

# GeoBallistics

User Manual v6



***GEOBALLISTICS***



# Table of Contents

Table of Contents	2
Why GeoBallistics	3
<i>The GeoBallistics Approach</i>	3
Quick Start Guide	4
<i>HUD Mode</i>	4
<i>Chart Mode</i>	5
<i>Map Mode</i>	6
<i>Comp Mode</i>	7
Ballistics	8
<i>Bullet Selection</i>	8
<i>Rifle Setup</i>	9
<i>Muzzle Velocity and Temperature</i>	10
<i>Scope and Units Selection</i>	10
<i>GeoBallistics Overlays</i>	11
<i>Truing Muzzle Velocity</i>	12
Atmospherics	13
<i>Active Profile</i>	13
<i>Wind</i>	13
<i>Weather</i>	14
<i>Bluetooth Weather</i>	15
<i>Online Weather</i>	16
Range Cards	17
<i>Range Card Functionality</i>	17
Wireless Devices	18
<i>Manage Devices</i>	18
<i>WeatherFlow</i>	19
<i>Kestrel</i>	20
<i>DRS E-Dope™</i>	21
App Settings	22
User Account	23

# Why GeoBallistics

## The GeoBallistics Approach

Since 2014, user experience has been our number one goal. Anytime user experience fails to meet the expectations of our customers, customer success becomes our sole focus.

GeoBallistics strives to create ballistic solutions from the standpoint of producing the highest quality solution in the most intuitive ways possible. Our basic approach breaks the process of building a solution into 3 parts; ballistics, atmospheric, and range cards. This premise is reflected in the GeoBallistics solver's name, **BallisticsARC**. Each of these 3 components can be independently adjusted within the GeoBallistics mobile app to build solutions for quick and responsive calculations.

**Ballistics** encompasses the bullet profile, rifle profile, and settings related directly to the bullet and rifle setup.

**Atmospherics** applies the *Active Atmospheric Profile (the set of parameters that will be used to build the solution)* of wind and weather. Wind is the velocity and the compass direction from which the wind is blowing, and weather is reported as a temperature / pressure / relative humidity format OR as density altitude.

**Range Cards** use *Target Info (angle, direction, and range)* to build a solution around a selected rifle and atmospheric profile. Target info can be saved in a file/folder format for later recall. This workflow can be applied to hunting (folder = hunting area, file = specific glassing points), tactical operations (folder = mission, file = shooter positions), and competitive events (folder = match, files = stages). Only the *Target Info* and target name are saved, thus allowing updated atmospheric or rifle profile changes to be applied as needed.

# Quick Start Guide

## HUD Mode

HUD is a single target mode built for efficiency and flexibility. Target info (angle, direction, and range) and wind (velocity and direction) can be adjusted from a single screen, and ballistic data is printed in the footer for quick reference of critical metrics. This is also the only mode that supports moving targets.



*\*Double tapping the Angle or Compass buttons will reset the corresponding field to 0.*

[Table of Contents](#)

## Chart Mode

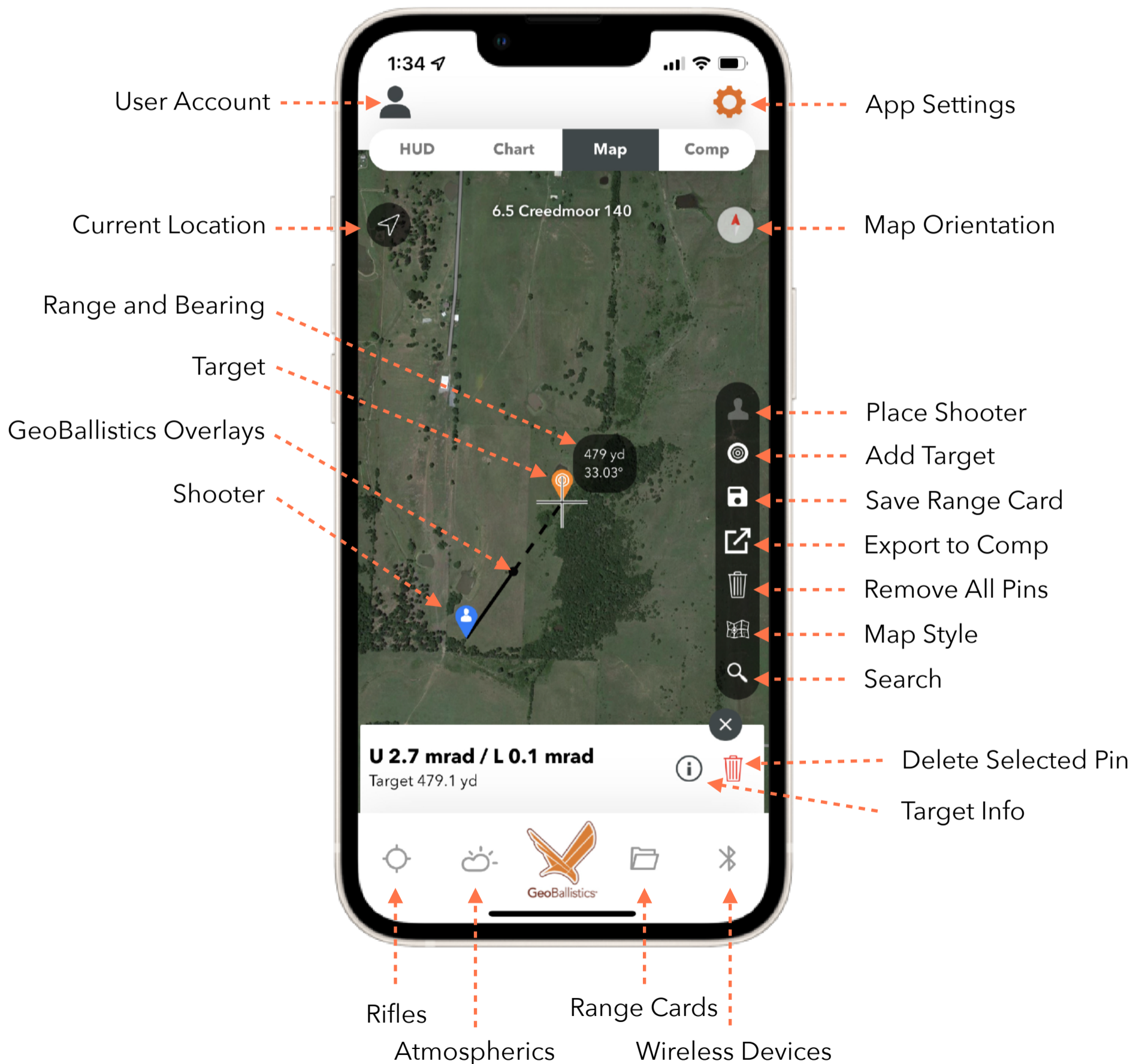
Chart Mode is legacy approach to displaying solutions from point A to point B for a single direction of fire. Chart increments defined in the app settings are selected to show solutions along the bullet's path.



*\*Double tapping the Angle or Compass buttons will reset the corresponding field to 0.*

## Map Mode

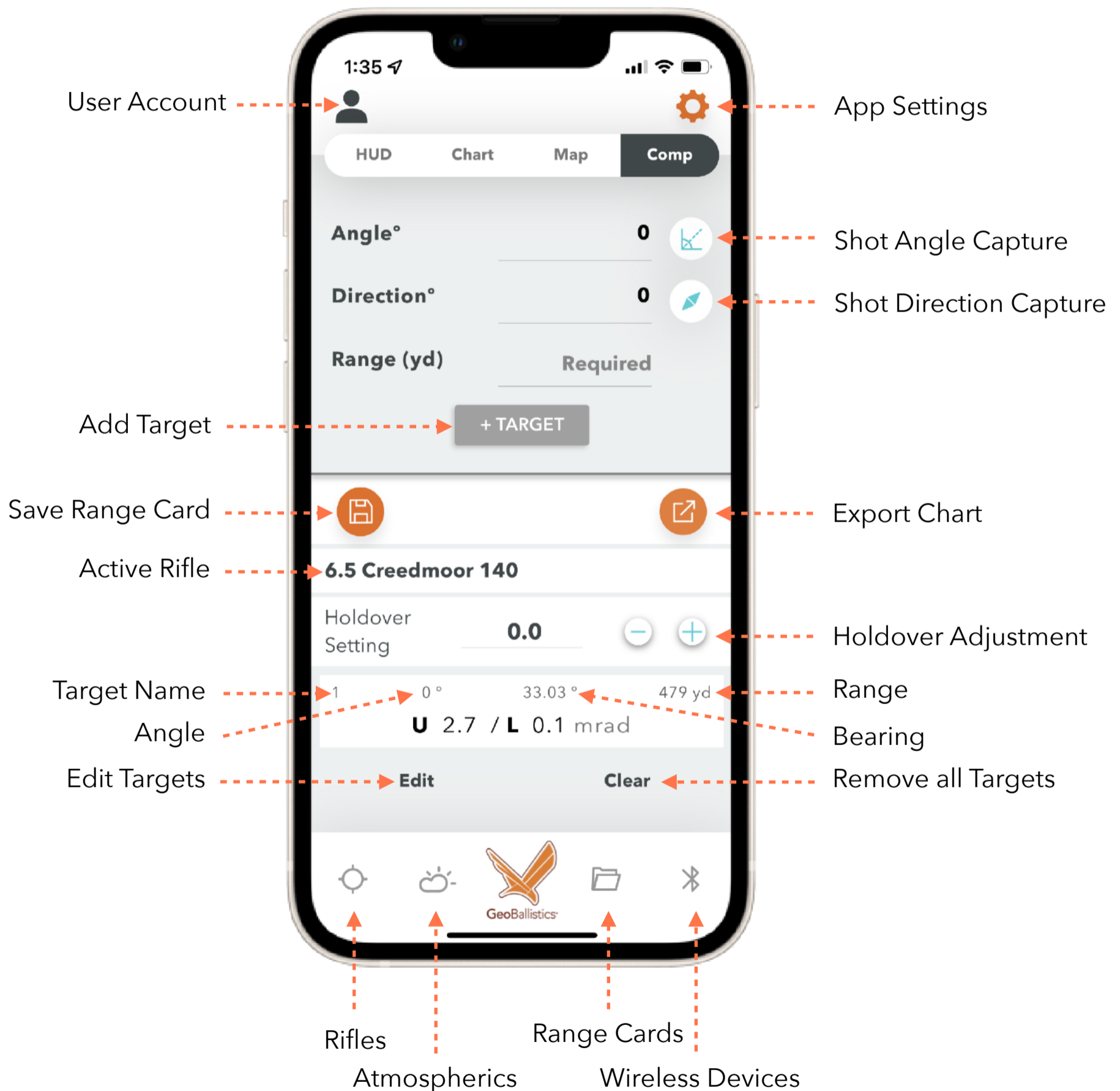
Map Mode is a range card tool with a GPS range finding feature that allows users to place targets in a 360 degree bird's eye view format by using satellite (or topographic) features. Once a shooter pin (blue) is placed, target pins (orange) can be set to reveal ballistic solutions when pressed.



