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Basal ice processes: their importance for the knowledge of environmental evolution in Polar Regions

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« Basal ice » refers to the portion of an ice body that is in contact and interacts with the glacial bed. The ice present e.g. at the bottom of a glacier, an ice sheet or an entirely frozen lake meets this definition. As a result of its specific location within the ice body, basal ice generally displays a higher debris content as well as a more variable structure as compared to the overlying ice. These characteristics confer to the basal zone distinctive physical and chemical properties, which will often influence the behaviour of the entire ice body itself. For these reasons, the study of basal ice properties is essential to the understanding of glacial dynamics. Here, some of the major processes responsible for the formation of basal ice will be reviewed. The importance of the knowledge of basal ice processes in reconstructing and predicting the evolution of polar environments will also be illustrated through different analytical case studies.