USDA-ARS

South Fork Experimental Watershed



Summary

A total of 15 stations are deployed in and around the South Fork River in North Central Iowa. An additional 5 stations are operated by NASA in cooperation with the University of Iowa. This summary addresses the ARS stations specifically and the NASA station information can be found at <http://ifis.iowafloodcenter.org>.

Equipment

There are 4 Stevens Water Hydra Probes installed at each station in profile with the center of each sensor located at 5, 10, 20, and 50 cm. There are 2 precipitation gages located at each site as well, a Texas Electronics 525 (TE525) and a MetOne 380. The soil moisture probes record hourly instantaneous measurements of the real dielectric, soil temperature and volumetric soil moisture.

File Formats

There are three files for each station. They are organized in Daily, Hourly, and Rainfall-only.

File Name: SF##\_Daily.xlsx is the daily file for station ##.

 SF##\_Hourly.xlsx is the hourly file for station ##.

 SF##\_Rain.xlsx is the rainfall file for station ## in second increments.

\*some stations have an alternate designation of A, B, C, or D which is an old naming convention for 4 longer term sites. These are represented in the file names as well.

SF##\_Daily and SF##\_Hourly file formats.

Columns: TimeStamp: in Central Standard Time

 Record: record number

 Site ID

 VWC\_1: Volumetric Water Content at 5 cm depth

 VWC\_2: Volumetric Water Content at 10 cm depth

 VWC\_3: Volumetric Water Content at 20 cm depth

 VWC\_4: Volumetric Water Content at 50 cm depth

 Rain\_TE\_Tot: precipitation in mm from the TE525 tipping bucket raingage

 Rain\_Met\_Tot: precipitation in mm from the MetOne 380.

 Temp\_1: Soil Temperature at 5 cm depth

 Temp\_2: Soil Temperature at 10 cm depth

 Temp\_3: Soil Temperature at 20 cm depth

 Temp\_4: Soil Temperature at 50 cm depth

 Batt\_Volt: battery voltage in volts

\*\*\*2 stations have additional measurements as follows.

 AirTC\_Min: Minimum air temperature during the day of record in Celsius

 AirTC\_Max: Maximum air temperature during the day of record in Celsius

 AirTC\_Avg: Average air temperature in Celsius

RH\_avg: Average relative humidity in %

e\_sat: saturation vapor pressure

e\_act: actual vapor pression

e\_sat\_Avg: Average Saturation Vapor Pressure

 e\_act\_avg: Average Actual Vapor Pressure

 WindSpeed\_Mean: Mean wind speed in meter/sec

 WindDir\_Mean: Mean wind direction in degrees (0 North)

 WindDir\_SD: Standard deviation of the wind direction in degrees

 SLR\_MJ\_Tot: Total Solar Radiation in MegaJoules/m2.

 SLR\_W\_Avg: Solar Radiation in W/m2

SF##\_Rain file format

Columns: TimeStamp: in Central Standard Time, nearest second

 Record: record number

 Site ID

 Rain\_TE\_Tot: precipitation in mm from the TE525 tipping bucket raingage

 Rain\_Met\_Tot: precipitation in mm from the MetOne 380.



Figure 1: Map of the South Fork Experimental Watershed

Table 1: ARS and NASA soil moisture and raingage stations in and around the South Fork Experimental Watershed.

|  |  |  |
| --- | --- | --- |
| Site ID | Latitude | Longitude |
| SF01 | 42.542620 | -93.589060 |
| SF02 | 42.469300 | -93.565450 |
| SF03 | 42.452960 | -93.567970 |
| SF04 | 42.544590 | -93.525270 |
| SF05 | 42.428570 | -93.521580 |
| SF06 | 42.389600 | -93.500130 |
| SF07 | 42.515010 | -93.472710 |
| SF08 | 42.484630 | -93.441490 |
| SF09 | 42.445560 | -93.444050 |
| SF10 | 42.379370 | -93.402930 |
| SF11 | 42.429750 | -93.365960 |
| SF12 | 42.341400 | -93.334220 |
| SF13 | 42.403180 | -93.309710 |
| SF14 | 42.328310 | -93.254860 |
| SF15 | 42.420340 | -93.220770 |
| NA01 | 42.297846 | -93.520643 |
| NA02 | 42.304850 | -93.483616 |
| NA04 | 42.398868 | -93.444281 |
| NA04 | 42.637269 | -93.341192 |
| NA05 | 42.451260 | -93.232442 |