

Solar Forecast Arbiter .org

An open source evaluation framework for solar forecasting

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Office of **ENERGY EFFICIENCY
& RENEWABLE ENERGY**

Project goal

Open-source framework for solar forecast evaluations that are impartial, repeatable, and auditable.

- Implement objective, consistent evaluation scenarios and metrics → better solar forecasts
- Develop user confidence in solar forecasts → system integration
- Standardize evaluations → reduce provider and user costs
- Easily extend to wind power and load forecasting

Three Key Tasks

Stakeholder Engagement

- Help define use cases
- Guide selection of benchmarks, metrics, data sets
- Contribute data
- Aid long-term planning

Support DOE Solar Forecast 2 Teams

- Define test data
- Provide evaluation services

Construct the Solar Forecast Arbiter

- Open source
- Thoroughly test, document, validate

Major Results as of June 2019

1. Created Stakeholder Committee
2. Defined use cases
3. Defined data exchange
4. Reference irradiance/pv datasets
5. All code open, available online

Stakeholder Committee

Our project development will be guided by stakeholders and we need your help to ensure that Solar Forecast Arbiter meets your needs. Anyone who has a stake in evaluating the skill of solar irradiance and power forecasts can participate in the project stakeholder committee. Joining is a simple as clicking this [link](#) and filling out the short form there.

The goal of the stakeholder committee is to ensure that we:

- Create a framework for evaluating forecasts that meets community needs
- Protect the data security and privacy of users and data providers.

The role of committee members will include the following:

- Review and provide input to use cases that the platform capabilities will be built around
- Input on data requirements including metadata, format, quality control, security, access management, privacy, and communications
- Weighing in on benchmark forecasts and reference datasets
- Provide input and review of analysis capabilities and metrics selection

All committee members will be able keep up with stakeholder topics and dive in where they feel it is most appropriate but it is not expected that every stakeholder will weigh in on every topic. The types of stakeholders we need are:

- Forecast providers, along with their data scientists and legal teams
- Forecast end-users
- Data owners, especially those considering contributing their project/resource data. We particularly need input on how to maximize data contributions by addressing legal, privacy, security, and other data related issues.
- Solar Forecasting 2 Topic Areas 2/3 teams to make sure we meet their needs

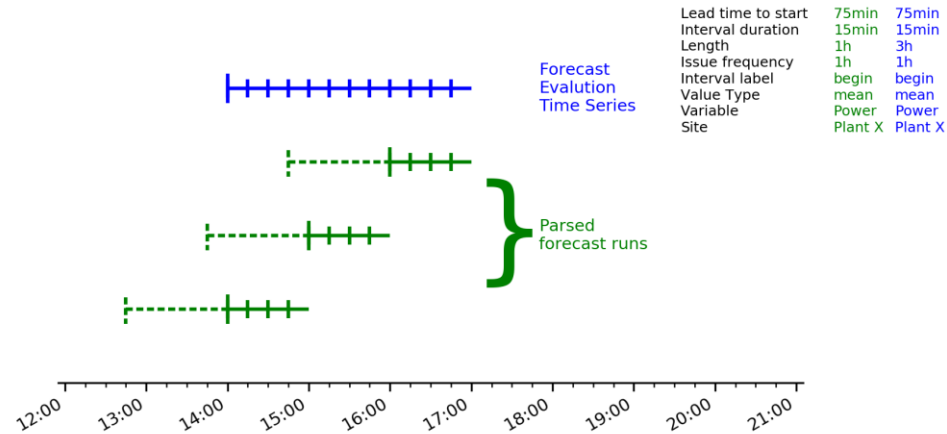
We need your help so that Solar Forecast Arbiter not only meets the SF2 goals, but continues to have lasting value to both forecasters and end-users after the SF2 is complete.

solarforecastarbiter.org

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Forecast runs concatenated into a forecast evaluation time series



- 1.A. Compare a forecast to measurements
- 1.B. Compare a prob. forecast to measurements
- 1.E. Evaluate an event forecast
- 1.F. Conduct forecast trial

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Screenshot of the Solar Forecast Arbiter web interface. The page title is 'SOLAR FORECAST ARBITER' with links for 'Changelog' and 'Documentation', and an 'Account' dropdown. A sidebar on the left contains links for 'Sites', 'Observations', 'Forecasts', and 'Trials'. The main content area is titled 'Upload Observation data' and contains an 'Observation Metadata' section with the following information: Name: GHI Instrument 1, Site: Ashland OR, Variable: GHI (W/M^2), Value Type: Interval Mean, Interval Label: Start. Below this is a section for 'Upload data for Observation 'Ashland OR, ghi'' with a 'My data is formatted in:' section where 'CSV' is selected. A text box shows an example of CSV data: '# optional header, ignored by Solar Forecast Arbiter', 'timestamp,value,questionable', '2018-11-22T12:01:48Z,10.23,0', '2018-11-22T12:07:30Z,10.67,0'. There is a 'Choose File' button (currently showing 'No file chosen') and a 'Submit' button.

