**SUPPLEMENTARY MATERIAL**

**Table SM-1** The demographic information of the provinces studied (TUIK 2021).

|  |  |  |
| --- | --- | --- |
| Provinces of the Black Sea Region | Population | Area (km2) |
| Sinop | 216,460 | 5,718 |
| Samsun | 1,356,079 | 9,655 |
| Ordu | 761,400 | 5,861 |
| Giresun | 448,721 | 7,025 |
| Trabzon | 811,901 | 4,648 |
| Rize | 344,494 | 3,835 |

**Table SM-2** Monthly cases per 100,000 people between February and August, 2021 for all provinces examined in the current study.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Provinces of Turkey | | | | | | | | |
|  | Sinop | Samsun | Ordu | Giresun | Trabzon | Rize | İstanbul | Ankara | İzmir |
|  | Monthly Cases/100K population | | | | | | | | |
| FEBRUARY | 637.32 | 984.76 | 1004.85 | 948.70 | 901.22 | 823.83 | 329.89 | 165.55 | 206.95 |
| MARCH | 1239.35 | 1895.05 | 1167.62 | 1358.60 | 984.29 | 944.12 | 1100.51 | 488.47 | 456.34 |
| APRIL | 1601.15 | 2189.67 | 2043.02 | 2453.87 | 1461.63 | 1946.89 | 3271.80 | 1960.54 | 1277.01 |
| MAY | 371.24 | 458.53 | 646.06 | 544.29 | 512.36 | 677.99 | 786.02 | 681.68 | 393.94 |
| JUNE | 93.38 | 149.87 | 208.81 | 160.60 | 223.81 | 343.34 | 212.90 | 349.05 | 115.71 |
| JULY | 285.94 | 249.75 | 463.68 | 520.60 | 516.97 | 568.87 | 430.51 | 398.32 | 139.47 |
| AUGUST | 654.63 | 754.03 | 926.61 | 1026.53 | 1513.57 | 2532.41 | 725.03 | 867.74 | 221.84 |

**Table** **SM-3** Weekly cases per 100,000 people from 08th February, 2021 to 03rd September 2021 for all provinces examined in the current study.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Provinces of Turkey | | | | | | | | |
|  | Sinop | Samsun | Ordu | Giresun | Trabzon | Rize | İstanbul | Ankara | İzmir |
|  | Weekly Cases/100K population | | | | | | | | |
| 08 - 14 Feb | 79.52 | 171.29 | 194.42 | 184.34 | 228.02 | 202.44 | 60.19 | 35.49 | 44.39 |
| 15 - 21 Feb | 83.62 | 202.94 | 228.40 | 217.51 | 207.54 | 200.08 | 68.23 | 35.39 | 42.67 |
| 20 - 26 Feb | 160.03 | 262.17 | 301.76 | 264.71 | 239.52 | 213.10 | 89.90 | 39.84 | 53.42 |
| 27 Feb -05 Mar | 314.15 | 348.36 | 280.27 | 282.14 | 226.14 | 208.21 | 111.57 | 54.83 | 66.47 |
| 06 - 12 Mar | 345.56 | 458.53 | 248.62 | 296.84 | 222.32 | 188.18 | 178.25 | 68.53 | 78.57 |
| 13 - 19 Mar | 309.06 | 508.97 | 258.87 | 356.35 | 246.95 | 202.41 | 251.12 | 107.99 | 111.41 |
| 27 Mar-02 Apr | 360.34 | 678.72 | 459.94 | 503.88 | 353.49 | 404.81 | 591.45 | 272.79 | 218.88 |
| 03 - 09 Apr | 398.69 | 645.17 | 501.71 | 591.01 | 359.28 | 453.31 | 804.97 | 419.06 | 304.07 |
| 10 - 16 Apr | 440.73 | 601.14 | 565.14 | 624.22 | 409.90 | 516.03 | 920.07 | 534.14 | 351.97 |
