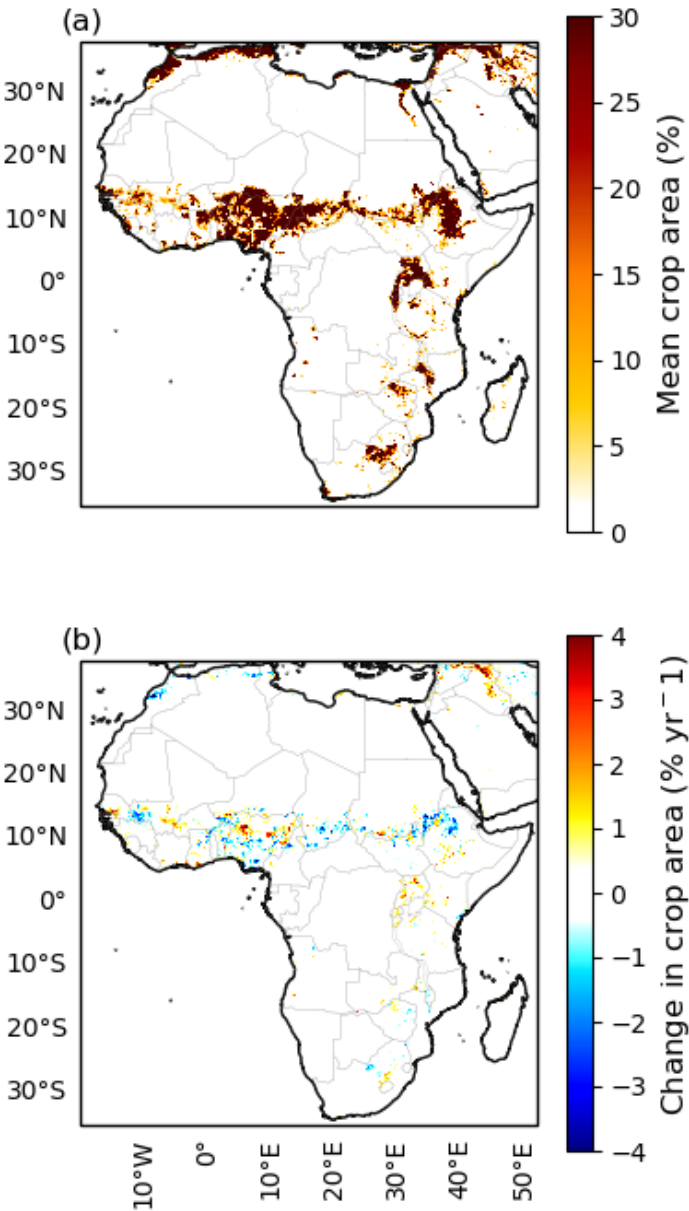
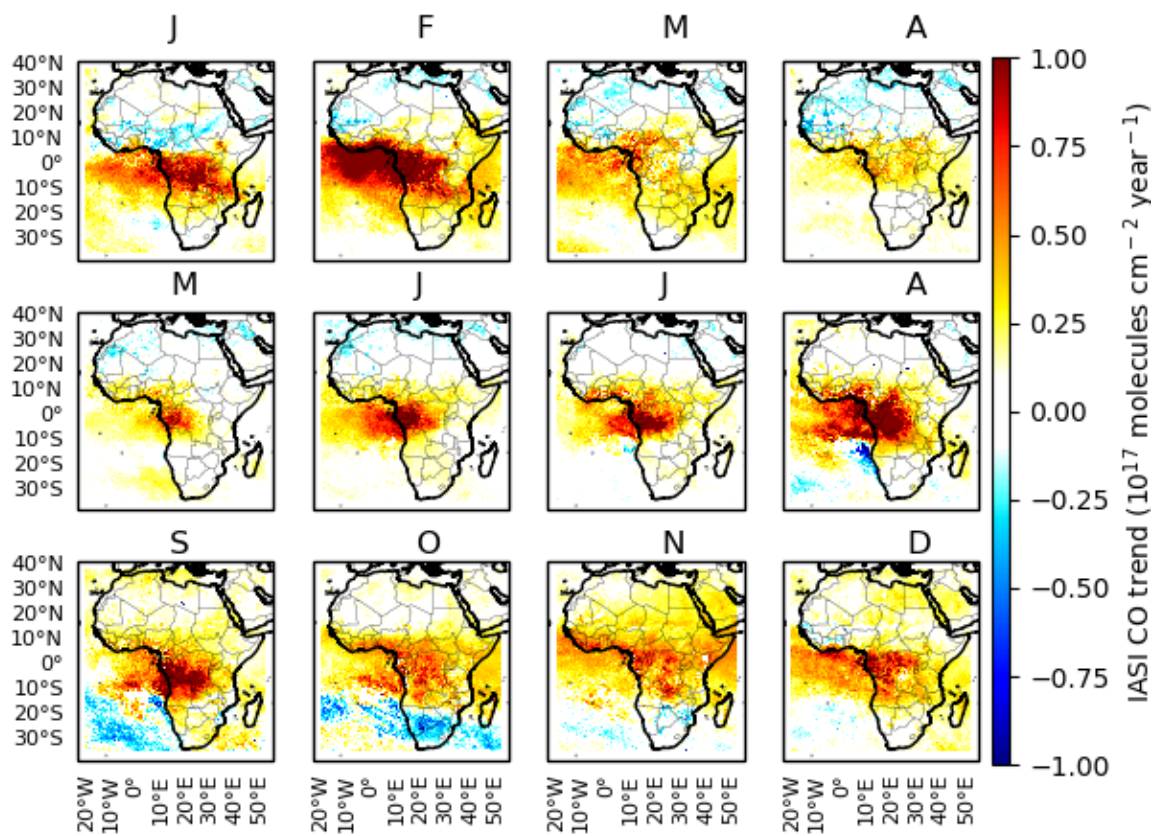



