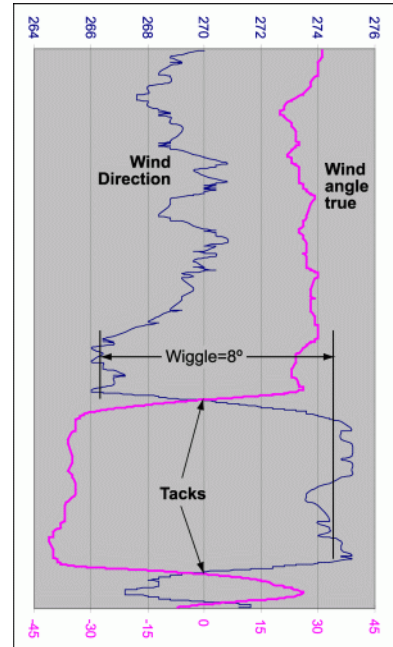


How to set up and use DeWiggler Analyst™

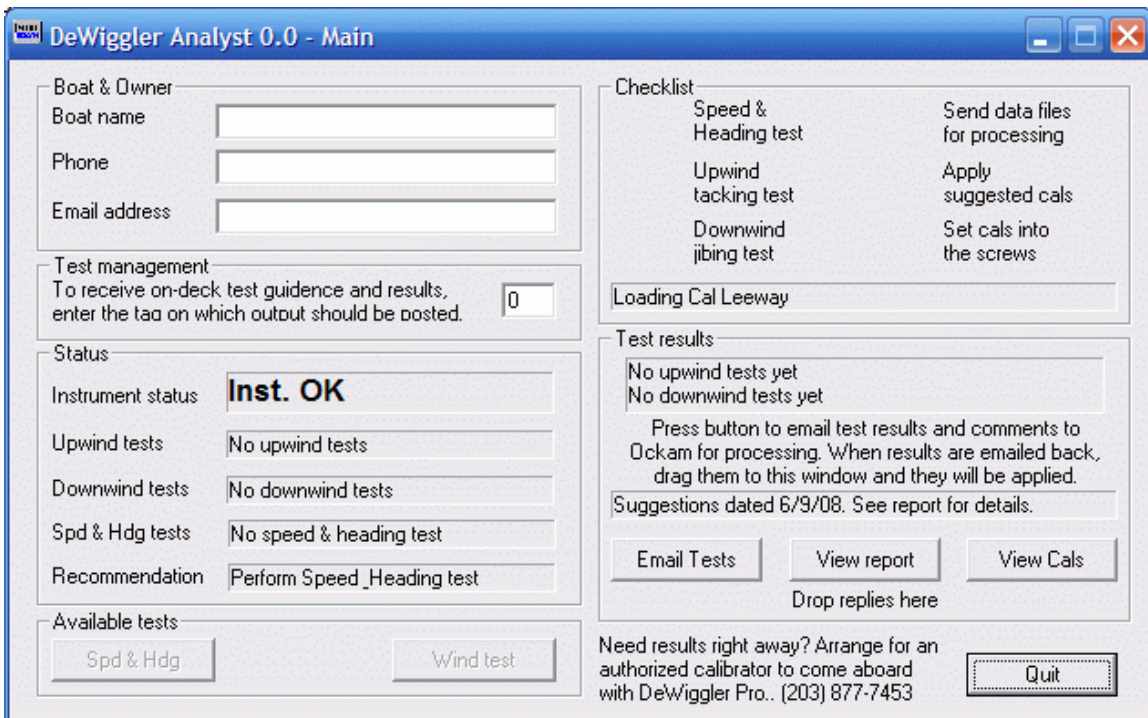
The most important mission of an instrument system is correctly reporting wind direction (see <http://www.ockam.com/functrue.html>). DeWiggler Analyst is an application for determining wind direction change due to tacking, and recommending adjustments to the instrument system's calibrations.

If lifts or headers occur every time you tack or gibe, there is a problem with the instrument calibration. DeWiggler records how much wind direction shifts with tacks or gibes. When the log files are processed, recommended changes are downloaded, and set into the instruments calibrations. This wind test will require lots of tacking and gibing over at several 10 minute periods.

Analyst also calibrates boatspeed and compass by comparing them against COG/SOG. For this speed & heading test, you motor over an octagonal course about ¼ mile in diameter.



