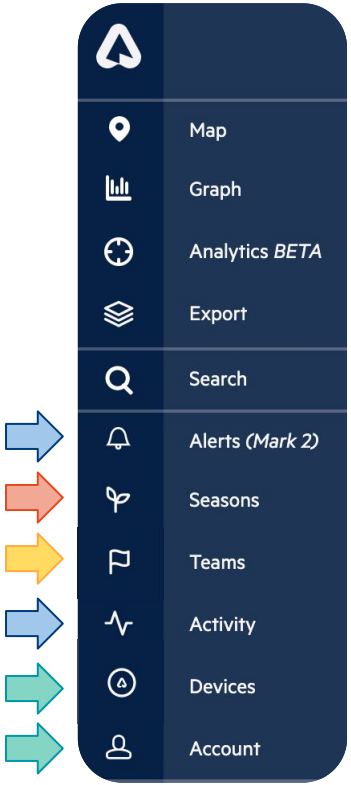
WELCOME TO ARABLE

WEB ONBOARDING GUIDE
FEBRUARY 2021

NAVIGATION: The First 4 Essentials



When devices ship, the **Org Admin** will receive an email with account details, including how to log in from the web, and how to download the mobile app. When you deploy your device and log into the web app (https://app.arable.com), you will land on the **Map** screen. The deployed device will populate the **Map** as "New" and will need a name for the location. If you are invited to the account by an **Org Admin**, you will land on the **Teams** page first. Let's get started with these four key pages:

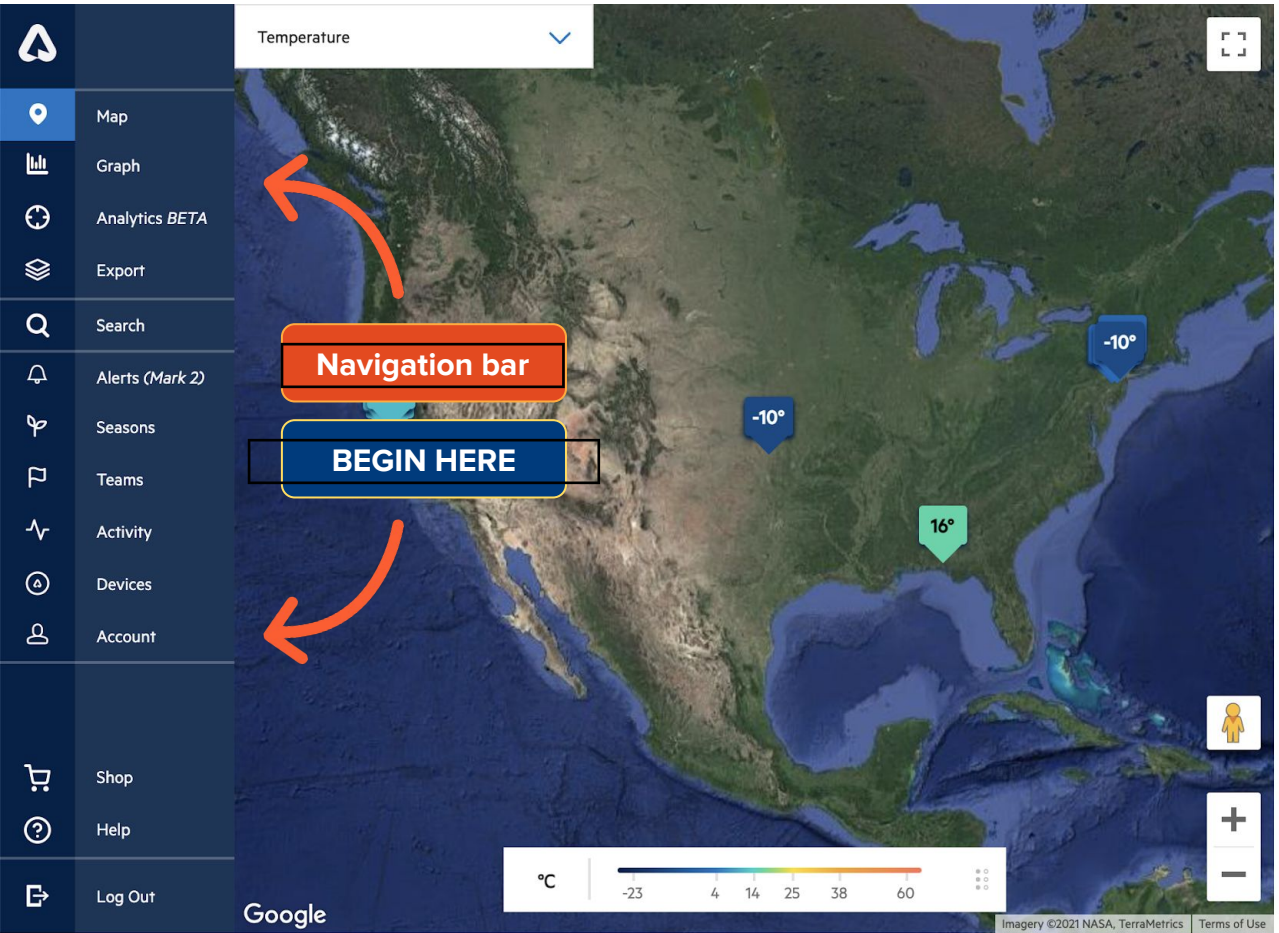
1. Account & Devices

3. Seasons

2. Teams

4. Alerts & Activity

YOU ARE HERE: Arable Overview



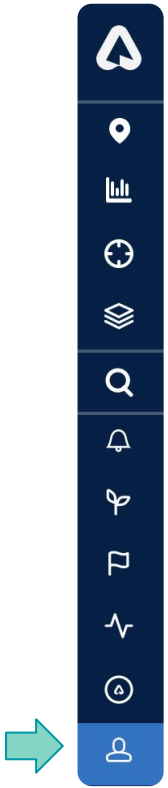
Sort By A to Z

Now | Today's Forecast

Location	Temp	Rain	W/m²	
4 Mac Ranch	16°C	17.2mm	245	13 mins ago
A001320	12°C	0mm	96	4 mins ago
Berg Enclave	-2°C	0mm	104	33 mins ago
Blueberry Corner	12°C	0mm	131	17 mins ago
By the creek	11°C	0mm	84	26 mins ago
Geiger Compound	11°C	0mm	83	30 mins ago
Hardy Homestead	-1°C	0mm	7	13 mins ago
Jans Backyard	12°C	0mm	82	49 mins ago
Lupine Lane	-1°C	0mm	39	46 mins ago
Mount Tamalpais	11°C	0mm		

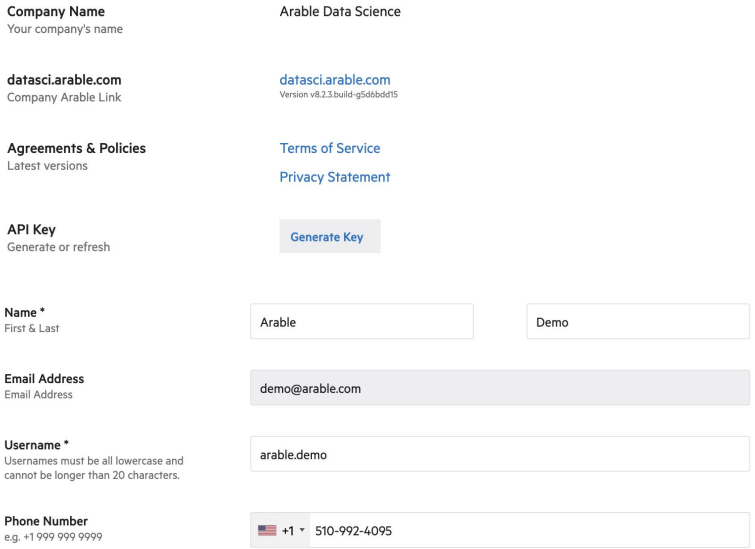
Help

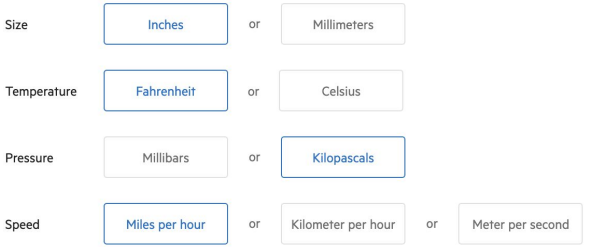
ACCOUNT: Settings & Notifications



First, head over to **Account**. On this page, you should change your password, plus find a copy of the **Terms of Service** (covering Warranty and Replacement) and the **Arable Data Privacy Statement**. You can also generate API Keys and ensure that you have access to the right account.

Here you will also add your mobile phone number to receive SMS- and phone- based alerts (in addition to push notifications), find the **Data Privacy Agreement**, **API Key**, and change **Unit Preferences**.

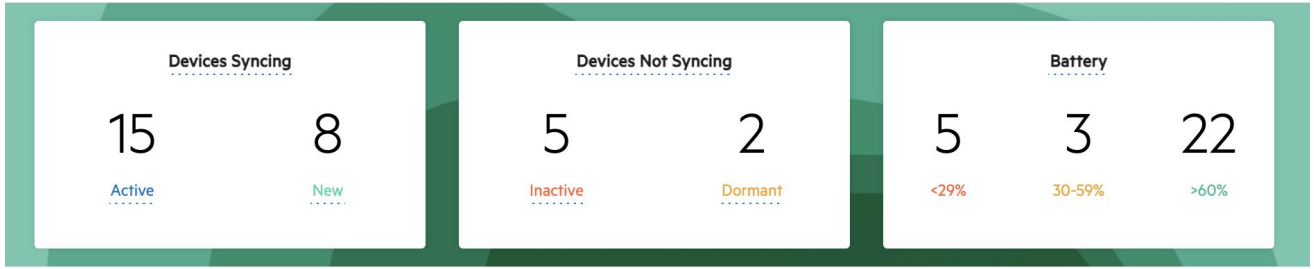




To get started with the API, visit https://developer.arable.com/

DEVICES: SETTINGS

The **Devices** page is meant to help you manage the status of each of your devices and monitor connected sensors.



Devices Syncing: Active
Named devices that are posting measurements to our servers at least once every 8.5 hours.

Devices Syncing: New
Devices from the factory will show up as Untitled upon first deployment. Once given a location name the status is updated to Active.

