BALLOON-BORNE MEASUREMENTS IN THE UPPER TROPOSPHERE AND LOWER STRATOSPHERE ABOVE BULGARIA (N41-43° E24-26°)

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Basic Environmental Observatory Musala

Химически Факултет

IOFA consult

IICT INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

Balloon setup

Helium around 2 m^3

Radio antenna, 868 MHz

Payload around 800 g

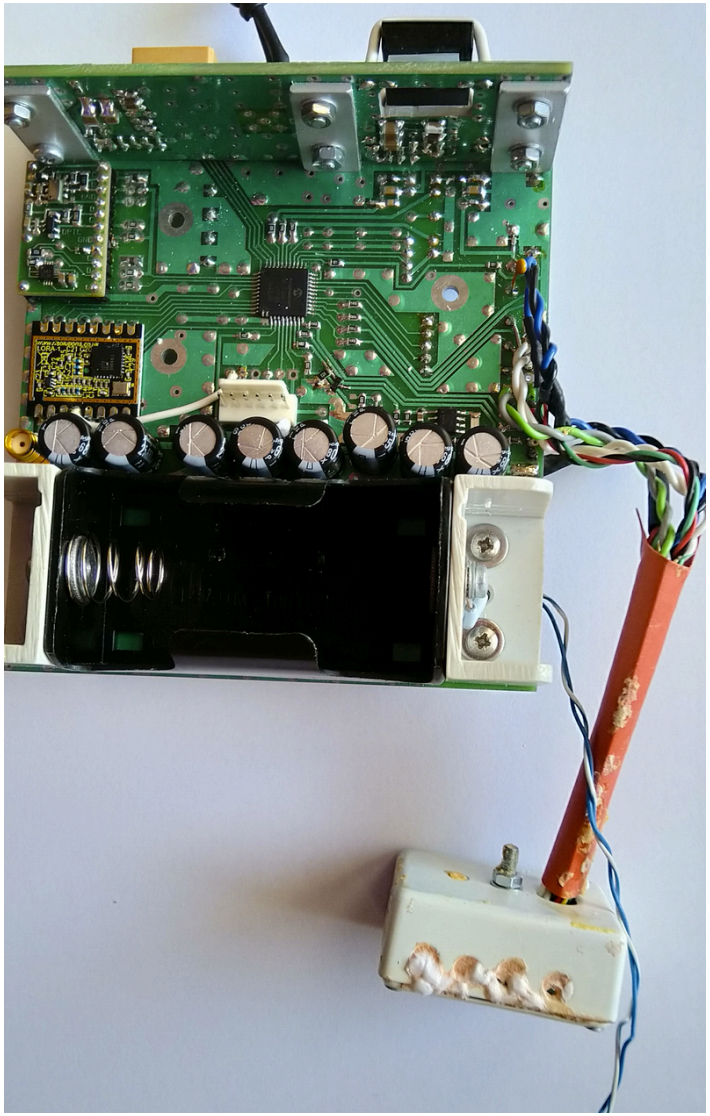
Summary

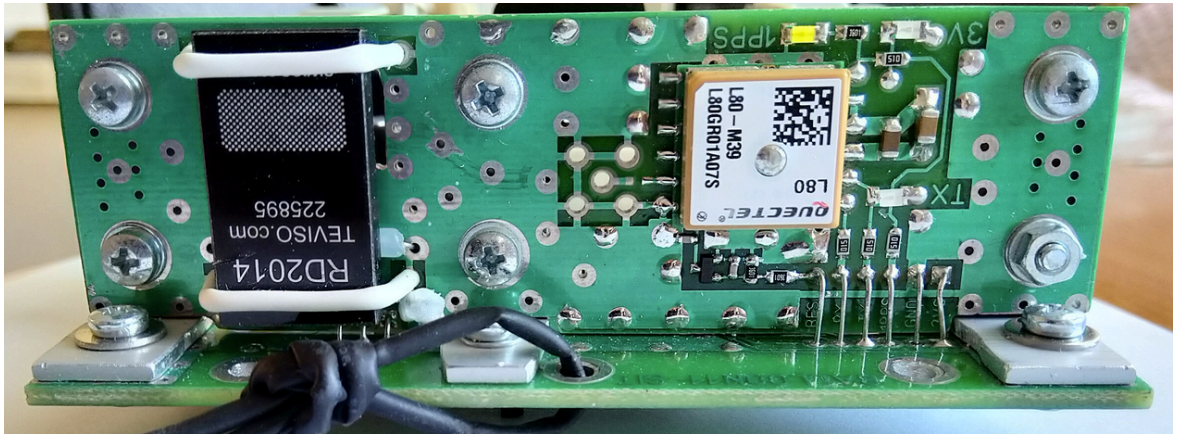
balloon	date	max. height	weight	launch site	team
#1	08.09.2017	32852 m	736 g	Golyam Chardak	8
#2	06.11.2017	35167 m	802 g	highway Trakiya, Belozem	10
#3	31.03.2018	32250 m	850 g	Plovdiv	13
#4	27.04.2018	30620 m	820 g	highway Trakiya, Belozem	6

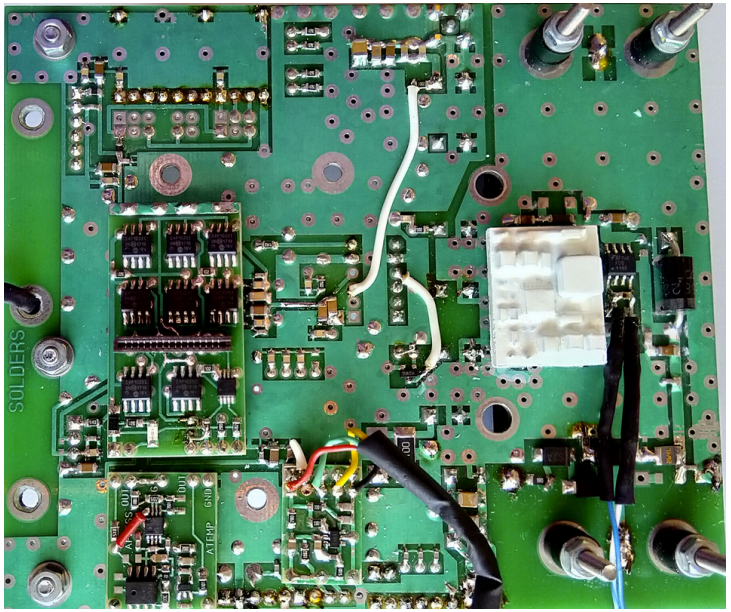
Key points

1. Self made hardware, payload design;
2. Self made firmware and data transfer protocols;
3. Self made independent radio communication;
4. Lightweight payload;
5. Low cost;
6. Multiple usage payload due to the tracing reliability;
7. High resolution measurements (each second);
8. Open data, publicly available results.

