**Yakou superstation**

This dataset includes data recorded by the automatic meteorological station (AMS) and snow cover observations from 2017/01/01 to 2017/12/31. The Yakou superstation (100.24° E, 38.01° N) was covered by Alpine meadow and located in the Dadongshu Yakou, Binggou town, Qilian County, Qinghai Province. The elevation is 4148 m.

An overview of the measured variables and sensor specifications of Tower1 (installed at 2014/01/01) and Tower2 (installed at 2015/09/18) are summarized in the following Table, respectively:

Tower1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Unit | Corporation/Sensors | Height | | Direction |
| Air temperature | ℃ | Vaisala/HMP45AC | 5 m | | north |
| Air humidity | % | Vaisala/HMP45AC | 5 m | | north |
| Wind speed | m/s | MetOne/010C | 10 m | | north |
| Wind direction | ° | MetOne/020C | 10 m | | north |
| Four-component radiation  ((DR/UR/DLR\_Cor/ULR\_Cor) | W/m2 | Kipp&Zone/  CNR1 | 1.5 m | | south |
| Air pressure | hpa | Setra/CS100 | 0.5 m | | / |
| Soil heat flux | W/m2 | Hukseflux/HFP01 | -6 cm  (2 Repeats) | | / |
| Soil temperature | ℃ | CSI/109 | 0, -4, -10, -20, -40, -80, -120, and -160 cm | | / |
| Soil moisture | % | CS/CS616 | -4, -10, -20, -40, -80, -120, and -160 cm | | / |
| Snow depth | m | CSI/SR50A | 2.5 m | / | |
| Snow water equivalent | mm | CSI/CS725 | 2.5 m | / | |
| Drifting snow | g/m2/s | IAV/ FLOWCAPT | 0-1, 1-2, 2-3 m | / | |

Tower2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Unit | Corporation/Sensors | Height | Direction |
| Air temperature | ℃ | Vaisala/HMP45D | 5 m | north |
| Air humidity | % | Vaisala/HMP45D | 5 m | north |
| Wind speed | m/s | MetOne/010C | 10 m | north |
| Wind direction | ° | MetOne/020C | 10 m | north |
| Precipitation | mm | Texas Electronics/ TE525M | 10 m | / |
| Four-component radiation  ((DR/UR/DLR\_Cor/ULR\_Cor) | W/m2 | Kipp&Zone/  CNR1 | 6 m | south |
| Air pressure | hpa | Setra/CS100 | 0.5 m | / |
| Soil heat flux | W/m2 | Hukseflux/HFP01 | -6 cm  (2 Repeats) | / |
| Soil temperature | ℃ | CSI/109 | 0, -4, -10, -20, -40, -80, -120, and -160 cm | / |
| Soil moisture | % | CS/CS616 | -4, -10, -20, -40, -80, -120, and -160 cm | / |
| Land surface temperature | ℃ | Avalon/IRTC3 | 6 m | south, vertically downward |

The missing data are denoted by -6999, which include: 1) drifting snow (0-1, 1-2, 2-3 m) of Tower 1 from 2017/01/19 to 2017/02/28 due to sensor breakdown; 2) snow depth of Tower 1 from 2017/10/20 to 2017/11/24 due to sensor breakdown. 3) snow water equivalent of Tower 1 continually from 2017/01/01 to 2017/01/10, 2017/01/22 to 2017/01/28, 2017/06/17 to 2017/09/03, 2017/10/19 to 2017/11/26, and 2017/12/02 to 2017/12/29 due to sensor breakdown.

