

The RAOB Program: and the SHERB Index

SHERB: Severe Hazards in Environments with Reduced Buoyancy.

SHERB is an experimental, normalized composite parameter, which is intended to identify the potential for significant damaging winds and tornadoes in High-Shear, Low-CAPE (HSLC) environments typical of the southeast U.S. cool season.

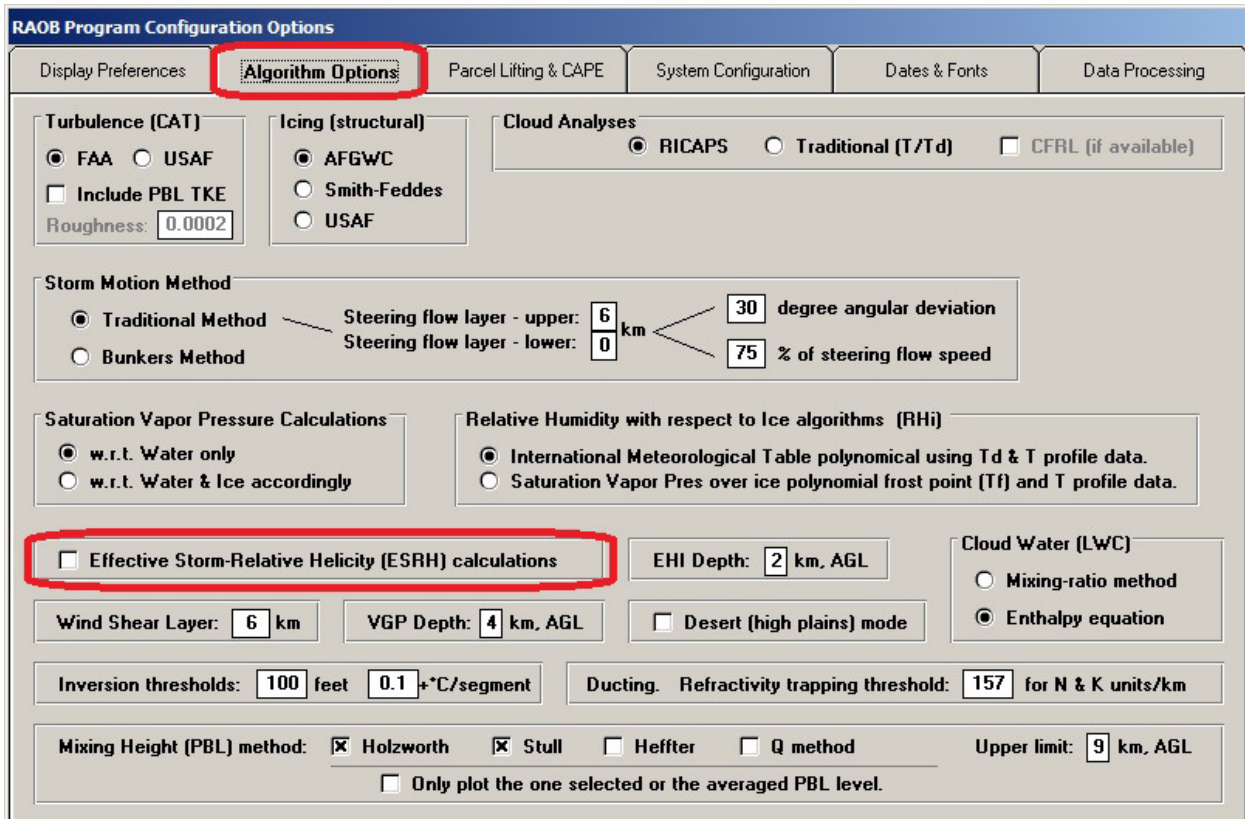
Source information can be found on the NC State University's "NCSU home page for HSLC and SHERB information" page ...

https://sites.google.com/ncsu.edu/mdparker/hslc#h.p_W76UVFI4hzKr

There are 2 variations of the SHRED Index: SHERBS3 and SHERBE.

SHERBS3. By default, RAOB calculates the SHERBS3 value, which uses the 0-3 km bulk shear value.

SHERBE. If RAOB's "Effective Storm Relative Helicity (ESRH)" data processing option is used, RAOB calculates the SHERBE value, which uses the "Effective" shear layer. RAOB's configuration panel showing the ESRH layer option is seen below. When used, the ESRH option also affects the EHI, STP, and SCP composite parameters.



RAOB Program Configuration Options

Display Preferences **Algorithm Options** Parcel Lifting & CAPE System Configuration Dates & Fonts Data Processing

Turbulence (CAT)
 FAA USAF
 Include PBL TKE
Roughness: 0.0002

Icing (structural)
 AFGWC
 Smith-Feddes
 USAF

Cloud Analyses
 RICAPS Traditional (T/Td) CFRL (if available)

Storm Motion Method
 Traditional Method
 Bunkers Method

Steering flow layer - upper: 6 km
Steering flow layer - lower: 0 km

30 degree angular deviation
75 % of steering flow speed

Saturation Vapor Pressure Calculations
 w.r.t. Water only
 w.r.t. Water & Ice accordingly

Relative Humidity with respect to Ice algorithms (RH_i)
 International Meteorological Table polynomial using T_d & T profile data.
 Saturation Vapor Pres over ice polynomial frost point (T_f) and T profile data.

Effective Storm-Relative Helicity (ESRH) calculations

EHI Depth: 2 km, AGL

Cloud Water (LWC)
 Mixing-ratio method
 Enthalpy equation

Wind Shear Layer: 6 km VGP Depth: 4 km, AGL Desert (high plains) mode

Inversion thresholds: 100 feet 0.1 +*C/segment Ducting. Refractivity trapping threshold: 157 for N & K units/km

Mixing Height (PBL) method: Holzworth Stull Heffter Q method Upper limit: 9 km, AGL
 Only plot the one selected or the averaged PBL level.