

# Long-Term Trends of Atmospheric CH<sub>4</sub> Concentration across China from 2002 to 2016

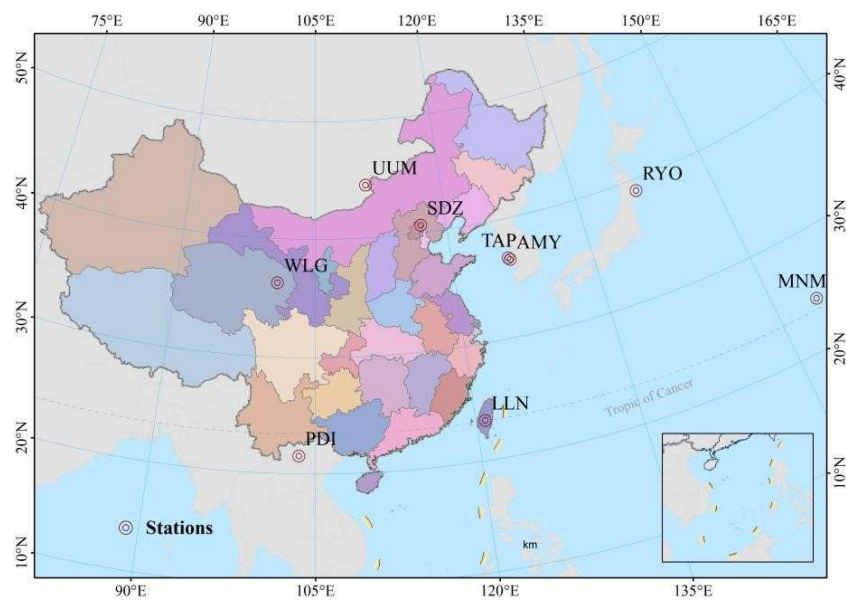
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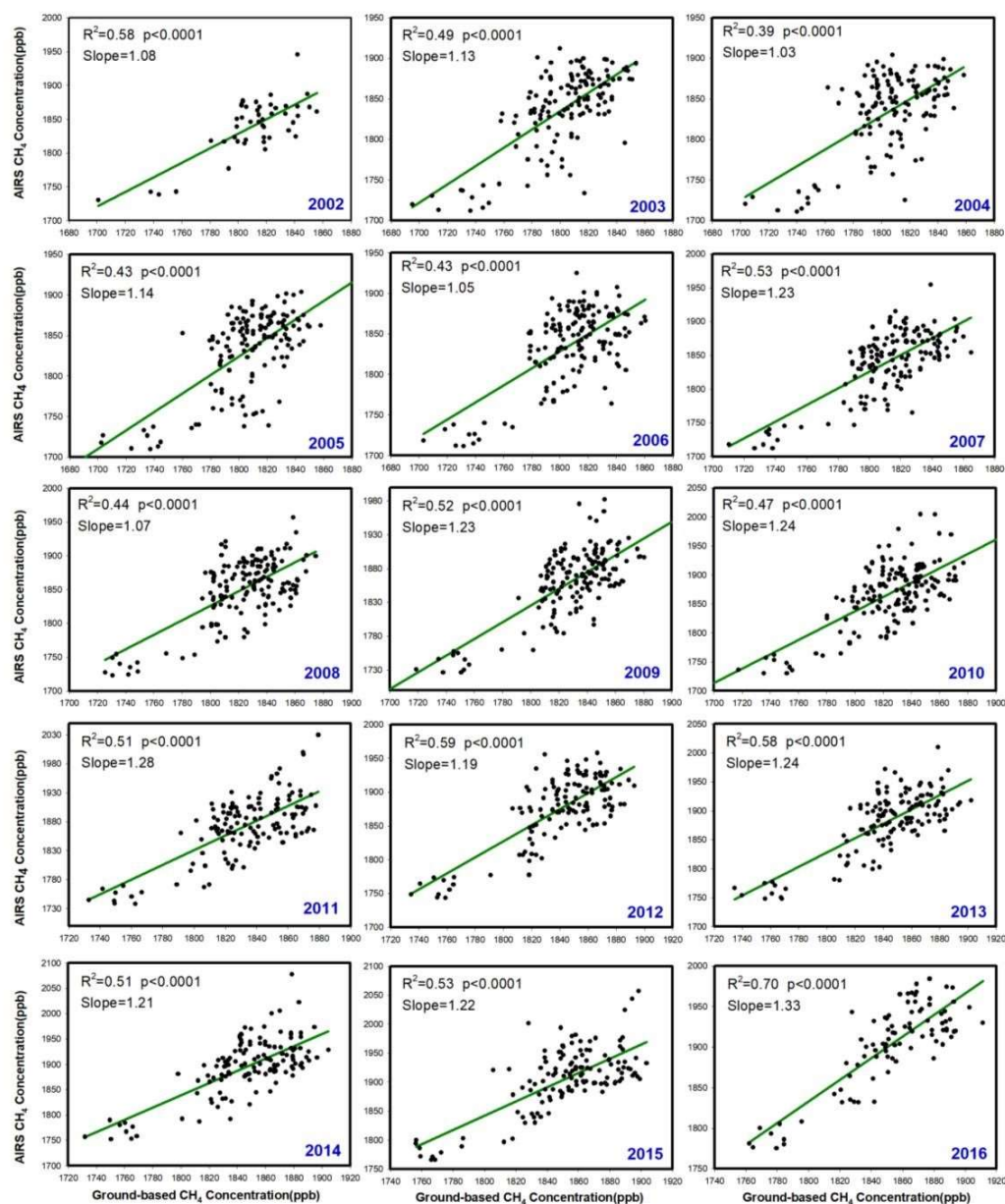
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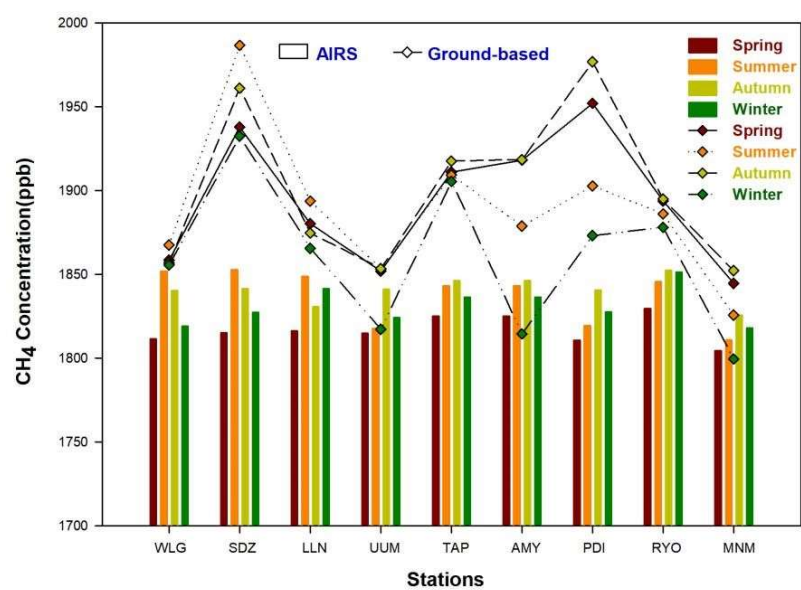
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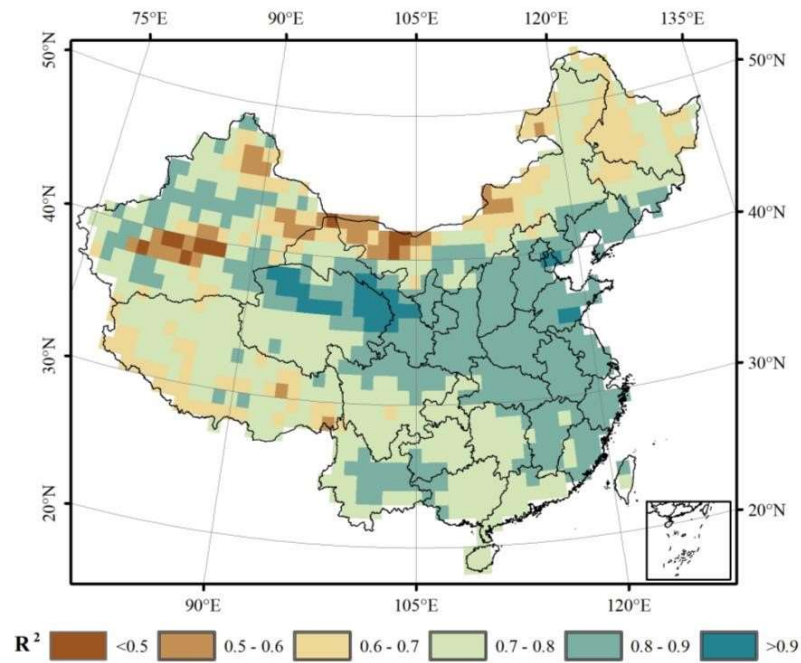
**Figure S1.** Distribution of nine ground-based stations in eastern Asia.