| 17-23 Apr | 445.35 | 481.90 | 528.24 | 706.23 | 353.74 | 508.19 | 845.75 | 567.88 | 335.09 |
| 24 - 30 Apr | 213.43 | 267.54 | 316.52 | 388.44 | 237.71 | 353.70 | 532.02 | 361.52 | 223.34 |
| 01 - 07 May | 167.24 | 189.00 | 260.97 | 236.90 | 198.55 | 270.94 | 359.99 | 247.68 | 161.92 |
| 08 - 14 May | 97.02 | 95.57 | 149.72 | 134.83 | 125.14 | 167.27 | 184.78 | 152.63 | 93.86 |
| 15 - 21 May | 51.28 | 97.19 | 117.28 | 84.69 | 93.73 | 119.64 | 123.88 | 123.02 | 72.75 |
| 22 - 28 May | 39.27 | 55.60 | 88.78 | 64.41 | 72.92 | 83.63 | 89.97 | 115.71 | 47.74 |
| 29 May - 04 Jun | 38.34 | 49.40 | 68.39 | 54.74 | 51.38 | 85.18 | 63.93 | 99.50 | 41.23 |
| 05 - 11 Jun | 32.80 | 46.60 | 59.76 | 52.15 | 65.65 | 80.15 | 55.20 | 94.87 | 32.04 |
| 12 - 18 Jun | 14.78 | 30.97 | 55.69 | 39.00 | 60.35 | 96.99 | 51.27 | 93.11 | 25.99 |
| 19 - 25 Jun | 20.33 | 34.36 | 42.95 | 31.87 | 54.44 | 95.54 | 54.30 | 83.64 | 27.40 |
| 26 Jun - 02 Jul | 12.47 | 34.00 | 39.66 | 22.06 | 49.02 | 76.95 | 54.60 | 71.99 | 23.51 |
| 03 - 09 Jul | 29.57 | 23.97 | 50.17 | 23.40 | 49.88 | 59.82 | 56.75 | 59.10 | 22.16 |
| 10 - 16 Jul | 27.44 | 30.66 | 50.32 | 78.54 | 56.33 | 76.76 | 75.12 | 57.95 | 24.46 |
| 17 - 23 Jul | 58.21 | 47.22 | 87.87 | 142.72 | 108.11 | 94.77 | 88.19 | 69.13 | 33.43 |
| 24 - 30 Jul | 144.14 | 112.90 | 220.25 | 230.88 | 241.78 | 243.64 | 168.82 | 165.20 | 43.30 |
| 31 Jul – 06 Aug | 161.09 | 176.99 | 306.18 | 271.28 | 328.03 | 503.27 | 182.21 | 184.58 | 65.85 |
| 07 - 13 Aug | 119.19 | 171.16 | 240.08 | 279.24 | 330.58 | 575.56 | 181.96 | 199.55 | 49.81 |
| 14 - 20 Aug | 132.59 | 160.54 | 170.08 | 204.80 | 310.63 | 538.10 | 147.73 | 176.38 | 46.24 |
| 21 – 27 Aug | 149.68 | 169.16 | 158.92 | 197.90 | 366.67 | 614.18 | 148.33 | 194.96 | 43.30 |
| 28 Aug – 03 Sep | 201.42 | 177.57 | 166.40 | 196.11 | 392.91 | 653.10 | 158.95 | 242.61 | 45.58 |

**Table SM-4** Kendal and Spearman correlation coefficients based on the associations between meteorological parameters in the provinces of the Black Sea region from February to September 2021.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SAMSUN city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.19 | -0.195 | -0.78\* | -0.15 | -0.78\* | -0.98\*\* | 0.78\* |
| Wind Speed | -0.19 | 1.00 | 1.00\*\* | -0.05 | -0.59 | 0.05 | 0.14 | 0.05 |
| Gust | -0.19 | 1.00\*\* | 1.00 | -0.05 | -0.59 | 0.05 | 0.14 | 0.05 |
| Precipitation | -0.78\* | -0.05 | -0.05 | 1.00 | 0.09 | 0.71\* | 0.81\* | -0.81\* |
| Relative Humidity | -0.15 | -0.59 | -0.59 | 0.09 | 1.00 | 0.39 | 0.09 | -0.29 |
| Cloud | -0.78\* | 0.05 | 0.05 | 0.71\* | 0.39 | 1.00 | 0.71\* | -0.91\*\* |
| Pressure | -0.98\*\* | 0.14 | 0.14 | 0.81\* | 0.09 | 0.71\* | 1.00 | -0.81\* |
