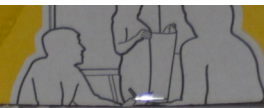


# PHILIP KOLBS GPS TRIANGLE RACING COOKBOOK AUSTRALIA 2023



SOUTHERN SOARING LEAGUE

Milang, South Australia • Since 1973  
50<sup>th</sup> Anniversary International Festival of Gliding March 2023

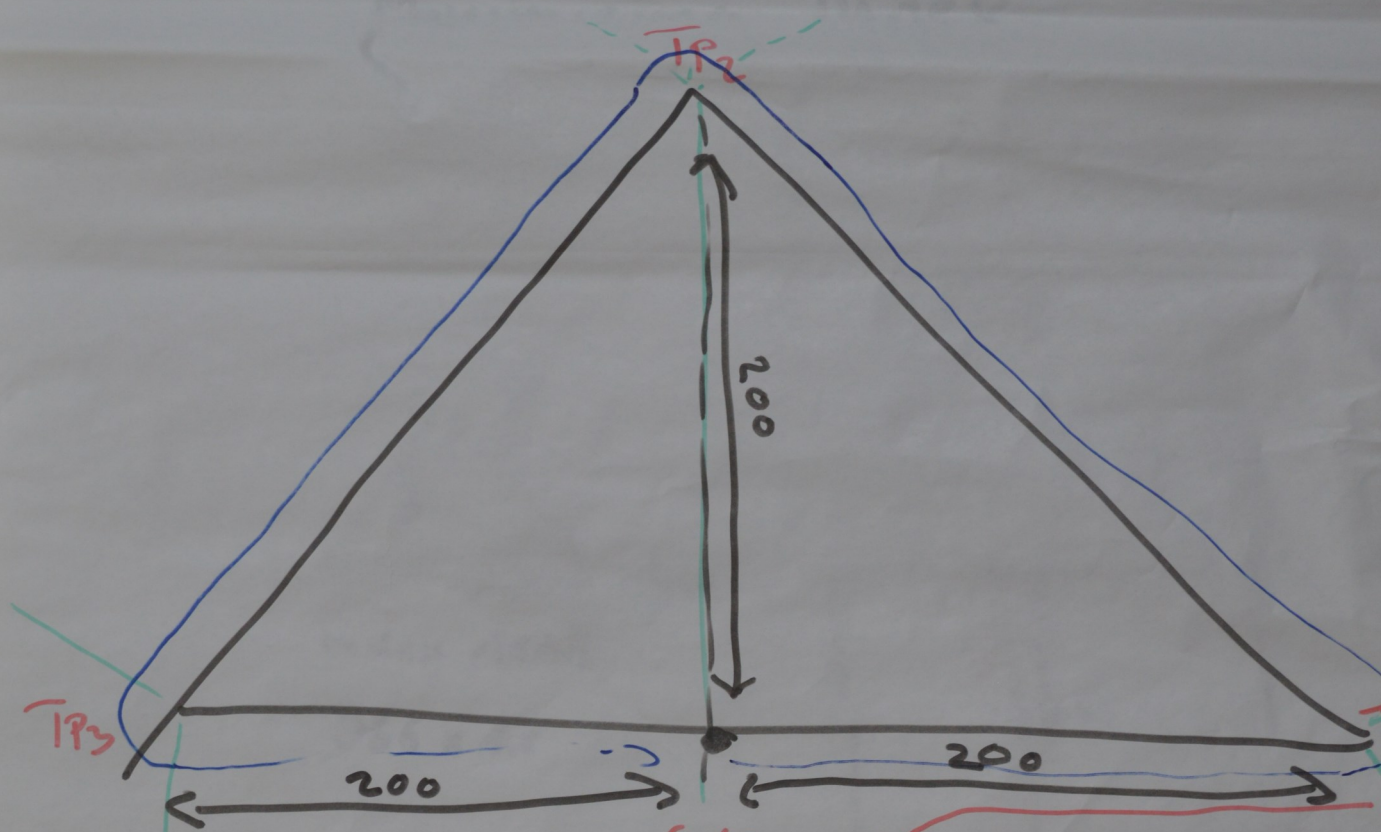


## GPS - Triangle in OZ

Welcome!!!

