在线处理程序EasyFlux DL 和数据管理软件 EasyFlux Web

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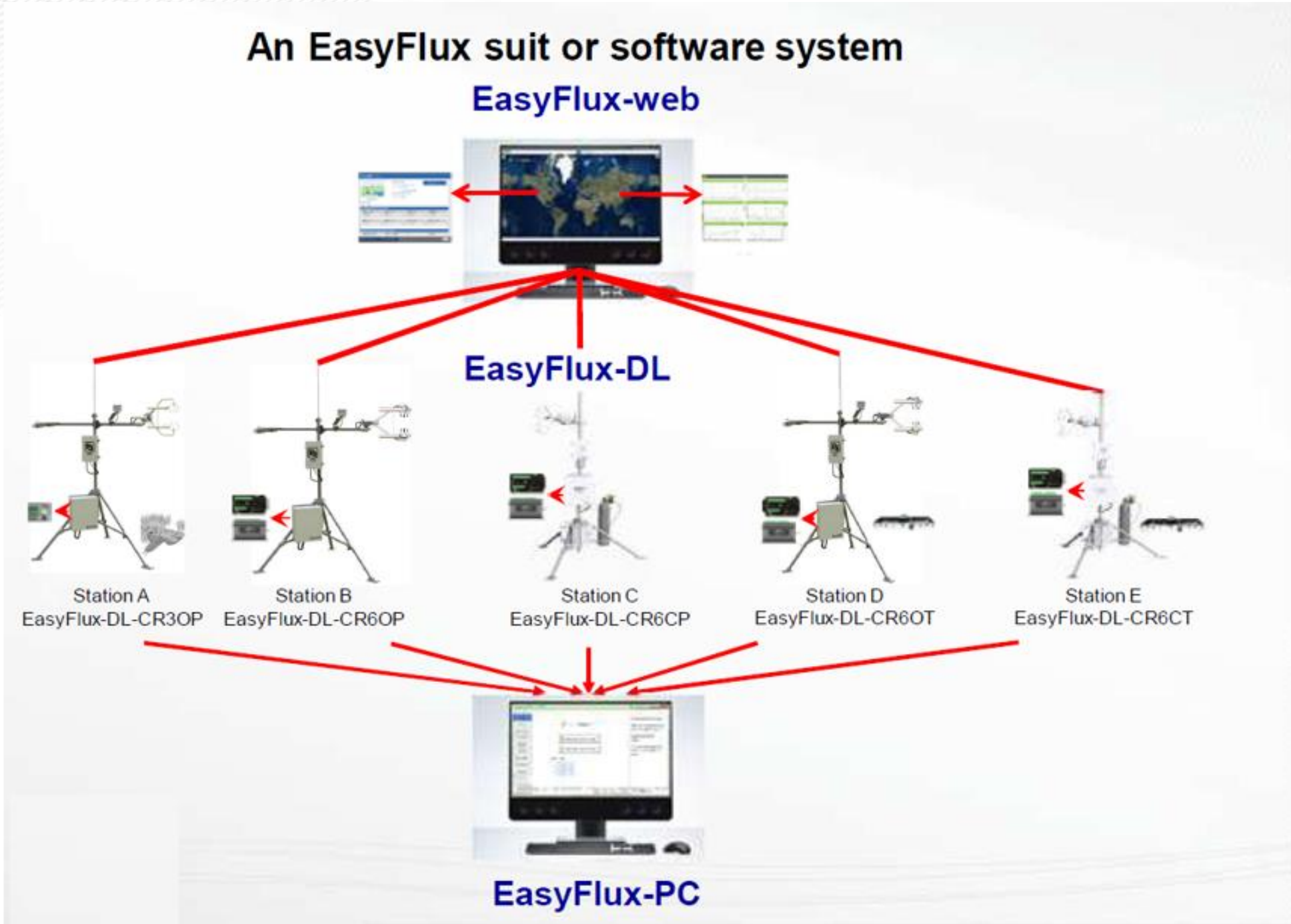
常用数据处理软件

- EasyFlux DL(Campbell Scientific，2016）
- EddyPro (Li-Cor, 2011), EddyPro 5.2.1 (Jan/2015)
- TK2/TK3 (U. Bayreuth, 2004), TK3.11 (Nov/2013)
- EdiRe (U. Edinburgh, 2004), EdiRe 1.5.0.32 (May/2012)
- EddyUH (U. Helsinki, 2011)
- ECO2S (U. Tuscia, 2010)
- EddySoft (Max-Planck-Institut, 2007)
- ECPACK (U. Wageningen, 2004)
- APAK (U. Oregon, 2003)

An EasyFlux suit or software system



EasyFlux-DL

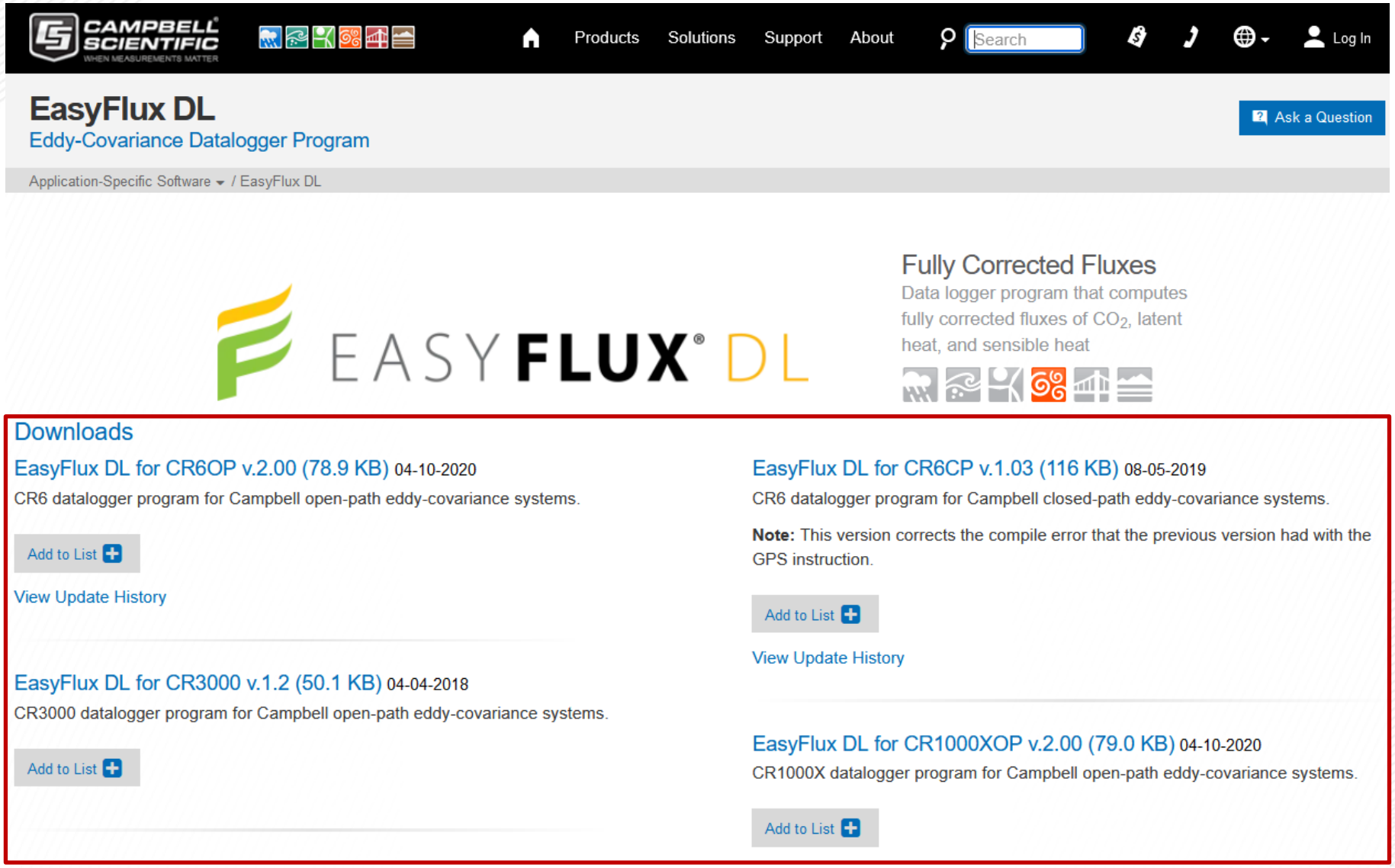
程序目的：report fully corrected fluxes of CO_2, latent heat, sensible heat, and momentum

实现方法：applying commonly used corrections found in scientific literature.

适用采集器：CR6，CR1000X，CR3000

适用通量系统：EC150/CSAT3A，IRGASON，CPEC300 Series

EasyFlux® DL has been tested at several stations in various environments, including irrigated alfalfa, grassland, maize, open water, forest, and desert. The results have shown good agreement with fluxes processed using traditional PC-based software applications.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Eddy-Covariance Datalogger Program
Ask a Question
Application-Specific Software / EasyFlux DL
EASYFLUX® DL
Fully Corrected Fluxes
Data logger program that computes fully corrected fluxes of CO_2, latent heat, and sensible heat
Downloads
EasyFlux DL for CR6OP v.2.00 (78.9 KB) 04-10-2020
CR6 datalogger program for Campbell open-path eddy-covariance systems.
Add to List
View Update History
EasyFlux DL for CR3000 v.1.2 (50.1 KB) 04-04-2018
CR3000 datalogger program for Campbell open-path eddy-covariance systems.
Add to List
EasyFlux DL for CR6CP v.1.03 (116 KB) 08-05-2019
CR6 datalogger program for Campbell closed-path eddy-covariance systems.
Note: This version corrects the compile error that the previous version had with the GPS instruction.
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EasyFlux DL for CR1000XOP v.2.00 (79.0 KB) 04-10-2020
CR1000X datalogger program for Campbell open-path eddy-covariance systems.
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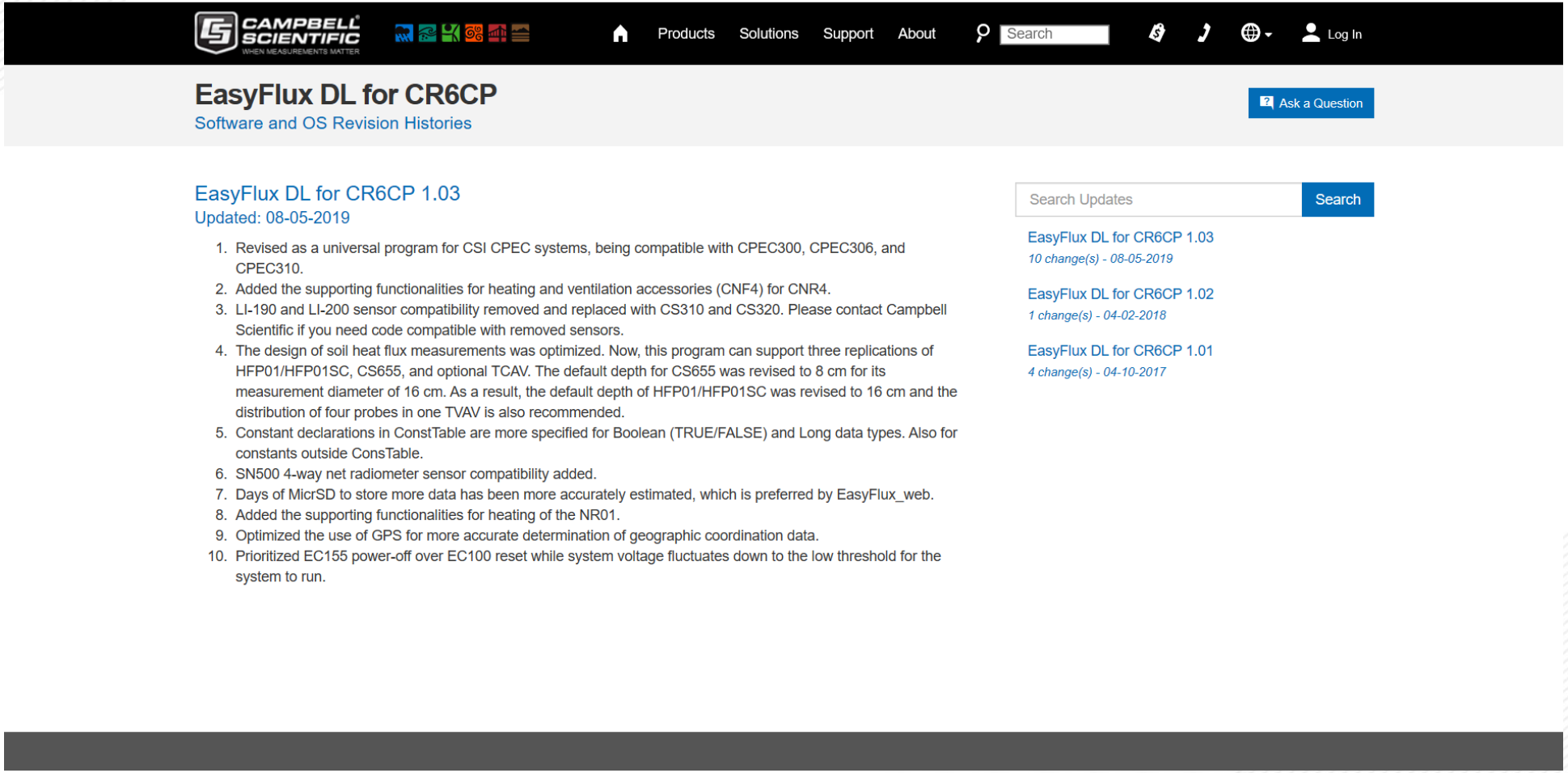
程序更新内容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Software and OS Revision Histories
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EasyFlux DL for CR6CP 1.03
Updated: 08-05-2019
1. Revised as a universal program for CSI CPEC systems, being compatible with CPEC300, CPEC306, and CPEC310.
2. Added the supporting functionalities for heating and ventilation accessories (CNF4) for CNR4.
3. LI-190 and LI-200 sensor compatibility removed and replaced with CS310 and CS320. Please contact Campbell Scientific if you need code compatible with removed sensors.
4. The design of soil heat flux measurements was optimized. Now, this program can support three replications of HFP01/HFP01SC, CS655, and optional TCAV. The default depth for CS655 was revised to 8 cm for its measurement diameter of 16 cm. As a result, the default depth of HFP01/HFP01SC was revised to 16 cm and the distribution of four probes in one TVAV is also recommended.
5. Constant declarations in ConstTable are more specified for Boolean (TRUE/FALSE) and Long data types. Also for constants outside ConsTable.
6. SN500 4-way net radiometer sensor compatibility added.
7. Days of MicrSD to store more data has been more accurately estimated, which is preferred by EasyFlux_web.
8. Added the supporting functionalities for heating of the NR01.
9. Optimized the use of GPS for more accurate determination of geographic coordination data.
10. Prioritized EC155 power-off over EC100 reset while system voltage fluctuates down to the low threshold for the system to run.
Search Updates
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EasyFlux DL for CR6CP 1.03
10 change(s) - 08-05-2019
EasyFlux DL for CR6CP 1.02
1 change(s) - 04-02-2018
EasyFlux DL for CR6CP 1.01
4 change(s) - 04-10-2017

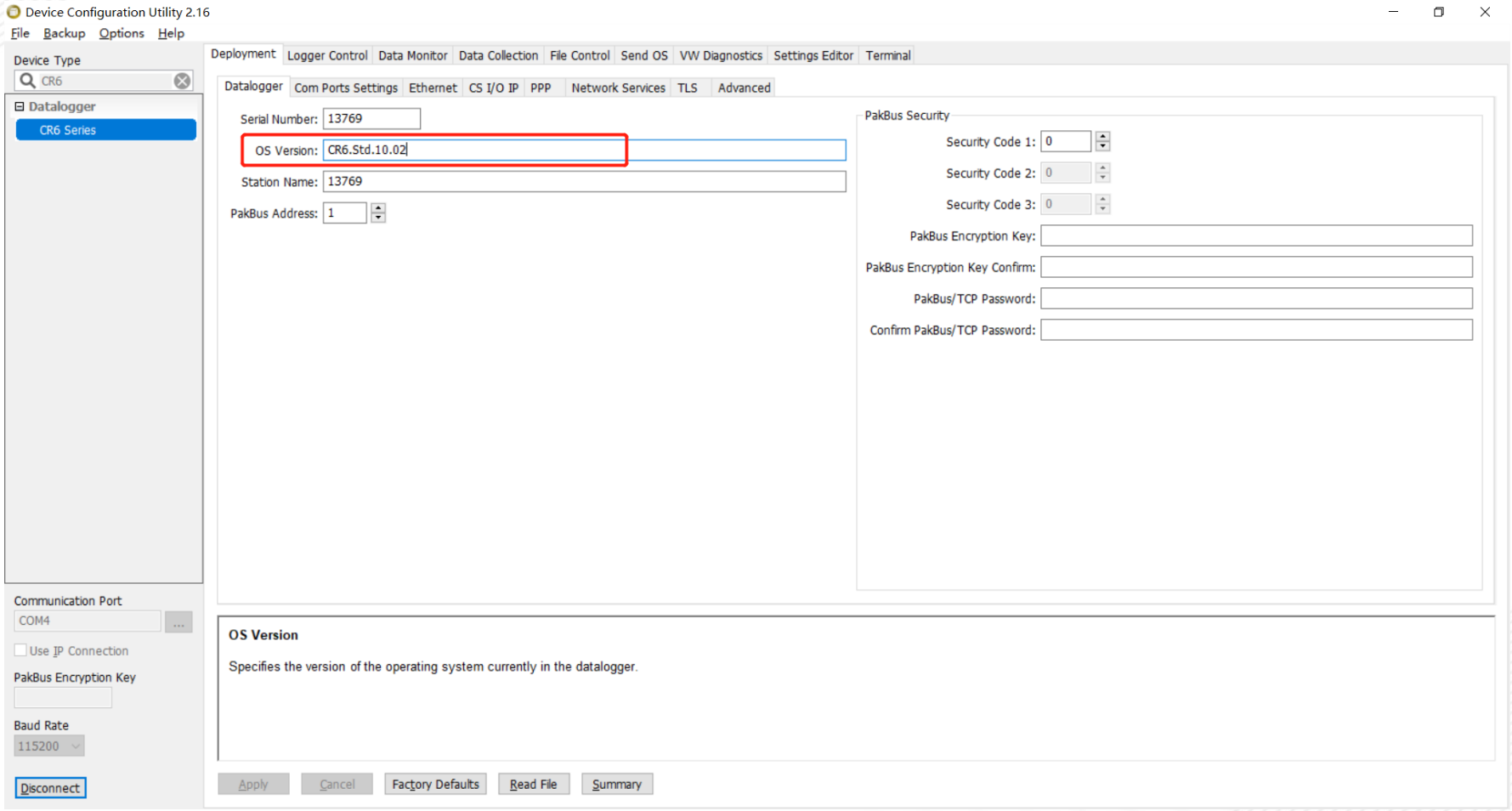
EasyFlux-DL

Update OS

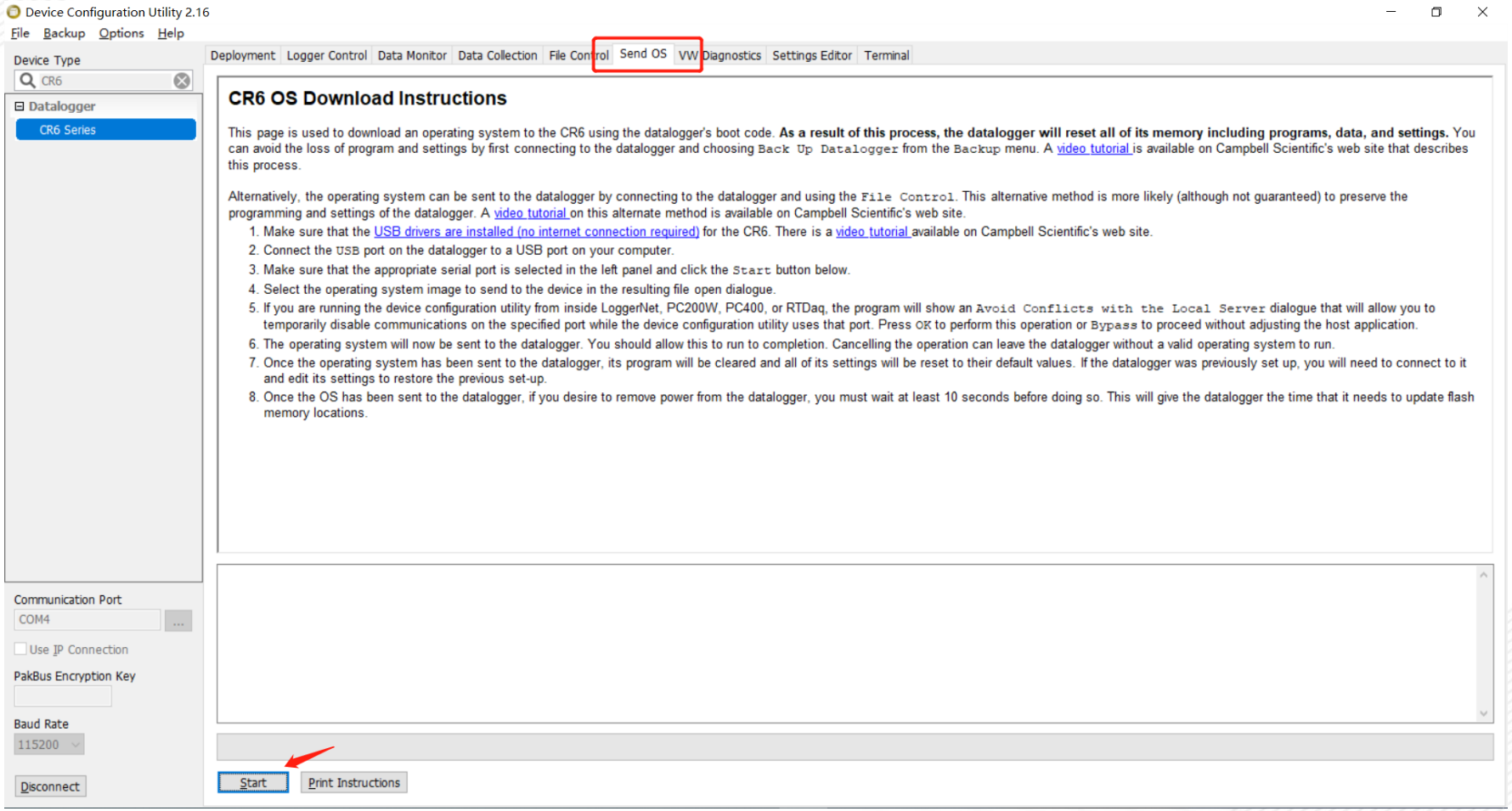
- CR6 operating system 10.02 or newer — https://www.campbellsci.com/cr6
- EC100 operating system 08.02 or newer — https://www.campbellsci.com/ec100
- CDM-A116 operating system 06.01 or newer — https://www.campbellsci.com/cdm-a116

```
'Version 02.00 for CR6 + CDM-A116 + IRGASON or (CSAT3A and EC150) + slow microclimate sensors, based on EasyFlux_DL

'Requirements: EC100 OS version 08.02 or newer
'              CR6   OS version 10.02 or newer

'Copyright (c), 2020 Campbell Scientific, Inc. All rights reserved.
'This program is intended for use with Campbell Scientific open-path eddy-covariance systems manufactured after Fall
'along with microclimate sensors.
'The most common or "best practice" corrections are applied to fluxes in this program.  Consult the manual for detai
'of the user to determine appropriateness of the corrections used. Campbell Scientific always recommends saving raw
'is warranted. Furthermore, it is the responsibility of the user and associated researchers to determine the quality
'regardless of whether said data were processed by this program or another tool.
```

查看采集器的os

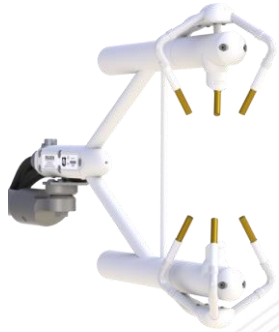

Device Configuration Utility 2.16
File Backup Options Help
Device Type
CR6
Datalogger
CR6 Series
Communication Port
COM4
Use IP Connection
PakBus Encryption Key
Baud Rate
115200
Disconnect
Deployment
Logger Control
Data Monitor
Data Collection
File Control
Send OS
VW Diagnostics
Settings Editor
Terminal
Datalogger
Com Ports Settings
Ethernet
CS I/O IP
PPP
Network Services
TLS
Advanced
Serial Number: 13769
OS Version: CR6.Std.10.02
Station Name: 13769
PakBus Address: 1
PakBus Security
Security Code 1: 0
Security Code 2: 0
Security Code 3: 0
PakBus Encryption Key:
PakBus Encryption Key Confirm:
PakBus/TCP Password:
Confirm PakBus/TCP Password:
OS Version
Specifies the version of the operating system currently in the datalogger.
Apply
Cancel
Factory Defaults
Read File
Summary