*\*Maps can be cached by zooming in and allowing the map tiles to render at the same resolution desired offline. Cached maps will be available for approximately 30 days.*

## Comp Mode

Comp Mode is the most versatile and robust offering for building range cards in the ballistics space. Target lists can be imported or built locally. Targets can be individually edited, and target lists can be exported (photos, E-Dope™, .csv), shared (URL, text, email) or saved for future use.



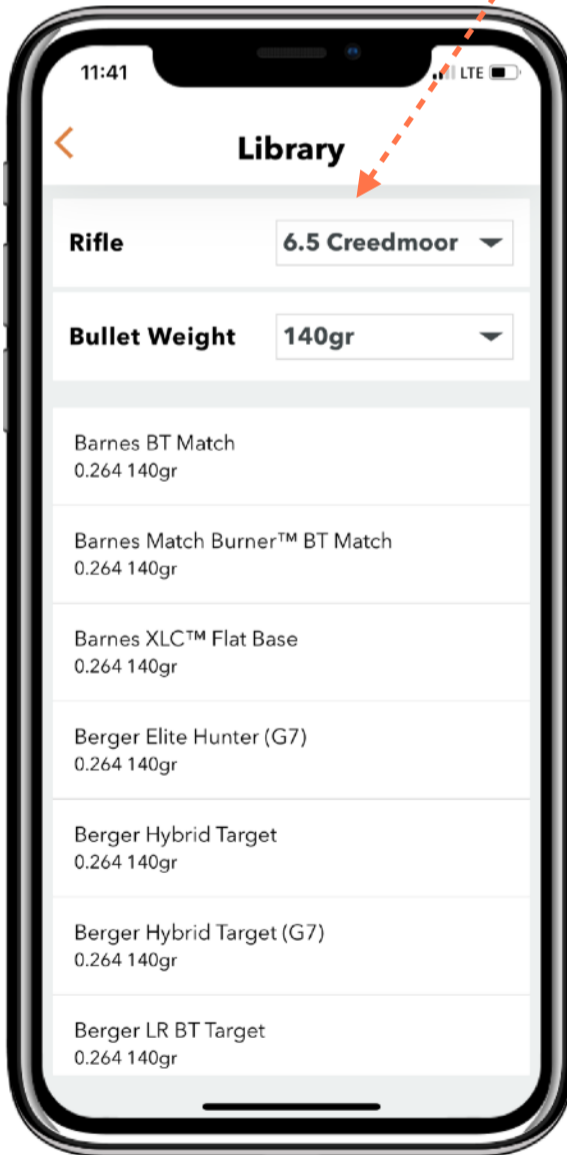
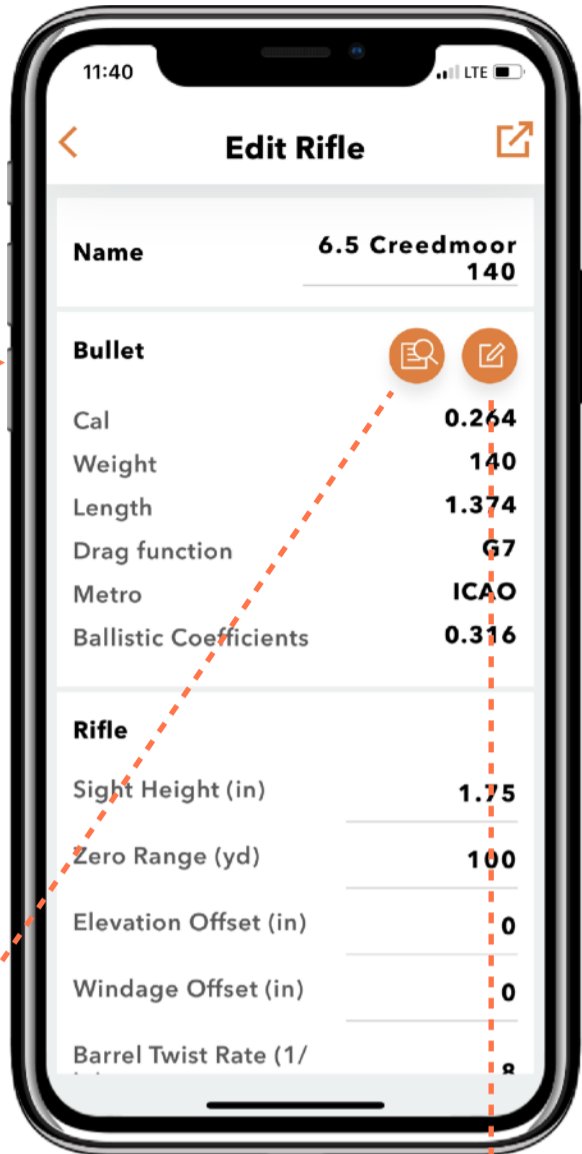
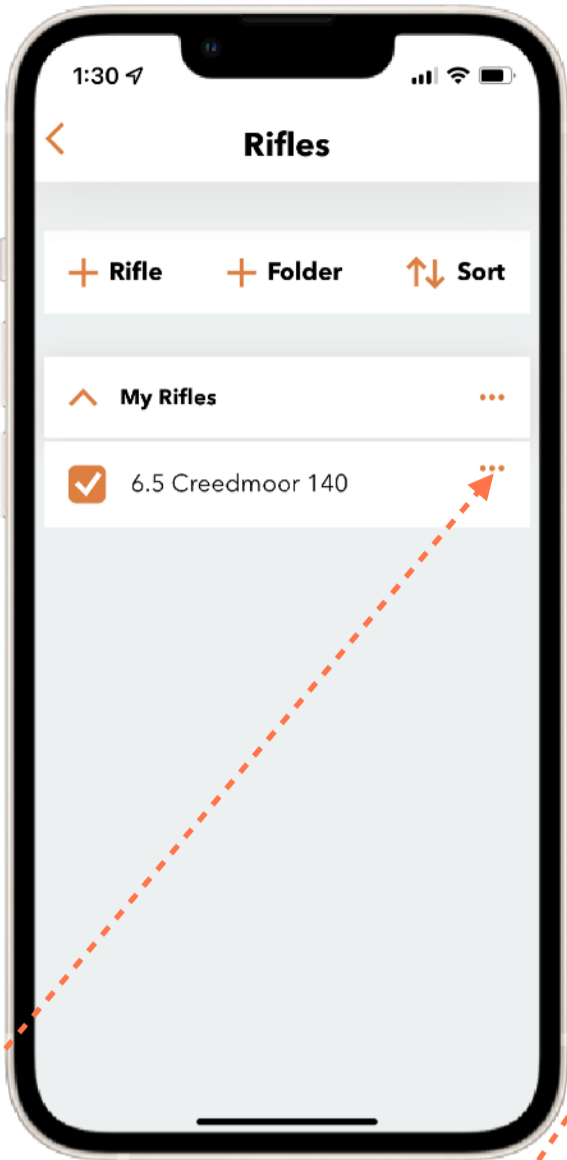
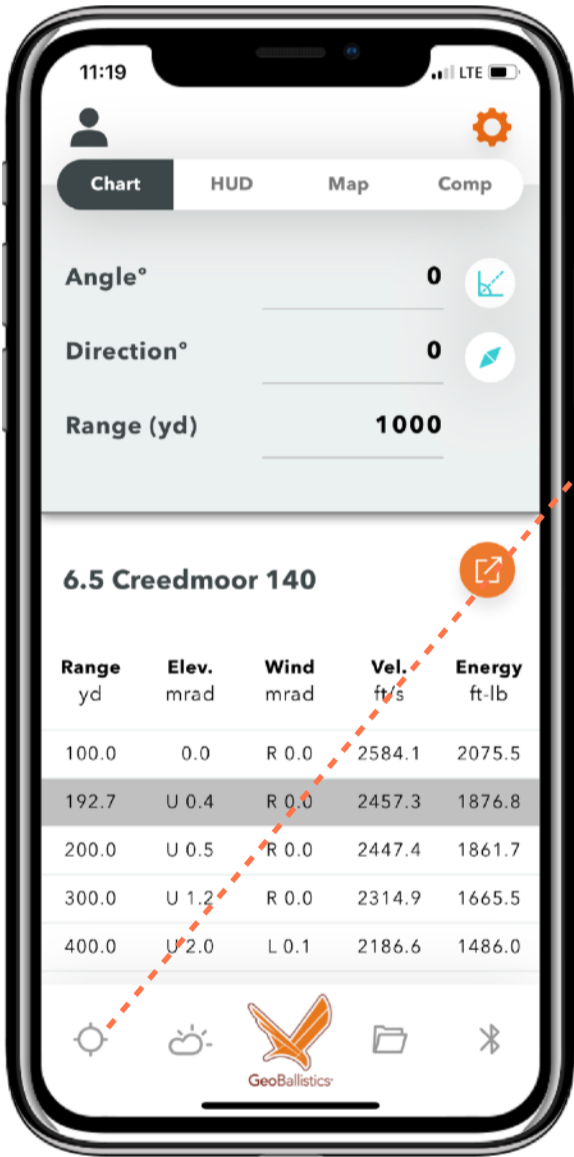
*\*Double tapping the Angle or Compass buttons will reset the corresponding field to 0.*

