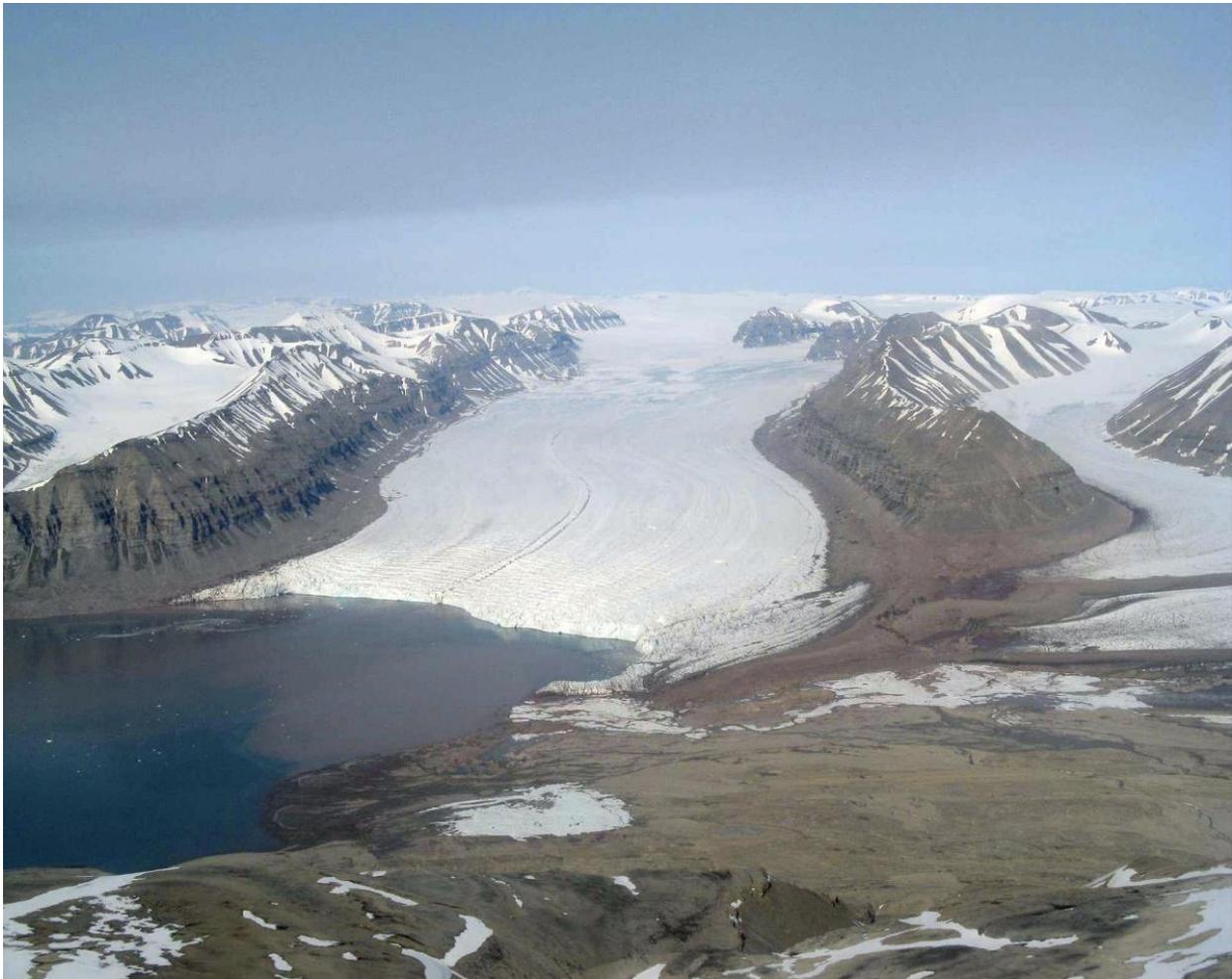


## 1. UNDERSTANDING THE TIDEWATER GLACIERS OF SVALBARD: 2018 -

In recent years, large amounts of data about the glaciers of Svalbard have been collected from space. Many of the large glaciers are calving and surging glaciers, and therefore have complex dynamics. Existing glaciers models have problems in reproducing the behaviour of these glaciers. I have been fascinated by these glaciers and together with Norwegian researchers work on a modelling strategy to unravel the key processes. My ambition for the near future is to use new data sets to improve models, with a keen eye for testing, calibration and projection of future behaviour.

*J Oerlemans, J Kohler and A Luckman (2022): Modelling the mass budget and future evolution of Tunabreen, central Spitsbergen. The Cryosphere, 16, 2115-2126, <https://doi.org/10.5194/tc-16-2115-2022>*

*J Oerlemans (2018): Modelling the late Holocene and future evolution of Monacobreen, northern Spitsbergen. The Cryosphere 12, 3001-3015, [doi.org/10.5194/tc-12-3001-2018](https://doi.org/10.5194/tc-12-3001-2018).*



## 2. THE USE OF ICE STUPAS AS WATER STORAGE IN COLD ARID REGIONS: 2018-

Sonam Wanchuk, an engineer from Ladakh, and winner of the Rolex Award for Enterprises, initiated the idea of building ice structures (pyramids) for storing water for irrigation purposes. A Swiss project was initiated by the Academia Engiadina to design an automated watering system for the construction of ice stupas. I am involved in this and designed a physical model to calculate the amount of ice that can be produced for given meteorological conditions. This model was recently published (see below). Further model development is currently undertaken by a Ph.D. student from Ladakh (S. Balasubramanian, at Université de Fribourg), which I am also co-supervising.

*J Oerlemans, S Balasubramanian, C Clavuot and F Keller (2021): Brief communication: Growth an decay of an ice stupa in alpine conditions – a simple model driven by energy-flux observations over a glacier surface. The Cryosphere, 15, 1-6, <https://doi.org/10.5194/tc-15-1-2021>.*



### 3. MODELLING ICE GROWTH ON THE LAKE OF ST. MORITZ: 2022 –

Lake of St. Moritz, Switzerland, has an area of 0.78 km<sup>2</sup> and is about 45 m deep. In winter it is extensively used for recreational purposes, including horse racing with thousands of spectators. Safety on the ice cover is essential and there is a great need to have a calibrated model to predict ice growth. I have started a project, together with Dr. Felix Keller (affiliated with the Academia Engiadina and ETH) to develop such a tool as well as a more extensive observational program. A first publication on this has been submitted:

*J Oerlemans and F Keller (2022): Application of a simple model for ice growth to the Lake of St. Moritz, Switzerland. Journal of Glaciology (submitted).*



#### 4. THE GlaciersAlive FOUNDATION (2020)

I am one of the founders of the [GlaciersAlive Foundation](#).

This foundation is in development and has the objective to foster small-scale projects for protecting glaciers and dealing with the consequences of glacier retreat (e.g. water supply for mountain huts). The foundation is sponsored by local communities and commercial parties, as well as supported by personal gifts.



**Diavolezzafirn (ski slope)**  
fleece cover in summer since 2007