Air Littoral: The New Sub-domain that Demands a Fresh Look at Verticality

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Abstract

The article examines the emergence of the air littoral—the low-altitude airspace up to approximately 10,000 feet above mean sea level—as a decisive and contested battlespace in contemporary warfare. It argues that advances in uncrewed aerial systems, loitering munitions, and precision weapons have fundamentally altered traditional notions of air superiority, shifting operational emphasis from high-altitude dominance to persistent, localised control of low-altitude airspace. Drawing on global case studies, including the Russia-Ukraine conflict and Indian operational experience from Operation Sindoor, the article demonstrates how control of the air littoral directly affects ground-force survivability, tempo, and freedom of manoeuvre. It highlights the limitations of episodic, air force-centric models and makes a strong case for land force-led command and control of the air littoral, supported by integrated joint structures. The article concludes by recommending doctrinal clarity, layered air defence, indigenous technological investment, and institutionalised joint command mechanisms to secure dominance in this critical domain.

Introduction

Contemporary battlefields are evolving swiftly, driven by new technologies and geopolitical changes. The air littoral, the airspace from the surface up to approximately 10,000 feet above mean sea level, has now become crucial, integrating land, maritime,

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Journal of the United Service Institution of India, Vol. CLV, No. 642, October-December 2025.

and air operations. This region was first called the 'Air Littoral' by Dr Kelly A Grieco and Colonel Maximilian K Bremer, who described it as the "Area from the coordinating altitude to the Earth's surface, which must be controlled to support land and maritime operations and can be supported and defended from the air and/or the surface".[1]

Historically, air superiority focused on high-altitude control by air forces. But "The airspace between ground forces and high-end fighters and bombers is quickly emerging as the more challenging and important contest for air control".[2]

Today, asymmetric threats such as low-cost Unmanned Aerial System (UAS), loitering munitions, and precision aerial weapons dominate the air littoral, exploiting terrain masking and sensor blind spots to disrupt ground forces.

Surface forces operate below this vertical space, exposed to immediate aerial threats. Recent conflicts and operational experience have demonstrated that local, continuous control of the air littoral is crucial for protecting ground troops, enabling rapid engagement, and maintaining tempo. Integrated Command and Control (C2) among land, air, and maritime forces is crucial, as ambiguity or fragmentation undermines operational effectiveness and survivability.

One of the biggest challenges of modern warfare is that large numbers of uncrewed drones have effectively taken control of the airspace above the contemporary battlefield, diminishing the dominance traditionally exercised by manned aircraft. The drone revolution suggests that attaining traditional air superiority—long the core mission of air forces—will become increasingly difficult, and in some contexts unattainable. In contemporary conflicts such as Ukraine, uncrewed systems, rather than manned aircraft, now dominate the airspace directly above ground forces. As a result, the contested air littoral has emerged as a vital new subdomain of warfare, marking a clear paradigm shift in the conduct of air operations.

There is, therefore, a need to establish principles for the control of the air littoral, drawing on lessons from both global and Indian experiences, including Operation Sindoor. Additionally, there is a need for enabling technologies and effective command structures to attain dominance in this domain.

The Army Chief, while speaking at a Tri-Services Symposium on 23 Sep 2025, said that "Conflicts in the recent past have demonstrated that the effectiveness of the unmanned aerial systems, and Counter-UAS (C-UAS) for exploiting the airspace, just above the land battle area. The effective management and exploitation of this space, known as the air littoral, has become imperative.[3] With the persistent presence of weapons, radar systems, artillery, missiles, unmanned aerial systems, and C-UAS, this space 'Needs Exploitation' as well as efficient management, including that of the electromagnetic spectrum. "We need a de novo innovative solution for force application and force preservation in this limited space of air littoral", he said.[4]

In summary, air littoral control is not just tactical but a strategic necessity for modern warfare. Recognising the littoral zone and strengthening a force for C2 is essential.

Operational Definition and Boundaries of the Air Littoral

A precise operational definition is essential. The air littoral features intricate terrain masking, sensor limitations, and congested airspace. Aircraft, helicopters, and UAS perform vital mission profiles within this layer, while ground-based air defences operate at overlapping altitudes.

Altitude up to 10,000 feet marks the direct influence of surface weapons, affecting the operations of both manned and unmanned platforms. The air littoral coincides with tactical battle areas and theatres of operation i.e., coastal zones for joint sea-land force activity and inland theatres with intensive fires, UAS, and artillery.

