

DPW-8 & AePW-4

Buffet Working Group



September 17, 2024

aiaabuffet@gmail.com



No major updates from last meeting

Buffet Working Group website

<https://aiaa-dpw.larc.nasa.gov/WorkingGroups/Group3/group3.html>

- Test-case centric information added to the Buffet Working Group website

Postprocessing website

<https://aiaa-dpw.larc.nasa.gov/postprocessing.html>

- Includes ONERA OAT15A experimental results
- Added v3 of data files (includes Tstatic as an auxiliary data value)
- Residual data form in preparation
- Unsteady F&M and surface cut data file in preparation (will include $C_{P,rms}$ and spectral content)
- Conversations for alternate data formats are in process using lessons learned from previous workshops

Large File Upload

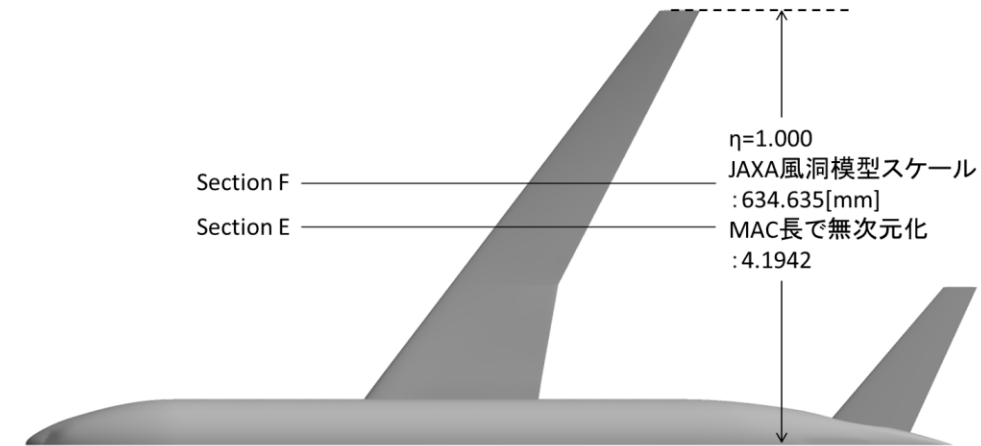
<https://nasagov.app.box.com/f/fd164563283b4e85857d1a0975b0b363>

- Please upload as a zip file with your name in the file name and alert the buffet email address

- **Workshop-wide (DPW) validation case**
 - Same problem statement across all four DPW Working Groups
 - Critically important for consistent analysis
 - Carefully crafted problem statement for consistency across workshop
- **Data form the basis for the Scatter Working Group,**
 - Residual particularly interesting
 - Continuity, three components of momentum, energy, and turbulence
- **New grids may be needed for the Buffet Working Group**
- **Goals**
 - “Ticket to entry” for DPW
 - Not an extraordinarily-detailed effort, hence the short timeline
 - Not a detailed sensitivity study (that is the focus of Scatter)
 - Establish some preliminary best-practices for these unsteady grids
 - Include students

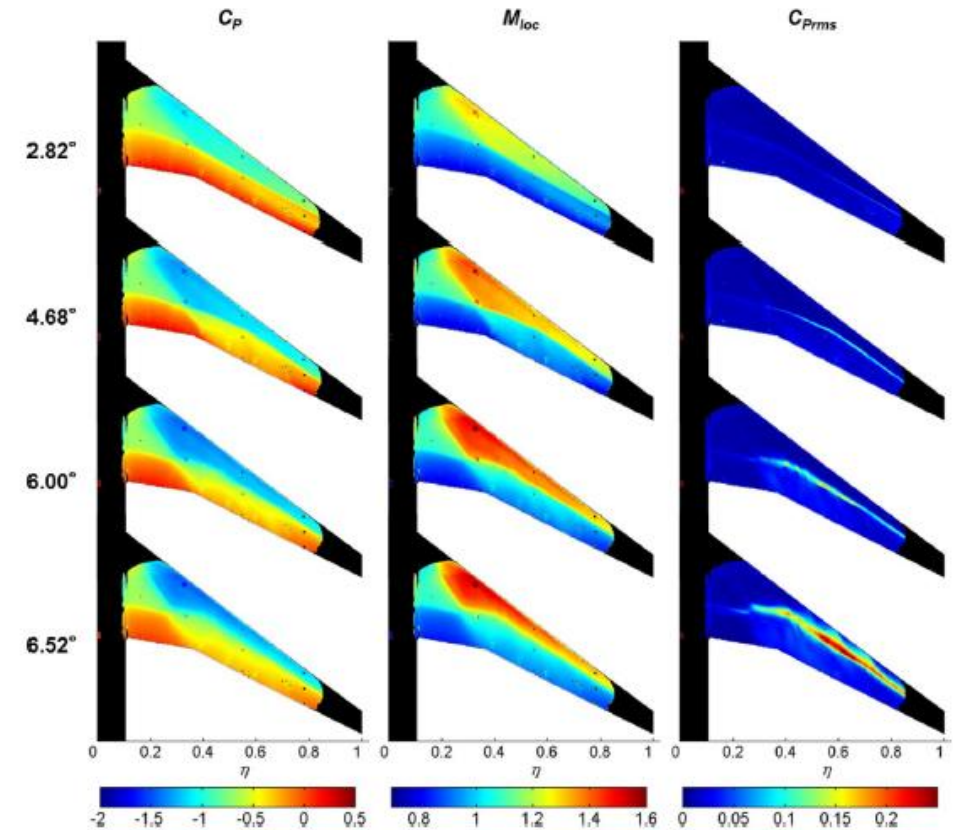
Test Case 2 Vision (Optional)