Figure S1. Mean (a) and trend (b) in percentage of land area covered by crops or mosaics of crops and natural vegetation for 2008 through 2017.

7   **Figure S2.** Change in mean monthly atmospheric CO VCDs for the period 2008 through

8   2017.

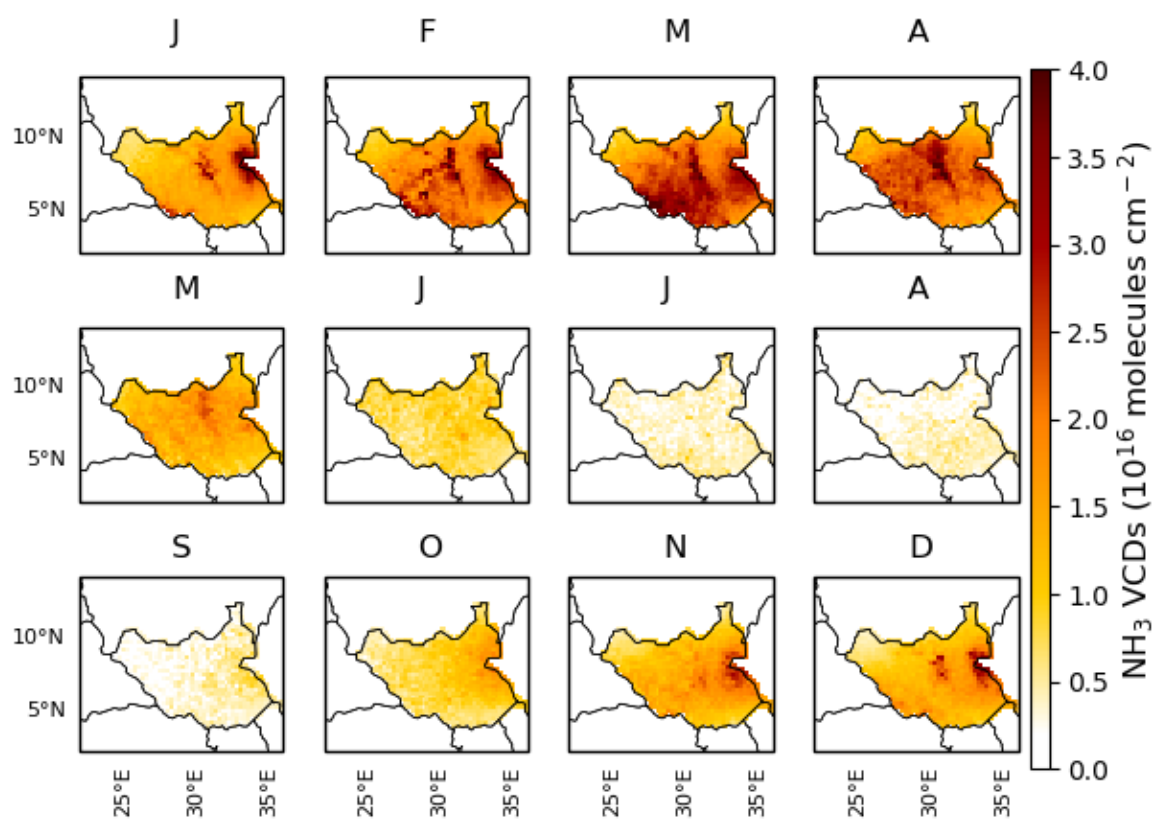
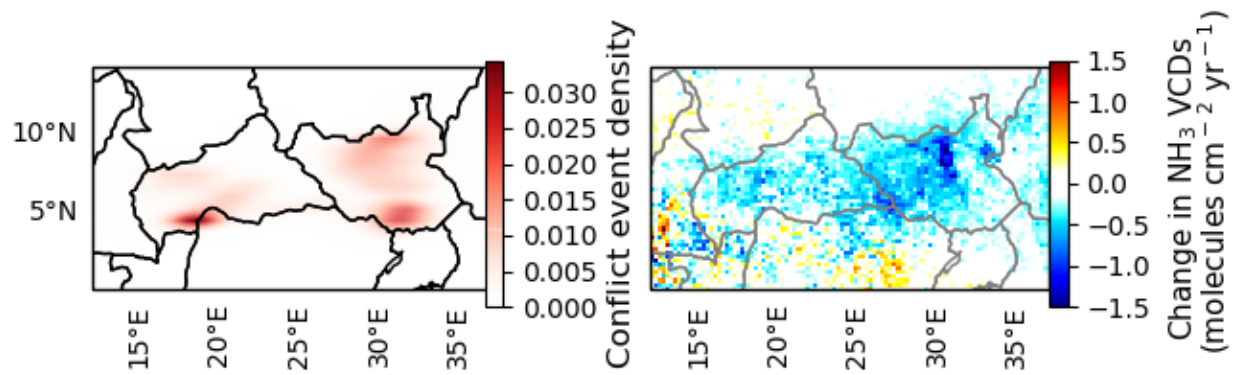