# Ballistics

## Bullet Selection

Bullets may be selected from our internal library or added manually.

Start Here



*\*Contact us to add a bullet you are unable to locate in the Library.*

## Rifle Setup

**Sight Height** - distance from center of bore to center of optic

**Zero Range** - distance where POA = POI

*\*POA: point of Aim; POI: point of Impact*

**Elevation Offset** - vertical spread from POA to POI

*\*impacts below POA are (-)*

**Windage Offset** - horizontal spread from POA to POI

*\*impacts left of POA are (-)*

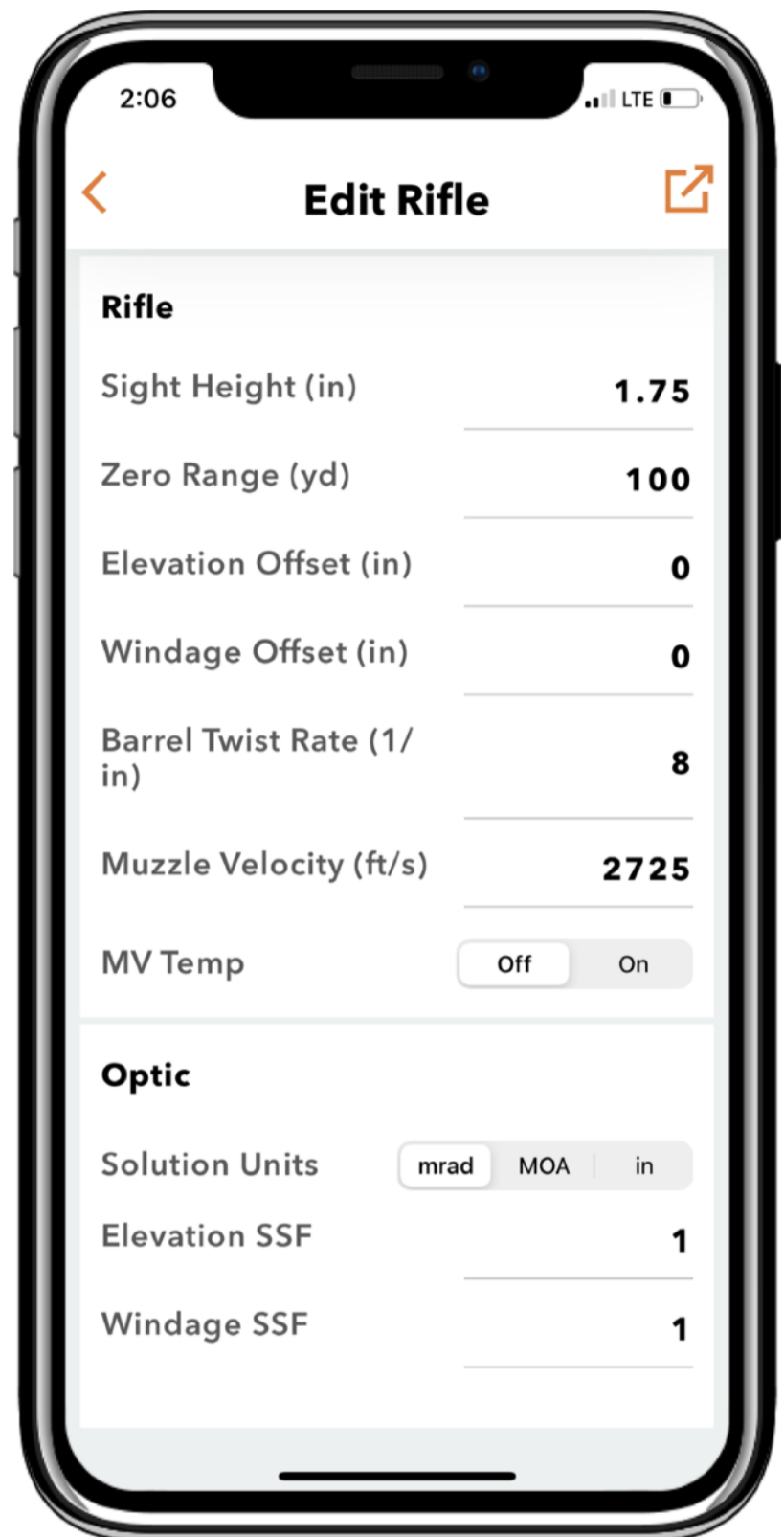
**Barrel Twist** - inches of travel for each complete revolution of rifling within the barrel

**Muzzle Velocity** - speed of the bullet as it exits the barrel

**MV Temp** - feature that allows muzzle velocity to adapt to ambient temperature. See more info on next page.

*\*MV Temp may only be turned on while the weather format is set to T/P/RH. Density Altitude may not be used with this feature because manual DA entries are absent of ambient temperature.*

*If MV Temp is turned on, the DA weather format will not be selectable.*

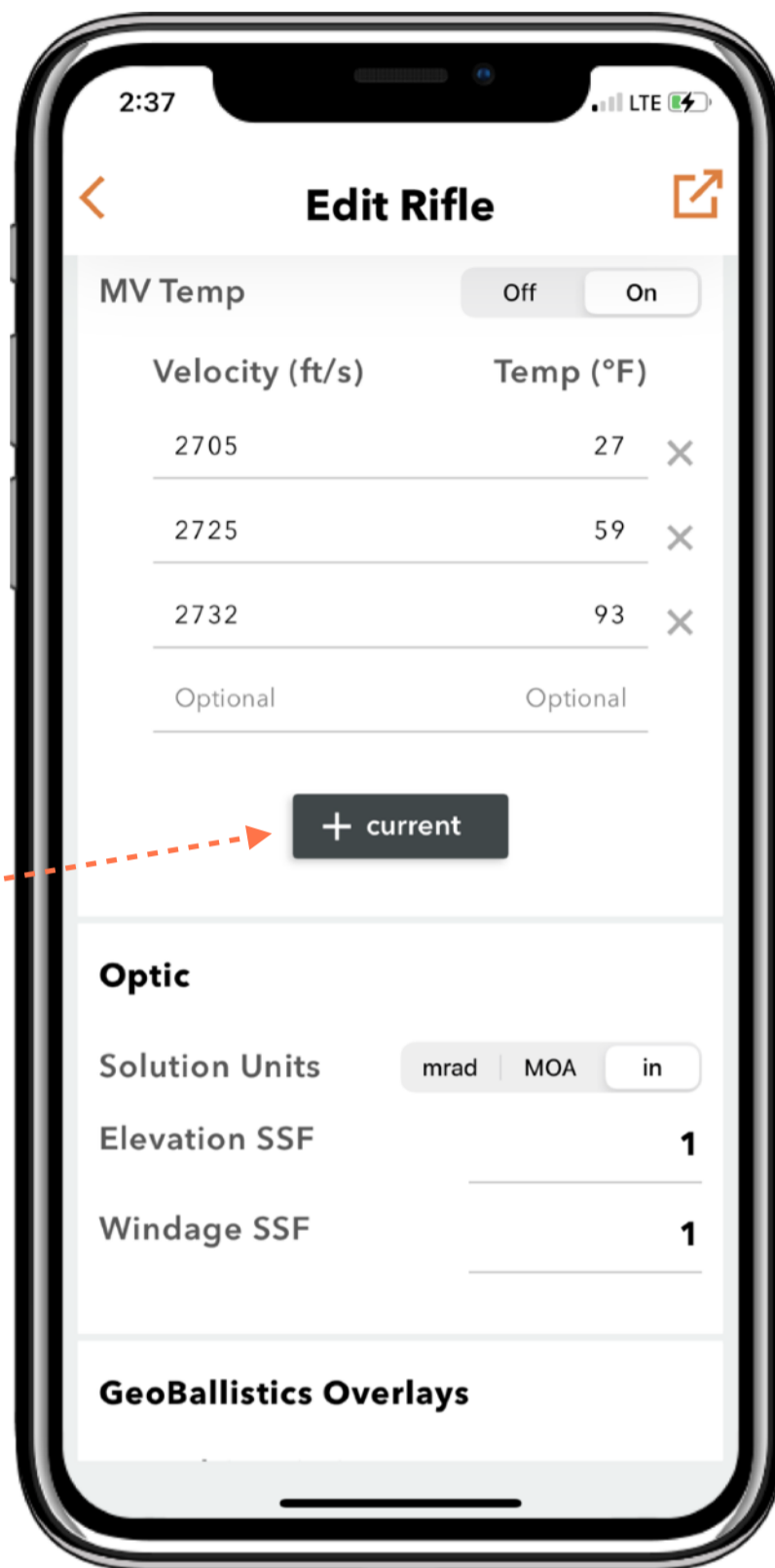


## Muzzle Velocity and Temperature

Muzzle velocity can be calculated based on recorded entries of MV at various ambient temperatures. If a current ambient temperature is outside of the recorded maximum or minimum on the MV Temp chart, the MV corresponding with the nearest temperature will be applied to the solution.

