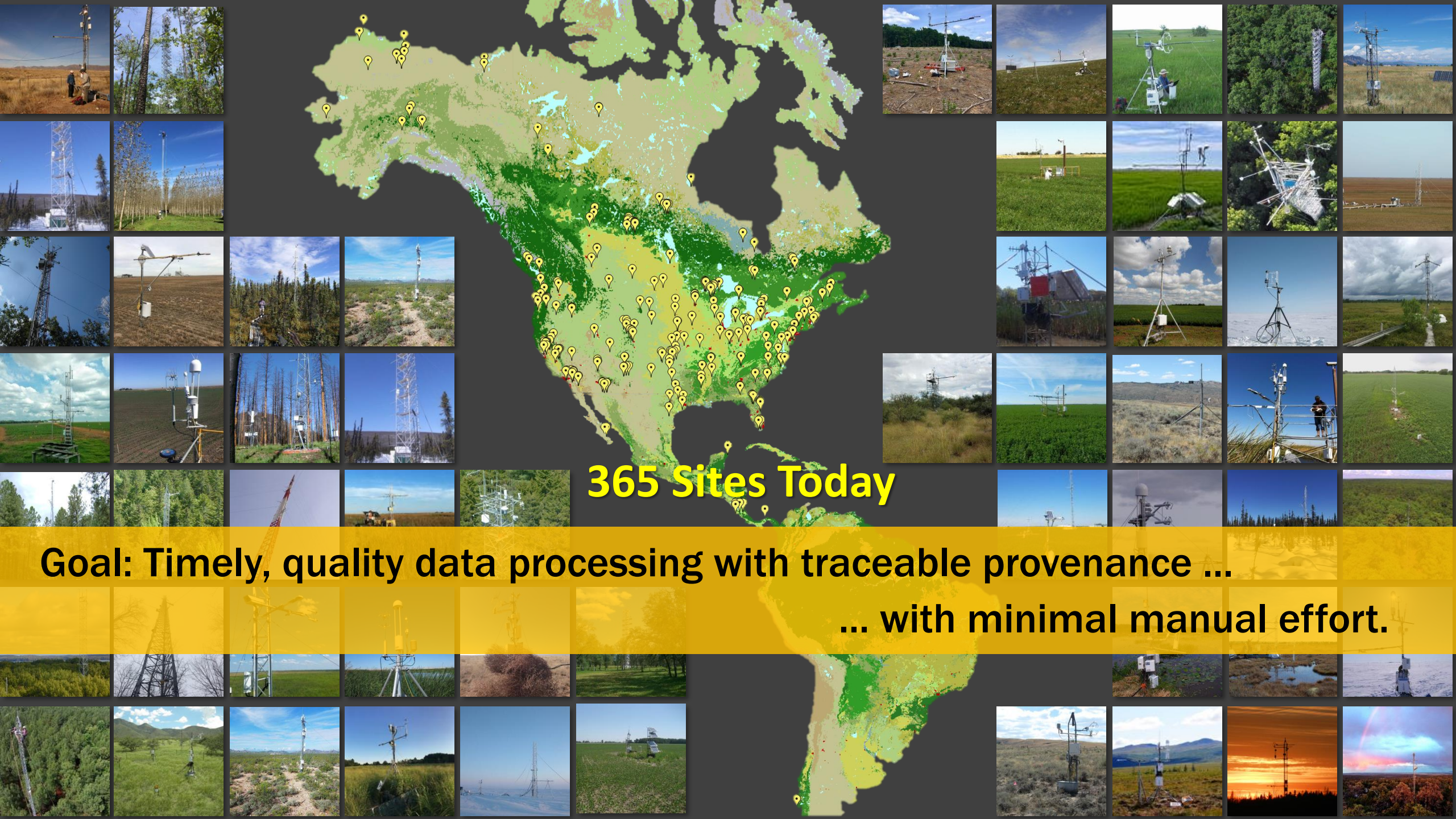
AMERIFLUX MANAGEMENT PROJECT

BASE Data Product & Pipeline

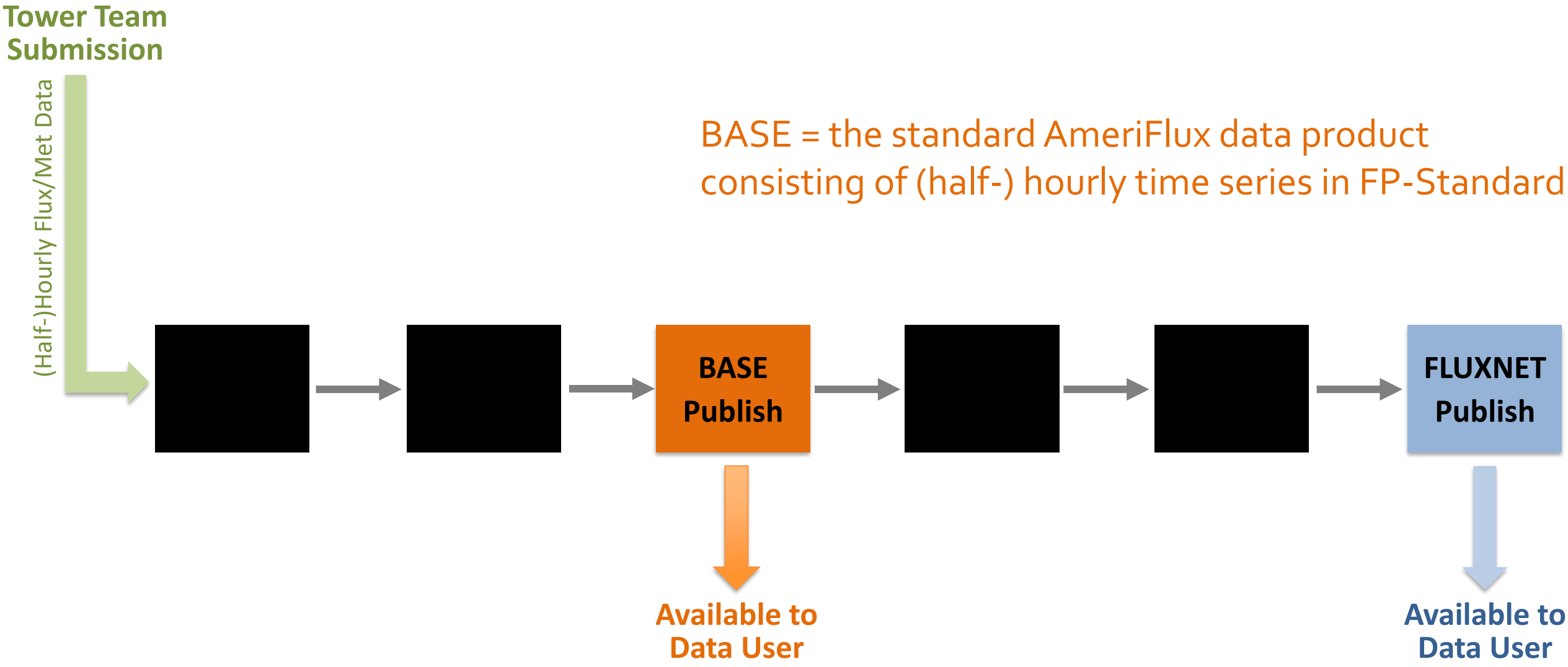
Housen Chu, Danielle Svehla Christianson, Norm Beekwilder, Stephen Chan, You-Wei Cheah, Sigrid Dengel, Fianna O'Brien, Gilberto Pastorello, Megha Sandesh, Margaret S. Torn, Deb Agarwal