- **Spring, summer, and fall 2025**
- **Unsteady CFD without FSI**
 - CRM wing/body/tail
 - Want to include DPW and AePW communities
 - Committee-supplied deformed geometry
 - Committee-supplied RANS grids
 - Not all unsteady CFD codes have unsteady FSI
- **Simulations**
 - Somewhere between 2 and 4 alphas (TBD)
 - Detailed comparisons to recent JAXA data
- **Expectations**
 - Probably won't definitively solve this problem
 - Analysis of Test Case 2 and 3 may be simultaneous → we must be flexible



Test Case 3 Vision (Optional)

- Spring, summer, and fall 2025; spring 2026
- **Unsteady CFD with FSI**
 - CRM wing/body/tail
 - Want to include DPW and AePW communities
 - Committee-supplied wind-off (“jig”) geometry
 - Committee-supplied wind-off (“jig”) RANS grids
 - Hardest analysis point
- **Simulation plan (as of now)**
 - Extensive analysis, limited flow conditions
 - One alpha pre-buffet (required)
 - One alpha post-buffet (optional)
 - Detailed comparisons to recent JAXA data



- **Students are strongly encouraged to participate**
- **Please encourage your students/contacts to participate**
- **Airfoil case has been scoped to be able to be executed on a laptop**
- **Minimum content for submission**
 - ONERA OAT15A
 - Coarsest grid
 - Three angles of attack
- **Additional analysis certainly encouraged!**
- **No submission deadline**
- **Mentorship opportunities exist**

Grid Partner Updates

- Cadence is going to release Rev01 soon
- Helden has prepped Rev01

- **Community-wide, open-to-all mini workshop**
 - Thursday 9:30-12:00
 - Bayhill 29
 - Will include a hybrid component
- **Content**
 - Updates from all seven working groups
 - Presentation of ONERA OAT15A data (RANS and some unsteady)
 - Various Organizing Committee members will be presenting
- **Will include technical content and some open discussion**
- **No evening meeting scheduled**

- The four DPW-8 working groups will be using Github
- Three AePW-focused groups are still in discussion
- Automated checks to ensure correct data file format
- Freely available for download and interrogation (helps the committee)
- Skeleton has been built for Scatter and will be extended to Buffet soon
- See following slides