Setting up



When you start DeWiggler, the setup screen appears.

How to set up and use DeWiggler Analyst™

1. Fill in the boat name (required). Phone and email are valuable but not required.
2. If you are not connected to a live instrument system, you can enable the OS4 driver simulator (see below).
3. When you run DeWiggler Analyst, it checks current calibrations against any previous saved calibrations to ensure that new testing time is not wasted re-establishing calibrations. To review your calibrations, press the 'View Cals' button. This dialog gives you the opportunity to set previous calibrations to the screws (strongly recommended), or soft set saved calibrations back into the system.
4. DeWiggler can source a display to allow on deck monitoring. To enable output, set the test monitoring edit box to the desired tag. The default ("0") outputs to User 0.

Available Tests

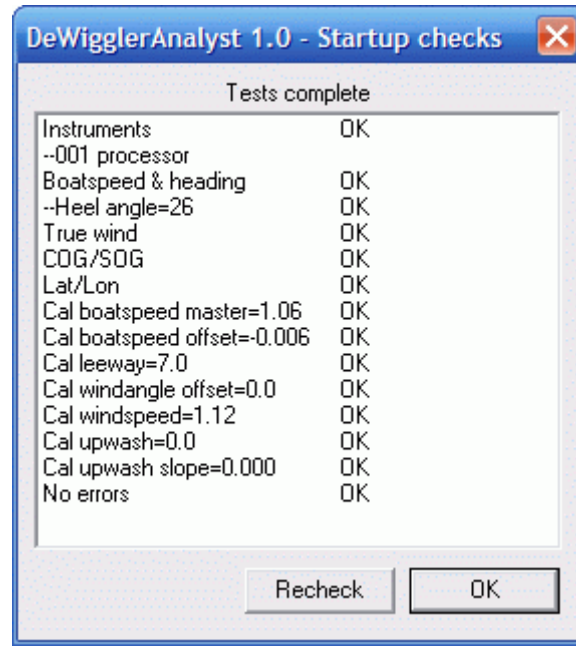
There are two tests that can be performed;

Speed & Heading compares boatspeed and compass to GPS COG/SOG. This test is done upright, under power to eliminate leeway and compass heeling error issues. This test should be performed first, in order to provide accurate boatspeed and heading upon which the wind triangle is based. Recommendations for Cal Boatspeed Master and Compass Lubber Offset will be produced, as well as a compass deviation table.

Wiggle compares wind direction before and after tacks/jibes in order to recommend upwash and apparent wind speed calibrations.

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Startup



When Analyst starts, it checks the instrument system for the required variables, whether calibrations are within range, and errors. Some missing variables will prevent certain tests and features:

- If true wind is not available, the Wind test will be unavailable.
- If COG/SOG is missing, you will not be able to do the Speed & Heading test. COG/SOG is produced by the T1 GPS input or the 041 interface of the 001 system.
- If Lat/Lon is missing, the Speed & Heading test map will not be drawn, although the test will work. Lat/Lon is produced by the T1 GPS input or the 041 interface of the 001 system.

If you have issues with your instruments, it would be best to correct them before you begin testing.