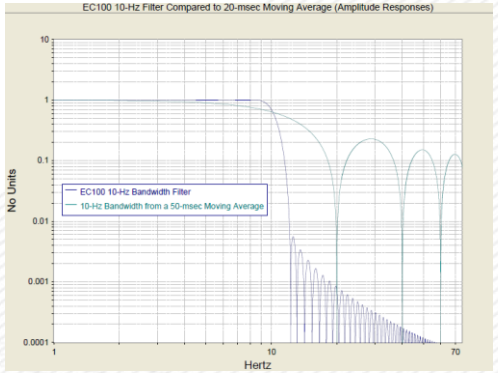
升级采集器的OS


Device Configuration Utility 2.16
File Backup Options Help
Device Type
CR6
Datalogger
CR6 Series
Deployment Logger Control Data Monitor Data Collection File Control Send OS VW Diagnostics Settings Editor Terminal
CR6 OS Download Instructions
This page is used to download an operating system to the CR6 using the datalogger's boot code. As a result of this process, the datalogger will reset all of its memory including programs, data, and settings. You can avoid the loss of program and settings by first connecting to the datalogger and choosing Back Up Datalogger from the Backup menu. A video tutorial is available on Campbell Scientific's web site that describes this process.
Alternatively, the operating system can be sent to the datalogger by connecting to the datalogger and using the File Control. This alternative method is more likely (although not guaranteed) to preserve the programming and settings of the datalogger. A video tutorial on this alternate method is available on Campbell Scientific's web site.
1. Make sure that the USB drivers are installed (no internet connection required) for the CR6. There is a video tutorial available on Campbell Scientific's web site.
2. Connect the USB port on the datalogger to a USB port on your computer.
3. Make sure that the appropriate serial port is selected in the left panel and click the Start button below.
4. Select the operating system image to send to the device in the resulting file open dialogue.
5. If you are running the device configuration utility from inside LoggerNet, PC200W, PC400, or RTDaq, the program will show an Avoid Conflicts with the Local Server dialogue that will allow you to temporarily disable communications on the specified port while the device configuration utility uses that port. Press OK to perform this operation or Bypass to proceed without adjusting the host application.
6. The operating system will now be sent to the datalogger. You should allow this to run to completion. Cancelling the operation can leave the datalogger without a valid operating system to run.
7. Once the operating system has been sent to the datalogger, its program will be cleared and all of its settings will be reset to their default values. If the datalogger was previously set up, you will need to connect to it and edit its settings to restore the previous set-up.
8. Once the OS has been sent to the datalogger, if you desire to remove power from the datalogger, you must wait at least 10 seconds before doing so. This will give the datalogger the time that it needs to update flash memory locations.
Communication Port
COM4
Use IP Connection
PakBus Encryption Key
Baud Rate
115200
Disconnect
Start
Print Instructions

1，定义基础常量

```
27  '*PROGRAM FUNCTION CONSTANTS
28  Const SCN_INTV                = 100          'Unique: measurement rate (m
29  Const SLW_SCN_INTV            = 5000         'Unique: slow sequence measu
30  Const OUTPUT_INTV             = 30           'Unique: online flux data ou
31  Const DAY_FLUX_CRD            = 30           'Unique: number of days of F
32  Const DAY_TSRS_CRD            = 1            'Unique: number of days of T
33  Const NTCH_FRQ_SLW As Long    = 60           'Unique: slowsequence analog
34  Const ONE_FL_TABLE As Boolean = FALSE        'Unique: Whether or not all
35
36  '*PERIPHERAL
37  Const CDM_VOLT_116 As Boolean = FALSE        'Unique: A CDM-A116 is being
38  #If (CDM_VOLT_116) Then
39  Const CDM_VOLT_SN  As Long    = 1001         'Unique: CDM-A116 serial num
40  Const CDM_VOLT_CPI As Long    = 1            'Unique: CPI address for CDM
41  Const CPI_DEVICE   As String  = "CDMA116"    'Unique: CDM Module name or
42  #EndIf
43
44  '* GAS ANALYZER AND SONIC ANEMOMETER
45  Const IRGASON       As Boolean = TRUE        'Unique: IRGASON. TRUE as de
46  Const CSAT3A_EC150  As Boolean = FALSE       'Unique: CSAT3A + EC150. FAI
47  Const SDM_CLCK_SPD  As Long    = 30          'Unique: default SDM clock s
48  Const EC100SDM_ADDR As Long    = 1           'Unique: SDM address for EC1
49  Const BANDWIDTH               = 20           'Unique: in Hz. For spectral
```





2，添加气象传感器

如果选用了某个传感器

将其值改为**-1或TRUE**　　修改传感器的**个数**　　修改传感器的**系数或地址**等

```
133  '*SOIL WATER CONTENT PROBE
134  Const SENSOR_CS616  As Boolean = FALSE      'Unique: CS616 water content reflectometers for volumetric soil moisture
135  Const SENSOR_CS65X  As Boolean = FALSE       'Unique: CS650 or CS655: water content reflectometers for volumetric so
136  #If (SENSOR_CS616 OR SENSOR_CS65X) Then
137  Const NMBR_CS6xx    As Long    = 2         'Unique: number of CS616, CS650, or CS655 sensors (Maximum is 3, 2 as de
138  #If (SENSOR_CS65X) Then
139  Const CSSDI12_ADR1              = 1         'Unique: SDI address for CS65X #1 (not applicable if using only CS616)
140  #If (NMBR_CS6xx > 1) Then
141  Const CSSDI12_ADR2              = 2         'Unique: SDI address for CS65X #2 (not applicable if using only CS616)
142  #EndIf
143  #If (NMBR_CS6xx > 2) Then
144  Const CSSDI12_ADR3              = 3         'Unique: SDI address for CS65X #3 (not applicable if using only CS616)
145  #EndIf
```

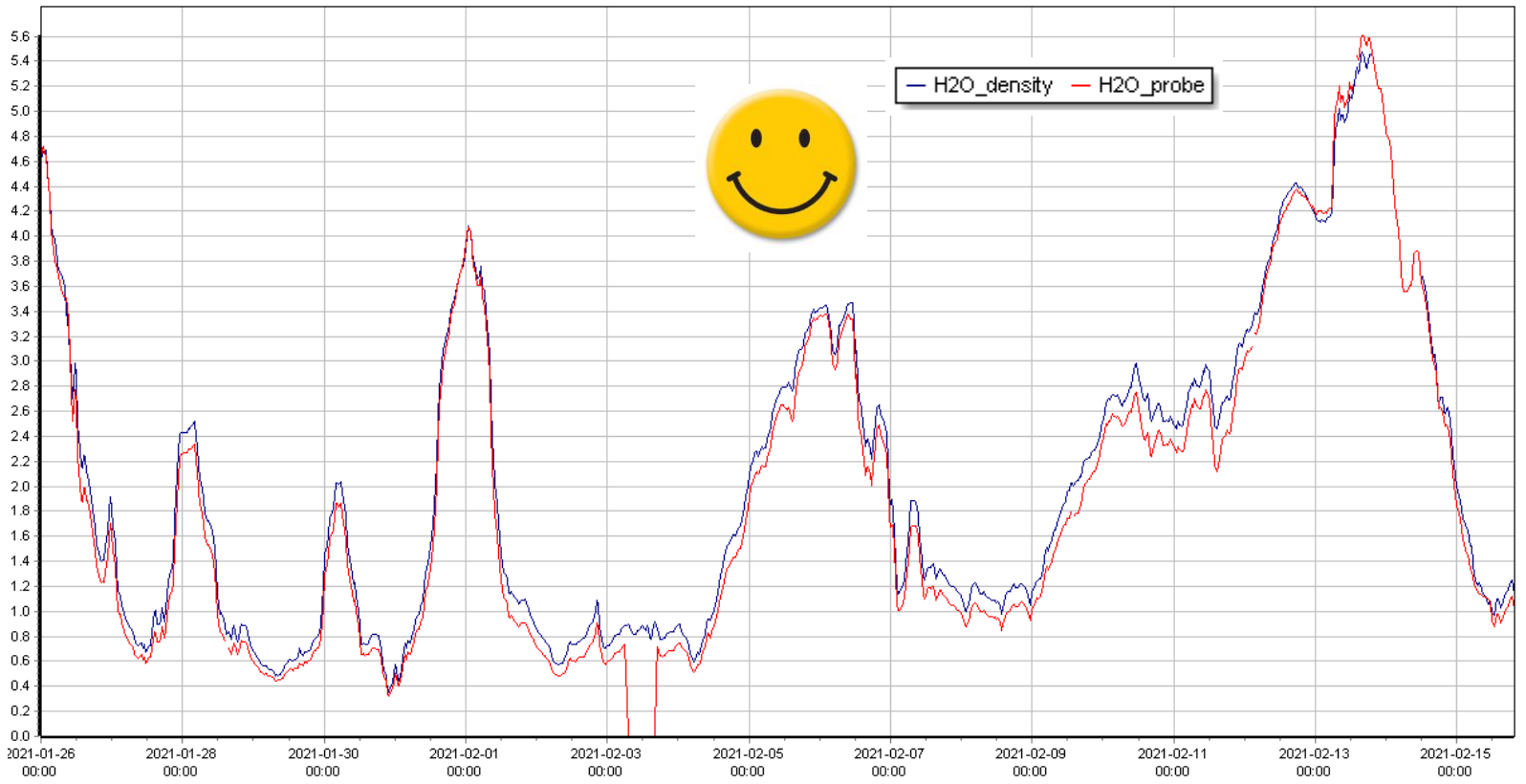
1，Unique: CS650 or CS655: water content reflectometers for volumetric soil moisture. FALSE as default. If true, SENSOR_CS616 must be set to FALSE

2，Unique: number of CS616, CS650, or CS655 sensors，Maximum is 3, 2 as default, NMBR_CS6xx = NMBR_HFP = NMBR_TCAV

2.1 空气温湿度

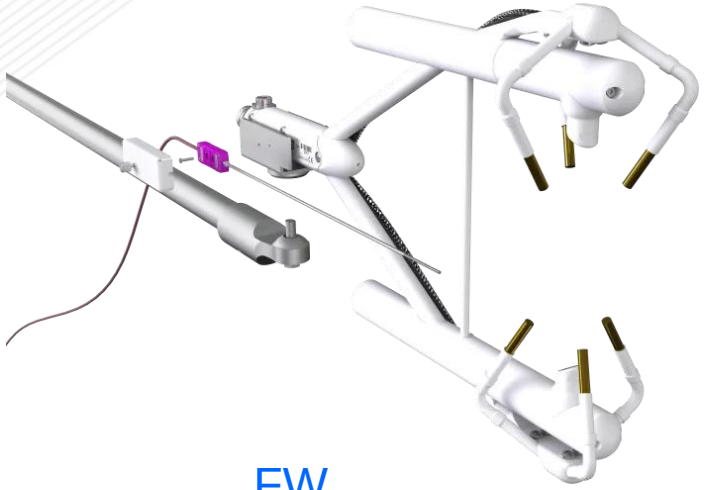
Air Temp & Humidity

```
'*TEMP/RH PROBE
Const SENSOR_T_RH    As Boolean    = FALSE
#If (SENSOR_T_RH)    Then
  Const TMPR_MULT As Float        = 0.14
  Const TMPR_OFST As Float        = -80.0
  Const RH_MULT    As Float       = 0.1
  Const RH_OFST    As Float       = 0
#EndIf
```

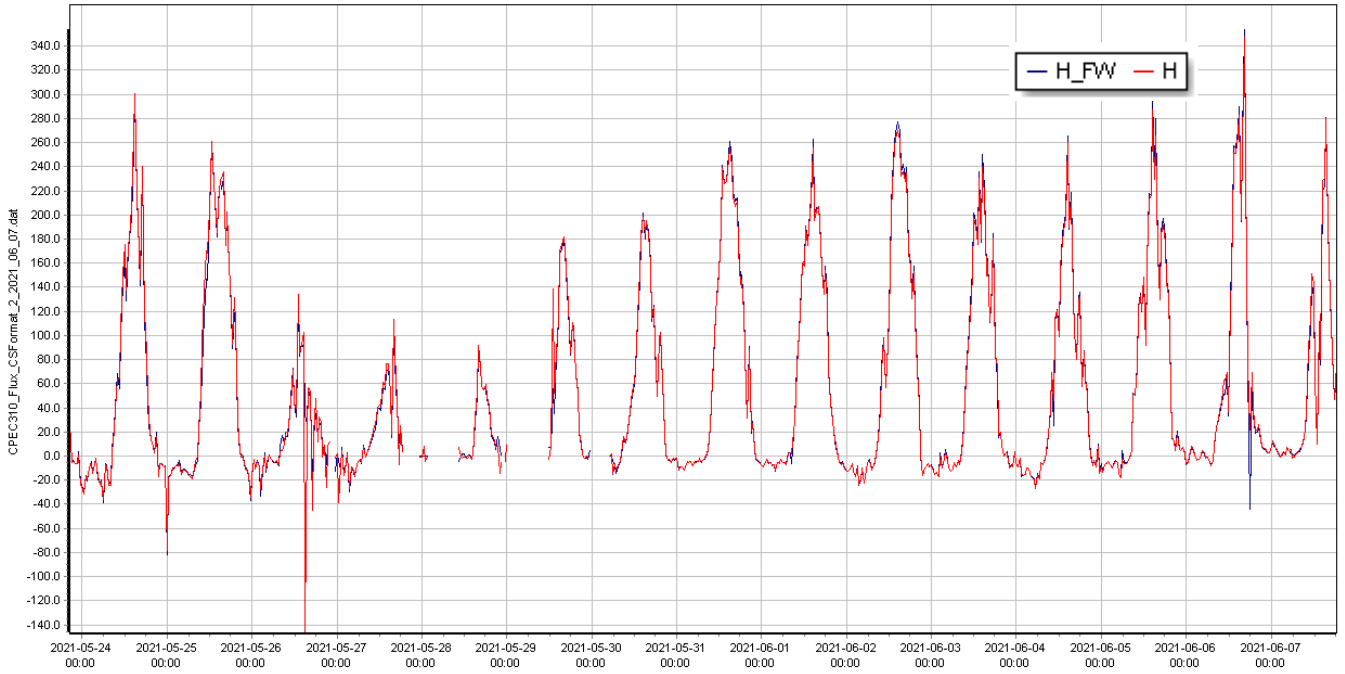


分别利用空气温湿度传感器与涡动系统得到的水汽密度

2.2 热电偶



FW




```
'*FINE WIRE THERMOCOUPLE
 Const SENSOR_FW     As Boolean   = FALSE
```

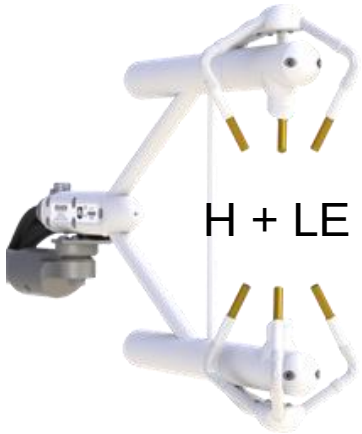
分别利用热电偶与超声温度计算得到的感热通量

2.3 大气压力传感器的选择

```
1047  'Constants and variables that are used to select
1048  Const BB              = 0                    'BB = 0
1049  Const UB              = 1                    'UB = 1
1050  Const EB              = 2                    'EB = 2
1051  Const POWER_ON        = 0                    'IRGA po
1052  Const POWER_OFF       = 1                    'IRGA po
1053  Const HEATER_AUTO     = -2                   'Heater
1054  Const HEATER_MAX      = 0                    'Heater
1055  Const HEATER_OFF      = -1                   'Heater
1056  Const FAST_ON         = TRUE                 'Use the
1057  Const FAST_OFF        = FALSE                'Convent
1058  Const CORR_ON         = 1                    'ON = apply shadow correction
1059  Const CORR_OFF        = 0                    'OFF = do not apply shadow correction

1072  'Constants used to pre-configue EC100
1073  Const DIFFERENTIAL_PRESS   = 0               '0 = disabled. Not applicable to an OPEC system. Should be disabled
1074  Const PRESS_SOURCE_OPTION = BB               '0 = built-in Basic Barometer, 1 = User-added Barometer, 2 = Enhanced
1075  Const TEMPERATURE_SOURCE   = 0               '0 = defaut ambient temperature sensor that gas analyzer has
1076  Const HEATER_OPTION        = HEATER_AUTO     '-2= heater auto,-1 = heater off, and 0 = heater max at 4.5375 V
1077  Const SHADOW_CORR_OPTION   = CORR_OFF        '1 = on, 0 = off
```

2.4 能量平衡

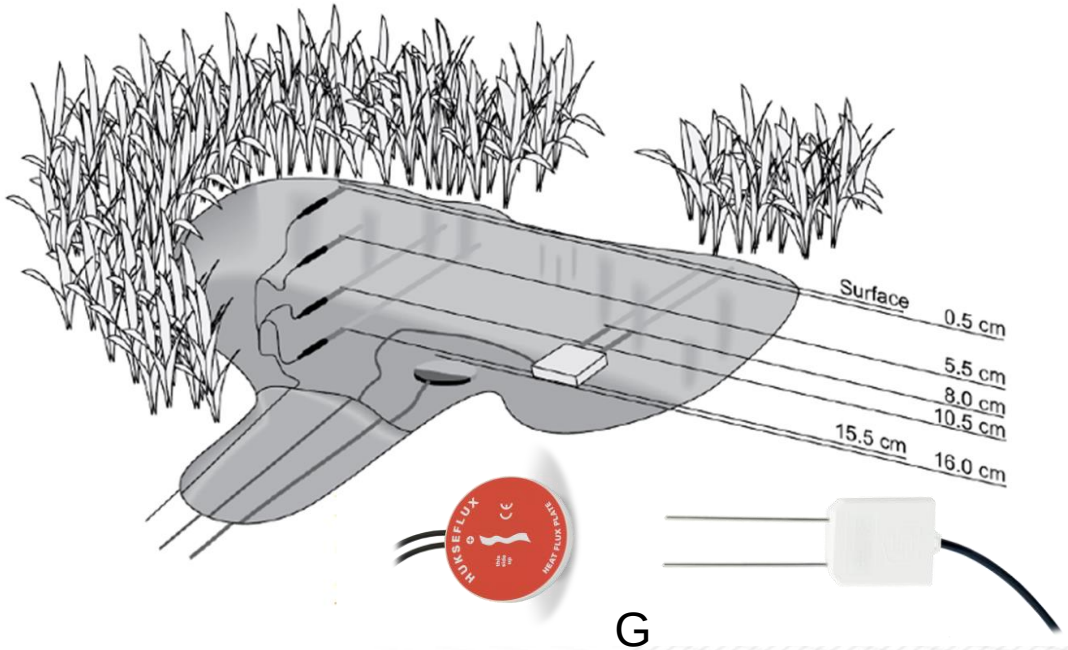
Rn



H + LE

$$Rn = LE + H + G \quad (W\ m^{-2}\ s^{-1})$$

净辐射通量 = 潜热通量 + 感热通量 + 地表热通量

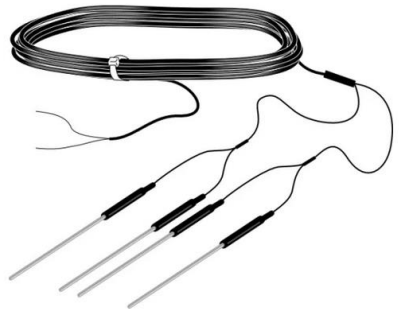


G

2.5 光合有效辐射和温度

```
'*QUANTUM SENSOR
Const SENSOR_CS310 As Boolean     = FALSE
#If (SENSOR_CS310) Then
  Const QUNTM_MULT As Float       = 100
#EndIf
```

```
'*TCAV SOIL TEMPERATURE PROBE
Const SENSOR_TCAV   As Boolean    = FALSE
#If (SENSOR_TCAV) Then
  Const NMBR_TCAV   As Long       = 2
#EndIf
```



$$NEE = A \times e^{(BT)}$$

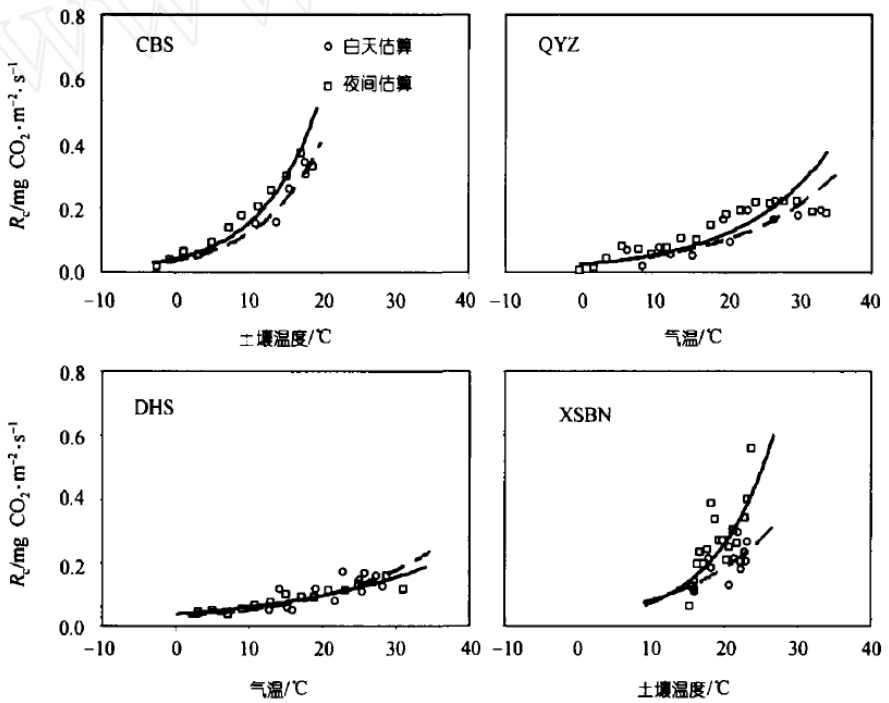


图 3　不同森林生态系统呼吸(R_e)与温度关系的估算

张雷明，于贵瑞等：中国东部森林样带典型生态系统碳收支的季节变化

$$NEE = \frac{\alpha \times PAR \times P_{max}}{\alpha \times PAR + P_{max}} - RE_{daytime}$$

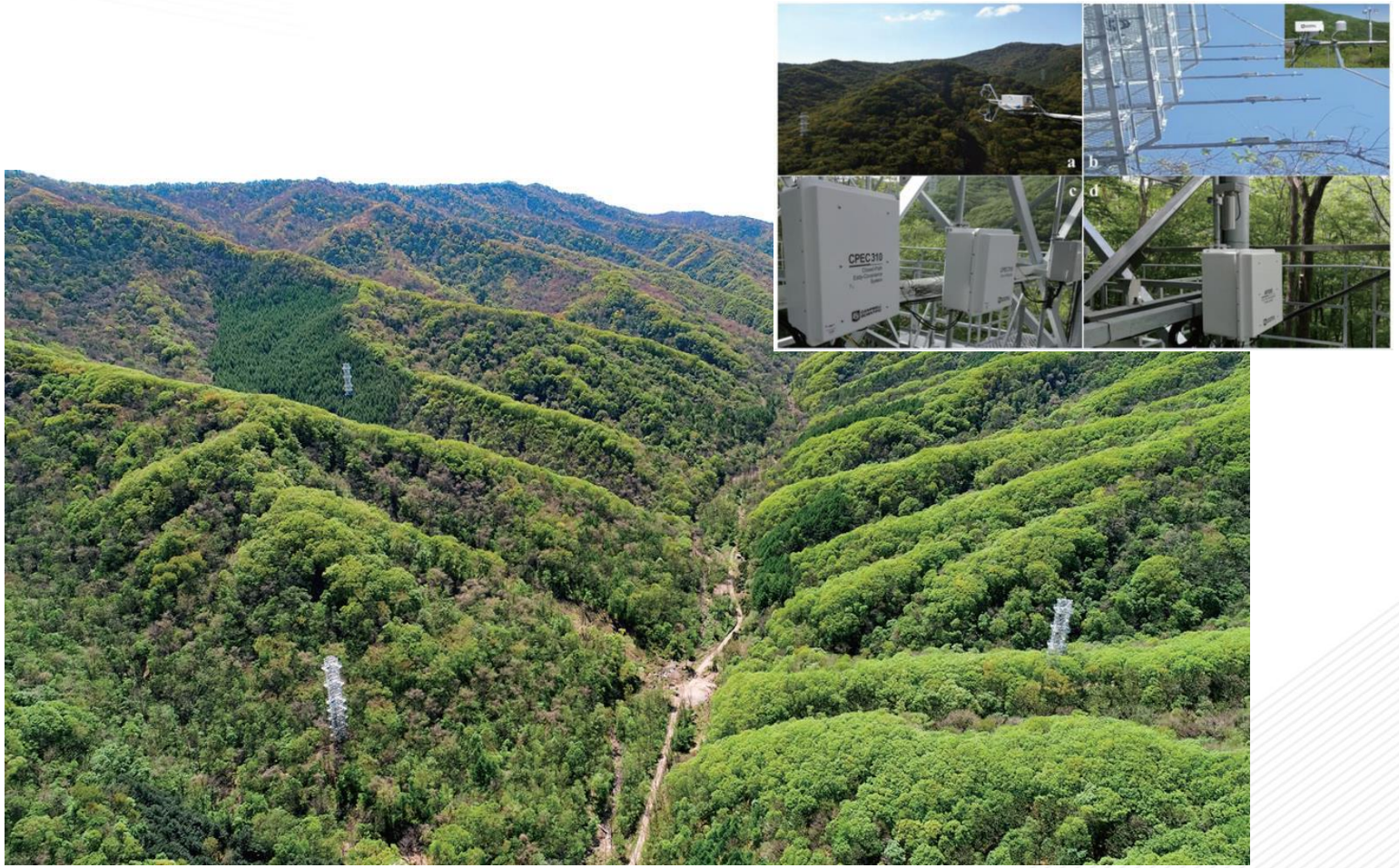
Michaelis–Menten 响应方程

Lloyd & Taylor index equation with temperature,

2.6 GPS

GPS 用于同步时间

```
'*GPS
 Const SENSOR_GPS    As Boolean    = TRUE
 Const UTC_OFST      As Long       = 8
```