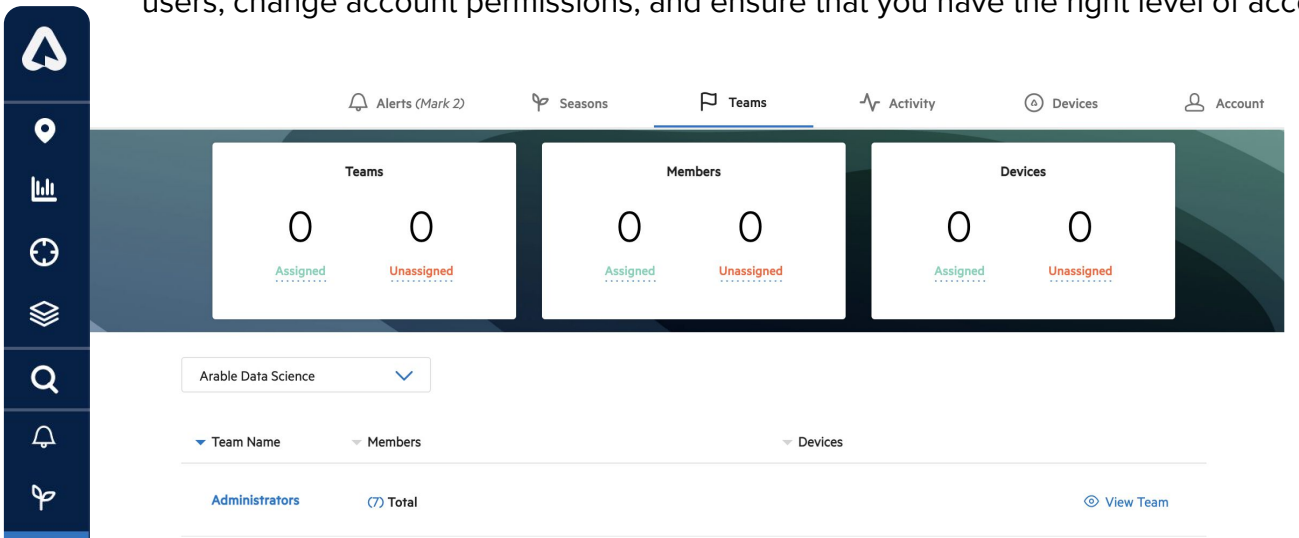
Inactive
Deployed devices experiencing a field problem. Main causes are battery <15% or the device has not posted measurements to our servers for 8.5 hours.

Dormant
Devices that have sent an undeployment message to the Arable system and are no longer collecting data.

Battery
Grouped by low, medium, and high percentage. Under 30% is in danger of losing power, and may need to be plugged into a power source to charge, then moved to a permanent location with more direct sunshine. Medium should be monitored for future dips in charge. High is fine, no action required.

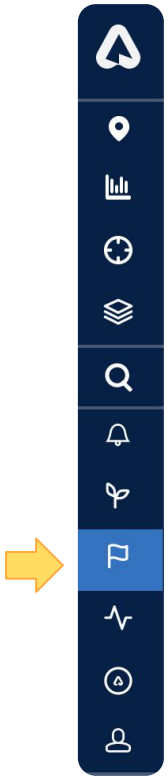
TEAMS: Overview

Next, to get everything set up, navigate to the **Teams** page. This will allow you to set up your team, add additional users, change account permissions, and ensure that you have the right level of access to account information.

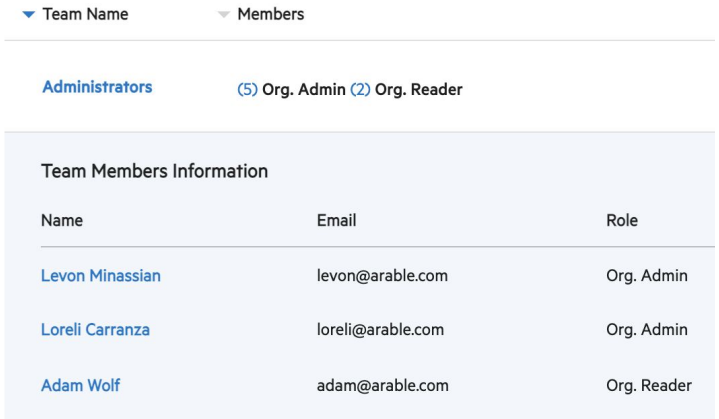


We've designed the Arable platform to be flexible enough to serve users with different needs, from granular operations to large-scale data collection across multiple geographies. On the **Teams** page, the **Org Admin** will be able to see all the **Teams**, **Devices** and **Members** associated with the account. **Teams** tie together users with devices. Within each team, Members will have access to the subset of devices associated with that **Team**. Please check this page and make sure you have access to the right **Teams** and right subset of **Devices/Locations**.

TEAMS: Members & Permissions



Select “View Team” to see any of the **Members** associated with each **Team**. You will be able to see Members, their email address, and their level of access. At Arable, we take data privacy very seriously. To make it easy for you to manage permissions, we have four levels of access: **Org Admin**, **Org Reader**, **Team Admin** and **Team Reader**.



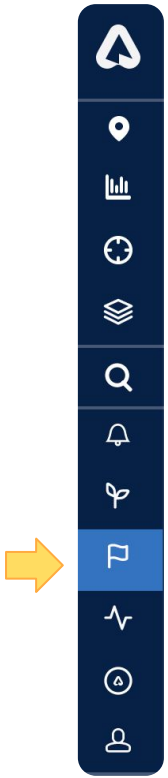
Org Admin will be able to see all the Devices associated with the account, can add **Members** to any **Team** and create new **Teams**.

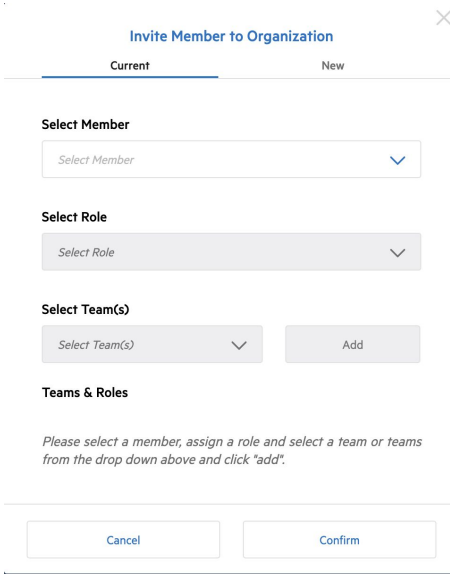
Org Reader can see all the Devices, but cannot move Members, Teams and Devices.

Team Admins can invite New **Members** to their Teams.

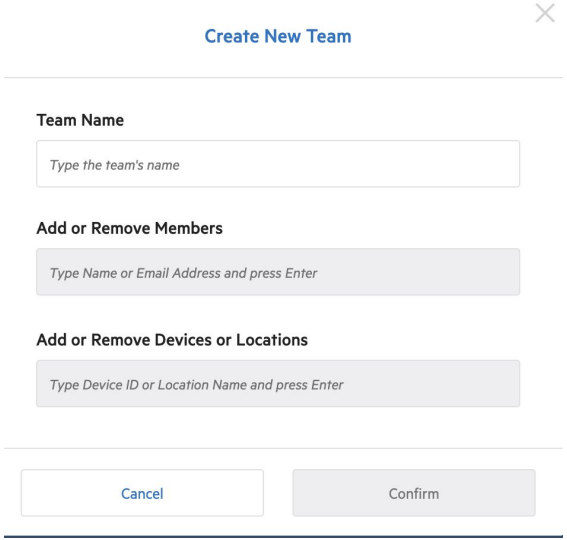
Team Readers can view **Device**, **Team** and **Member** data for only their **Team**, and cannot invite new **Team Members**.

TEAMS: Inviting Members & Creating New Teams



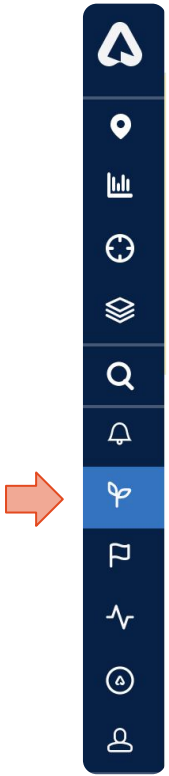


Unlimited users can join the Arable Platform. Click on “Invite Member” to add new **Members** (New) and to move existing **Members** to new **Teams** (Current).



By clicking “Create New Team” you can organize a new set of **Users** and subset of **Devices/Locations**. If you need help adding **Members** or **Teams**, please get in touch with support@arable.com.

SEASONS: Overview



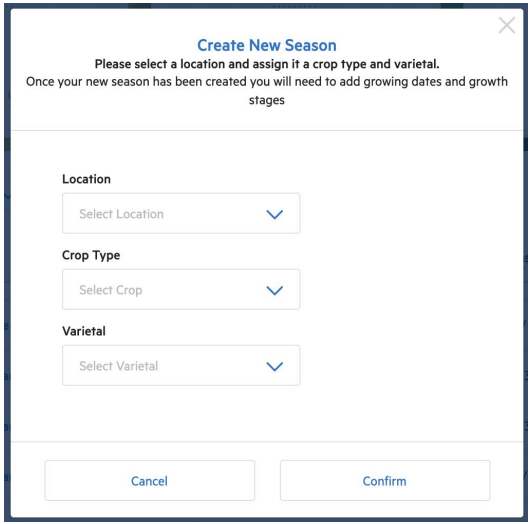
Then, navigate to **Seasons** to add details about the crop at your location. We have variety-specific growth stages that will allow for growth-stage based alerting. It will also enable seasonal archives for year-over-year comparisons.

Even if a device is not deployed at a location at the start of the season, setting up a season retroactively will enable us to backfill with remotely sensed data to provide a better snapshot of the season as a whole.

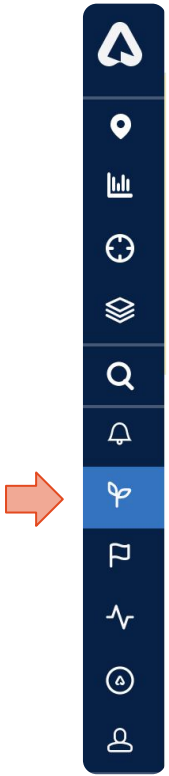
We built Arable to understand interactions between the climate and crop productivity. To maximize the benefits of the system, we encourage users to add in their **Seasons** and track **Growth Stages**.

By inputting seasonal start dates, harvest dates and growth stages, we can combine measurements to allow users to monitor water availability during critical stages, or if different fields are maturing faster.

We have pre-populated the system with a standard list of varietals and growth stages, but can easily add custom varieties, temperature thresholds and growth stages for you if you let us know.