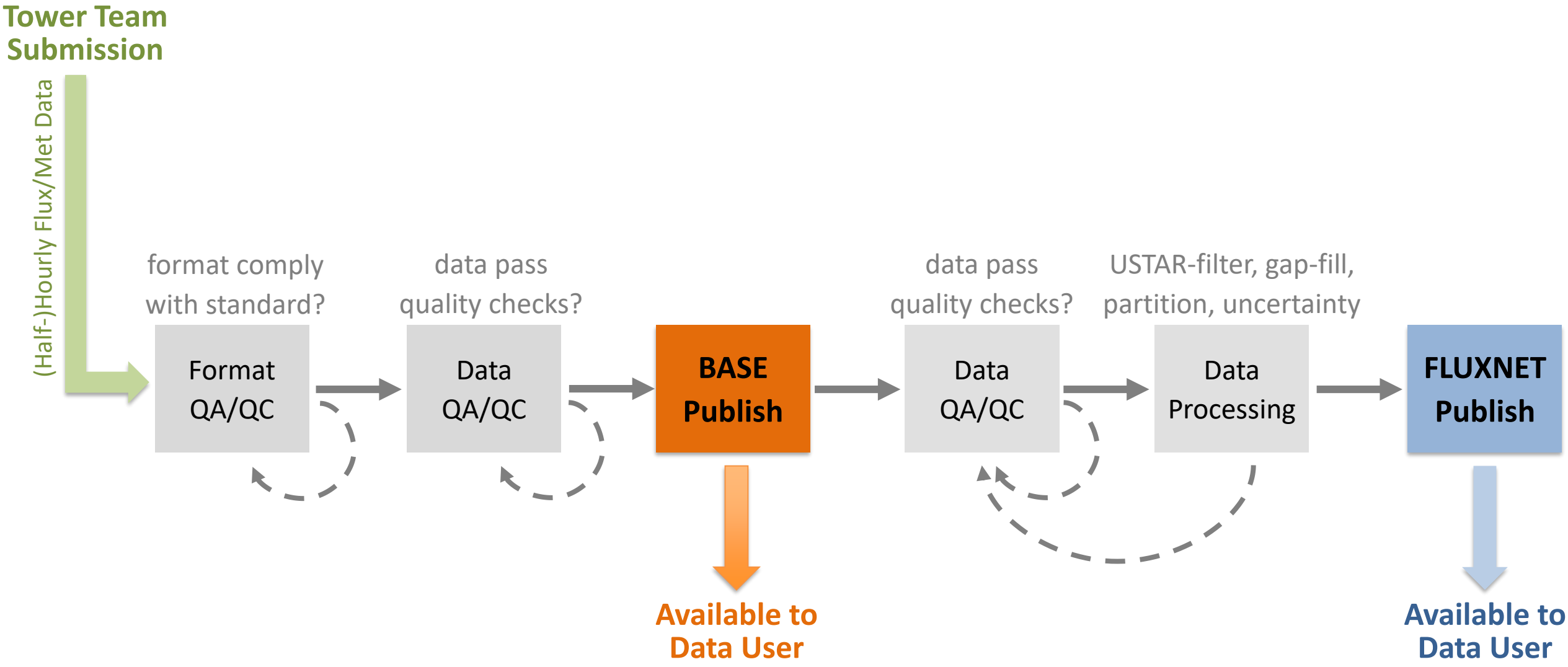
Goal: Timely, quality data processing with traceable provenance …

… with minimal manual effort.

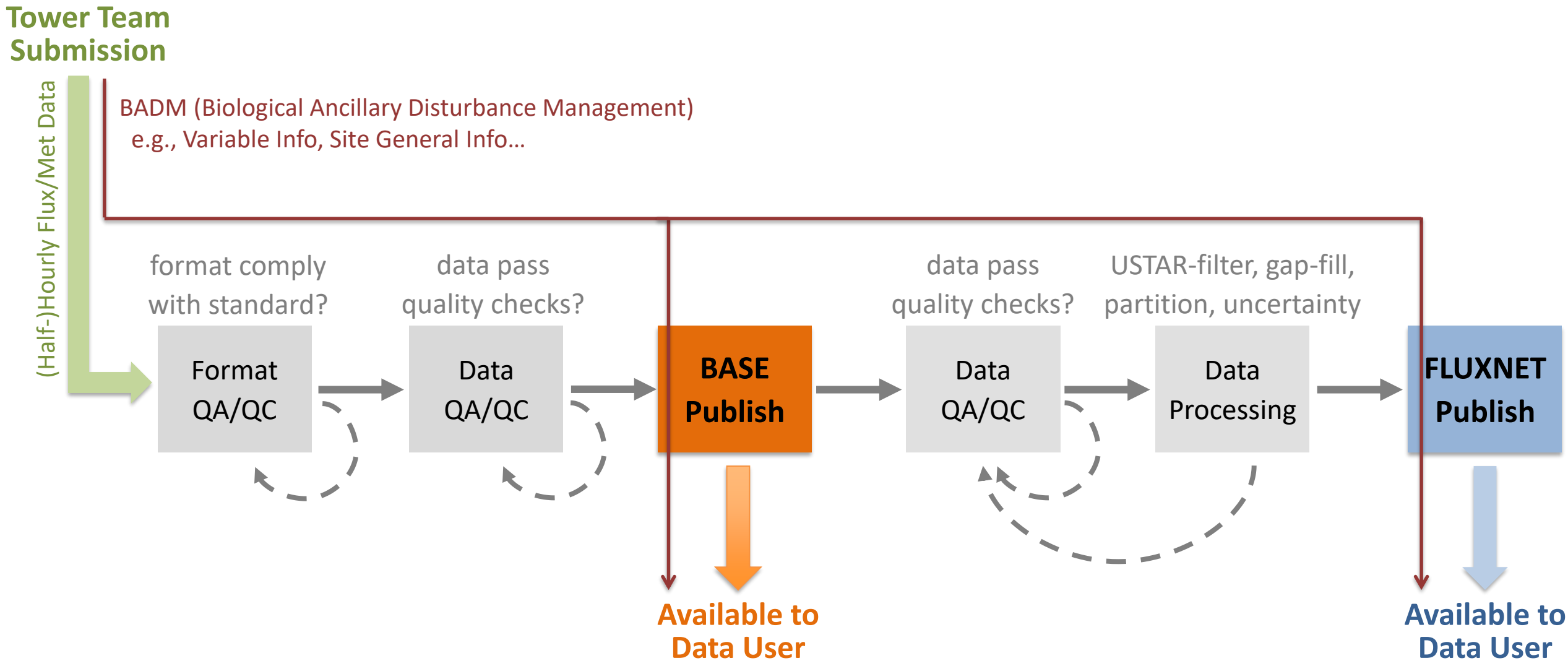
AmeriFlux Data Processing Pipeline



AmeriFlux Data Processing Pipeline



AmeriFlux Data Processing Pipeline



AmeriFlux Data Processing Pipeline

Tower Team Submission

(Half-)Hourly Flux/Met Data

BADM (Biological Ancillary Disturbance Management)
e.g., Variable Info, Site General Info…

format comply with standard?

Format QA/QC

data pass quality checks?

Data QA/QC

BASE Publish

Available to Data User

data pass quality checks?

Data QA/QC

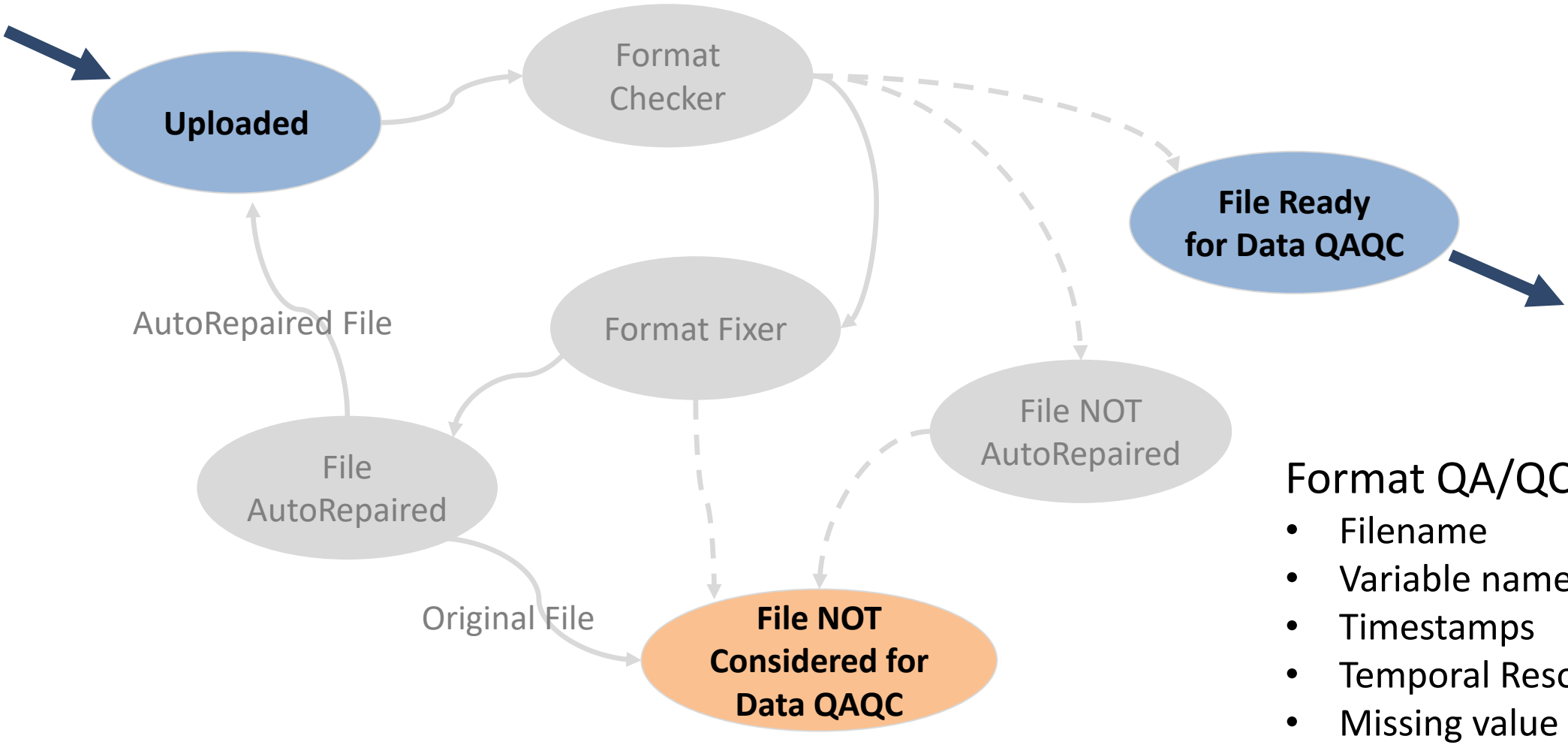
USTAR-filter, gap-fill, partition, uncertainty