CERN 清原站的三座塔位于三个森林样地内，分别为天然阔叶落叶林（左侧最近的塔），天然蒙古栎（右塔）和落叶松人工林（最远的塔）。这三种森林是中国东北三种主要的次生林生态系统

3.1，光谱效应

```
1047  'Constants and variables that are used to select options in data pad
1048  Const BB           = 0                    'BB = 0 for EC100 built-in Basic Barometer (EC.
1049  Const UB           = 1                    'UB = 1 for EC100 User-added Barometer (pressu
1050  Const EB           = 2                    'EB = 2 for EC100 CS106, Enhanced Barometer (p
1051  Const POWER_ON     = 0                    'IRGA power on
1052  Const POWER_OFF    = 1                    'IRGA power off
1053  Const HEATER_AUTO  = -2                   'Heater auto
1054  Const HEATER_MAX   = 0                    'Heater max at 4.5375 V.
1055  Const HEATER_OFF   = -1                   'Heater off
1056  Const FAST_ON      = TRUE                 'Use the alternative CO2 density that is compu
1057  Const FAST_OFF     = FALSE                'Conventional CO2
1058  Const CORR_ON      = 1                    'ON = apply shadow correction
1059  Const CORR_OFF     = 0                    'OFF = do not apply shadow correction
1072  'Constants used to pre-configue EC100
1073  Const DIFFERENTIAL_PRESS   = 0            '0 = disabled. Not applicable to an OPEC system. Should be disabled
1074  Const PRESS_SOURCE_OPTION  = BB           '0 = built-in Basic Barometer, 1 = User-added Barometer, 2 = Enhanced
1075  Const TEMPERATURE_SOURCE   = 0            '0 = defaut ambient temperature sensor that gas analyzer has
1076  Const HEATER_OPTION        = HEATER_AUTO  '-2= heater auto,-1 = heater off, and 0 = heater max at 4.5375 V
1077  Const SHADOW_CORR_OPTION   = CORR_OFF     '1 = on, 0 = off
```

Performance Evaluation of an Integrated Open-Path Eddy Covariance System in a Cold Desert Environment

WEI WANG,[a,b] JIAPING XU,[a] YUNQIU GAO,[a] IVAN BOGOEV,[c] JIAN CUI,[a] LICHEN DENG,[a] CHENG HU,[a] CHENG LIU,[a] SHOUDONG LIU,[a] JING SHEN,[a] XIAOMIN SUN,[d] WEI XIAO,[a] GUOFU YUAN,[d] AND XUHUI LEE[a,e]

塔克拉玛干和库鲁克沙漠，冬季，胡杨

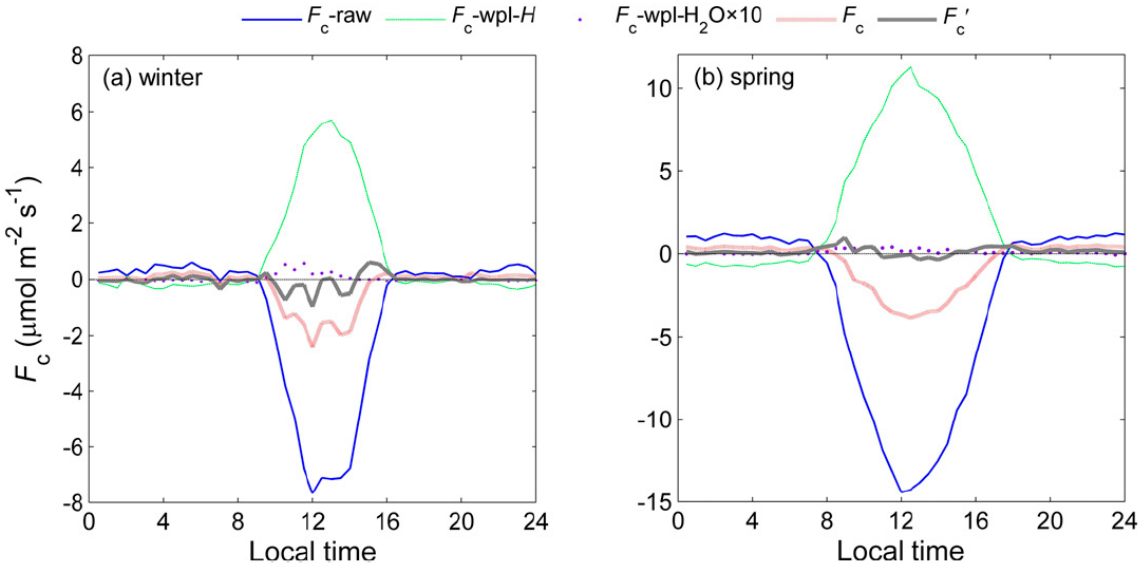


FIG. 9. Diurnal composition of the density correction for F_c averaged over the (a) winter and (b) spring experiments: the raw CO_2 flux (F_c-raw), temperature WPL correction (F_c-wpl-H), water vapor WPL correction (F_c-wpl-H_2O, multiplied by 10), CO_2 flux after the WPL density correction (F_c), and the CO_2 flux after the spectroscopic correction (F_c').

-1.6$\mu mol/m^2 \cdot s$ 修正至 -0.04$\mu mol/m^2 \cdot s$

3.1 光谱效应

In collaboration with Campbell Scientific, Inc., Helbig et al. (2016) and Wang et al. (2016) demonstrated that this apparent CO2 uptake was due to an inadequate correction for spectroscopic effects associated with high-frequency temperature fluctuations and is proportional to the magnitude of the sensible heat flux

1. 升级EC100 OS至7.01 or newer
2. 修改程序指令参数EC100 (raw(1), EC100SDM_ADDR, **2**)
3. 收集足够的数据，保证显热通量H跨度大于100W/m2
4. 使用CO2_lf和CO2_hf分别计算**Fc_lf**和**Fc_hf**
5. 对**Fc_lf**和**Fc_hf**的差值与H进行线性回归,得到k和b
6. Fc_corr = **Fc_lf** + (k*H + b)

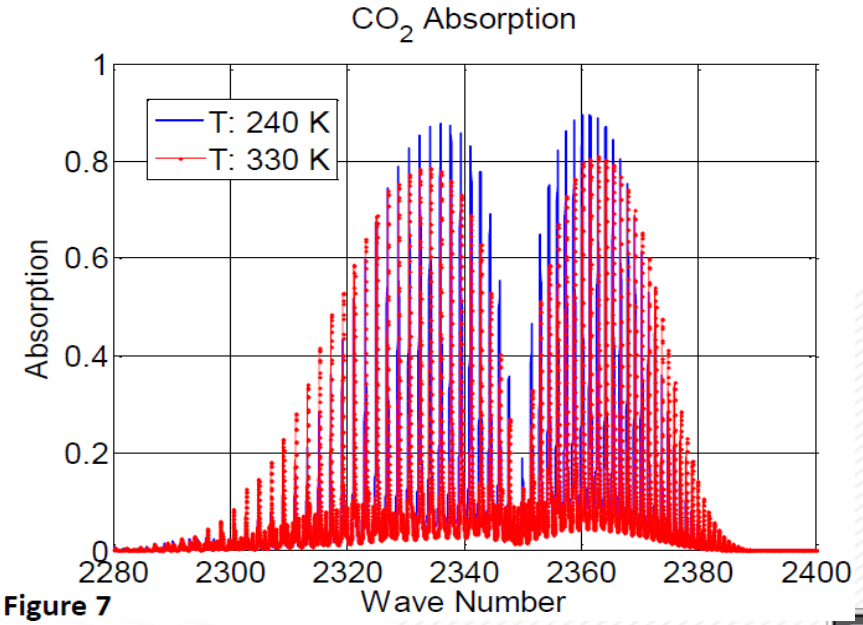


Figure 7

3.1 光谱效应

View Pro 4.2 - [11184_Time_Series_29.dat (No Graph Associated) 375001 Records]

File Edit View Window Help

Selected Graph: None

TimeStamp	RECORD	Ux	Uy	Uz	T_SONIC	diag_soni	CO2_density	CO2_density_fast_tmpr	H2O_density	diag_irga	T_SONIC_corr	TA_1_1_1	PA	CO2_sig_strgth	H2O_sig_strgth
2019-12-03 00:00:00.100	5609136	-3.72	1.78	0.33	3.35	0	618.43	620.21	-0.02	0	6.53	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.200	5609137	-3.35	1.47	0.41	3.21	0	619.27	620.95	-0.01	0	5.85	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.300	5609138	-3.09	1.76	0.21	3.23	0	618.96	620.65	-0.01	0	2.20	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.400	5609139	-3.06	2.00	-0.23	3.25	0	619.09	620.79	-0.01	0	8.06	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.500	5609140	-2.18	2.37	0.04	3.28	0	618.43	620.15	-0.01	0	0.11	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.600	5609141	-2.79	1.81	-0.34	3.24	0	619.04	620.73	-0.01	0	-4.18	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.700	5609142	-2.83	1.64	0.50	3.23	0	618.92	620.61	-0.01	0	1.10	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.800	5609143	-2.63	1.36	0.08	3.25	0	619.10	620.81	-0.01	0	5.84	2.19	81.01	0.97	0.97
2019-12-03 00:00:00.900	5609144	-2.75	2.14	-0.89	3.17	0	618.78	620.43	-0.01	0	4.00	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.000	5609145	-2.94	2.43	-0.85	3.23	0	618.99	620.68	-0.01	0	10.34	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.100	5609146	-2.75	2.58	-0.14	3.21	0	618.50	620.18	-0.01	0	6.06	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.200	5609147	-2.83	2.36	-0.67	3.16	0	618.92	620.56	-0.01	0	-0.15	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.300	5609148	-2.68	2.12	-0.70	3.10	0	618.95	620.54	0.00	0	-9.04	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.400	5609149	-2.70	1.92	-0.10	3.19	0	618.90	620.56	-0.01	0	-6.78	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.500	5609150	-2.28	1.74	-0.32	3.13	0	618.93	620.55	0.00	0	4.54	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.600	5609151	-2.53	1.61	0.24	3.13	0	619.15	620.77	-0.01	0	7.85	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.700	5609152	-3.34	1.02	0.37	3.17	0	618.91	620.55	-0.01	0	2.76	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.800	5609153	-3.10	1.37	0.66	3.23	0	618.85	620.54	-0.01	0	1.85	2.19	81.01	0.97	0.97
2019-12-03 00:00:01.900	5609154	-3.03	1.26	0.19	3.23	0	618.58	620.27	-0.02	0	5.82	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.000	5609155	-3.29	0.89	0.21	3.16	0	618.79	620.43	-0.01	0	6.64	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.100	5609156	-3.36	1.70	0.28	3.08	0	619.38	620.97	-0.01	0	0.72	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.200	5609157	-3.42	1.55	0.02	3.11	0	618.98	620.59	-0.01	0	7.89	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.300	5609158	-3.33	1.86	0.07	3.11	0	619.65	621.26	-0.01	0	3.17	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.400	5609159	-3.20	2.05	-0.24	3.18	0	619.05	620.71	-0.01	0	5.04	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.500	5609160	-3.67	1.41	0.13	3.03	0	619.39	620.94	-0.01	0	10.03	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.600	5609161	-3.69	1.35	0.19	3.04	0	620.05	621.61	0.00	0	-1.27	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.700	5609162	-3.42	1.66	0.05	3.03	0	620.00	621.56	-0.01	0	1.06	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.800	5609163	-2.98	1.63	0.06	3.02	0	619.46	621.01	0.00	0	19.57	2.19	81.01	0.97	0.97
2019-12-03 00:00:02.900	5609164	-3.00	1.12	0.18	3.02	0	619.80	621.35	0.00	0	-92.68	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.000	5609165	-3.21	0.75	0.07	3.00	0	620.16	621.69	0.00	0	47.69	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.100	5609166	-3.05	0.96	0.01	3.02	0	620.01	621.56	0.00	0	-19.85	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.200	5609167	-2.88	1.18	0.29	3.00	0	619.69	621.23	0.00	0	-3.25	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.300	5609168	-2.83	1.13	0.13	2.97	0	619.85	621.36	0.00	0	24.51	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.400	5609169	-2.52	1.17	0.15	2.98	0	619.82	621.34	0.00	0	-4.33	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.500	5609170	-2.30	1.09	0.03	2.96	0	620.06	621.57	0.00	0	12.81	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.600	5609171	-2.28	1.13	0.26	2.99	0	619.73	621.25	-0.01	0	3.96	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.700	5609172	-2.76	1.19	0.55	3.01	0	619.66	621.20	-0.01	0	-3.93	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.800	5609173	-3.10	1.17	0.30	3.03	0	619.19	620.75	-0.01	0	4.01	2.19	81.01	0.97	0.97
2019-12-03 00:00:03.900	5609174	-2.53	1.38	0.36	3.04	0	619.36	620.91	-0.01	0	7.46	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.000	5609175	-2.73	1.48	0.44	3.09	0	619.10	620.70	-0.01	0	4.11	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.100	5609176	-2.69	1.50	0.41	3.10	0	619.11	620.71	-0.01	0	5.73	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.200	5609177	-2.60	1.14	0.32	2.92	0	619.59	621.07	0.00	0	-69.82	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.300	5609178	-2.47	1.02	0.54	2.94	0	619.88	621.37	0.00	0	26.04	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.400	5609179	-2.76	0.95	0.54	2.93	0	619.83	621.31	0.00	0	70.57	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.500	5609180	-2.43	1.21	0.46	2.89	0	620.21	621.67	0.00	0	-1.80	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.600	5609181	-2.48	1.24	0.47	2.87	0	619.68	621.12	0.00	0	-273.15	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.700	5609182	-2.50	1.12	0.54	2.90	0	620.03	621.49	0.00	0	224.67	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.800	5609183	-2.78	0.93	0.41	2.91	0	619.63	621.10	0.00	0	-28.44	2.19	81.01	0.97	0.97
2019-12-03 00:00:04.900	5609184	-2.86	1.00	0.84	2.95	0	619.62	621.11	0.00	0	0.73	2.19	81.01	0.97	0.97
2019-12-03 00:00:05.000	5609185	-2.65	0.97	0.83	2.93	0	619.53	621.02	-0.01	0	14.86	2.19	81.01	0.97	0.97
2019-12-03 00:00:05.100	5609186	-3.08	1.20	0.83	2.99	0	619.80	621.33	0.00	0	30.77	2.19	81.01	0.97	0.97

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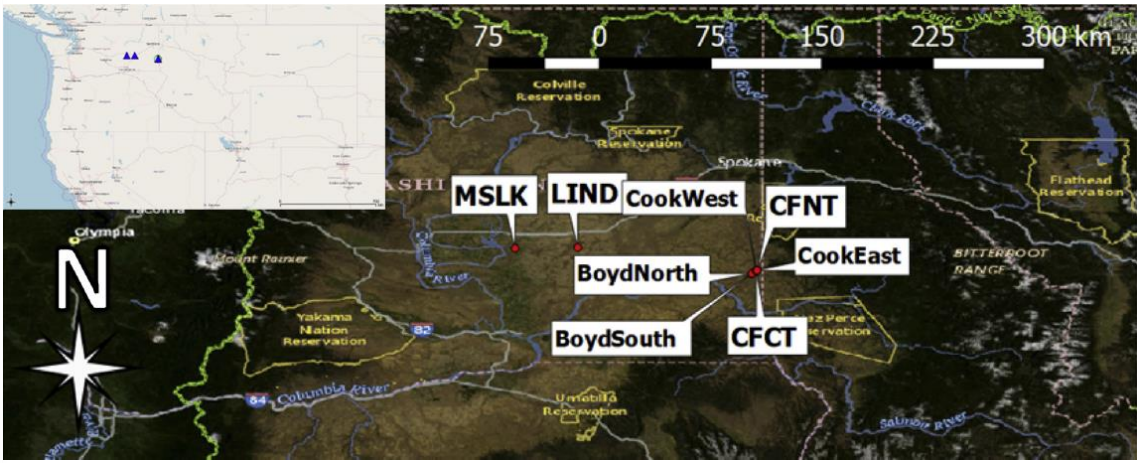
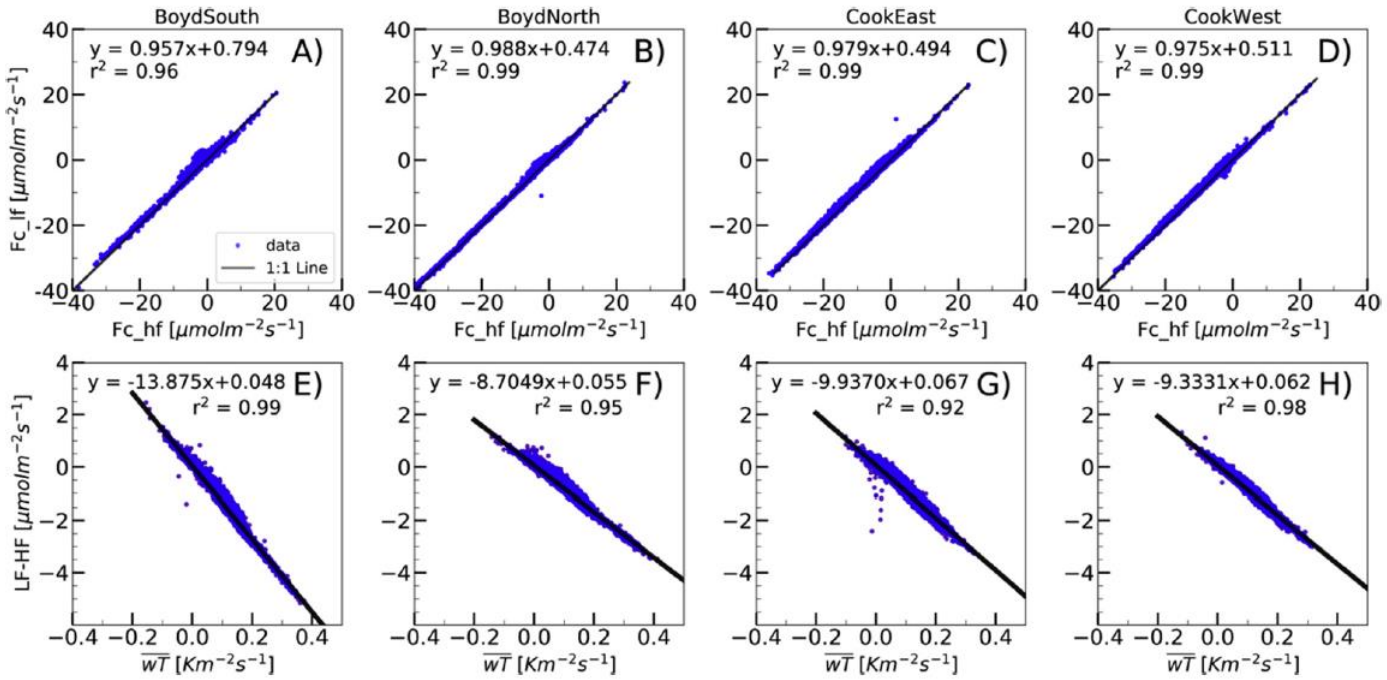
Adjustment of CO2 flux measurements due to the bias in the EC150 infrared gas analyzer

Eric S. Russell[a,*], Victoria Dziekan[a], Jinshu Chi[b], Sarah Waldo[a,1], Shelley N. Pressley[a], Patrick O'Keeffe[a], Brian K. Lamb[a]

利用新方法，修正Fc历史数据

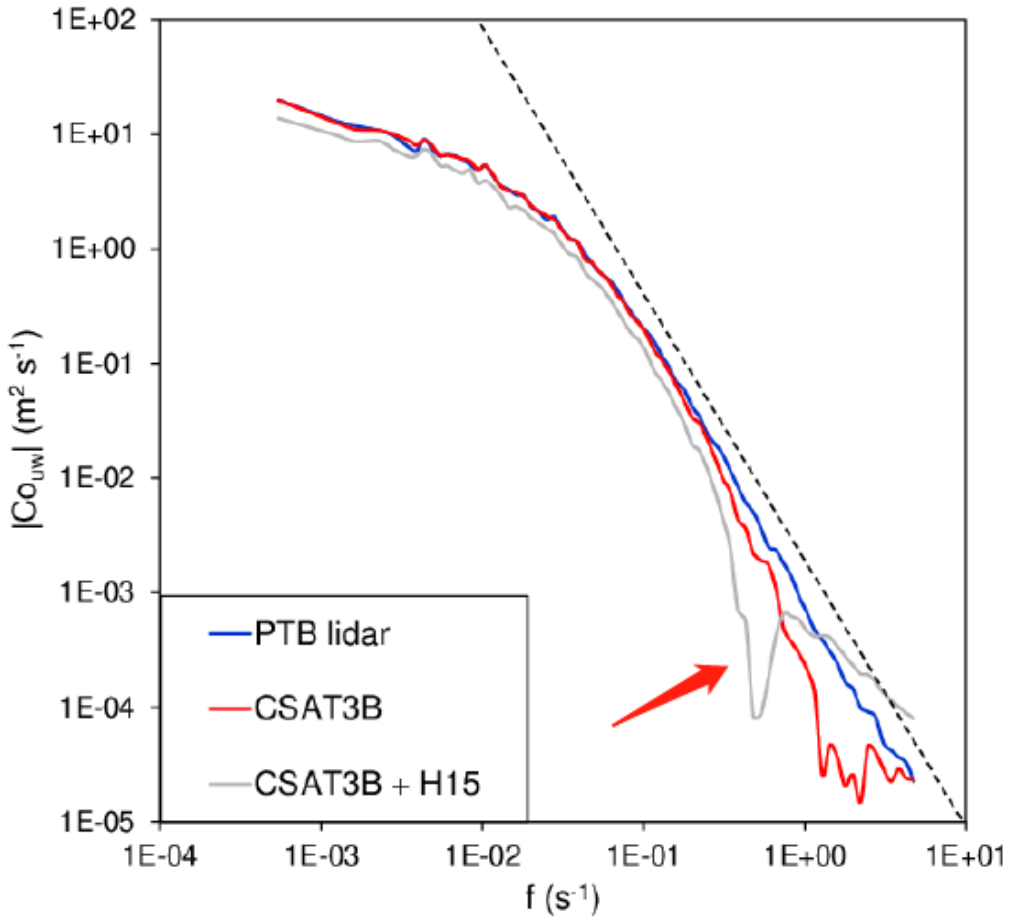




3.2 阴影校正

```
1047  'Constants and variables that are used to select options in data pad
1048  Const BB           = 0                    'BB = 0 for EC100 built-in Basic Barometer (EC.
1049  Const UB           = 1                    'UB = 1 for EC100 User-added Barometer (pressu:
1050  Const EB           = 2                    'EB = 2 for EC100 CS106, Enhanced Barometer (p:
1051  Const POWER_ON     = 0                    'IRGA power on
1052  Const POWER_OFF    = 1                    'IRGA power off
1053  Const HEATER_AUTO  = -2                   'Heater auto
1054  Const HEATER_MAX   = 0                    'Heater max at 4.5375 V.
1055  Const HEATER_OFF   = -1                   'Heater off
1056  Const FAST_ON      = TRUE                 'Use the alternative CO2 density that is compu
1057  Const FAST_OFF     = FALSE                'Conventional CO2
1058  Const CORR_ON      = 1                    'ON = apply shadow correction
1059  Const CORR_OFF     = 0                    'OFF = do not apply shadow correction
1072  'Constants used to pre-configue EC100
1073  Const DIFFERENTIAL_PRESS  = 0             '0 = disabled. Not applicable to an OPEC system. Should be disabled
1074  Const PRESS_SOURCE_OPTION = BB            '0 = built-in Basic Barometer, 1 = User-added Barometer, 2 = Enhanced
1075  Const TEMPERATURE_SOURCE  = 0             '0 = defaut ambient temperature sensor that gas analyzer has
1076  Const HEATER_OPTION       = HEATER_AUTO   '-2= heater auto,-1 = heater off, and 0 = heater max at 4.5375 V
1077  Const SHADOW_CORR_OPTION  = CORR_OFF      '1 = on, 0 = off
```

3.2 阴影校正



We also evaluated whether the overall accuracy of the CSAT3B measurements can be improved by the H15 flow-distortion correction, and our results indicate that **this method cannot be recommended for standard applications（H15修正并不能作为标准修正方法）**

Comparison of turbulence measurements by a CSAT3B sonic anemometer and a high-resolution bistatic Doppler lidar

Ensemble cospectra between *u* and *w* (absolute value) based on turbulence measurements from the PTB lidar and the CSAT3B sonic anemometer. The dashed line indicates the theoretical –5 7/3 power law in the inertial subrange