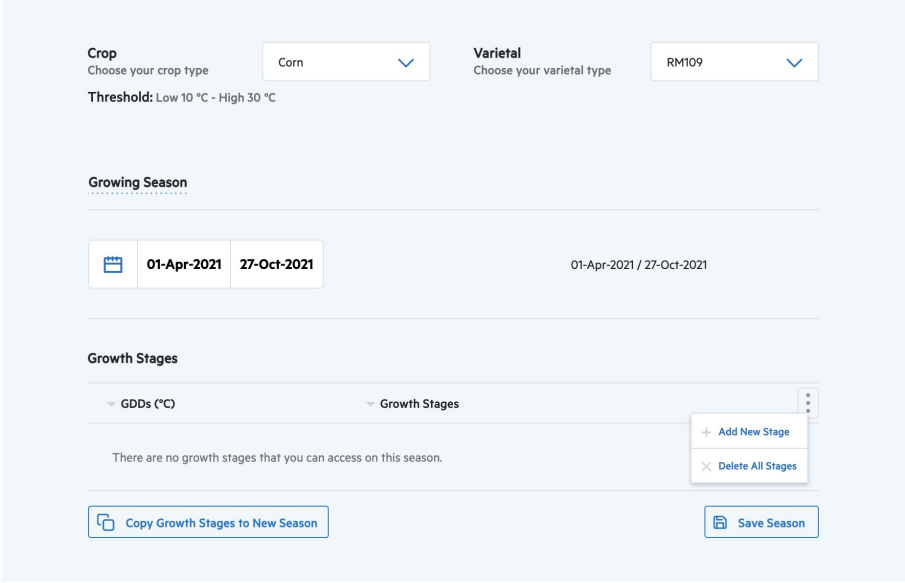


SEASONS: Entering Growth Stages

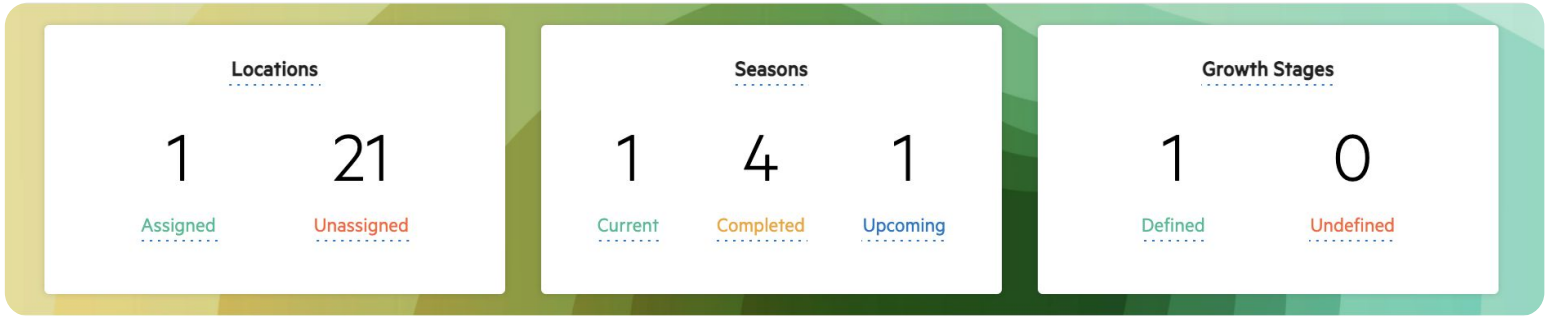


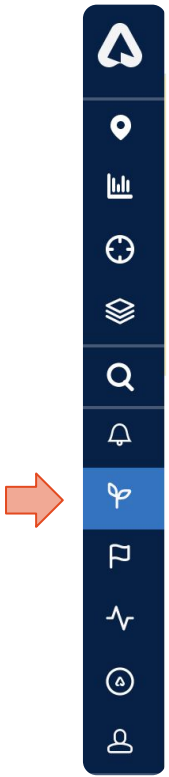
If the standard growth stages for a Varietal does not match your specific needs or experience, you can easily add or remove growth stages yourself.

Once you enter your **Varietal** and **Growth Stages**, it's also easy to apply the same **Growth Stages** to multiple **Devices/Locations**. Make sure the Season start date is correct, even if it is in the past. Note that the absolute value of cumulative growing degree days will vary based on preferred unit (°C or °F).



SEASONS: Understanding the Dashboard





Locations: Assigned
The number of locations assigned to at least one season in the organization.

Locations: Unassigned
The number of locations that are unassigned in the selected organization. *To best archive your historical crop data, this number should be zero.*

Seasons: Current
The number of seasons where today's date is currently within a growing season's start and stop dates.

Seasons: Completed
The number of seasons with stop dates in the past.

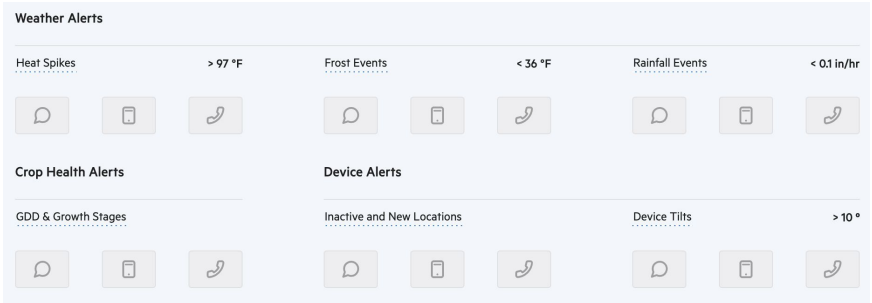
Seasons: Upcoming
The number of seasons with start dates in the future.

Growth Stages: Defined
The number of locations with Seasons (planting and harvest date defined) that have incremental growth stages enabled, and therefore are able to receive Growth Stage based alerts.

Growth Stages: Undefined
Those without defined growth stages.

ALERTS: Overview

Now, select **Alerts**. Since you've already added your phone number, crop and season information, it will be easy to select different thresholds for unique locations to make sure you don't miss an event in your field!



Only **Org Admins** can change/set the Global Alert thresholds. There are options to receive alerts on the following Parameters:

- **Heat Spikes**
- **Frost Events**
- **Precipitation Rate**
- **Growth Stage / GDD** (new growth stage transition)
- **Device Alerts** (Tilt/Inactives)

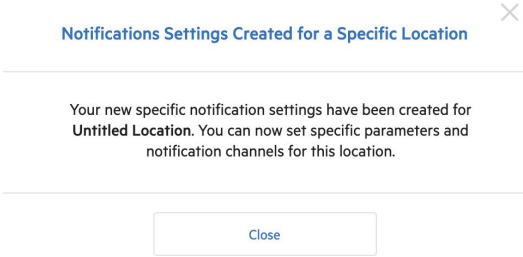
All users can opt in to receive alerts three different ways, and will receive alerts for ALL devices assigned under their permissions:

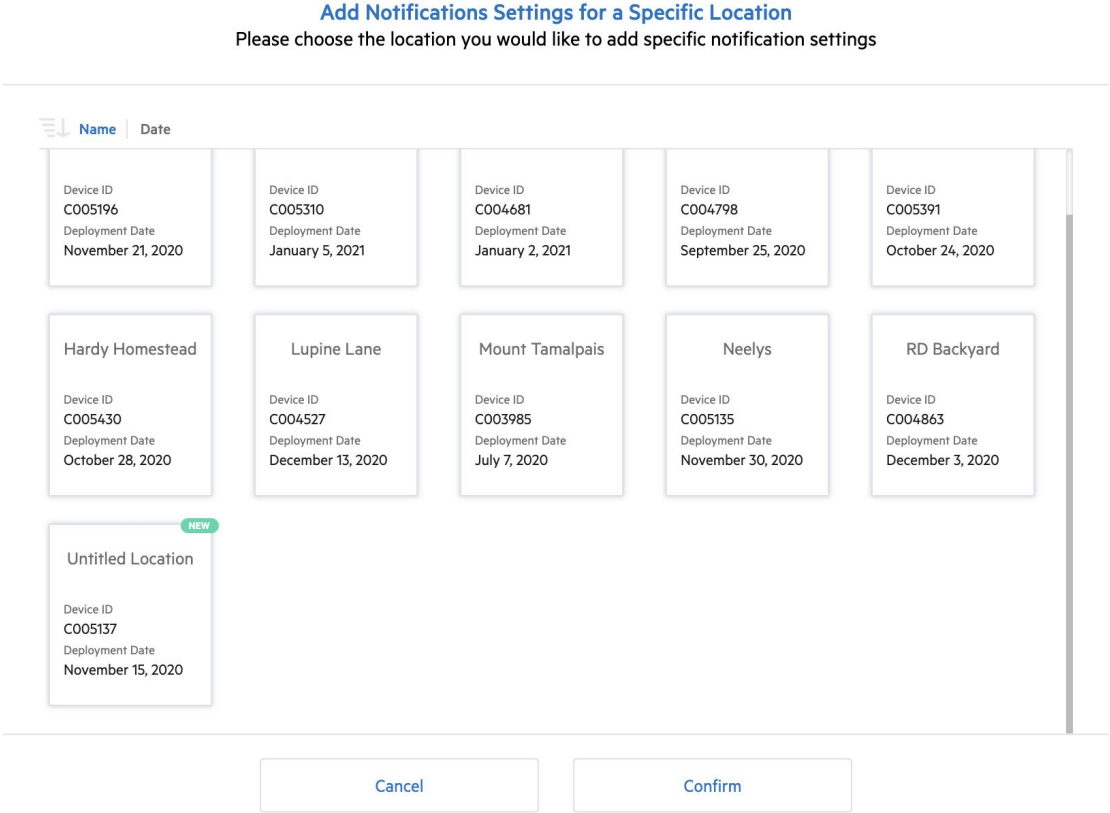
- **SMS-based Text Alerts**, enter phone number on Account page.
- **Phone Calls**, enter phone number on Account page.
- **Push Notifications**, via the mobile app.

ALERTS: Location-Specific (1 of 2)

The Alerts system defaults to **Global Alerts**, setting the same thresholds across Devices/Locations.

By clicking “Add Alerts for Specific Location,” Org Admins will be able to set own thresholds for specific Devices/Locations. Similarly, any user can customize the method for receiving alerts with the same mechanism.



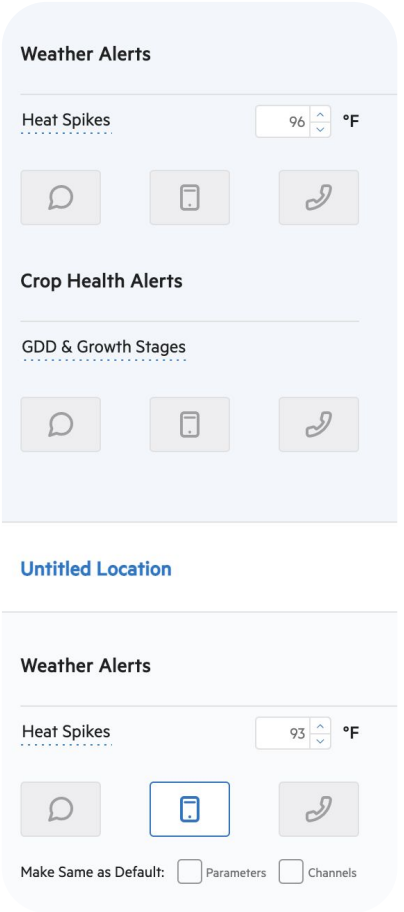


ALERTS: Location-Specific (2 of 2)

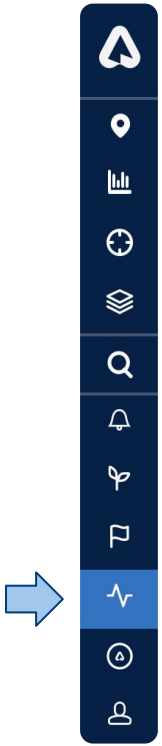
For each location, the alert settings will mirror the Global Settings as the default setting. Once a specific Location is selected, it will appear below the Global Settings (as shown for Weather Alerts on the right). Initially, both the Parameters and Channels boxes will be checked, indicating that that Location will mirror the Global Settings by default.

To set Location-Specific Alerts, uncheck the Parameters and Channels boxes. This will allow the user to change the thresholds and select different methods for receiving the alerts.

By rechecking the Parameters and Channels boxes, the user overrides the local settings and reverts to the default Global Settings.