The **+ current** button will push the velocity from the rifle profile along with the ambient temperature from the Active Profile to the MV Temp chart.

Add Current  
MV and Temp  
to chart



## Scope and Units Selection

Units may be configured as mrad, MOA, or inches

**Elevation SSF** - elevation sight scale factor is used to enter results from tall target testing to correct for turrets that are out of spec

Ex 1: 10 mrad dialed at 100 yards impacts at 36" above POA, then SSF = 1

Ex 2: 10 mrad dialed at 100 yards impacts at 36.36" above POA and expected POI is 36" above POA, then SSF = .99

Ex 3: 10 mrad dialed at 100 yards impacts at 35.64" above POA and expected POI is 36" above POA, then SSF = 1.01

**Windage SSF** = windage sight scale factor is used to correct for windage turrets that are out of spec

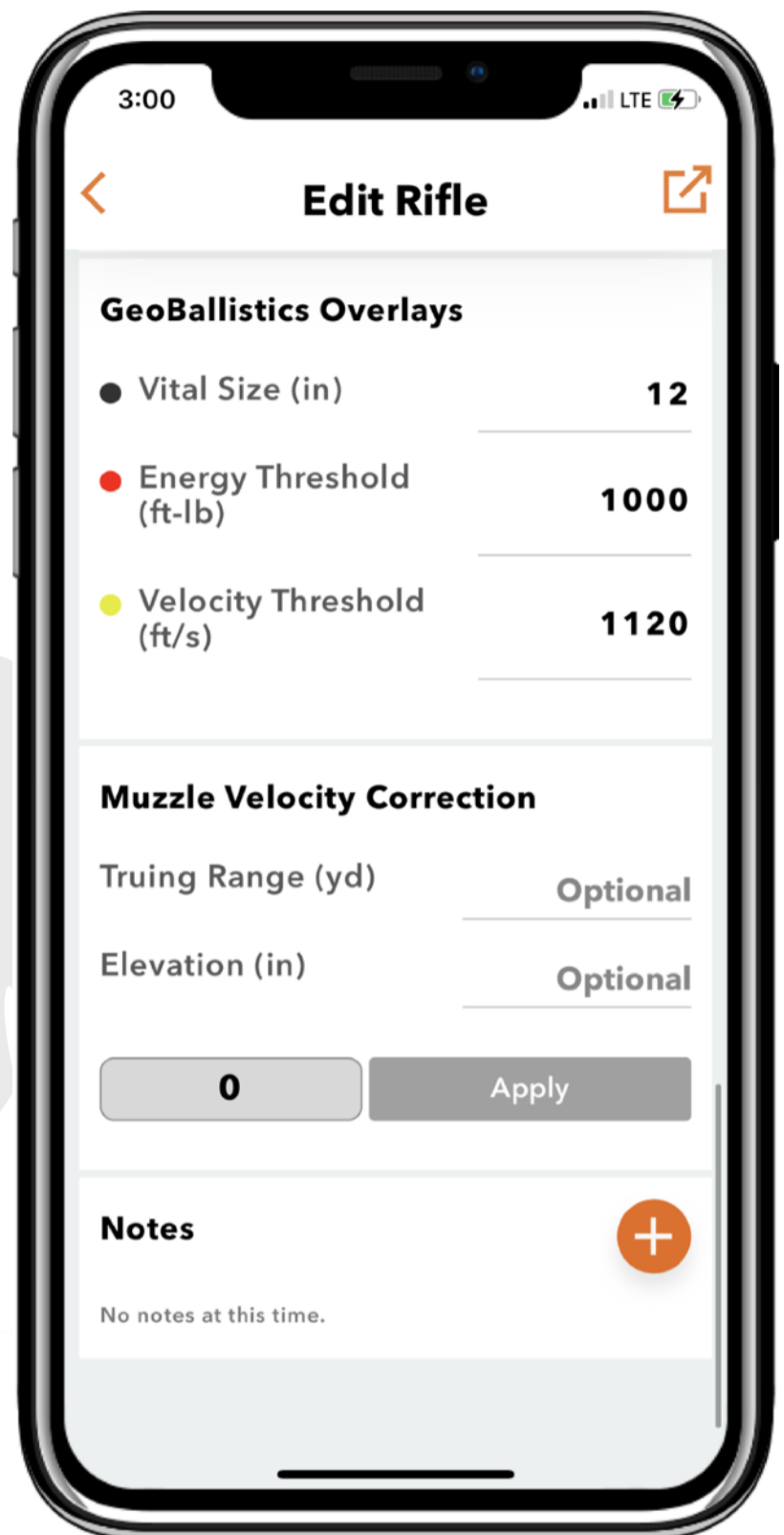
## GeoBallistics Overlays ●●●

- **Vital Size** - relates to MVR (Max Vital Range) which is the distance a target can be engaged by aiming at the center and have the bullet impact within a predefined area without adjusting the turrets or holding over

Ex: if Vital Size equals 12", the MVR is the range where POI will deviate 6" from POA



- **Energy Threshold** - used to calculate the max range where a bullet will impact a target with a desired amount of energy
- **Velocity Threshold** - used to calculate the max range where a bullet will impact a target with a desired amount of velocity



## Truing Muzzle Velocity

Muzzle Velocity Correction allows for calculating a muzzle velocity based on observations and does not require the use of a chronograph.

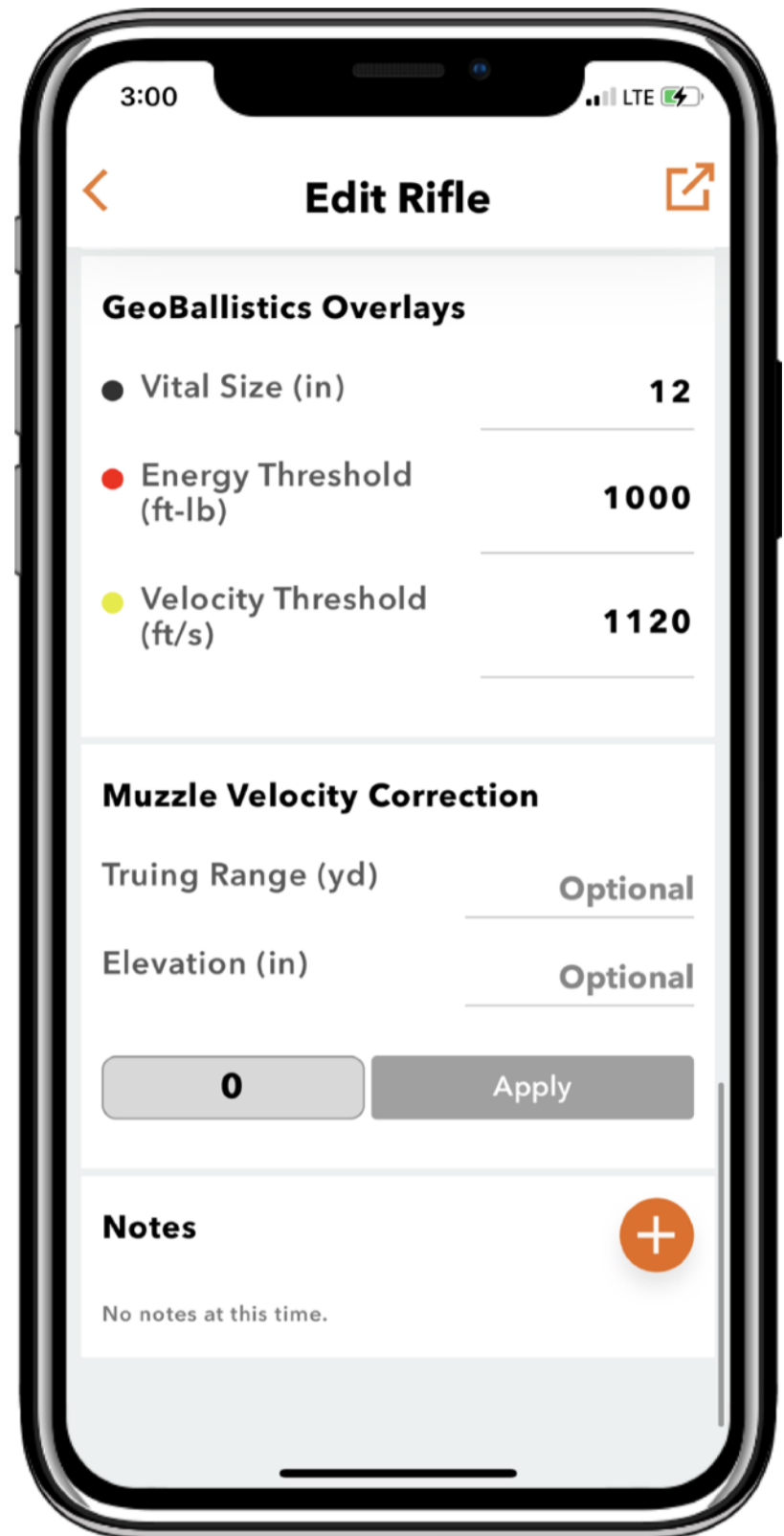
**Truing Range** - the absolute distance from the muzzle to the target

**Elevation** - the actual elevation used where POA = POI

When truing, it's imperative to make sure all conditions have been accounted for properly. This includes atmospheric, direction of fire, latitude, etc. Every variable will be applied to this calculation. It is also advised to true on level ground in as little wind as possible.