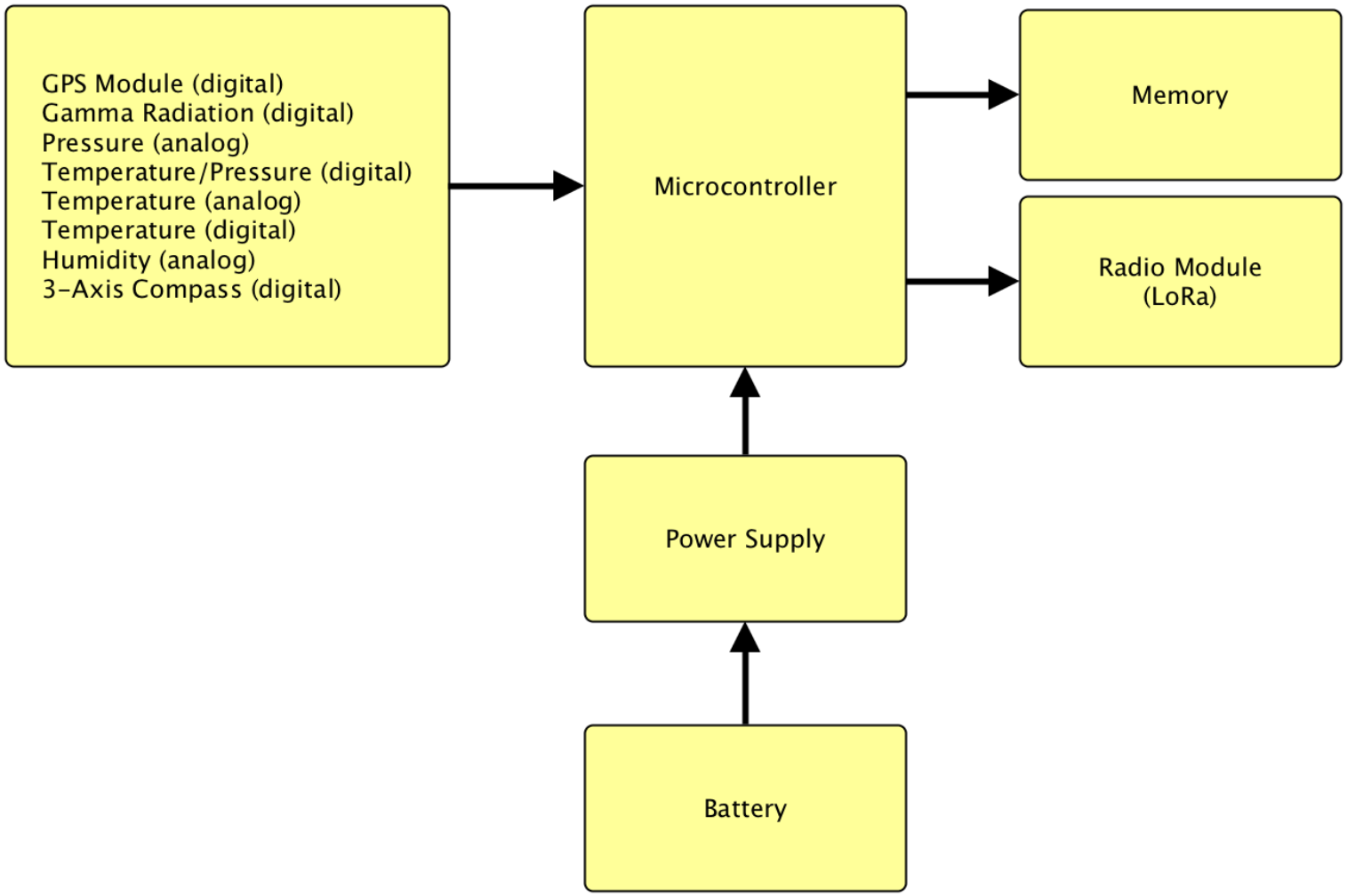
Board computer



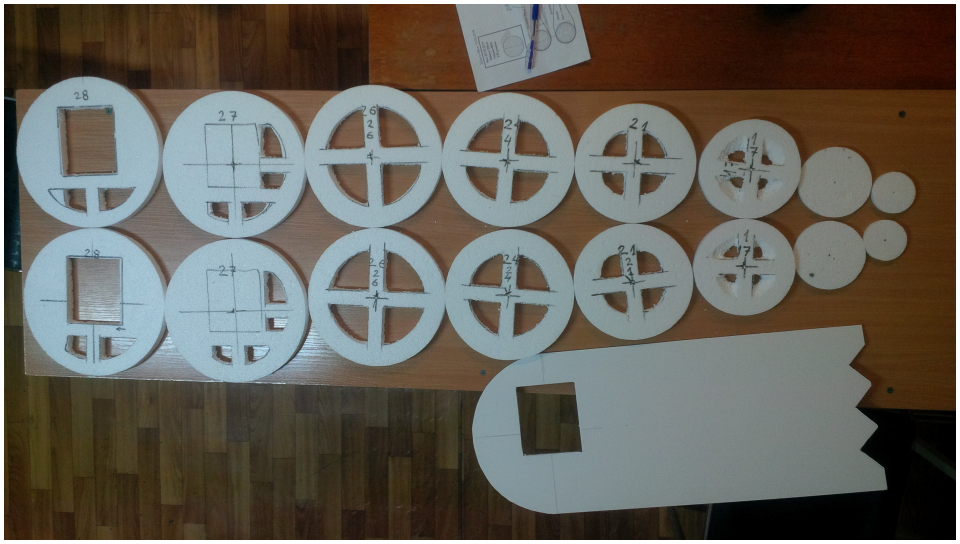