ACTIVITY: Overview



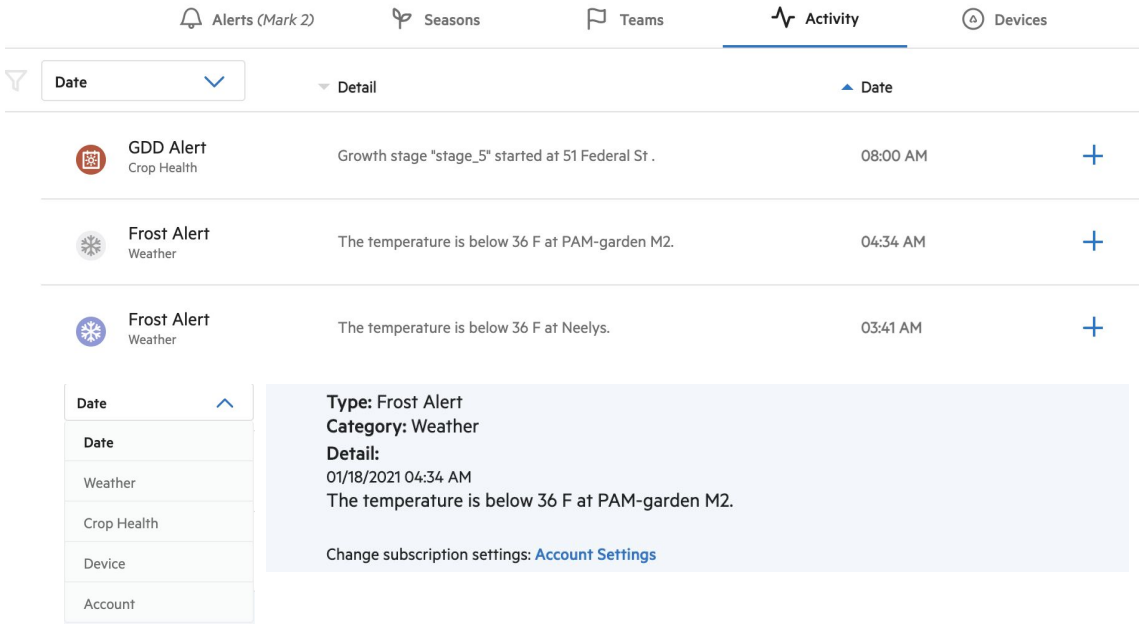
The **Activity** page is an easy way to check on current and historical alerts across Locations/Devices in your Org. Alerts on device location (movement > 200 meters), crop health and growth stage, weather threshold alerts and device and account activity will be logged here.

Alerts can be sorted by type:

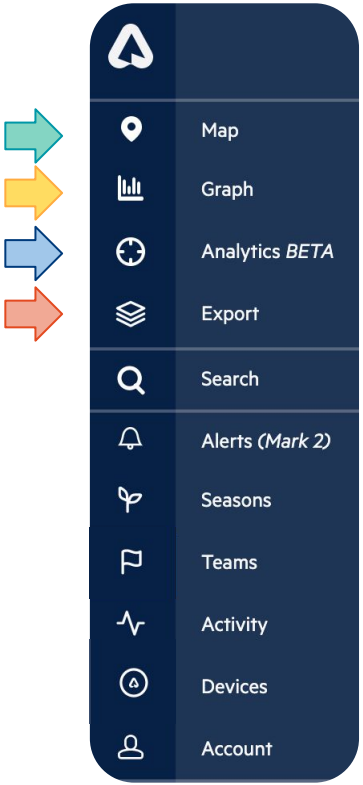
- **Date** (chronological)
- **Weather**
- **Crop Health**
- **Device**
- **Account**

To get additional detail on each alert, click the + sign next to it.

Here, there will be a quick link to change Alert settings. Already read alerts will change to gray.



EXPLORE THE WEB APP: Getting the Most Out of Arable



Once you have the basics set up, you can begin to explore more functionality in the app.

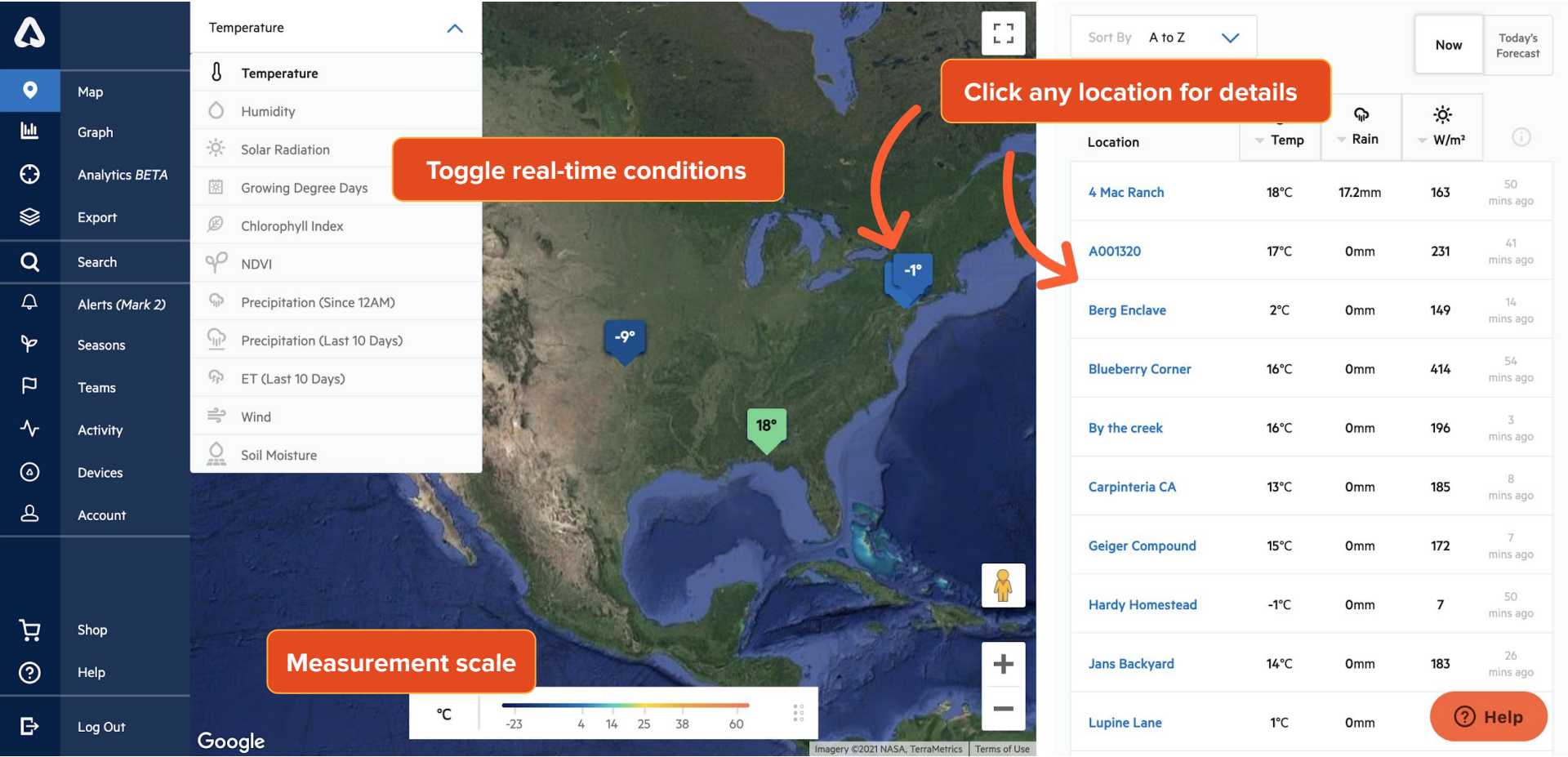
5. Map & Details

7. Export

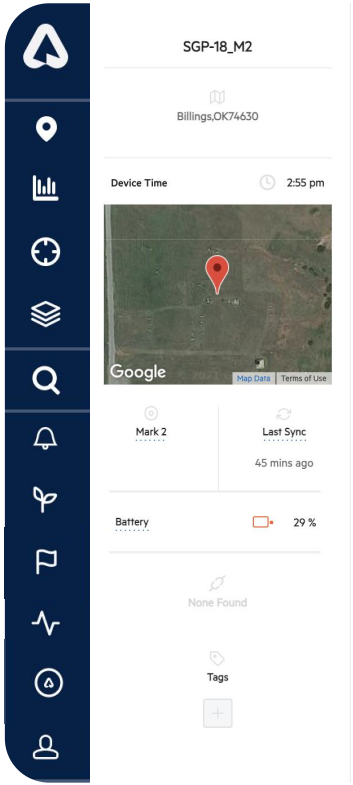
6. Graph & Rank

8. Analytics

MAP: Overview



LOCATION DETAILS: Overview



On the Map, click a location's name from the list on the right to be taken to that location's complete details page. A **Location** is a named Mark device; if you need to name your new device, this is where you do it.

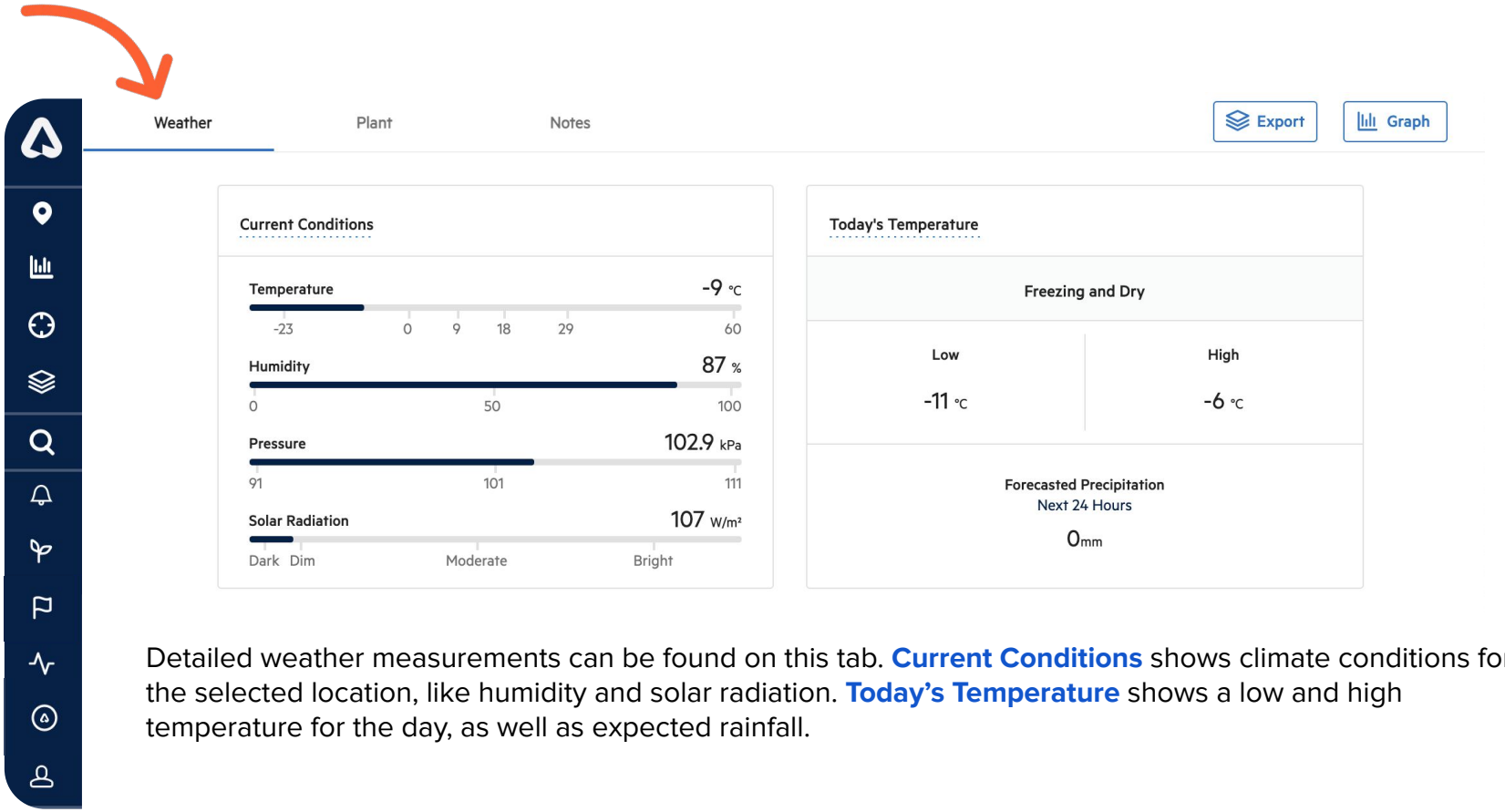
All of the device's information can be found on the right side of this page, including the location name, device ID, GPS location, battery percentage, time of last sync, and any connected external sensors such as soil probes or anemometers.

