



## **Winter Tourism and mountain wetland management and restoration**

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The degradation and loss of wetlands is more rapid than that of other ecosystems (MEA 2005). In mountains area, wetlands are small and scattered and particularly sensitive to global change. The development of ski resorts can lead to the destruction or the deterioration of mountain wetlands because of hydrologic interferences, fill in, soil compression and erosion, etc.

Since 2008, we have studied a high altitude wetland complex in the ski resort of Val Thorens. The aim of our study was to identify the impacts of mountain tourism development (winter and summer tourism) on wetland functioning and to produce an action plan designed to protect, rehabilitate and value the wetlands. We chose an approach based on multi-stakeholder participatory process at every stage, from information gathering to technical choices and monitoring.

In this presentation, we show how such an approach can efficiently improve the consideration of wetlands in the development of a ski resort, but also the bottlenecks that need to be overcome. We will also discuss some of the ecological engineering techniques used to rehabilitate or restore high altitude degraded wetlands. Finally, this work has contributed to the creation in 2012 of a mountain wetland observatory coordinated by the conservatory of Haute-Savoie. The objective of this observatory is to estimate ecosystem services furnished by mountain wetlands and to find restoration strategies adapted to the local socio-economical context (mountain agriculture and mountain tourism).