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 579 Table 1. Meteorological conditions and regional characteristics of the different regions in HRB

| Study area        | Annual temperature<br>( °C) | Annual rainfall<br>(mm) | Potential evaporation and its terms<br>(mm) |                        |                         | Land use and percent           |
|-------------------|-----------------------------|-------------------------|---|------------------------|-------------------------|--------------------------------|
|                   |                             |                         | <i>E<sub>pen</sub></i>                      | <i>E<sub>rad</sub></i> | <i>E<sub>aero</sub></i> |                                |
| Natural area      | 1.5–7.6                     | 350                     | 611   | 856                    | 245                     | Shrubs and grasses, 54%        |
| Agricultural area | 2.8–7.6                     | 60–160                  | 731   | 1211                   | 480                     | Farmland, 13%                  |
| Desert area       | 8.04                        | <100                    | 1489  | 705                    | 784                     | Desert or adjacent beach , 99% |

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Table 2. Location of the meteorological stations and the percentage of cultivated land area within 4 km of the stations in HRB

| Study area        | Meteorological stations | Percentage of cultivated land area (%) |
|-------------------|-------------------------|--|
| Natural area      | Tuole                   | 0                                      |
|                   | Yeniugou                | 0                                      |
|                   | Qilian                  | 3                                      |
| Agricultural area | Jinta                   | 66                                     |
|                   | Jiuquan                 | 58                                     |
|                   | Zhangye                 | 41                                     |
|                   | Dingxin                 | 42                                     |
|                   | Gaotai                  | 56                                     |
|                   | Shandan                 | 31                                     |
| Desert area       | Ejina                   | 5                                      |

Table 3. Trend slopes per decade of  $E_{pen}$ ,  $E_{rad}$ , and  $E_{aero}$  in different regions in the HRB (1970–2017)

| Study area        | Period of time | $E_{pen}$<br>mm decade <sup>-1</sup> | $E_{rad}$<br>mm decade <sup>-1</sup> | $E_{aero}$<br>mm decade <sup>-1</sup> |
|-------------------|----------------|--------------------------------------|--------------------------------------|---------------------------------------|
| Natural area      | 1970–1998      | 1                                    | 7*                                   | –7*                                   |
|                   | 1998–2017      | 11*                                  | –2                                   | 12                                    |
| Agricultural area | 1970–1998      | –39**                                | 8**                                  | –45**                                 |
|                   | 1998–2017      | 54**                                 | –3                                   | 60**                                  |
| Desert area       | 1970–1998      | –80**                                | –2                                   | –78**                                 |
|                   | 1998–2017      | –41**                                | –20**                                | –13                                   |

Note: \*\* and \* are significant at the 0.01 and 0.05 levels.

587 Table 4. Trend slopes per decade of the meteorological factors in different regions in the HRB (1970–2017)

| Study area        | Meteorological station | Period of time | $T_{mean}$<br>°C decade <sup>-1</sup> | $U_2$<br>m s <sup>-1</sup> decade <sup>-1</sup> | $VPD$<br>kPa decade <sup>-1</sup> | $Rn$<br>MJ m <sup>-2</sup> d <sup>-1</sup> decade <sup>-1</sup> |
|-------------------|------------------------|----------------|---------------------------------------|---|-----------------------------------|---|
| Natural area      | Tuole                  | 1970–1998      | 0.37**                                | −0.05   | 0                                 | 94  |
|                   |                        | 1998–2017      | 0.15                                  | 0.18**  | 0.01                              | 54  |
|                   | Yeniugou               | 1970–1998      | 0.2                                   | −0.24**   | 0                                 | 103   |
|                   |                        | 1998–2017      | −0.04                                 | 0.09  | 0                                 | 124   |
|                   | Qilian                 | 1970–1998      | 0.17                                  | −0.16**   | 0                                 | 33  |
|                   |                        | 1998–2017      | 0.26*                                 | 0.15**  | 0.03                              | −131  |
| Agricultural area | Dingxin                | 1970–1998      | 0.38**                                | −0.57**   | 0.01                              | −133  |
|                   |                        | 1998–2017      | 0.11                                  | 0.35**  | 0.05                              | 96  |
|                   | Jinta                  | 1970–1998      | 0.35**                                | −0.57**   | 0.01                              | 48  |
|                   |                        | 1998–2017      | 0.1                                   | 0.27*   | 0.03                              | 97  |
|                   | Jiuquan                | 1970–1998      | 0.31*                                 | −0.4**  | 0                                 | 97  |
|                   |                        | 1998–2017      | 0.12                                  | 0.08  | 0.04*                             | 352   |
|                   | Gaotai                 | 1970–1998      | 0.28*                                 | −0.77**   | −0.01                             | 35  |
|                   |                        | 1998–2017      | 0.46*                                 | 0.5**   | 0.11**                            | 86  |
|                   | Zhangye                | 1970–1998      | 0.32*                                 | −0.38**   | 0.01                              | 160*  |
|                   |                        | 1998–2017      | 0.27                                  | 0.48**  | 0.08**                            | −126  |
|                   | Shandan                | 1970–1998      | 0.52**                                | −0.33**   | 0.03*                             | −136  |
|                   |                        | 1998–2017      | 0.14                                  | 0.23**  | 0.03                              | −280  |
| Desert area       | Ejina                  | 1970–1998      | 0.56**                                | −0.66**   | 0.03                              | −265**  |
|                   |                        | 1998–2017      | 0.34*                                 | −0.22**   | 0.03                              | −232*   |