3.3 自动标定设置

```
Const CPEC300          As Boolean  = FALSE
Const CPEC306          As Boolean  = FALSE
Const CPEC310          As Boolean  = TRUE
Const CPEC310SCRUB     As Boolean  = FALSE
#If (CPEC310) Then
  Const ZRO_SPN_INTV                = 1
  Const ZRO_SPN_OFST                = 32
  Const TIME_ZRO_SPN                = 60
  Const CHECK_ZERO     As Boolean  = TRUE
  Const SET_ZERO       As Boolean  = FALSE
  Const CHECK_CO2SPN   As Boolean  = TRUE
  Const SET_CO2SPN     As Boolean  = FALSE
  Const CHECK_H2OSPN   As Boolean  = FALSE
  Const SET_H2OSPN     As Boolean  = FALSE
#EndIf
```

4. 站点参数设置

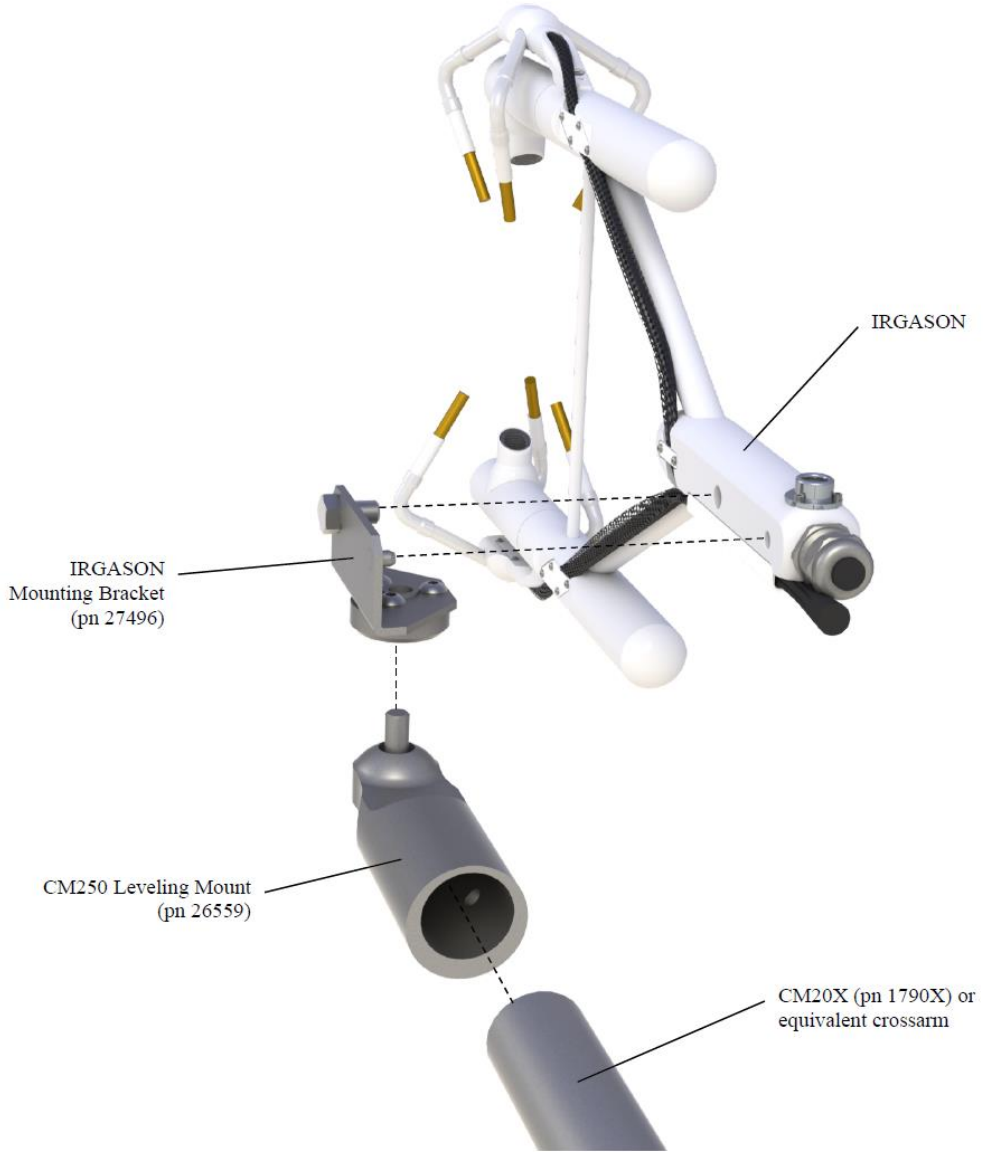
```
' Set default values of station var
sonic_azimuth       = 0
latitude            = 41.766
hemisphere_NS       = NORTH
longitude           = -111.855
hemisphere_EW       = WEST
altitude            = 1356.0
height_measurement  = 2.0
surface_type        = GRASS
height_canopy       = 0.5
displacement_user   = 0
roughness_user      = 0
separation_x_irga   = 0.15020
separation_y_irga   = - 0.03218

#If (SENSOR_GPS) Then
  height_GPS16X    = 2
#EndIf

#If (SENSOR_FW) Then
  separation_x_FW = 0.36427-0.338
  separation_y_FW = -0.02408
  FW_diameter     = FW3_DIA
#EndIf
```

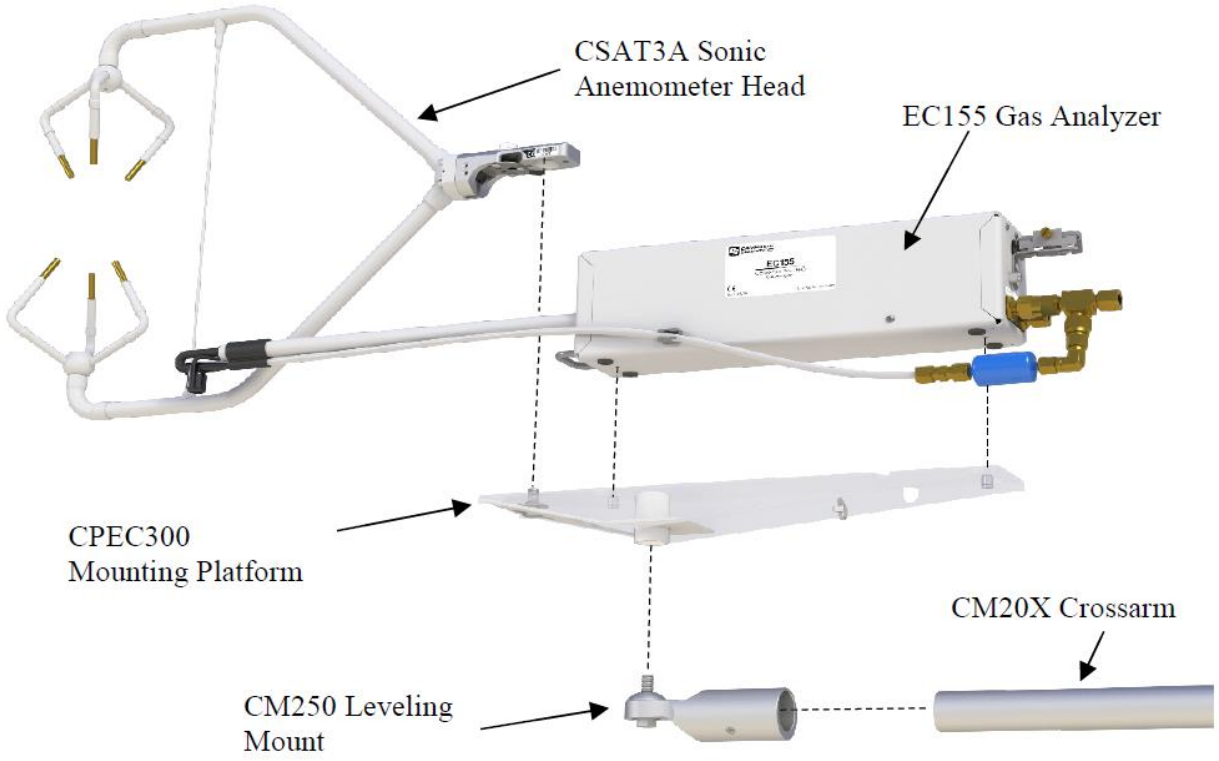
		Default
sonic_azimuth	方位角	0
latitude	纬度	41.766
hemisphere_NS	南/北半球	NORTH
longitude	经度	-111.855
hemisphere_EW	东/西半球	WEST
altitude	海拔	1356.0
height_measurement	设备安装高度	2.0
surface_type	下垫面植被类型	GRASS
height_canopy	下垫面植被高度	0.5
displacement_user	用户定义零平面位移	0
roughness_user	用户定义地面粗糙度	0
height_GPS16X	GPS16X安装高度	2
thick_abv_SHFP	土壤热通量传感器安装深度	0.16

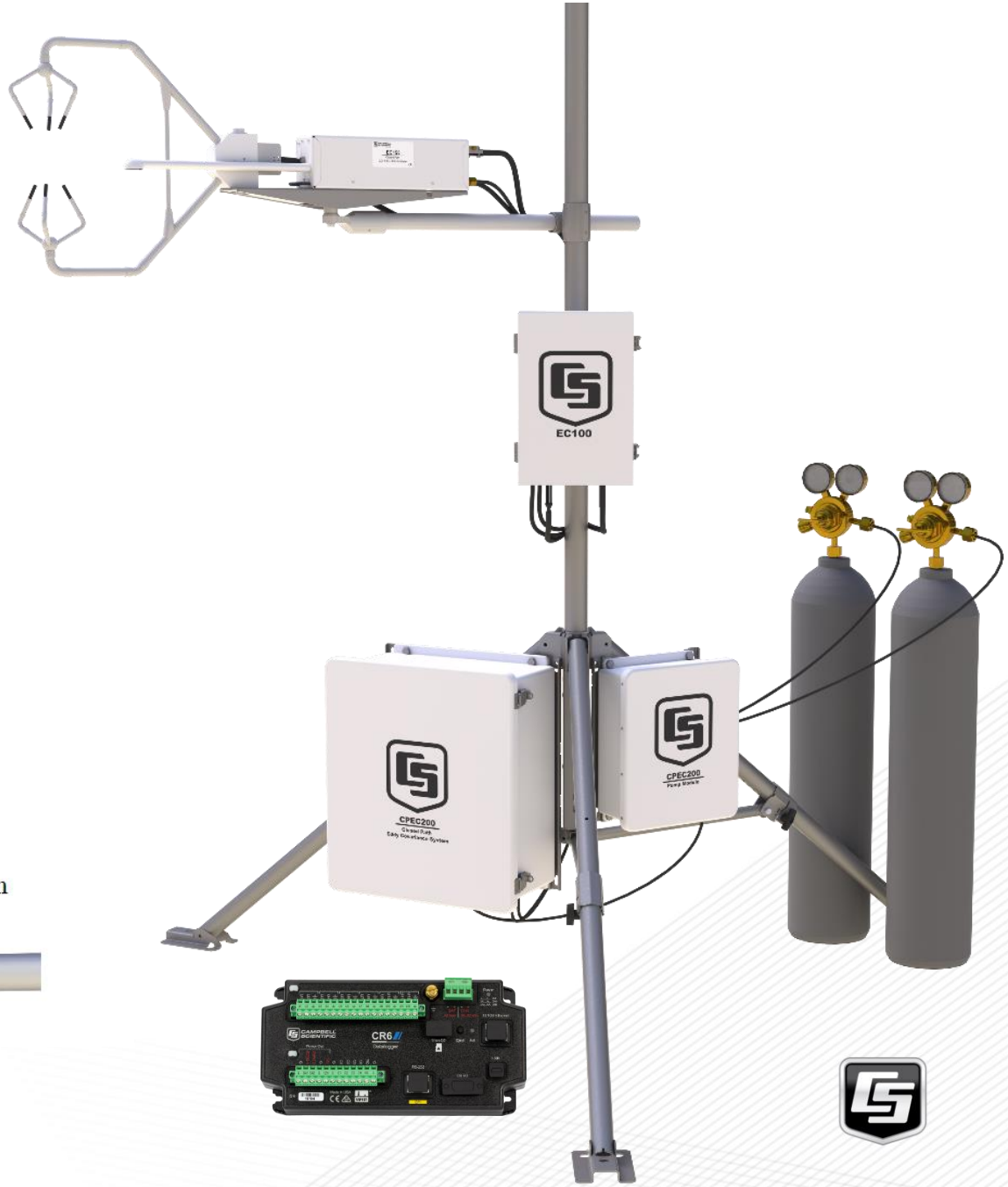
5. 系统安装


IRGASON
IRGASON
Mounting Bracket
(pn 27496)
CM250 Leveling Mount
(pn 26559)
CM20X (pn 1790X) or
equivalent crossarm

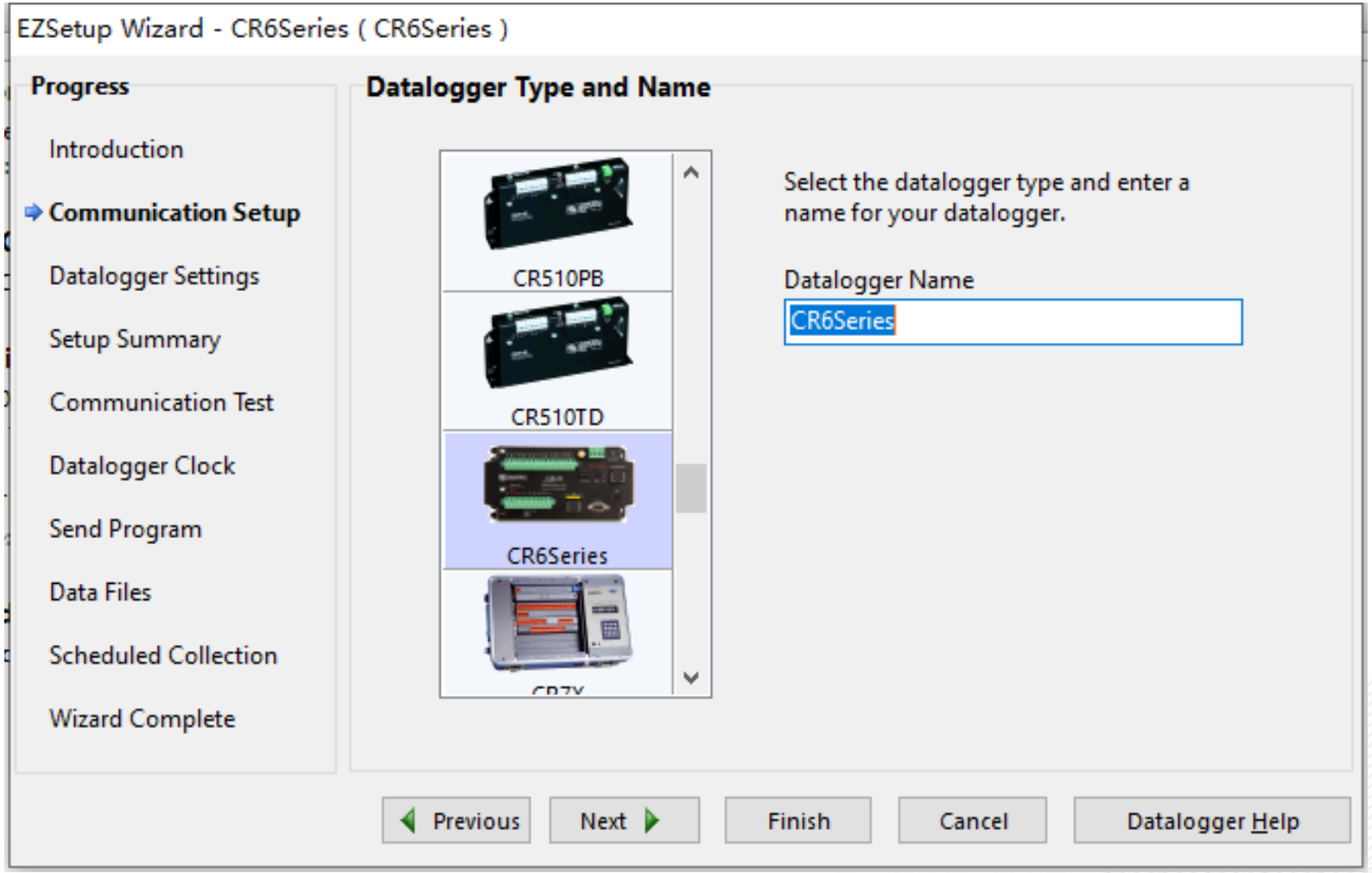

EC100
CR6
Datalogger
CR1000X

5. 系统安装

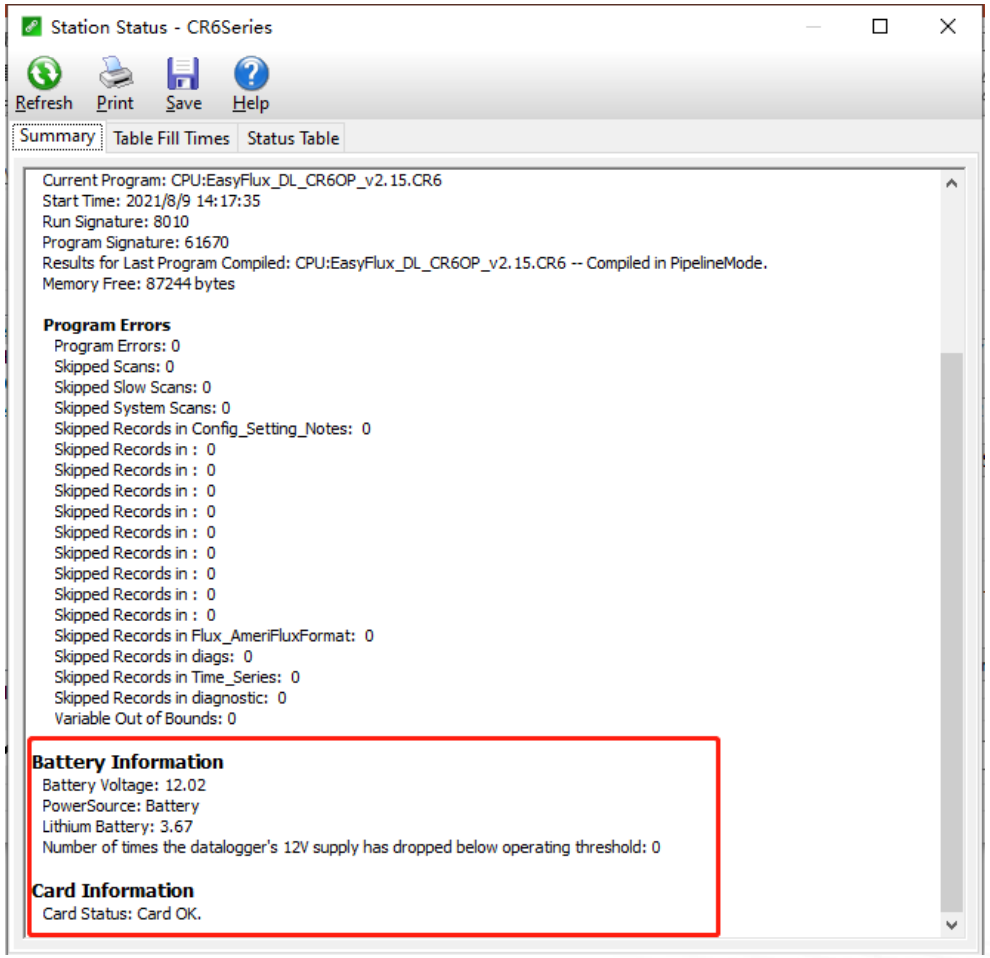

CSAT3A Sonic
Anemometer Head
EC155 Gas Analyzer
CPEC300
Mounting Platform
CM20X Crossarm
CM250 Leveling
Mount


EC100
CPEC200
CPEC200
CR6

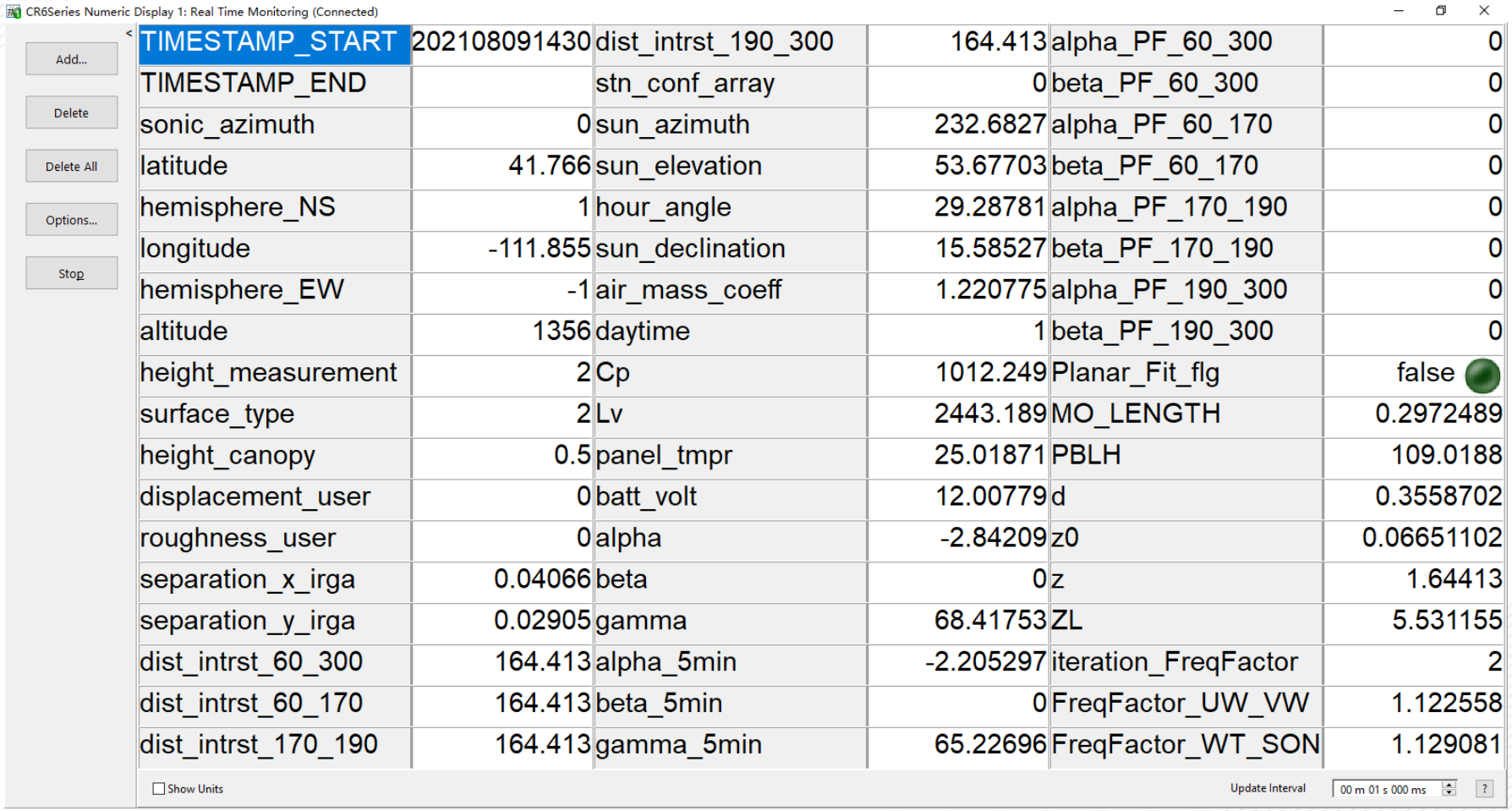
6. 创建链接


EZSetup Wizard - CR6Series (CR6Series)
Progress
Introduction
Communication Setup
Datalogger Settings
Setup Summary
Communication Test
Datalogger Clock
Send Program
Data Files
Scheduled Collection
Wizard Complete
Datalogger Type and Name
CR510PB
CR510TD
CR6Series
Select the datalogger type and enter a name for your datalogger.
Datalogger Name
CR6Series
Previous
Next
Finish
Cancel
Datalogger Help

6.1 查看状态信息


Station Status - CR6Series
Refresh
Print
Save
Help
Summary
Table Fill Times
Status Table
Current Program: CPU:EasyFlux_DL_CR6OP_v2.15.CR6
Start Time: 2021/8/9 14:17:35
Run Signature: 8010
Program Signature: 61670
Results for Last Program Compiled: CPU:EasyFlux_DL_CR6OP_v2.15.CR6 -- Compiled in PipelineMode.
Memory Free: 87244 bytes
Program Errors
Program Errors: 0
Skipped Scans: 0
Skipped Slow Scans: 0
Skipped System Scans: 0
Skipped Records in Config_Setting_Notes: 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in : 0
Skipped Records in Flux_AmeriFluxFormat: 0
Skipped Records in diags: 0
Skipped Records in Time_Series: 0
Skipped Records in diagnostic: 0
Variable Out of Bounds: 0
Battery Information
Battery Voltage: 12.02
PowerSource: Battery
Lithium Battery: 3.67
Number of times the datalogger's 12V supply has dropped below operating threshold: 0
Card Information
Card Status: Card OK.

