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Authors: Cláudia Fontana, Gonzalo Pérez-de-Lis, Cristina Nabais, José Luís Penetra Cerveira Lousada, Gabriela Morais Olmedo, Paulo Cesar Botosso, Juliano Morales Oliveira

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Climatic signal in growth-rings of *Copaifera lucens*: an endemic species of a Brazilian Atlantic Forest hotspot, southeastern Brazil

Cláudia Fontana[a], Gonzalo Pérez-de-Lis[b,c], Cristina Nabais[c], José Luís Penetra Cerveira Lousada[d], Gabriela Morais Olmedo[a], Paulo Cesar Botosso[e], Juliano Morales Oliveira[a]

[a] University of Vale do Rio dos Sinos (UNISINOS). Av. Unisinos, 950, Cristo Rei, 93022-750, São Leopoldo, RS, Brazil. claudiafontanabio@gmail.com (corresponding author, permanent address; ORCID 0000-0003-2032-5673); julianooliveira@unisinos.br; gabriela.m.olmedo@hotmail.com

[b] Université de Lorraine, AgroParisTech, INRA, UMR Silva, 54000 Nancy, France gonzalo.perez-de-Lis-castro@inra.fr

[c] Coimbra University, Department of Life Sciences, Functional Ecology Center. Calçada Martim de Freitas, 3000, nº 456, Coimbra, Portugal. crnabais@bot.uc.pt

[d] University Trás-os-Montes e Alto Douro/CITAB. Forestry Department, Quinta de Prados, 5001-801, Vila Real, Portugal. jlousada@utad.pt

[e] Brazilian Agricultural Research Corporation (Embrapa), Embrapa Forestry, Estrada da Ribeira - Km 111, 83411-000, Colombo, PR, Brazil. paulo.botosso@embrapa.br

Abstract

In this study, we present the first tree-ring chronology for the tropical tree species *Copaifera lucens* and its climatic signal in southeastern Brazil. Tree-ring width series were compared with local climate indices using a drought index (Standardized Precipitation Evapotranspiration Index —SPEI), in monthly, bi-monthly and four-monthly scales. We also calculated negative pointer years over the time-span of the tree-ring width. The radial growth of *C. lucens* showed a positive correlation with the SPEI of the current summer and autumn in all the three analyzed time scales, while the negative pointer years matched with drier years. The species was highly sensitive to very low summer precipitation, which may lead to a 49% reduction in growth. We conclude that the long-living *C. lucens* has a great potential for dendrochronological studies as it shows a marked climatic signal. Our study also reinforces the importance of rainfall in regulating radial growth in tropical forests and sheds light on the local climate influence on tree growth in recent decades.

Keywords: Dendrochronology; climate-growth relationship; tree-ring; tropical forest.