Expectations

- Setup of planes (in the "correct" way)
- Navigation gadgets' setup
- getting comfortable with my "setup"
- beating my personal best
- "looking at it" and learning "what it is"!
- STF - Theory
- Specific tactics and techniques
- "special setups" for whatever 😊?
- learning entry techniques
- having fun and the ways to it.
- using the working time the best way
- sharpening my "control skills"
- air reading and "listening" skills
- fly in onsite-competition situations
- doing fast first steps



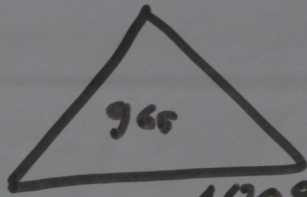
SC = 200m max  
70 km/h max

H

Start

# Minimizing Index

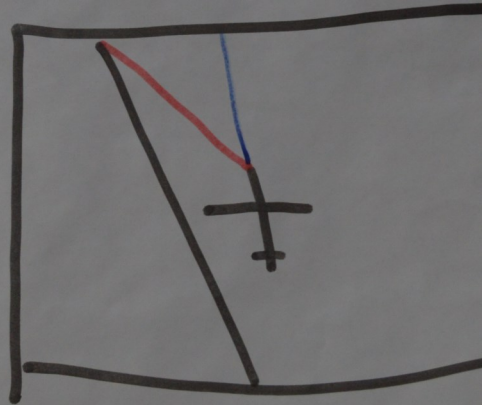
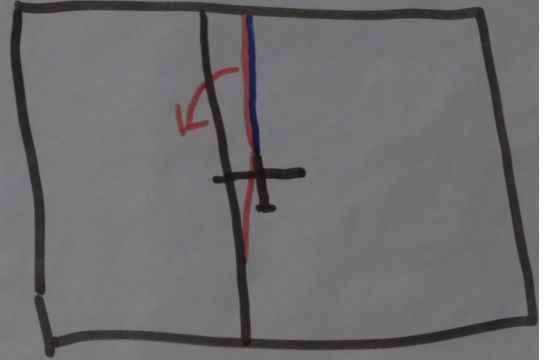
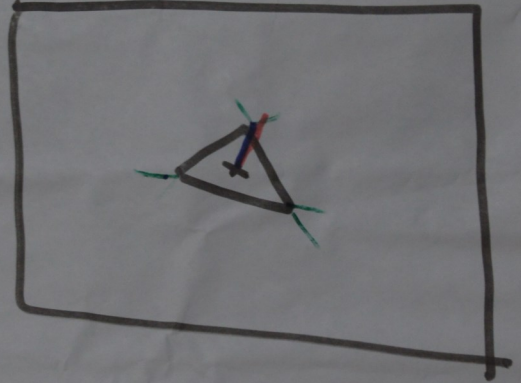
course & heading



$$100\% = 966m$$

Index 110%

$$966 \times 1.1$$



# Navigation screens

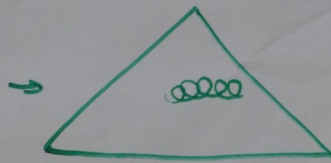
Start

BA		St. Alt
GS		St.
3D		Sp.
Alt loss		PP

Thermal

BA		m. Var
GS		Av
3D		Var.
Alt loss		Ther Var

Glide

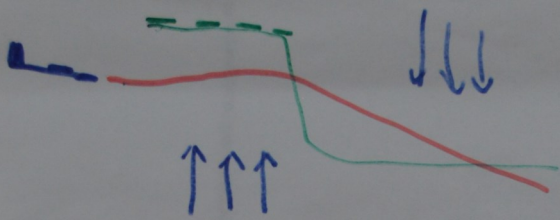


Info

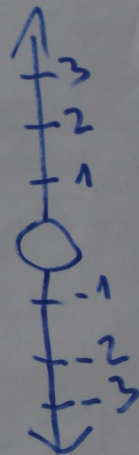
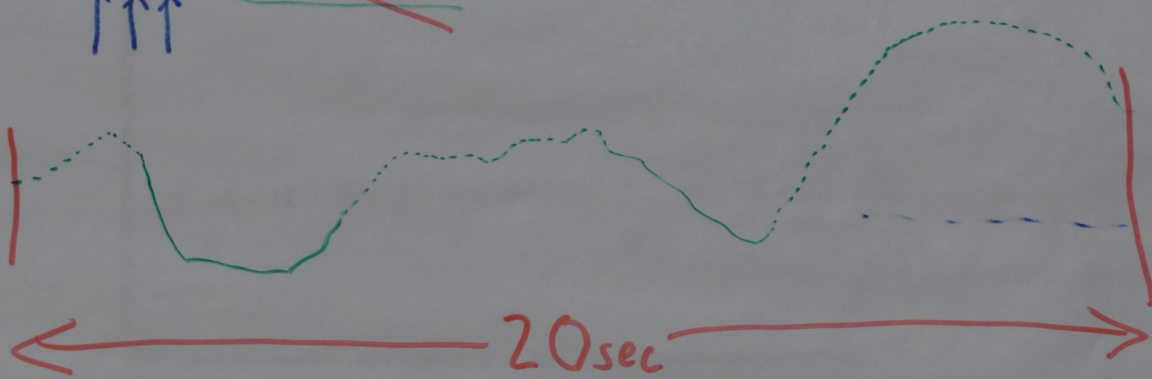
BA		T.p.
GS		Δ
3D		Av. Var.
Alt loss		%

