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 Gebäude GEO I
Hörsaal H6

BayCEER Kolloquium

Vortragsreihe Ökologie und Umweltforschung

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A new climate era in the Swedish sub-Arctic? – accelerating climate changes and their multiple current and future impacts

It is now widely recognised that climate warming is in progress and is amplified at high northern latitudes where the current rate of warming is about double the global average. Such changes are already having impacts on the Arctic's physical and biological environments while continuing warming is likely to have more profound effects than those currently observed. Further, many of the impacts on biodiversity and feedbacks to climate such as greenhouse gas emissions and albedo in the Arctic are likely to have global consequences. However, the Arctic is sparsely populated and the power of observation and projection of climate changes and their impacts are limited compared to many other regions. An exception is the Abisko Scientific Research Station that hosts up to about 700 visiting international scientists each year. Here, environmental monitoring and observation have been in operation since 1913 and a large array of environmental and ecosystem manipulation experiments has been deployed to project impacts on terrestrial ecosystems of future warming.

Analysis of the long-term environmental data shows increased warming over the past ca. 100 years with a recent period that is warmer than any in the instrumental record. These temperature increases are resulting in landscape level changes such as reduced snow depth, loss of lake ice and permafrost and changes in the location of treeline and forest structure. Superimposed on these century-long changes are extreme events that have led to widespread damage to vegetation and provide significant challenges to the reindeer herding community as well as to the local administration responsible for the maintenance of infrastructures. The powerful combination of Indigenous Peoples' traditional ecological knowledge, long-term observation and experimentation together provide insights into future ecosystem changes that are not yet incorporated in ecosystem and dynamic vegetation models.

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