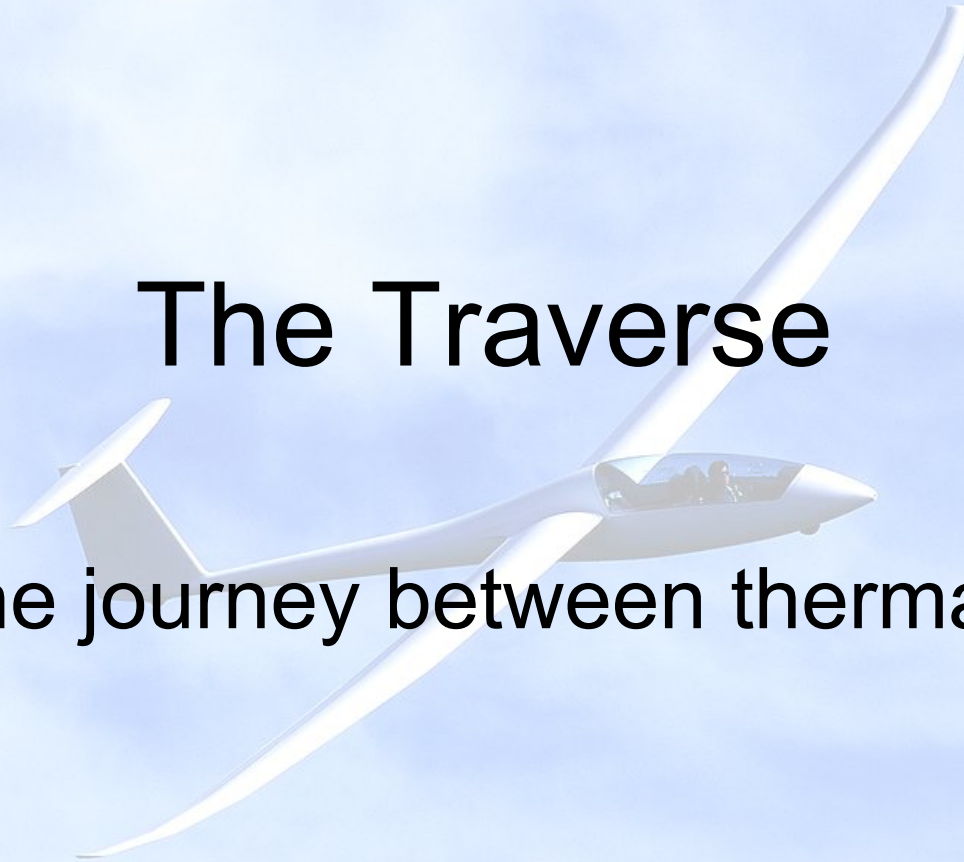


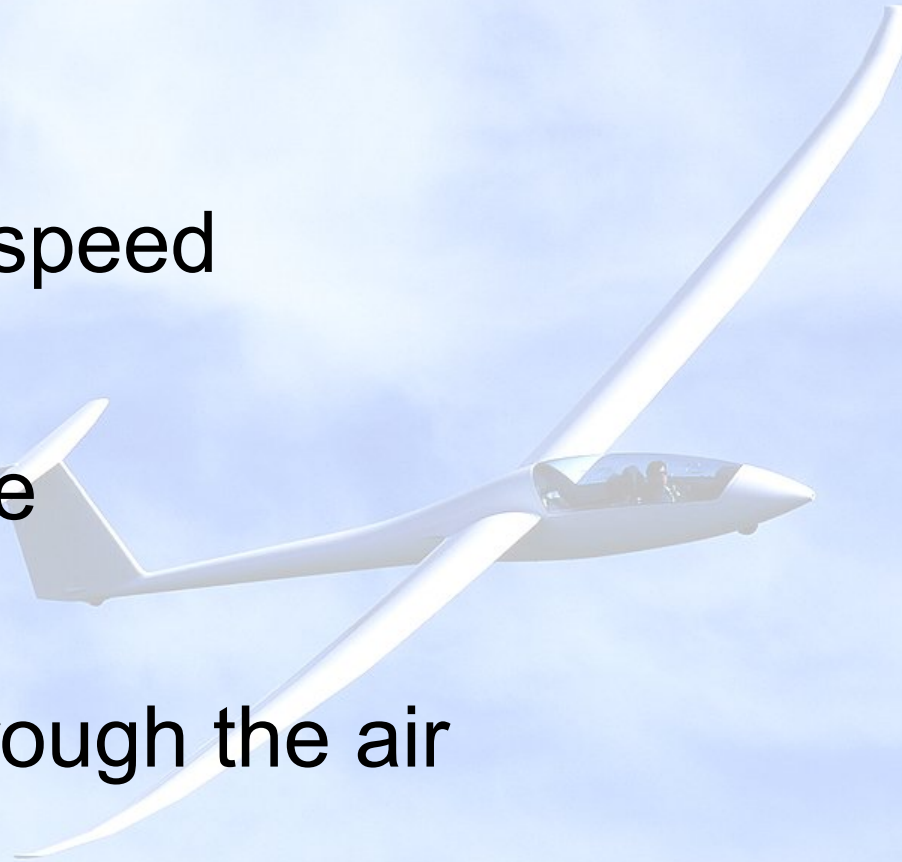
The Traverse

The journey between thermals



X country speed is related to:

- Cruising speed
- Climb rate
- Route through the air



What speed to fly

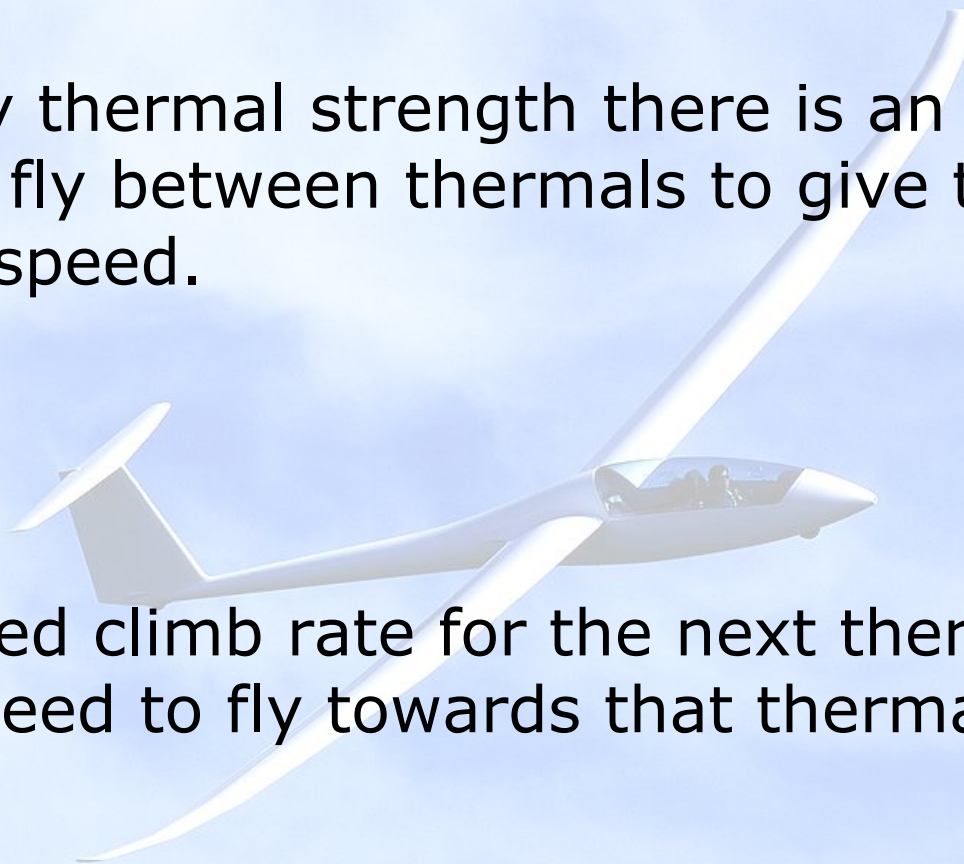
- McCready theory



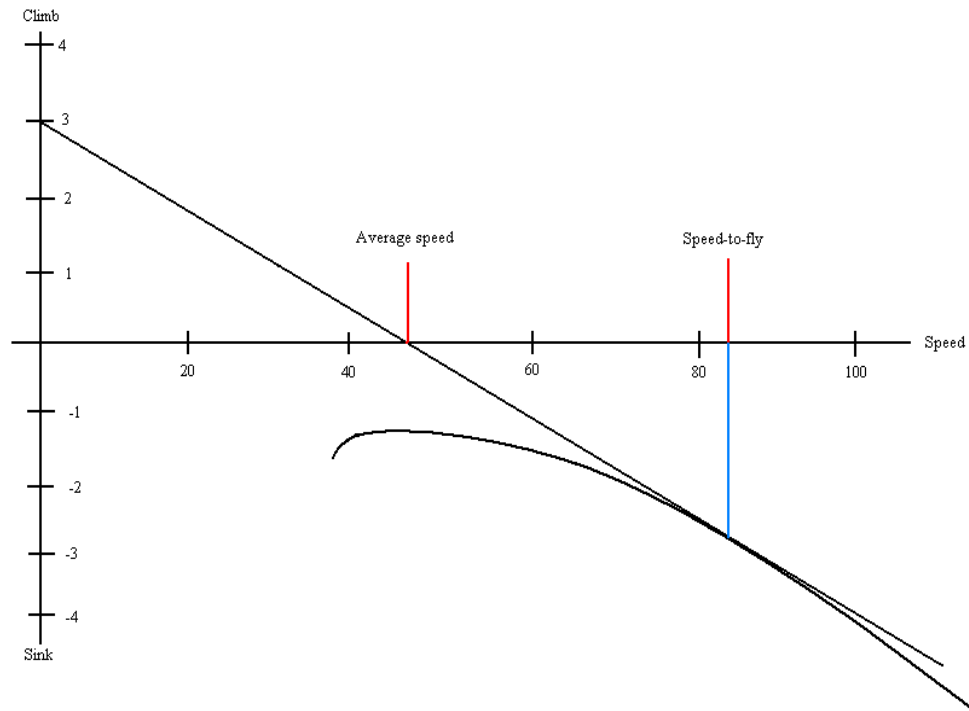
- Block speeds or dolphin?

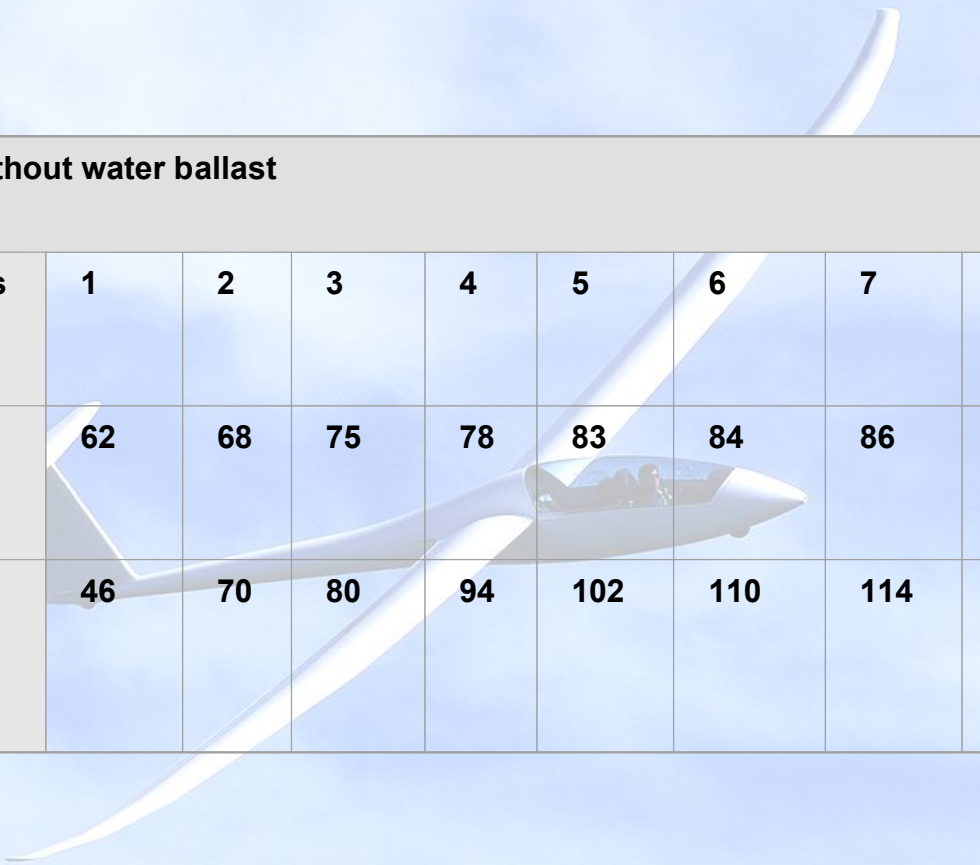
McCready theory

- For every thermal strength there is an optimum speed to fly between thermals to give the fastest average speed.
- Anticipated climb rate for the next thermal will give a speed to fly towards that thermal



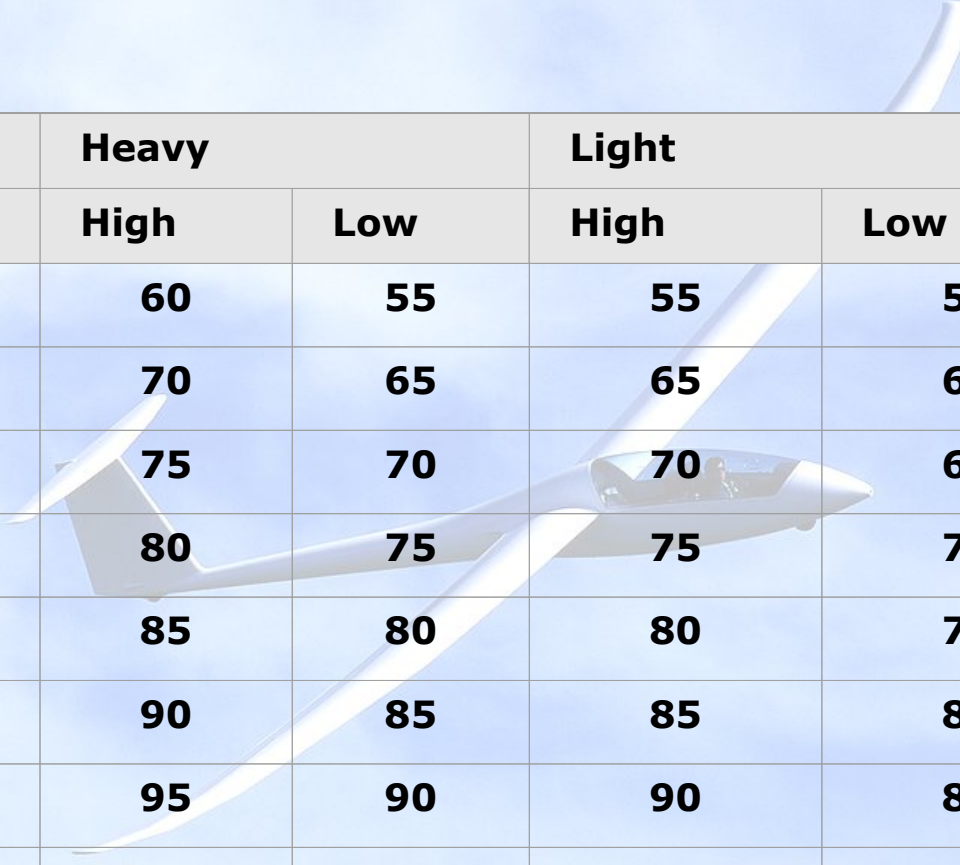
Devised from the gliders performance curve