DPW-8/AePW-4

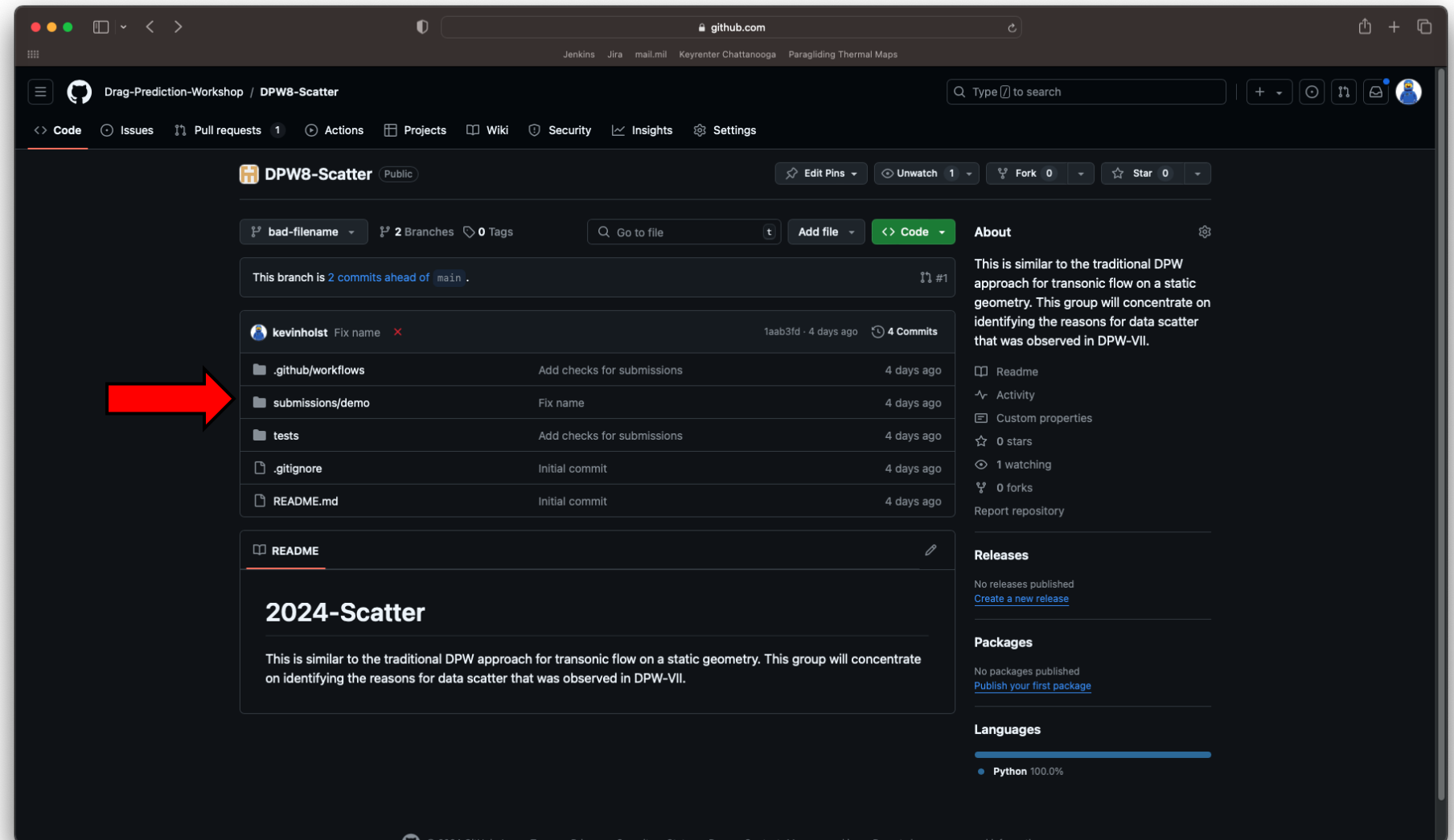
GitHub Slides

DPW8-Scatter GitHub Repository

- The purpose of the repository is to
 - Provide a centralized location for submitting results
 - Maintain a historical record of data submissions
 - Manage submissions efficiently
 - Reduce the post-processing workload on group leaders
- Users will make data submissions through pull requests on the main repository
 - If users are unfamiliar with git or are unable to access GitHub, the group leaders will facilitate the submission via email or another alternative
- Currently only built for Scatter WG, but similar repos will be built for Static Deformation, Buffet, and Test Environments

