Subject: Re: Marker years

Date: Thursday, February 28, 2019 at 10:02:18 AM Eastern Standard Time

From: Ryan Helcoski

To: Teixeira, Kristina A.

could be, I'm not sure. I just remember the dates and when I looked them up in Virginia those were the most searched weather events, all droughts. Ian or Valentine or even Alan may recall something else about those dates. We all looked them up at some point or another.

47,77,91 were the easiest to pick out

El jue., 28 de feb. de 2019 a la(s) 08:59, Teixeira, Kristina A. (TeixeiraK@si.edu) escribió:

> Thanks so much for the helpful and fast response!
>
> I thought there was at least one caused by a late freeze or something?
>
> **Kristina J. Anderson-Teixeira**
> **Ecologist, Leader of ForestGEO Ecosystems & Climate Program**
> **Smithsonian Institution**
> Smithsonian Conservation Biology Institute
> 1500 Remount Rd. MRC 5535; Front Royal, VA 22630 USA
> 1-540-635-6546 | teixeirak@si.edu
> CTFS-ForestGEO Ecosystems & Climate Program
> Lab Website

From: Ryan Helcoski <rhelcoski@gmail.com>
Date: Thursday, February 28, 2019 at 9:47 AM
To: "Teixeira, Kristina A." <TeixeiraK@si.edu>
Subject: Re: Marker years

Yes, the first marker I used was 1947 caused by a drought

It's a narrow band surrounded by wider bands before and after. 46 is normal, then 48 shows a slight recovery. Often 47 would almost be absent, 48 was still narrow. 43 - 48 would be somewhat more narrow than 40-42 and 49-52, but 47 was almost always the most narrow of all of them. There were often 6 years of narrow bands, with 47 the most narrow or missing. The early 40s were usually quite wide (link)

There would then be some normal sized rings until the drought of the 50's. This lasted from about 52-56 and wasn't as precise as 47, but generally if 47 matched then the 50s matched up very well and there was a series of

narrow rings. If I didn't see this pattern it usually meant I needed to recheck the core. (link)

I then also used 1977 which was also caused by a famous drought and was even more distinct than 47. Often times (like 47) 77 would almost be missing entirely and 78 would also be narrow. The vast majority of the times that I matched 47 and the 50's 77 would fit nicely into place. (link)

The next marker I used was 1991, which was also a famous drought and showed patterns similar to 47 and 77. (link). In some trees the 91 marker was weaker than the others though.

The last marker I used was 2002, but this was more difficult to see in many of the older trees. Generally there was a severe drop around 2002 (link) caused by a drought.

There were many other droughts that occurred during sampling, but often they would be long series of bands that were difficult to identify so I couldn't use them. Even the markers I chose were not the most severe droughts of the time, they were just the easiest markers to point out.

To find the markers I went by Alan's suggestions. He taught me to review about 30 or so cores looking for patterns and making down years using a skeleton plot. 47 (and to a lesser extent 48), the early 50's, 77, and 91 were consistently easily identified and very narrow across species and so I went with them. I actually didn't know they were droughts until I looked them up right now (thank goodness I was right). I was following Alan's rules of pattern recognition and I'm impressed (though not suprised) by how well they correlate to documented events.

The links are just last minute searches to see if the drought calls made sense.

Crazy that I still remember this. I still have the pattern of years memorized from 1947 - 2009. There were other markers before 47, but I don't remember them as well. 47 was the first one I'd check for on the trees

El jue., 28 de feb. de 2019 a la(s) 08:11, Teixeira, Kristina A. (TeixeiraK@si.edu) escribió:

Hi Ryan,

Could you please tell me the marker years that you used/ what caused them? I think it's important to have record of this and potentially account for them in analyses.

Many thanks,

K

Kristina J. Anderson-Teixeira
Ecologist, Leader of ForestGEO Ecosystems & Climate Program
Smithsonian Institution
Smithsonian Conservation Biology Institute
1500 Remount Rd. MRC 5535; Front Royal, VA 22630 USA
1-540-635-6546 | teixeirak@si.edu
CTFS-ForestGEO Ecosystems & Climate Program
Lab Website

--

Ryan Helcoski

Manager: CloudBridge Nature Reserve

2 Km Este de Escuela

San Gerardo de Rivas

Pérez Zeledón, Costa Rica 11904

Linkedin

--