Data Processing

FLUXNET Publish

Available to Data User

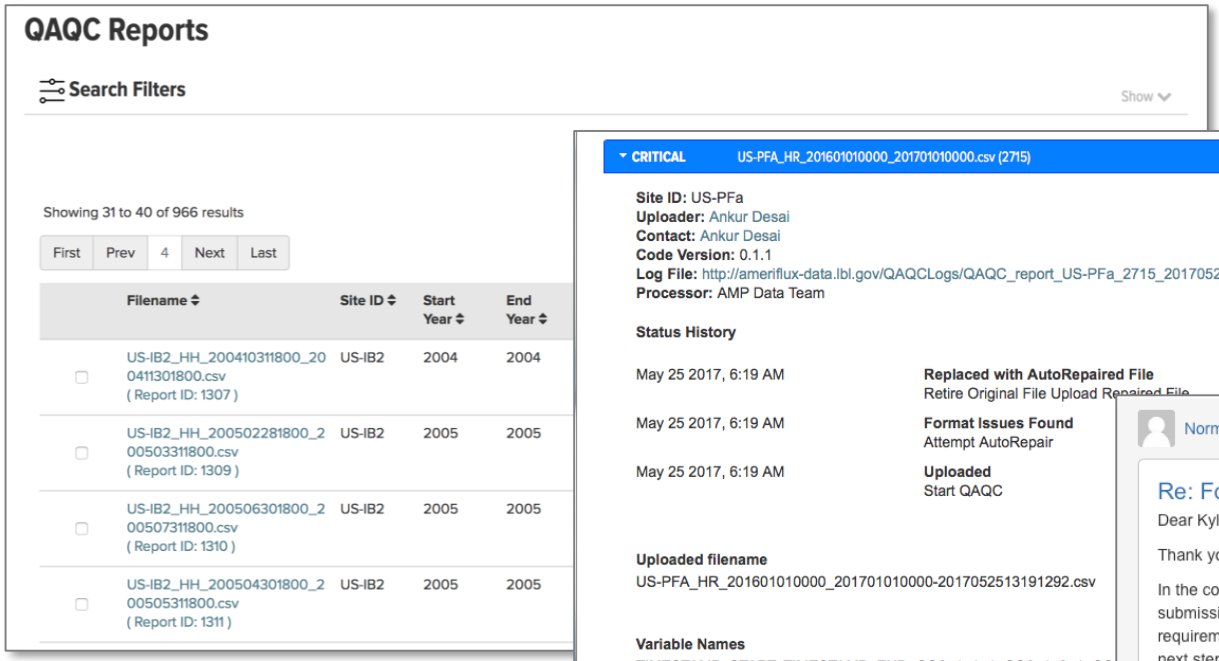
Automated Format QA/QC

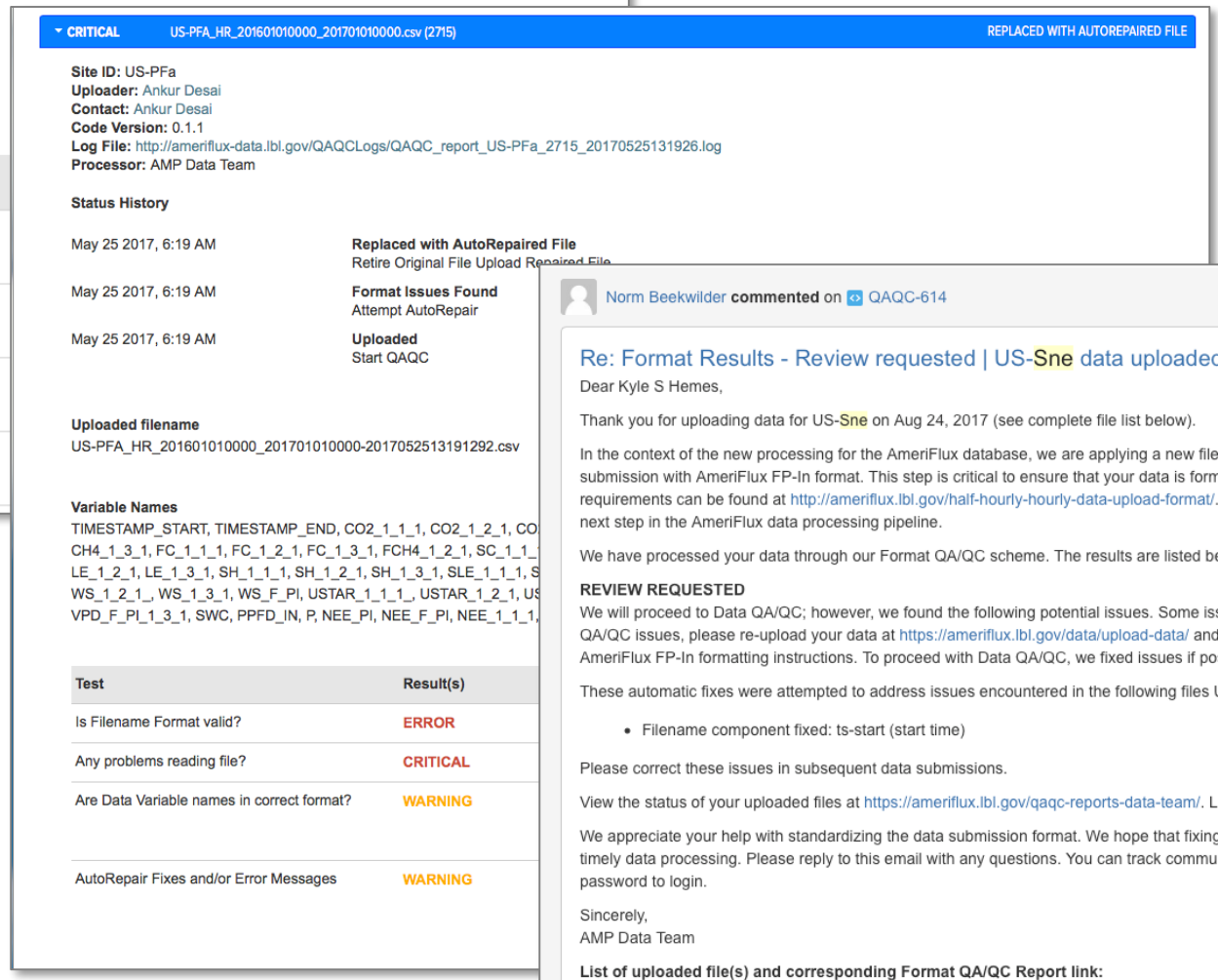


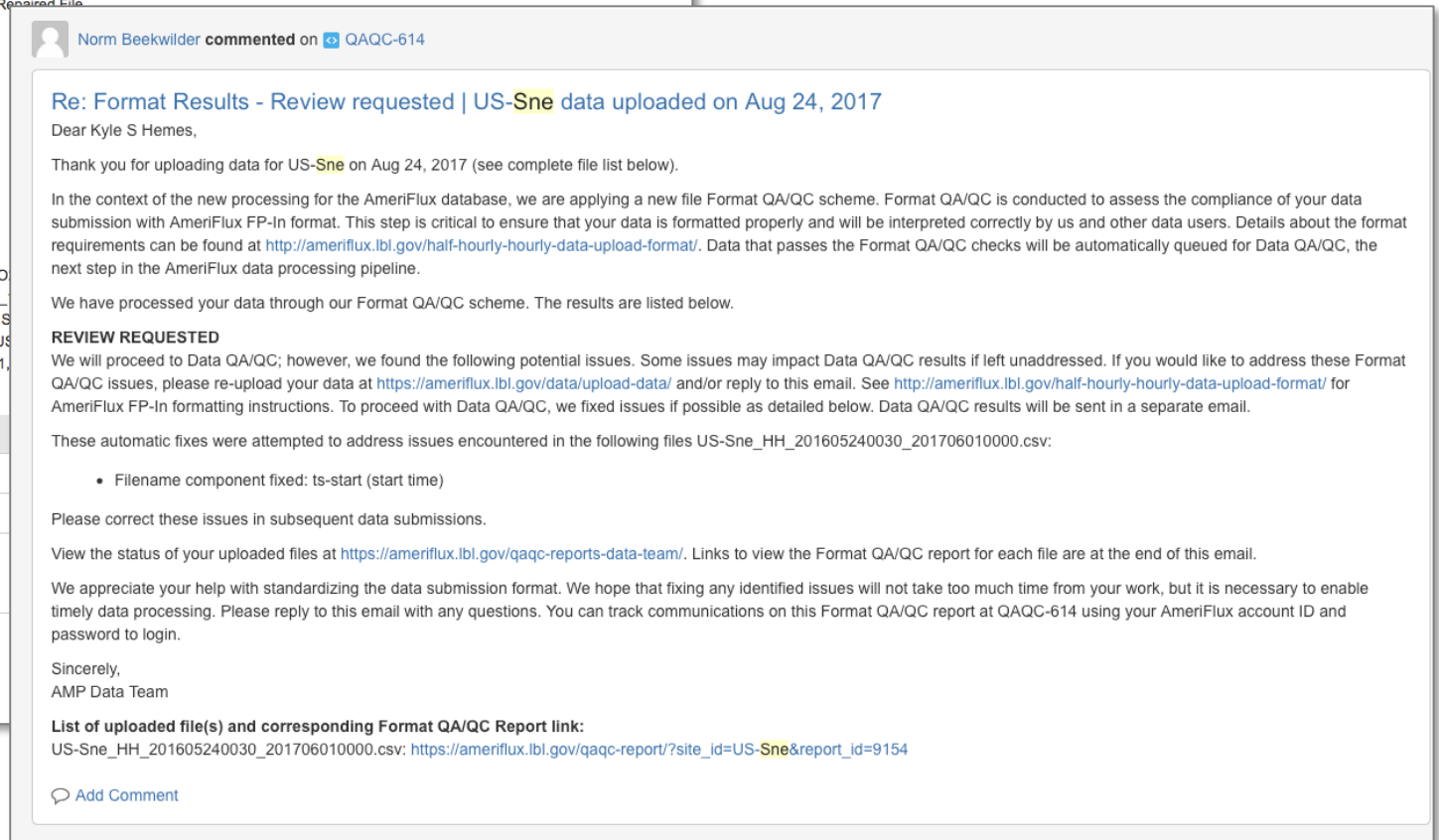
Format QA/QC check for

- Filename
- Variable names
- Timestamps
- Temporal Resolution
- Missing value format
- Missing data
