



AVIATION FOR SCIENCE

BLACK CARBON POLLUTION RESEARCH MEDITERRANEAN 2017

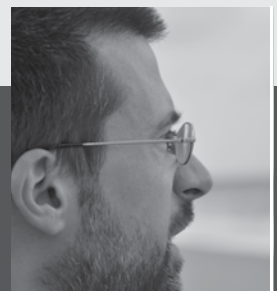
www.worldgreenflight.com

- The planet Earth is getting warmer.
- Scientists predict significant rise of sea level in the next years (1 m, NASA).
- Black carbon adds 1,1 W/m² to the greenhouse effect, caused by anthropogenic pollution.
- 7 Million people worldwide die every year due to air pollution.
- We can act once we know the problem.
- We must change black carbon pollution legislation in order to save our lives.

We are going to measure the black carbon and Sahara sand influx from Africa to Alpine glaciers and Central Europe in the spring time above the Mediterranean Sea, south and north of the Alps and above the mountain range itself on different altitude levels.



Matevž Lenarčič
Aviator

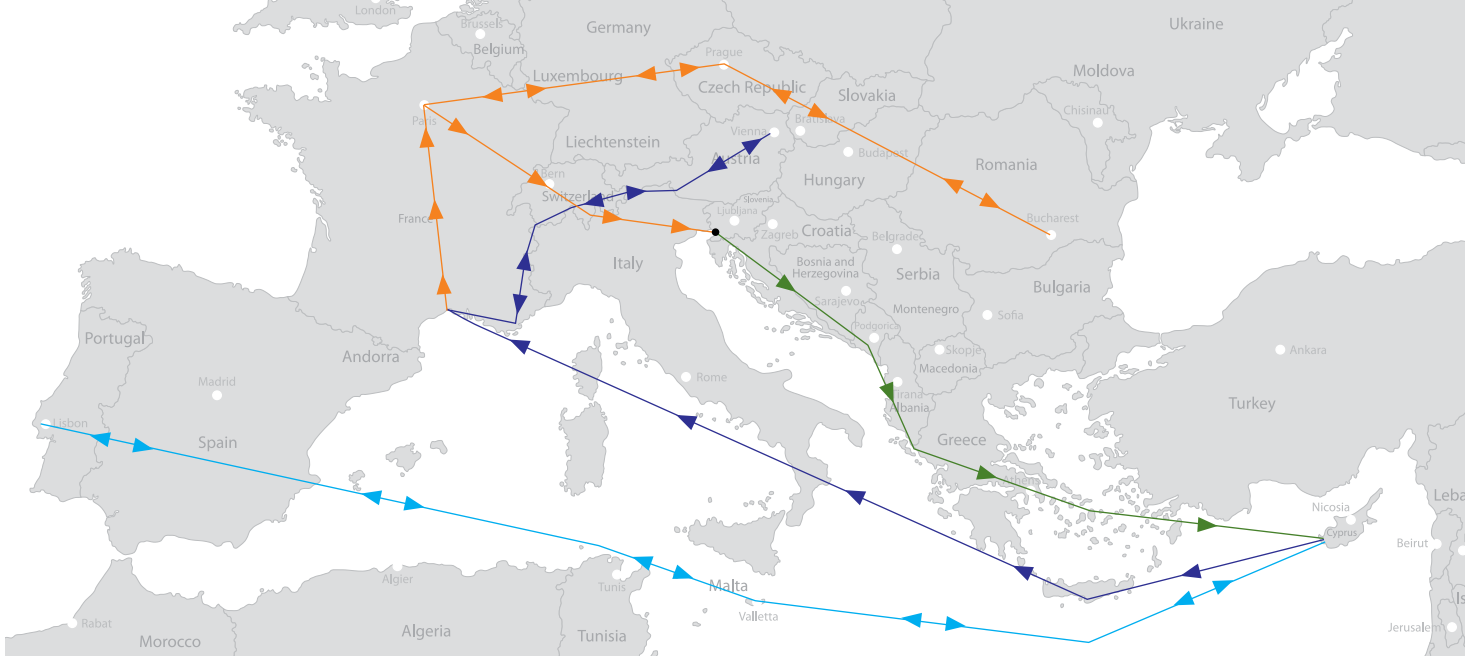


Dr. Griša Močnik
Scientist



CLIMATE CHANGES ARE HERE.