DPW8-Scatter GitHub Repository

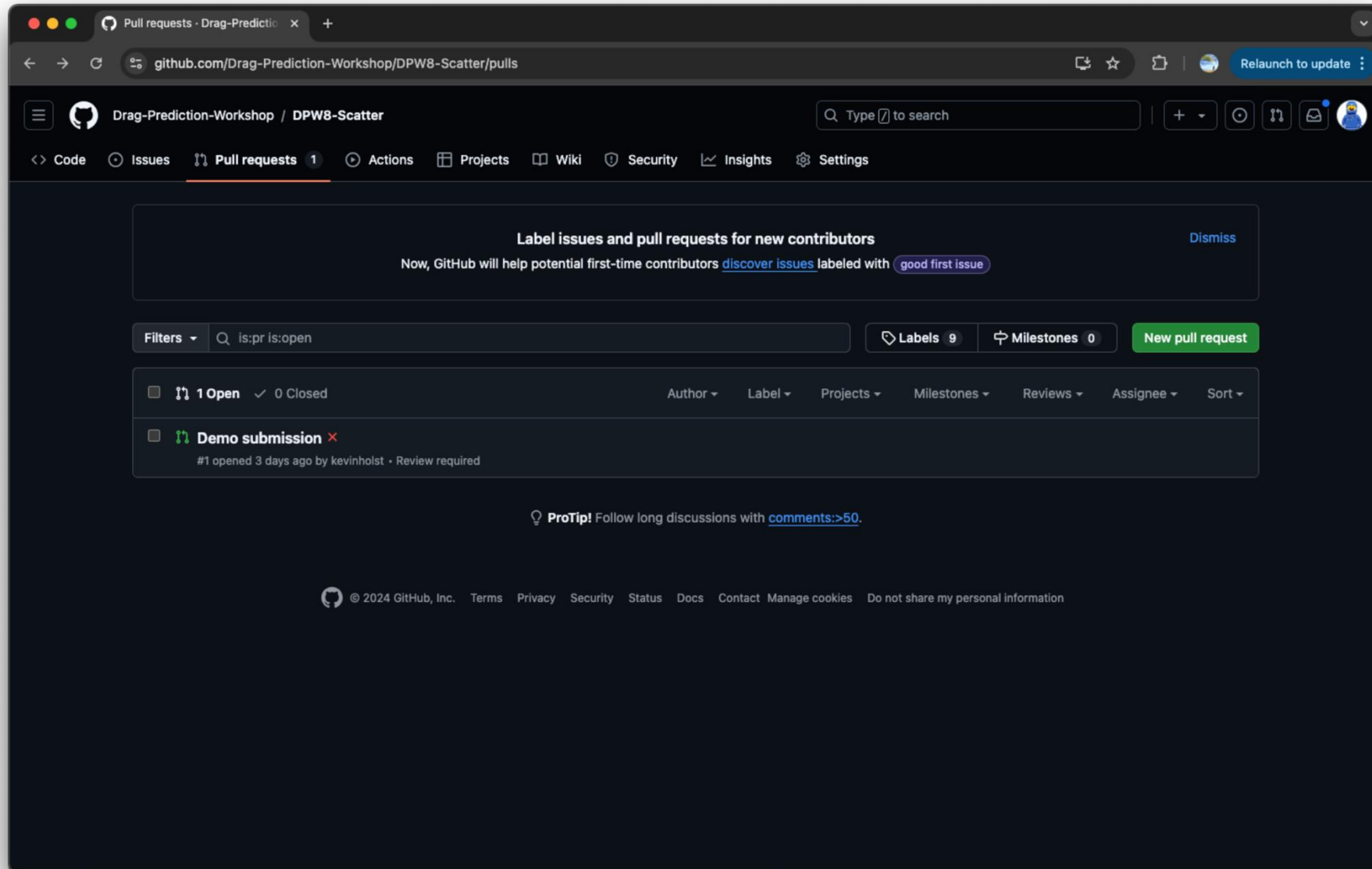
- Data submissions should go in the submissions directory
- Create a subdirectory with your participant ID



DPW8-Scatter GitHub Repository

- Users can submit results using the “fork and pull model” as described in the GitHub docs
 - <https://docs.github.com/en/pull-requests/collaborating-with-pull-requests/getting-started/about-collaborative-development-models>
- More information about forking a repository:
 - <https://docs.github.com/en/pull-requests/collaborating-with-pull-requests/working-with-forks/fork-a-repo>
- More information about creating a pull request:
 - <https://docs.github.com/en/pull-requests/collaborating-with-pull-requests/proposing-changes-to-your-work-with-pull-requests/creating-a-pull-request>

DPW8-Scatter GitHub Repository



DPW8-Scatter GitHub Repository

Demo submission #1

Open kevinholst wants to merge 2 commits into main from bad-filename

Conversation 0 Commits 2 Checks 1 Files changed 1 +105 -0

kevinholst commented 3 days ago
No description provided.

kevinholst added 2 commits 3 days ago

- Try to submit with a bad filename 068fbcd
- Fix name 1aab3fd

Review required
At least 1 approving review is required by reviewers with write access. [Learn more about pull request reviews.](#)

All checks have failed
1 failing check [Hide all checks](#)