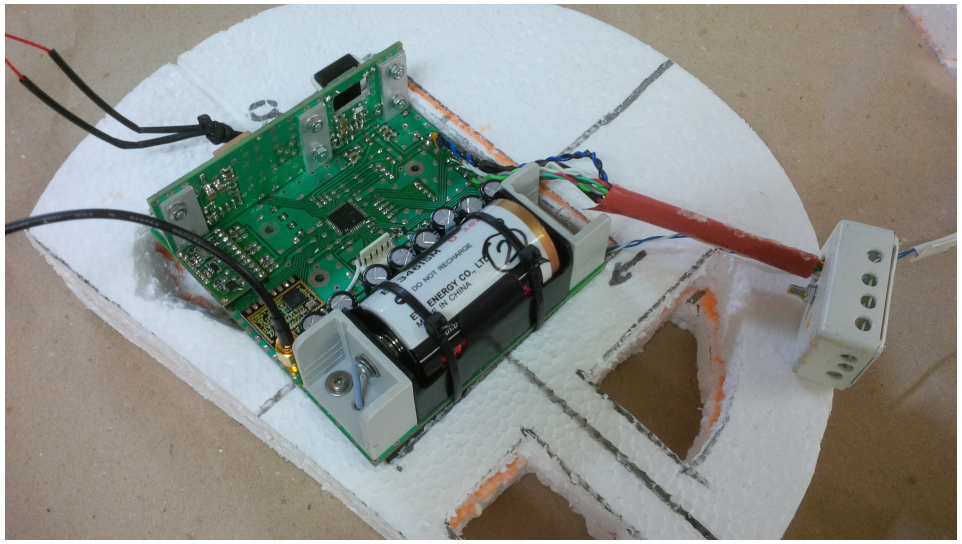


Block diagram

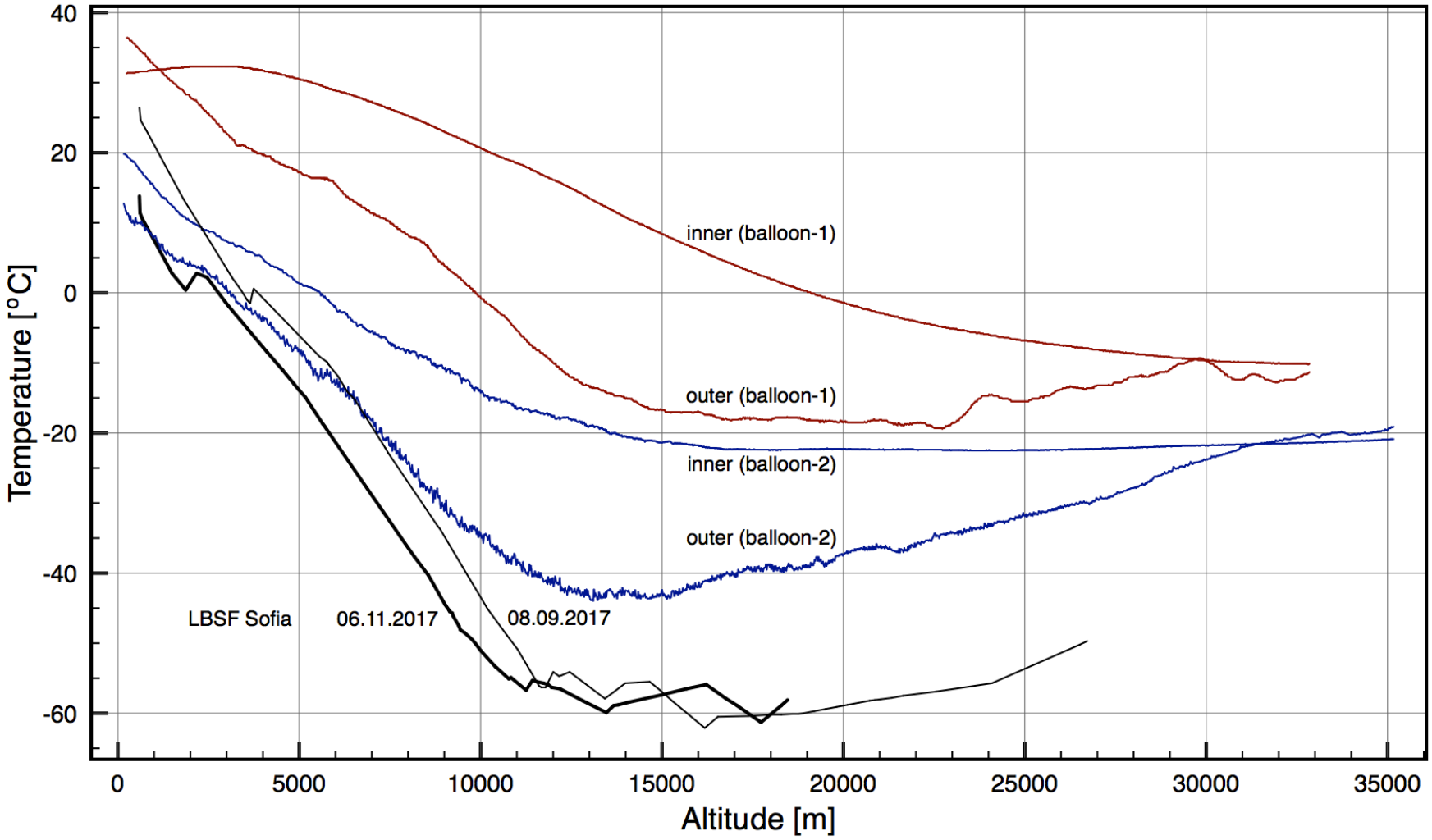


Payload setup (polystyrene ball)