| Sun Hour | 0.78\* | 0.05 | 0.05 | -0.81 | -0.29 | -0.91\*\* | -0.81\* | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.13 | -0.13 | -0.92\*\* | -0.11 | -0.88\*\* | -0.99\*\* | 0.88\*\* |
| Wind Speed | -0.13 | 1.00 | 1.00\*\* | -0.04 | -0.74 | -0.11 | 0.11 | 0.14 |
| Gust | -0.13 | 1.00\*\* | 1.00 | -0.04 | -0.74 | -0.11 | 0.11 | 0.14 |
| Precipitation | -0.92\*\* | -0.04 | -0.04 | 1.00 | 0.14 | 0.86\* | 0.93\*\* | -0.89\*\* |
| Relative Humidity | -0.11 | -0.74 | -0.74 | 0.14 | 1.00 | 0.39 | 0.09 | -0.29 |
| Cloud | -0.88\*\* | -0.11 | -0.11 | 0.86\* | 0.39 | 1.00 |  |  |
| Pressure | -0.99\*\* | 0.11 | 0.11 | 0.93\*\* | 0.09 | 0.86\* | 1.00 | -0.89\*\* |
| Sun Hour | 0.88\*\* | 0.14 | 0.14 | -0.89\*\* | -0.29 | -0.96\*\* | -0.89\*\* | 1.00 |
| **SİNOP city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | 0.25 | 1.00 | -0.19 | -0.15 | -0.78\* | -0.88\* | 0.78\* |
| Wind Speed | 0.25 | 1.00 | 0.49 | 0.29 | -0.05 | -0.29 | -0.19 | 0.29 |
| Gust | 1.00 | 0.61 | 1.00 | 0.14 | 0.29 | -0.05 | 0.05 | 0.24 |
| Precipitation | -0.19 | 0.29 | 0.14 | 1.00 | -0.09 | 0.24 | 0.33 | -0.24 |
| Relative Humidity | -0.15 | -0.05 | 0.29 | -0.09 | 1.00 | 0.09 | 1.00 | 0.09 |
| Cloud | -0.78\* | -0.29 | -0.05 | 0.24 | 0.09 | 1.00 | 0.71\* | -0.81\* |
| Pressure | -0.88\*\* | -0.19 | 0.05 | 0.33 | 1.00 | 0.71\* | 1.00 | -0.71\* |
| Sun Hour | 0.78\* | 0.29 | 0.24 | -0.24 | -0.24 | 0.09 | -0.81\* | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | 0.35 | 1.00 | -0.22 | -0.03 | -0.92\*\* | -0.96\*\* | 0.87\* |
| Wind Speed | 0.35 | 1.00 | 0.61 | 0.19 | -0.10 | -0.36 | -0.32 | 0.34 |
| Gust | 1.00 | 0.61 | 1.00 | 0.14 | 0.45 | -0.11 | 0.04 | 0.32 |
| Precipitation | -0.22 | 0.19 | 0.14 | 1.00 | -0.19 | 0.32 | 0.36 | -0.43 |
| Relative Humidity | -0.03 | -0.10 | 0.45 | -0.19 | 1.00 | 0.18 | 1.00 | 0.18 |
| Cloud | -0.92\*\* | -0.36 | -0.11 | 0.32 | 0.18 | 1.00 | 0.86 | -0.93\*\* |
| Pressure | -0.96\*\* | -0.32 | 0.04 | 0.36 | 1.00 | 0.86\* | 1.00 | -0.86 |
| Sun Hour | 0.86\* | 0.34 | 0.32 | -0.43 | -0.43 | 0.18 | -0.93\*\* | 1.00 |

**Table SM-4 (continue).** Kendal and Spearman correlation coefficients based on the associations between meteorological parameters in the provinces of the Black Sea region from February to September 2021.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ORDU city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.05 | -0.10 | -0.55 | -0.21 | -0.62 | -0.95\*\* | 0.65\* |
| Wind Speed | -0.05 | 1.00 | 0.88\*\* | 0.24 | -0.55 | 0.00 | 0.05 | 0.24 |
| Gust | -0.10 | 0.88\*\* | 1.00 | 0.29 | -0.62 | 1.00 | 0.09 | 0.09 |
| Precipitation | -0.55 | 0.24 | 0.29 | 1.00 | -0.15 | 0.39 | 0.43 | -0.33 |