- Gap-filled

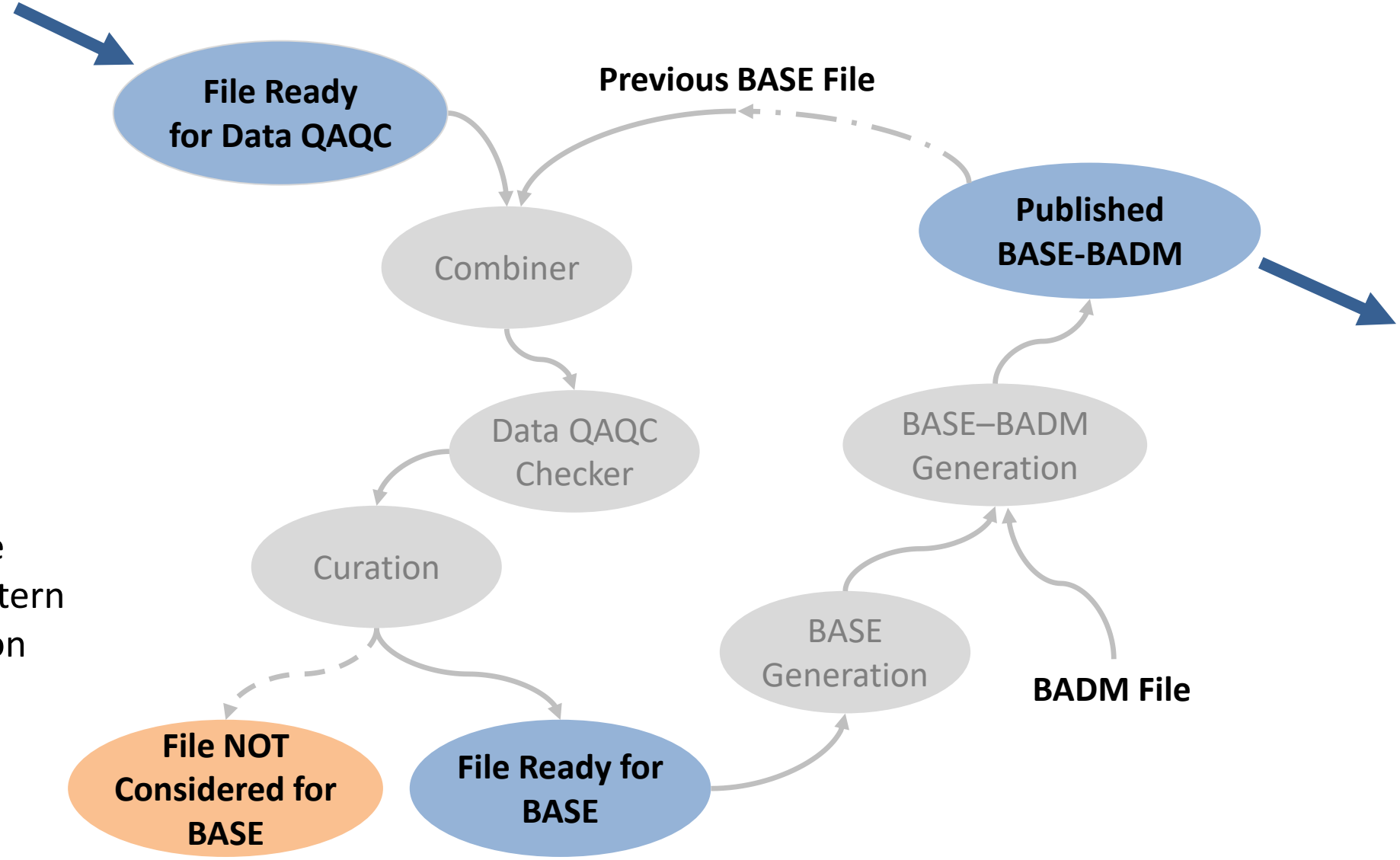
Format QA/QC Report and Email (1-2 days)







Semi-Automated Data QA/QC



Data QA/QC check for

- Units, Sign convention
- Outliers, physical range
- Diurnal & Seasonal pattern
- Multivariate comparison
- Time stamp shift
- USTAR-filtering

Data QA/QC Report and Email (1-2 weeks)