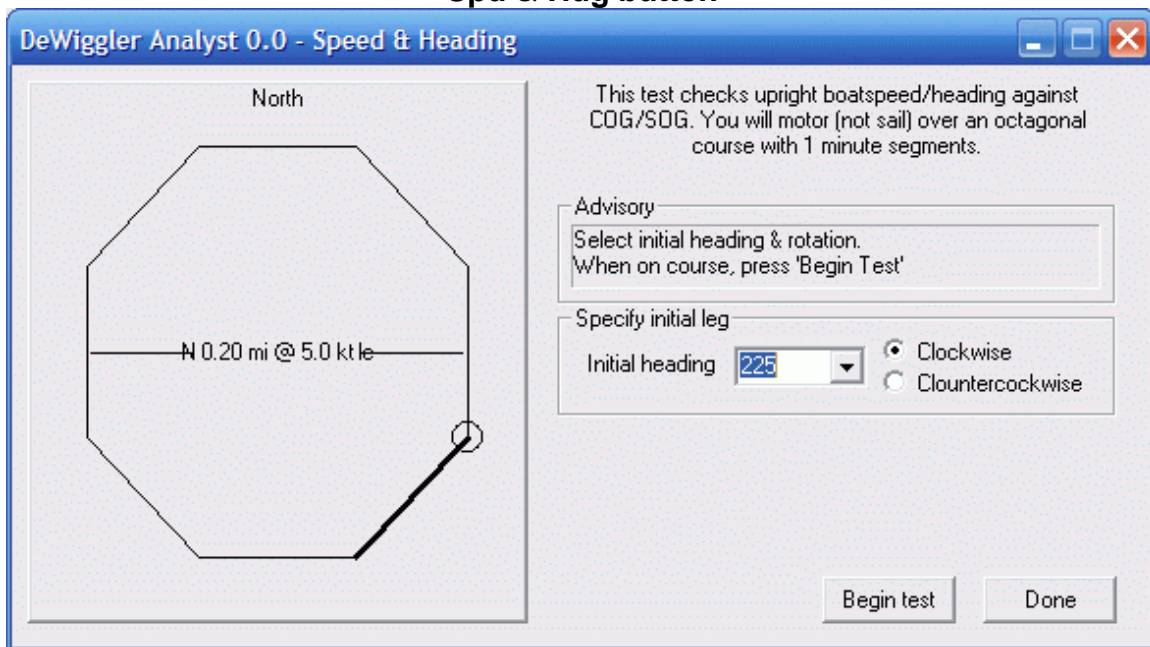
How to set up and use DeWiggler Analyst™

Testing boatspeed and heading

The Speed & Heading test compares boatspeed and compass against GPS COG/SOG. This test should be done under power in a location without current if possible. The test consists of 8 segments describing an octagon, each segment lasting 1 minute.

- Motor to a place where you can do an octagon approximately ¼ miles in diameter.
- Select an initial heading and rotation.
- Steady up on your initial chosen direction and press Begin Test.

Spd & Hdg button



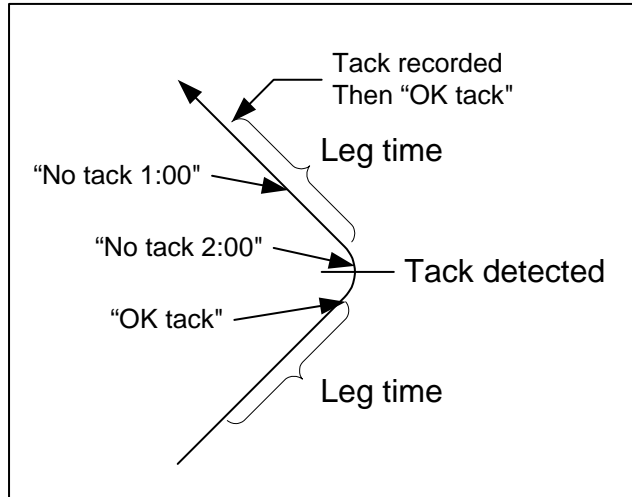
The dialog draws a schematic of the test with the chosen initial conditions highlighted.

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Testing for Wiggle

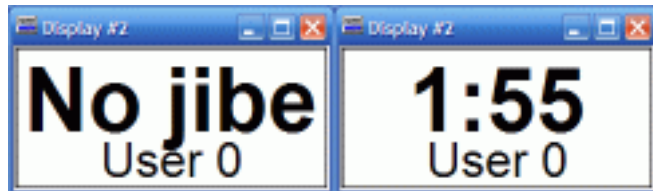
Wiggle is our term for wind direction change on tacking and jibing, and indicates incorrect instrument calibration. Wiggle is discussed in detail at <http://www.ockam.com/truwind.html>. Upwind wiggle is corrected by upwash calibration, while downwind wiggle is corrected by apparent windspeed calibration.

The wind test monitors your true wind angle. After you have been on a steady course (up or downwind) for LegTime, it recommends “OK tack” (or jibe). When the tack is detected, it records the previous leg, and recommends “No tack 2:00”, counting down until LegTime after the tack has elapsed. At that time, the tack statistics are recorded, and it returns to “OK tack”.

