

***Interactive comment on “Tree ring-based  
February–April temperature reconstruction for  
Changbai Mountain in Northeast China and its  
implication for East Asian Winter Monsoon” by  
H. F. Zhu et al.***

**Anonymous Referee #1**

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Manuscript Clim. Past Discuss., 5, 1215–1229 Title: Tree ring-based February–April temperature reconstruction for Changbai Mountain in Northeast China and its implication for East Asian Winter Monsoon

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General comments The paper addresses the reconstruction of winter temperature from tree rings in the Changbai Mountains of northeastern China, where only little tree-ring information is available until now. Most tree-ring studies from China focus on pre-

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cipitation reconstructions or summer temperature reconstruction, winter temperature development and its climatological background is rarely addressed. Thus, the study adds useful information about regional climate development and is suitable for CP. The data used are original, the statistical concept of data evaluation is standard but sound.

Title and abstract are informative and the general structure of the paper is clear. The number of illustrative figures is sufficient, although Figure 4 seems reproduced too small. The map (Figure 1) is not very appealing; some topographic features instead of a plain grey background would give a better impression of the area.

The methods are clearly described, although it is not completely clear if the fixed 180-year spline used to detrend the original data is applicable for all trees collected. As shown in Table 1, median segment length of the trees is at least 180 years, so some tree-ring series are shorter. It would be helpful to give more information about the regional climate (winter temperature, seasonal distribution of precipitation) to demonstrate the monsoonal character of the local climate The positive tree-ring response to winter temperature is a widely found reaction at high-altitude tree-ring sites, although explanations about the effect are often speculative, though reasonable from the common ecological knowledge. There is also a number of tree-ring papers mentioning an influence of winter temperature on the Tibetan plateau which have not been addressed. Therefore, a more thorough discussion about the effect of February–April temperature on tree growth is needed.

The usage of English is generally good, despite some wrong usage of the particle ‘the’ which should be checked by a native English speaker. Some detailed suggestions for language corrections are given below.

p. 1217, l. 2f: The purpose of this study is to reconstruct winter temperature based on tree-ring widths of Korean Pines from the Changbai (also known as Baekdu) Mountain area in Northeast China (Fig. 1). This reconstruction may also be useful for studying the long-term behavior of the EAWM. p. 1217, l. 21: CB is considered to be reliable

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from 1750 AD, when the sample depth is 20 series, although the EPS is 0.80, slightly lower than the commonly used level of 0.85. p. 1218, l. 18: The ring width series shows has significantly ( $p < 0.01$ ) positive correlations with the temperatures in previous October, current February to April, and September. p. 1220, l. 15: A former reconstruction of January–April maximum temperature for the Changbai area was based mainly on *Larix olgensis* and *Picea jezoensis* (Shao and Wu, 1997). However, due to the removal of persistence in their original tree-ring data by autoregressive modeling (Cook and Kairiukstis, 1990), little low-frequency variations were retained in that record that would allow a comparison with the current reconstruction. p. 1221, l. 17: The SH is the source area of EAWM, and its intensity is significantly positively correlated with. . . p. 1221, l. 17: Moreover, D'Arrigo et al. (2005) have developed a difference index between the normalized SH index and North Pacific index based on the tree-ring records from broad regions of Eurasia and northwest America.

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