Figure S3. Mean monthly atmospheric NH₃ VCDs over South Sudan; mean is for the period 2008 through 2017.

14

15 **Figure S4**. Kernel density estimate of conflict events (left) and change in NH$_3$

16 concentrations (right) between 2008 and 2017. Conflict data are from the Armed Conflict

17 Location and Event Project (Raleigh et al., 2010; acleddata.com), and includes both violent

18 and non-violent events.

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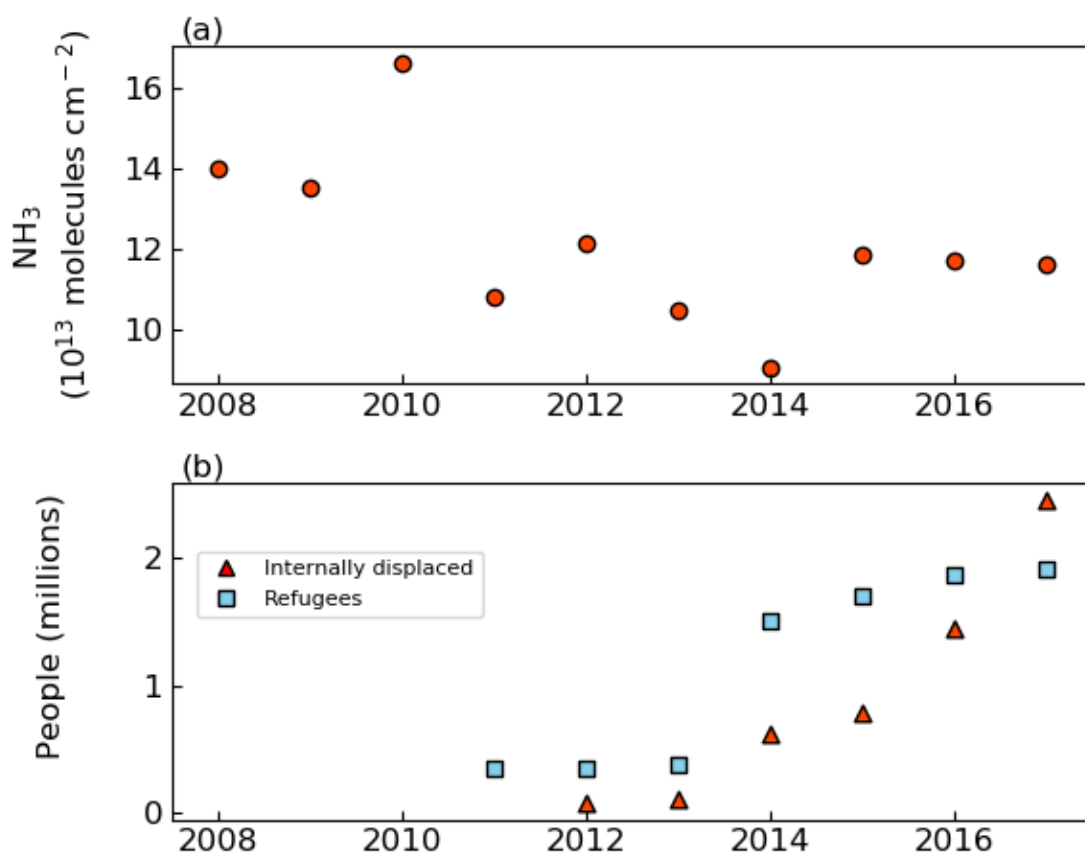
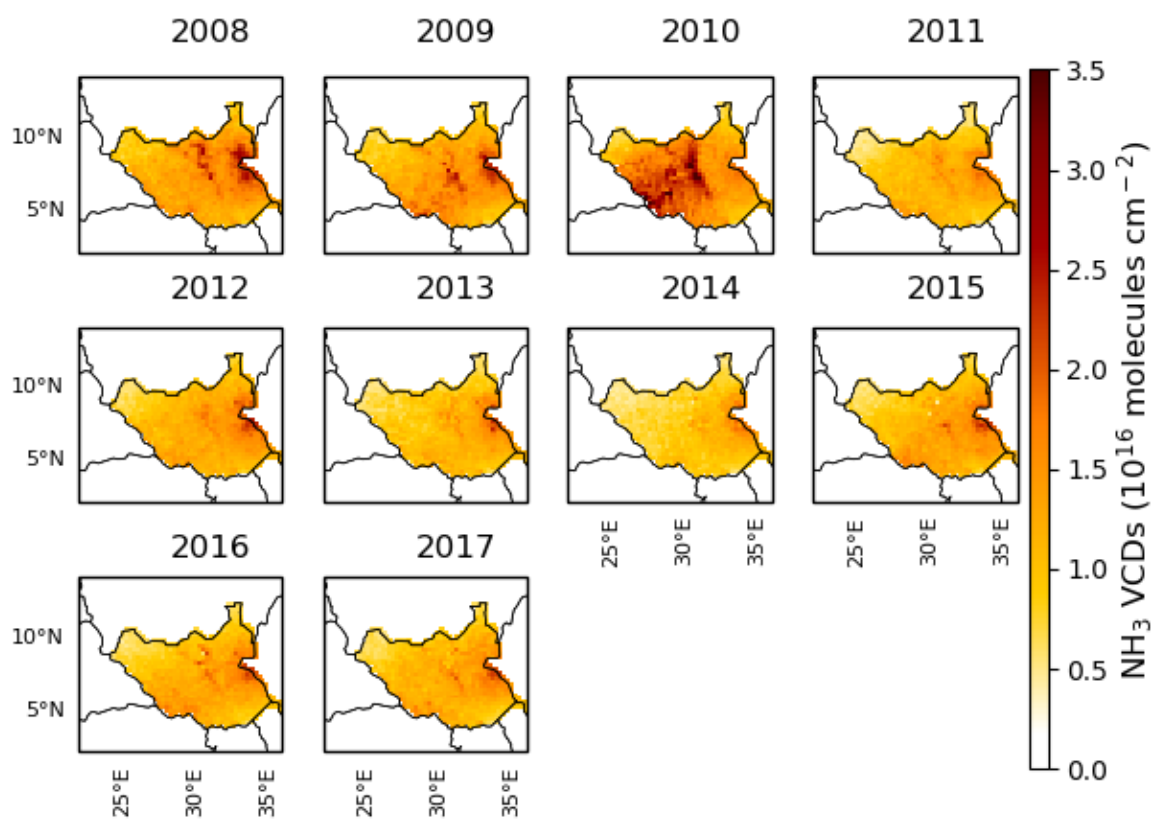
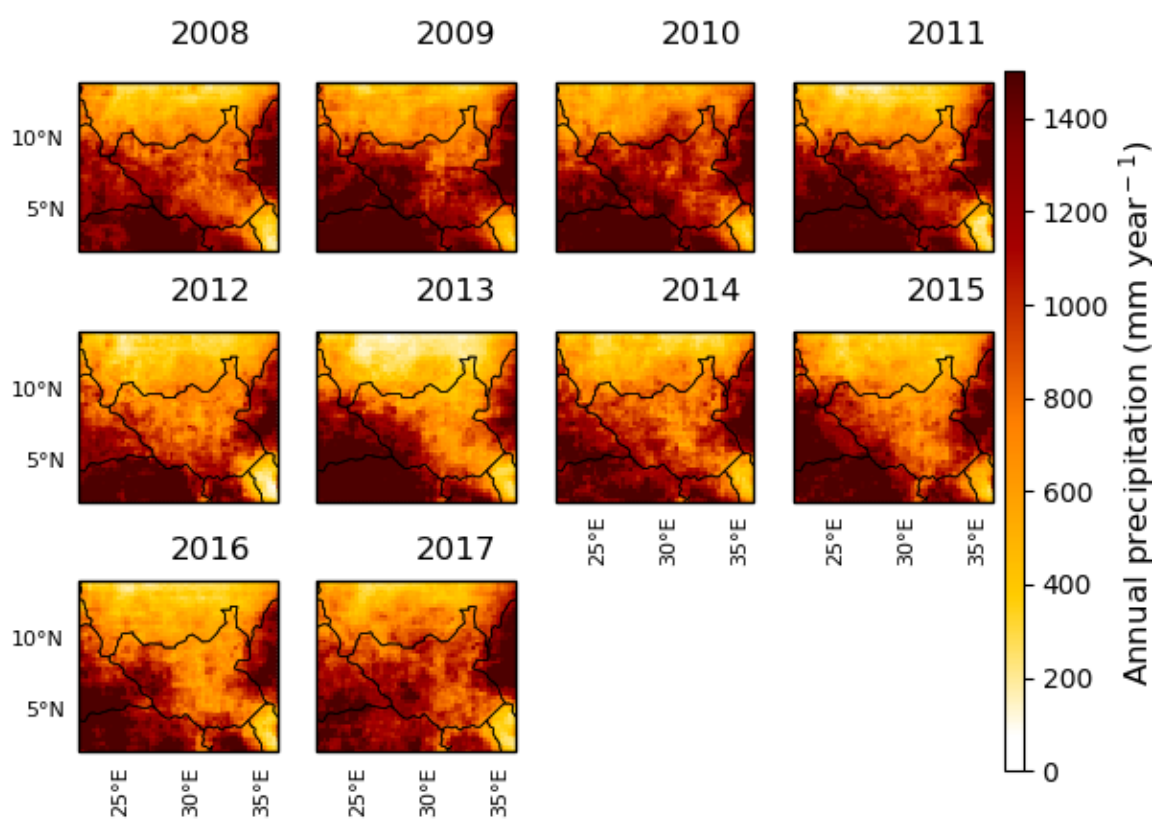
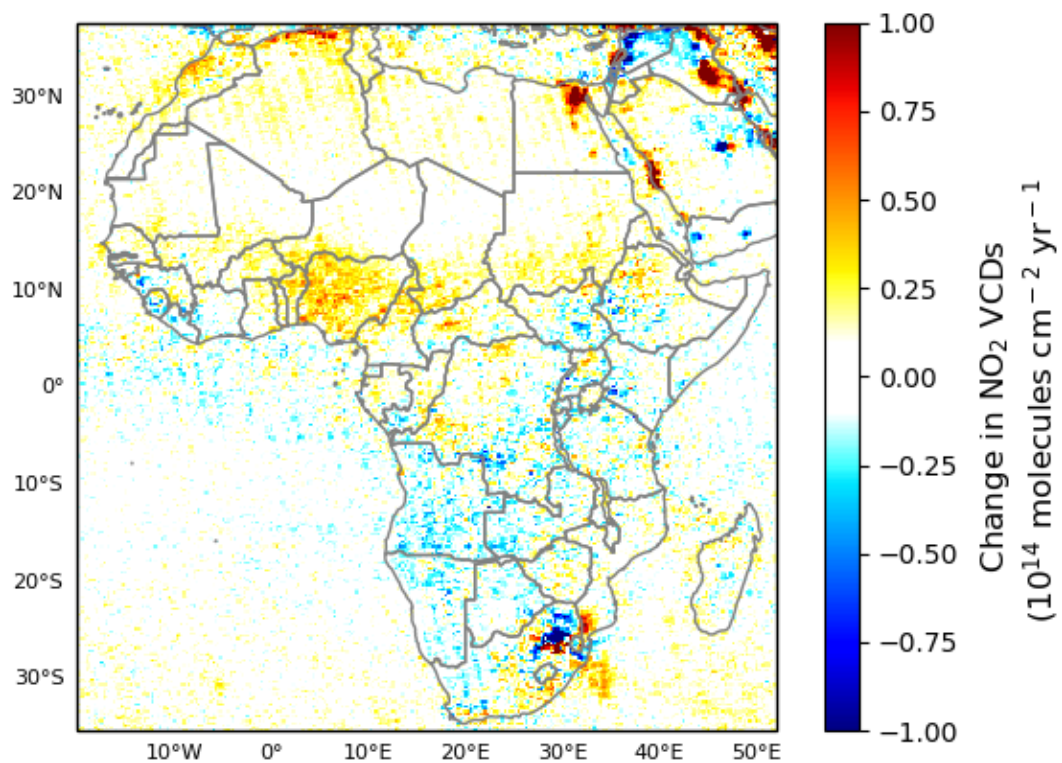