Air Defence (AD) operations today face a multitude of complex challenges that significantly impact detection, tracking, and engagement effectiveness. Other challenges include terrain masking that obscures sensor and complicates targeting. There is also an issue of congestion with overlapping flight paths, artillery, missiles, and UAS. The engagement cycles are short, measured in seconds, and threats are layered and adaptive, such as swarms and advanced electronic warfare.

Unlike high-altitude air superiority, which permits only episodic control, littoral dominance demands persistent presence, integrated layered defence, and decentralised authority. Control over the air littoral shields ground forces from surveillance and strikes, enables

rapid targeting, and synchronises multi-domain operations. This shift highlights the increasing significance of the air littoral as a distinct and critical battlespace.

The Air Littoral as a Decisive Battlespace

Control of the air littoral directly shapes the tempo of battle and the survivability of operations. Without dominance in this zone, ground manoeuvre remains constrained. Dominance in this zone, therefore, provides freedom of manoeuvre, persistent surveillance, precision engagement, and force protection against a broad spectrum of aerial threats. The operational value, thus, lies not only in neutralising enemy air activity but also in enabling friendly forces to exploit initiative on the ground.[5]

Recent conflicts highlight these dynamics. In Ukraine, swarms of drones and loitering munitions proved decisive in disrupting tactical operations. Similarly, in Operation Sindoor, integrated AD, real-time command, and indigenous systems enabled both successful defence and accelerated strike cycles. Together, these cases demonstrate how littoral control translates directly into operational advantage.

The traditional doctrine of high-altitude-centric control offers only fleeting coverage and remains ineffective against terrain-shielded, low-altitude threats. Furthermore, the air littoral has become an extension of close-quarters battle, with drones and loitering munitions posing an immediate overhead threat. What was once a peripheral concern is now central to tactical survivability.[6]

Tackling this environment requires consistent surveillance, quick sensor-to-shooter connections, multi-domain integration, and decentralised command. These demands set the bar for effective control and signify the shift from episodic air power to ongoing battlespace management.

Historical and Contemporary Case Studies

The importance of air littoral control is best understood through a detailed analysis of both contemporary conflicts and evolving doctrinal practice. Such studies underscore how lessons from the past inform future operational design. When General Norman Schwarzkopf, the United States (US) and Allied Commander,

proclaimed 'Air Supremacy' over the Iraqi Air Force on the tenth day of the Gulf War in 1991, the Iraqi Air Force had ceased all fixed-wing operations, and any Iraqi helicopters that still dared to fly were shot down. Yet Iraqi flak and short-range, mobile infrared anti-air missiles remained a serious threat, accounting for 71 per cent of all coalition aircraft losses in the war.[7]

The prolonged conflict between Russia and Ukraine since 2022 exemplifies the modern air littoral battlespace. Ukraine's establishment of the Unmanned Systems Force in 2024 centralised drone operations, reflecting an institutional realisation that persistent, land force-led control of low-altitude airspace is vital to operational success.

The war has dramatically accelerated the military use of drones in ways few could have foreseen. Today, they saturate the skies above battlefields in numbers previously unimaginable, conducting missions in surveillance, intelligence gathering, early warning, and precision strike. Ukrainian forces have employed swarms of small drones and loitering munitions to conduct reconnaissance, target enemy artillery, and disrupt Russian manoeuvres.[8] This persistent aerial presence has compelled Russian forces to adapt by deploying fibre-optic-controlled drones resistant to electronic jamming and by reinforcing ground-based AD specifically designed to counter UAS threats.

The continuous overhead activity of drones has prevented both sides from massing or manoeuvring their forces, making decisive breakthroughs on the front nearly impossible.[9] The conflict, therefore, exemplifies how control of the air littoral directly influences artillery effectiveness, troop mobility, and the overall tempo of the battlefield. This dynamic contest has simultaneously exposed the limitations of traditional high-altitude air superiority models and revealed the pressing need for ground-centric, persistent airspace management that integrates AD, reconnaissance, and rapid strike capabilities in the air littoral domain.