6.2 查看实时数据



TIMESTAMP_START	202108091430	dist_intrst_190_300	164.413	alpha_PF_60_300	0
TIMESTAMP_END		stn_conf_array	0	beta_PF_60_300	0
sonic_azimuth	0	sun_azimuth	232.6827	alpha_PF_60_170	0
latitude	41.766	sun_elevation	53.67703	beta_PF_60_170	0
hemisphere_NS	1	hour_angle	29.28781	alpha_PF_170_190	0
longitude	-111.855	sun_declination	15.58527	beta_PF_170_190	0
hemisphere_EW	-1	air_mass_coeff	1.220775	alpha_PF_190_300	0
altitude	1356	daytime	1	beta_PF_190_300	0
height_measurement	2	Cp	1012.249	Planar_Fit_flg	false
surface_type	2	Lv	2443.189	MO_LENGTH	0.2972489
height_canopy	0.5	panel_tmpr	25.01871	PBLH	109.0188
displacement_user	0	batt_volt	12.00779	d	0.3558702
roughness_user	0	alpha	-2.84209	z0	0.06651102
separation_x_irga	0.04066	beta	0	z	1.64413
separation_y_irga	0.02905	gamma	68.41753	ZL	5.531155
dist_intrst_60_300	164.413	alpha_5min	-2.205297	iteration_FreqFactor	2
dist_intrst_60_170	164.413	beta_5min	0	FreqFactor_UW_VW	1.122558
dist_intrst_170_190	164.413	gamma_5min	65.22696	FreqFactor_WT_SON	1.129081

6.3 查看历史数据

10Hz高频数据

View Pro 4.2 - [8472.Time_Series_66.dat 1065003 Records]

File Edit View Window Help

Selected Graph: None

TimeStamp	RECORD	Ux	Uy	Uz	T_SONIC	diag_sonic	CO2	H2O	diag_irga	TA_1_1_1	T_cell	PA_cell	CO2_sig_strgth	H2O_sig_strgth	PA_diff	PA	pump_flow	sampling_regime	FW
2021-05-18 00:00:00	2131491	1.64	9.07	0.19	7.46	0.00	413.90	4.68	0.00	7.04	7.06	54.72	0.97	0.96	-3.31	58.03	7.99	1	6.74
2021-05-18 00:00:00.	2131492	1.14	8.74	0.02	7.32	0.00	413.75	4.68	0.00	6.91	7.06	54.72	0.97	0.96	-3.30	58.03	7.99	1	6.73
2021-05-18 00:00:00.	2131493	2.02	8.30	-1.28	7.32	0.00	413.87	4											
2021-05-18 00:00:00.	2131494	2.19	7.63	-0.94	7.45	0.00	413.86	4											
2021-05-18 00:00:00.	2131495	2.02	7.66	-0.61	7.47	0.00	413.83	4											
2021-05-18 00:00:00.	2131496	1.88	7.92	-0.42	7.42	0.00	413.74	4											
2021-05-18 00:00:00.	2131497	1.77	7.49	-0.41	7.38	0.00	413.86	4											
2021-05-18 00:00:00.	2131498	1.89	7.27	0.10	7.40	0.00	413.85	4											
2021-05-18 00:00:00.	2131499	2.48	6.85	0.18	7.34	0.00	413.81	4											
2021-05-18 00:00:01.	2131500	2.92	7.17	0.26	7.34	0.00	413.89	4											
2021-05-18 00:00:01.	2131501	2.46	7.33	0.28	7.32	0.00	413.79	4											
2021-05-18 00:00:01.	2131502	1.54	8.16	0.02	7.26	0.00	414.02	4											
2021-05-18 00:00:01.	2131503	1.68	7.46	0.13	7.26	0.00	413.87	4											
2021-05-18 00:00:01.	2131504	2.08	6.73	-0.37	7.26	0.00	413.78	4											
2021-05-18 00:00:01.	2131505	1.92	6.68	0.28	7.24	0.00	413.79	4											
2021-05-18 00:00:01.	2131506	2.09	7.29	0.47	7.33	0.00	413.75	4											
2021-05-18 00:00:01.	2131507	3.69	8.46	0.35	7.40	0.00	413.86	4											
2021-05-18 00:00:01.	2131508	4.66	8.40	-0.86	7.48	0.00	413.91	4											
2021-05-18 00:00:01.	2131509	4.43	8.40	-1.33	7.50	0.00	413.85	4											
2021-05-18 00:00:02.	2131510	3.81	7.92	-0.83	7.48	0.00	413.95	4											
2021-05-18 00:00:02.	2131511	3.63	7.53	-0.93	7.45	0.00	413.92	4											
2021-05-18 00:00:02.	2131512	3.04	7.05	-0.75	7.37	0.00	413.84	4											
2021-05-18 00:00:02.	2131513	3.24	6.96	-0.42	7.39	0.00	413.83	4											
2021-05-18 00:00:02.	2131514	2.57	6.57	-0.38	7.38	0.00	413.79	4											
2021-05-18 00:00:02.	2131515	4.54	6.72	0.26	7.37	0.00	413.93	4											
2021-05-18 00:00:02.	2131516	4.25	5.53	0.49	7.27	0.00	413.88	4											
2021-05-18 00:00:02.	2131517	2.66	5.78	-0.85	7.42	0.00	413.89	4											
2021-05-18 00:00:02.	2131518	3.22	6.98	-0.05	7.41	0.00	413.82	4											
2021-05-18 00:00:02.	2131519	3.83	7.56	0.00	7.38	0.00	413.87	4											
2021-05-18 00:00:03.	2131520	3.47	7.14	-0.13	7.35	0.00	413.83	4											
2021-05-18 00:00:03.	2131521	3.40	7.33	-0.16	7.38	0.00	413.96	4											
2021-05-18 00:00:03.	2131522	3.05	6.43	0.57	7.31	0.00	413.80	4											
2021-05-18 00:00:03.	2131523	2.14	5.96	0.18	7.38	0.00	413.82	4											
2021-05-18 00:00:03.	2131524	1.78	5.74	0.29	7.27	0.00	413.88	4											
2021-05-18 00:00:03.	2131525	1.63	6.01	0.70	7.22	0.00	413.76	4											

30min通量数据

View Pro 4.2 - [CPEC310_Flux_CSFormat_2_2021_06_07.dat]

File Edit View Window Help

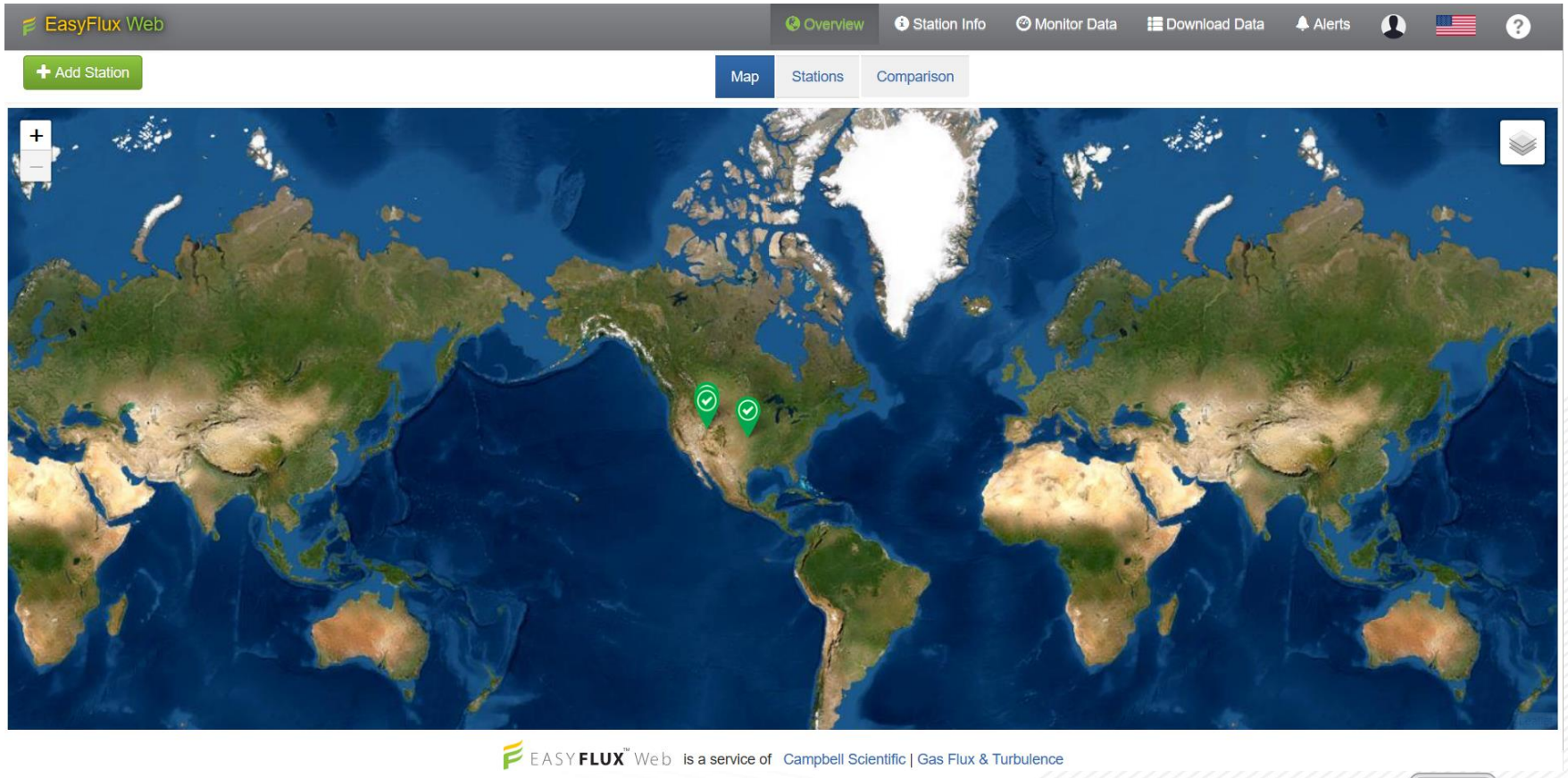
Selected Graph: None

TimeStamp	RECORD	FC	FC_mass	FC_QC	FC_samples	LE	LE_QC	LE_samples	H	H_QC	H_samples	H_FW	H_FW_samples	Bowen_ratio	TAU	TAU_QC	USTAR	TSTAR	TKE	TA_1_1_1
2021-05-23 20:30:00	399	0.25	0.01	3.00	18000	7.59	4.00	18000	28.27	3.00	18000	27.75	18000	3.73	0.06	1.00	0.28	-0.14	0.46	15.29
2021-05-23 21:00:00	400	0.21	0.01	7.00	18000	4.07	7.00	18000	-5.24	7.00	18000	-4.51	18000	-1.29	0.02	3.00	0.17	0.04	0.34	13.93
2021-05-23 21:30:00	401	0.34	0.02	7.00	18000	5.15	7.00	18000	-4.68	7.00	18000	-3.61	18000	-0.91	0.00	9.00	0.08	0.08	0.59	12.84
2021-05-23 22:00:00	402	0.71	0.03	7.00	18000	5.11	7.00	18000	-6.18	7.00	18000	-5.96	18000	-1.21	0.01	7.00	0.11	0.08	0.86	11.14
2021-05-23 22:30:00	403	-0.03	0.00	9.00	18000	0.39	9.00	18000	-6.53	9.00	18000	-6.02	18000	-16.89	0.02	9.00	0.16	0.06	0.95	10.98
2021-05-23 23:00:00	404	-0.23	-0.01	9.00	18000	-5.94	9.00	18000	0.55	9.00	18000	3.97	18000	-0.09	0.03	7.00	0.19	0.00	1.36	10.41
2021-05-23 23:30:00	405	0.15	0.01	4.00	18000	7.04	3.00	18000	-24.67	3.00	18000	-23.19	18000	-3.50	0.04	3.00	0.25	0.14	1.20	10.81
2021-05-24 00:00:00	406	0.01	0.00	3.00	18000	5.10	3.00	18000	-24.67	3.00	18000	-23.28	18000	-4.83	0.03	3.00	0.21	0.16	0.80	10.52
2021-05-24 00:30:00	407	0.01	0.00	7.00	18000	6.59	3.00	18000	-31.24	3.00	18000	-30.94	18000	-4.74	0.04	1.00	0.24	0.18	0.68	9.58
2021-05-24 01:00:00	408	-0.09	0.00	7.00	18000	3.18	7.00	18000	-17.17	7.00	18000	-15.89	18000	-5.39	0.02	7.00	0.16	0.15	1.56	8.85
2021-05-24 01:30:00	409	0.12	0.01	9.00	18000	6.74	9.00	18000	-19.31	9.00	18000	-20.64	18000	-2.86	0.01	9.00	0.11	0.25	0.49	7.40
2021-05-24 02:00:00	410	0.00	0.00	9.00	18000	0.81	7.00	18000	-10.21	7.00	18000	-9.79	18000	-12.59	0.01	4.00	0.11	0.13	0.39	7.15
2021-05-24 02:30:00	411	-0.01	0.00	8.00	18000	-1.22	8.00	18000	-6.12	8.00	18000	-4.80	18000	5.00	0.01	8.00	0.10	0.09	1.02	5.93
2021-05-24 03:00:00	412	0.17	0.01	9.00	18000	2.58	9.00	18000	-14.22	9.00	18000	-14.15	18000	-5.50	0.01	9.00	0.11	0.17	0.56	5.59
2021-05-24 03:30:00	413	0.15	0.01	9.00	18000	-2.63	9.00	18000	-6.86	9.00	18000	-6.93	18000	2.61	0.00	9.00	0.07	0.14	0.34	5.08
2021-05-24 04:00:00	414	-0.01	0.00	9.00	18000	1.58	9.00	18000	-1.81	9.00	18000	-1.39	18000	-1.15	0.01	7.00	0.10	0.02	0.58	5.13
2021-05-24 04:30:00	415	-0.37	-0.02	9.00	18000	8.80	9.00	18000	-17.01	9.00	18000	-19.18	18000	-1.93	0.01	9.00	0.10	0.23	0.44	3.95
2021-05-24 05:00:00	416	-0.36	-0.02	7.00	18000	5.15	7.00	18000	-23.35	7.00	18000	-23.16	18000	-4.54	0.02	7.00	0.18	0.18	1.39	3.83
2021-05-24 05:30:00	417	-0.04	0.00	7.00	18000	0.90	8.00	18000	-21.94	7.00	18000	-19.91	18000	-24.35	0.04	7.00	0.23	0.13	2.07	4.84
2021-05-24 06:00:00	418	-0.11	0.00	7.00	18000	9.36	7.00	18000	-35.76	7.00	18000	-38.22	18000	-3.82	0.02	7.00	0.18	0.28	1.32	4.61
2021-05-24 06:30:00	419	-0.10	0.00	9.00	18000	-0.06	9.00	18000	-7.05	9.00	18000	-6.18	18000	114.42	0.00	9.00	0.08	0.12	0.81	4.49
2021-05-24 07:00:00	420	0.00	0.00	9.00	18000	-1.17	8.00	18000	-7.85	8.00	18000	-6.98	18000	6.73	0.01	7.00	0.09	0.11	0.57	2.74
2021-05-24 07:30:00	421	-0.21	-0.01	7.00	18000	3.78	7.00	18000	-24.22	7.00	18000	-23.47	18000	-6.40	0.03	3.00	0.21	0.16	0.77	3.56
2021-05-24 08:00:00	422	-0.18	-0.01	7.00	18000	5.45	7.00	18000	-24.52	7.00	18000	-21.05	18000	-4.50	0.05	3.00	0.26	0.13	1.09	5.24
2021-05-24 08:30:00	423	-0.05	0.00	8.00	18000	8.27	8.00	18000	2.35	8.00	18000	5.61	18000	0.28	0.04	3.00	0.24	-0.01	1.16	6.67
2021-05-24 09:00:00	424	0.13	0.01	4.00	18000	12.95	3.00	18000	21.16	3.00	18000	23.43	18000	1.63	0.01	3.00	0.12	-0.24	0.67	8.10
2021-05-24 09:30:00	425	0.29	0.01	2.00	18000	16.52	1.00	18000	38.61	1.00	18000	40.93	18000	2.34	0.01	7.00	0.12	-0.45	1.20	8.79
2021-05-24 10:00:00	426	0.46	0.02	1.00	18000	23.32	1.00	18000	64.18	1.00	18000	68.83	18000	2.75	0.01	8.00	0.13	-0.68	1.32	9.69
2021-05-24 10:30:00	427	0.61	0.03	3.00	18000	21.68	3.00	18000	63.65	3.00	18000	55.99	18000	2.94	0.03	8.00	0.20	-0.44	1.25	10.24
2021-05-24 11:00:00	428	0.84	0.04	3.00	18000	21.33	3.00	18000	106.79	3.00	18000	101.05	18000	5.01	0.01	8.00	0.09	-1.61	2.36	11.18
2021-05-24 11:30:00	429	1.01	0.04	1.00	18000	34.94	1.00	18000	150.97	1.00	18000	143.09	18000	4.32	0.04	7.00	0.23	-0.91	4.74	12.17
2021-05-24 12:00:00	430	0.91	0.04	1.00	18000	35.07	2.00	18000	175.30	1.00	18000	165.59	18000	5.00	0.06	7.00	0.30	-0.84	9.17	13.68
2021-05-24 12:30:00	431	0.59	0.03	1.00	17973	20.02	1.00	17973	137.36	1.00	17973	128.64	17973	6.86	0.06	7.00	0.29	-0.68	5.72	13.31
2021-05-24 13:00:00	432	0.78	0.03	1.00	18000	39.01	1.00	18000	173.34	1.00	18000	171.63	18000	4.44	0.10	3.00	0.37	-0.66	4.28	14.29
2021-05-24 13:30:00	433	0.77	0.03	1.00	18000	31.93	1.00	18000	191.15	1.00	18000	188.57	18000	5.99	0.16	1.00	0.48	-0.57	3.38	15.27
2021-05-24 14:00:00	434	0.90	0.04	1.00	18000	38.25	2.00	18000	208.53	1.00	18000	196.89	18000	5.45	0.10	7.00	0.37	-0.80	6.54	16.05
2021-05-24 14:30:00	435	0.99	0.04	2.00	18000	25.42	4.00	18000	267.64	1.00	18000	254.18	18000	10.53	0.09	7.00	0.36	-1.06	8.44	17.22
2021-05-24 15:00:00	436	1.29	0.06	1.00	18000	46.14	1.00	18000	300.59	1.00	18000	298.44	18000	6.51	0.15	3.00	0.47	-0.92	4.85	17.80

EasyFlux _WEBS

EasyFlux-Web

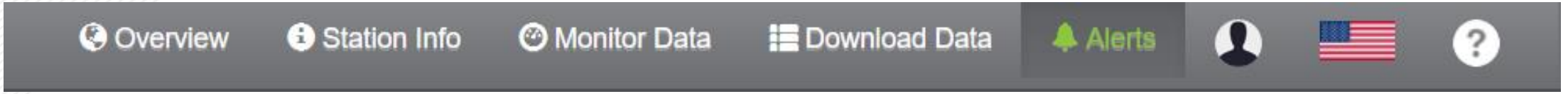
- ☐ EasyFlux-WebS
- ☐ EasyFlux-WebH
- ✓ Monitor
- ✓ Download
- ✓ Alerts



https://www.easyfluxweb.com/

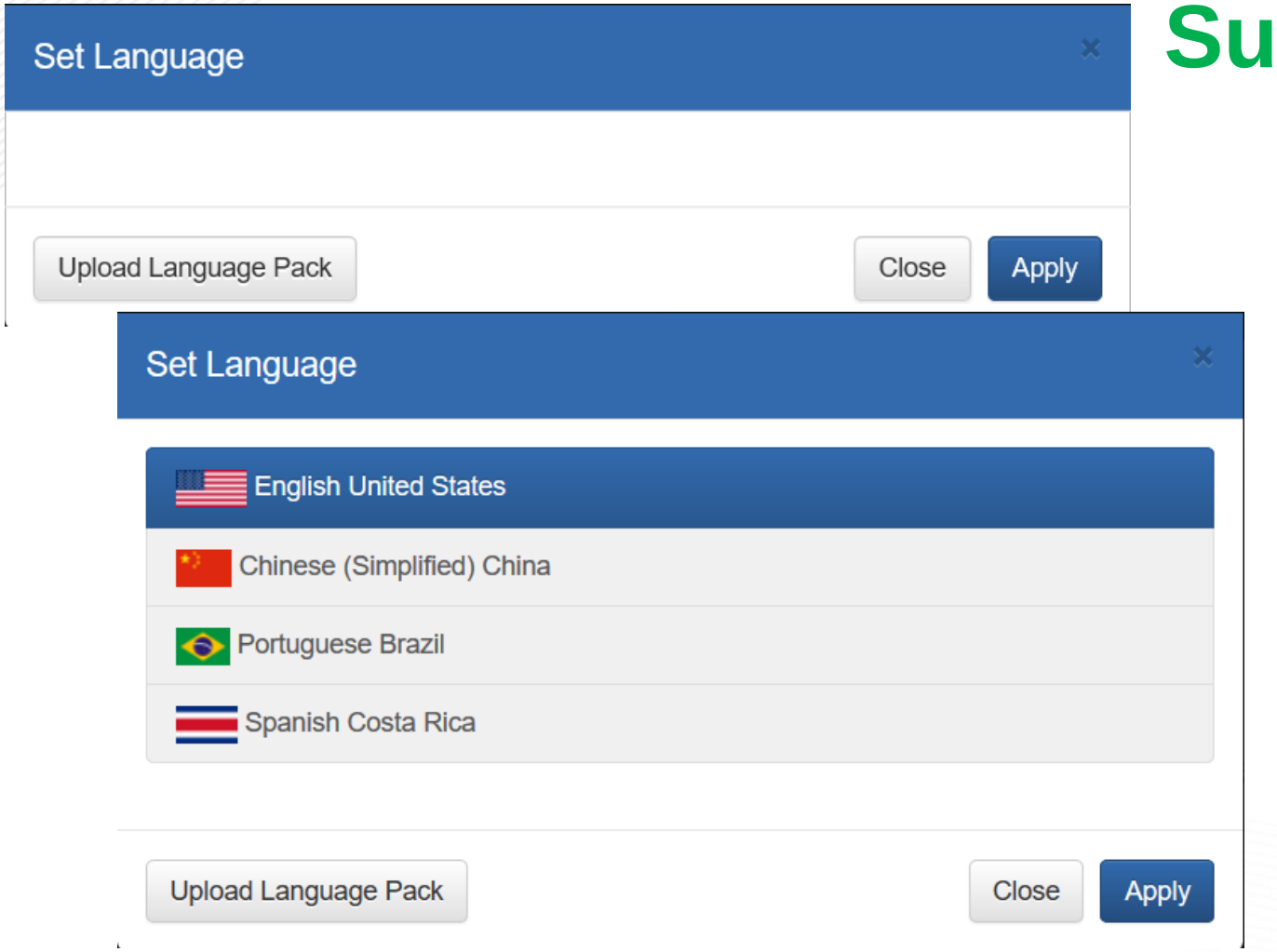
总览

https://www.easyfluxweb.com



功能	功能描述
Overview	通过地图或列表形式显示站点信息，比较功能
Station Info	显示站点信息
Monitor Data	管理及显示监测数据
Download Data	下载数据
Alerts	设置警报类型及对应阈值，通过邮件告知用户
Login	管理用户、管理站点权限
Language	设置语言
Help	提供问题帮助