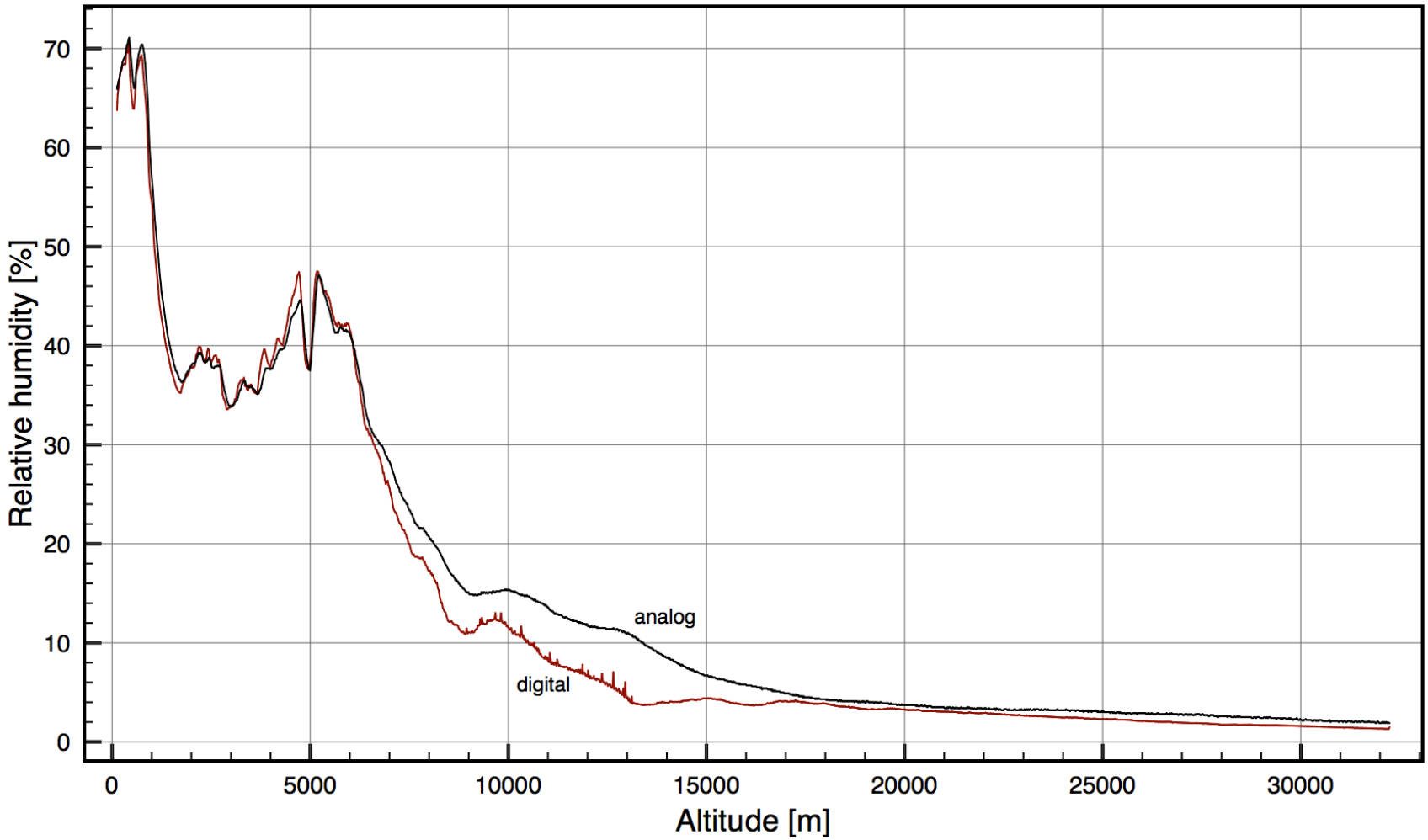




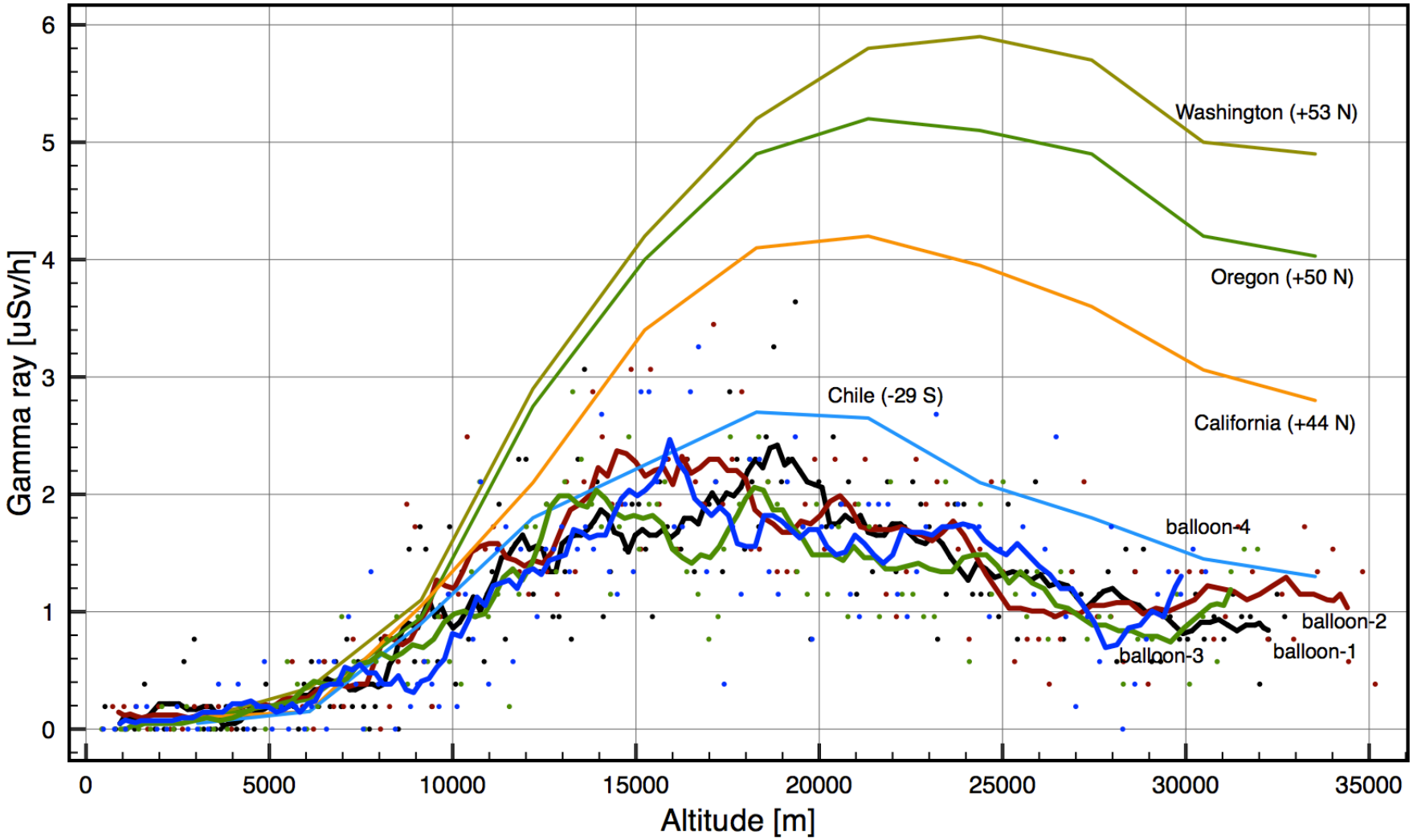
Temperature measurements



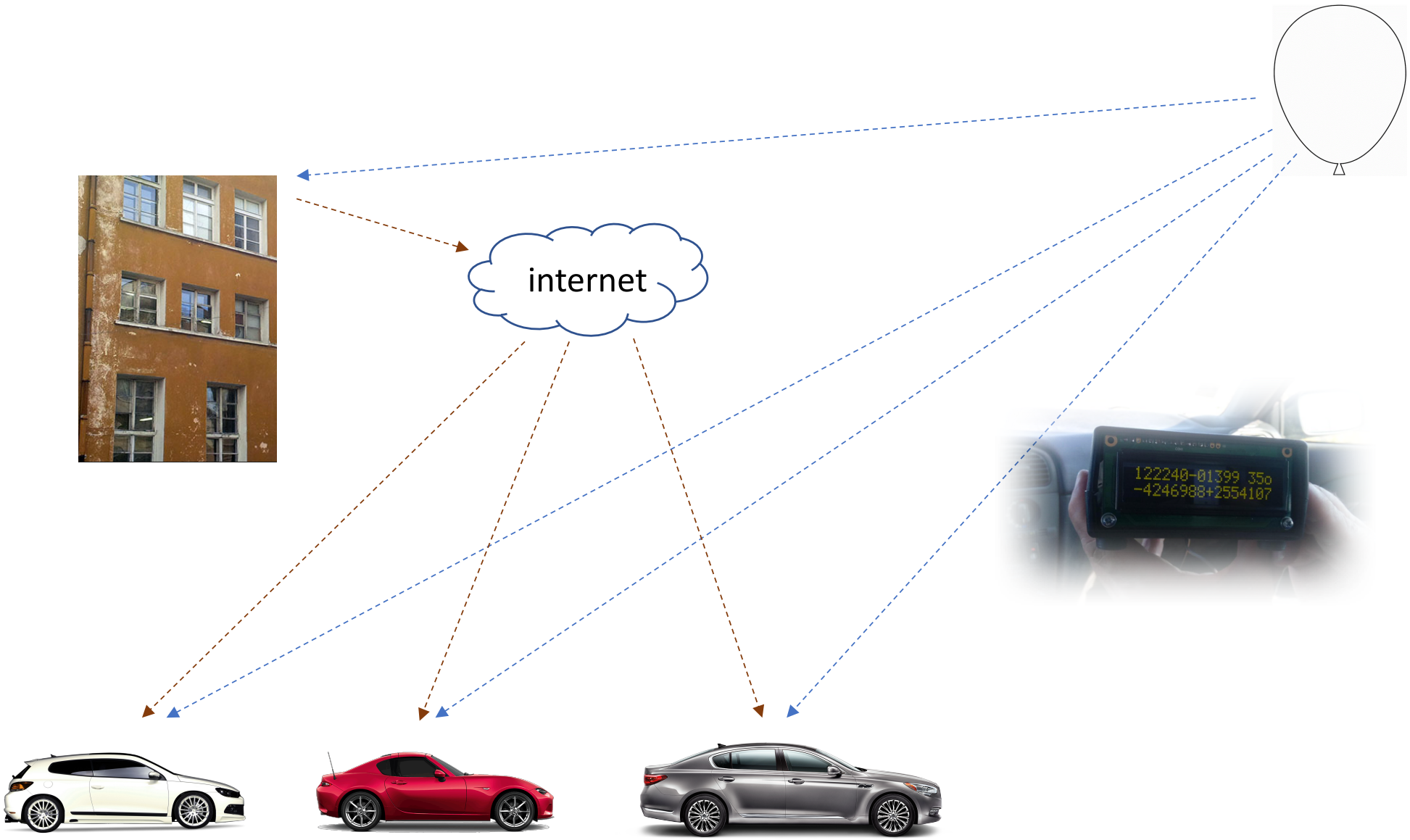
Relative humidity measurements



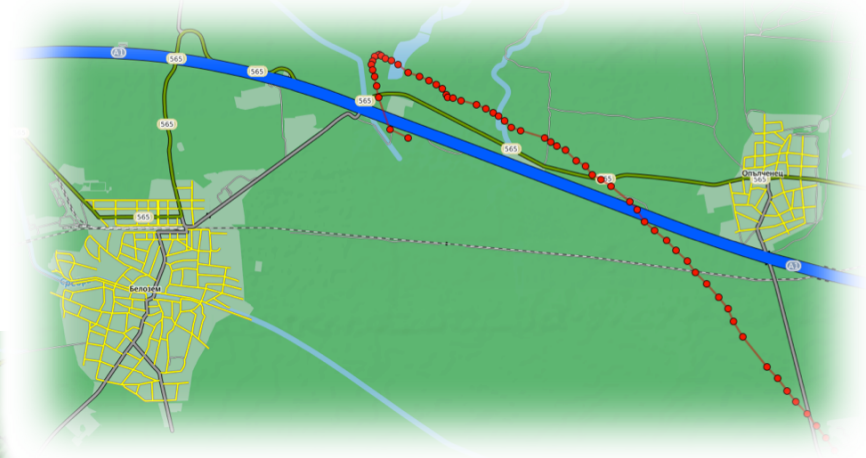
