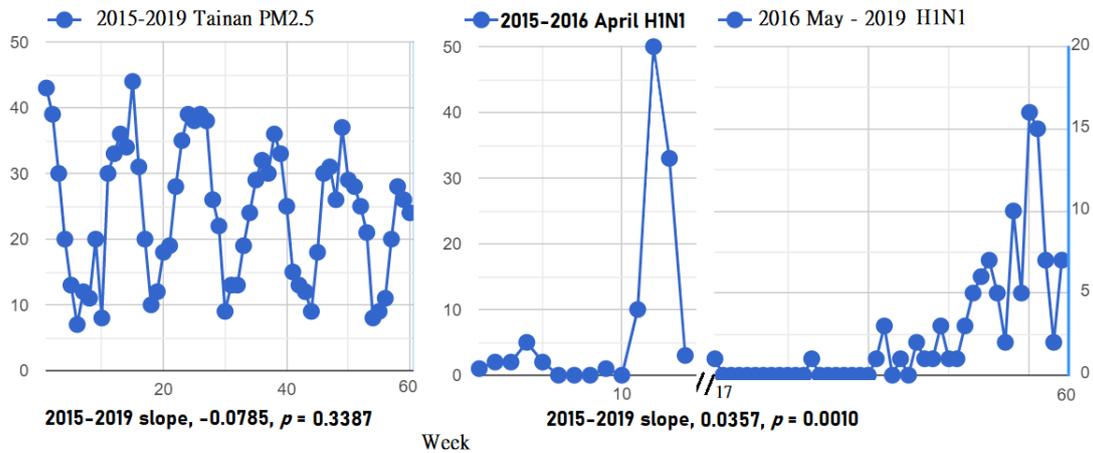
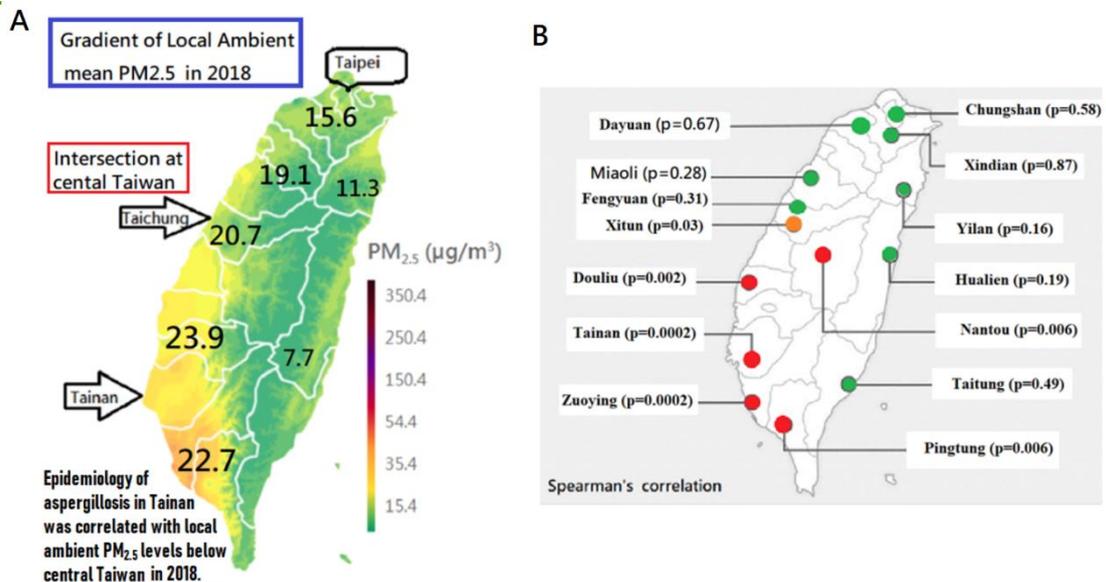


