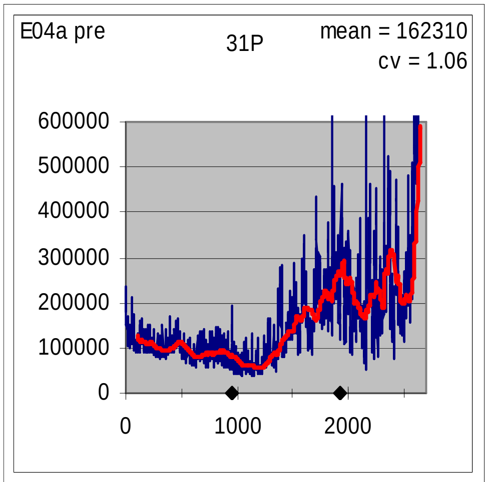

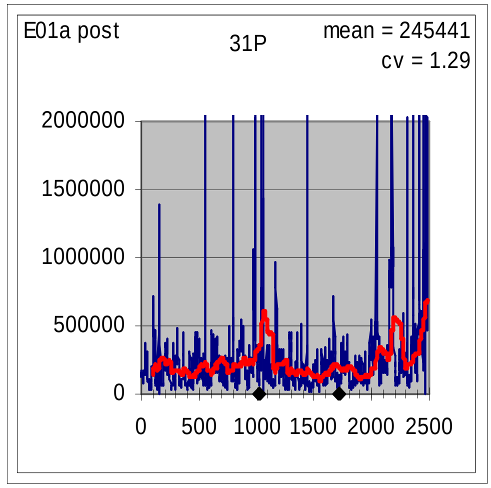

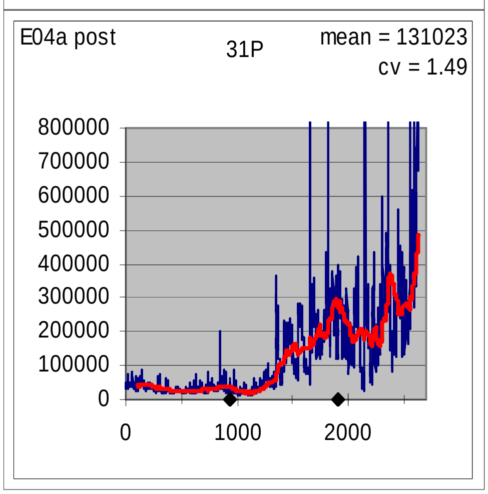

These plots are of phosphorus (P) in the two trees measured from Emmett Idaho.

In all cases, x-axis is in rows, i.e., data lines, which represent time in laser ablation. In all cases, the wood spans the time period 1980 to 2008, so the left-hand edge is the start of 1980 and the right-hand edge is the end of 2008. Based on my marking of the rings, the black diamonds indicate the start of 1990 (left diamond) and 2000 (right diamond). Sub-decadal temporal resolution is sufficient for the moment.

In all cases, y-axis is in units of something like mass-spec activity counts, not actual concentrations. As I understand it, the higher the activity count, the more of the element that is present, so at a minimum, these data show relative increases/decreases within trees through time. Perhaps relative differences between trees are also interpretable (Adam?).

Pre = the first laser run, i.e., on the sanded surface of the wood. Measuring the sanded surface is risky because sanding packs wood cells with sand dust from all rings, so it's a potential source of cross-ring contamination. Post = the second laser run, i.e., right down the same laser track of the first run, so post is on clean wood. Post should be safer, as the sanding issue is avoided with post.

As near as I can tell from the data set, tree E01a had only one set of data, presumably post. Tree E04a had pre and post, allowing for a comparison between the two. From this example and virtually all others I've plotted so far, pre data have higher average activity counts that post data of the same tree-element. An explanation for this could be that the cell pores are packed with dust, which adds extra elements of the dust and thereby raising the absolute numbers. This would seem to confirm the possibility of contamination from sanding, and in and of itself, this might be a publishable result. One pub says sanding is bad, but it was a general statement, not backed up with data.

Tree E04a shows a clear change in P beginning in the early 1990s. Especially in the post data, P is low and steady from 1980 up till early 90s, then it takes off on an uphill ramp all the way to present. This is a strong dendrochem result, a steady state for years followed by a departure.

By comparison, tree E01a shows essentially a steady amount of P from 1980 to present. The mean value of E01a is higher than E04a, but E01a just doesn't show any clear departures through time.

Tree E04 is growing in town in a city park, very close to the public pool of the park. E04 was considered to be within the area of human illnesses of Emmett, though I'm not exact clear on what illness(es) or how much in Emmett. Tree E01a is growing outside of town in a local cemetery, pretty far from the center of town itself and uphill from town. E01 was considered to be a control tree for Emmett.

If the change in P in E04 can be explained in terms of environmental availability of P, then this alone would be publishable. For example, does that point in time of the change (early 90s) coincide with the public pool? Does the pool use chemicals that include P? Might this be a fertilizer effect in the grassy lawn of the park? We are asking our Idaho contact these questions to see if it might be this easy.

Dendrochem of P is notoriously vague. Many researchers consider P to be translocatable across rings and therefore uninterpretable for environmental history. Any case examples of tree-ring P being successfully used to reconstruct changes through time in environmental availability in P would be of interest.

Replication of this P result remains to be seen. We have one more tree from the Emmett cemetery and one more tree from the city Park, also near the pool. It might be that these two trees should be measured to see if they confirm this P signal.

Comments welcomed, but perhaps by phone would be best. Please don't share this document with anyone.