QA/QC Report (Beta): Data

This page is under active development. Please bear with us as we m

This report details the results of the AmeriFlux QA/QC data processi

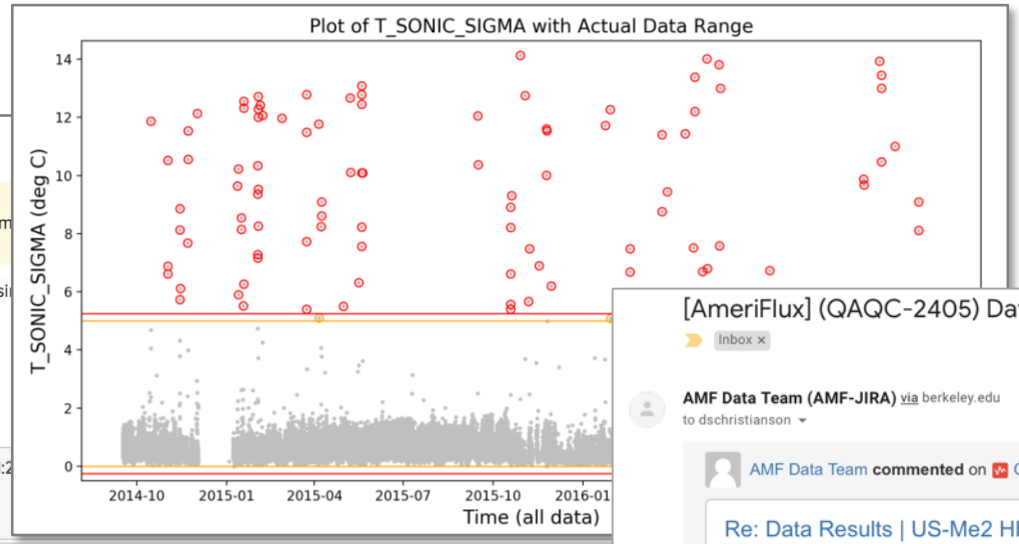
How to Read This Report

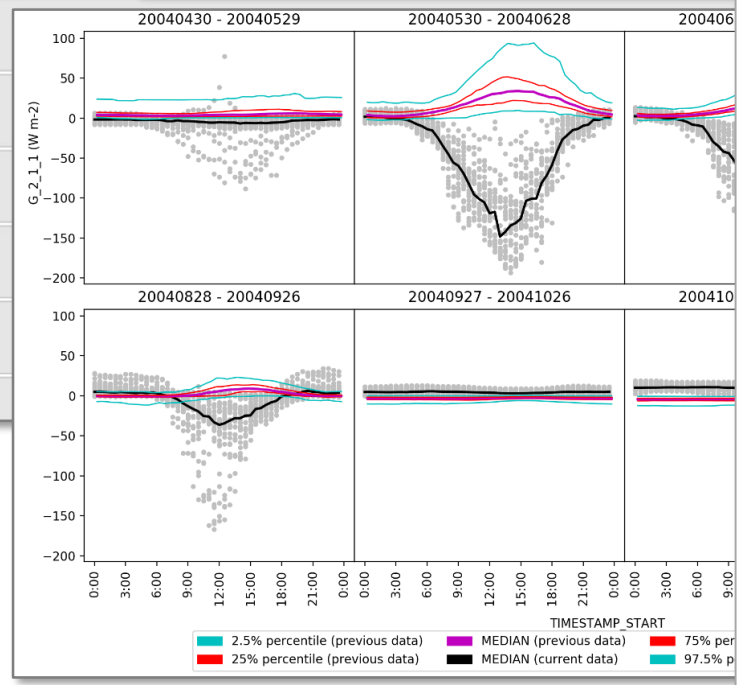
Result Code Definitions

FAQ

Base Generation Report: US-ADR

ERROR	BASE Generation: US-ADR HH on November 13 2017, 11:2
ERROR	PHYSICAL LIMITS
OK	PAIRWISE VARIABLE COMPARISON
WARNING	FILE COMBINER
WARNING	DIURNAL SEASONAL
OK	FORMAT QAQC
ERROR	RADIATION TIMESHIFT





[AmeriFlux] (QAQC-2405) Data Results | US-Me2 HH 20020101 - 20180803 | Using uploads through Sep 19, 2018

Inbox ×

AMF Data Team (AMF-JIRA) via berkeley.edu — Thu, Sep 20, 12:37 PM

to dschristianson

AMF Data Team **commented** on QAQC-2405

Re: Data Results | US-Me2 HH 20020101 - 20180803 | Using uploads through Sep 19, 2018

Dear Bev Law, Hyojung Kwon,

Thank you for your data submissions for US-Me2 (Metolius mature ponderosa pine).

In the context of the new processing for AmeriFlux data products, we are applying a new Data QA/QC scheme that follows the Format QA/QC. We believe that these checks ca independent analysis of your data and help identify potential issues in data formats and contents earlier in the pipeline.

Briefly, Data QA/QC includes the inspection of sign conventions, ranges, diurnal-seasonal patterns, and potential outliers of variables. Multivariate relations (e.g., WS vs USTAR SW_IN) are also analyzed to detect potentially erroneous data. The comparison of measured radiation (e.g., PPFD_IN, SW_IN) to the maximum, top of the atmosphere radiatio for a given location (i.e., SW_IN_POT) is also analyzed to check the timestamp specification and alignment.

In analyzing your data, we have the following questions where we request your expert opinion and suggestion. Please note that some issues we identify could be normal and e your site. Please verify, clarify, or correct the following issues before we can make your data available as an AmeriFlux BASE data product. If you decide to resubmit a correcte please upload files using https://ameriflux.lbl.gov/data/upload-data/.

[Data QA/QC]

- Issue #1 ……
- Issue #2 ……
- Issue #3 ……

We hope that this will not take too much time from your work, but it will help to make your data more robust and clear. You can view the status of all of your uploaded files at https://ameriflux.lbl.gov/qaqc-reports-data-team/.

Please reply to this email with any questions. You can track communications on this Data QA/QC at QAQC-2405 using your AmeriFlux account ID and password to login.

Best regards and thanks for the collaboration,
AmeriFlux Data Team

Housen Chu

FTP link to Data QA/QC, where you can access all figures and intermediate files generated during Data QA/QC:
ftp://ftp.fluxdata.org/.ameriflux_downloads/data/.US-Me2_6115763/26981/output

Format QA/QC reports associated with this Data QA/QC, where you can glance at the file sources used in this Data QA/QC:
http://ameriflux.lbl.gov/qaqc-report/?site_id=US-Me2&report_id=26920

BASE Publish Update and Email (1-2 months)

AMERIFLUX

Home | About | Community | Sites | Data

Home / Data / Data Change Log – AmeriFlux

Data Change Log – AmeriFlux

This page lists updates and changes to site data across releases of the new forma
https://ameriflux.lbl.gov. For further information, check the site pages (linked to the

Notes:

- Beginning August 2018, files with processing version 5 or greater will have variable name for aggregated variables submitted by the site team. The _A added to ecosystem data products (GPP, NEE, RECO, and VPD) and gap-fil site team.
- As of April 2016, all sites with BADM data will be using the new BIF format. https://ameriflux.lbl.gov/badm-data-product/.

Errata: Files released in September 2017 (processing version 3) had a bug that ma headers. This has been corrected in processing version 4. We recommend data us the impacted sites.

October 2018

New Sites Added	US-ALQ	US-Bi1	US-NC4	US-StJ	US-Uaf
Updated Sites	CA-TPD US-Ro3	US-Me2 US-Tw3	US-Men	US-NC2	US-NR1

August 2018

New Sites Added	CA-ARB	CA-ARF	CA-MR3	CA-MR5	US-UM3

[AmeriFlux] (QAQC-2520) AmeriFlux BASE Published | US-NC4 HH 2009-2016 version 1-5 Inbox ×

Housen Chu (AMF-JIRA) via berkeley.edu
to dschristianson

Oct 16, 2018, 12:05 PM (4 days ago)

Housen Chu **commented** on QAQC-2520

Re: AmeriFlux BASE Published | US-NC4 HH 2009-2016 version 1-5

Dear Asko Noormets, Bhaskar Mitra,

Thank you for your data submissions for US-NC4 (NC_AlligatorRiver). The data have now been published as an AmeriFlux BASE data product (1-5, 2009-2016).

A list of useful links associated with AmeriFlux BASE data product in general:
1. To download the data (http://ameriflux.lbl.gov/data/download-data/) (login required).
2. The AmeriFlux data policy (http://ameriflux.lbl.gov/data/data-policy/)
3. To check the data available years (http://ameriflux.lbl.gov/data/data-availability/)

You can also check the status/information specifically for your site through the site page:
(https://ameriflux.lbl.gov/sites/siteinfo/US-NC4)

Currently, the site page provides the following information and features:
1. Site general information
2. Primary citation, DOI, and Acknowledgment (note: If this is a new site, DOI may take a few weeks to generate and update here)
3. Data processing status (login required)
4. Data downloading log
5. Windrose and external link to MODIS / VIIRS / Daymet fixed-site subset (note: If this is a new site, these may not be available immediately, fixed-site subset is provided by ORNL DAAC)
6. Publications and photos
7. Access and edit BADM (login required, note: editing feature is currently available for site general information and variable information only)

Please contact us (ameriflux-support@george.lbl.gov) if you have any question.

Best regards and thanks for the collaboration,
AmeriFlux Data Team

Add Comment

This message was sent by Atlassian JIRA (v7.3.6#73017-sha1:51437cf)

Atlassian

Data Processing Status

Data Processing Status

Use the table below to determine which sites have data that require action.

