

Table S8 Sources of the daily meteorological data of the individual rice paddy field sites for each period with ammonia observation (PAO) and for those beyond the PAO, and simulation configurations.

Changshu	
PAO	The maximum daily air temperature (T_{\max} , °C), the minimum daily air temperature (T_{\min} , °C), the average daily wind speed (W , m s ⁻¹) and the average daily relative humidity (RH, %) in 2002/2003 and daily precipitation (P , mm d ⁻¹) in 2003: Measured in Nantong (station no.: 58259; downloaded from the online database of China Meteorological Administration (CMA, http://www.data.cma.cn).
	Daily precipitation (P , mm d ⁻¹) in 2002: Adapted from the observations in Nantong (station no.: 58259; downloaded from CMA) by referring to the periodically maximum value (45.2 mm) from 06/22 to 06/30, the periodically few amount (< 5 mm, arbitrarily) from 07/20 to 07/29, and the total value (29.1 mm) from 08/20 to 08/31 measured onsite by Song et al. (2004). The maximum daily solar radiation (R_{\max} , W m ⁻²) and the moment of R_{\max} appearing (M , hour) in 2002/2003: Measured in Shanghai (station no.: 58362; downloaded from CMA).
Beyond PAO	T_{\max} , T_{\min} , P , W and RH in 2002/2003: Measured in Nantong (station no.: 58259; downloaded from CMA). R_{\max} and M in 2002/2003: Measured in Shanghai (station no.: 58362; downloaded from CMA).
Configuration	Ten years for spin-up, which was driven by the inputs of 2002; the last 2 years (2002–2003) for simulation.
Danyang	
PAO	T_{\max} and T_{\min} in 1984: Measured in Changzhou (station no.: 58343; downloaded from CMA). P in 1984: No precipitation, measured onsite by Cai et al. (1986). W in 1984: Adapted from the observations in Changzhou (station no.: 58343; downloaded from CMA) by referring to the periodically low values (1 m s ⁻¹ , arbitrarily) from 06/20 to 06/27 measured onsite by Cai et al. (1986). RH in 1984: Measured in Gaoyou (station no.: 58241; downloaded from CMA). The average daily solar radiation (R_{ave} , W m ⁻²) in 1984: Measured in Nanjing (station no.: 58238; downloaded from CMA).
	T_{\max} , T_{\min} , P and W in 1984: Measured in Changzhou (station no.: 58343; downloaded from CMA). RH in 1984: Measured in Gaoyou (station no.: 58241; downloaded from CMA). R_{ave} in 1984: Measured in Nanjing (station no.: 58238; downloaded from CMA).
Beyond PAO	

Configuration	Ten years for spin-up, which was driven by the inputs of 1984; the last year (1984) for simulation.
Fengqiu	
PAO	T_{\max} , T_{\min} , P , W and RH in 1986: Measured in Kaifeng (station no.: 57091; downloaded from CMA). R_{ave} in 1986: Measured in Zhengzhou (station no.: 57083; downloaded from CMA).
Beyond PAO	T_{\max} , T_{\min} , P , W and RH in 1986: Measured in Kaifeng (station no.: 57091; downloaded from CMA). R_{ave} in 1986: Measured in Zhengzhou (station no.: 57083; downloaded from CMA).
Configuration	Ten years for spin-up, which was driven by the inputs of 1986; the last year (1986) for simulation.
Shenzhen	
PAO	T_{\max} and T_{\min} in 2010: Measured in Shenzhen (station no.: 59493; downloaded from CMA). P in 2010: No data because the wind tunnel could not receive rainfall (Gong et al., 2013). W in 2010: Adapted from the observations in Shenzhen (station no.: 59493; downloaded from CMA) by referring to periodically average value 1.4 m s^{-1} (for P11 and P12 cases) from 05/16 to 06/04, 1.3 m s^{-1} (for P13 case) from 06/22 to 07/11, 0.89 m s^{-1} (for P14 case) from 06/22 to 07/11, 1.4 m s^{-1} (for P15 case) from 07/31 to 08/19, 1.2 m s^{-1} (for P16 case) from 07/31 to 08/19, 1.1 m s^{-1} (for P17 case) from 08/26 to 09/14, 0.96 m s^{-1} (for P18 case) from 08/26 to 09/14 inside the wind tunnel measured onsite by Gong et al. (2013). RH: Adapted from the observations in Shenzhen (station no.: 59493; downloaded from CMA) by referring to the periodically average value (77.7 %, 76.5 %, 77.3 %, 75.8 %, 77.1 %, 76.2 %, 80.5 % and 79.5 %) from 05/16 to 06/04 (for P11 case), from 05/16 to 06/04 (for P12 case), from 06/22 to 07/11 (for P13 case), from 06/22 to 07/11 (for P14 case), from 07/31 to 08/19 (for P15 case), from 07/31 to 08/19 (for P16 case), from 08/26 to 09/14 (for P17 case) and from 08/26 to 09/14 (for P18 case) measured onsite by Gong et al. (2013). R_{\max} and M in 2010: Measured in Guangzhou (station no.: 59287; downloaded from CMA).
Beyond PAO	T_{\max} , T_{\min} , P , W and RH in 2010: Measured in Shenzhen (station no.: 59493; downloaded from CMA). R_{\max} and M in 2010: Measured in Guangzhou (station no.: 59287; downloaded from CMA).
Configuration	Ten years for spin-up, which was driven by the inputs of 2010; the last year (2010) for simulation.
Yingtian	

PAO	T_{\max} , T_{\min} , P , W and RH in 1992: Measured in Guixi (station no.: 58626; downloaded from CMA). R_{ave} in 1992: Measured in Jianou (station no.: 58737; downloaded from CMA).
Beyond PAO	T_{\max} , T_{\min} , P , W and RH in 1992: Measured in Guixi (station no.: 58626; downloaded from CMA). R_{ave} in 1992: Measured in Jianou (station no.: 58737; downloaded from CMA).
Configuration	Ten years for spin-up, which was driven by the inputs of 1992; the last year (1992) for simulation.

The definitions of the case codes are referred to Table 3.

Reference:

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- Gong, W., Zhang, Y., Huang, X., Luan, S., 2013. High-resolution measurement of ammonia emissions from fertilization of vegetable and rice crops in the Pearl River Delta Region, China. *Atmospheric Environment* 65, 1–10.
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