# Solar Powered Race Bicycle

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| **Motivation / Grundidee**<br>Was ist der Auslöser (Problem, Wunsch), was ist der Zweck des Projektes. Was genau wird gemacht / hergestellt? | I will be taking part in a solar powered bike race (The Sun Trip) in April and need to convert a bike to an e-bike able to charge only with the sun |
| **Platzbedarf**<br>Wo und wieviel Platz wird dauerhaft benötigt? | Around 3m2 of storage |
| **Ab wann / wie lange**<br>Ab wann soll es los gehen? Wie lange wirst du vorraussichtlich brauchen? | I will start immediately and need the month of March to complete the bike. |
| **Kontakt**<br>Name, Email oder Telefonnummer? | Jack Butler, |

# About me/the race

The Sun Trip - Is a solar powered bike adventure race

In 2018 I took part for the first time! The route that year was from Lyon, France to Canton (Guangzhou), China. The route was around 14000km and I finished in 6th place winning the "Jury Price" for best content and communication throughout the race.

In 2020 I planned to take part again racing to China, however the COVID pandemic ended up cancelling the race this year.

from 2021 The Sun Trip organisation has held many shorter races just around the Alps and Europe.

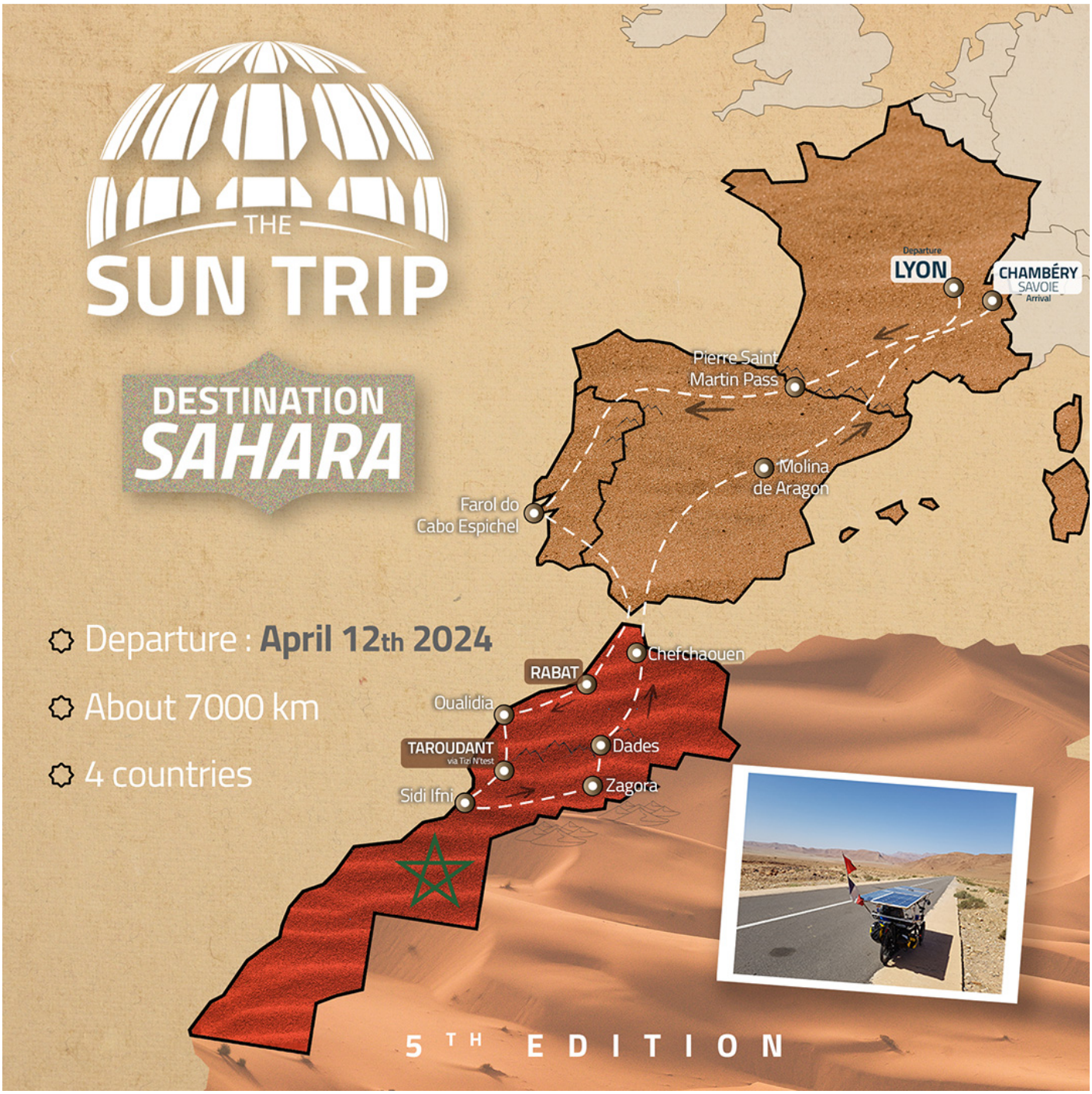
Now in 2024 is the first "Big Sun Trip" again I have joined the race! The route this year is a loop of around 7000km from Lyon, France to the Sahara Desert, Morocco.

MAJOR PARTNERS

La Région Auvergne-Rhône-Alpes

eDF

Aktid




# Logbuch / Schritte

## Goals/stages

1. Electrify the bike
2. Design, test and assemble the tilting solar roof
3. Test and optimise electrical and mechanical systems
4. Optimise other (Aero, Storage, redundancy)
5. Testing and data gathering

# Step 1 - Electrification

The first step is the convert the existing recumbent bike to an e-bike

I plan to use a direct drive front hub motor inside the front 20" wheel. This smaller wheel is ideal for a hub motor as the higher RPM helps efficiency under power at slower road speeds and also increases the amount of regenerative braking that can be performed.

The battery will be 50.4V nominal based on Samsung INR18650-35E cells (LiNiCoAlO2). Capacity to be decided.

Revision #2
Created 17 February 2024 16:33:54 by Jack Butler

Updated 17 February 2024 17:02:20 by Jack Butler