Key:
▼ = Site Team action required
✓ = Complete

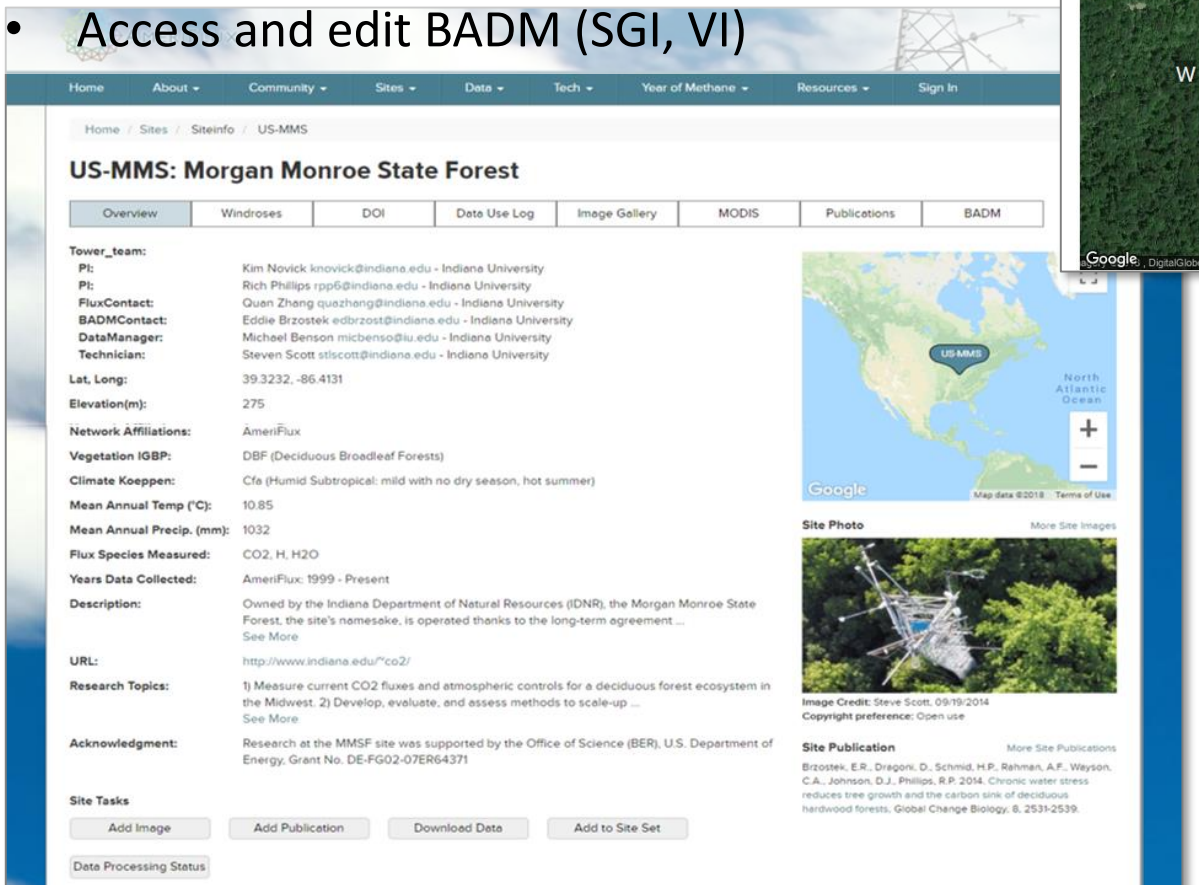
Statuses

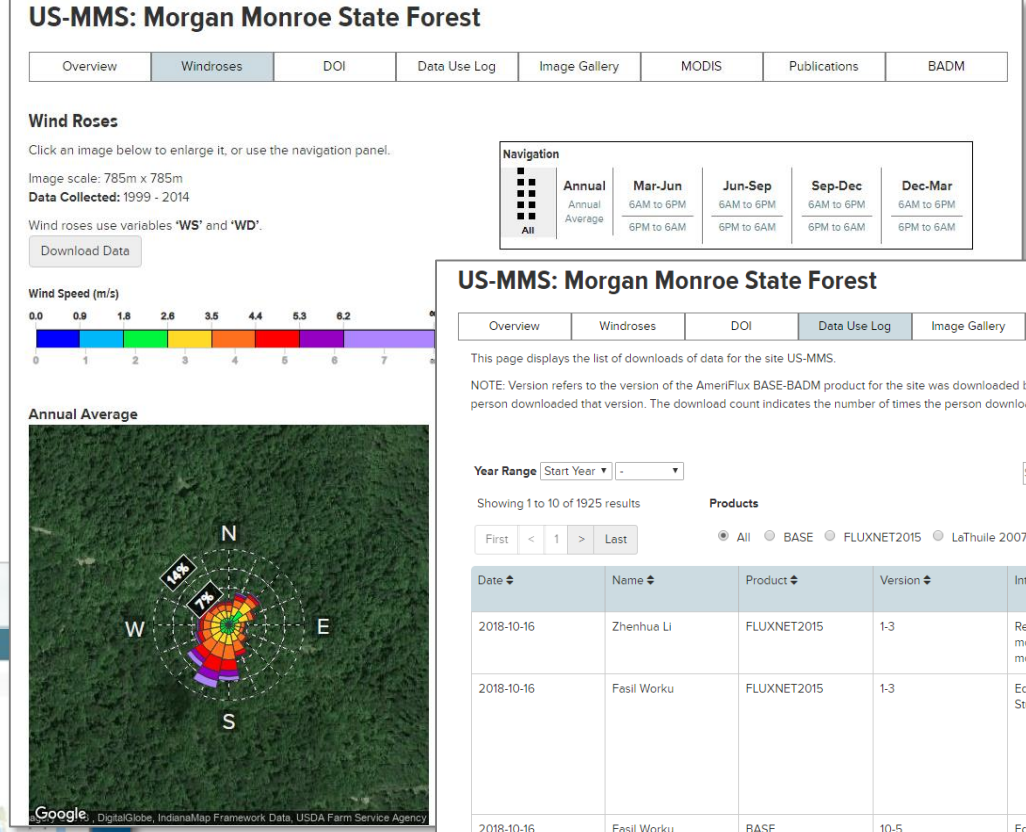
Symbol	Status
●○○○○	Format issues: Waiting for AmeriFlux Data Team
●○○○○ ▼	Format issues: Waiting for Tower Team
●●○○○	Ready for Data QA/QC
●●●○○	Data issues: Waiting for AmeriFlux Data Team
●●●○○ ▼	Data issues: Waiting for Tower Team
●●●●○	Data ready to be published
●●●●● ✓	Data Products Up-to-Date

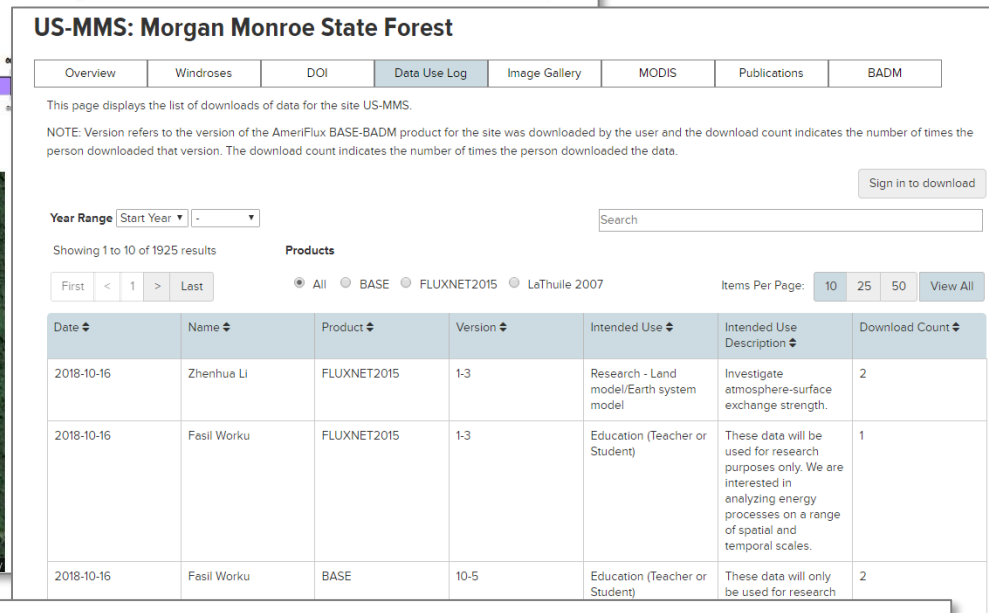
Site	Published Version	Progress	Status	Issue	Last Activity	Uploader
Filter						Filter
US-Tw1	2-1	●●●●○	Data ready to be published	QAQC-1130	2017-11-21	Sara Knox
US-Twt	4-1	●●●●○	Data ready to be published	QAQC-1095	2017-11-13	Elke Eichelmann
US-Myb	3-1	●●●○○ ▼	Data issues: Waiting for Tower Team	QAQC-1094	2017-11-13	Samuel Chamberlain
US-Tw4	3-1	●●●●○	Data ready to be published	QAQC-1092	2017-11-13	Elke Eichelmann
US-Sne	1-4	●●●●● ✓	Published as version 1-4	QAQC-809	2017-09-12	Kyle S Hemes
US-Snd	2-1	●●○○○	Ready for Data QA/QC	QAQC-666	2017-08-30	AmeriFlux Data Team
US-Tw2	1-1	●●○○○	Ready for Data QA/QC	QAQC-649	2017-08-30	AmeriFlux Data Team
US-Ton	9-1	●○○○○ ▼	Format issues: Waiting for Tower Team	QAQC-553	2017-08-17	Siyan Ma
US-Var	9-1	●○○○○ ▼	Format issues: Waiting for Tower Team	QAQC-409	2017-07-31	Siyan Ma