BA		T.p
GS		A
3D		Var
Alt loss		Adj
		%

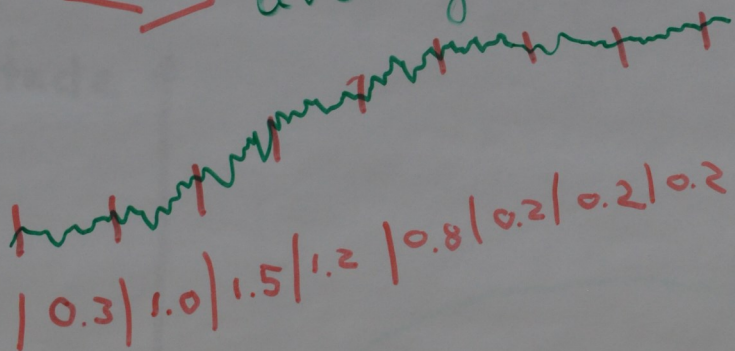
# Vario + Settings



⇒ momentary Vario (actual)

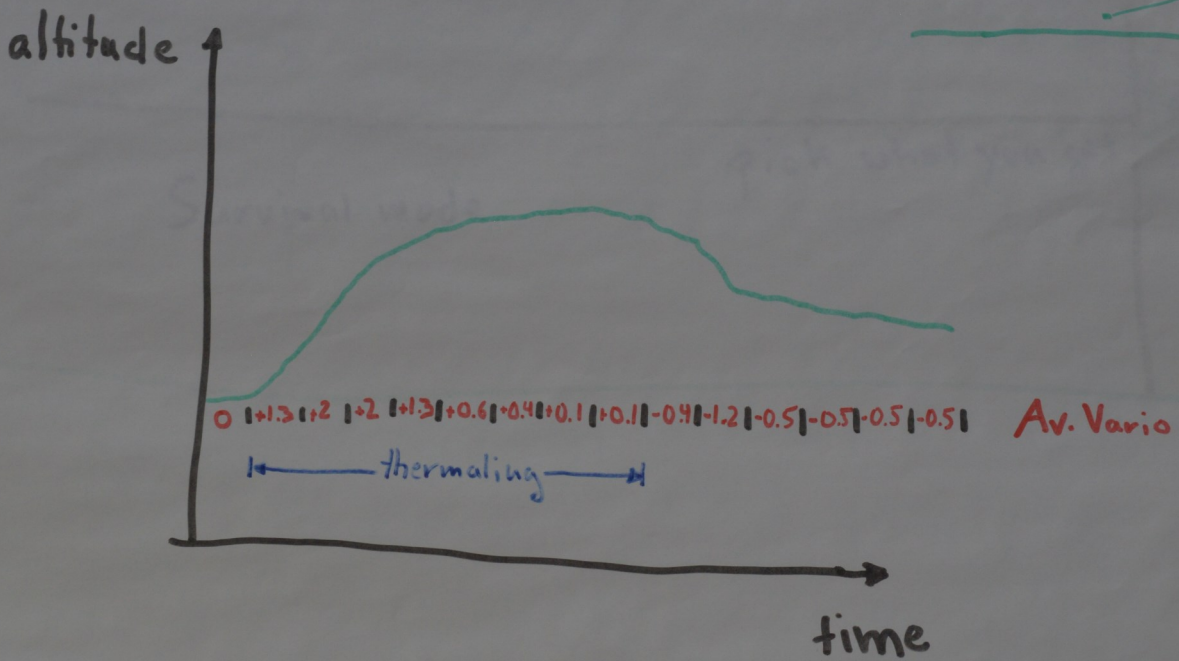
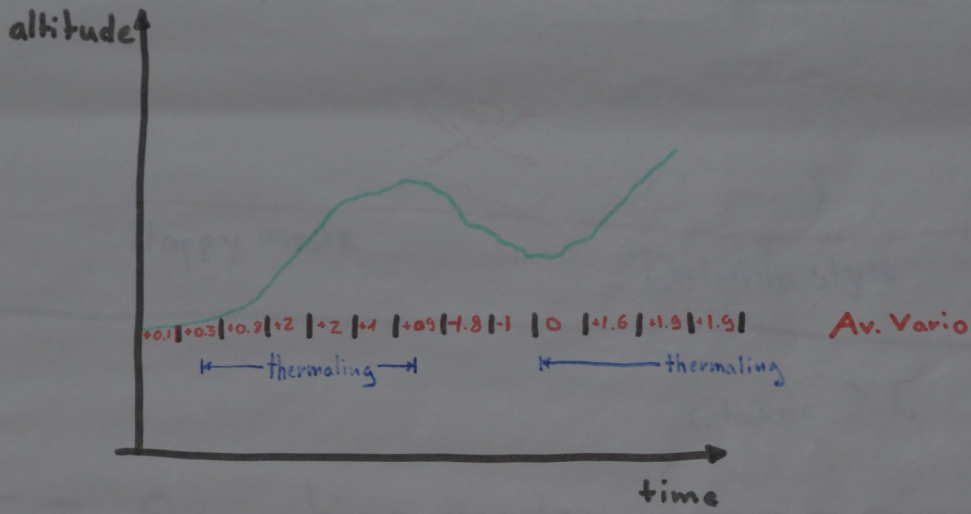