语言设置



Supported Web Browsers

Chrome

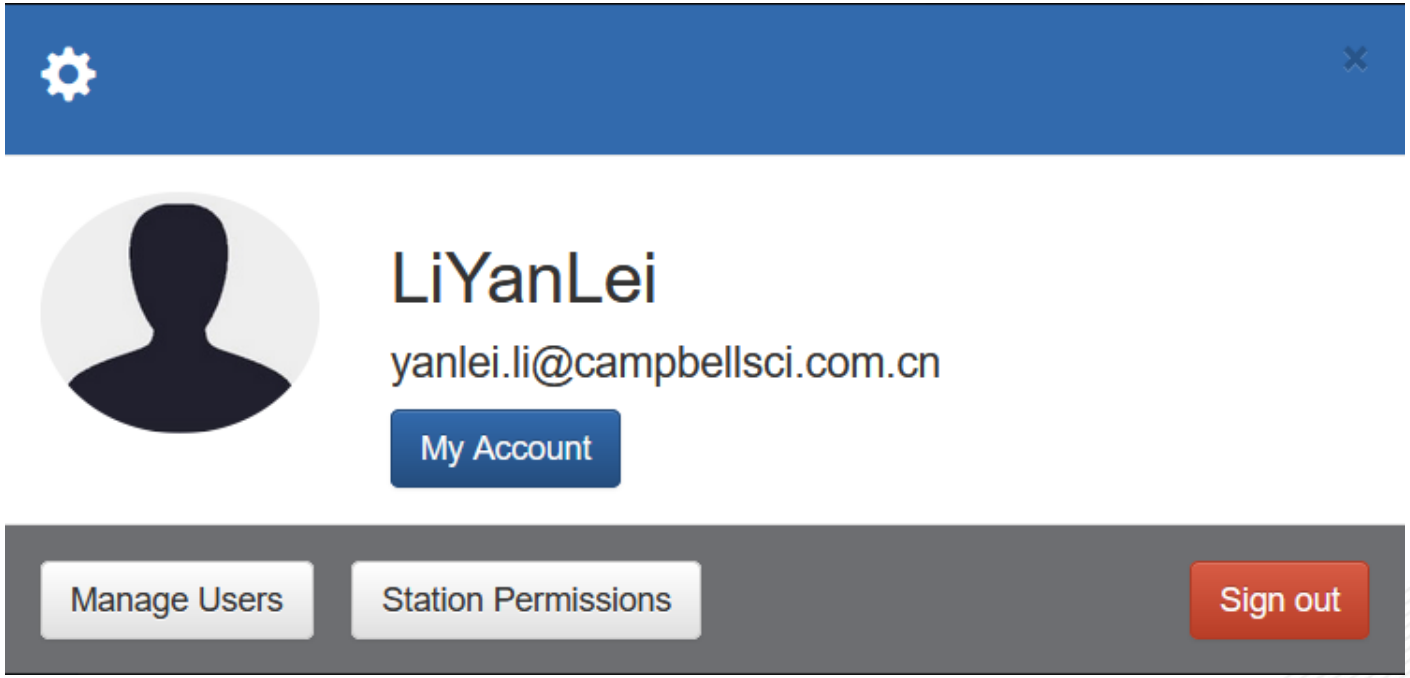
Firefox

Safari

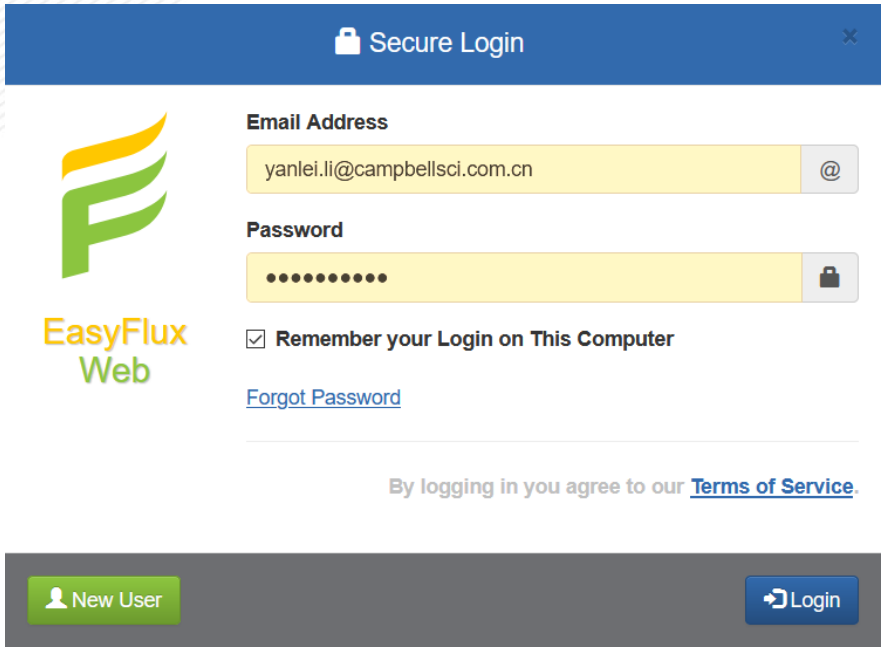
用户管理

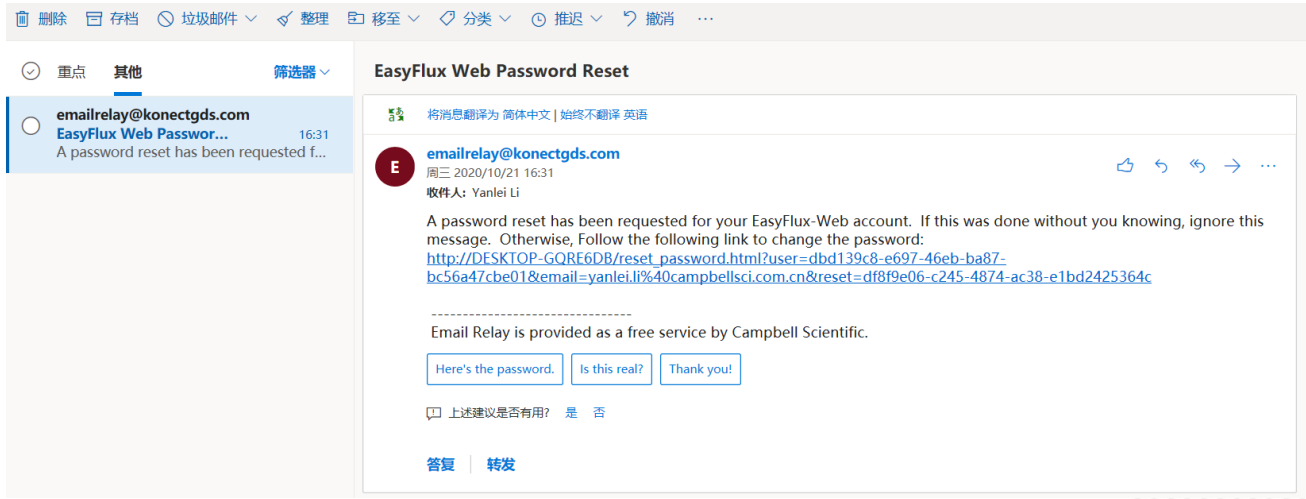
设置个人账号信息

- 账户管理
  - 增加账户
  - 删除账户
  - 账户权限
- 站点管理
  - 用户访问权限

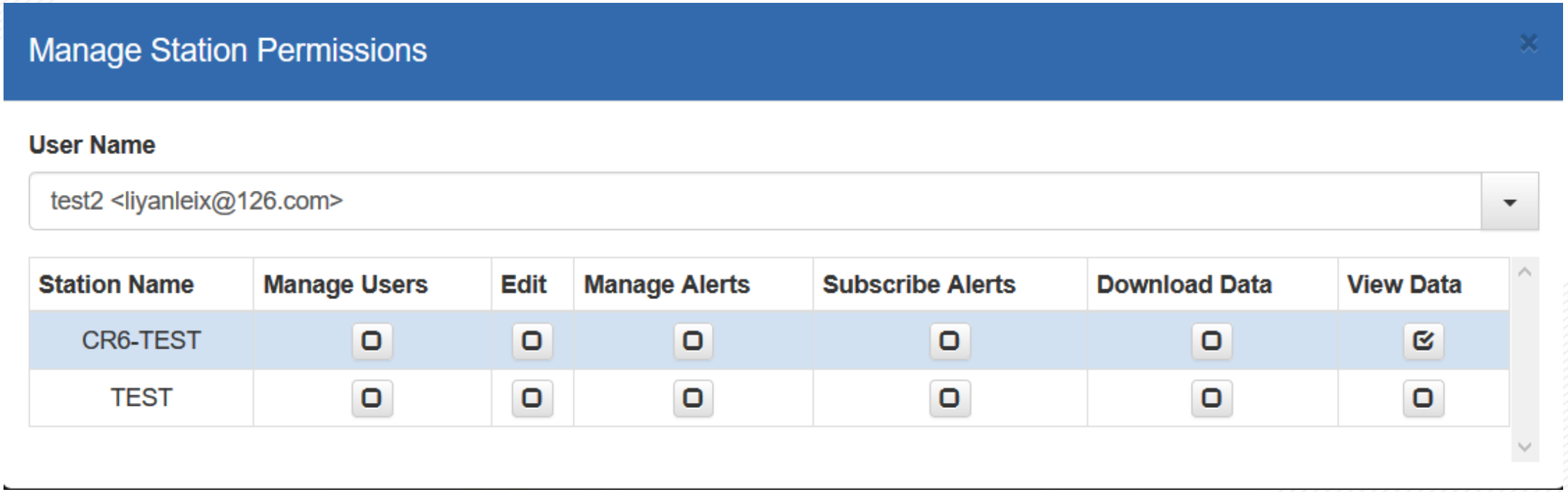


用户管理

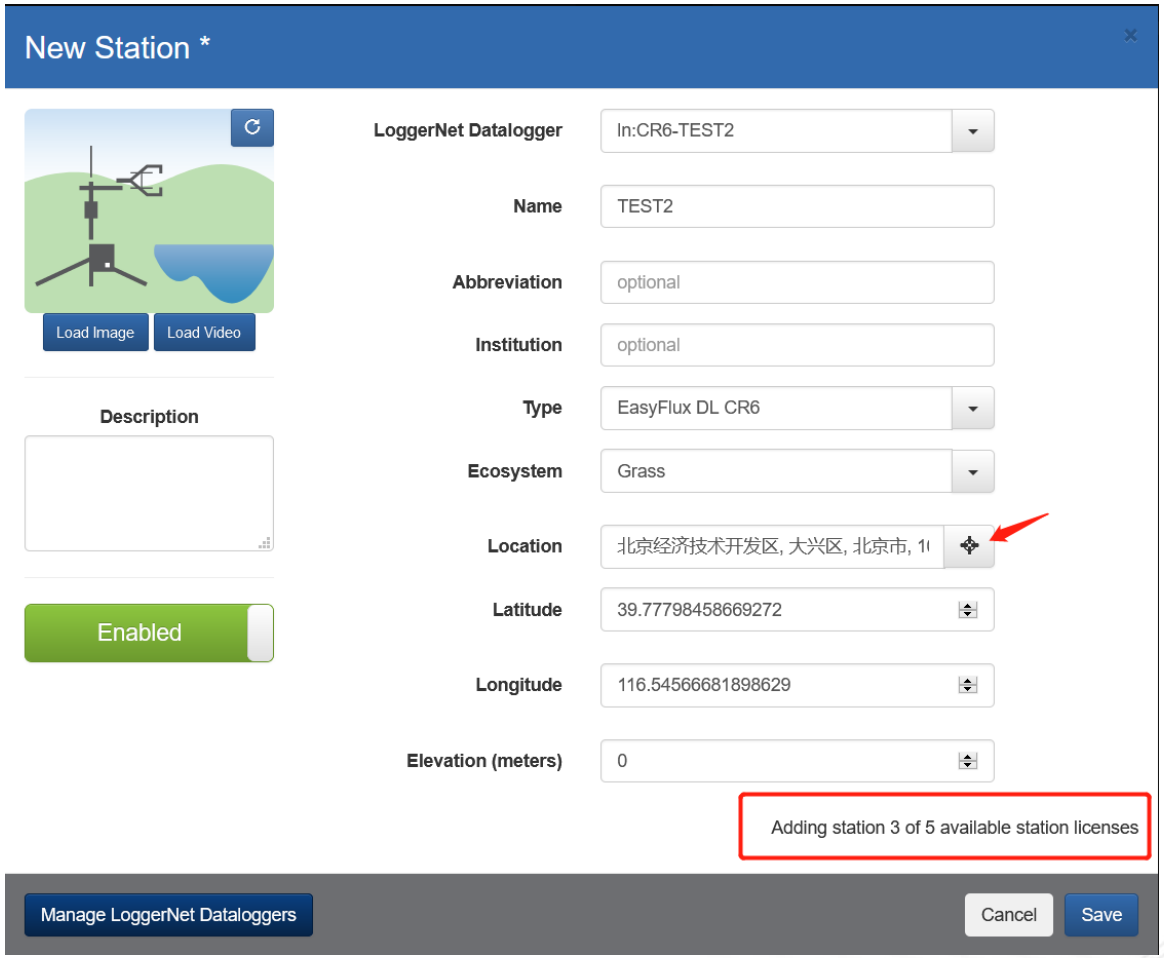

Secure Login
EasyFlux Web
Email Address
yanlei.li@campbellsci.com.cn
@
Password
Remember your Login on This Computer
Forgot Password
By logging in you agree to our Terms of Service.
New User
Login


删除 存档 垃圾邮件 整理 移至 分类 推迟 撤消
重点 其他 筛选器
emailrelay@konectgds.com
EasyFlux Web Passwor... 16:31
A password reset has been requested f...
EasyFlux Web Password Reset
emailrelay@konectgds.com
周三 2020/10/21 16:31
收件人: Yanlei Li
A password reset has been requested for your EasyFlux-Web account. If this was done without you knowing, ignore this message. Otherwise, Follow the following link to change the password:
http://DESKTOP-GQRE6DB/reset_password.html?user=dbd139c8-e697-46eb-ba87-bc56a47cbe01&email=yanlei.li%40campbellsci.com.cn&reset=df8f9e06-c245-4874-ac38-e1bd2425364c
Email Relay is provided as a free service by Campbell Scientific.
Here's the password.
Is this real?
Thank you!
答复
转发

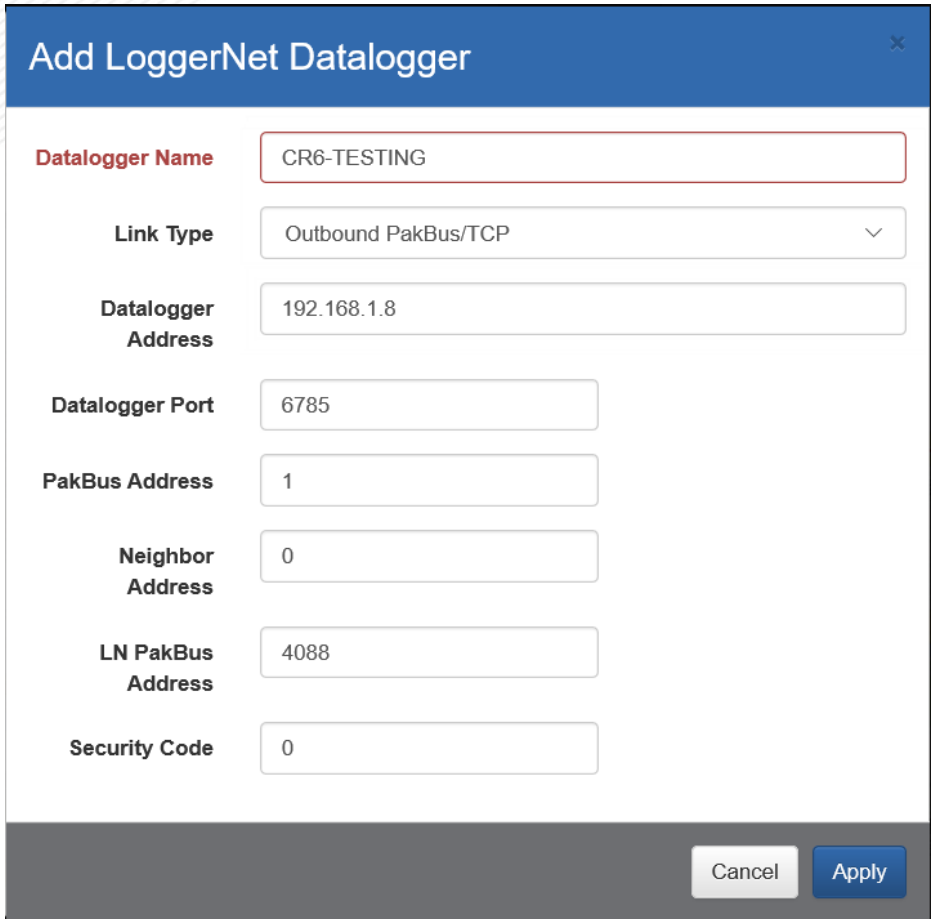
站点管理


Manage Station Permissions
User Name
test2 <liyanleix@126.com>
Station Name
Manage Users
Edit
Manage Alerts
Subscribe Alerts
Download Data
View Data
CR6-TEST
TEST

添加站点

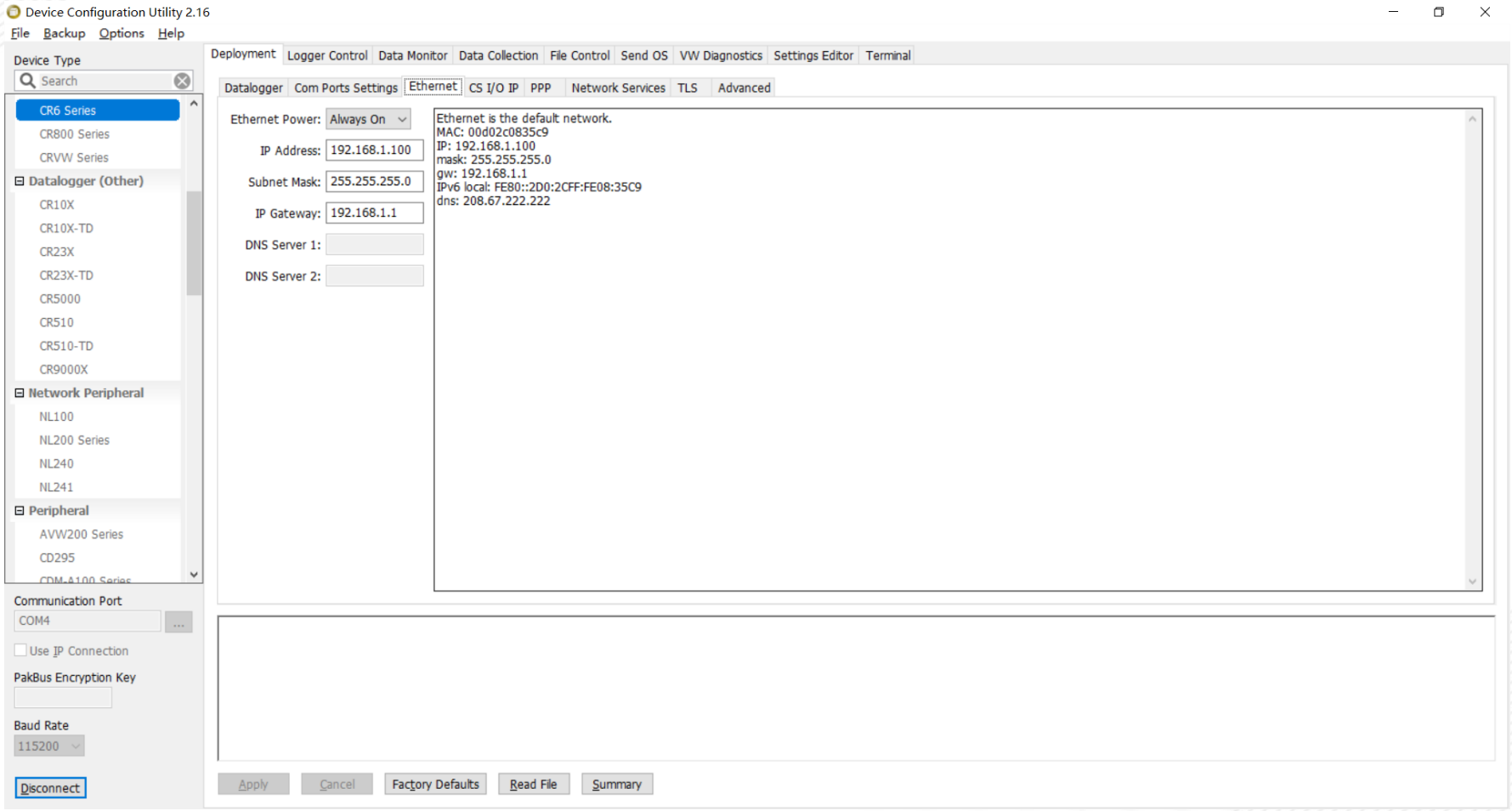

New Station *
Load Image
Load Video
Description
Enabled
LoggerNet Datalogger
In:CR6-TEST2
Name
TEST2
Abbreviation
optional
Institution
optional
Type
EasyFlux DL CR6
Ecosystem
Grass
Location
北京经济技术开发区, 大兴区, 北京市, 1
Latitude
39.77798458669272
Longitude
116.54566681898629
Elevation (meters)
0
Adding station 3 of 5 available station licenses
Manage LoggerNet Dataloggers
Cancel
Save

设置采集器

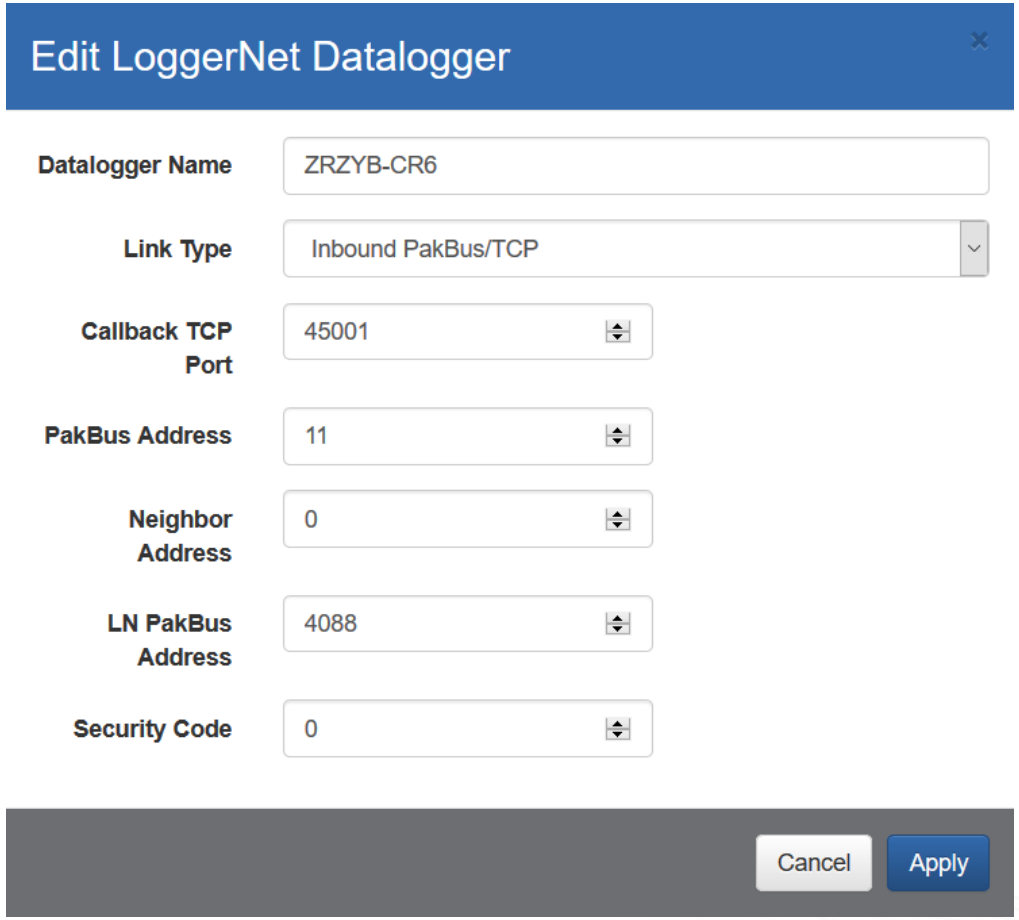


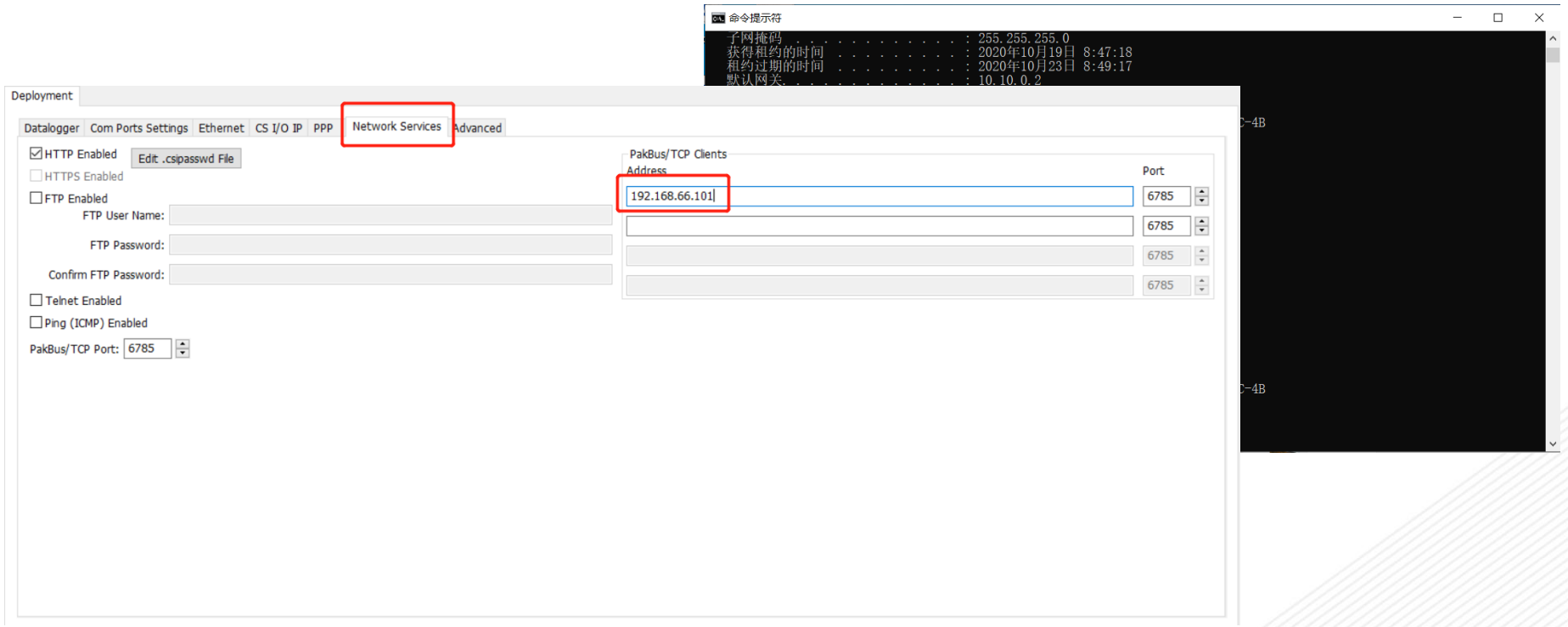
Datalogger Name	采集器名称
Link Type	连接方式
Datalogger Address	采集器地址（domain或IP)
Datalogger Port	采集器端口（default 6784)
PakBus Address	采集器Pakbus地址（default 1)
Neighbor Address	
LN PakBus Address	LN的Pakbus地址（default 4088)
Security Code	采集器安全码（default 0)

