The manuscript reviews recent development of isotopic dendroclimatology, addressing possible divergence problem in tree-ring d13C and d18O. In my opinion, this kind work is very important when isotopic dendroclimatology has been paid more attention and plays more important role in high-resolution paleoclimate reconstruction. However, the current manuscript should be reorganized and concentrated in d13C. Physiological mechanisms between tree-ring d13C and d18O are quite different, therefore, comparing with tree-ring d13C, tree-ring d18O did not show recognizable effects from rising pCO2 (Lines 240-241) and pollution (Lines 424-425). Just as the authors said in Lines 514-515, tree-ring d18O is a more appropriate proxy for climate reconstruction. And, the phenomenon of divergence between the d18O and climate is really few worldwide.

I also suggest the authors adding one section discussing uncertainty. Isotopic dendroclimatology is a subject based on chemical experiment. Unlike tree-ring width or density, the result of tree-ring d13C or d18O measurements are different to verified again from their core or disk samples, due to time consuming and great expense. It is possible to introduce mistakes during many steps of experiments, for example, impure cellulose and unreliable measurements caused by bad condition of the isotope ratio mass spectrometer.

Some other uncertainties also exist. First is sampling strategy. We should understand what kind of tree could be used for climate reconstruction. As recommended by classical “The principle of limiting factors” (Fritts 1976), site selection is very important when one would employ trees to infer climate change. It is also important to isotopic dendroclimatology. Because mixed (deep phreatic water, shallow ground water, precipitation…) ground water may disturb tree-ring d18O (A tree in flowing figure), tree-ring d18O of B tree only absorb precipitation. Although cellulose d13C and d18O could be measured for any tree from any site, but for purpose of climate correlation, it should be carefully selected.

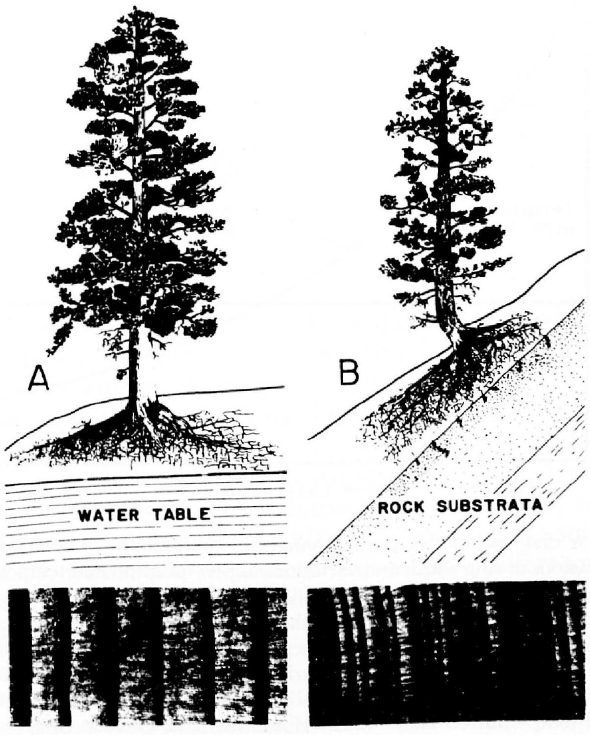

FIG. 1.5. Trees growing on sites where climate seldom limits growth processes produce rings that are uniformly wide (A). The ring widths provide little or no record of variations in climate and are termed *complacent*. Trees growing on sites where climatic factors are frequently limiting produce rings that vary in width from year to year depending upon how severely limiting climate has been to growth (B). These are termed *sensitive*.

Second uncertainty may be introduced by different samples for measurement (extractive-free samples, α-cellulose, whole wood or holocellulose). And, for different chemical extraction methods (Green's method, Brendel's method…). Third uncertainty may be introduced by "pooling" or "not pooling".

Special comments are as follow.

Lines 13-19, changes on physiology (f_o and *peclet effect*…) should be mentioned here.

Line 32, need a reference

Lines 38-32, it is no need to descript growth divergence

Line 72, "concentration" is better than "pressure" , also in Line 236

Lines 94-95, need references

Line 157, 5 year is not enough

Lines 175-177, one advantage for tree-ring isotope chronology is no need to detrending. If detrending for the isotope chronology, some climate signals may be lost.

Line 263, "1850s" is easy to understanding than "last 170 years"

Line 302, relative humidity and RH, repeat

Line 376, tropic/

Lines 399-412, does multi-proxy approach introduces more climate noise?

Section 3.3. there is only one sentence to state the situation of cellulose

d18O (Line 240). I recommend to delete d18O discussion in this manuscript. In addition, removing effect of increasing CO2 from the d13C series has been discussed in many literatures. Please shorten this section.

Table 1, check which one use pooling method.