api.solarforecastarbiter.org

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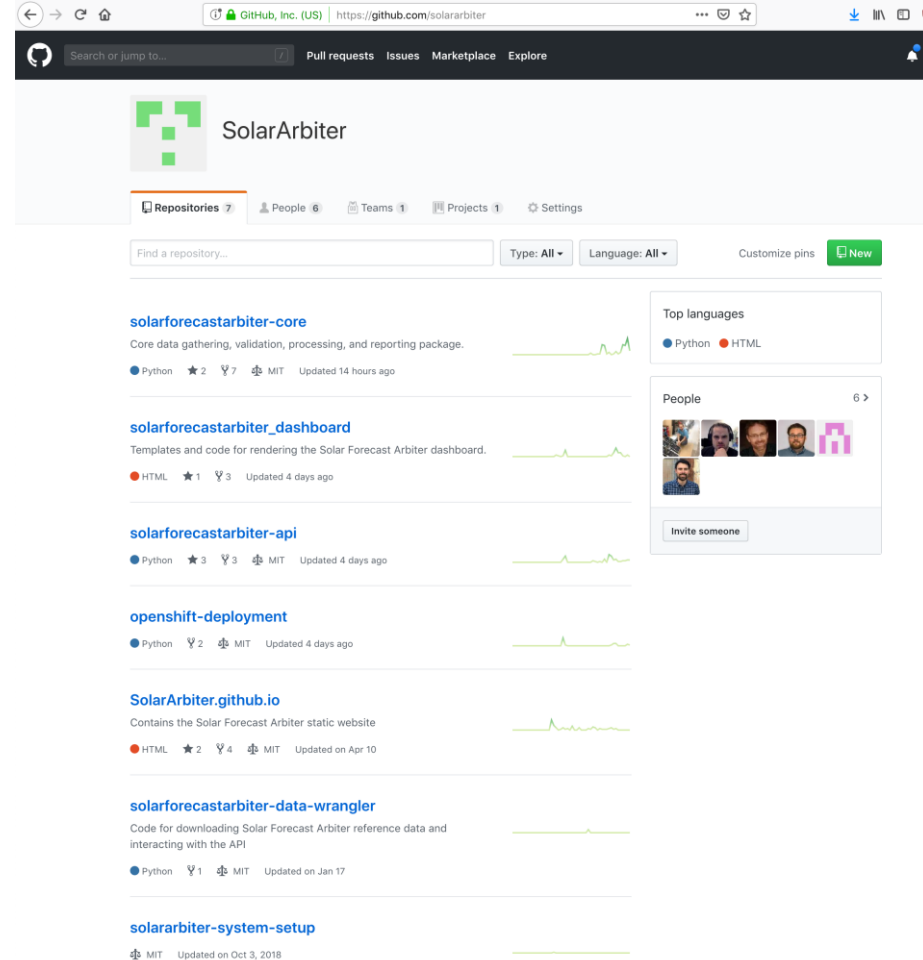


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github.com/SolarArbiter



The screenshot shows the GitHub repository page for SolarArbiter. The page displays a list of repositories with their names, descriptions, languages, stars, forks, license, and last update date. The repositories listed are:

- solarforecasterbiter-core**: Core data gathering, validation, processing, and reporting package. Python, 2 stars, 7 forks, MIT license, updated 14 hours ago.
- solarforecasterbiter_dashboard**: Templates and code for rendering the Solar Forecast Arbiter dashboard. HTML, 1 star, 3 forks, updated 4 days ago.
- solarforecasterbiter-api**: Python, 3 stars, 3 forks, MIT license, updated 4 days ago.
- openshift-deployment**: Python, 2 forks, MIT license, updated 4 days ago.
- SolarArbiter.github.io**: Contains the Solar Forecast Arbiter static website. HTML, 2 stars, 4 forks, MIT license, updated on Apr 10.
- solarforecasterbiter-data-wrangler**: Code for downloading Solar Forecast Arbiter reference data and interacting with the API. Python, 1 fork, MIT license, updated on Jan 17.
- solararbiter-system-setup**: MIT license, updated on Oct 3, 2018.

The page also includes a search bar, navigation links for Pull requests, Issues, Marketplace, and Explore, and a sidebar with top languages (Python, HTML) and a list of contributors.

Solar Forecast Arbiter

- Sign up for stakeholder committee
solarforecastarbiter.org
- Attend workshop on Thursday
1:30 – 3:30 pm
- Give us your feedback!