22 **Figure S5.** Mean annual NH3 VCDs (a) and mean annual refugees and internally displaced

23 people (b) in South Sudan through 2017.

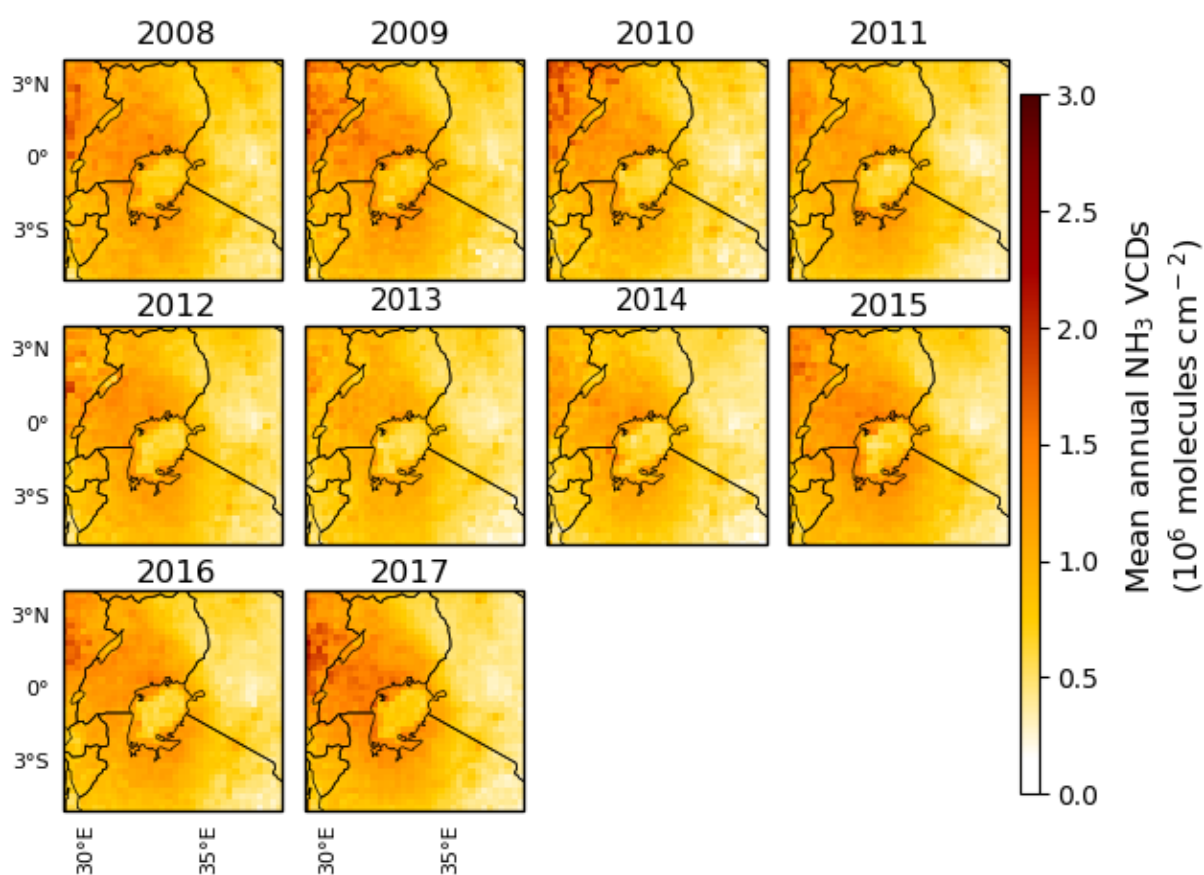
24

25

26 **Figure S6.** Mean annual atmospheric NH₃ VCDs over South Sudan for 2008 through 2017.

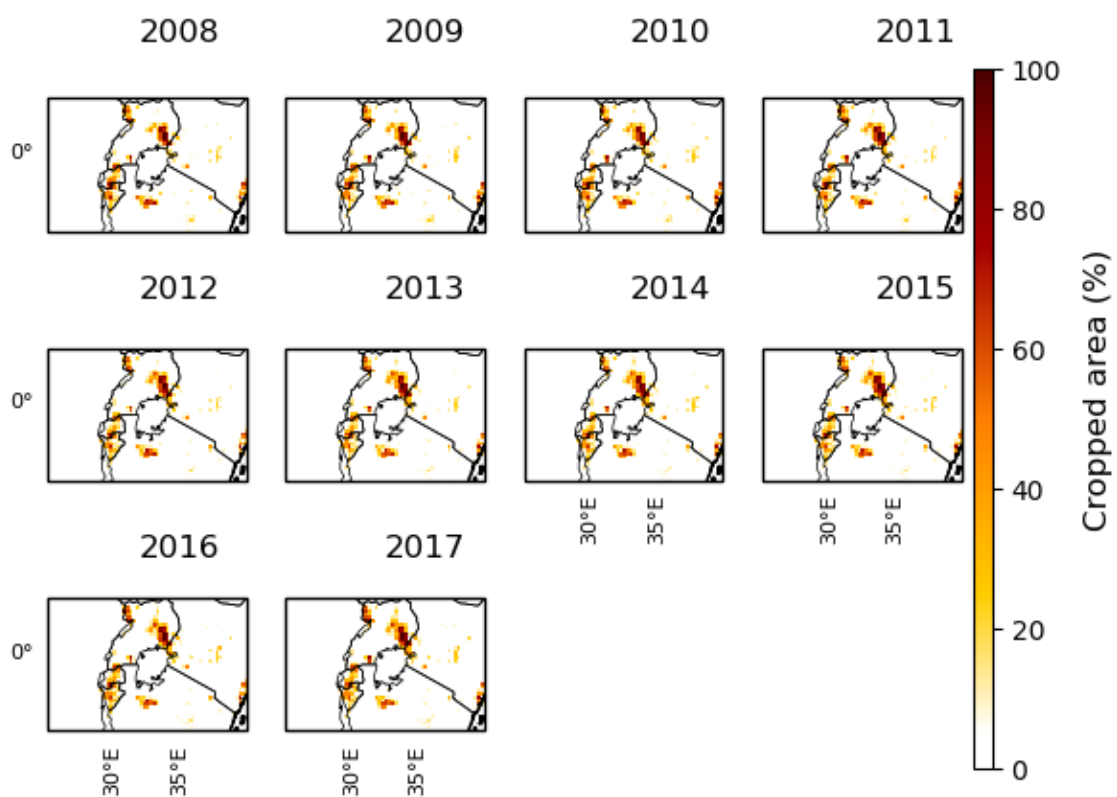
27

28   **Figure S7**. Mean annual precipitation over South Sudan for 2008 through 2017

29

30

31   **Figure S8.** Change in mean annual tropospheric NO_2 VCDs over Africa, 2008 through 2017.

32

33   **Figure S9**. Mean annual atmospheric NH$_3$ VCDs over the Lake Victoria region for 2008

34   through 2017.

35

36   **Figure S10.** Cropped area in the Lake Victoria region for 2008 through 2017.