设置采集器信息

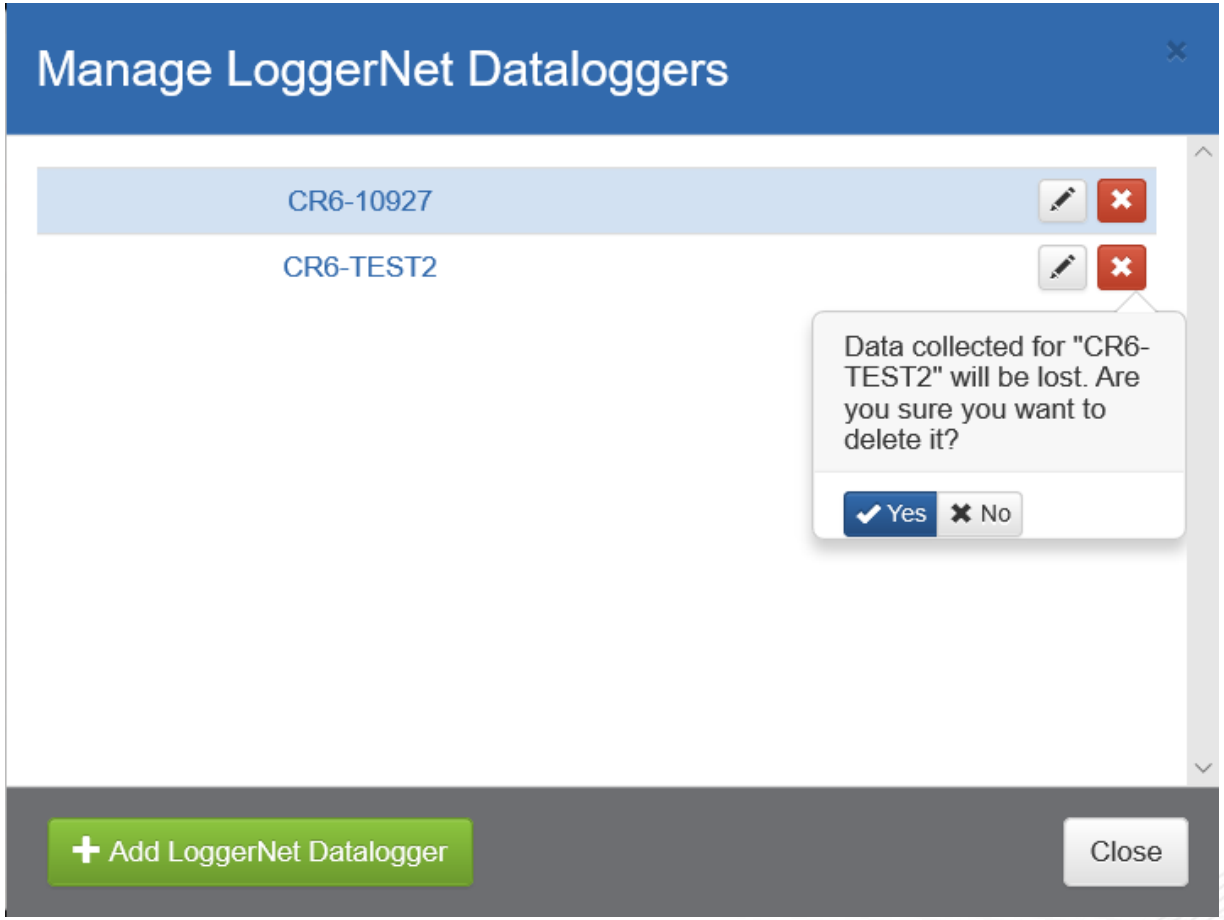

Device Configuration Utility 2.16
File Backup Options Help
Device Type
Search
CR6 Series
CR800 Series
CRVW Series
Datalogger (Other)
CR10X
CR10X-TD
CR23X
CR23X-TD
CR5000
CR510
CR510-TD
CR9000X
Network Peripheral
NL100
NL200 Series
NL240
NL241
Peripheral
AVW200 Series
CD295
Communication Port
COM4
Use IP Connection
PakBus Encryption Key
Baud Rate
115200
Disconnect
Deployment
Logger Control
Data Monitor
Data Collection
File Control
Send OS
VW Diagnostics
Settings Editor
Terminal
Datalogger
Com Ports Settings
Ethernet
CS I/O IP
PPP
Network Services
TLS
Advanced
Ethernet Power: Always On
IP Address: 192.168.1.100
Subnet Mask: 255.255.255.0
IP Gateway: 192.168.1.1
DNS Server 1:
DNS Server 2:
Ethernet is the default network.
MAC: 00d02c0835c9
IP: 192.168.1.100
mask: 255.255.255.0
gw: 192.168.1.1
IPv6 local: FE80::2D0:2CFF:FE08:35C9
dns: 208.67.222.222
Apply
Cancel
Factory Defaults
Read File
Summary

Connection Type

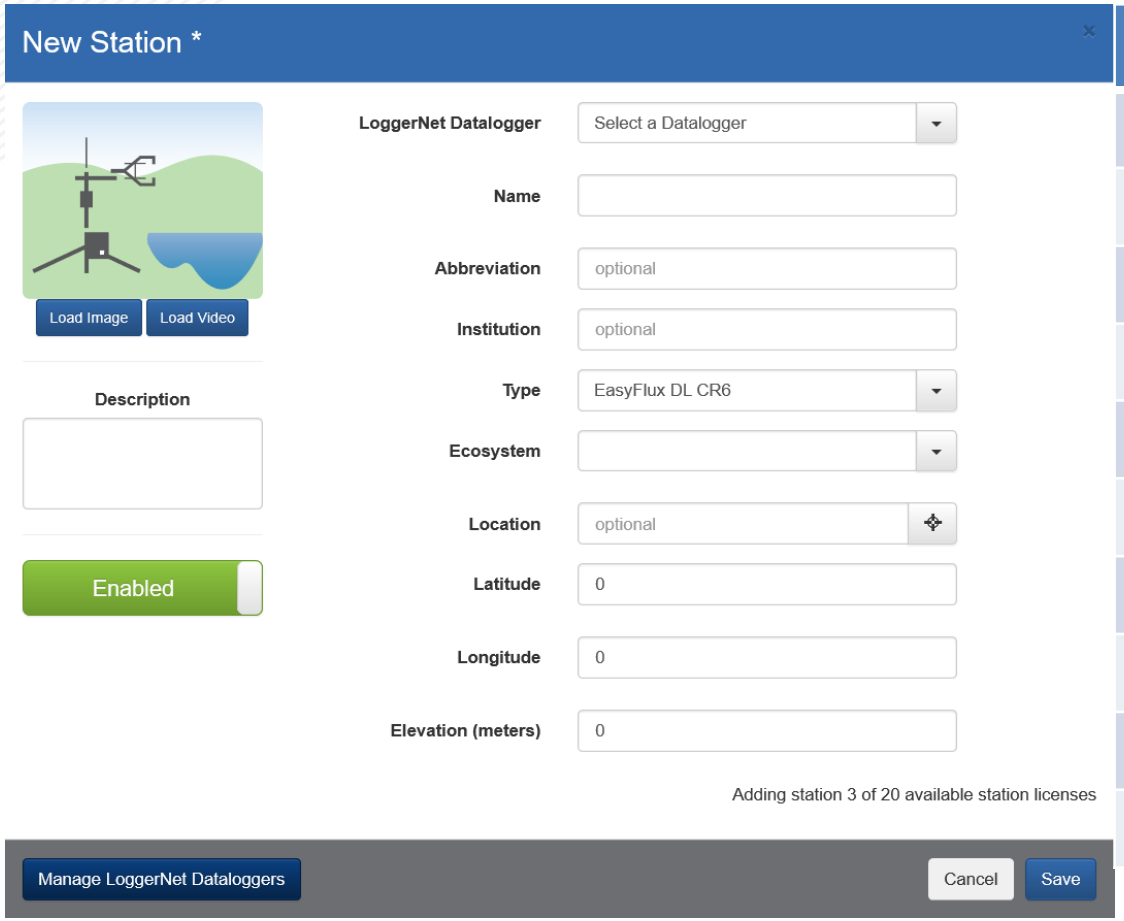



命令提示符
子网掩码 . . . . . : 255.255.255.0
获得租约的时间 . . . . . : 2020年10月19日 8:47:18
租约过期的时间 . . . . . : 2020年10月23日 8:49:17
默认网关. . . . . : 10.10.0.2
C-4B
C-4B
Deployment
Datalogger
Com Ports Settings
Ethernet
CS I/O IP
PPP
Network Services
Advanced
HTTP Enabled
Edit .csipasswd File
HTTPS Enabled
FTP Enabled
FTP User Name:
FTP Password:
Confirm FTP Password:
Telnet Enabled
Ping (ICMP) Enabled
PakBus/TCP Port: 6785
PakBus/TCP Clients
Address
Port
192.168.66.101
6785
6785
6785
6785

删除采集器信息


Manage LoggerNet Dataloggers
CR6-10927
CR6-TEST2
Data collected for "CR6-TEST2" will be lost. Are you sure you want to delete it?
Yes
No
Add LoggerNet Datalogger
Close

添加站点



Loggernet Datalogge	选择采集器
Name	站点名称
Abbreviation	名称缩写
Institution	机构
Type	站点类型
Ecosystem	生态系统类型
Location	位置
Latitude	纬度
Longitude	经度
Elevation	海拔

添加站点

TESTING

A video to introduce your station dynamically

这是视频

You can use a photo or video to introduce your station

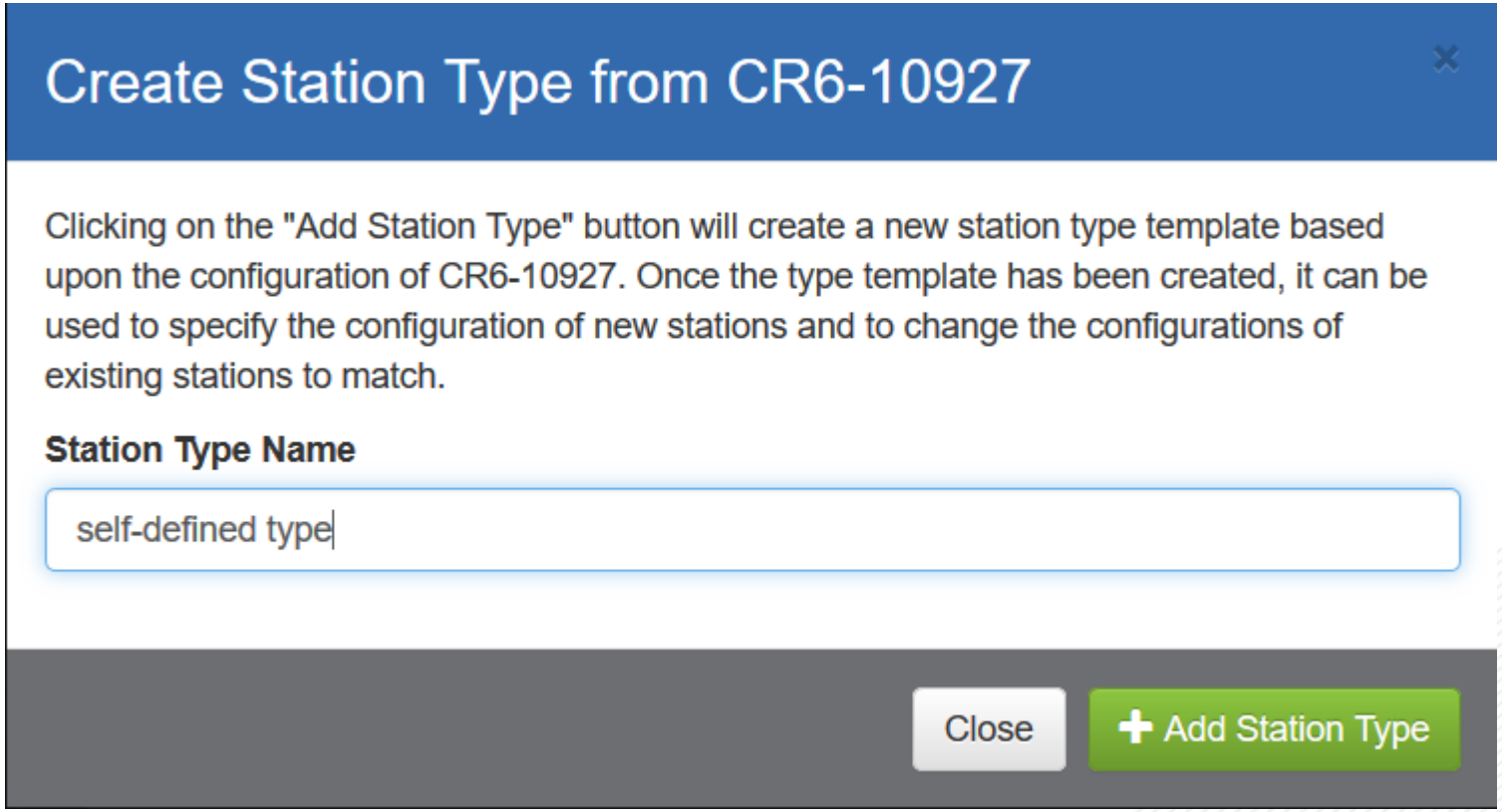
添加站点类型

Manage Station

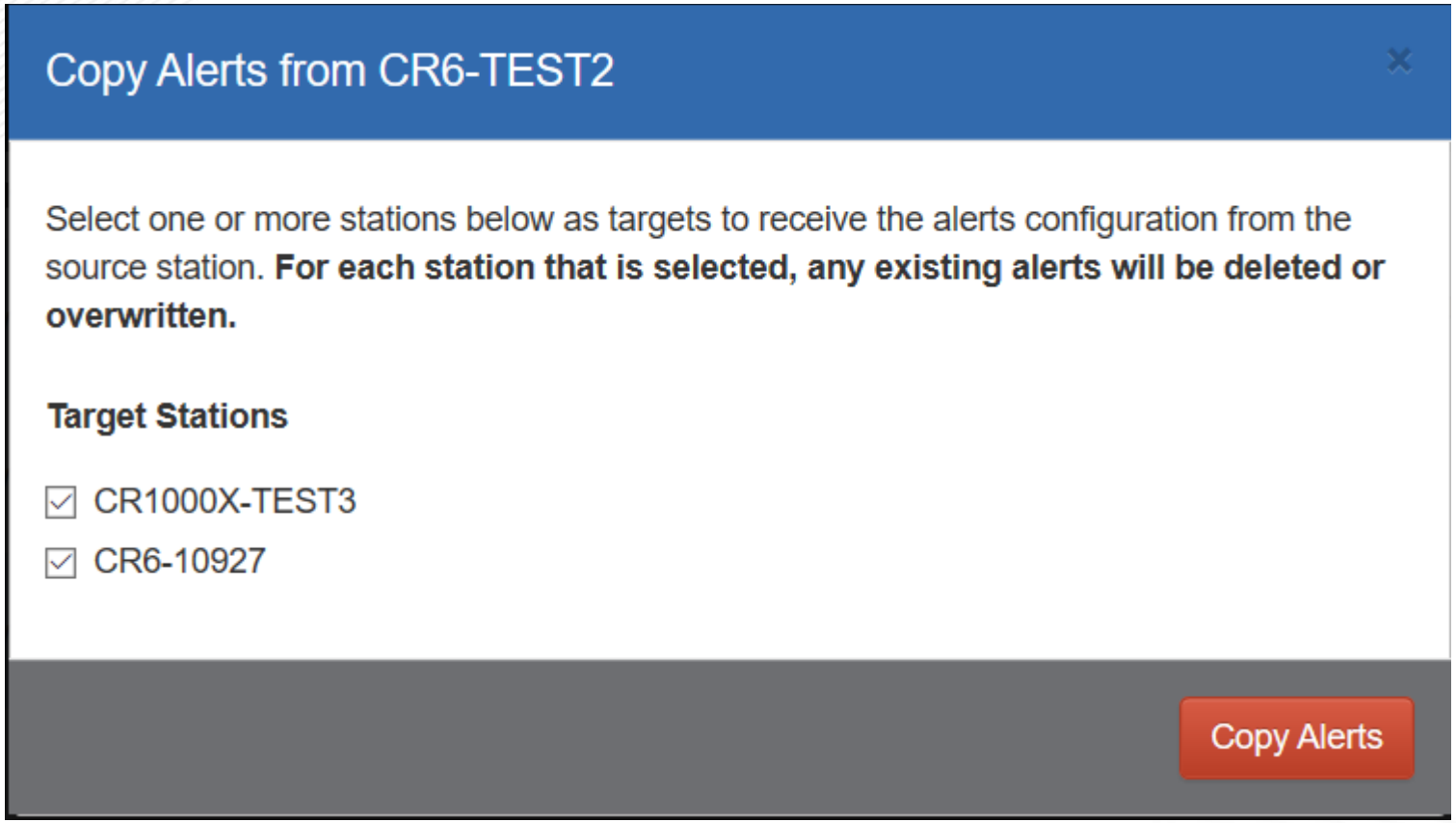
Edit Properties

Manage Station Type

New Type from this station

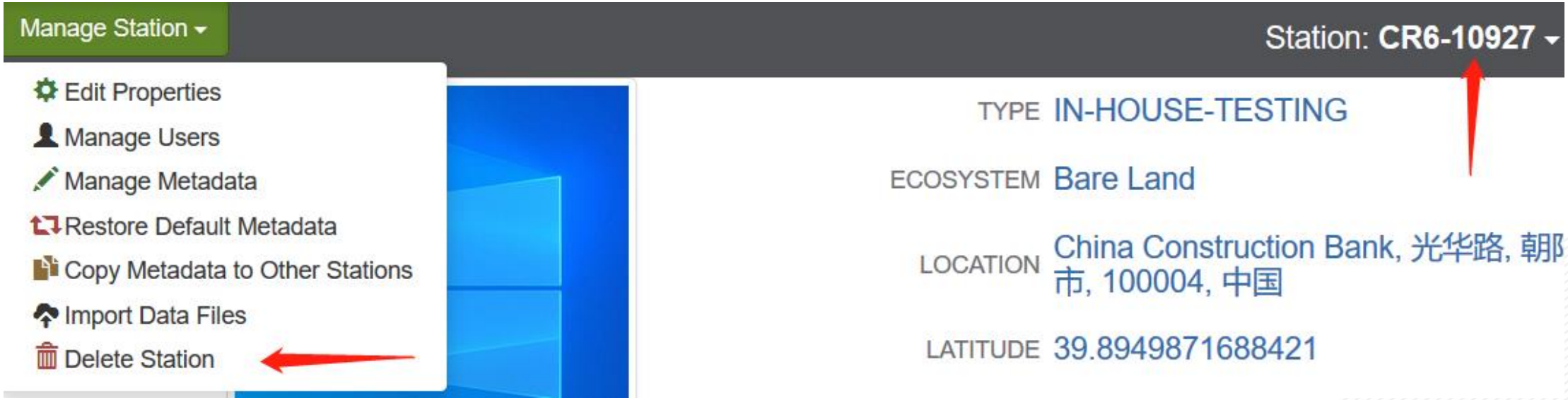


站点信息复制

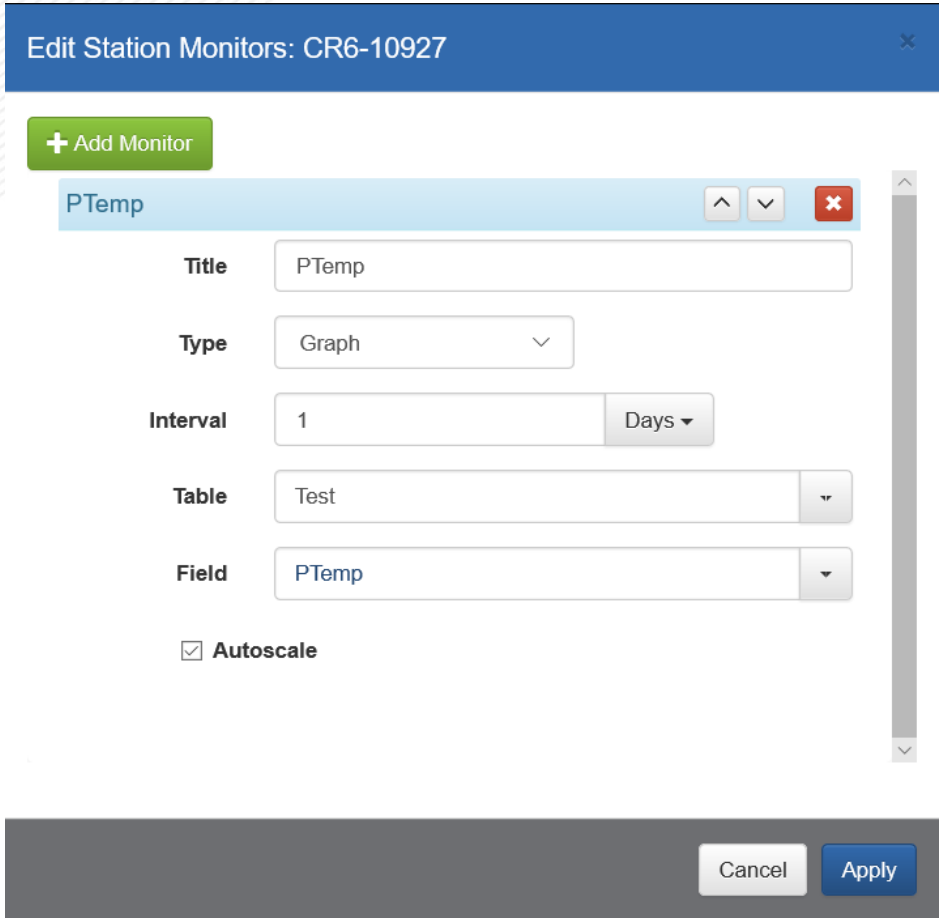


- ☐ Metadata
- ☐ Data
- ☐ Alert information

删除站点

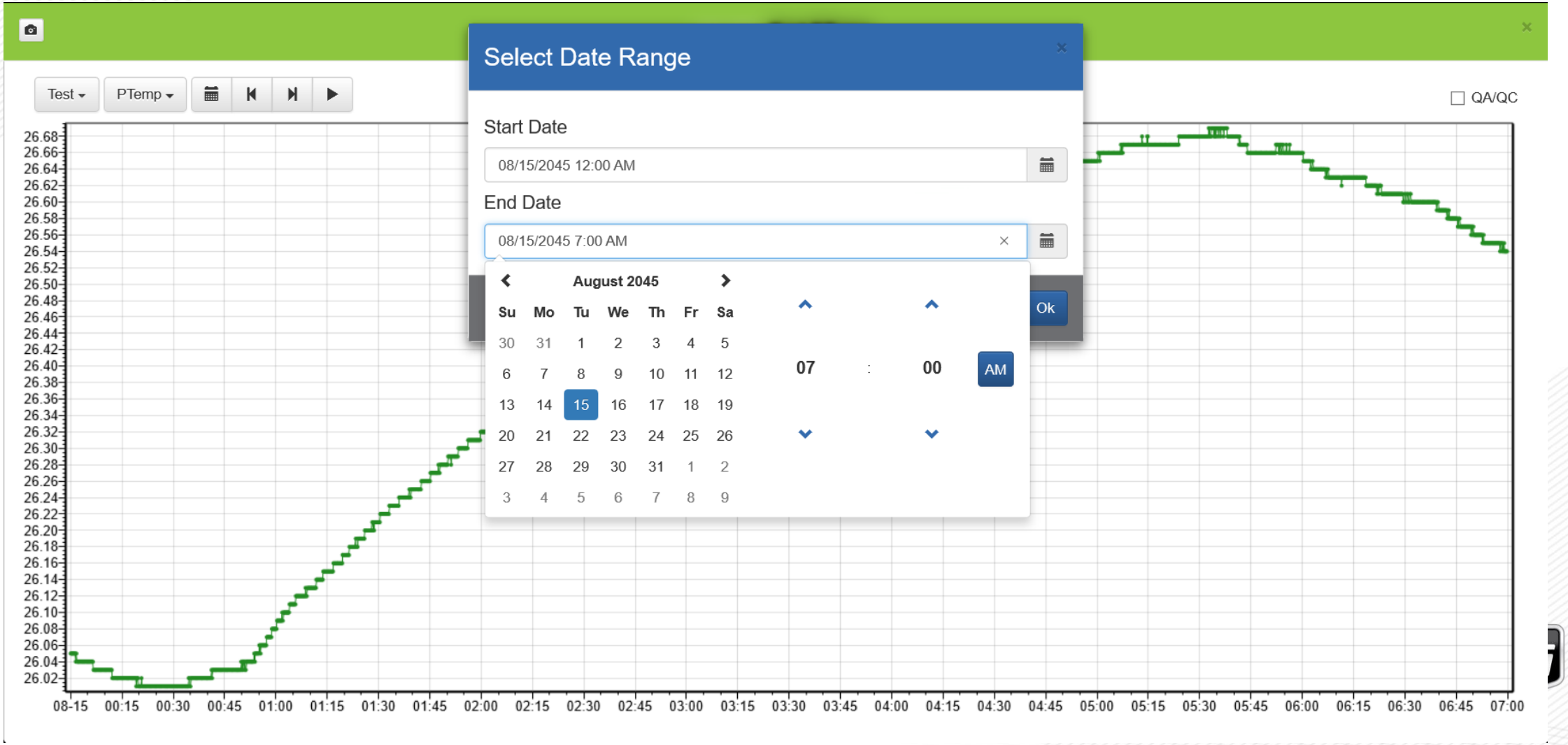

Manage Station
Edit Properties
Manage Users
Manage Metadata
Restore Default Metadata
Copy Metadata to Other Stations
Import Data Files
Delete Station
Station: CR6-10927
TYPE IN-HOUSE-TESTING
ECOSYSTEM Bare Land
LOCATION China Construction Bank, 光华路, 朝阳市, 100004, 中国
LATITUDE 39.8949871688421