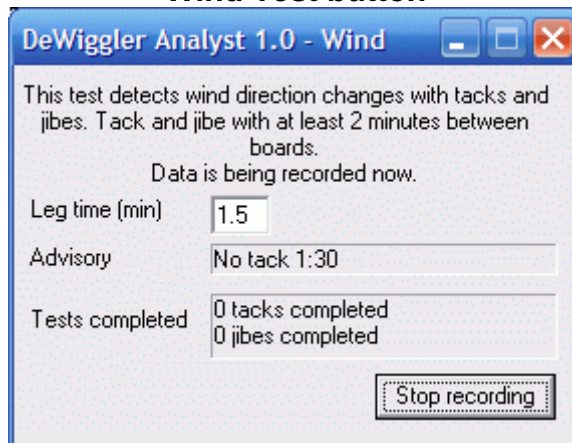


“No tack” does not mean you can’t tack, jibe, round a mark or any other maneuver. If you do any of these things, the recording is merely aborted, and it waits for another steady state to develop.

You can keep tabs on what the wind test is doing by putting up the output tag (User 0 by default) on a graphic display.



Wind Test button



Here you see a wiggle test in progress.

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The status line shows that we're recording a tack where there is 1:30 left to go before you can tack.

Things to be aware of

- The wiggle test looks for a relationship between tacking and wind direction. When racing, it is an advantage to tack into a lift. When testing, this behavior would appear to be instrument miscalibration. The best test methodology is to tack regularly by the clock. Chances are the wind gods aren't using the same clock.
- The setting for LegTime depends on the boat's response time. If tacks are too close together, the wind direction disturbance due to tacking becomes most of the signal. If tacks are too long, the tacking 'signal strength' is reduced, and there is a greater chance that a big wind shift will come along and mess up the test.
- You should record as many tacks/gibes as possible, balanced between port and starboard. You should also test in a range of wind speeds to allow Upwash Slope to be recommended.
- If there is a lot of wind shear, it may adversely affect the test. If shear is more than 15 degrees, postpone the test until mixing makes things more normal.

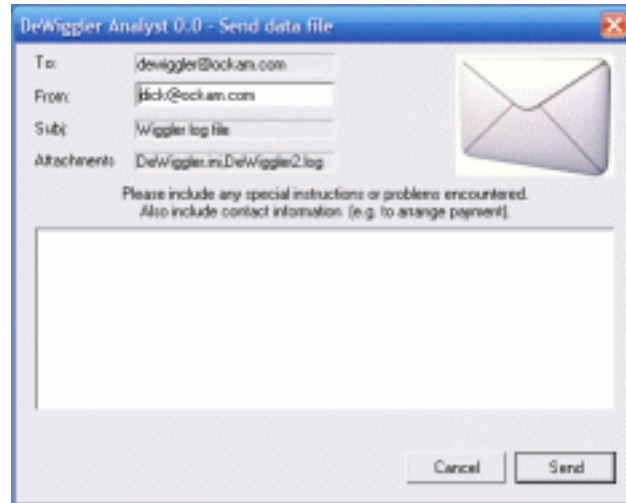
How to set up and use DeWiggler Analyst™

Getting an analysis

When you have completed several tests, press the 'Email Tests' button to email the log files to Ockam for analysis. After analysis, a 'Recommendations.txt' file and a report file will be returned. Drag the recommendations file to DeWiggler, and its contents will be applied.

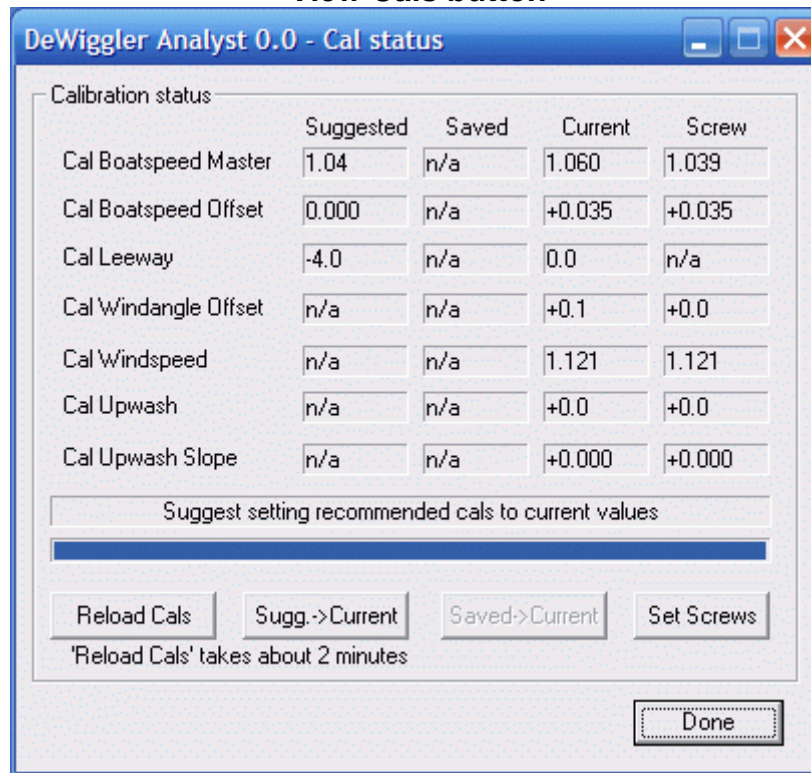
Then, when on the boat and attached to the instrument system, press the 'View Cals' button to review and set your calibrations.

