

4.3 Support system

Military operations and more especially air operations are more and more supported by external systems such as :

- Communication relay,
- Target designators,
- Jammers, ...

Most of these hazardous missions are today carried out by manned systems.

A logical evolution would be to make these systems more and more efficient. A way to do it, is to allow them to go closer to the target (and the threat) by making them unmanned.

5. ENVIRONMENT ON THE BATTLEFIELD.

The number of actors on the battlefield is greater and greater. This implies that coordination and deconfliction are needed at all the levels of command.

UTA will be one of these actors.

On the battlefield, all tactical unmanned aircraft will have to cope with three different kinds of constraints :

- atmospheric,
- operational,
- enemy.

In addition, if efficiency of the overall forces and survivability of some actors are based on the use of Unmanned Tactical Aircraft, these systems will have to be :

- available,
- reliable,
- survivable.

In these future mixed Manned / Unmanned missions UTA will be a key part of manned operations.

5.1 Atmospheric constraints

An aircraft operating in western Europe in all seasons may have to fly in very difficult conditions :

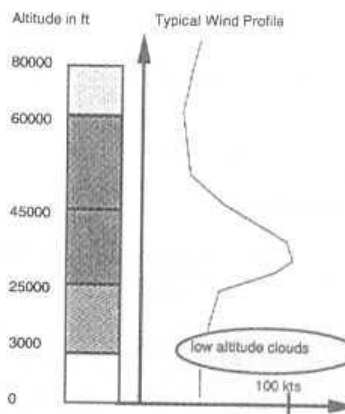
- wind,
- snow and ice,
- fog,
- thunders and lightening, ...etc

If the success of a combat mission (manned or unmanned) depends on the presence of an unmanned tactical aircraft, either for surveillance ; jamming or target designation, it is obvious that all these atmospheric constraints are to be taken into account from the initial design of the UTA.

In addition mission preparation systems and mission management system have to be able to take into account those constraints when defining the flight path.

If we only consider clouds and wind, two basic parameters which may affect the mission, it is to be noticed that :

- in Europe, wind may reach speed higher than 50 kts in all seasons in altitude,
- clouds often have a minimum ceiling lower than 1000 ft, especially in winter.



Typical wind and clouds distribution

This means that :

- a UTA flying at low speed (< 80 kts) may double its flight time to reach a way point if it meets "usual wind",
- a UTA equipped with an electropotential device or a laser device may have to be able to fly at an altitude lower than 1000 ft even in a hilly area...

Such elements may be important design drivers both for the UTA system and for the mission planning and preparation system.

5.2 Operational constraints

Main characteristic of an unmanned tactical aircraft in operation is that **it is an aircraft working for a customer.**

This means that these vehicles will have :

- to have the same kind of behavior than any other aircraft,
- to provide any time the service the customer is expecting.

To achieve such aims, UTA systems will have to cope with very strict operational constraints.

- They will be able to be integrated in the air operation system :
 - ⇒ ability to understand the ATO,
 - ⇒ ability to abide by the communication plan,
 - ⇒ ability to fly with other aircraft, ...
- They will be able to be integrated in the battlefield surveillance system :
 - ⇒ ability to understand the surveillance plan,
 - ⇒ ability to follow existing STANAGs for data collection, processing and dissemination, ...
 - ⇒ ability to interface with existing C4Is, ...