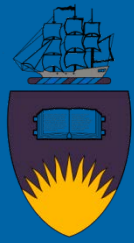


Using small manned and unmanned aircraft for atmospheric research
(meteorology, earth observation, both in-situ and remote sensing)







FLINDERS UNIVERSITY
ADELAIDE • AUSTRALIA

www.airborneresearch.org.au



Luzern University
of Applied Sciences



The logos above are representing the network in which we are working:

- **METAIR / ARA / Flinders** since more than 30 years in the field of atmospheric research with small manned platforms
- **COST-Action ES0802 (2008-2012)** as a trigger for our first UAS "UMARS"
- **SESAR-JU** (member of the scientific committee) as a source of information about the integration of RPAS in Civil Aviation (SESAR is a several billion project of the EU, to establish the future ATM system in close coordination with EUROCONTROL and EASA (details see homepage)
- **Important remark right at the beginning:**
Flying within line of sight, rather low (no formal limit in Switzerland), with "model aircraft" < 30 kg is not a big problem (even > 30 kg).
But: With no direct visual contact, even for smaller objects, the legal situation is very strict. These are two "different worlds".

Flying low ...





... and high up to 6 km altitude



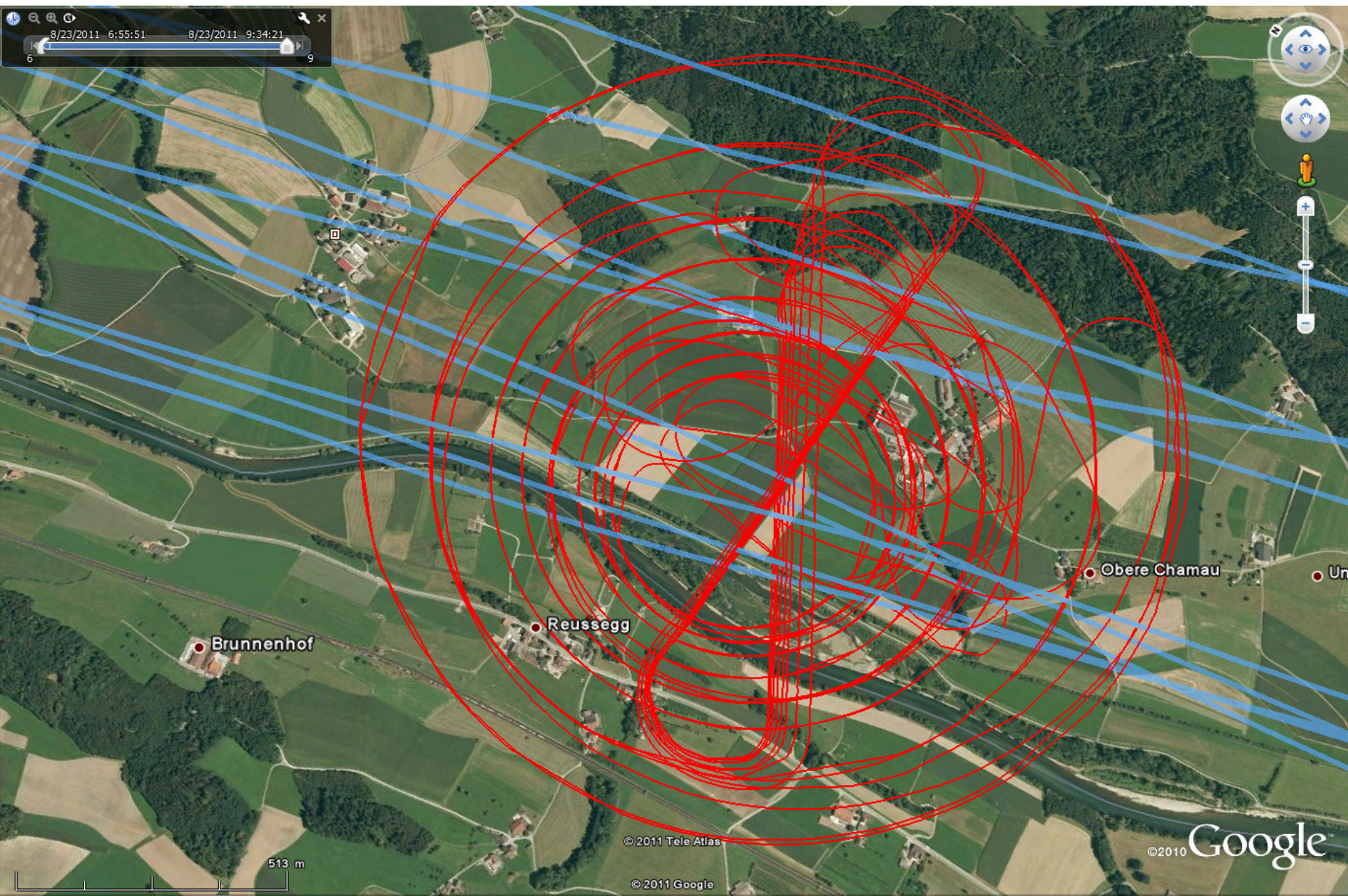
Then we developed the UAS ZHAW-UMARS, flying a campaign in 2011. Both UMARS_1 and UMARS_2 have wing spans of 5 m, MTOM of 30 kg, relatively high speed of 30 to 40 m/s, and an electrical endurance of more than one hour for fully autonomous operation (except T/O & LDG) or RPAS.



We flew manned and unmanned platforms combined (Aug 2011, for ETH)



Same flight pattern (funnel and cross section) from above



There was even a third airborne system involved:



A tethered balloon from ETHZ (Prof. Dr. Nina Buchman et al.)



A new development we just have heard from
(has nothing to do with ZHAW or METAIR, but, is showing that there
is more activity on the topic – maybe closer to your applications):



<http://www.meteomatics.com/en/inhalt/meteodrones/>



Unmanned Aerial Systems in Atmospheric Research

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COST Action ES0802 - Unmanned Aerial Systems in Atmospheric Research

The COST Action ES0802 is an initiative to establish an European COST action on the use of unmanned aerial systems (UAS) for atmospheric research. Information on the actual status can be found on the official [COST Action web page](#) and on the web site of [COST Action ES0802](#).

For general information about COST have a look at corresponding [homepage of the European Science Foundation ESF](#).

<http://www.cost-uas.net/index.php?id=23>

Links that might be interesting for you:

follow-up, since 2013: <http://www.isarra.org/isarra2014.html>



International Society for Atmospheric Research using Remotely piloted Aircraft

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ISARRA 2014 is held at Hans Christian Andersen Airport in Odense, Denmark, on May 26 to 28.

Thank you!



(photo Marc Gerber, ZHAW)