Once a trued muzzle velocity is acquired, pressing the Apply button will push the MV to the rifle profile.

**NOTE:** This tool is disabled when the MV Temp feature is turned on.



This is a great time to go back and press the **+ current** button in the MV Temp feature for later use of this data if ever needed.

# Atmospherics

## Active Profile

The Active Profile is the data that will be used for calculations. An Active Profile can be entered manually, imported from HUD, collected from Bluetooth devices, or obtained from the nearest airport via an online report.

## Wind

**Wind Direction** - the direction the wind is blowing from in relation to compass heading

Ex 1: Wind from the east is reported as 90

Ex 2: Wind from the south is reported as 180

**Wind 1** - will display as primary windage solution and can be acquired:

- manually
- via WeatherFlow or Kestrel
- nearest airport

**Wind 2** - will display as second wind

- ONLY viewable in Comp Mode
- ONLY entered manually
- WILL NOT be used for crosswind jump calculations



## Weather

Weather is formatted as either Temperature / Pressure / Humidity OR as Density Altitude

Use the slider to select the desired format

Weather Format Slider

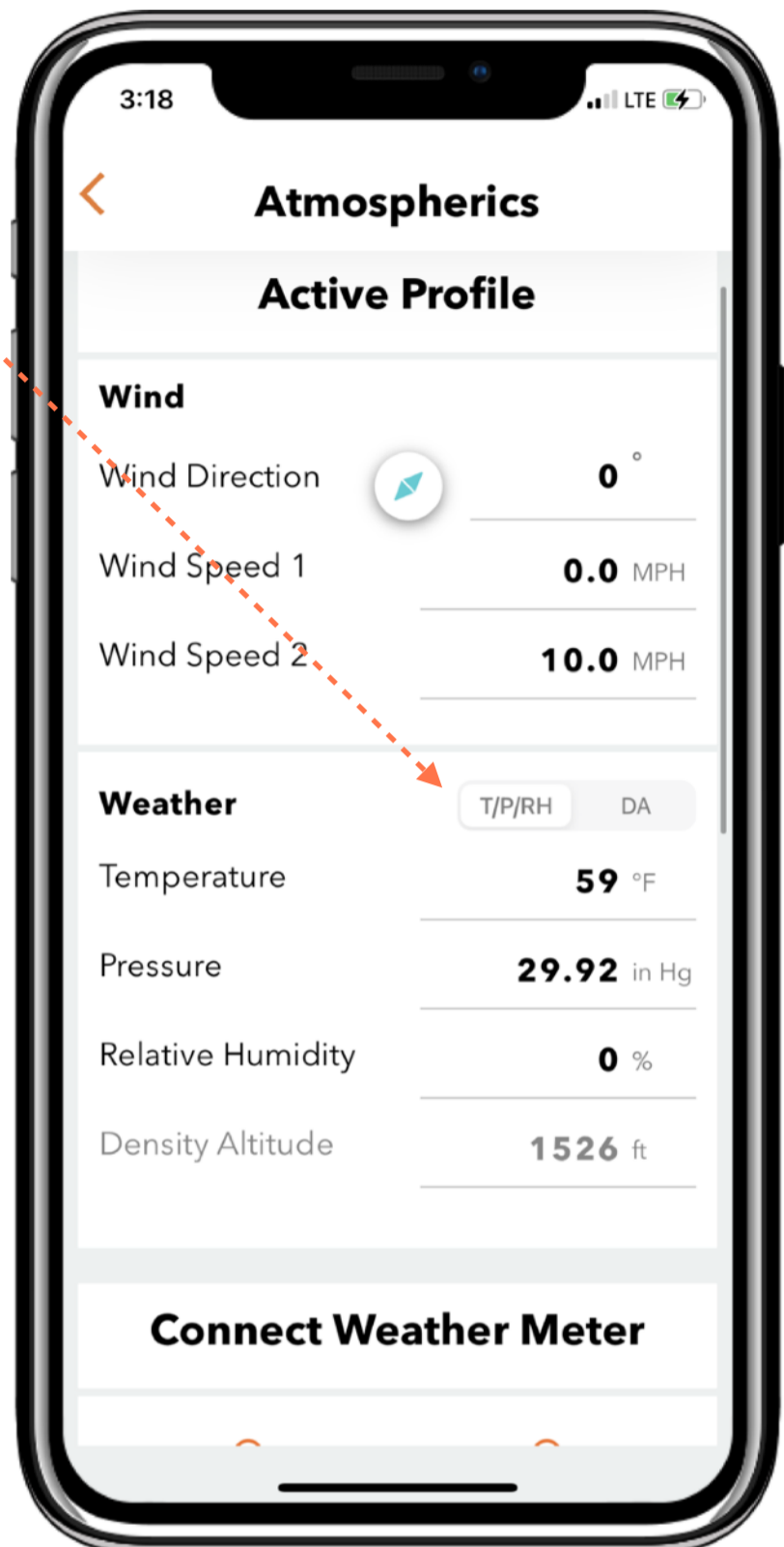
**Temperature** - this is the ambient temperature

**Pressure** - \*station or absolute pressure (must be obtained from an on-site tool or our Online Weather report)

**Relative Humidity** - % of humidity in the air

**Density Altitude** - using an ICAO chart, a DA can be used to calculate air density for shooting purposes. DA is independent of altitude above sea level

*\*Altitude is not a variable used in our app. The only application for altitude is to solve for absolute pressure. Since we require absolute pressure to begin with, altitude is not needed. If you're unsure where to get a pressure reading, use our Online Weather tool. Do NOT use [weather.com](http://weather.com) or something similar.*



## Bluetooth Weather

WeatherFlow and Kestrel devices must be connected within the app. It is not possible to pair these devices by using traditional pairing methods in mobile device settings.

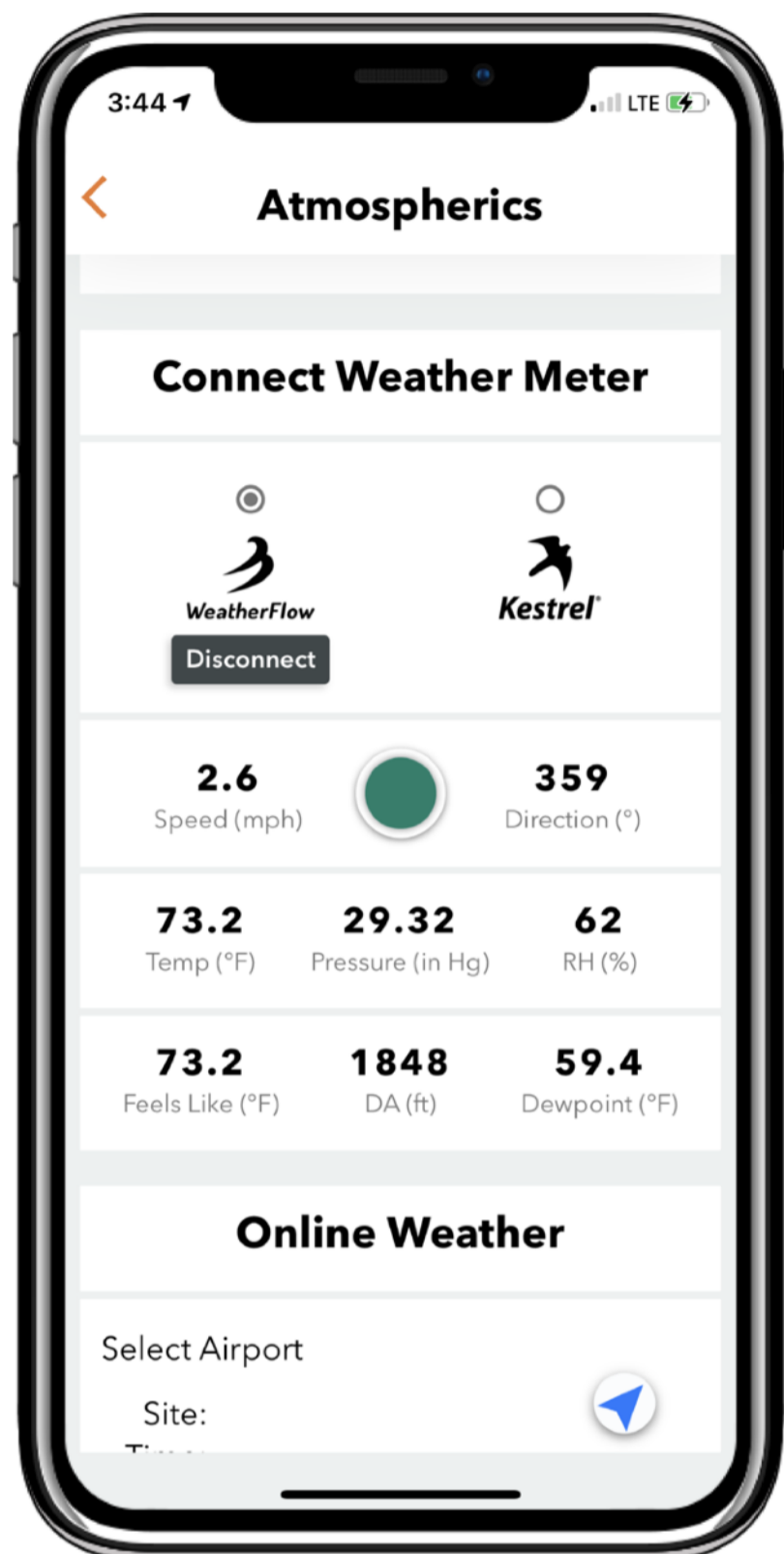
App permissions must include Bluetooth access and \*Location Sharing.