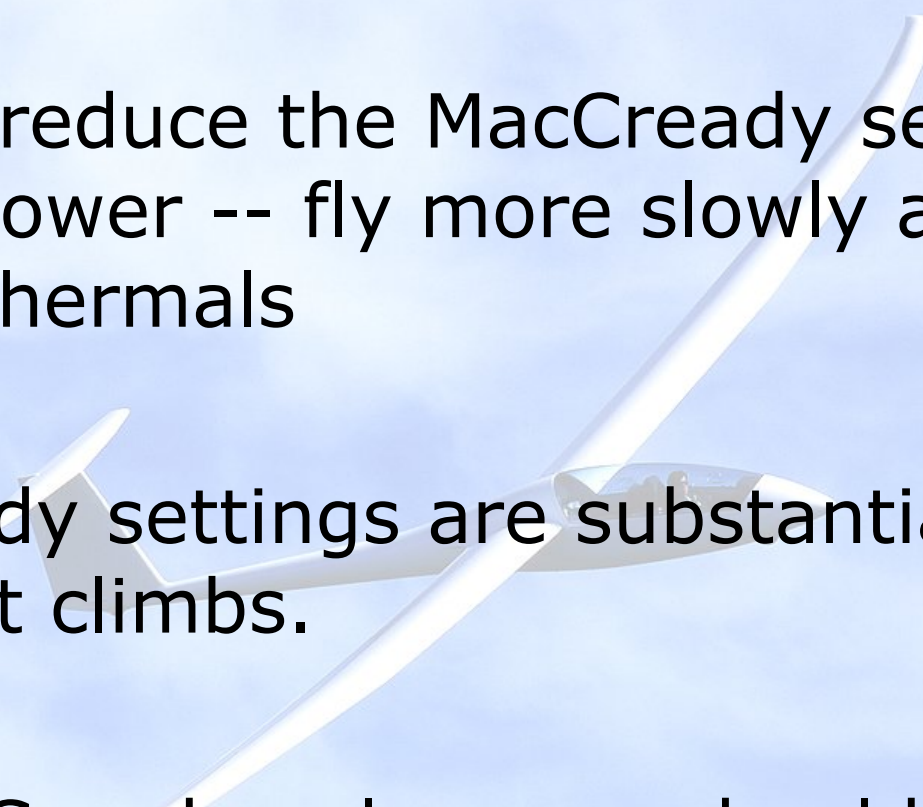
| Discus without water ballast | | | | | | | | |
|--|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| Thermal in Knots | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Cruise speed knots | 62 | 68 | 75 | 78 | 83 | 84 | 86 | 88 |
| Average x country speed Kilometers per hour | 46 | 70 | 80 | 94 | 102 | 110 | 114 | 121 |

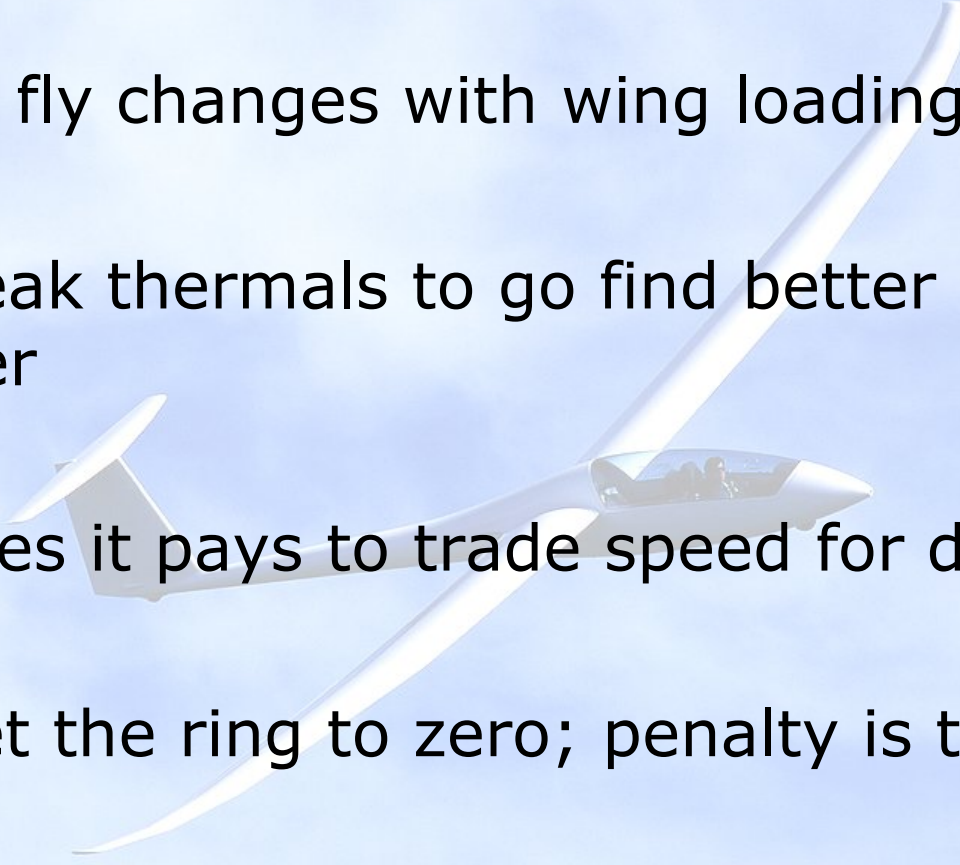
Ingo's table of speed to fly



| Lift | Heavy | | Light | |
|------|-------|-----|-------|-----|
| | High | Low | High | Low |
| 0 | 60 | 55 | 55 | 50 |
| 1 | 70 | 65 | 65 | 60 |
| 2 | 75 | 70 | 70 | 65 |
| 3 | 80 | 75 | 75 | 70 |
| 4 | 85 | 80 | 80 | 75 |
| 5 | 90 | 85 | 85 | 80 |
| 6 | 95 | 90 | 90 | 85 |
| 7 | 100 | 95 | 95 | 90 |
| 8 | 105 | 100 | 100 | 95 |

MacCready rules of thumb

- Steadily reduce the MacCready setting as you get lower -- fly more slowly and take weaker thermals
 - MacCready settings are substantially lower than best climbs.
 - The MacCready value now should be the same as you expect it to be ahead.
- 
- A white glider is shown in flight, angled upwards from the bottom left towards the top right. The glider has a long, slender fuselage, a high-wing configuration, and a T-tail. The background is a clear blue sky with some light, wispy clouds. The glider is semi-transparent, allowing the text of the list to be seen through it.

