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Fire in the environment: effects on soil functions and ecosystem services in a changing world

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Fire is an essential element of the environment and a vital force for shaping landscapes all around the world. It has a critical role as driver of natural ecosystem processes and many plant communities are fire dependent aros the globe. However, although fire is a natural and regular component of some biomes in the Earth's systems, it can become a destructive force when natural ecosystems are disturbed, fire is introduced at a rate not previously experienced, and recovery to a pre-fire state is not possible. Thus, assesing the potentially harmful environmental impacts of fire and building the underlying knowledge required to successfully manage fire makes are crucial in order to understand the role of fire in all its different dimensions. Over the past year, fires in California in the United States and in the Amazon rainforest in Brazil have grabbed the world's attention. The increased rates of fire events in some of these areas, mostly attributed to land degradation processes, have led to international concern. More recently, several bushfires all around Australia have had dramatic impacts in the environment with 10 million hectares burned so far, including large portions of the natural environment. These unprecedented fires are predicted to affect to a large extent the soil characteristics, processes and function in several ecosystems. In this presentation, we highlight some of the most recent research published during the last year on the effects of fire on soil functions and the provision of soil ecosystem services. We also showcase some of the possible approaches to protect and conserve soil ecosystems affected by extreme fires and propose available strategies for post-fire management.