After this, it is usually a good idea to run another set of tests to confirmation the new calibrations.



Viewing and setting Calibrations

View Cals button



The Ockam system has 7 primary calibrations. For each one, there are 4 states:

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- Suggested** These numbers come from the recommendations file. If no changes are recommended, the value is n/a. Suggested calcs can be transferred to the Current state (soft cal).
- Saved** These are the numbers which were in effect during the last DeWiggler session. Saved calcs can also be transferred to the Current state.
- Current** These are the current calibrations in effect. They can come from the screw calcs, but are usually modified by software or a display (soft calcs). Current calcs can be transferred to the Screw calcs by the Set Screws dialog.
- Screw** The screw calcs are set by hardware adjustments on the interface(s). Although they are a pain to set, they are very important to set to the correct value so that a system reset can instantly restore your carefully won calibrations.

DeWiggler suggests changes to the calibrations in effect when the tests are performed. These suggestions can be applied to the instrument system by the Set Screws dialog. These are set into the 'soft' calibrations, and possibly stored in the instrument's screw calibrations.

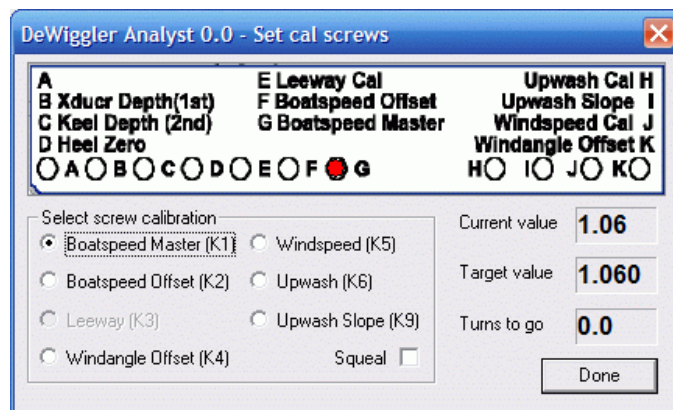
When DeWiggler starts, it checks saved calibrations against the current calibrations. After that, it is a good idea to review your calibrations in case they have changed. This prevents wasted time re-establishing calibrations already set in previous testing sessions.

Setting calcs into the screws

Soft calibrations are vulnerable to modification and memory loss. The Ockam system has a hardware backup for most calibrations in the form of 'screw calcs'. These are mechanical adjustors which are invulnerable to the whims of nature and man. If the time is taken to set your calibrations into the screws, your system can always be returned to correct settings with a master reset.

When you press the 'Set screws' button, the following screen appears to help you quickly adjust the relevant screw cal to the current soft value.

To help with single-handed adjustment, you can enable a tone ('Squeal') that rises in pitch the further away from the target you are. The tone is



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a long beep for “turn clockwise” and a short one for “turn counterclockwise”.

Using the OS4 simulator

You can use OckamSoft 4 to train in using DeWiggler.

- OS4 (<http://www.ockam.com/os4>) should have already been installed.
- Run the driver, and bring up the driver dialog (click on the gray icon in the “tray”).
- Check that you have a polar file installed (OS4 Polar tab). If not, press Select and find the polar that comes with OS4.
- Go to the Simulator tab and check Enable.
- In the Course group, select WindLwd and press Reset. This gives you 100% DeWiggler fodder. Leave the simulator dialog up so you can Tack the simulator when you want to.
- Start DeWiggler. Wait for the “Reading Cals” to finish, then press “Wind Test”.
- After a couple of minutes on the initial tack, press the Tack button on the simulator tab. The boat will tack. Repeat as desired.