Here you can add tags (e.g., alfalfa, strawberries, greenhouse) to the location; these tags can searched and referenced via the Search page.

Top right are quick links to the **Export** and **Graph** pages.

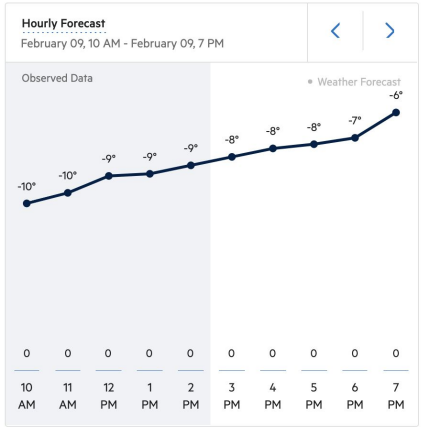
In the following slides we'll explore the **Weather** & **Plant** tabs. Click on any of the words underlined in blue (e.g., Current Conditions) to see detailed descriptions of the measurements and other helpful information.

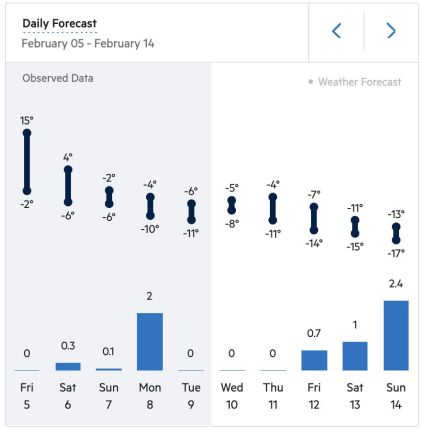
LOCATION DETAILS: Weather Tab (1 of 2)

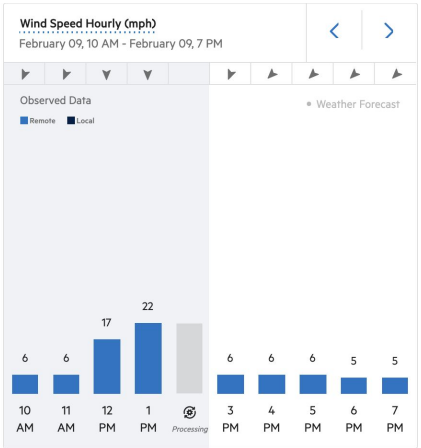


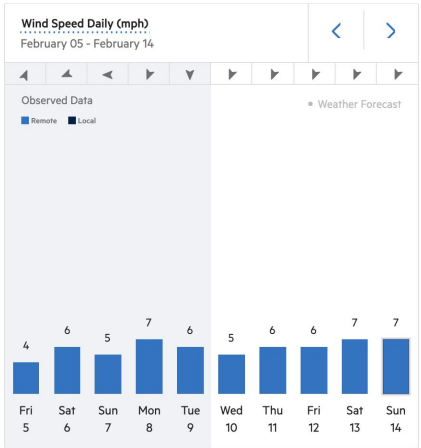
Detailed weather measurements can be found on this tab. **Current Conditions** shows climate conditions for the selected location, like humidity and solar radiation. **Today's Temperature** shows a low and high temperature for the day, as well as expected rainfall.

LOCATION DETAILS: Weather Tab (2 of 2)







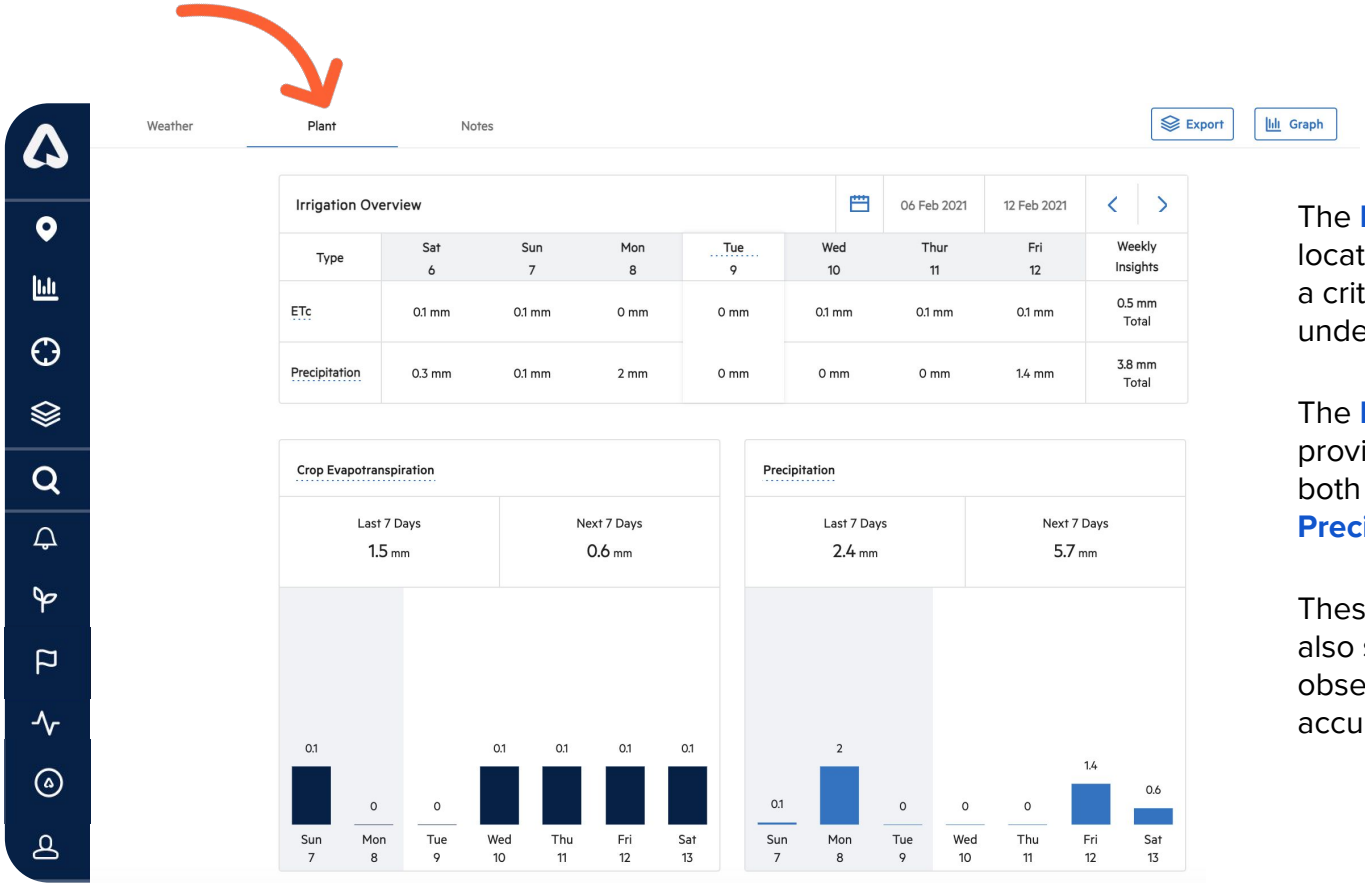


The graphs at the bottom show **Hourly & Daily Rainfall** and **Hourly & Daily Wind Speed**. Without an attached anemometer, we will show remotely sensed wind.

Both observed (grayed, to the left) and forecasted (white, to the right) data are shown for the day selected. You can scroll to the left or right to see past and forecasted values. For hourly, we show 48 hours' observed data and 48 hours' forecast. For daily, we show 14 days' observed and 10 days' forecast data.

Use the blue < > arrows at the top of each graph to change the time/date.

LOCATION DETAILS: Plant Tab (1 of 2)

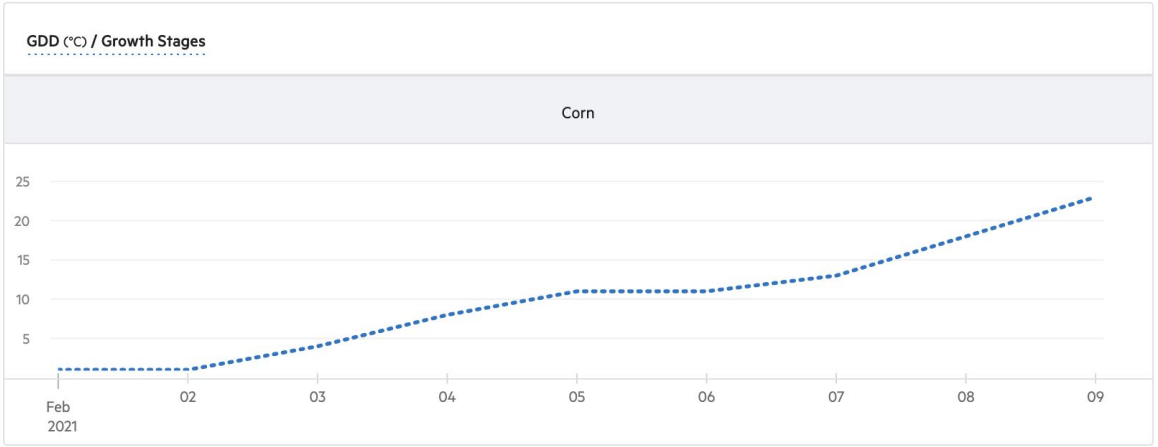


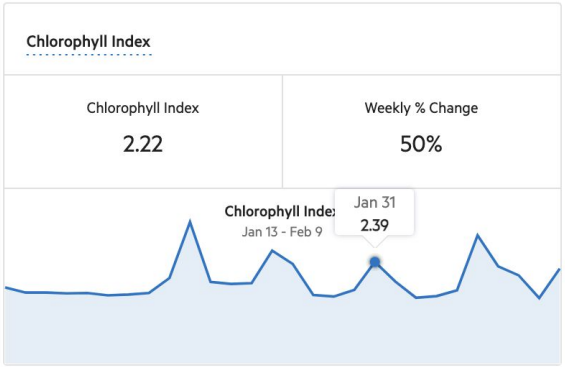
The **Plant** tab shows a location's plant measurements, a critical component to understanding crop outcomes.

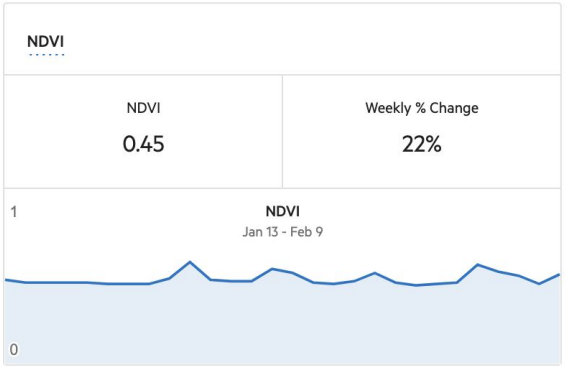
The **Irrigation Overview** provides a daily summary of both **Evapotranspiration** and **Precipitation**.

These two measurements are also shown below, with observed and forecasted accumulations.