| Relative Humidity | -0.21 | -0.55 | -0.62 | -0.15 | 1.00 | 0.31 | 0.15 | -0.55 |
| Cloud | -0.62 | 0.00 | 1.00 | 0.39 | 0.31 | 1.00 | 0.49 | -0.78\* |
| Pressure | -0.95\*\* | 0.048 | 0.098 | 0.43 | 0.15 | 0.49 | 1.00 | -0.52 |
| Sun Hour | -0.65\* | 0.24 | 0.09 | -0.33 | -0.55 | -0.78\* | -0.52 | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | 0.11 | -0.05 | -0.71 | -0.19 | -0.78\* | -0.98\*\* | 0.84\* |
| Wind Speed | 0.11 | 1.00 | 0.96\*\* | 0.36 | -0.71 | 0.04 | -0.11 | 0.29 |
| Gust | -0.05 | 0.96\*\* | 1.00 | 0.36 | -0.74 | 0.07 | 0.09 | 0.16 |
| Precipitation | -0.71 | 0.36 | 0.36 | 1.00 | -0.22 | 0.52 | 0.64 | -0.36 |
| Relative Humidity | -0.19 | -0.71 | -0.74 | -0.22 | 1.00 | 0.44 | 0.11 | -0.60 |
| Cloud | -0.78\* | 0.04 | 0.07 | 0.52 | 0.44 | 1.00 | 0.69 | -0.90\*\* |
| Pressure | -0.98\*\* | -0.11 | 0.09 | 0.64 | 0.11 | 0.69 | 1.00 | -0.79\* |
| Sun Hour | 0.84\* | 0.29 | 0.16 | -0.36 | -0.60 | -0.90\*\* | -0.79\* | 1.00 |
| **GİRESUN city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.41 | -0.45 | -0.35 | -0.11 | -0.62 | -0.95\*\* | 0.65\* |
| Wind Speed | -0.41 | 1.00 | 0.98\*\* | 0.59 | -0.51 | 0.30 | 0.39 | -0.09 |
| Gust | -0.45 | 0.98\*\* | 1.00 | 0.62 | -0.45 | 0.29 | 0.43 | -0.14 |
| Precipitation | -0.35 | 0.59 | 0.62 | 1.00 | -0.45 | 0.29 | 0.24 | -0.14 |
| Relative Humidity | -0.11 | -0.51 | -0.45 | -0.45 | 1.00 | 0.21 | 0.05 | -0.45 |
| Cloud | -0.62 | 0.30 | 0.29 | 0.29 | 0.21 | 1.00 | 0.49 | -0.78\* |
| Pressure | -0.95\*\* | 0.39 | 0.43 | 0.24 | 0.05 | 0.49 | 1.00 | -0.52 |
| Sun Hour | 0.65\* | -0.09 | -0.14 | -0.14 | -0.45 | -0.78\* | -0.52 | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.43 | -0.47 | -0.49 | -0.08 | -0.76\* | -0.98\*\* | 0.84\* |
| Wind Speed | -0.43 | 1.00 | 0.99\*\* | 0.78\* | -0.59 | 0.42 | 0.40 | -0.25 |
| Gust | -0.47 | 0.99\*\* | 1.00 | 0.79\* | -0.55 | 0.41 | 0.43 | -0.29 |
| Precipitation | -0.49 | 0.78\* | 0.79\* | 1.00 | -0.60 | 0.31 | 0.43 | -0.11 |
| Relative Humidity | -0.08 | -0.59 | -0.55 | -0.60 | 1.00 | 0.31 | 0.02 | -0.51 |
| Cloud | -0.76\* | 0.42 | 0.41 | 0.31 | 0.31 | 1.00 | 0.69 | -0.90\* |
| Pressure | -0.98\*\* | 0.39 | 0.43 | 0.43 | 0.02 | 0.69 | 1.00 | -0.79\* |
| Sun Hour | 0.84\* | -0.25 | -0.29 | -0.11 | -0.51 | -0.90\* | -0.79\* | 1.00 |

**Table SM-4 (continue).** Kendal and Spearman correlation coefficients based on the associations between meteorological parameters in the provinces of the Black Sea region from February to September 2021.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TRABZON city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.75\* | -0.75\* | -0.45 | 0.10 | -0.41 | -0.95\* | 0.45 |
| Wind Speed | -0.75\* | 1.00 | 0.91\*\* | 0.71\* | -0.29 | 0.39 | 0.62 | -0.24 |
