

WINDSLED pulled by a kite in Antarctica Eastern Plateau (December 2018).





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Polar Wind Highways

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The existence of Katabatic winds in the coastal areas of Greenland and Antarctica has been known for a long time. Human activity in the shores of these two major masses of permanent ice on Earth has been conditioned by the violent pieces of air that precipitate down the slopes of their respective high plateaus.

In the upper part of these enormous “islands”, the layer of air close to the surface cools down, radiating all its heat away, and therefore gets denser and denser, increasing the pressure, until it flows down to the coast, accelerating in the steeper and more channelized relief as it approaches the coast.

Theoretically, in its way, like any other fluid, the wind follows the maximum slope and it is, in some degree, deviated by Coriolis force, which is associated with the turning of the planet.

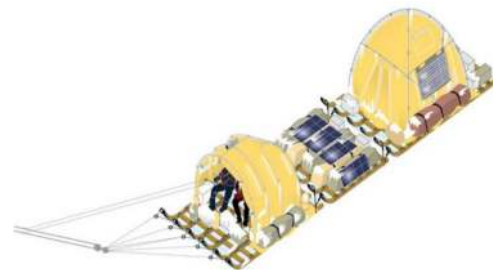
This process is quite regular and intense in stable conditions. Any disturbance created at continental/regional level and the presence of the sun can modify the velocity and the direction of the main pattern.

Due to obvious reasons, the validation of this behaviour with reliable data collected in meteorological stations is a significant challenge, above all in the vast and inhospitable interior of Antarctica.

From year 2020, WINDSLED PROJECT, started its own empiric validation. After more than 25.000Km flowing with these winds, studying their local behaviour, inter-

preting the consequences in the shape of the frozen surfaces, WINDSLED has establish proven “Wind Highways”, and “Secondary wind roads”, that allow the transportation of persons and goods across the most pristine and unexplored areas of the world.

Today, WINDSLED is able to communicate main scientific and logistic bases using Airborne Wind energy as unique fuel. Current developments/plans of WINDSLED include the direct pulling with kites, kite reel in/out electricity generation systems, and Polar proof autonomous electric vehicle with auto transportable renewable energy generator.



In 2022 a new journey is scheduled in Greenland. Later, in 2023, WINDSLED will become the first sustainable mobile International Scientific Base in Antarctica, hopefully under the auspices of the Spanish Polar Committee.