⇔ average Vario

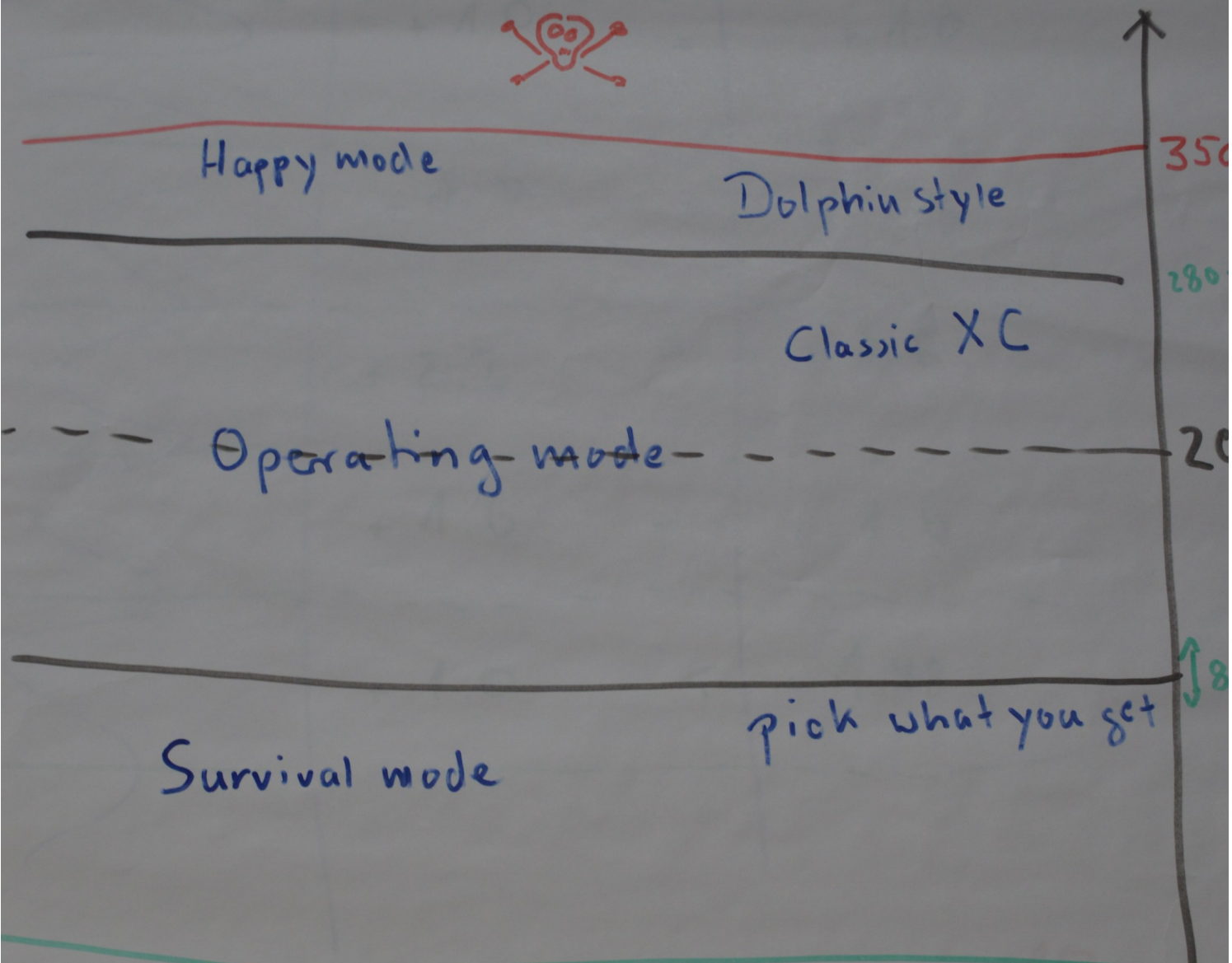
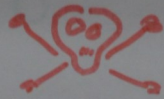


⇒ Thermal Vario

# Operational band



# Operational band



Survival mode


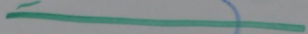
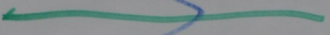

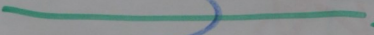
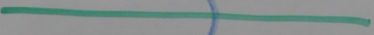
pick what you get

NEXT: Meet your

Threat is your friend!