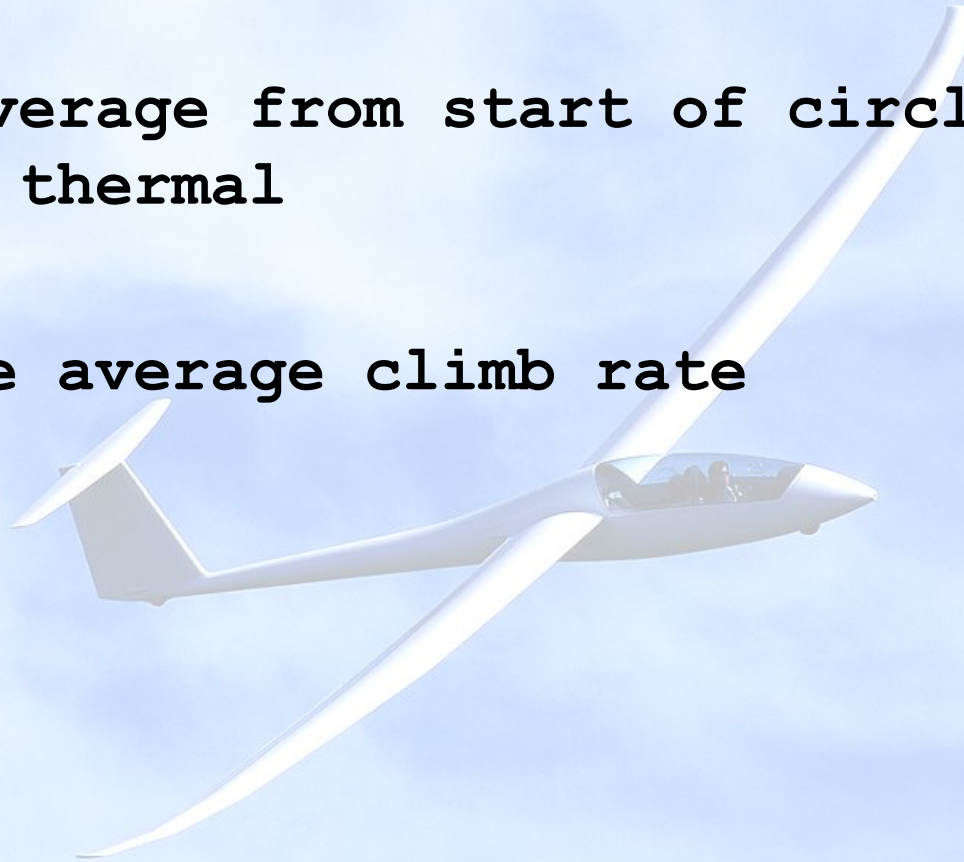
- 
- Speed to fly changes with wing loading
 - Leave weak thermals to go find better lift, as you get higher
 - Sometimes it pays to trade speed for distance
 - never set the ring to zero; penalty is too high
 - Conservative ring settings increase your chance

The speed you fly shows the confidence that you have for the future



What is my average climb rate?

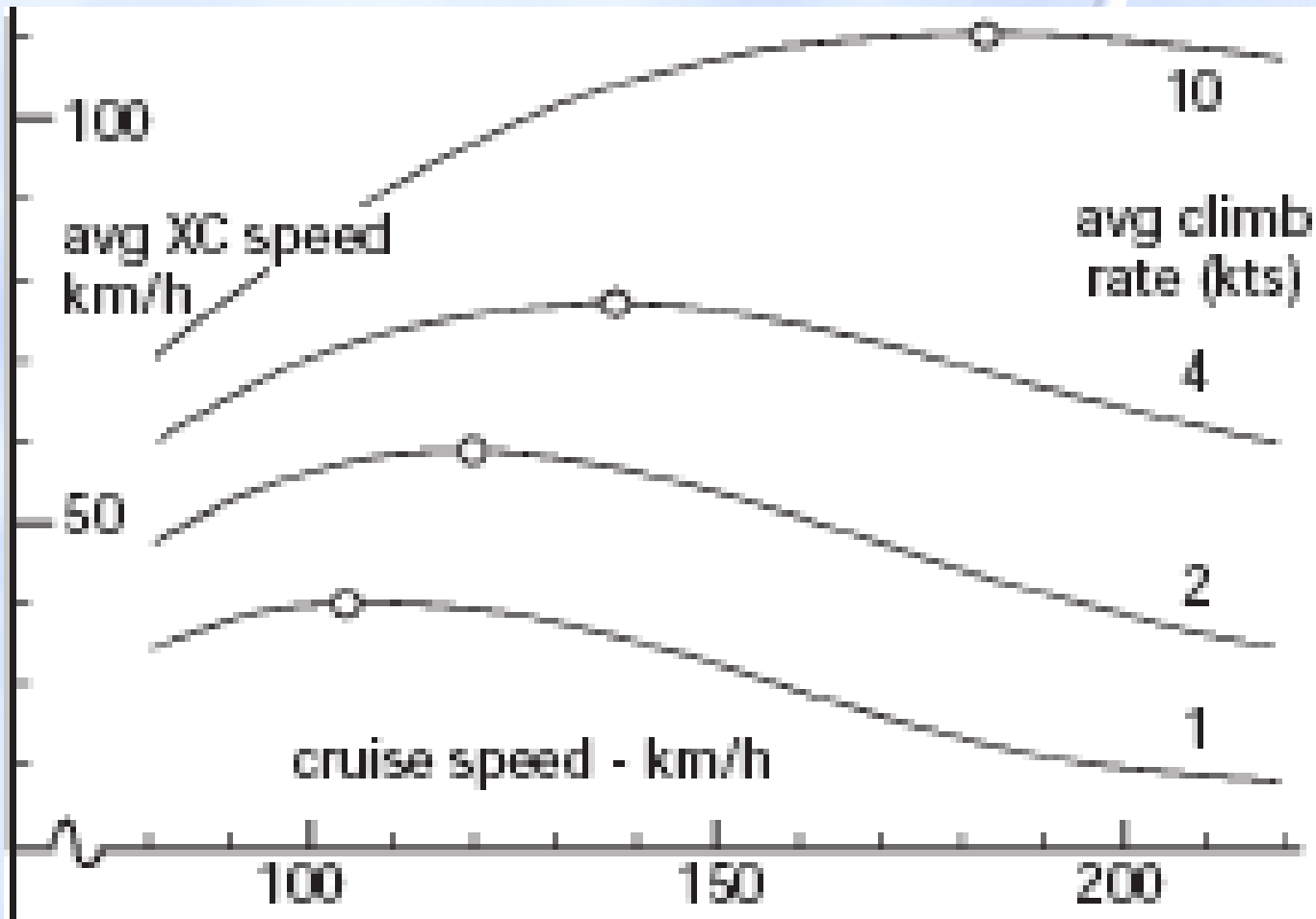
- VAR t average from start of circling to leaving thermal
- Half the average climb rate