Regener–Pfotzer maximum

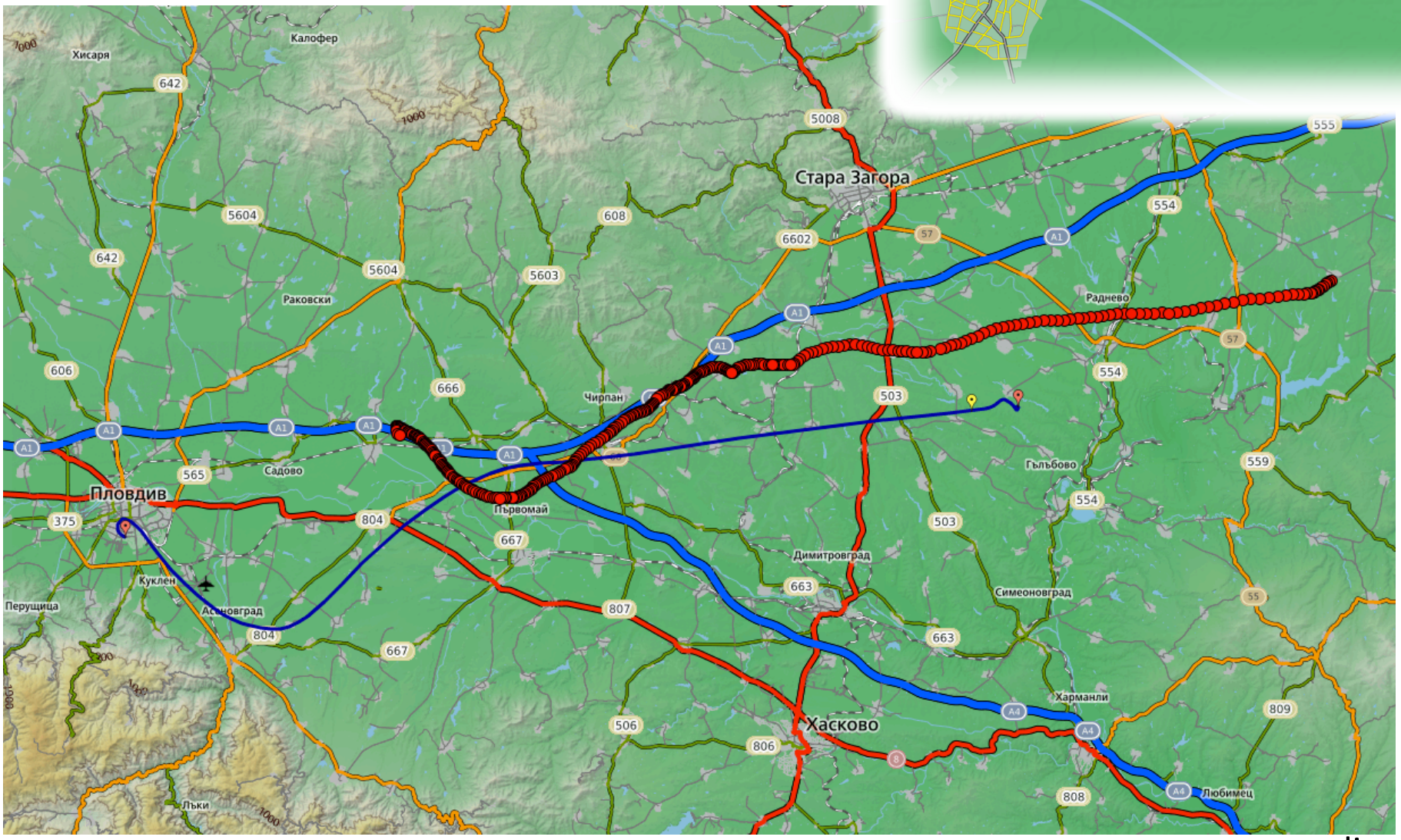


Following the balloon



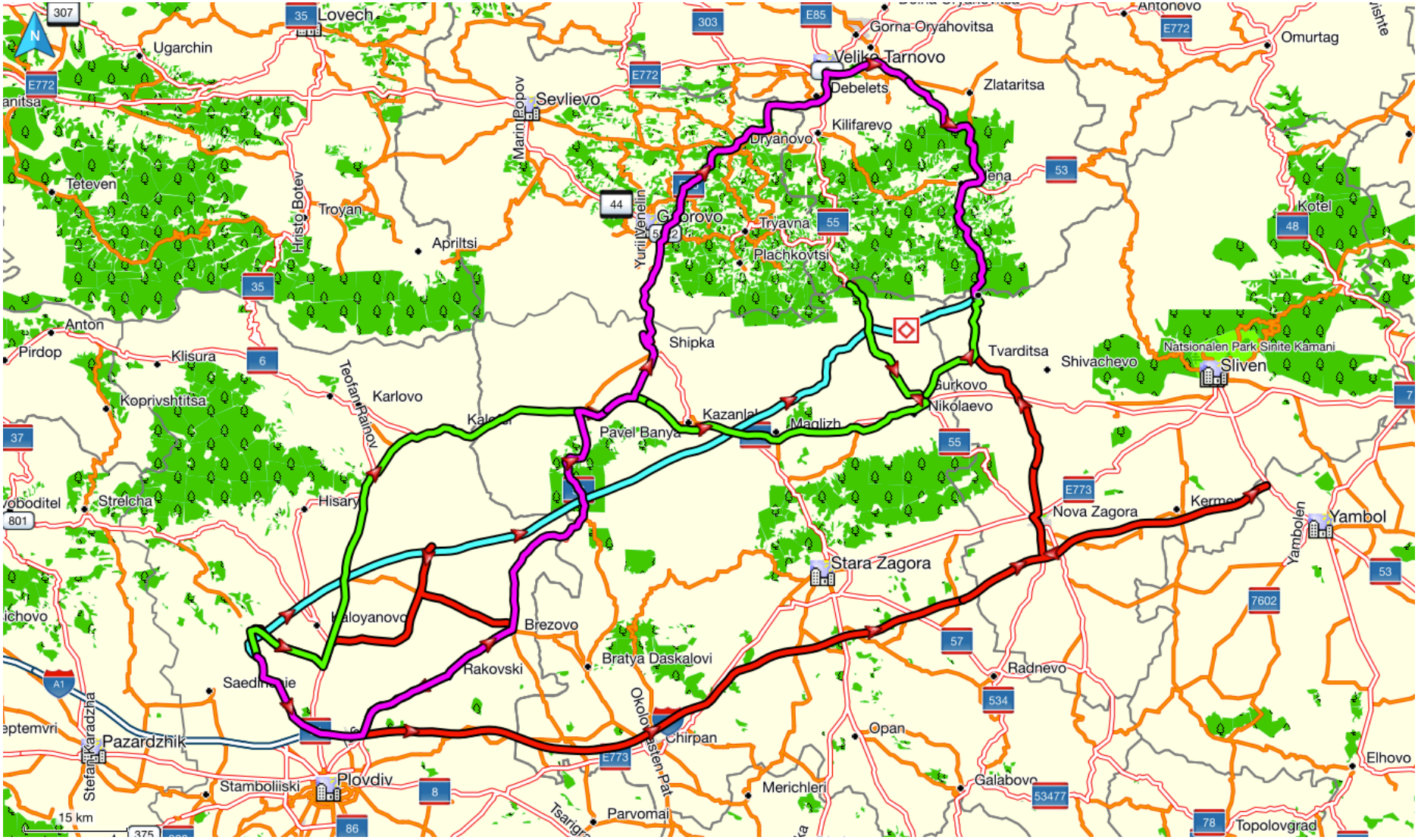
Balloon live tracking



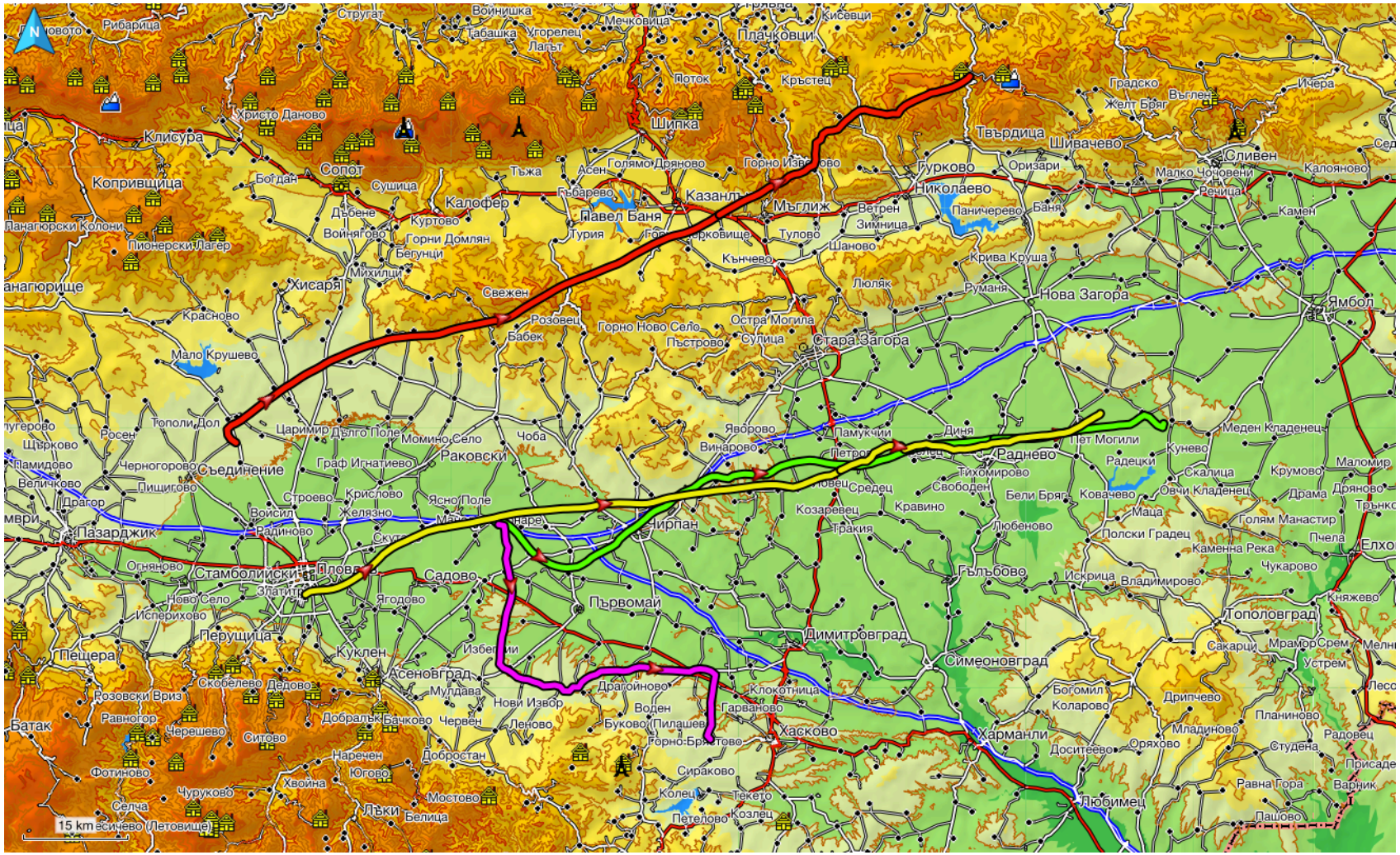


credits to kade.si