Time is your enemy!



V	AV	Th V
	+ 1.0	= + 1.0
	+ 1.6	> + 1.3
	+ 2.2	> + 1.6
	+ 1.6	= + 1.6
	+ 1.0	< + 1.48
		

NEXT Meeting: 12<sup>10</sup>

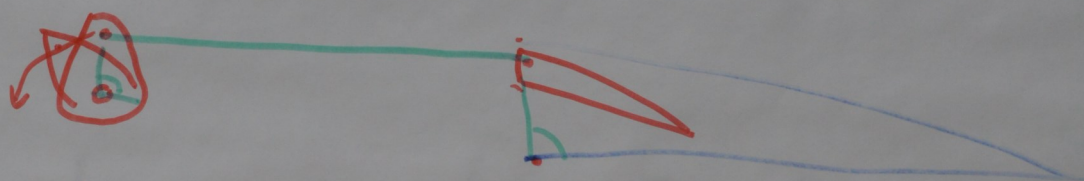
Thermal is your friend!

Time is your enemy!

## ② Flight Airplane setup

- Throws ①
- Flight mode settings ②
- mixers ③

### ① Throws



- control balance
- Symmetrical linkages
- as ~~st~~ linear throws as possible

### Typical throws:

ail	$\pm 15^\circ$
x elev	$\pm 20^\circ$
x rudder	$\pm 25^\circ$

## ② Flight modes

normal  
(cruise 1)