Step 1: Press the WeatherFlow or Kestrel icon

Step 2: Turn on Bluetooth device

Once connected, the record button will turn green. This button will record the sample as long as it is being pushed. A quick tap of the button will record a snapshot. Once the button is no longer being pressed, the recording will stop and the averaged data will be pushed to Active Profile.

*\*Google and Apple policies suggest allowing location permissions for bluetooth compatibility, and this is why we enforce location permissions.*



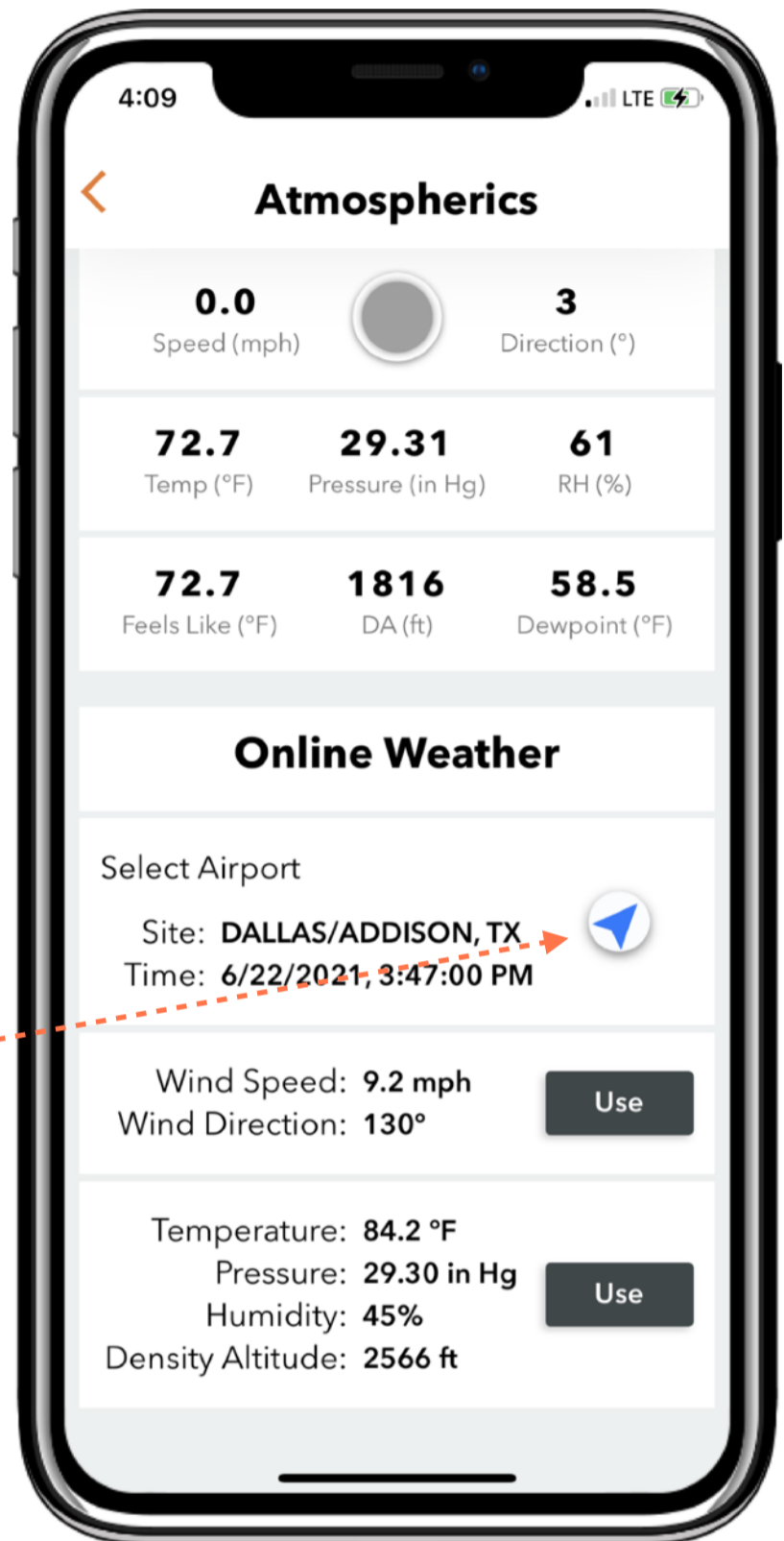
## Online Weather

Online weather uses the phone's location to search for the 5 nearest airports. These airports will present as a list for the user to choose from. If a particular airport does not produce a report, this means that the station is either offline or the report is more than 2 hours old.

The data provided is separated into wind and weather.

In order to push data to the Active Profile, the **Use** button must be pressed next to the corresponding data.

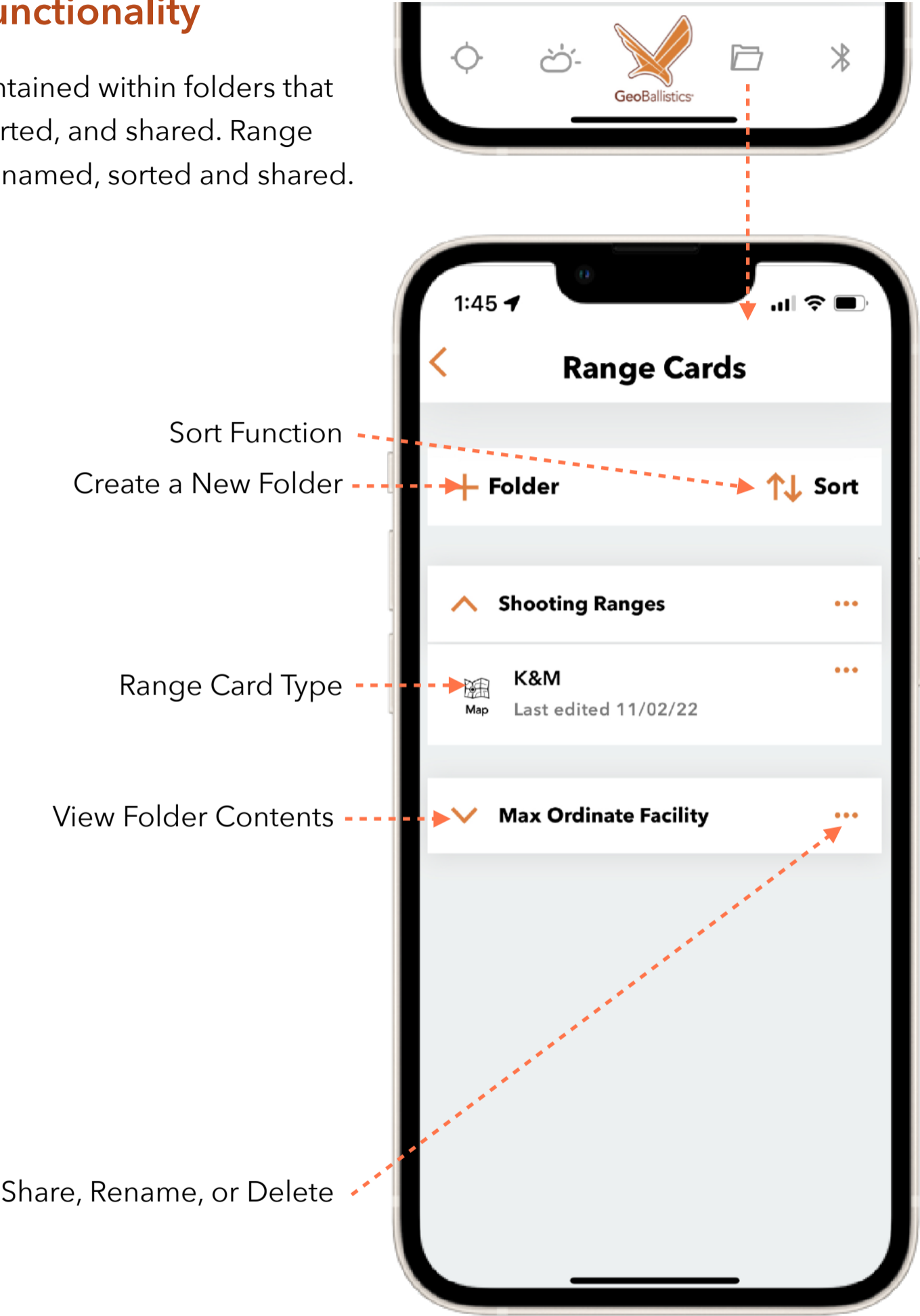
Search for nearby Airports



# Range Cards

## Range Card Functionality

Range cards are contained within folders that can be renamed, sorted, and shared. Range cards can also be renamed, sorted and shared.