Operation Sindoor: A Paradigm of Tactical Airspace Command

Operation Sindoor marks a crucial point in Indian military strategy, establishing land force dominance in air littoral control amid multidomain threats. The operation was characterised by the army's

handling of the tactical battle area, where troops encountered persistent drone swarms and loitering munitions.

While the Indian Air Force executed strategic strikes and suppression of enemy AD, it was the army's responsibility to maintain control of the low-altitude airspace directly above frontline units. The deployment of indigenous systems such as the fully automated 'Akashteer'; AD control and reporting system enabled real-time sensor fusion and rapid engagement of aerial threats, underscoring the operational necessity of ground-controlled airspace management.[10]

Operation Sindoor validated long-standing doctrinal arguments supporting decentralised, land force led C2 of the air littoral. It showed tangible improvements in troop survivability, decision-making speed, and integration of multi-domain assets, thereby, strengthening the case for a doctrinal shift towards ground-led airspace management.

Comparative International Doctrinal Models

Globally, militaries have adopted varied models for controlling air littoral domains, balancing the roles of land forces and air forces according to operational realities and technological capabilities. Each nation tailors its doctrinal approach to suit its geography, threat environment, and service strengths. Despite these variations, there is near-universal recognition of the critical importance of unified C2 in this contested domain.

This comparative analysis reveals a set of common principles that cut across national approaches. In most cases, tactical airspace control is vested in land forces or in joint structures that are closely integrated with ground operations. Air forces generally retain the responsibility for strategic airspace and high-altitude command, while the low-altitude littoral is managed in coordination with frontline manoeuvre elements. At the same time, integrated joint command-and-control centres remain essential for deconfliction, operational cohesion, and the seamless employment of multi-domain assets.

Understanding how leading militaries approach control of the tactical airspace within the air littoral offers valuable insights for doctrinal development and operational planning.

Country	Tactical AD Control	Air Force Role	Integration Framework
United States (US)	The US Army controlsshort- and medium-range AD assets and operates tactical crewless aerial vehicles (UAVs) within the tactical battle area to providepersistent airspace control and protection for ground forces.	The US Air Forcemaintains controlover strategic airspace, long-range strike capabilities, and strategic UAVs, focusing on theatre-wide air superiority and interdiction.	A joint architecture featuring integrated airspace coordination centres ensures deconfliction and synchronisation between army and air force operations.
Russia	The Russian Ground Forces manage tactical AD, deploying surface-to-air missile systems and electronic warfare units to protect ground formations.	The Russian Air Force is responsible for air superiority missions and strategic strikes at high altitudes.	A federated control model maintains operational integrity and responsiveness by defining roles for both ground and air forces, ensuring seamless coordination and effective management.
China	The People's Liberation Army (PLA) Ground Force exercises control over tactical missile and AD systems to safeguard ground operations.	The PLA Air Force retains command over strategic airspace, overseeing air superiority and long-range operations.	Layered joint operations combine ground manoeuvre forces and air dominance efforts in coordinated campaigns.
NATO	Engagement authority is devolved to ground commanders within defined airspace zones, enabling responsive, localised AD.	NATO Air Forces maintain centralised joint airspace management to coordinate operations across member states.	A layered tactical-strategic control model integrates joint operational command for coherence and effectiveness.
United Kingdom	The British Army operates ground-based AD systems within the tactical battle area to shield forces from low-altitude threats.	The Royal Air Force commands strategic airspace and aerial combat assets.	Integrated air and missile defence with joint command posts ensures operational cohesion.

Country	Tactical AD Control	Air Force Role	Integration Framework
France	The French Air Force operates tactical radar sites and missile AD systems, supporting ground operations.	The air force manages air superiority and strategic AD missions.	Centralised air operations with distributed control centres ensure unified command and control.
Israel	The Israeli Army operates short-range missile defence systems such as the Iron Dome to protect critical assets and ground troops.	The Israeli Air Force controls strategic airspace and high-altitude missile defence systems.	Close coordination through joint operations centres enables layered and integrated air and missile defence.

Table 1: Comparative Models of Tactical Air Defence Control

Common Themes and Lessons

Several consistent themes emerge from the comparative overview of international practices. A clear trend is the devolution of tactical control, with most militaries assigning authority over low- and medium-altitude airspace, along with associated AD assets, to land or ground forces. This reflects the operational necessity for persistent, localised command that can respond rapidly to dynamic threats. At the same time, air forces generally retain responsibility for high-altitude airspace, strategic strike missions, and theatre-wide air superiority, leveraging advanced platforms and centralised command structures.