Monitor data

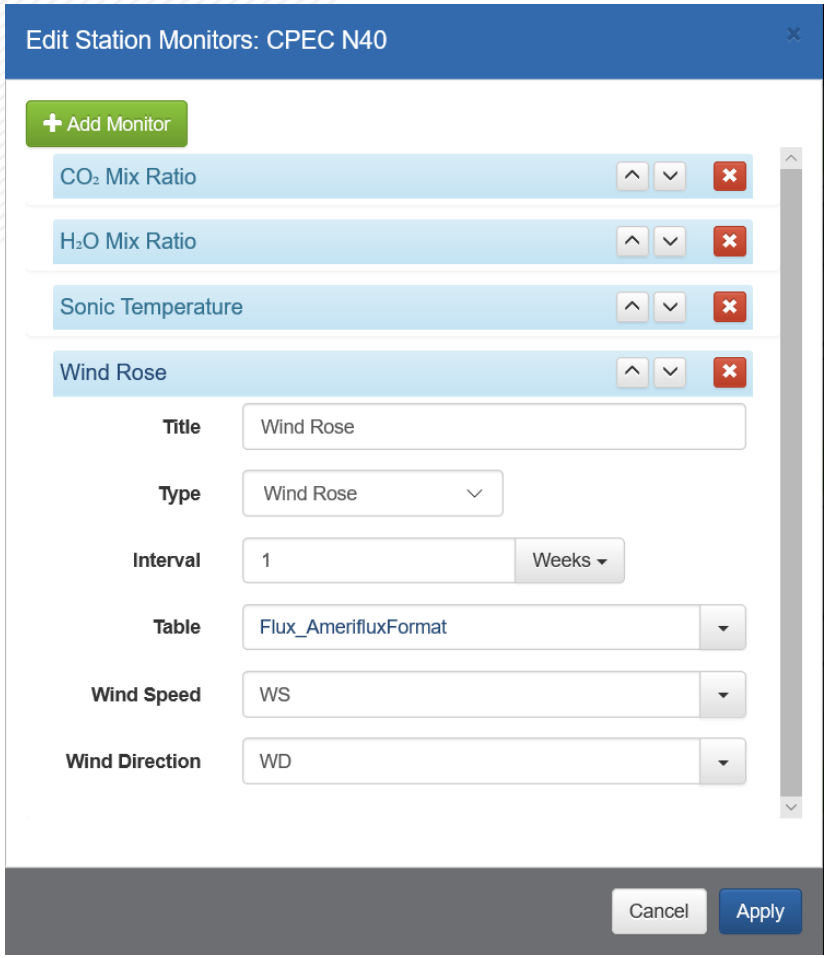


Title	名称
Type	Graph / Wind Rose
Interval	显示指定时段内的数据
Table	要显示的数据存储表
Field	要显示的变量字段
Auto Scale	自动调整坐标轴量程

Monitor data

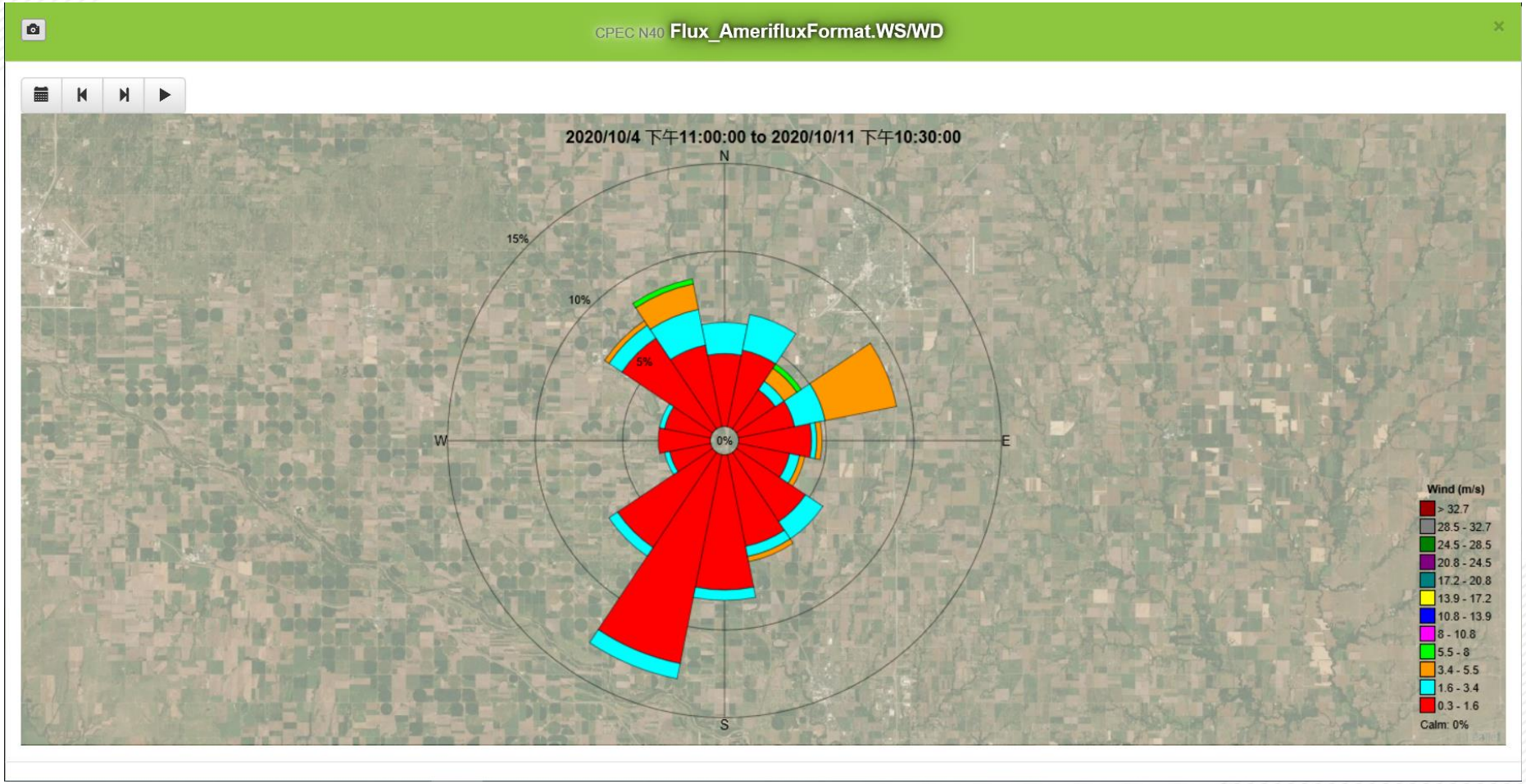


Wind Rose

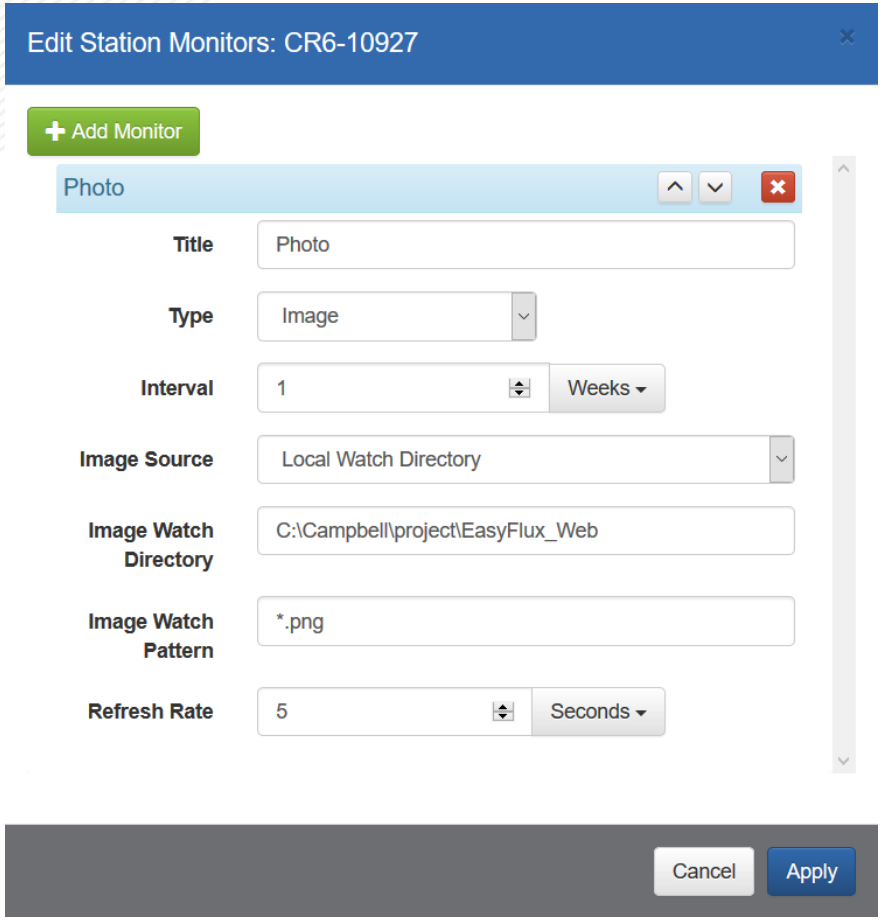


Title	名称
Type	Graph / Wind Rose
Interval	显示指定时段内的数据
Table	要显示的数据存储表
Wind Speed	风速列表头
Wind Direction	风向列表头

Wind Rose


CPEC N40 Flux_AmerifluxFormat.WS/WD
2020/10/4 下午11:00:00 to 2020/10/11 下午10:30:00
N
E
S
W
15%
10%
5%
0%
Wind (m/s)
> 32.7
28.5 - 32.7
24.5 - 28.5
20.8 - 24.5
17.2 - 20.8
13.9 - 17.2
10.8 - 13.9
8 - 10.8
5.5 - 8
3.4 - 5.5
1.6 - 3.4
0.3 - 1.6
Calm: 0%

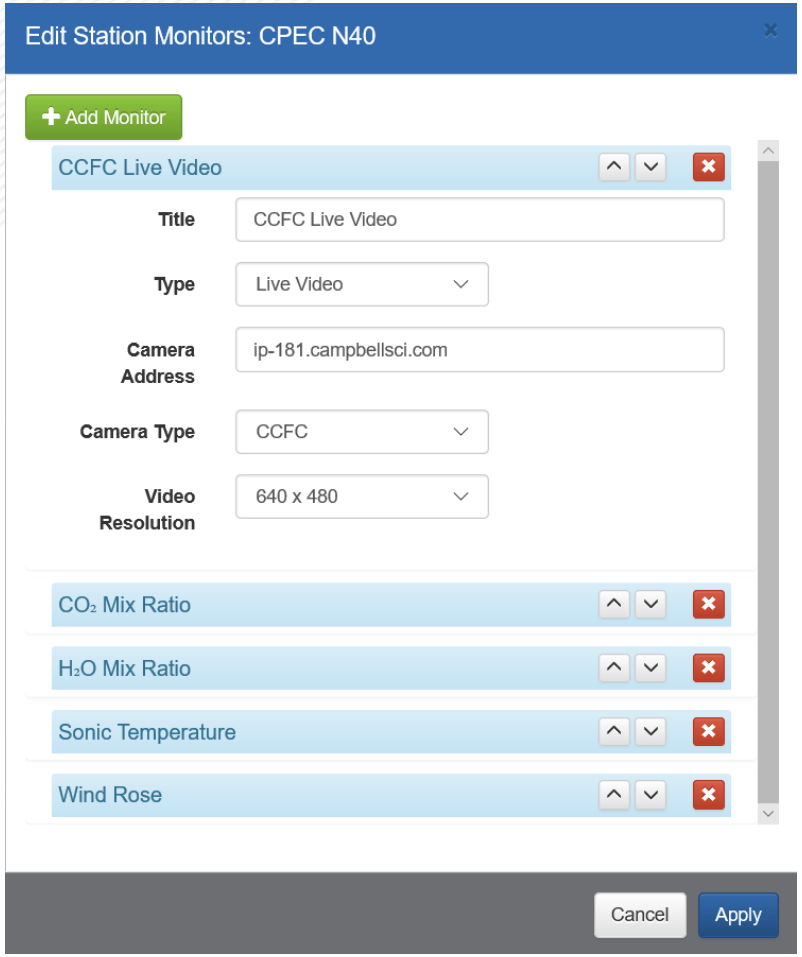
Image



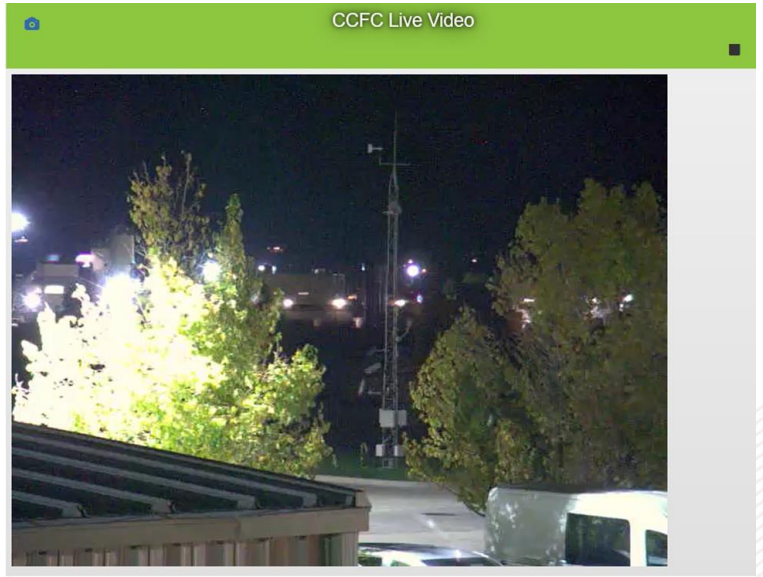
Title	名称
Type	Image
Interval	显示指定时段内的图片
Image Source	Datalogger / FTP / URL
Image Watch directory	图片存放目录
Image Watch Pattern	图片格式
Refresh Rate	刷新速率

演示FTP显示图片的功能

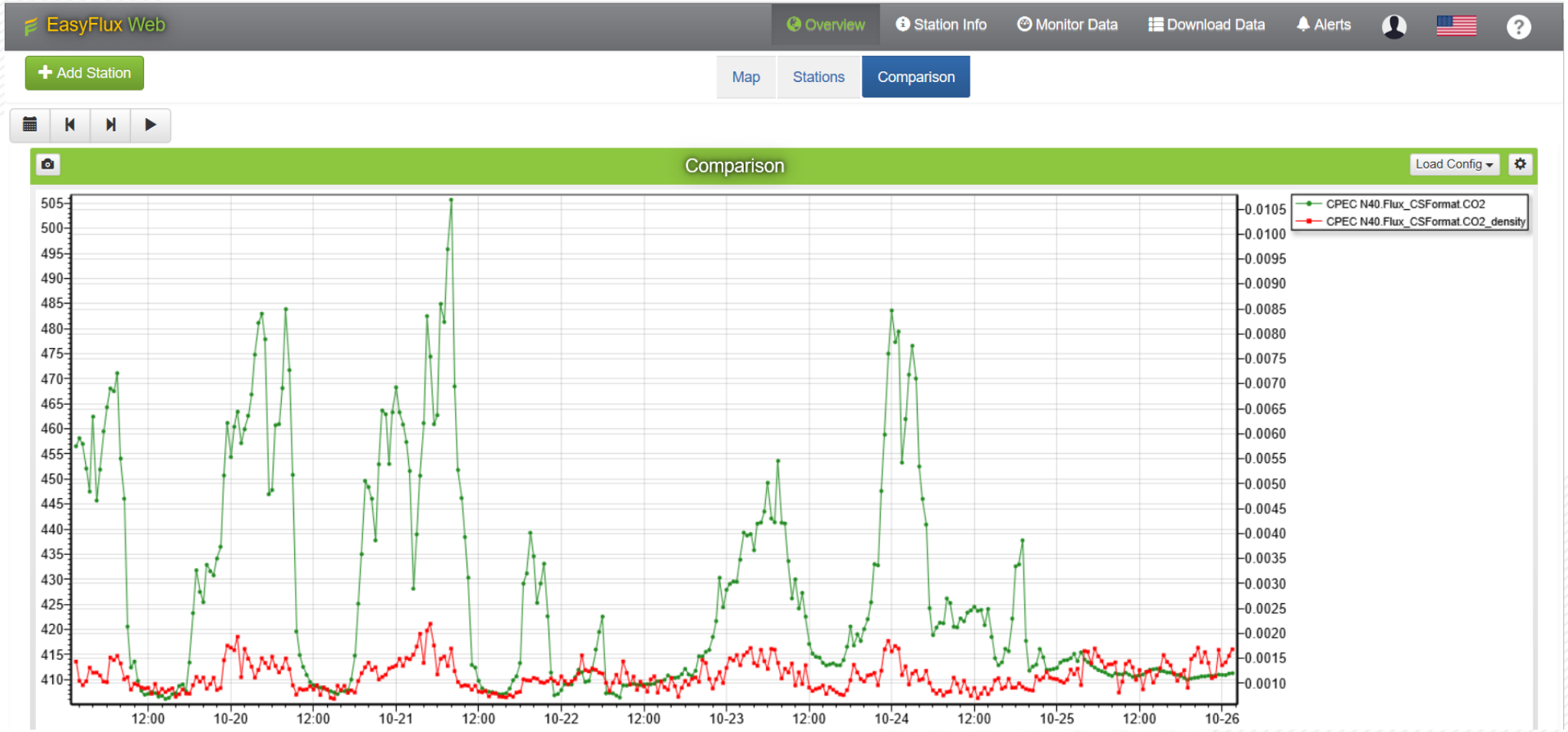
Live Video



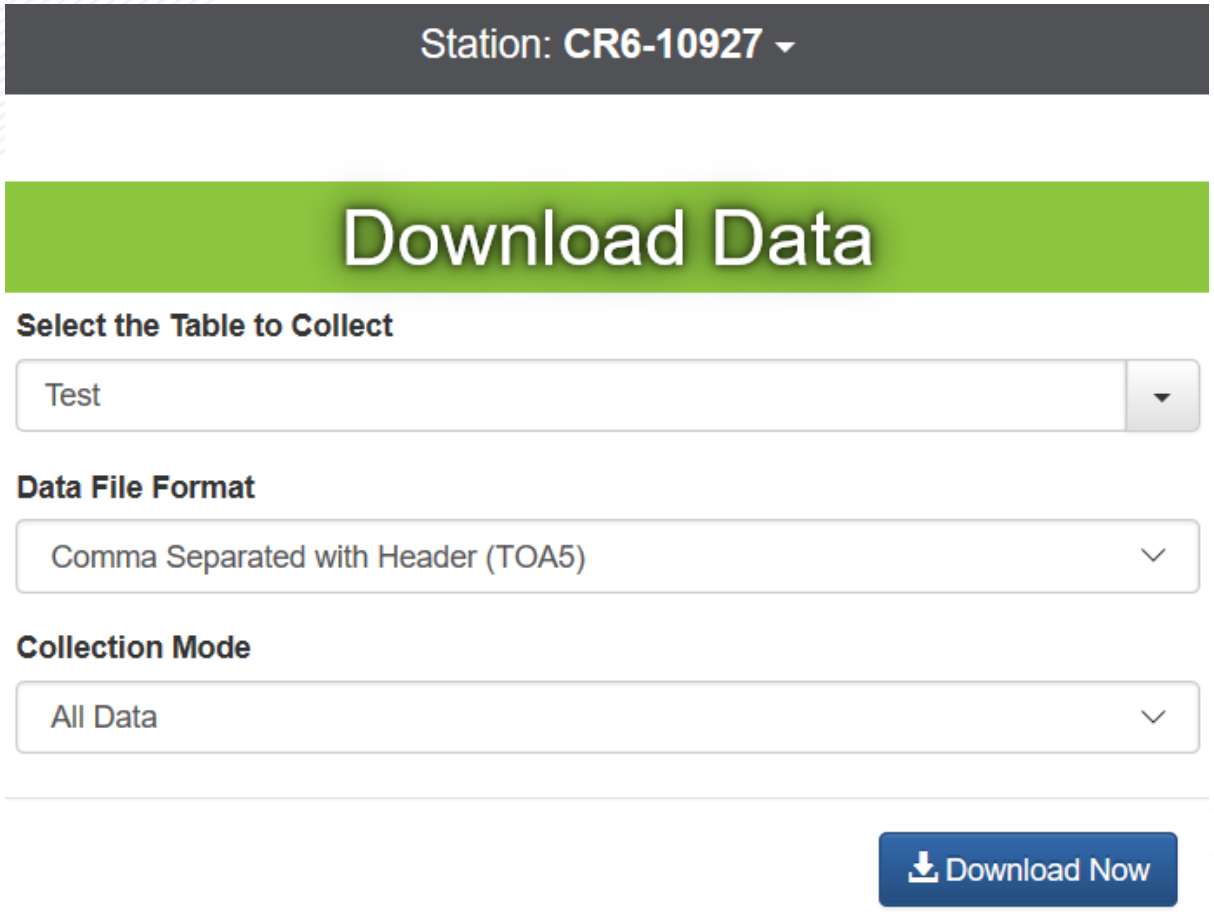
Title	名称
Type	Live Video
Camera Address	相机访问地址
Camera Type	相机类型
Video Resolution	视频分辨率



数据对比


EasyFlux Web
Overview
Station Info
Monitor Data
Download Data
Alerts
Add Station
Map
Stations
Comparison
Comparison
Load Config
CPEC N40.Flux_CSFormat.CO2
CPEC N40.Flux_CSFormat.CO2_density
505
500
495
490
485
480
475
470
465
460
455
450
445
440
435
430
425
420
415
410
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
12:00
10-20
12:00
10-21
12:00
10-22
12:00
10-23
12:00
10-24
12:00
10-25
12:00
10-26

Download Data



Select the Table to Collect

选择要下载的数据表

Data File Format

选择输出数据的格式

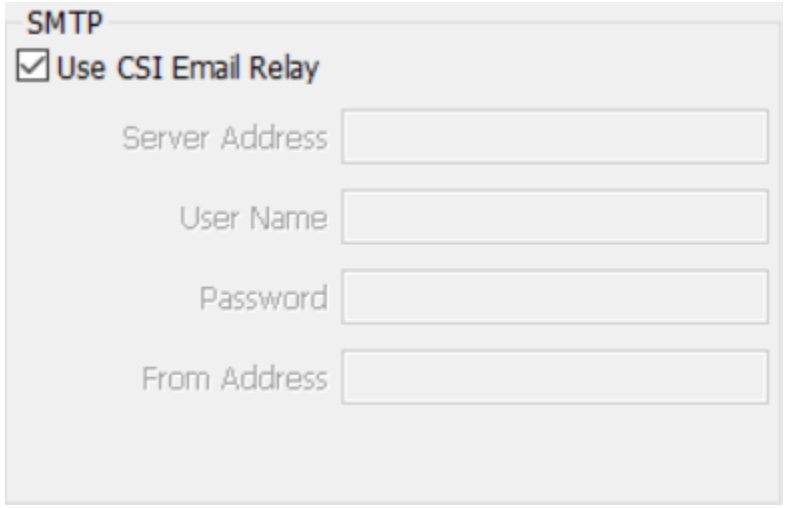
Collection Mode

下载数据的方式

所下载的数据来源于数据库

Alert Information

Title	Status	Value	Threshold	Message	Subscribed	Actions
Skipped Scans	✓	0	value > 0		☐	⚙
Watchdog Errors	✓	0	value > 0		☐	⚙
INNER BATTERY	✗	0.9512704	value < 3	THE DATALOOGER'S INTERNAL BATTERY IS LOW?!??	☑	⚙



This free service allows up to 100 emails to be sent per day.