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Sommario/riassunto	<p>Extreme climatic events, such as intense and prolonged droughts and heat waves, are occurring with increasing frequency and with pronounced impacts on forests. Forest trees, as long-lived organisms, need to develop adaptation mechanisms to successfully respond to such climatic extremes. Whether physiological adaptations on the tree level result in ecophysiological responses that ensure plasticity of forest ecosystems to climate change is currently in the core forest research. Within this Special Issue, forest species' responses to climatic variability were reported from diverse climatic zones and ecosystem types: from near-desert mountains in western USA to tropical forests in central America and Asia, and from Mediterranean ecosystems to temperate European forests. The clear effects of constraints related to climate change were evidenced on the tree level, such as in differentiated gene expression, metabolite abundance, sap flow rates, photosynthetic performance, seed germination, survival and growth, while on the ecosystem level, tree line shifts, temporal shifts in allocation of resources and species shifts were identified. Experimental schemes such as common gardens and provenance trails also provided long-term indications on the tolerance of forest species against drought and warming and serve to evaluate their performance under the predicted climate in near future. These findings enhance our</p>

knowledge on the potential resilience of forest species and ecosystems to climate change and provide an updated basis for continuing research on this topic.