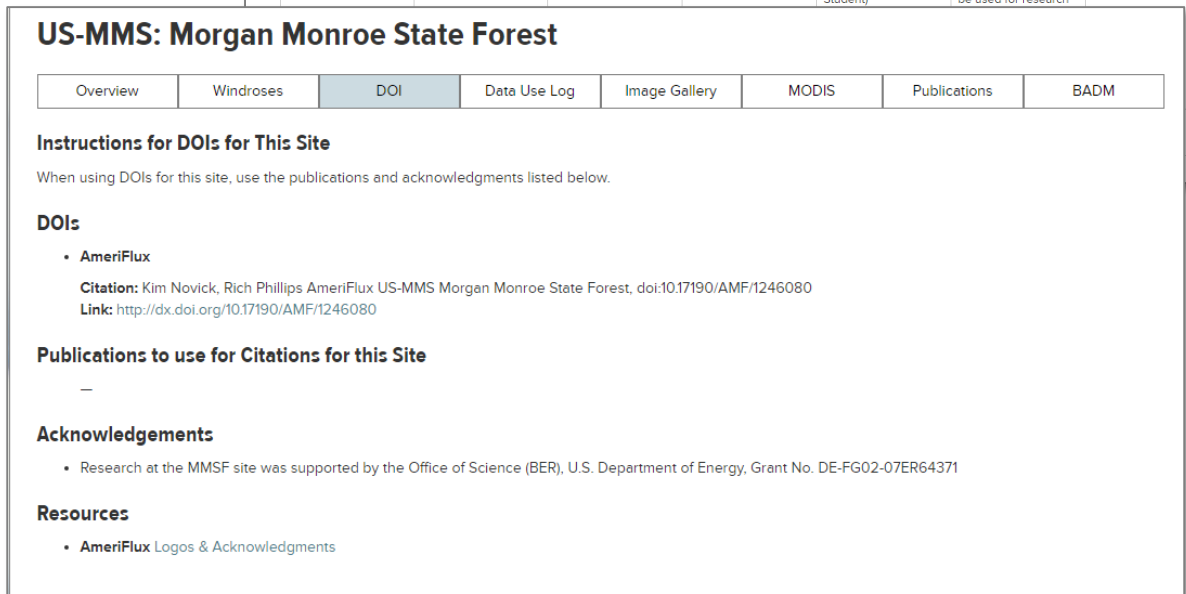
Supporting Features

- Site general information
- Publications and photos
- Primary citation, DOI, and Acknowledgment
- Data processing status
- Data downloading log
- Windrose & External link to MODIS / Daymet
- Access and edit BADM (SGI, VI)



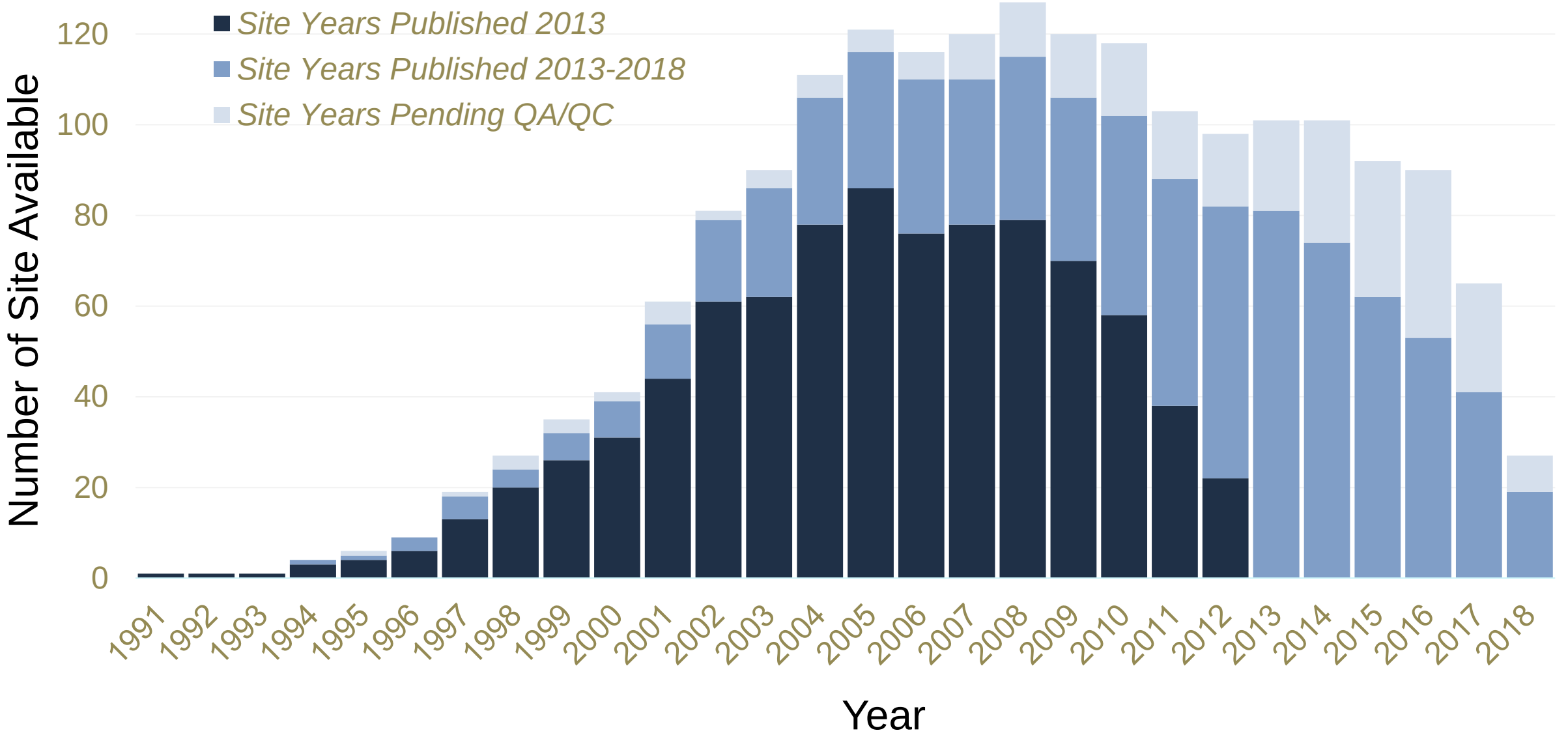




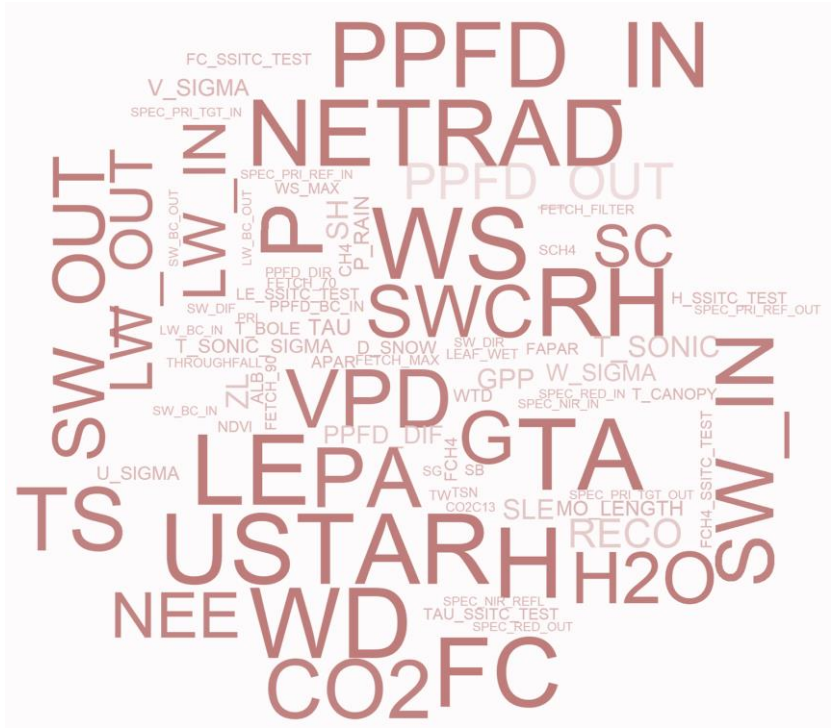


Current BASE Availability

256 Sites
1670 Site-Years



What's in BASE?