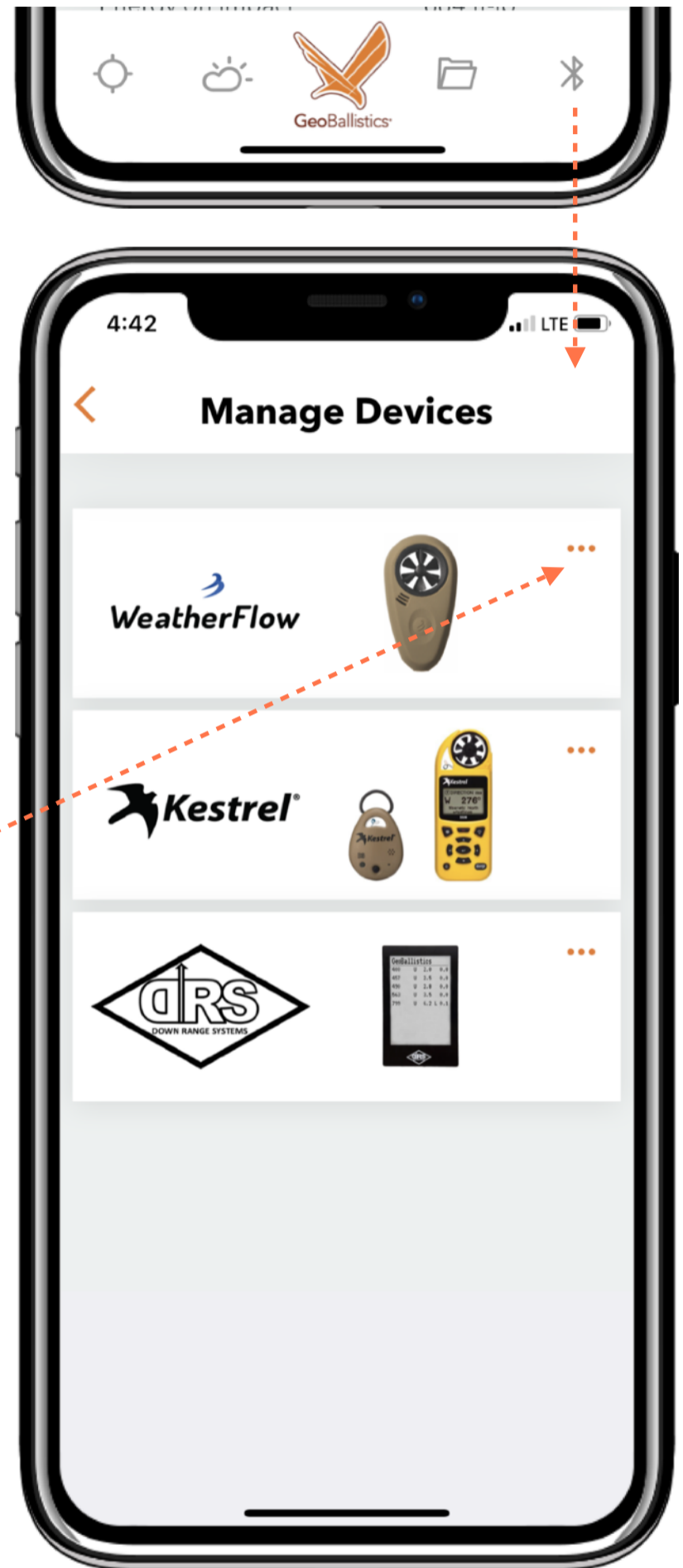


# Wireless Devices

## Manage Devices

Wireless devices that are compatible will be displayed on this screen. Each device's unique settings can be accessed here.

Explore Settings



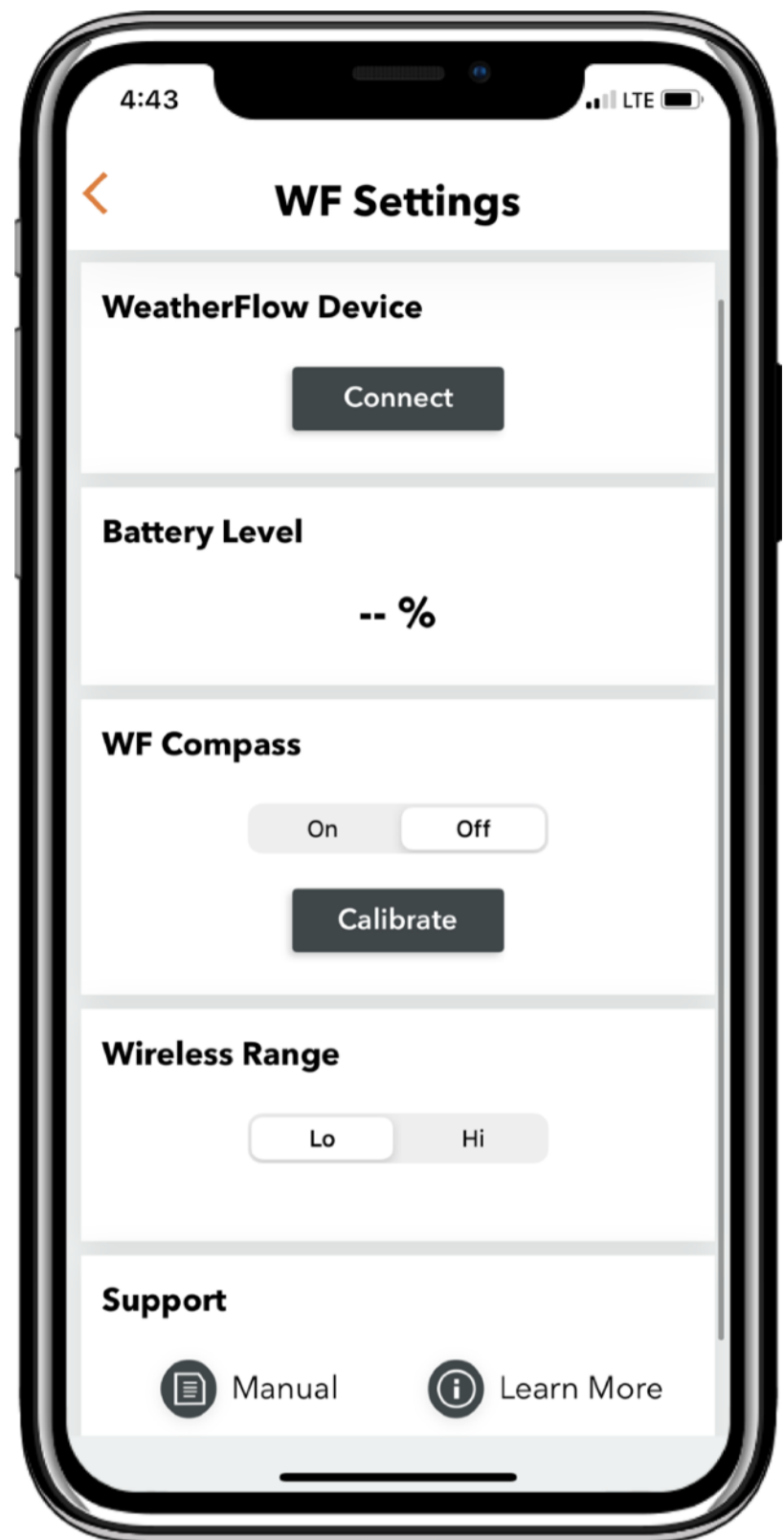
## WeatherFlow

**Connect** - will look for nearby devices that are turned on. This can be useful for calibrating the compass if the device contains one. Units manufactured between May 2019 and March 2022 do not contain compasses.