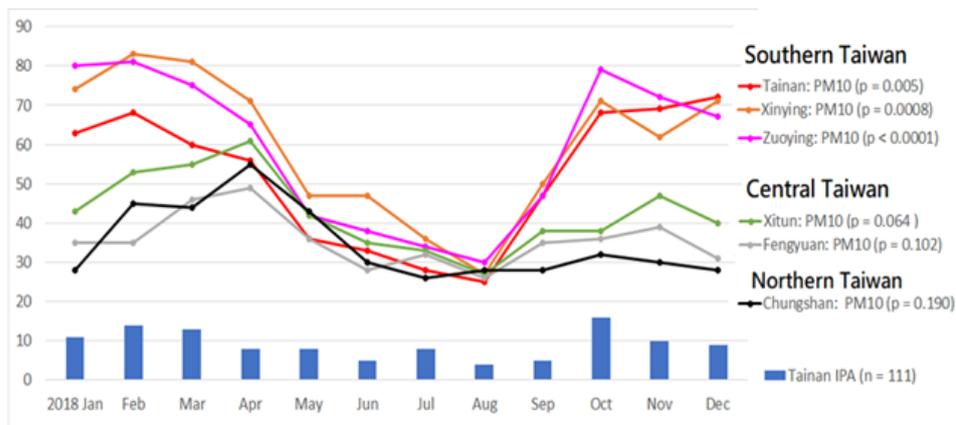
## Supplement figures



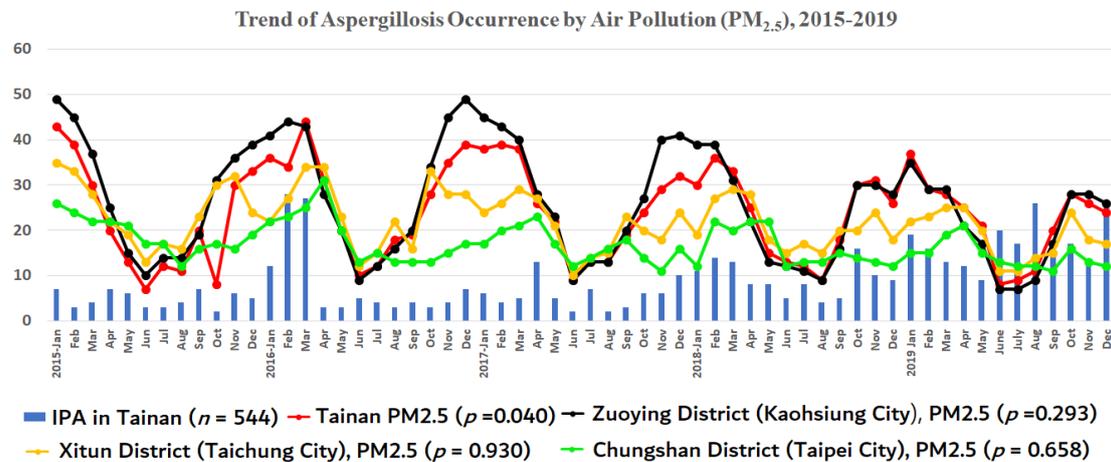
**Supplementary Figure 1:** The secular trend (2015-2019) of PM<sub>2.5</sub> (monthly average) in Tainan City (left) decreased but was statistically insignificant ( $p = 0.3387$ ). In contrast, the trend of monthly cases of influenza A (H1N1) in the Chi Mei medical systems (right) significantly increased (slope,  $0.0357$ ;  $p = 0.001$ ).



**Supplementary Figure 2: A:** Gradient of annually local ambient mean PM<sub>2.5</sub> levels in 2018, increasing from northern to southern Taiwan. Epidemiology of aspergillosis in Tainan City was correlated with local ambient mean PM<sub>2.5</sub> levels higher than  $20 \mu\text{g}/\text{m}^3$  in areas south to central Taiwan. **B:** Tainan IPA in 2018 is significantly correlated with the local PM<sub>2.5</sub> pollution (Tainan and Zuoying) in southern Taiwan, but not correlated with PM<sub>2.5</sub> pollution in distant areas, like northern and eastern Taiwan, with an interface at central Taiwan between Xitun and Fengyuan districts.



**Supplementary Figure 3:** In 2018, Tainan IPA (cases/month) in Tainan City is significantly correlated with PM<sub>10</sub> (μg/m<sup>3</sup>) at cities in southern Taiwan using Spearman’s correlation calculation, including Tainan west-central area ( $p = 0.005$ ), Xinying ( $p = 0.0008$ ), and Zuoying ( $p < 0.0001$ ), but not related to distant areas in central Taiwan, such as Xitun ( $p = 0.064$ ) and Fenyuan ( $p = 0.102$ ) and in northern Taiwan, such as Taipei Chongshan district ( $p = 0.190$ ). The vertical axis represents monthly case number for Tainan IPA and also for monthly average concentrations of PM<sub>10</sub> of various areas.



**Supplementary Figure 4:** From 2015 to 2019, Tainan IPA monthly cases (blue bar) are positive correlated to local PM<sub>2.5</sub> (μg/m<sup>3</sup>) curve in Tainan (red), but there is no statistically significant correlation of Tainan IPA with PM<sub>2.5</sub> in distant areas, including Zuoying district of Kaohsiung City (black), Xitun district of Taichung City (yellow) and Chungshan District of Taipei City (green). The  $p$  values represent Spearman’s correlation calculation between Tainan IPA and PM<sub>2.5</sub> of each area in various city.