**Figure S2.** Scatter plots of the monthly averaged surface  $\text{CH}_4$  concentrations from WDCGG and AIRS retrievals in 9 stations around China on annual scale from 2002 to 2016, respectively.



**Figure S3.** Comparison of the seasonal CH<sub>4</sub> concentration over China between AIRS and ground-based observations.



**Figure S4.**  $R^2$  of the linear trend model in  $\text{CH}_4$  concentration by grids over China.

**Table S1.** Specific information of the nine ground-based observations sites.

| Site Name         | Site ID | Country           | Site Location |                |               | Time Period   |
|-------------------|---------|-------------------|---------------|----------------|---------------|---------------|
|                   |         |                   | Latitude (N°) | Longitude (E°) | Elevation (m) |               |
| Mt. Waliguan      | WLG     | China             | 36.28         | 100.90         | 3810          | 2002/9-2016/9 |
| Shangdianzi       | SDZ     | China             | 40.65         | 117.12         | 287           | 2002/9-2015/9 |
| Lulin             | LLN     | China             | 23.47         | 120.87         | 2867          | 2006/8-2016/9 |
| Ulaan Uul         | UUM     | Mongolia          | 44.45         | 111.08         | 914           | 2002/9-2016/9 |
| Tae-ahn Peninsula | TAP     | Republic of Korea | 36.72         | 126.12         | 20            | 2002/9-2016/9 |
| Anmyeon-do        | AMY     | Republic of Korea | 36.53         | 126.32         | 47            | 2002/9-2016/9 |
| Pha Din           | PDI     | Viet Nam          | 21.57         | 103.51         | 1466          | 2014/1-2016/9 |
| Ryori             | RYO     | Japan             | 141.82        | 39.58          | 260           | 2002/9-2016/9 |
| Minamitorishima   | MNM     | Japan             | 24.28         | 153.98         | 8             | 2002/9-2016/9 |