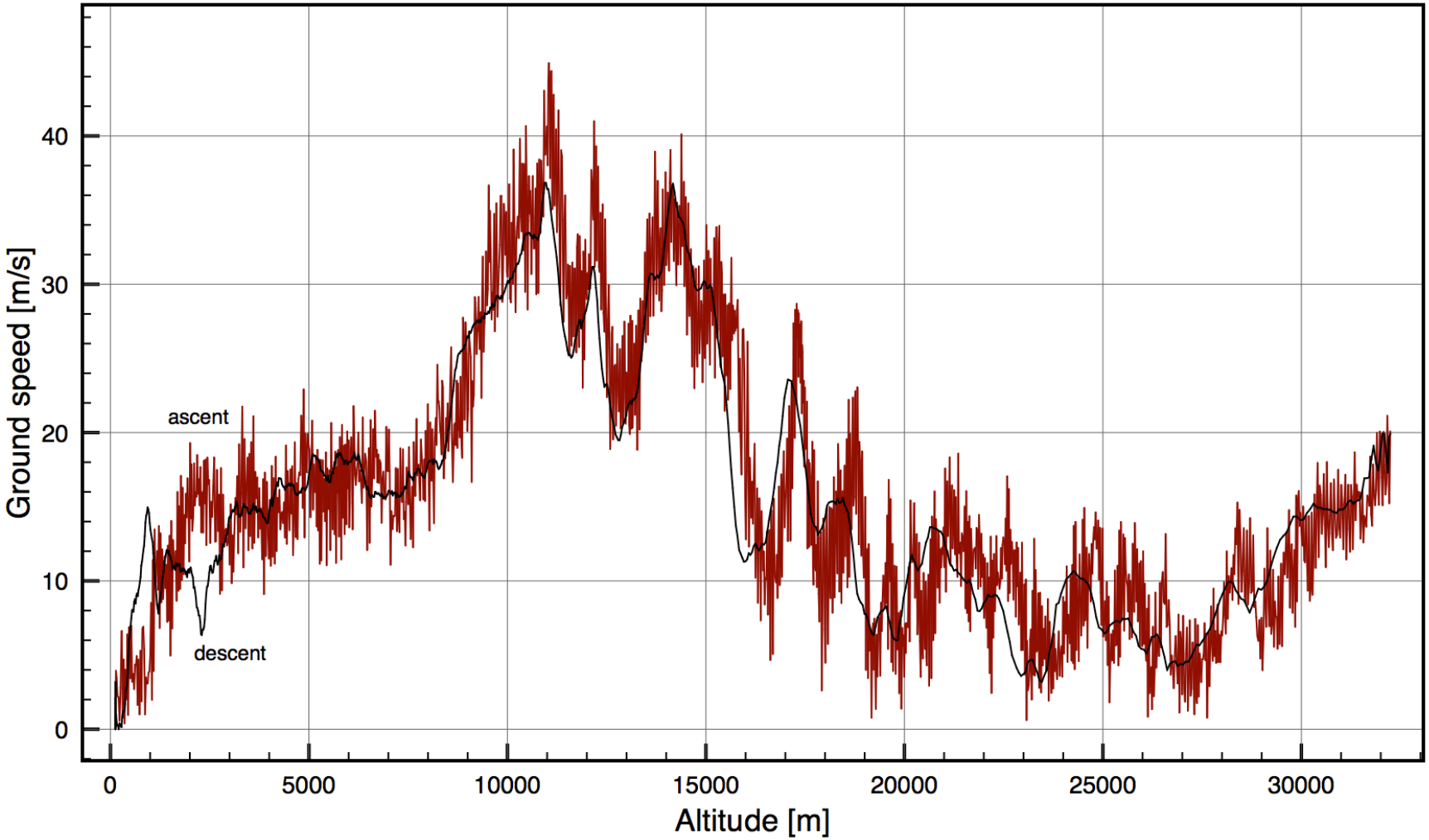
Balloon #1


Lovech
Ugarchin
Sevlievo
Gorna Oryahovitsa
Veliko Tarnovo
Debelets
Zlataritsa
Omurtag
Kilifarevo
Dryanovo
Teteven
Troyan
Apriltsi
Tryavna
Plachkovtsi
Kotel
Anton
Pirdop
Klisura