LOCATION DETAILS: Plant Tab (2 of 2)







If a season has been defined for the location (set on the Seasons page), **Cumulative Growing Degree Days** and **Crop Growth Stages** will be displayed on this page.

Chlorophyll Index and **NDVI** are also shown on this page in absolute value and weekly percent change.

Hover your cursor over the graph to see daily values.

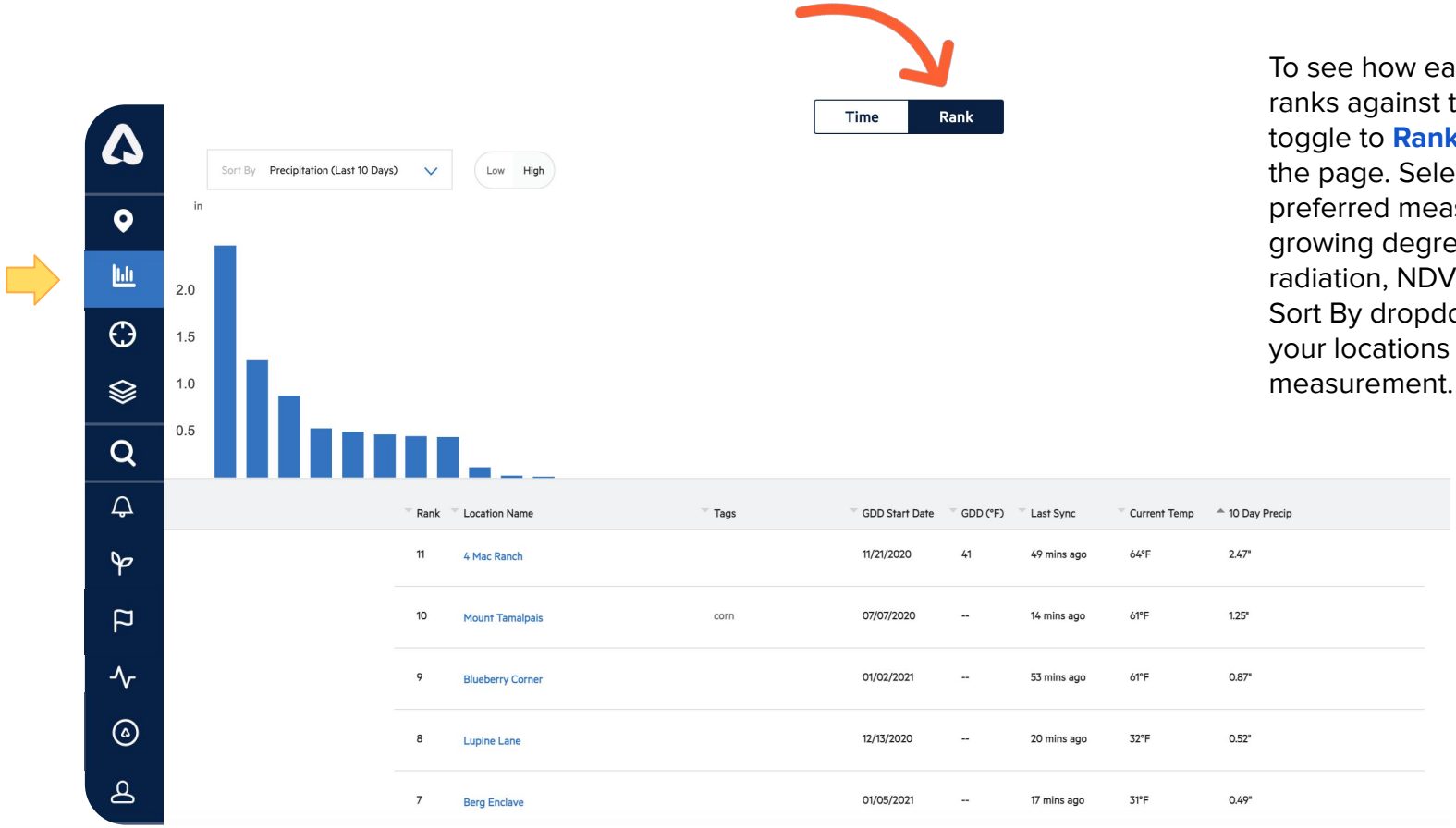
GRAPH: Overview

Select **Graph** from the left-hand menu to visit this page. Here you can combine weather and plant data at one or several locations, all in one view.

In the **Time** view, pick your location(s), measurement(s), and date range (e.g., last 30 days) before clicking Graph to view your data.

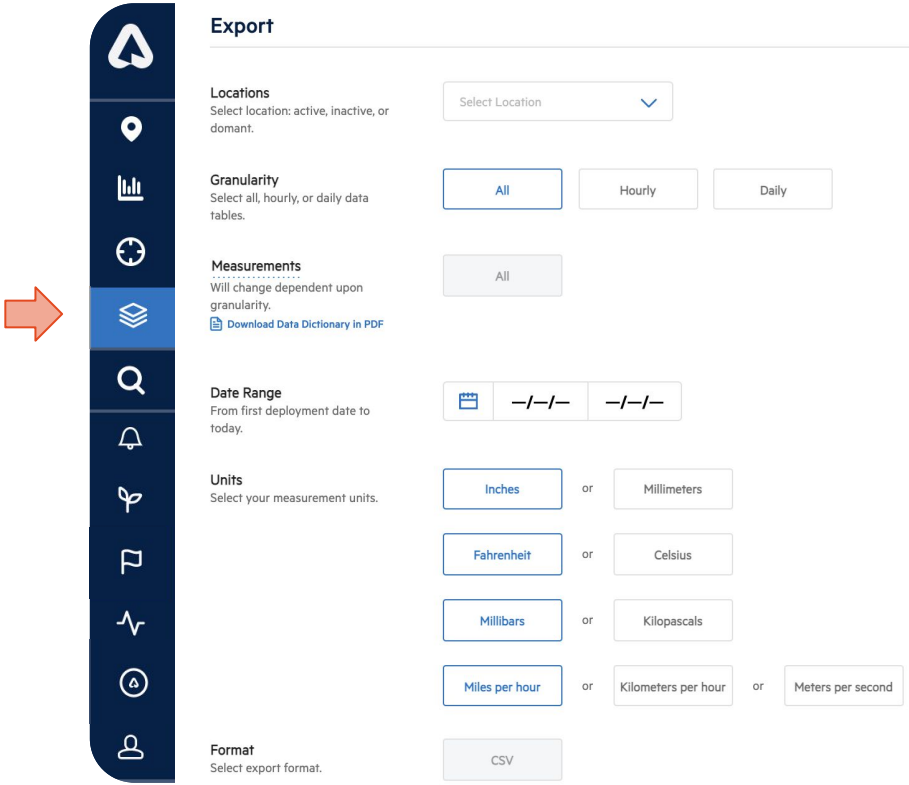
Most measurements have an Hourly option and allow the use of a slider at the bottom to focus in on specific time events.

RANK: Overview



To see how each location ranks against the others, toggle to **Rank** at the top of the page. Select your preferred measurement (e.g., growing degree days, solar radiation, NDVI, etc.) from the Sort By dropdown to rank your locations by that measurement.

EXPORT: Overview



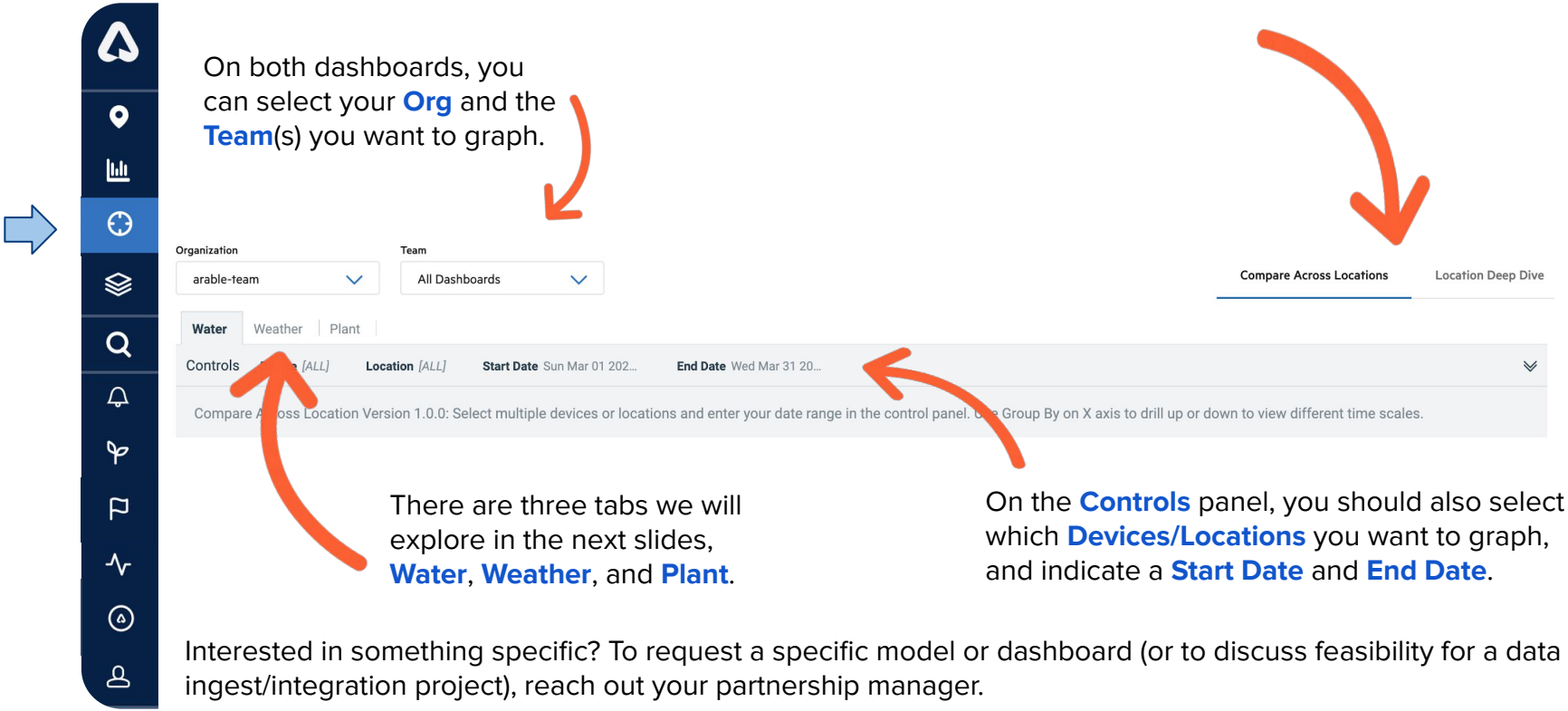
To export raw data, visit the **Export** page and select the location, granularity, date range, and preferred units, then click Export to download data as a CSV. The file can be opened with all CSV-compatible platforms, e.g., Excel or Google Sheets.

The export contains summary information at the top (e.g., Date Range and Number of Records) and detailed time-series data below.

Select multiple locations in the Locations drop-down in order to export data for more than one location at the same time.