Another universal feature is the emphasis on joint integration and coordination. Modern models prioritise robust command-and-control architectures—whether through integrated airspace coordination centres or joint air operations centres—that synchronise actions, prevent fratricide, and ensure operational cohesion.[11] Finally, a layered approach to AD emerges as a common denominator, combining ground-based systems with airborne assets to provide comprehensive coverage of the battlespace.

Implications for Indian Doctrine

India's evolving security environment and operational experience suggest the adoption of a similarly layered and integrated framework. Firstly, the Indian Army must be empowered with unequivocal authority over low- and medium-altitude airspace in the tactical battle area, enabling rapid and context-specific responses.[12] Secondly, the Indian Air Force should retain primacy over high-altitude airspace and strategic missions, preserving theatre-wide air superiority. Next, permanent joint command mechanisms, such as institutionalised airspace coordination centres staffed by both army and air force personnel, are essential to ensure seamless integration and operational coherence. Ultimately, sustained investment in layered AD capabilities, which blend indigenous ground-based systems with air assets, will provide resilient protection against diverse aerial threats.[13]

Despite the growing centrality of the air littoral, most militaries still lack an explicit doctrine for this domain. Ambiguous definitions and overlapping authorities between air and surface forces foster operational fragmentation and create vulnerabilities. Inconsistencies in terminology and the limited scope of joint exercises further compound the risks posed by low-cost drones, loitering munitions, and sophisticated electronic warfare. Latent command structures not only delay response but also leave gaps in coverage, raising the risk of fratricide.[14]

It is, therefore, imperative to define the air littoral as a distinct operational domain. Primary authority should rest with land forces, supported by institutionalised joint command-and-control structures and standardised terminology. Integrated training and rapid technological adaptation are equally critical. Evidence from Ukraine's centralised UAS operations and Operation Sindoor underscores that unified command markedly enhances both threat neutralisation and force protection.

Arguments for Land Force-Led Air Littoral Control

A range of operational and doctrinal considerations converge in favour of land force leadership in the air littoral. The first is persistence: ground forces require uninterrupted surveillance, protection, and continuity of operations in the air littoral. The second is stake and accountability: since ground troops are the most

exposed, their survival depends on immediate, context-aware control of the overhead battlespace. Proximity and responsiveness also matter, as sensor-to-shooter integration at the front lines enables near-instant engagement against fast-moving threats.

Land force-led control also remedies fragmentation by eliminating overlaps in authority, thereby improving interoperability. By contrast, concepts of air superiority rooted in high-end manned platforms lack persistence and are inefficient against swarms or low-altitude precision threats. Finally, the very character of close-quarters battle has expanded vertically. Ground formations now face multiple threats and only forces embedded in the tactical environment possess the agility to respond effectively to these threats.

Counterpoints and the Role of Air Forces

While arguments for land force-led control of the air littoral are compelling, counterpoints highlight the indispensable role of air forces, which retain critical expertise in airspace management, strategic planning, and networked command and control. Capabilities such as high-end fighters, advanced electronic warfare platforms, and persistent intelligence, surveillance, and reconnaissance assets augment joint operations, providing episodic massed effects that can rapidly shape the battlespace.

Challenges, however, emerge when land forces seek exclusive control of the littoral. Risks of procedural fragmentation, interoperability gaps, and resource duplication cannot be overlooked. The advanced sensors, networked systems, and electronic warfare capabilities that the air forces possess remain vital enablers. In this context, joint control models, structured through layered authority and flexible allocation of responsibilities, offer a pragmatic way to balance institutional strengths while minimising operational risks.[15]

Synthesising Joint Command: Layered Authority and Integration

Layered joint C2 divides strategic (air force) and tactical (land force) airspace control. Joint Airspace Operations Centres provide situational awareness, deconfliction, and dynamic tasking with representatives from all services. Advanced sensor fusion and networked C2 systems are essential, supported by clear rules of engagement, identification, and continuous joint training.

India's geography and conflict history necessitate army-led tactical airspace control. Persistent threats, ranging from UAS and loitering munitions to attack helicopters, require proximity, situational awareness, and the ability to leverage indigenous capabilities.[16] The army's operational experiences, culminating most recently in Operation Sindoor, demonstrate the value of direct and localised command, coupled with seamless integration and joint coordination at the operational and corps levels.