Join the unique scientific aviation adventure and show the world you care about our planet



| | | | | | |
|-------|---|-----------------|---------------------|----------|----------|
| Stage | 1. ■ Portorož – Pafos/Cyprus | Flight altitude | 10,000 ft | Distance | 2.400 km |
| | 2. ■ Pafos/Cyprus – Lisbon – Pafos/Cyprus | | 6.000 ft, 11.000ft | | 7.600 km |
| | 3. ■ Pafos/Cyprus – Marseille – Vienna – Marseille | | 8.000 ft, 12.000 ft | | 4.800 km |
| | 4. ■ Marseille – Paris – Bucharest – Paris – Portorož | | 6.000 ft, 11.000 ft | | 5.500 km |

Glaciers in the Alps are melting at an accelerating rate! The pessimistic scientific forecasts say they will completely disappear within 50 years. Since glaciers are one of the important sources of drinking water and energy in Central Europe, they are of vital importance for the people on the continent.

The causes for the acceleration in melting lie also in the increased concentrations of black carbon and sand dispersed by winds from the Sahara Desert – particulates deposited on white surfaces increase the rates of heat absorption.



Black carbon

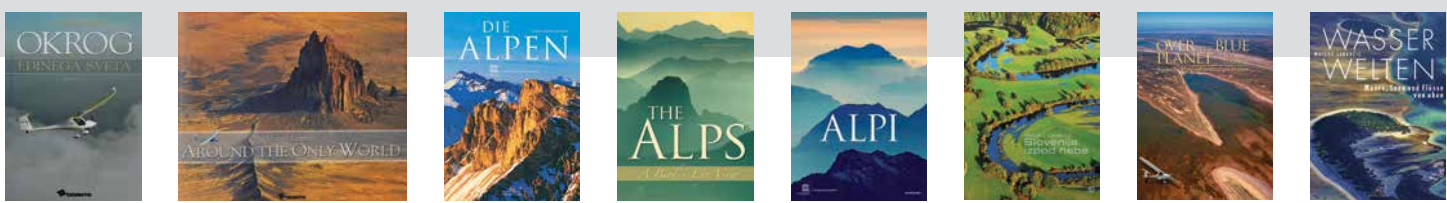
The incomplete combustion of fuels containing carbon (such as gasoline, diesel, natural gas, wood and other biomasses) results in the emission of aerosols, small particles which pollute the air and are harmful to people's health. An important part of these emissions is soot, known by its scientific name: Black Carbon (BC). It is inert and can be transported over great distances. It also highly absorbs sunlight, which is the reason for its name – it has a very black appearance.

BC heats the atmosphere through the absorption of sunlight and is recognized as a very important cause of global warming, second only to CO₂. Although BC measurements can increase the knowledge on these topics, they are scarce at global background locations. The GLWF flights are an opportunity to carry out measurements on such a scale. We modified the aircraft and installed an aerosol inlet on the wing, with tubing carrying the sampled air to the prototype Aethalometer – the instrument for measuring BC we developed for this very occasion.

We have demonstrated during the previous GLWF round-the-world and the North Pole campaigns that an instrumented ultra lightweight aircraft can provide valuable information on BC concentrations, their regional heterogeneity and vertical profiles with a minor payload and for a fraction of the cost associated with large airborne platforms. We trust that the campaigns will initiate a change of the measurement paradigm and a start of measurements campaigns on a really large scale.

Dr. Griša Močnik

Matevž's »aerial view« Books



Pilots

Matevž Lenarčič is experienced long distance flier. He has flown for more than 3500+ hours all over the world, mostly with his ultra light airplane and other single engine aircrafts. He holds PPL - private pilot license with IFR - (instrumental flight rules) rating, night qualification, and ULPL - ultralight pilot license.



Matevž Lenarčič has graduated in biology. An alpinist, paraglider, environmentalists, photographer and a pilot, he has climbed all over the world and among others reached the top of 8051m Broad Peak in Himalaya and climbed extreme routes in Patagonia. He is author of 11 books (nature, photography, climbing and flying), some of them awarded and translated in several languages. He is also founder and director of Aerovizija d.o.o., company for aerial photography.



Domen Grauf is experienced aviator with several pilot licences and ratings. He holds also flight instructor rating for ultra-light aeroplanes.

In last five years, he participated as a team member in GreenLight WorldFlight projects, his main tasks included support with meteorological data and over-flight permits for the flight around the world. With participation in the past projects, he was able to get valuable aviation experiences connected to extreme flights. His next goal is to fly as a pilot in the future project and measure the black carbon in 2017.

www.aerovizija.com

Scientist

Dr. Griša Močnik, is the director of research and development of Aerosol d.o.o. – the developer and producer of the Aethalometer, the instrument for measurement of black carbon. He received his doctorate from the University of Ljubljana while working at Institute "Jozef Stefan", and universities and institutes in the Netherlands, France and Germany, where he performed research on photothermal and photoacoustic methods for investigation of highly absorbing and scattering samples. Before that he studied physics at the University of Ljubljana.