| Gust | -0.75\* | 0.91\*\* | 1.00 | 0.62 | -0.39 | 0.29 | 0.71\* | -0.14 |
| Precipitation | -0.45 | 0.71\* | 0.62 | 1.00 | -0.49 | 0.49 | 0.33 | -0.33 |
| Relative Humidity | 0.10 | -0.29 | -0.39 | -0.49 | 1.00 | 0.05 | -0.09 | -0.19 |
| Cloud | -0.41 | 0.39 | 0.29 | 0.49 | 0.05 | 1.00 | 0.39 | -0.88\*\* |
| Pressure | -0.95\*\* | 0.62 | 0.71\* | 0.33 | -0.09 | 0.39 | 1.00 | -0.43 |
| Sun Hour | 0.45 | -0.24 | -0.14 | -0.33 | -0.19 | -0.88\*\* | -0.43 | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.84\* | -0.83\* | -0.56 | 0.19 | -0.63 | -0.98\*\* | 0.69 |
| Wind Speed | -0.84\* | 1.00 | 0.96\*\* | 0.86\* | -0.43 | 0.61 | 0.75 | -0.54 |
| Gust | -0.84\* | 0.96\*\* | 1.00 | 0.82\* | -0.51 | 0.56 | 0.79\* | -0.50 |
| Precipitation | -0.56 | 0.86\* | 0.82\* | 1.00 | -0.67 | 0.59 | 0.50 | -0.43 |
| Relative Humidity | 0.19 | -0.43 | -0.51 | -0.67 | 1.00 | 0.09 | -0.18 | -0.25 |
| Cloud | -0.63 | 0.61 | 0.56 | 0.59 | 0.09 | 1.00 | 0.63 | -0.96\*\* |
| Pressure | -0.98\*\* | 0.75 | 0.79\* | 0.50 | -0.18 | 0.63 | 1.00 | -0.71 |
| Sun Hour | 0.69 | -0.54 | -0.50 | -0.43 | -0.25 | -0.96\*\* | -0.71 | 1.00 |
| **RİZE city** | | | | | | | | |
| Kendall’s Correlation Coefficients, rk | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.65\* | -0.75\* | -0.45 | 0.25 | -0.45 | -0.68\* | 0.68\* |
| Wind Speed | -0.65\* | 1.00 | 0.85\*\* | 0.35 | -0.15 | 0.55 | 0.29 | -0.49 |
| Gust | -0.75\* | 0.85\*\* | 1.00 | 0.45 | -0.35 | 0.45 | 0.49 | -0.59 |
| Precipitation | -0.45 | 0.35 | 0.45 | 1.00 | -0.55 | 0.15 | 0.09 | -0.49 |
| Relative Humidity | 0.25 | -0.15 | -0.35 | -0.55 | 1.00 | 0.25 | -0.29 | 0.09 |
| Cloud | -0.45 | 0.55 | 0.45 | 0.15 | 0.25 | 1.00 | 0.19 | -0.68\* |
| Pressure | -0.68\* | 0.29 | 0.49 | 0.09 | -0.29 | 0.19 | 1.00 | -0.43 |
| Sun Hour | 0.68\* | -0.49 | -0.59 | -0.49 | 0.09 | -0.68\* | -0.43 | 1.00 |
| Spearman’s Correlation Coefficients, rs | | | | | | | | |
|  | Temperature | Wind Speed | Gust | Precipitation | Relative Humidity | Cloud | Pressure | Sun Hour |
| Temperature | 1.00 | -0.74\* | -0.84\* | -0.56 | 0.30 | -0.66 | -0.78\* | 0.79\* |
| Wind Speed | -0.74\* | 1.00 | 0.90\*\* | 0.44 | -0.16 | 0.68 | 0.39 | -0.65 |
| Gust | -0.84\* | 0.90\*\* | 1.00 | 0.61 | -0.46 | 0.66 | 0.60 | -0.74 |
| Precipitation | -0.56 | 0.44 | 0.61 | 1.00 | -0.70 | 0.24 | 0.23 | -0.61 |
| Relative Humidity | 0.30 | -0.16 | -0.46 | -0.70 | 1.00 | 0.29 | -0.32 | 0.09 |
| Cloud | -0.66 | 0.68 | 0.66 | 0.24 | 0.29 | 1.00 | 0.36 | -0.85\* |
| Pressure | -0.78\* | 0.39 | 0.60 | 0.23 | -0.32 | 0.36 | 1.00 | -0.57 |
| Sun Hour | 0.79\* | -0.65 | -0.74 | -0.61 | 0.09 | -0.85\* | -0.57 | 1.00 |