Modern dominance in the air littoral depends on a suite of evolving technologies. Tactical and loitering UAS, often organised in swarms, provide reconnaissance and precision strike options, especially when integrated with indigenous systems. C-UAS platforms that blend sensors, electronic warfare, and kinetic interceptors are equally critical. Advances in radar technology—such as active electronically scanned array and light detection and ranging—combined with sensor fusion and real-time airspace management systems, enhance detection and engagement capabilities. Artificial Intelligence enables autonomous targeting and swarm coordination, while rotary-wing assets and manned–unmanned teaming expand flexibility and coverage across the battlespace.[17]

Recommendations for Effective Air Littoral Control

Several policy imperatives follow from these operational realities. First, there is a need to codify tactical airspace control under a joint doctrine, clearly defining army-led authority, operational ceilings, and engagement protocols. Second, army AD must be expanded through investment in indigenous, multi-layered C-UAS and missile systems with integrated C2. Third, institutionalising joint structures, such as permanent Joint Airspace Coordination Centres, is essential for standardised procedures and effective inter-service coordination.[18]

Simultaneously, the air force's strategic roles must be preserved, including high-altitude command, strategic strike, and theatre-wide air superiority, with clearly demarcated boundaries and coordination protocols. Training and doctrine must keep pace, with the army developing programmes in multi-domain operations, conducting realistic joint exercises, and fostering cross-service exchanges. Finally, indigenous innovation must be prioritised by supporting research and development of terrain-optimised,

advanced defence systems, with rapid deployment cycles informed by frontline feedback.[19]

The Imperative of Tactical Airspace Ownership

Commanding tactical airspace is now a crucial operational requirement for survival and success. The army's constant presence and situational advantage enable rapid decision-making and prioritisation of threats. Collaboration with the air force's strategic roles must be fostered through doctrine and operational integration, ensuring a unified effort.

Implementing this doctrine requires clear authority for the army, the development of strong joint C2 structures, ongoing investment in technology and training, and a purposeful culture of joint effort. Sovereignty over tactical airspace not only protects frontline forces but also deters aggression and offers a lasting battlefield advantage.

Measurable benchmarks must support these imperatives. This includes training Commanders, empowering C2 of formations across all services, and expanding organic platforms within a set period to incorporate counter-UAS deployment for frontline units. Annual joint and multi-domain exercises, along with an increase in budget allocations for air littoral research and development.

Conclusion

Undoubtedly, assessing threats to the air littoral requires a paradigm shift in military thinking about verticality. An Australian Army Research Centre report points out that the use of drones has greatly increased the operational tempo of artillery engagements by 'Shortening time-critical targeting and firing cycles from about 30 minutes to 3-5 minutes'. AD dynamics and economics have also become problematic, with a range of small, low-altitude aerial targets now bypassing detection, and the existing AD systems not being cost-effective for engaging such inexpensive drones.

Countering drones in the air littoral is, therefore, one of the most urgent tasks facing military planners, and all services must participate in the solution. The rapid progress of drone warfare in ongoing conflicts is transforming the meaning of air superiority and challenging traditional ideas of airpower. Drones have largely

replaced manned aircraft in daily combat over the front lines, and they are actively contesting the emerging domain of the air littoral.

There is, therefore, a need to identify and empower a principal service responsible for the air littoral domain. Presently, the army seems to have responded decisively to the new contestation of the air littoral with the 'Eagle on the Arm' concept, as lethal drones directly threaten its soldiers.

Therefore, it is important to clearly distinguish and 'Decouple' the blue skies from the narrow, low-altitude area over the battlefield where these drones operate, by establishing a doctrine that assigns a service, preferably the army, to coordinate all resources to counter this emerging threat. The reality is that the future can no longer be approached as the past was.

Endnotes

[1] Maximilian K. Bremer and Kelly A. Grieco, "The Air Littoral: Another Look", *The US Army War College Quarterly: Parameters* 51, no. 4 (Winter 2021): 67–80, accessed 19 Nov 2025, https://press.armywarcollege.edu/parameters/vol51/iss4/8/

[2] Ibid.