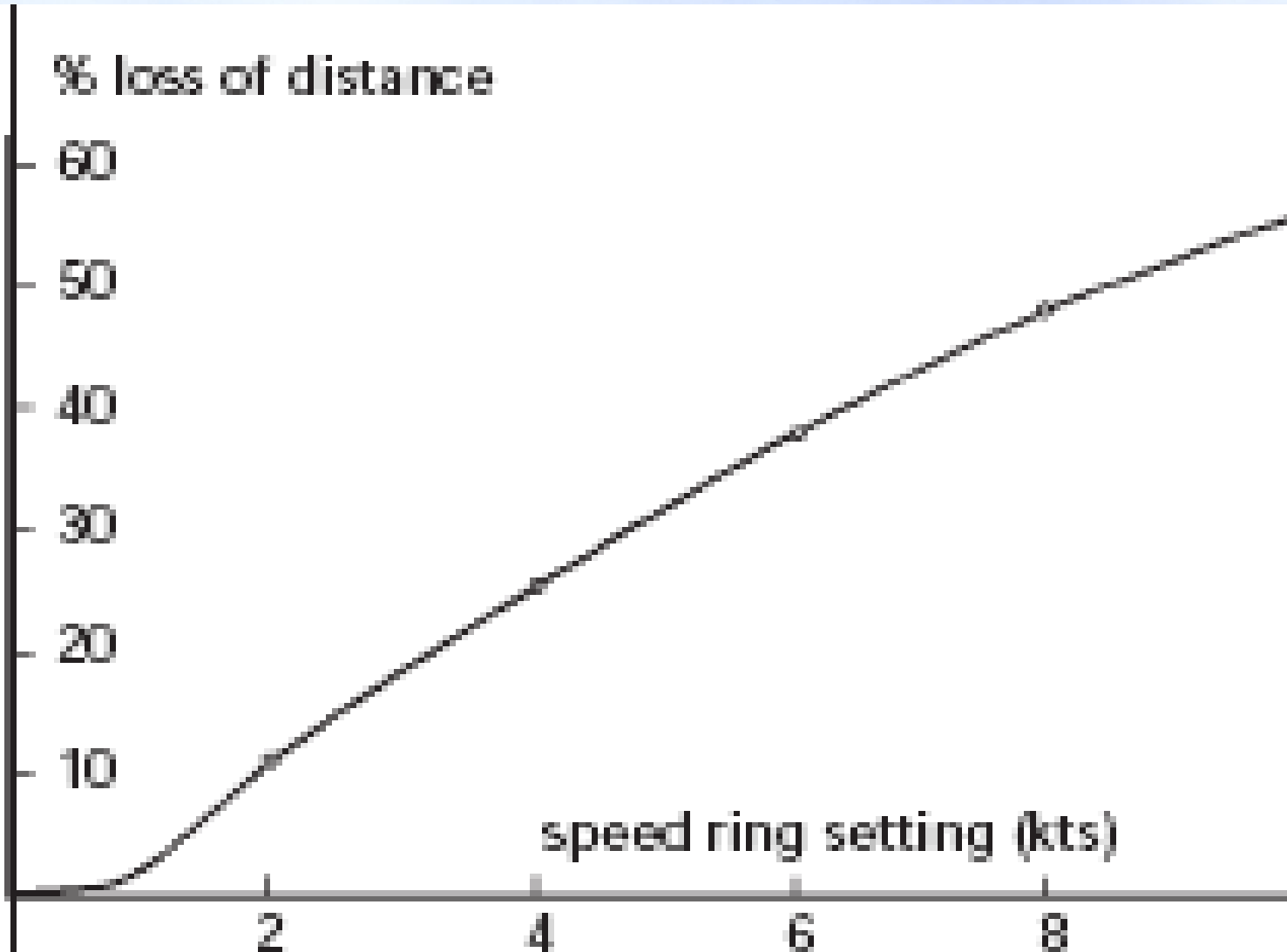
flying slower

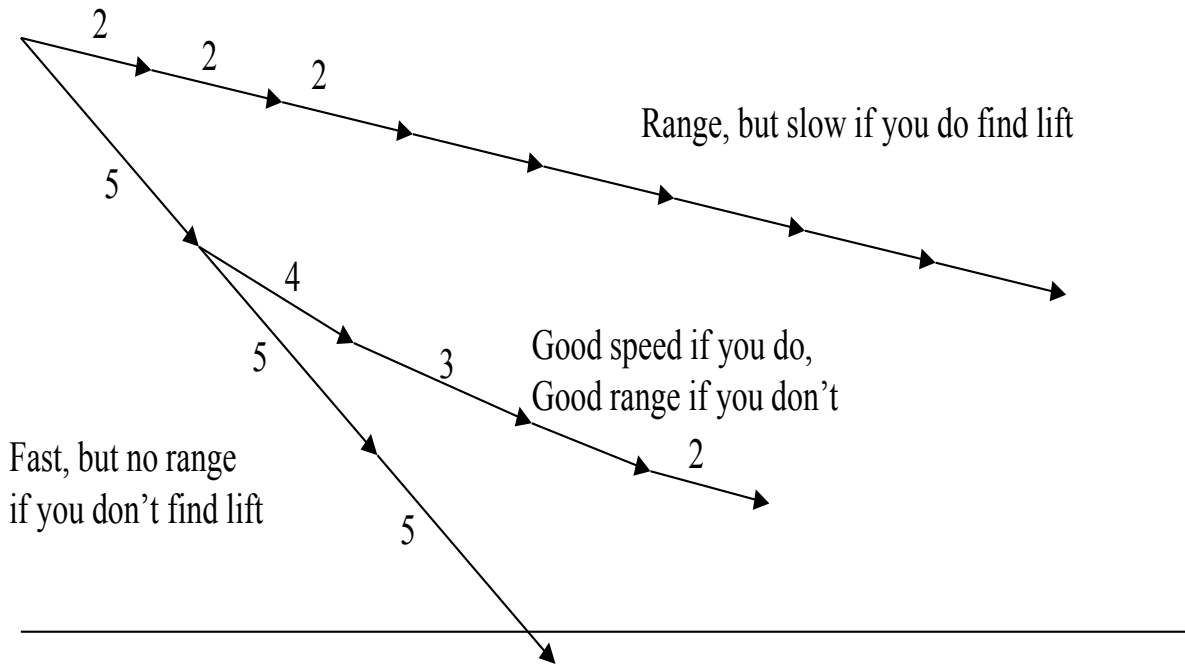
| Average climb rate 6 knots | | | | | | | |
|-------------------------------|-----|-----|-----|-----|-----|----|----|
| Cruise speed setting in knots | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Average x county speed | 110 | 109 | 108 | 106 | 103 | 93 | 88 |
| Reduction in search area % | 39 | 34 | 30 | 25 | 18 | 5 | — |

