

README: **ADIABATIC LIQUID WATER CONTENT ESTIMATES FOR ICE-T FLIGHTS**
(based on cloud base estimates also posted on this website using C130 data)

S. Lasher-Trapp (slasher@purdue.edu), 22 May 2012

- For each C130 flight, I used the cloud base properties as listed in the document *CBestim_ICET_SLT.pdf* to calculate the adiabatic liquid water content as a function of height, up to 400 mb. The program assumes air parcel ascent from cloud base along a saturated adiabat. Note that technically these calculations are only valid for levels with temperatures greater than 0 °C, but I ran them a little longer as a rough guide.
- When more than one cloud base estimate was provided, I ran an adiabatic liquid water profile for each, so that you can see the sensitivity to each, and decide which one you want to use (plots supplied at the end of this document).
- For each ASCII file (e.g. *alwc_RF01.out*), the first line lists the cloud base properties used—pressure (mb), temperature (°C), equivalent potential temperature (K), saturated mixing ratio (g/kg), and altitude (km).
- Then each line in the rest of the file contains:
 - N- the level number (ignore)
 - Z- the altitude in km
 - P- the pressure in mb
 - T- the temperature in °C
 - M- the saturated mixing ratio in g/kg
 - LWC- the adiabatic liquid water content in g/m³
- Please note that this was a lot of work (along with the determination of cloud base characteristics), so if you make extensive use of what I've done here, I'd appreciate an acknowledgement (or co-authorship of a paper, if appropriate).

Some additional analysis follows...

For the days where I had two estimates of cloud bases, here's how the adiabatic water profiles vary, depending on which estimate of cloud base one uses, fyi:

