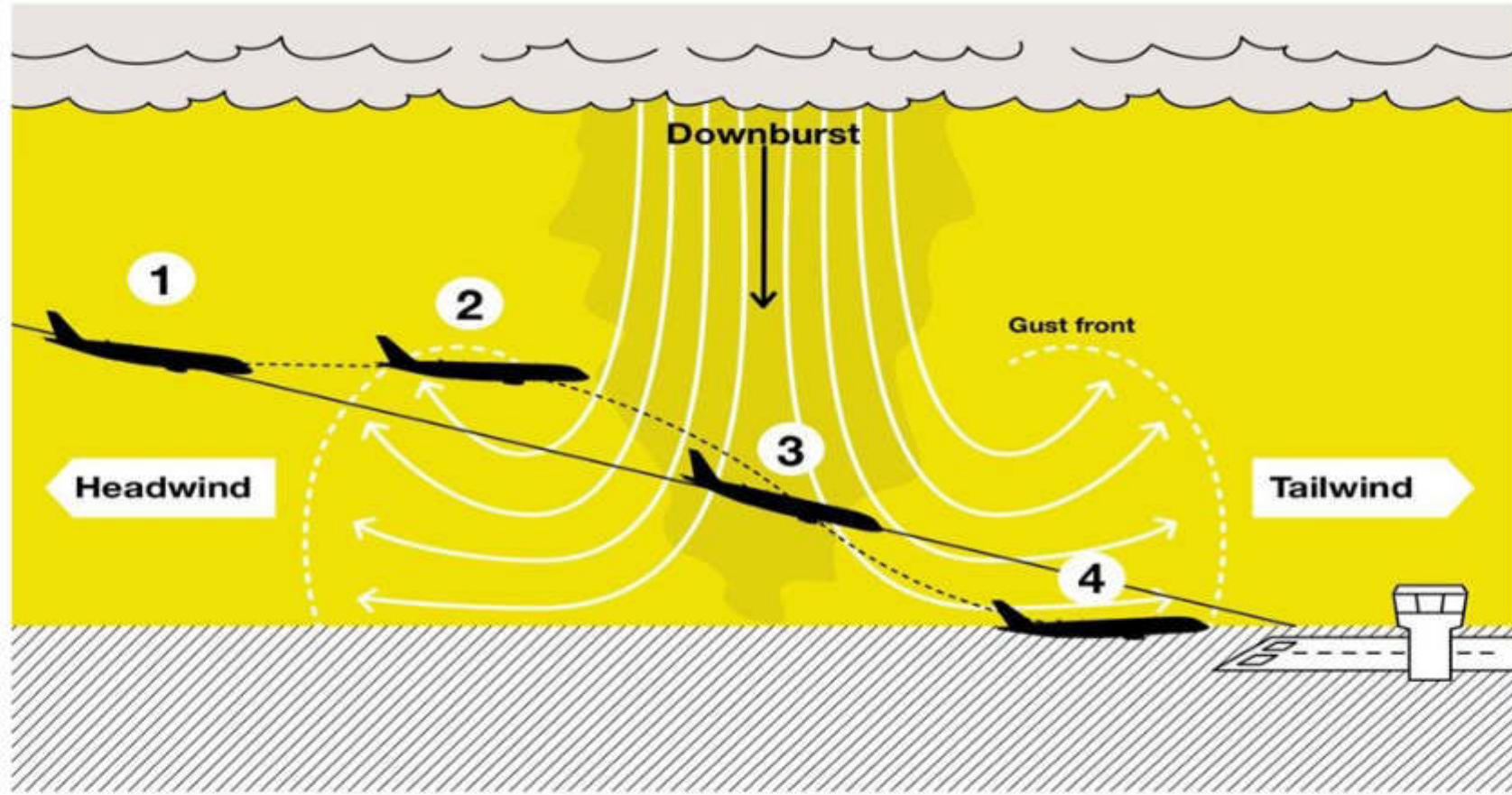


WINDSHEAR

It's threat for landing and take off
That can lead to an undesired aircraft state

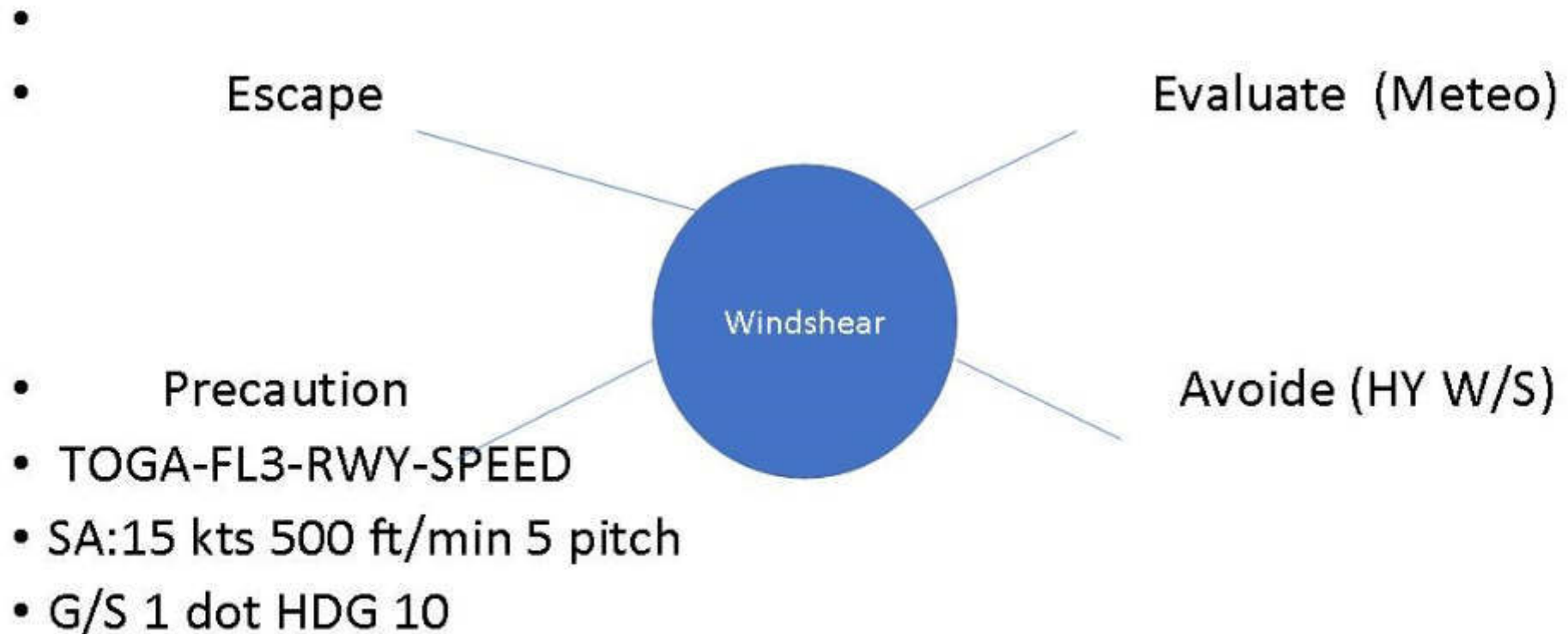


What's wind shear

- WIND VARIATION AND DIRECTION 15kts 500 ft/min
- CONVECTIVE ACTIVITY (microbursts)
- OROGRAPHIC ORIGIN

- Microburst : ts ra sh
- 5% ts ,400/3000,vortici fino a 6000/12000,2-3 nm
- Larghezza,dissipa dopo 10/20min.

SOLUTION



Aircraft SYS

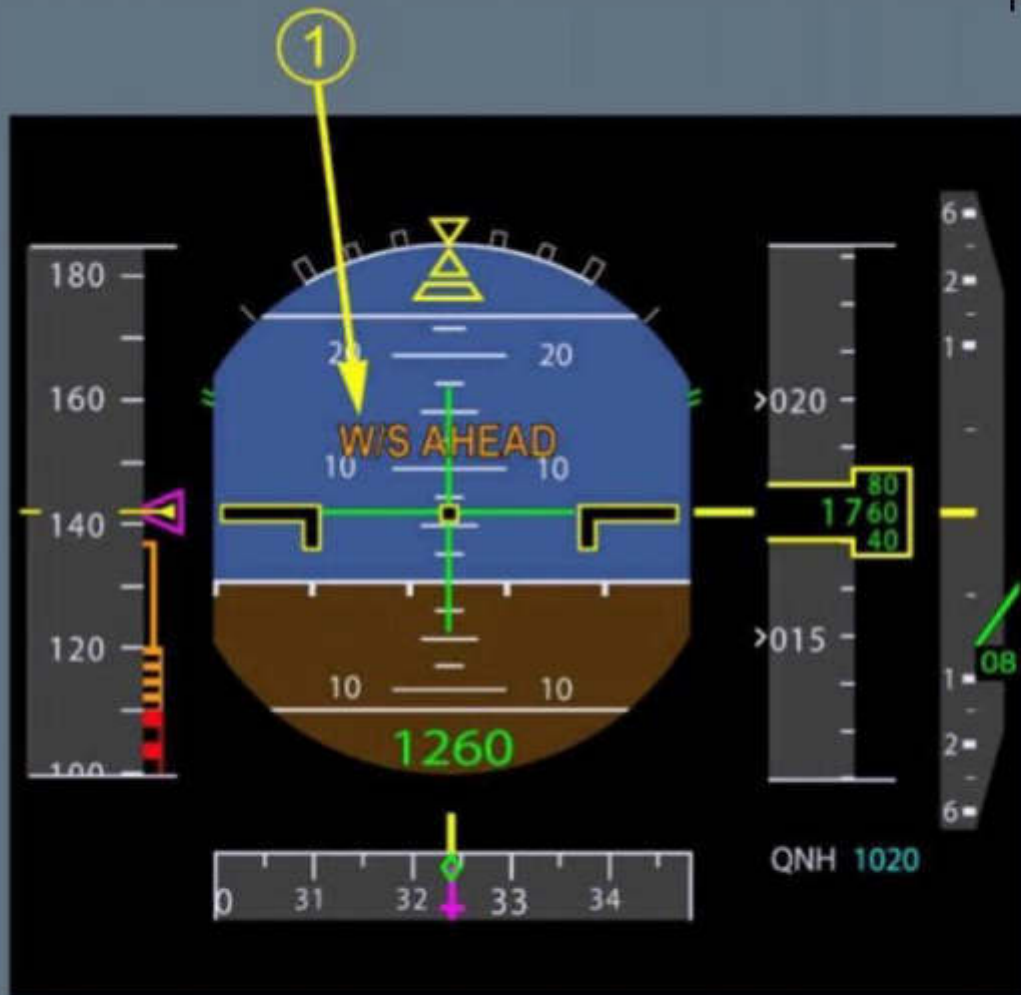
RWS and PWS compared characteristics

	RWS	PWS
PURPOSE	<ul style="list-style-type: none">- Detect in the wind shear- Guidance to escape	<ul style="list-style-type: none">- Detect ahead of the aircraft- Guidance to avoid the event
WARNING	<ul style="list-style-type: none">- Aural- Visual	<ul style="list-style-type: none">- Aural- Visual
PRINCIPLE	<ul style="list-style-type: none">- Comparison between inertial and aerodynamic data	<ul style="list-style-type: none">- Doppler weather radar

PWS

- Radar scan. 5NM ,warning 3NM
- From 30 kts to 100 kts on take off until 50'
- Landing 2300 ft to 50ft

Alert Level	Aural Warning	PFD	ND (<i>Refer to DSC-34-SURV-30-30 PWS (if installed) indication on PFD and ND</i>)
Warning (Approach)	«GO AROUND WINDSHEAR AHEAD»	W/S AHEAD (red)	Windshear icon
Warning (Takeoff)	«WINDSHEAR AHEAD» (twice)	W/S AHEAD (red)	Windshear icon
Caution	«MONITOR RADAR DISPLAY»	W/S AHEAD (amber)	Windshear icon
Advisory	Nil	Nil	Windshear icon



RWS

- Through FAC and ADR
- From 3" to 1300 ft
- From 1300 ft to 50 ft
- W/S on PFD for 15" Aural 3 time

- Il FAC genera il W/S warning quando il previsto livello di energia scende sotto una soglia determinata ,per misurare questa energia il FAC usa l'ADIRS.Il FAC esprime questo livello di energia con l'AoA e compara con l'AoA che dovrebbe avere.

IF IT HAPPENS

- TAKE OFF:
- Until V1 reject
- At Vr or limit of RWY (600mt) rotation
- App. TOGA –SRS-17,5-FULL SIDE STICK
- NO CONF.CHANGE

If Windshear is detected, both PFDs display a **WINDSHEAR** message. An associated aural WINDSHEAR alert sounds three times.

If the flight crew detects WINDSHEAR, apply the following recovery technique:

■ **At Takeoff:**

■ **If before V1:**

If there are significant variations in airspeed, and in airspeed trend below the indicated V1, reject the takeoff.

If windshear occurs during the takeoff roll, the aircraft may reach V1 later (or sooner) than expected. The flight crew should ensure that there is sufficient runway remaining to stop the aircraft, if necessary.

■ **If after V1:**

THR LEVERS.....TOGA
REACHING VR.....ROTATE
SRS ORDERS..... FOLLOW

If necessary the flight crew may pull the sidestick fully back.

Note: If the FD bars are not displayed, move toward an initial pitch attitude of 17.5°. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.

■ **Airborne, initial climb or landing:**

THR LEVERS AT TOGA..... SET OR CONFIRM
AP (if engaged)..... KEEP ON
SRS ORDERS..... FOLLOW

If necessary the flight crew may pull the sidestick fully back.

*Note: 1. Autopilot disengages if the angle of attack value goes above α prot.
2. If the FD bars are not displayed, move toward an initial pitch attitude of 17.5°. Then, if necessary, to prevent a loss in altitude, increase the pitch attitude.*

DO NOT CHANGE CONFIGURATION (SLATS/FLAPS, GEAR) UNTIL OUT OF WINDSHEAR.

CLOSELY MONITOR FLIGHT PATH AND SPEED.

RECOVER SMOOTHLY TO NORMAL CLIMB OUT OF WINDSHEAR.

The "W/S AHEAD" message is displayed on each PFD. The color of the message depends on the severity and location of the windshear

Note: When a predictive windshear alert ("WINDSHEAR AHEAD" or "GO AROUND WINDSHEAR AHEAD") is triggered, the flight crew must carefully check that there is no hazard. If this is the case, the flight crew can disregard the alert, as long as both of the following apply:

- *There are no other signs of possible windshear conditions*

- *The reactive windshear system is operational.*

Known cases of spurious predictive windshear alerts were reported at some airports, either during takeoff or landing, due to the specific obstacle environment.

However, always rely on any reactive windshear ("WINDSHEAR").

W/S AHEAD RED

■ **Takeoff**

Associated with an aural synthetic voice "WINDSHEAR AHEAD, WINDSHEAR AHEAD".

● **Before takeoff:**

Delay takeoff, or select the most favorable runway.

● **During the takeoff run:**

Reject takeoff.

Note: Predictive windshear alerts are inhibited above 100 kt until 50 ft.

● **When airborne:**

THR LEVERS.....TOGA

As usual, the slat/flap configuration can be changed, provided the windshear is not entered.

AP (if engaged).....KEEP ON
SRS ORDERS..... FOLLOW

If necessary the flight crew may pull the sidestick fully back.

Note: 1. Autopilot disengages if the angle of attack value goes above α prot.