Flying slower



Speed=Range

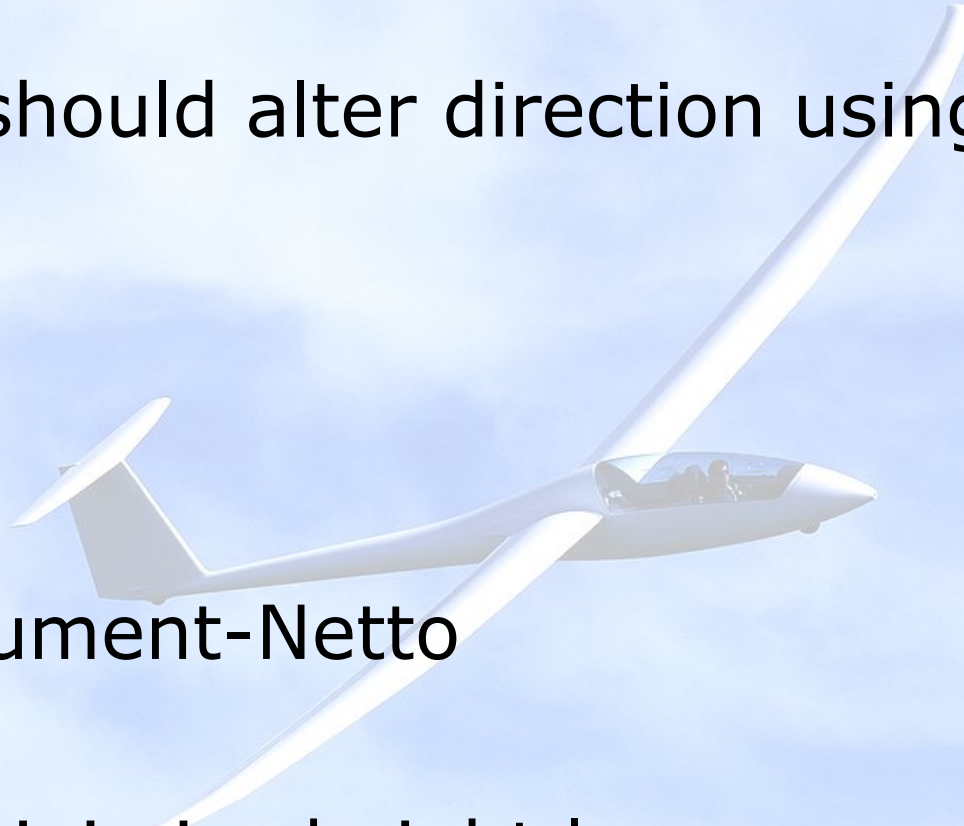




Effective inter thermal flying

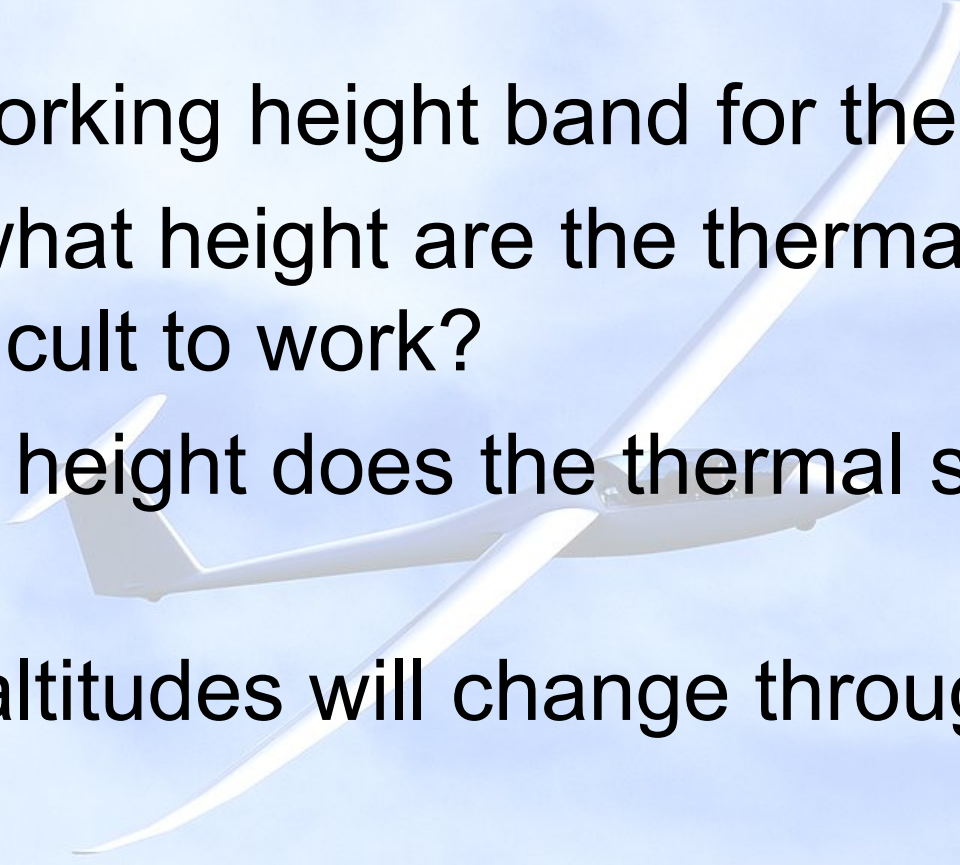
the pilot should alter direction using visual clues:


- clouds
- gliders
- terrain
- or instrument-Netto



To minimize height loss

Effective Inter-thermal Flying

- Set a working height band for the day
 - below what height are the thermals weak and difficult to work?
 - At what height does the thermal strength drop off
 - These altitudes will change throughout the day!
- 
- A white glider is shown in flight against a light blue sky. The glider is positioned diagonally across the frame, with its nose pointing towards the upper right. The background is a clear, pale blue sky with some very faint, wispy clouds near the horizon.

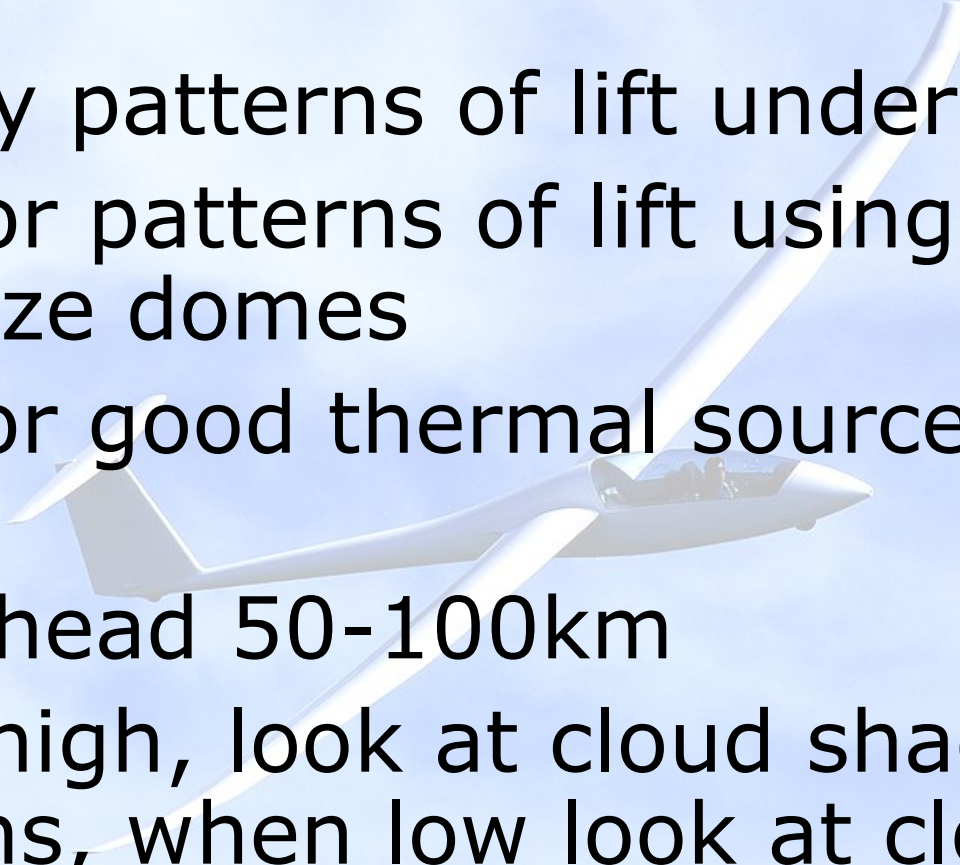


Operating height band- aggressive and fast

Caution height band – conservative, a bit slower

Survival height band –just stay in air

Effective Inter-thermal Flying

- Identify patterns of lift under clouds
 - Look for patterns of lift using clouds and haze domes
 - Look for good thermal sources and streets
 - Look ahead 50-100km
 - When high, look at cloud shadow patterns, when low look at cloud patterns.
- 
- A white glider is shown in flight against a light blue sky with wispy white clouds. The glider is positioned diagonally across the frame, pointing towards the upper right. It has a high-wing configuration and a T-tail. The background is a soft-focus sky with scattered clouds.

Effective Inter-thermal Flying

The diagram features three green circles on a white background. A red line starts at the top, curves down and left, then curves down and right, ending at the bottom. A blue line starts at the top left, curves down and right, then curves down and left, ending at the bottom right. The red line passes through the top-right circle and the bottom-right circle. The blue line passes through the top-left circle and the bottom-right circle.