Check scatter submission / build (pull_request) Failing after 4s [Details](#)

Merging is blocked
Merging can be performed automatically with 1 approving review. [View rules](#)

Reviewers: No reviews—at least 1 approving review is required. Still in progress? [Convert to draft](#)

Assignees: No one—[assign yourself](#)

Labels: None yet

Projects: None yet

Milestone: No milestone

Development: Successfully merging this pull request may close these issues. None yet

- Users will submit data through pull requests
- Submitted files will automatically be checked for conformity to the template standard
- Failures will show up in the pull request, and the user can fix the issue and re-commit the files

DPW8-Scatter GitHub Repository

The screenshot shows a GitHub pull request for the repository 'Drag-Prediction-Workshop / DPW8-Scatter'. The pull request is titled 'Demo submission #1' and is from user 'kevinholst'. It shows 2 commits merged into the 'main' branch from a branch named 'bad-filename'. The pull request has 1 check run, 2 commits, and 1 file changed. A red error message at the top states: 'Try to submit with a bad filename 068fbcd'. The check run 'build' failed 3 days ago in 4s. The failure is detailed in the logs, which are highlighted with a red box. The logs show the following output:

```
1 ▶ Run python tests/check_scatter_submission.py $ALL_CHANGED_FILES
6 Modified files: ['submissions/demo/OAT15A_abc.123.dat']
7 checking submissions/demo/OAT15A_abc.123.dat
8 *****
9
10 RuntimeError: Participant id and suffix must be numeric, found abc.123
11
12 *****
13 Error: Process completed with exit code 1.
```


DPW8-Scatter GitHub Repository

The screenshot shows the GitHub repository page for 'DPW8-Scatter'. The repository is public and has 2 branches and 0 tags. The file list shows a 'tests' directory highlighted with a red box. The README is titled '2024-Scatter' and describes the project's focus on identifying reasons for data scatter.

File/Folder	Commit Message	Commit Date
.github/workflows	Add checks for submissions	3 days ago
tests	Add checks for submissions	3 days ago
.gitignore	Initial commit	3 days ago
README.md	Initial commit	3 days ago

2024-Scatter

This is similar to the traditional DPW approach for transonic flow on a static geometry. This group will concentrate on identifying the reasons for data scatter that was observed in DPW-VII.

- The testing script is located in the tests directory of the repository
- Users can run this script locally, if they wish, prior to submitting pull request

- **Updates from subgroup leaders**

- URANS: Fulvio Sartor, ONERA Centre de Meudon fulvio.sartor@onera.fr
- Hybrid RANS/LES: Jeff Housman, NASA Ames jeffrey.a.housman@nasa.gov
- WMLES & Beyond: Johan Jansson, KTH jjan@kth.se

- **Email the Subgroup leader If you are interested in participating**

- **Individuals are welcome to attend these meetings and not submit data**

- **May, 2024**
 - ONERA OAT15A geometry release ✓
- **July, 2024**
 - ONERA OAT15A grids released ✓
 - AVIATION in-person meeting ✓
- **September, 2024**
 - Modified ONERA OAT15A grids released ●
- **October 31, 2024**
 - ONERA OAT15A RANS data submission deadline
- **November 30, 2024**
 - ONERA OAT15A unsteady data submission deadline (may be reconsidered)
- **January, 2025**
 - SciTech in-person meeting
 - Mini Workshop 1 (hybrid)
- **Winter, 2025**
 - First look of Test Case 3 grids
- **Fall, 2025**
 - Mini Workshop 2, virtual (???)
- **March, 2026**
 - Delivery of final data set
- **June, 2026**
 - Workshop in San Diego, CA
- **January, 2027**
 - SciTech Special Sessions in Orlando, FL

- **Subgroup Meetings**
 - Tuesday, October 1 at 10:00 EDT
 - Currently scheduled simultaneously for first Tuesday at 10:00 Eastern US... for now
 - Hope is for individuals to dive deeply into one of the groups
 - Cross pollination will still happen at this meeting
 - Feedback to the committee is welcomed and encouraged
- **Next Buffet Working Group meeting is Tuesday, October 15**
 - Individuals or teams are welcome to present preliminary analysis
 - Please contact aiaabuffet@gmail.com if you are interested to present grids or solutions
 - Virtual
- **US Daylight Saving time ends on November 3; meetings will still be held at 10:00 Eastern time**



aiaabuffet@gmail.com