**Epidemiology and Infection**

**Association between meteorological factors and reported cases of hand, foot, and mouth disease from 2000 to 2015 in Japan**

A. Sumi, S. Toyoda, K. Kanou, T. Fujimoto, K. Mise, Y. Kohei, A. Koyama, N. Kobayashi,

**SUPPLEMENTARY MATERIAL**

# Supplementary Table S1 Meteorological parameters used for examining the relationship with weekly HFMD data

|  |  |  |
| --- | --- | --- |
| Meteorological parameters | Mathematical calculation | Unit |
| Average temperature (T{A}) | Weekly average of daily average temperature | °C |
| Maximum temperature (T{M}) | Weekly average of daily maximum temperature | °C |
| Minimum temperature (T{m}) | Weekly average of daily minimum temperature | °C |
| Relative humidity (RH) | Weekly average of daily relative humidity | % |
| Total rainfall (RF) | Weekly summation of daily rainfall | mm |

# Supplementary Table S2 Two periodic modes used for the optimum LSF curves (XT{A}(*Temp*), XT{M}(*Temp*), XT{m}(*Temp*), and XRH(*h*))

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Perfectures | *f \** | |  |  |  |  | |  |
| XT{A}(*Temp*) | Hokkaido | 0.018, | 0.044 |  |  |  |  | |  |
|  | Miyagi | 0.022, | 0.057 |  |  |  |  | |  |
|  | Tokyo | 0.023, | 0.052 |  |  |  |  | |  |
|  | Nagano | 0.019, | 0.047 |  |  |  |  | |  |
|  | Kyoto | 0.023, | 0.053 |  |  |  |  | |  |
|  | Kochi | 0.024, | 0.049 |  |  |  |  | |  |
|  | Fukuoka | 0.022, | 0.057 |  |  |  |  | |  |
|  | Okinawa | 0.043, | 0.108 |  |  |  |  | |  |
|  |  |  |  |  |  |  |  | |  |
| XT{M}(*Temp*) | Hokkaido | 0.018, | 0.042 |  |  |  |  | |  |
|  | Miyagi | 0.021, | 0.057 |  |  |  |  | |  |
|  | Tokyo | 0.022, | 0.049 |  |  |  |  | |  |
|  | Nagano | 0.019, | 0.047 |  |  |  |  | |  |
|  | Kyoto | 0.019, | 0.041 |  |  |  |  | |  |
|  | Kochi | 0.024, | 0.050 |  |  |  |  | |  |
|  | Fukuoka | 0.020, | 0.047 |  |  |  |  | |  |
|  | Okinawa | 0.040 | 0.108 |  |  |  |  | |  |
|  |  |  |  |  |  |  |  | |  |
| XT{m}(*Temp*) | Hokkaido | 0.016, | 0.037 |  |  |  |  | |  |
|  | Miyagi | 0.021, | 0.054 |  |  |  |  | |  |
|  | Tokyo | 0.022, | 0.050 |  |  |  |  | |  |
|  | Nagano | 0.019, | 0.053 |  |  |  |  | |  |
|  | Kyoto | 0.029, | 0.054 |  |  |  |  | |  |
|  | Kochi | 0.022, | 0.055 |  |  |  |  | |  |
|  | Fukuoka | 0.020, | 0.059 |  |  |  |  | |  |
|  | Okinawa | 0.038, | 0.159 |  |  |  |  | |  |
|  |  |  |  |  |  |  |  | |  |
| XRH(*h*) | Hokkaido | 0.014, | 0.033 |  |  |  |  | |  |
|  | Miyagi | 0.011, | 0.029 |  |  |  |  | |  |
|  | Tokyo | 0.012, | 0.055 |  |  |  |  | |  |
|  | Nagano | 0.014, | 0.053 |  |  |  |  | |  |
|  | Kyoto | 0.014, | 0.056 |  |  |  |  | |  |
|  | Kochi | 0.013, | 0.061 |  |  |  |  | |  |
|  | Fukuoka | 0.014, | 0.066 |  |  |  |  | |  |
|  | Okinawa | 0.015, | 0.047 |  |  |  |  | |  |
|  |  |  |  |  |  |  |  | |  |
| XRF(*r*) | Hokkaido | 0.004, | 0.014 |  |  |  |  | |  |
|  | Miyagi | 0.002, | 0.005 |  |  |  |  | |  |
|  | Tokyo | 0.002, | 0.004 |  |  |  |  | |  |
|  | Nagano | 0.004, | 0.012 |  |  |  |  | |  |
|  | Kyoto | 0.003, | 0.007 |  |  |  |  | |  |
|  | Kochi | 0.002, | 0.005 |  |  |  |  | |  |
|  | Fukuoka | 0.002, | 0.004 |  |  |  |  | |  |
|  | Okinawa | 0.002, | 0.005 |  |  |  |  | |  |
|  |  |  |  |  |  |  | |  |  |
| \* unit of *f*: 1/*Temp* for XT{A}(*Temp*), XT{M}(*Temp*) and XT{m}(*Temp*), 1/*h* for XRH(*h*), and 1/*r* for XRF(*r*) | | | | | | | | | |

# Supplementary Table S3 Values of mean, standard deviation (SD), and SD/mean for yearly temperature (a), and yearly incidence rate of HFMD (b) during 2000–2015 for eight prefectures in Japan

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *a*. Yearly temperature | | |  | *b*. Yearly incidence rate | | |
| mean (℃) | SD (℃) | SD/mean |  | mean (per  100,000  population) | SD (per 100,000  population) | SD/mean |
| Hokkaido | 9.31 | 0.40 | 0.04 |  | 0.81 | 0.48 | 0.59 |
| Miyagi | 12.80 | 0.43 | 0.03 |  | 1.09 | 0.89 | 0.81 |
| Tokyo | 16.66 | 0.40 | 0.02 |  | 0.85 | 0.68 | 0.80 |
| Nagano | 12.27 | 0.33 | 0.03 |  | 1.05 | 0.69 | 0.65 |
| Kyoto | 16.20 | 0.32 | 0.02 |  | 0.70 | 0.61 | 0.87 |
| Kochi | 17.37 | 0.33 | 0.02 |  | 0.86 | 0.65 | 0.76 |
| Fukuoka | 17.36 | 0.31 | 0.02 |  | 1.45 | 1.11 | 0.76 |
| Okinawa | 23.28 | 0.22 | 0.01 |  | 0.97 | 0.45 | 0.46 |

# Supplementary Figure S1 Average HFMD infection occurrence against maximum temperature (T{M}), *N*T{M}, and its LSF curve, *X*T{M}(*Temp*). *X*T{M}(*Temp*), solid line; *N*T{M}, dashed line



# Supplementary Figure S2 Average HFMD infection occurrence against minimum temperature (T{m}), *N*T{m}, and its LSF curve, *X*T{m}(*Temp*). *X*T{m}(*Temp*), solid line; *N*T{m}, dashed line



**Supplementary Figure S3 Comparison of the least squares fitting curve (solid line) with the original monthly data (dashed line) for Fukuoka Prefecture**