ANALYTICS *BETA*: Overview

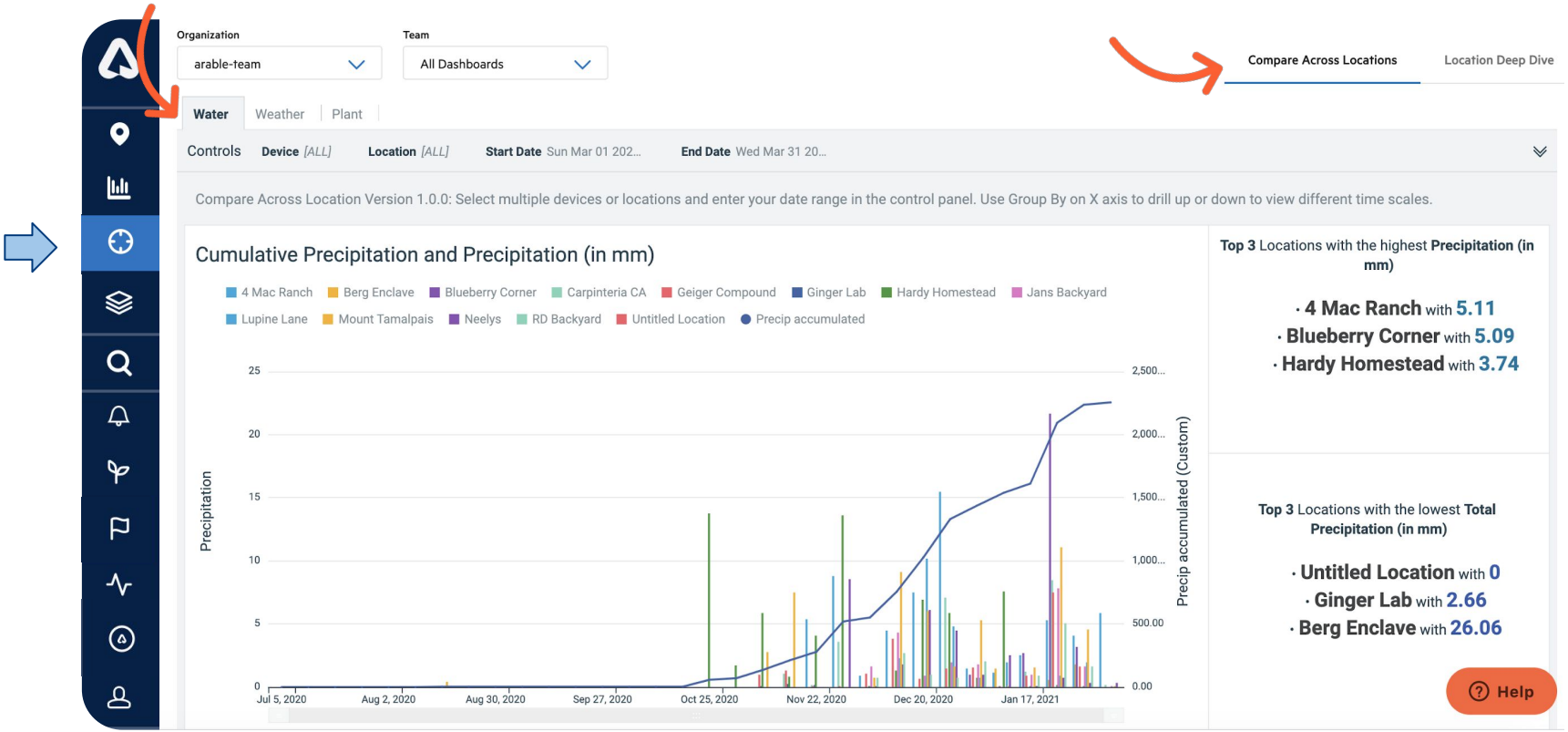
Select **Analytics *BETA*** from the left-hand menu to access the two dashboards we have recently written about, **Location Deep Dive** (single location) and **Compare Across Locations** (multi-location). Toggle between them here.



Interested in something specific? To request a specific model or dashboard (or to discuss feasibility for a data ingest/integration project), reach out your partnership manager.

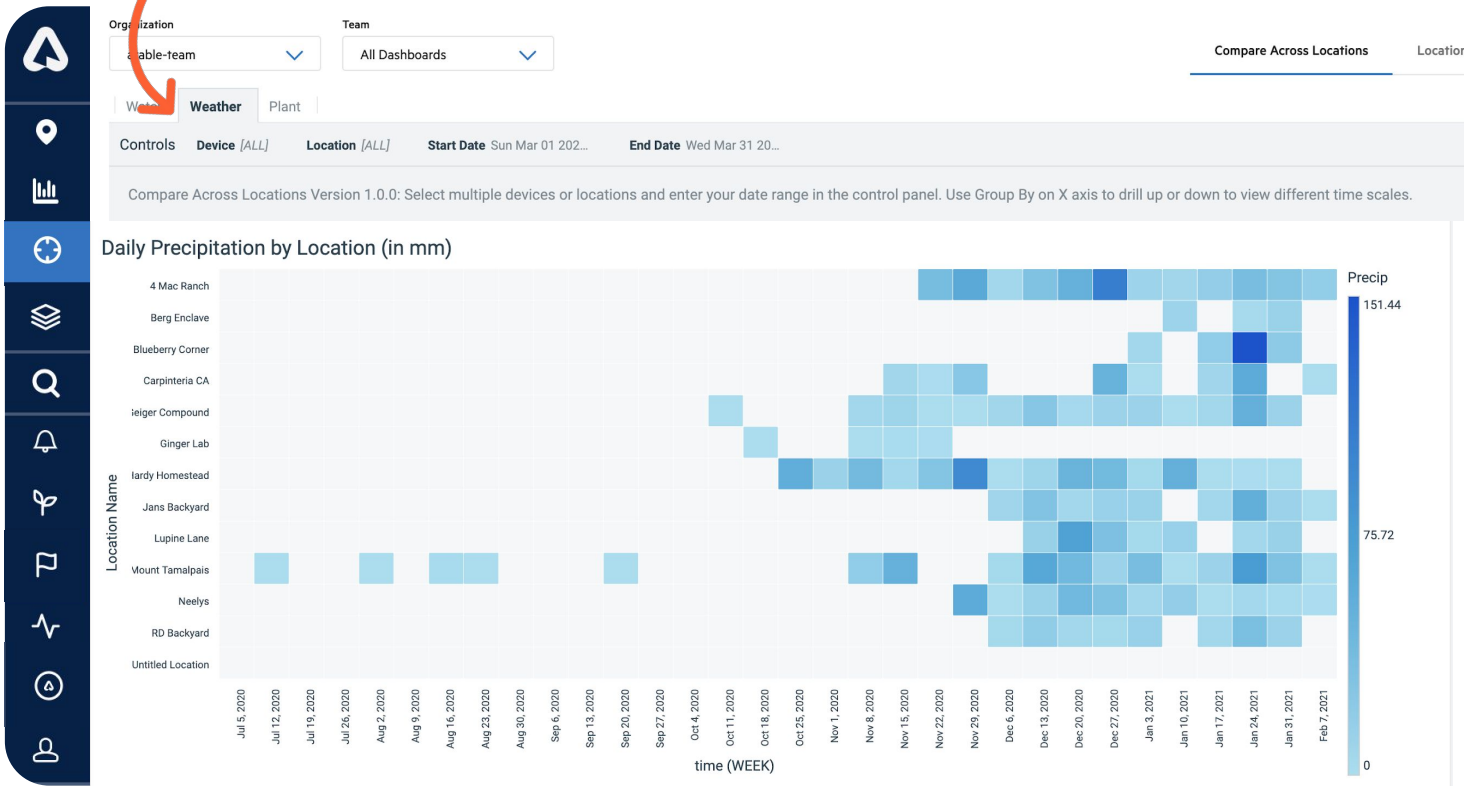
ANALYTICS *BETA*: Compare Across Locations, Water Tab

Compare Across Locations, Water displays Precipitation, ETc Accumulation by Location, Crop Water Balance by Location, and Average Soil Moisture at Top Depth by Location. Top 3 locations for each measurement are in the right-hand column.



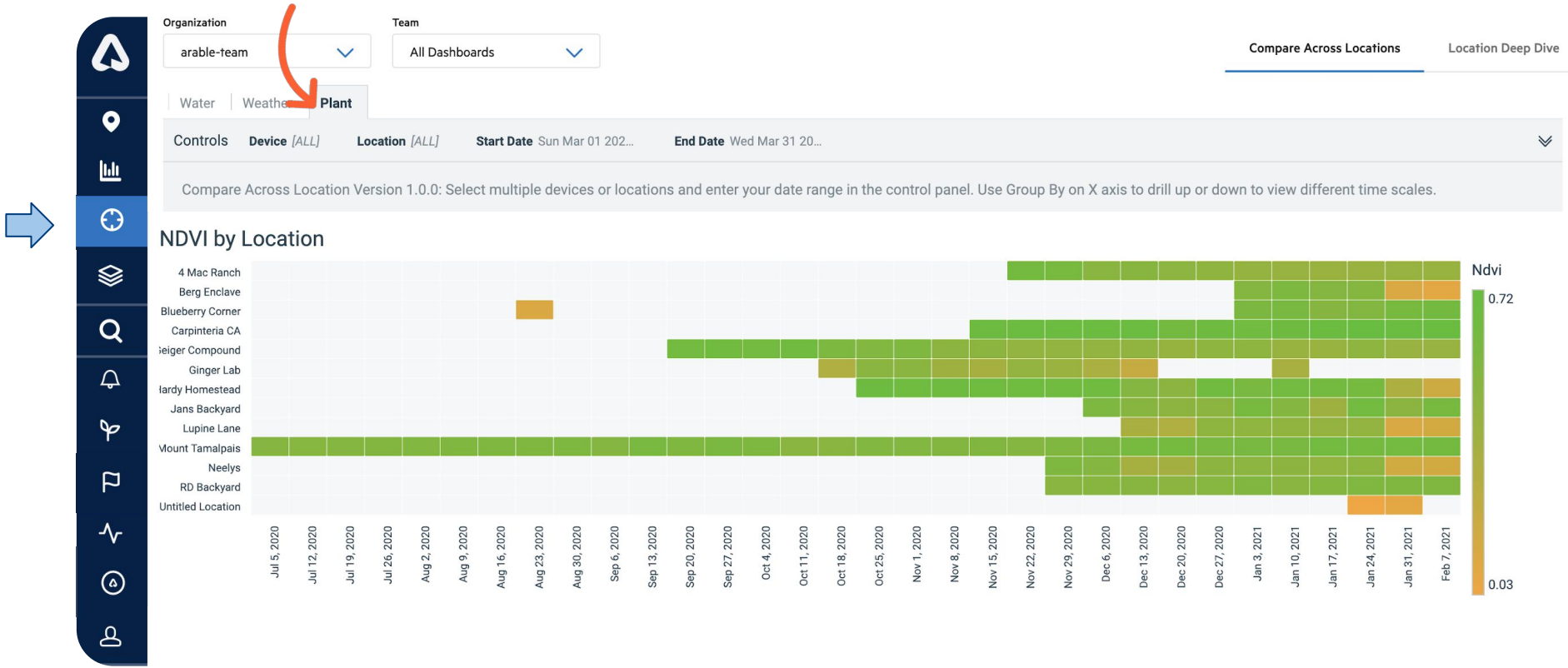
ANALYTICS *BETA*: Compare Across Locations, Weather Tab

Compare Across Locations, Weather displays Precipitation by Location, Heat Stress Days, VPD, and Temperature Extremes. Top locations for each measurement are in the right-hand column.