**Battery Level** - this is an approximation of remaining battery life

**WF Compass** - when turned off, the compass on the phone will be used for wind direction

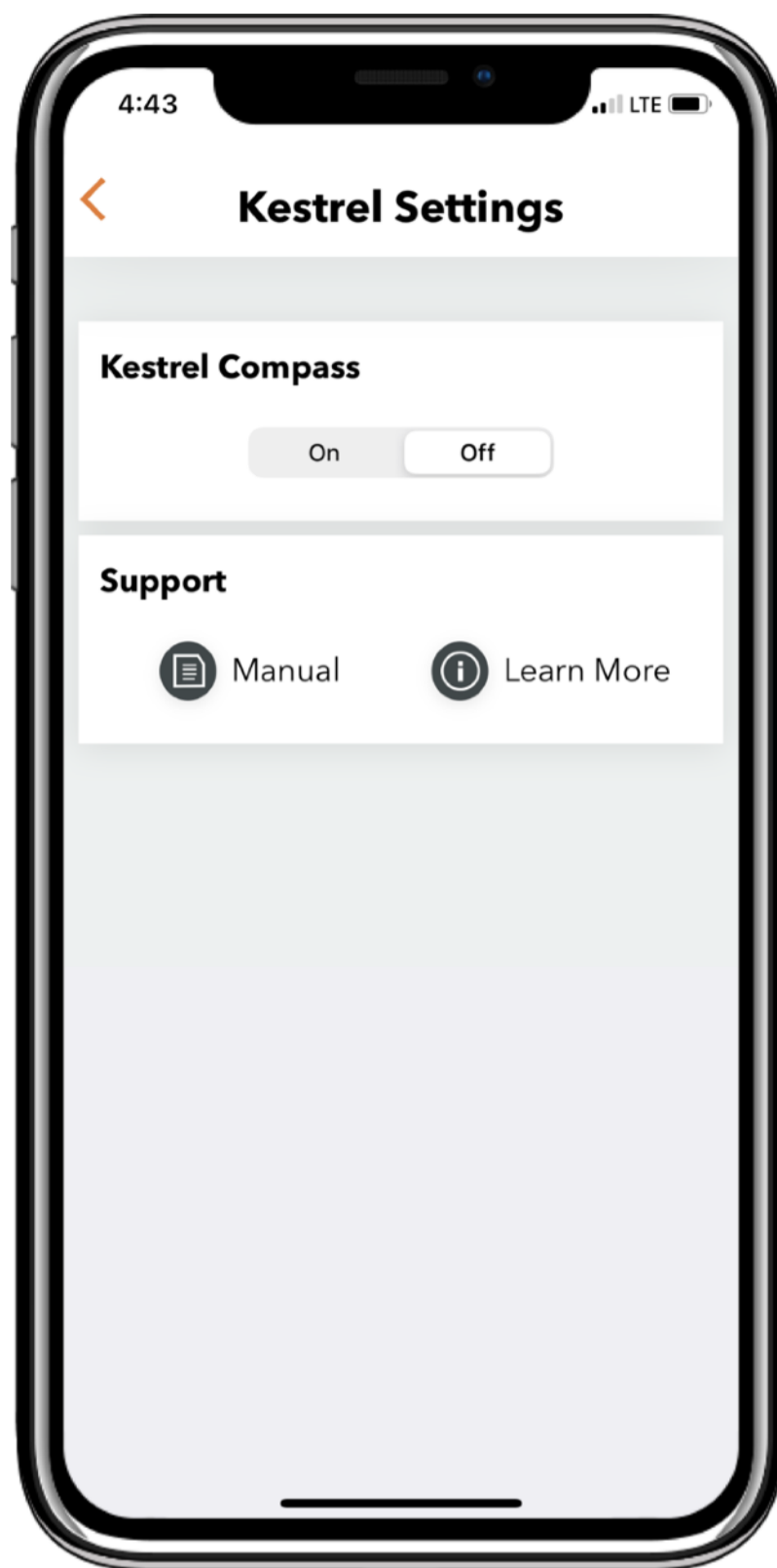
**Wireless Range** - this will increase battery usage to transmit a stronger signal for increased connection range



## Kestrel

Kestrel compasses can be utilized for wind direction by turning this feature on.

Management for device name, calibration, and other features must be performed within Kestrel's free app.



## DRS E-Dope™

The E-Dope™ card from Down Range Systems is a NFC device that can receive range cards from Comp Mode

### Card Orientation

Vert - transfers in portrait format

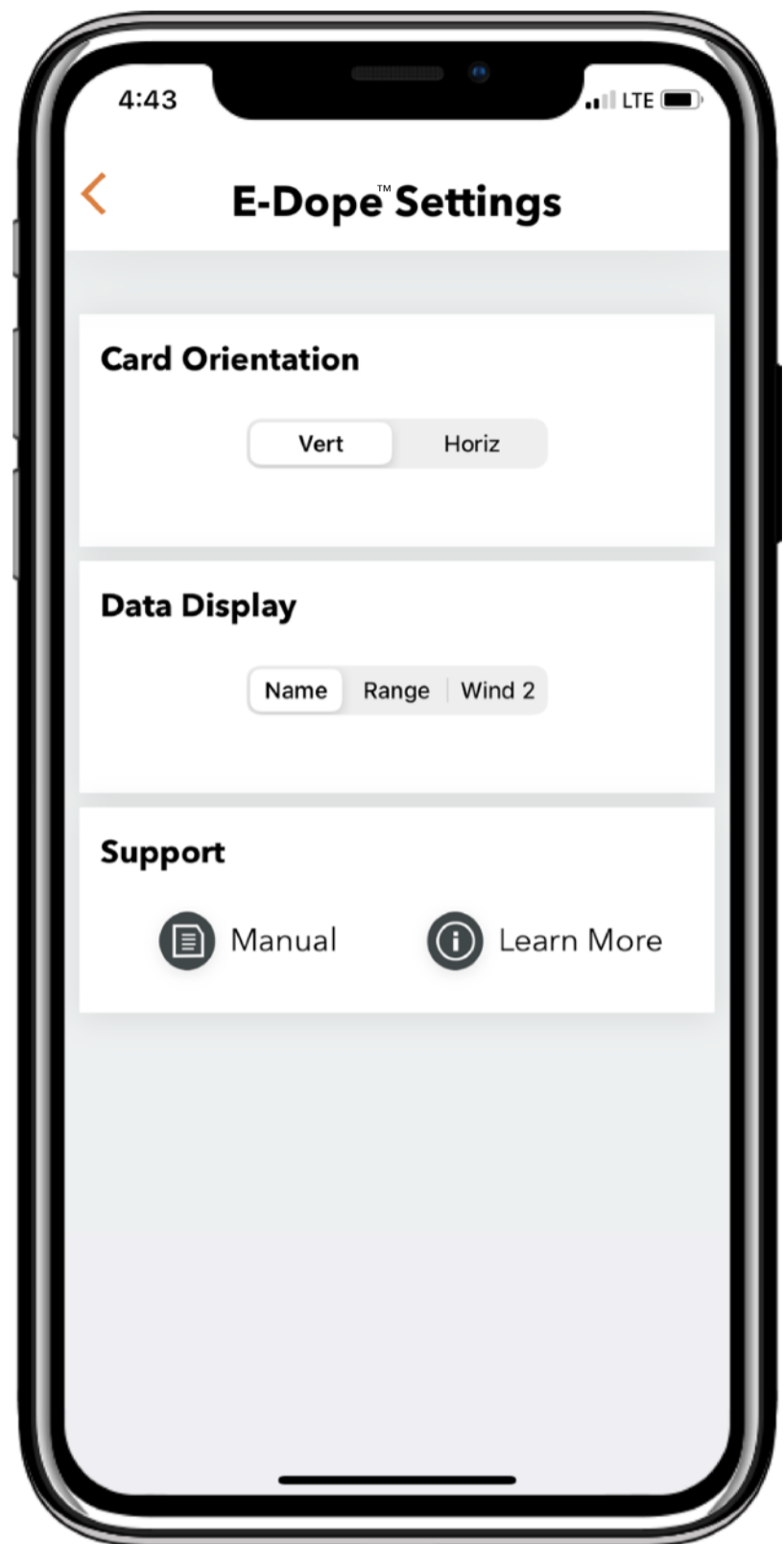
Horiz - transfers in landscape format

### Data display

Name - transfers the target names with elevation solutions and wind 1

Range - transfers the target ranges with elevation solutions and wind 1

Wind 2 - transfers elevation solutions with winds 1 & 2



# App Settings

**Open With** - determines the default mode

**Auto-Locate** - Map opens to current location and latitude is acquired from the mobile device

**Latitude** - manual latitude entry

**Solution Rounding** - determines how elevation solutions will be rounded and exported

**Ballistic Preferences** - turn on/off Spin Drift, Coriolis Effect, and Crosswind Jump

## Mobile Sensors

Angle - turn on/off angle buttons

Compass - turn on/off compass buttons

**Chart Increments** - set increments for Chart Mode

**Distance Units** - set range units for all modes

## Rifle Profile Units

Length - sight height, offsets, and vital size

Velocity - muzzle velocity, energy threshold and velocity threshold

**App Info** - Customer Service will set up a new rifle with all default settings for customer service issues

Open With

Chart

HUD

Map

Comp

App Preferences

Auto-Locate

Latitude

33.0

Solution Rounding

.1

.01

Ballistic Preferences

Spin Drift

Coriolis Effect

Crosswind Jump

Mobile Sensors

Angle

Compass

Chart Increments

5

10

25

50

100

Distance Units

Yards

Meters

Rifle Profile Units

Length

in

cm

Velocity

ft/s

m/s

Weather Units

Pressure

in Hg

mb

Temperature

°F

°C

Density Altitude

ft

m

Wind Speed

mph

m/s

App Info

Customer Service

User Manual

Version 6 (236)

# User Account

Once in the Pro version, the ability to setup an account is unlocked. Pro Users are able to setup an account to keep track of their rifles and range cards across multiple devices.

While an account can communicate across Android and iOS devices, the Pro version must be purchased in each platform in order to do this. Purchases cannot be transferred between platforms.

## Account Preferences

Auto-Sync Rifle and Ranges - when turned on, syncing will occur automatically when the app is opened. This can cause issues in areas of weak network connection. If turned off, a manual sync option under Rifles can be used.

Show Promotions - GeoBallistics occasionally advertises for precision rifle affiliates and shares special offers.

## Server Management

Manage Rifles - link to Rifles page at [BallisticsARC.com](https://BallisticsARC.com)

Manage Range Cards - link to Range Card page at [BallisticsARC.com](https://BallisticsARC.com)

Download Matches - link to Matches & Shooting Ranges page at [BallisticsARC.com](https://BallisticsARC.com)

## Social and Review

Leave a Review - Please leave us a review on Google Play or the App Store. It's the greatest compliment we can receive, and it helps our business tremendously.