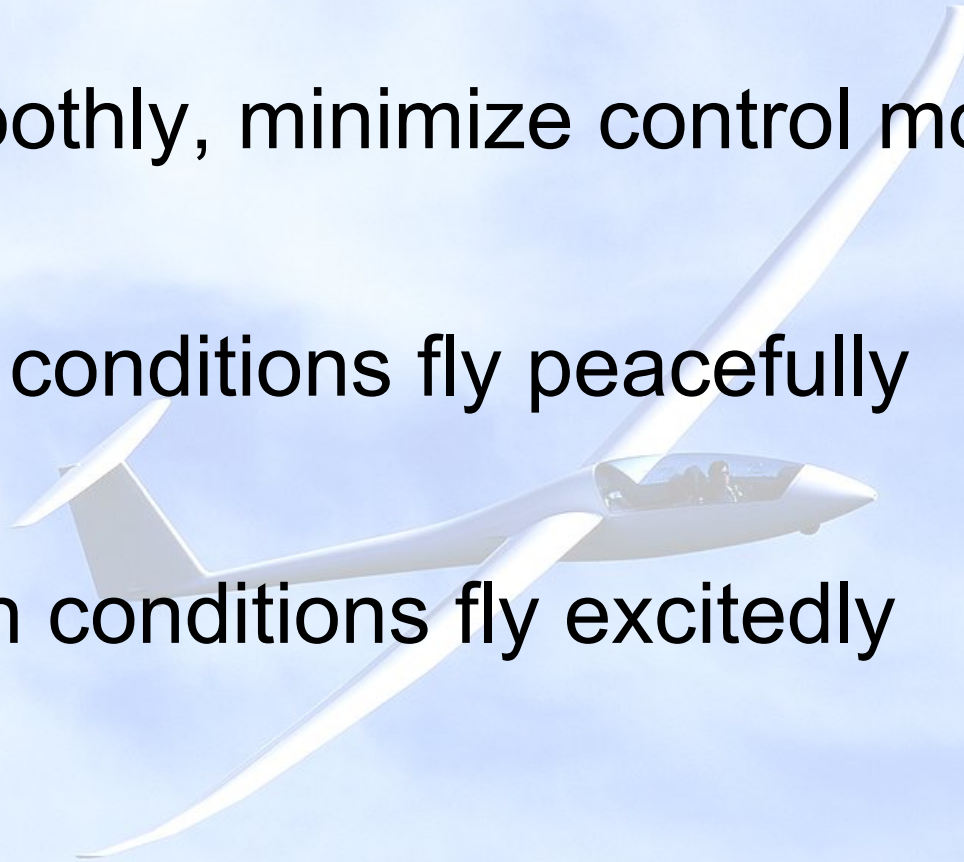
- When you feel lift always slow down and turn into it
- Anytime you can climb while flying straight on course is advantageous

Deviations

| Degrees off track | | | | | | |
|-------------------|----------|-----|-----|-----|------|------|
| | On track | 10 | 20 | 30 | 40 | 50 |
| Thermal strength | 1.0 | 1.0 | 1.2 | 1.5 | 1.6 | 2.6 |
| | 2.0 | 2.0 | 2.2 | 2.8 | 3.6 | 5.8 |
| | 3.0 | 3.0 | 3.4 | 4.2 | 6.0 | 9.6 |
| | 4.0 | 4.2 | 4.8 | 5.8 | 8.2 | 13.6 |
| | 5.0 | 5.2 | 6.0 | 7.4 | 10.6 | 17.4 |
| | 6.0 | 6.2 | 7.0 | 8.8 | 12.6 | 10.6 |

Momentum and rhythm

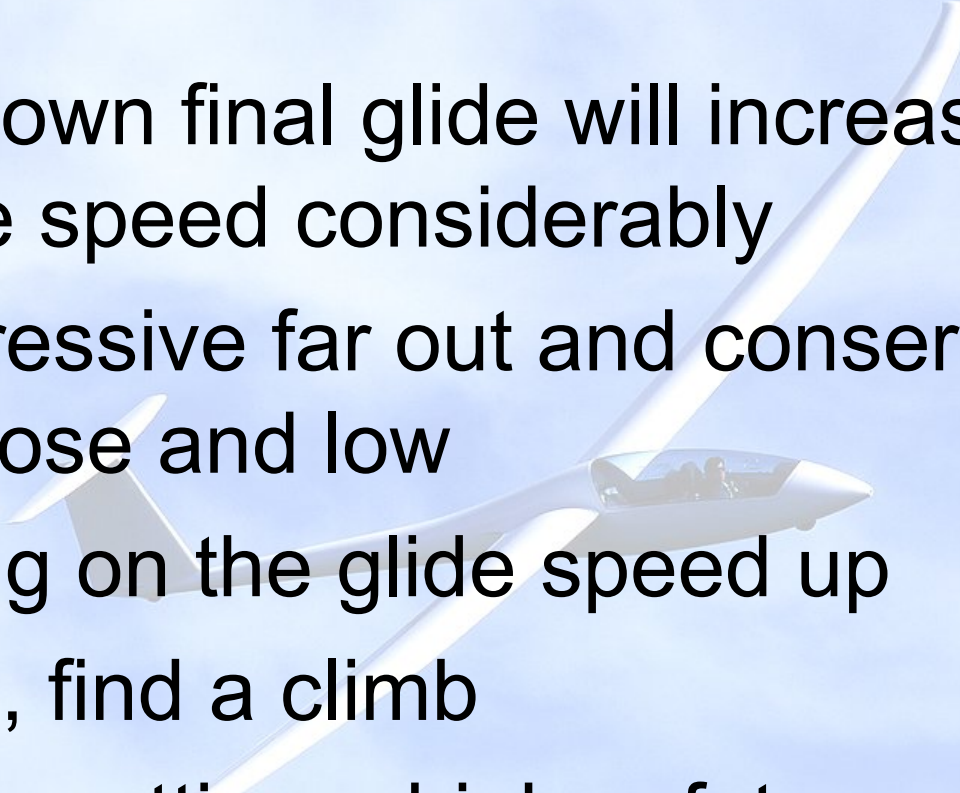
- Fly smoothly, minimize control movements
- In calm conditions fly peacefully
- In rough conditions fly excitedly