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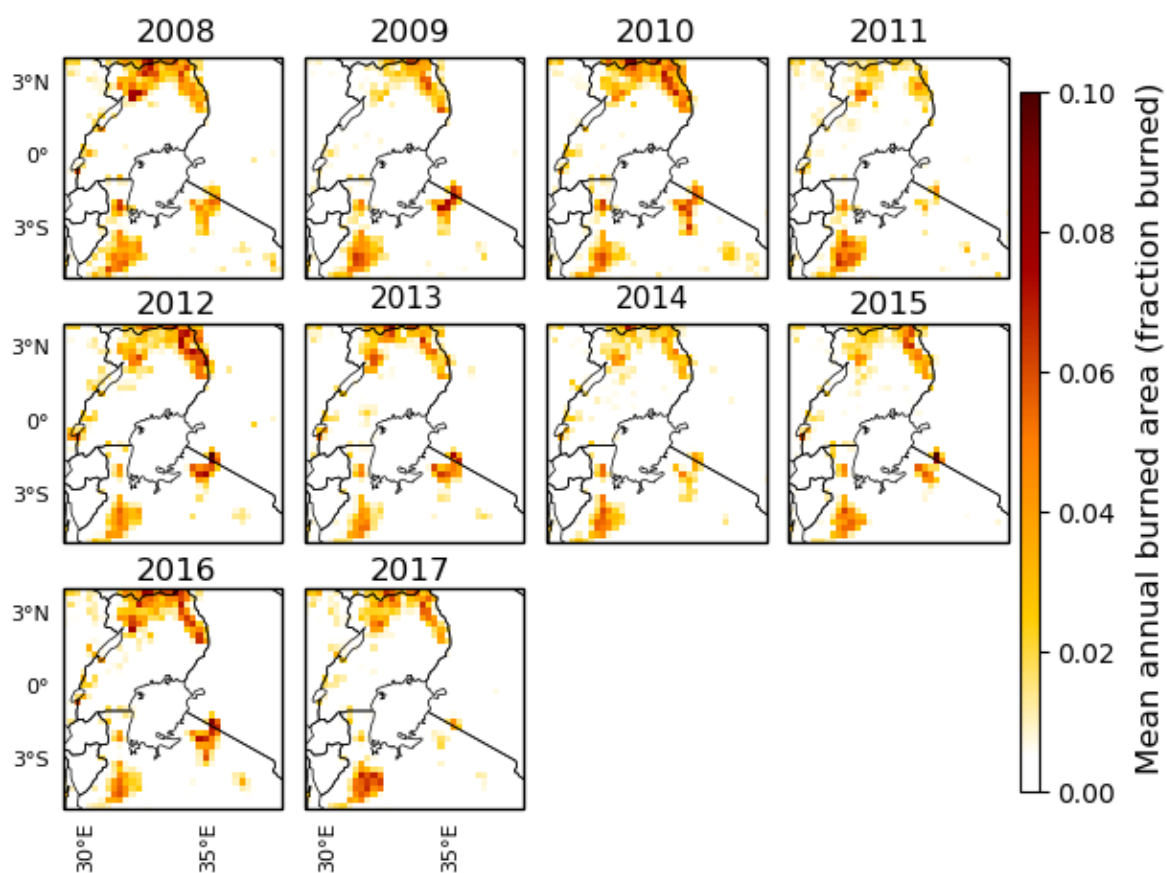
38

39 **Figure S11**. Total annual burned area in the Lake Victoria region for 2008 through 2017.

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41

42 **Table S1.** List of countries in Low, Medium, and High bins in Figure 8.

Low bin	Medium Bin	High Bin
Eswatini	Angola	Mauritania
South Africa	Western Sahara	Guinea-Bissau
Lesotho	Kenya	Burundi
Somalia	Central African Republic	Cameroon
Madagascar	Chad	Guinea
Djibouti	Zambia	Mali
Namibia	Tanzania	Rwanda
Libya	Malawi	Sierra Leone
Eritrea	Tunisia	Burkina Faso
Botswana	DRC	Nigeria
South Sudan	Niger	Benin
Egypt	Algeria	Togo
Mozambique	Uganda	Cote d'Ivoire
Sudan (former)	Senegal	Ghana
Sudan (former)	Gambia	Gabon
Zimbabwe	Morocco	Liberia
Ethiopia	Congo	Equatorial Guinea

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