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“Tropical” diversity of *Penicillium* spp. in water-related polar environments

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Penicillium species are not only amongst the most frequently isolated filamentous fungi from polar and alpine soil, but also from water environments. An almost ‘tropical’ diversity and quantity of *Penicillium* spp. was isolated in the study of the water-related coastal Arctic environments of the Svalbard archipelago in years 2001, 2003 and 2008. All together, at least 35 different *Penicillium* species were recorded. Most of them (78%) originated from different glacial ice samples. The highest numbers of isolated strains and the highest species diversity were obtained from (sub) glacial ice of different glaciers. A considerably lower diversity of *Penicillium* species was detected as well in glacial melt water, bordering sea ice and sea water, and puddles on snow in the tidal zone. Most species released from the glaciers into the surrounding area were detected in considerably lower numbers, however certain species, like *P. nordicum*, were isolated from sea water in high numbers. In the distribution of conidial filamentous fungi air is most often considered as the main dissemination factor, however recent evidence based on fungi from extreme environments, including *Penicillium* spp. indicates that water environments, such as glacial ice and sea-water might contribute much more than previously assumed to the distribution of certain pan-global species, particularly those that are involved in contamination of our house-holds and our food.