Final glides

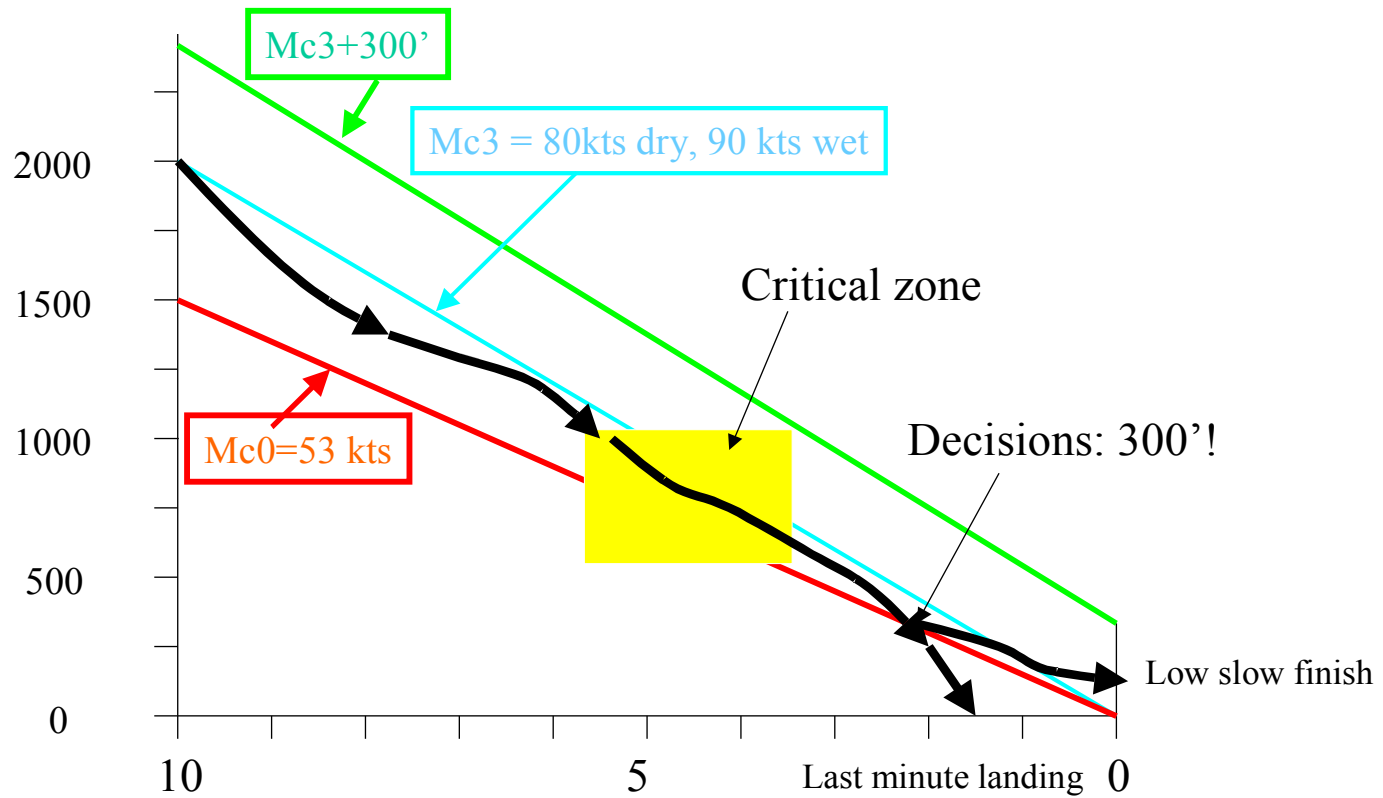


Final glides

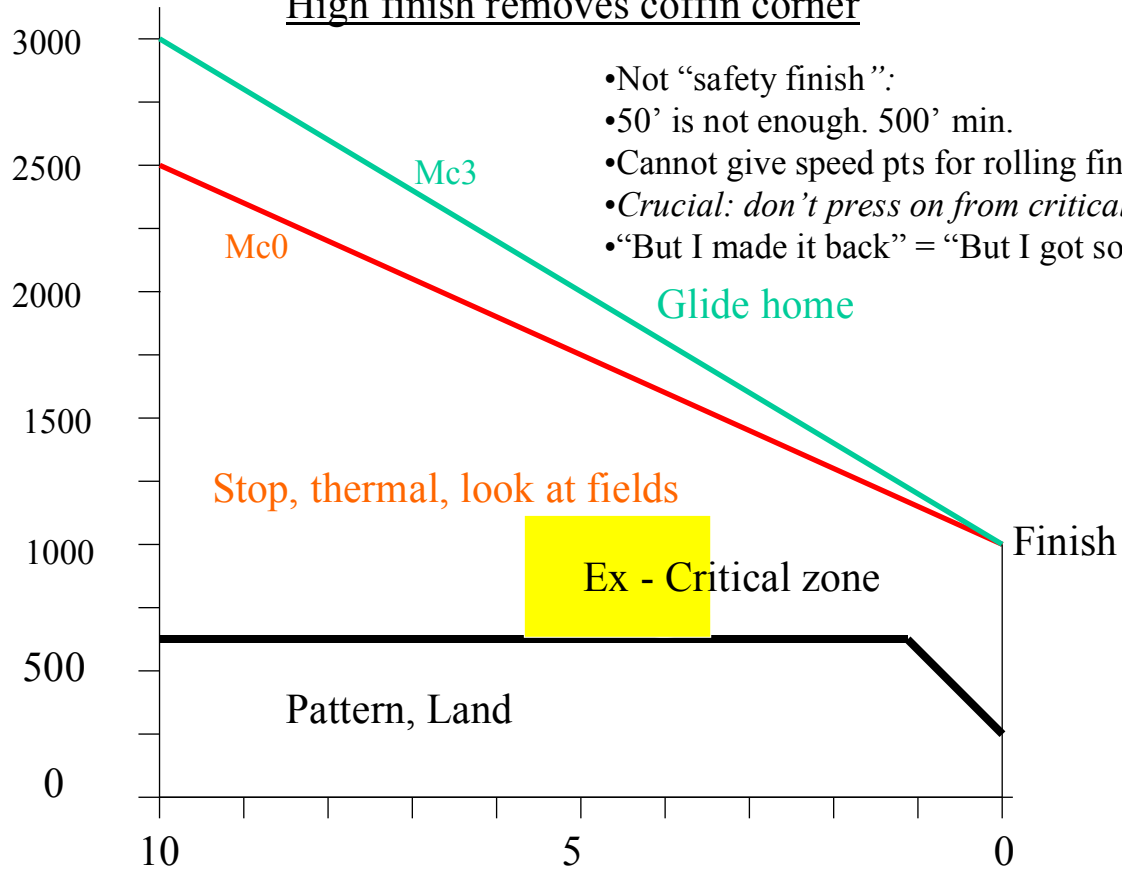
- A well flown final glide will increase the average speed considerably
 - Be aggressive far out and conservative when close and low
 - If gaining on the glide speed up
 - If losing, find a climb
 - high ring setting = high safety margin
- 
- A white glider is shown in flight against a light blue sky. The glider is viewed from a low angle, showing its long, slender wings and a small fuselage with a cockpit. The glider is angled upwards, suggesting it is in a climb or a steep glide. The background is a clear, bright blue sky with some light, wispy clouds.

Final glides

Coffin corner on final glide
Where would *you* thermal or land?

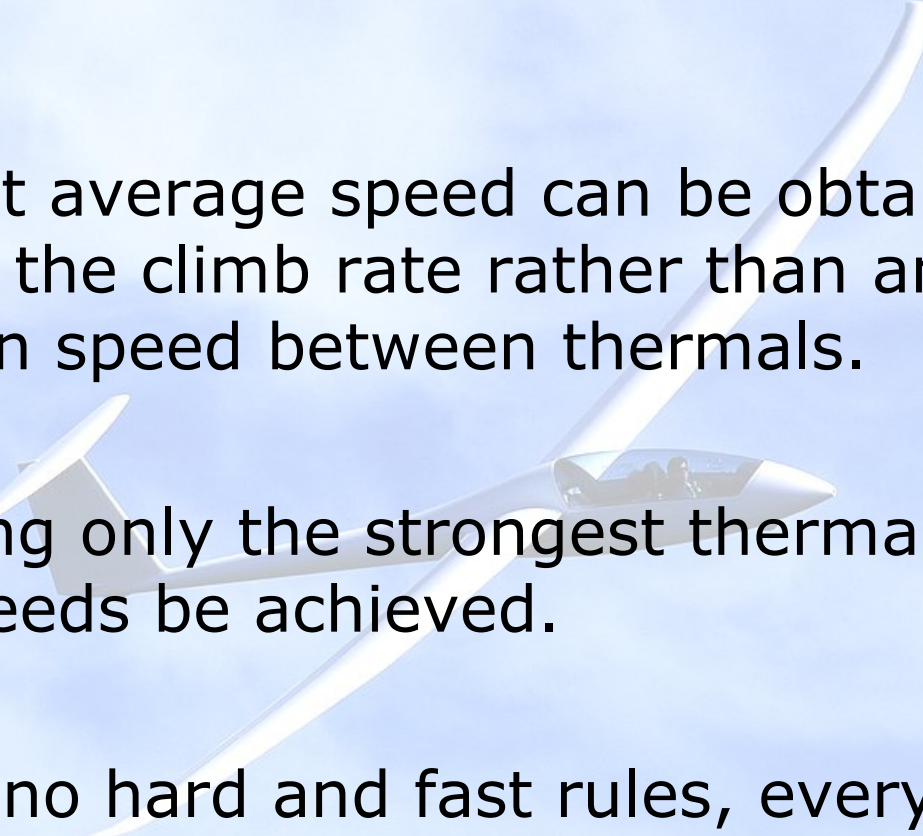


High finish removes coffin corner



- Not “safety finish”:
- 50’ is not enough. 500’ min.
- Cannot give speed pts for rolling finish
- Crucial: don’t press on from critical zone*
- “But I made it back” = “But I got so close”

Summary

- The fastest average speed can be obtained by improving the climb rate rather than any possible variation in speed between thermals.
 - By selecting only the strongest thermals will the fastest speeds be achieved.
 - There are no hard and fast rules, everything depends on the circumstances
- 
- A white glider is shown in flight against a light blue sky with soft, wispy clouds. The glider is positioned diagonally across the frame, from the lower left towards the upper right. It has a long, slender fuselage, a high-wing configuration, and a T-tail. The cockpit is visible, showing two pilots. The overall scene is bright and clear, suggesting a good day for flying.