[3] "Effective Management and Exploitation of Air Littoral Become an Imperative: Gen Dwivedi", *Journeyline.in*, 2025, accessed 19 Nov 2025, https://www.journeyline.in/effective-management-and-exploitation-of-air-littoral-become-an-imperative-gen-dwivedi/

[4] Ibid.

[5] Mateusz Piatkowski, "Precautions and Aerial Superiority or Supremacy", *Lieber Institute West Point*, 05 Jun 2024, accessed 20 Nov 2025, https://lieber.westpoint.edu/precautions-aerial-superiority-supremacy/

[6] "Contested Air Littoral and the Challenges Ahead", *Indian Defence Review*, 08 May 2022, accessed 20 Nov 2025, https://indiandefencereview.com/contested-air-littoral-and-the-challenges-ahead/

[7] James C. Slife, Kelly A. Grieco, Maximilian K. Bremer, Jennifer Kavanagh, Michael Kreuzer, David Giffen, and Branden Gulick, "Rethinking Airpower in the 21st Century", *Æther: A Journal of Strategic Airpower & Spacepower* 3, no. 3 (Fall 2024), accessed 20 Nov 2025, https://www.airuniversity.af.edu/Portals/10/AEtherJournal/Journals/Volume-3_Number-3/Aether_Volume_3_Number_3.pd

[8] Anna Miskelley, "Ukraine War Highlights New Role for Loitering Munitions", *Defense Security Monitor*, 05 Sep 2025, accessed 20 Nov 2025, https://dsm.forecastinternational.com/2025/09/05/ukraine-war-highlights-new-role-for-loitering-munitions/

[9] Alistair MacDonald, "Exclusive | Ukraine Is Using AI-Powered Drone Swarms against Russia", *The Wall Street Journal*, 02 Sep 2025, accessed 21 Nov 2025, https://www.wsj.com/world/ai-powered-drone-swarms-have-now-entered-the-battlefield-2cab0f05

[10] Sheershoo Deb, "Explained: IAF's Suppression of Enemy Air Defence Capabilities (SEAD)", *DefenceXP – Indian Defence Network*, 18 Jun 2022, accessed 21 Nov 2025, https://www.defencexp.com/explained-iafs-suppression-of-enemy-air-defence-capabilities-sead/

[11] "Joint Multi-Domain C4ISR for the Indian Armed Forces", *Synergy: Journal of the Centre for Joint Warfare Studies*, Oct 2022, accessed 22 Nov 2025, https://cenjows.in/wp-content/uploads/2022/11/Synergy-_October_2022_-Online.pdf

[12] Ibid.

[13] PIB, "Operation SINDOOR: The Rise of Aatmanirbhar Innovation in National Security", *Press Information Bureau of India*, 2025, accessed 19 Dec 2025, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2128746

[14] Dr Arvind Kumar and Hari Ram, "Operation Sindoor and the Rise of Drone-Centric Warfare: A Strategic Analysis of India's Technological Shift in Modern Combat Doctrine", *Zenodo*, 20 Jul 2025, accessed 22 Dec 2025, https://doi.org/10.5281/zenodo.16223932

[15] "Emerging Frontiers: Technology Absorption in the Military", accessed 03 Oct 2025, https://www.idsa.in/wp-content/uploads/2025/09/book-emergin-frontiers-akshat-upadhayaya.pdf

[16] PIB, "Operation SINDOOR: The Rise of Aatmanirbhar Innovation in National Security".

[17] Dominika Kunertova, "Embracing Drone Diversity: Five Challenges to Western Military Adaptation in Drone Warfare", *Department of War Studies, King's College London*, 2025, accessed 23 Nov 2025, https://www.kcl.ac.uk/warstudies/assets/paper-29-dr-dominika-kunertova.pdf

[18] "Drones and Multi-Domain Warfare: Praxis and Prognosis", *Synergy: Journal of the Centre for Joint Warfare Studies*, 2023, accessed 23 Nov 2025, https://cenjows.in/wp-content/uploads/2023/10/Synergy-Journal-online-version-merged.pdf

[19] Ajay Ahlawat, "Air Superiority: Myth, Magic or Panacea—Air Power's Quest for Control of the Air," *Journal of Defence Studies* 17, no. 4 (2023): 25–48, accessed 23 Nov 2025, https://www.idsa.in/wp-content/uploads/2024/04/jds-17-4_Ajay-Ahlawat_0.pdf