Shipka
Tvarditsa
Shivachevo
Natsionalen Park Sinite Kamani
Sliven
Karlovo
Koprivshtitsa
Kazanlak
Maglizh
Nikolaevo
Pavel Banya
Strelcha
Hisarya
Nova Zagora
Yambol
Stara Zagora
Brezovo
Rakovski
Bratya Daskalovi
Radnevo
Pazardzhik
Chirpan
Opan
Plovdiv
Stamboliiski
Merichleri
Galabovo
Elhovo
Parvomai
Topolovgrad
15 km

4 balloons, 1 map



Flight profiles



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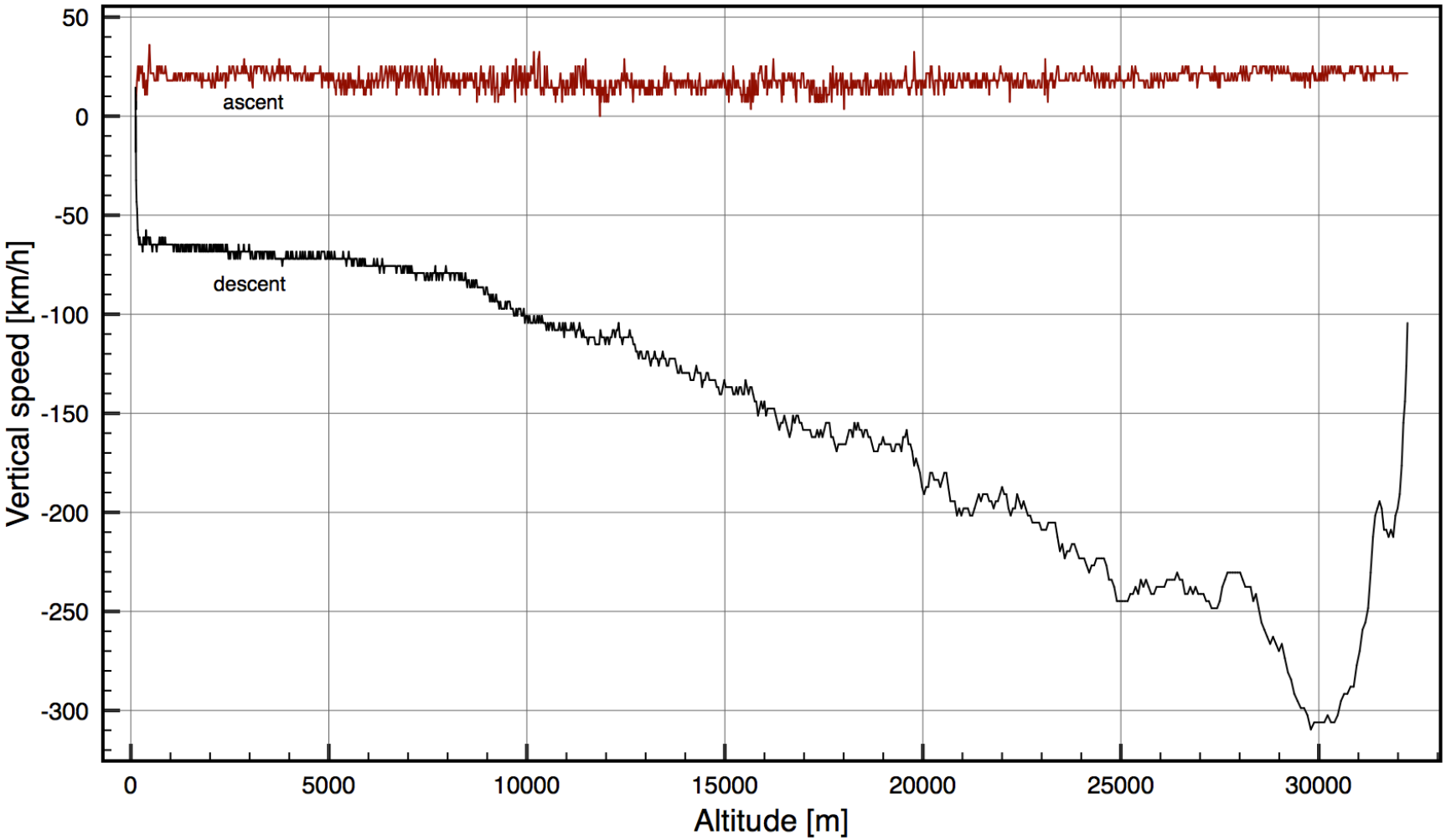

Our team