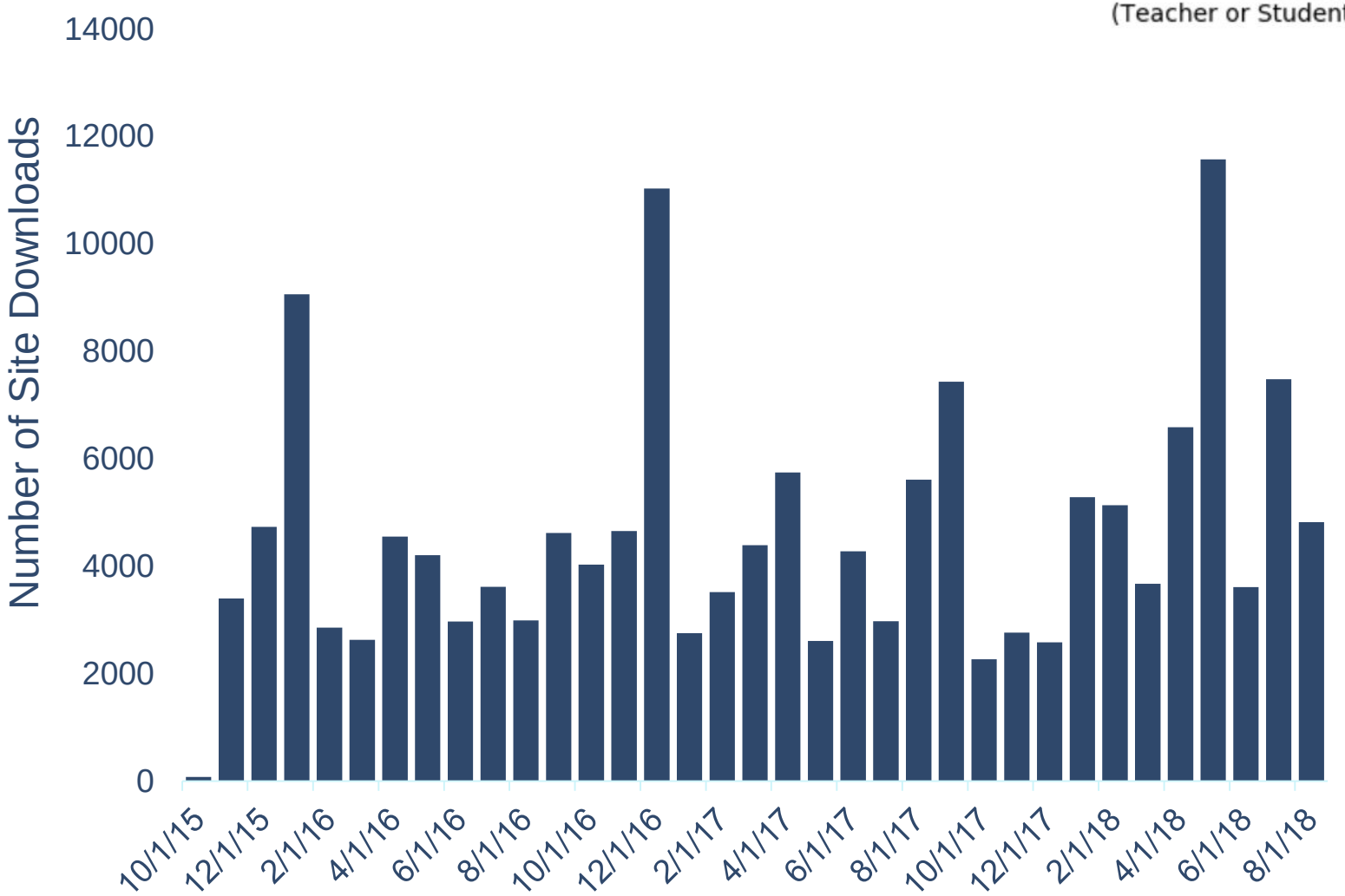
Site × Years

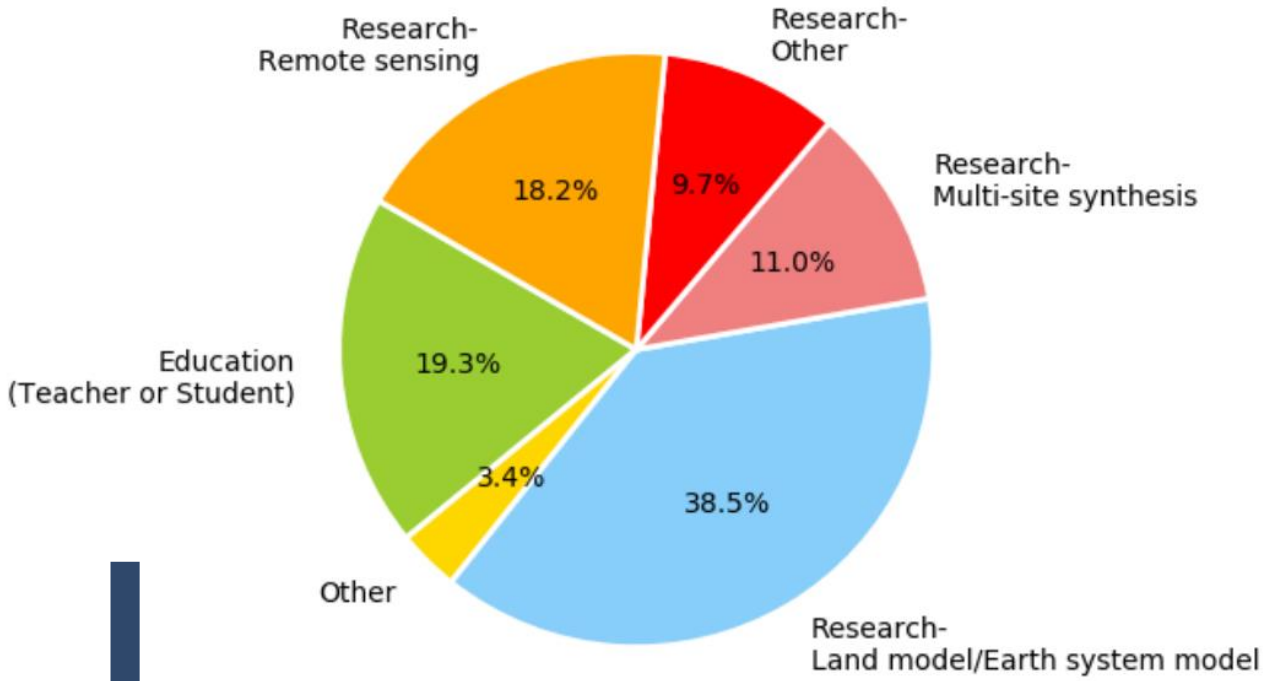
e.g., FC ~ 1500

Locations × Sites × Years

e.g., TS ~ 5900

BASE Data Download & Usage

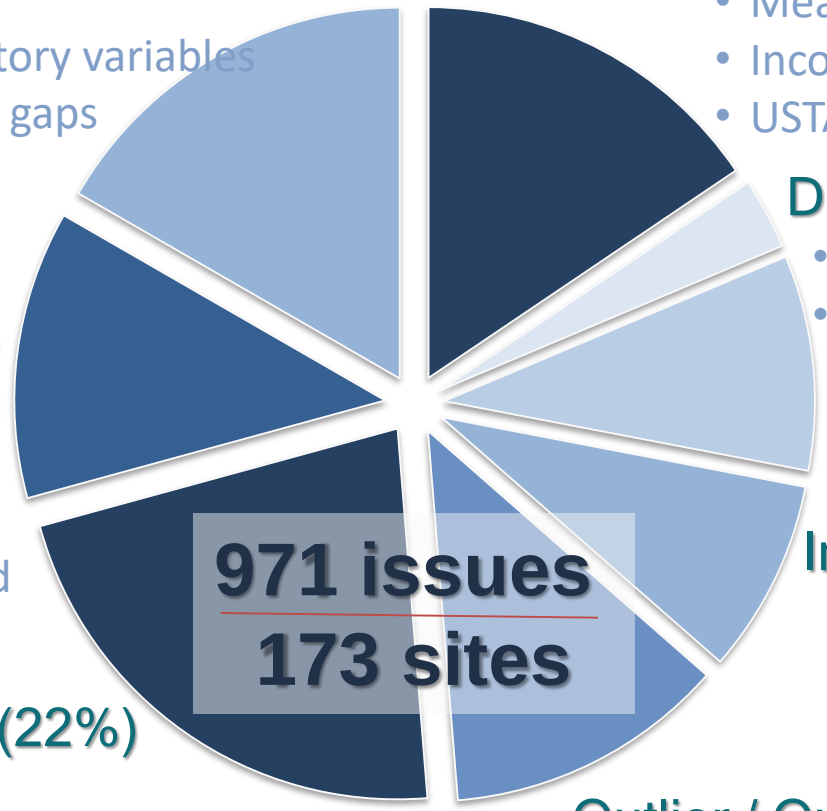




~4700 Downloads/month
(1875 unique users)

Useful Resource for Data QA/QC

Pastorello, G. et al., 2014., Observational data patterns for time series data quality assessment. *Proc. 10th IEEE International Conference on e-Science*, Sao Paulo, pp. 271-278, doi: 10.1109/eScience.2014.45



Cutoff / Filtered (16%)

- Measurement interval filter
- Measurement cutoff filter
- Inconsistent noise levels
- USTAR-filtered

Diverging Resolution (3%)

- Diverging sampling or aggregation interval
- Diverging measurement resolution

Gap-filled (9%)

- Repeating patterns

Inter-Variable Comparison (8%)

- Distinct trends / slopes
- Perfect match
- Regular short-term mismatched trend

Outlier / Outranged (8%)

- Physically unlikely ranges

Trend / Step Change (22%)

- Trend in max / min
- One-/Two-way displacement
- Windowed varying max / min

Time Stamp Shift (13%)

- Misspecified time stamps
- Time zone specification
- Daylight saving
- Variables not synchronized

Other (17%)

- Missing mandatory variables
- Long /Frequent gaps
- Others