$$\rightarrow f \ 0^\circ$$

fastcruis

$$\rightarrow f \ -1.2^\circ$$

L/D max

$$\rightarrow f \ +1.2^\circ$$

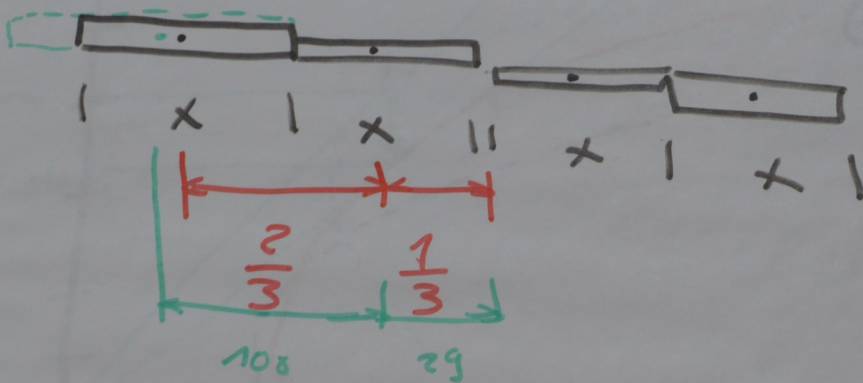
Thermal

$$\rightarrow f \ +3.9^\circ$$

increase  
in throws

### ③ sm mixers

→ aileron to flap mix



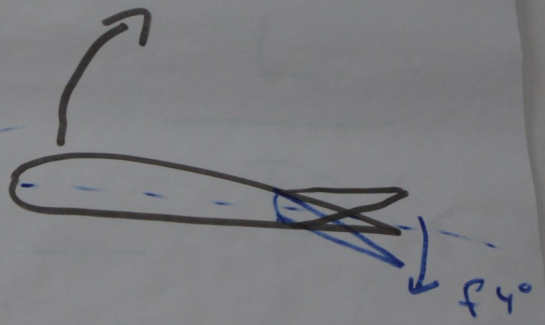
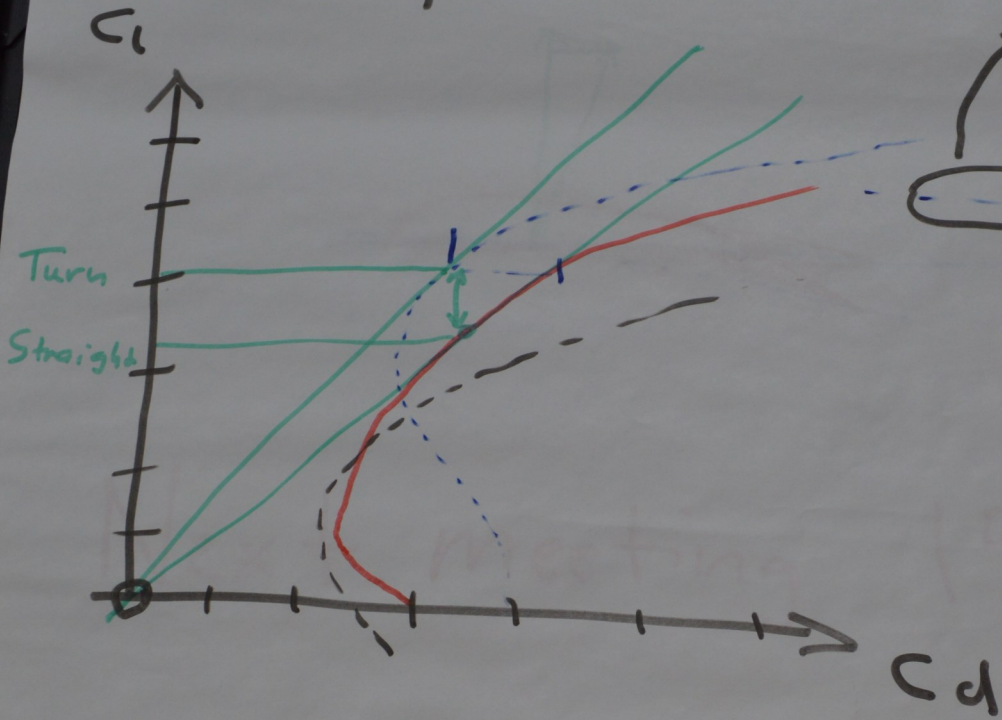
→ try and get it optimal for inducing as less drag as possible

↳ difference: Thermal Mode

3

MIXER

→ snap-flap mixer (Control switch)



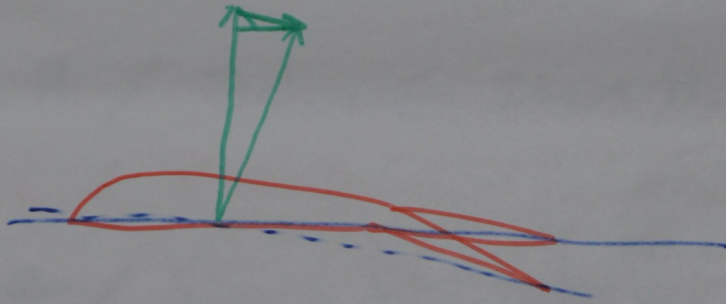
# Competition flying

## → The ingredients

- ① Gear / Equipment / Plane - setup  
prior to and on the competition
- ② Personal flying skills (Talent / Practise)
  - ↳ dividing into components I
  - ↳ and scale them
  - ↳ mental training
- ③ human psychological approach / Strategy  
Teamwork optimization!!! Tactics  
↳ Brief and Debrief
- ④ Luck

Next meeting: 15<sup>00</sup>

→ aiteron to rudder mix (Combi switch)



$\frac{L}{D}$

Next meeting 15<sup>00</sup>

# Competition flying

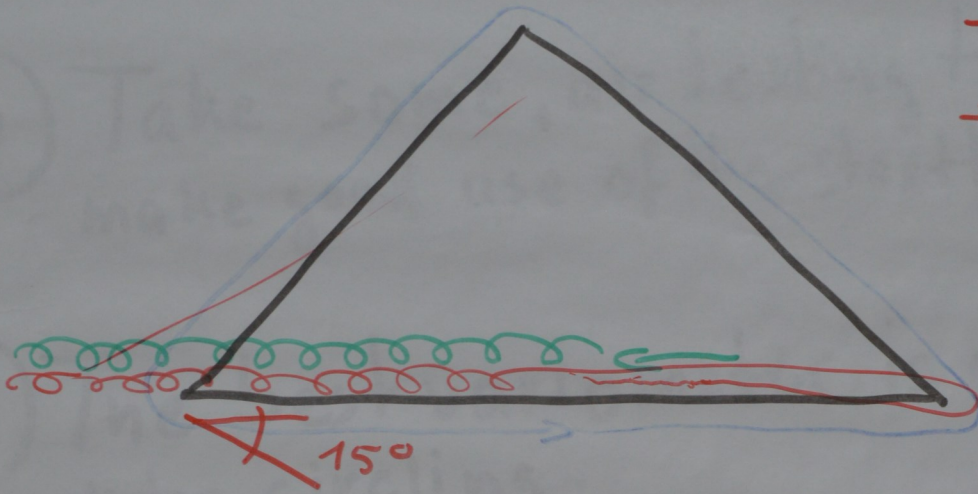
## → The ingredients

- ① Gear / Equipment / Plane - setup  
prior to and on the competition
- ② Personal flying skills (Talent / Practise)
  - ↳ dividing into components I
  - ↳ and scale them
  - ↳ mental training
- ③ human psychological approach / Strategy  
Teamwork optimization!!! Tactics  
↳ Brief and Debrief
- ④ Luck