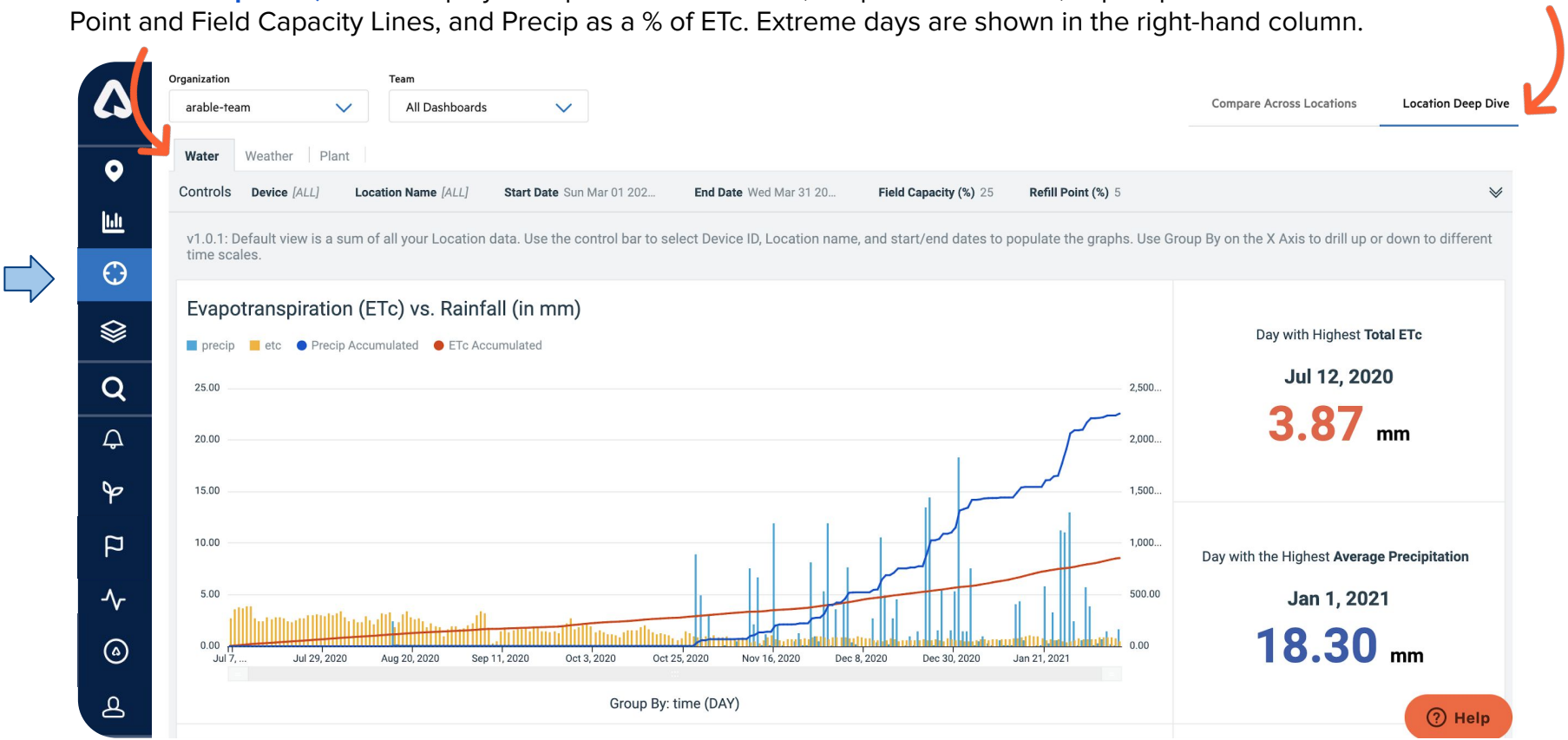
ANALYTICS *BETA*: Compare Across Locations, Plant Tab

Compare Across Locations, Plant displays NDVI by location, Peak NDVI, Cumulative GDD, CHlorophyll Index, Sunshine Duration, Sunshine Hours, & Growing Season Summary. Top locations for each measurement are in the right-hand column.



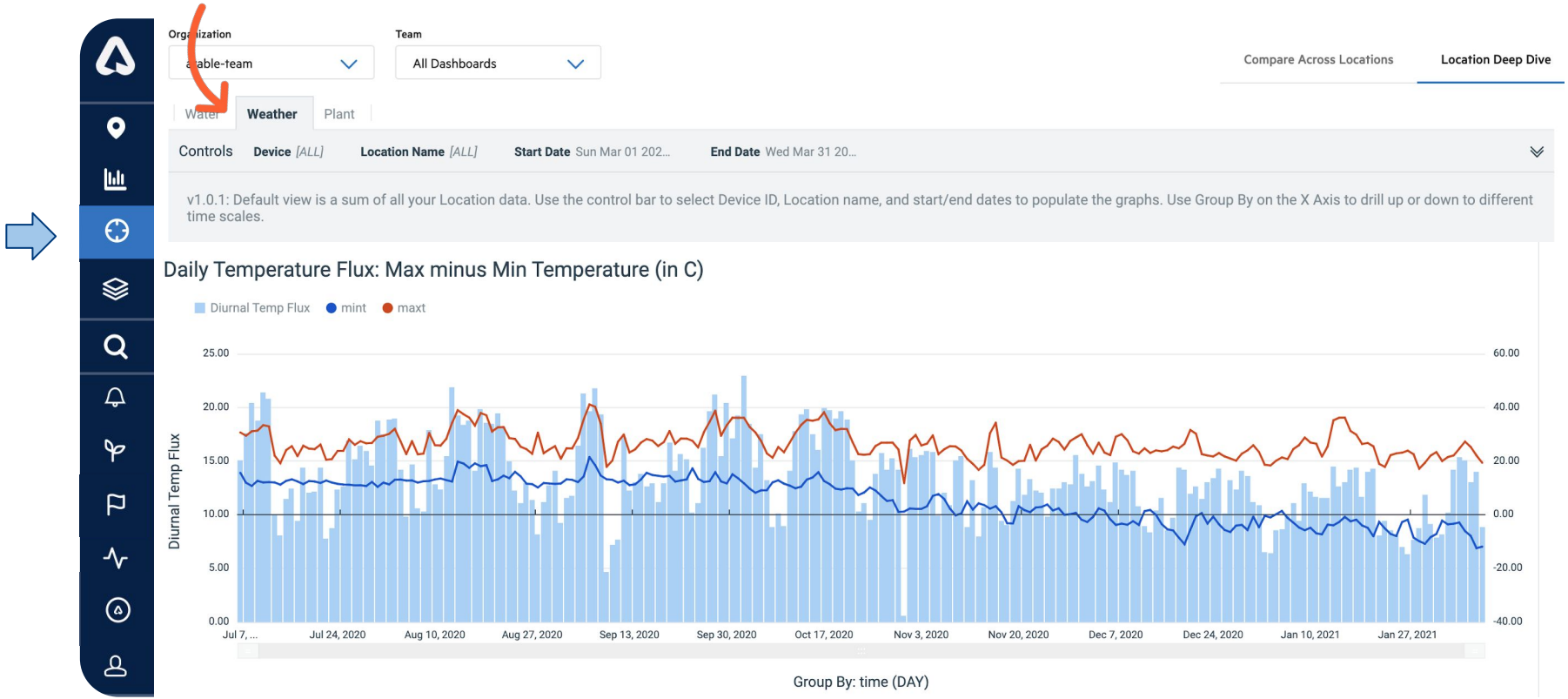
ANALYTICS *BETA*: Location Deep Dive, Water Tab

Location Deep Dive, Water displays ETc plotted with Rainfall, Crop Water Balance, Top Depth of Soil Moisture with Refill Point and Field Capacity Lines, and Precip as a % of ETc. Extreme days are shown in the right-hand column.



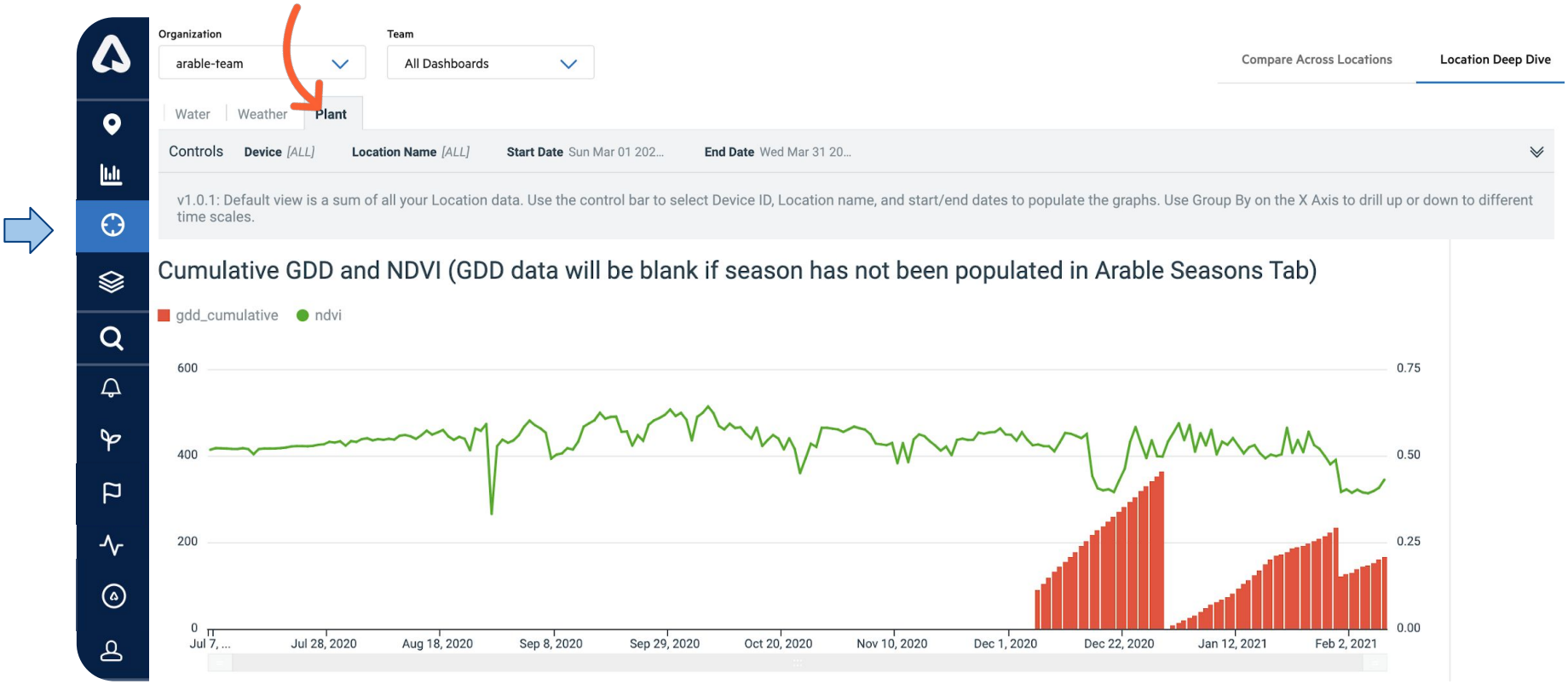
ANALYTICS *BETA*: Location Deep Dive, Weather Tab

Location Deep Dive, Weather displays Cumulative & Daily Rainfall, Daily Temperature Flux, VPD, Heat Stress Days Freeze Days, Sunshine Duration, and Warm Nights/Cool Days. Extreme days are shown in the right-hand column.



ANALYTICS *BETA*: Location Deep Dive, Plant Tab

Location Deep Dive, Plant displays NDVI, Cumulative GDD & NDVI (if seasons are set up), Sunlight Duration & Quality, and a Seasonal Growth Overview. Extreme days are shown in the right-hand column.

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