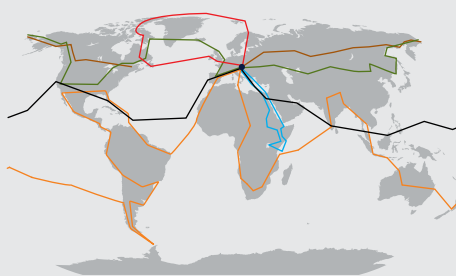


Griša Močnik has been a principal investigator, researcher and scientific advisor in numerous development and research projects in the field of aerosol instrumentation and laser devices. His work is mostly focused on the development of filter based instrumentation for research of aerosol optical properties and application of this instrumentation – in particular measurement of black carbon and other light absorbing carbonaceous aerosols. His current research includes source apportionment of carbonaceous aerosol for local studies and in context of long range transport; vertical profiles of primary combustion products; and methods for emission measurements. He served as a member of the United Nations ECE expert group on Black Carbon.

Successfully accomplished projects

www.wingsforever.com

- **Worldtransiberia 2002:**
28 000km over 8 countries incl. Russia
- **Around The Only World 2004:**
38 000km crossing 23 countries
- **Africa - Valley of Life 2005:**
17 000km over 13 countries
- **The Alps - A Bird's Eye View 2006 - 2009:**
60 000km all over the Alps
- **GLWF 2012:** 91 000km
- **GLWF North Pole 2013:** 15 900km
- **GLWF 2016:** 42 172km



Records:

- | Official national speed record Around the World Eastbound - C1a
- | Anofficial world speed record Around the World Eastbound - C1a
- | 2nd place national competition RAL2 2005

Aviation awards and prices:

- Fédération Aéronautique Internationale (FAI):
- | Bronze colibry
- | Circumnavigator East Diamond
- | Silver colibry
- | Diamond colibry
- | World Aviator of the year 2013

More informations:

www.wingsforever.com
www.panalp.net
www.aerovizija.com
www.worldgreenflight.com
www.overblueplanet.com

Green partner



Blue partner



Premium donator



Znanstveni partner



Partnerji



Tehnični partnerji



Medijska partnerja



Donator



ULTRALIGHT AIRCRAFT: Dynamic WT9 Survey



| | |
|-------------------------|---------------------------------------|
| ENGINE | ROTAX 912 iS |
| PROPELLER | MTV-33-1, hydraulic constant speed |
| DIMENSIONS | |
| Wingspan | 9,0 m |
| Wingarea | 10,35 m ² |
| Lenght | 6,4 m |
| Height | 2,0 m |
| WEIGHT | |
| Empty weight | 309 kg |
| Maximum take-off weight | 472,5 / 600 / 800 kg |
| Maximum fuel on board | 120 (standard) 360 l (long range) |

| | |
|--------------------------------|--|
| PERFORMANCE | |
| Minimal speed with flaps | 63 km/h |
| Minimal speed | 79 km/h |
| Cruise speed (75% power-FL100) | 250 km/h |
| Maximum speed in turbulence | 230 km/h |
| Maximum level speed | 280 km/h |
| Climb speed | 7,0 m/sec |
| Finesse | 1 : 12 |
| Maximum altitude MTOW 800 kg | 4500 m |
| Maximum altitude | 6500 m |
| Autonomy | 7h (standard)/22 ur (long range) |
| Max. Range | 5200 km |
| Fuel consumption | 16 l/h 13,5 l/h FL100 12,5 l/h FL120 |

GreenLight WorldFlight TEAM:



Vojko Strahovnik
holds a bachelor's degree in geography. Although he started his career in tourism, nature has been his basic field of interest since childhood. GLWF: head of organisation



Boris Mikuž
is an experienced manager, athletics specialist, sports coach and pilot
GLWF: financial consultancy, sponsors relations



Nataša Krhen
Nataša Krhen is a sculptor and designer with many references in graphic, web and showroom design. GLWF: visual identity of GLWF project.



Andrej Velkavrh
meteorologist at Slovenian Environment Agency and enthusiastic mountain biker. GLWF: world weather consultancy



Petra Draškovič Pelc
PhD degree in Biomedicine is a researcher, traveler, photographer, tour guide and above all naturelover. GLWF: communication, translation, forum



Rado Likon
MgA degree in TV and Film Camera at FAMU in Prague, is a member of ZFS, owner of video and film production and postproduction agency Cebtram. GLWF: film production



Dr. Lidija Honzak
PhD degree in Biomedicine is an experienced manager, business coach and alpinist
GLWF: financial consultancy, sponsors relations



Andreja Vrečar
graduated in Computer Science. She specialized in programming for Internet (PHP) and developing Flash multimedia applications. GLWF: developing and maintaining GLWF portal



Petar Damjanić
Degree in political science, advisor for communication. GLWF: public relations, sponsors relations