588 Note: \*\* and \* are significant at the 0.01 and 0.05 levels

589 Table 5. Trend slopes per decade of  $E_{pen}$ ,  $E_{rad}$ , and  $E_{aero}$  at different stations in the HRB (1970–2017)

| Study area        | Meteorological station | Period of time | $E_{pen}$<br>mm decade <sup>-1</sup> | $E_{rad}$<br>mm decade <sup>-1</sup> | $E_{aero}$<br>mm decade <sup>-1</sup> |
|-------------------|------------------------|----------------|--------------------------------------|--------------------------------------|---------------------------------------|
| Natural area      | Tuole                  | 1970–1998      | 9                                    | 10**                                 | 1                                     |
|                   |                        | 1998–2017      | 20**                                 | 1                                    | 20**                                  |
|                   | Yeniugou               | 1970–1998      | −7                                   | 8*                                   | −15**                                 |
|                   |                        | 1998–2017      | 0                                    | −1                                   | 3                                     |
|                   | Qilian                 | 1970–1998      | −4                                   | 5                                    | −10*                                  |
|                   |                        | 1998–2017      | 11*                                  | −3                                   | 21                                    |
| Agricultural area | Dingxin                | 1970–1998      | −4                                   | 48**                                 | 107**                                 |
|                   |                        | 1998–2017      | 25*                                  | 33*                                  | 10                                    |
|                   | Jinta                  | 1970–1998      | −59**                                | 4                                    | −61**                                 |
|                   |                        | 1998–2017      | 59**                                 | 3                                    | 48*                                   |
|                   | Jiuquan                | 1970–1998      | −30**                                | 10                                   | −40**                                 |
|                   |                        | 1998–2017      | 37                                   | 10                                   | 31                                    |
|                   | Gaotai                 | 1970–1998      | −58**                                | 11**                                 | −70**                                 |
|                   |                        | 1998–2017      | 84**                                 | −11*                                 | 92**                                  |
|                   | Zhangye                | 1970–1998      | −15                                  | 15**                                 | −27**                                 |
|                   |                        | 1998–2017      | 78**                                 | −8                                   | 86**                                  |
|                   | Shandan                | 1970–1998      | −20*                                 | 0                                    | −19*                                  |
|                   |                        | 1998–2017      | 21                                   | −11                                  | 23                                    |
| Desert area       | Ejina                  | 1970–1998      | −80**                                | −2                                   | −78**                                 |
|                   |                        | 1998–2017      | −41**                                | −20**                                | −13                                   |

590 Note: \*\* and \* are significant at the 0.01 and 0.05 levels

591 Table 6. Contributions of the meteorological factors to the variation of  $E_{pen}$  in different regions in the HRB

| Study area        | Meteorological station | Period of time | $T_{mean}$              | $U_2$                   | $VPD$                   | $Rn$                    |
|-------------------|------------------------|----------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                   |                        |                | mm decade <sup>-1</sup> | mm decade <sup>-1</sup> | mm decade <sup>-1</sup> | mm decade <sup>-1</sup> |
| Natural area      | Tuole                  | 1970–1998      | 5                       | −3                      | 0                       | 1                       |
|                   |                        | 1998–2017      | 0                       | 13                      | 6                       | 0                       |
|                   | Yeniugou               | 1970–1998      | 2                       | −11                     | 0                       | 3                       |
|                   |                        | 1998–2017      | 0                       | 5                       | 0                       | 1                       |
|                   | Qilian                 | 1970–1998      | 1                       | −5                      | 0                       | 0                       |
|                   |                        | 1998–2017      | 0                       | 11                      | 12                      | −2                      |
| Agricultural area | Dingxin                | 1970–1998      | −1                      | −55                     | 5                       | −1                      |
|                   |                        | 1998–2017      | 0                       | 35                      | 22                      | 2                       |
|                   | Jinta                  | 1970–1998      | 2                       | −63                     | 5                       | 1                       |
|                   |                        | 1998–2017      | 0                       | 28                      | 12                      | 3                       |
|                   | Jiuquan                | 1970–1998      | 3                       | −36                     | 0                       | 3                       |
|                   |                        | 1998–2017      | 0                       | 12                      | 20                      | 5                       |
|                   | Gaotai                 | 1970–1998      | 0                       | −58                     | −6                      | 1                       |
|                   |                        | 1998–2017      | −4                      | 39                      | 43                      | 2                       |
|                   | Zhangye                | 1970–1998      | 1                       | −28                     | 5                       | 3                       |
|                   |                        | 1998–2017      | −3                      | 48                      | 34                      | −3                      |
|                   | Shandan                | 1970–1998      | 1                       | −35                     | 16                      | −1                      |
|                   |                        | 1998–2017      | −2                      | 13                      | 14                      | −2                      |
| Desert area       | Ejina                  | 1970–1998      | 1                       | −83                     | 12                      | −7                      |
|                   |                        | 1998–2017      | 0                       | −32                     | 10                      | −5                      |

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