Next meeting: 15<sup>00</sup>



# The "Do's and Don't's" of GPS- $\Delta$ -Flying - Detour



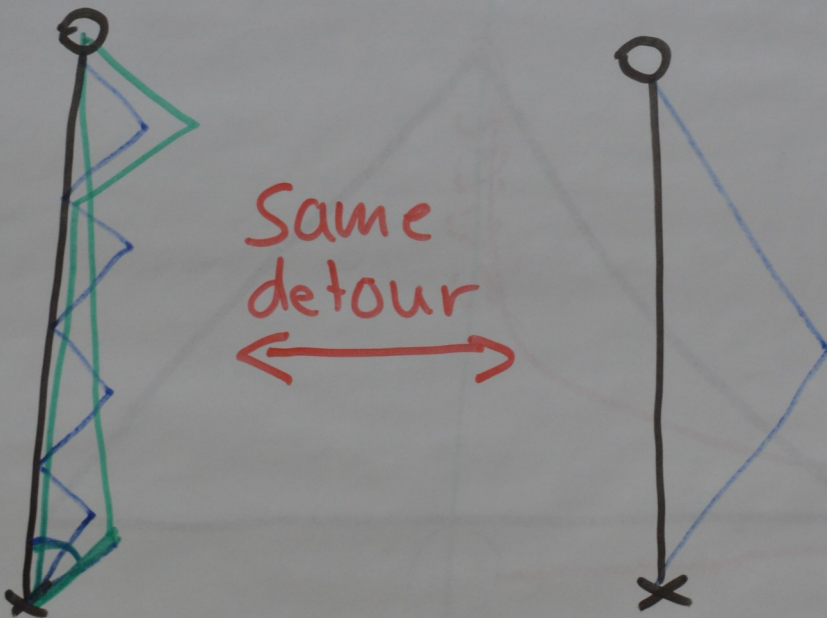
$\rightarrow 15^\circ$  : always possible

$\rightarrow 30^\circ$  : with 50% more thermal strength

$\rightarrow 45^\circ$  : with significant better thermal  $\sim 100^\circ$

$< 45^\circ$  only to survive.

1. The closer you come to the TP the less detour you should make!



Same detour

2. Always take the turnpoint first, then thermal! (TP is upwind) (and viceversa)

# Rules of conduct

- Group A → circling left (thermal)
- Group B → circling right (thermal)
- Group C → " left
- Group D → " right

→ avoid „optical“ collisions!



→ in a „face to face“ situation always alter on right !!!

→ thermaling aircraft always have priority!

→ no abrupt manoeuvres after crossing the start line, take your time for your restart.

→ retrieve your glider as soon as possible from the landing area. Watch out for other approaching planes.

# Competition flying

## → The ingredients

- ① Gear / Equipment / Plane - setup  
prior to and on the competition
- ② Personal flying skills (Talent / Practise)
  - ↳ dividing into components I
  - ↳ and scale them
  - ↳ mental training
- ③ human psychological approach / Strategy  
Teamwork optimization!!! Tactics  
↳ Brief and Debrief
- ④ Luck

## valuable books

- Helmut Reichmann:  
„Crosscountry Soaring“  
(Thompson Publications, English version 1984)
- George B. Moffat Jr.  
„Winning on the wind (II)“  
(The soaring press. 1st Edition, 1974) 1st book  
(Bookbaby. 1st Edition, 2012) 2nd book

---

## rules + documents

go to: [www.gps-triangle.net](http://www.gps-triangle.net)

find column „GPS Triangle“

open scroll-down-menu and click:

„rules & documents“  
„regulations & documents“

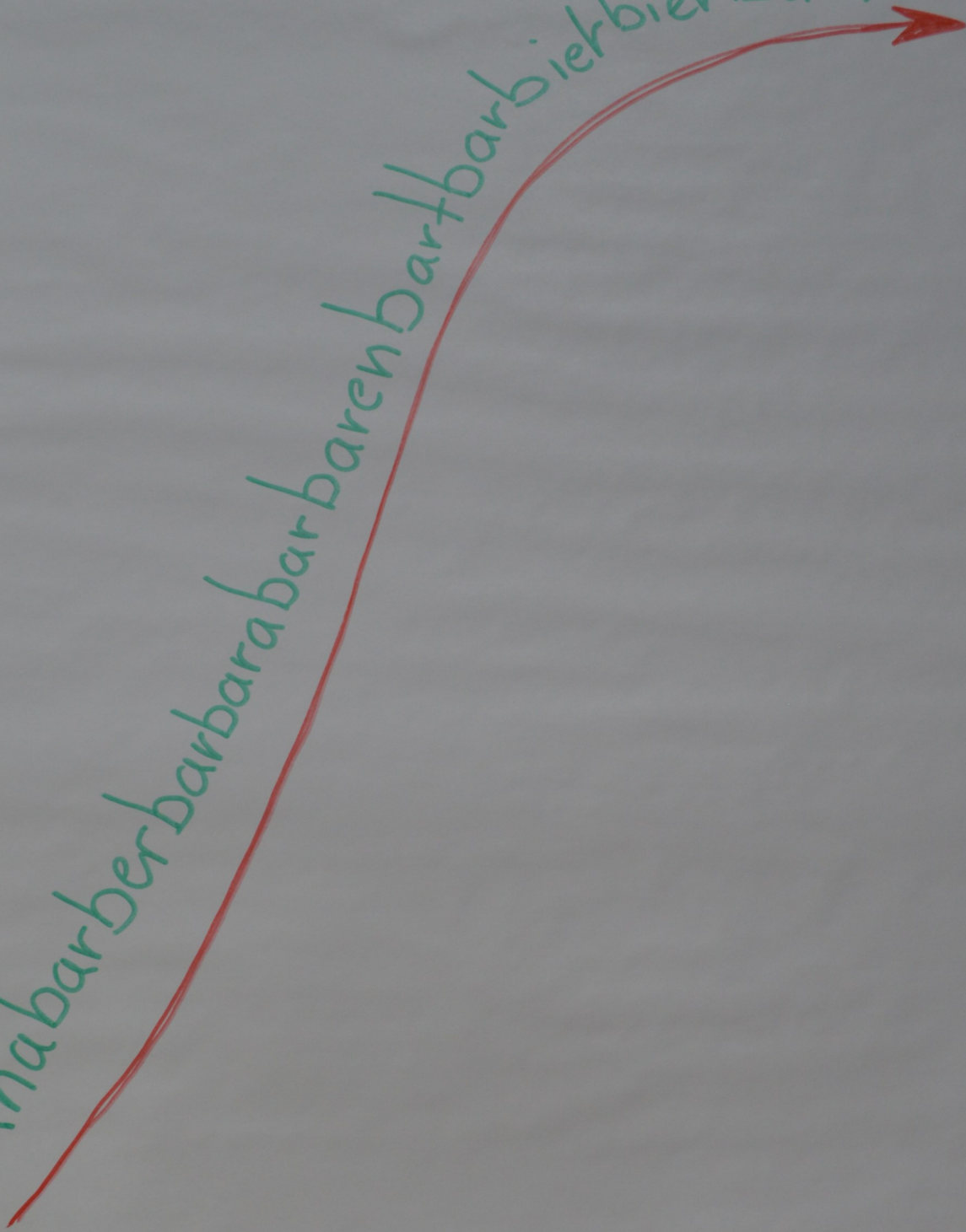
## Finding out about Performance parameters the easy way

- Fly precisely around the course in supercalm air.  
↳ best early morning
- Choose 1 flightmode setting and 1 airspeed
- After the flight look it up in your logbook
- Then calculate:

<u>Lap</u>	<u>Index</u>	<u>Time</u>	<u><math>\Delta</math> Alt</u>
1	110%	1:40min	47m

- remember: circumference for  $1\Delta = 966\text{m}$
  - real distance travelled: Index  $\cdot 966\text{m}$  ( $1.10\% \cdot 966\text{m} = 1063\text{m}$ )
  - $\frac{L}{D}$  is the real distance travelled divided by the altitude loss of  $1\Delta$ . ( $1063\text{m} : 47\text{m} = 22,6$ )
  - average airspeed is the real distance travelled divided by the time. ( $1063\text{m} : 100\text{sec.} = 10.63 \frac{\text{m}}{\text{s}} = 38.3 \frac{\text{km}}{\text{h}}$ )
  - average sinkspeed is the real altitude loss per  $\Delta$  divided by the time. ( $47\text{m} : 100\text{sec.} = 0.47 \frac{\text{m}}{\text{s}}$ )
- ⇒ Then go and repeat !!! (with different flightmode setting)

Rhabarberbarbarabarenbartbarbiebierbar!



**THANKYOU PHILIP!!**

**MILANG 2023 !!!**