The Air War Against the Islamic State: The Need for An “Adequacy of Resources”

By Anthony H. Cordesman

October 29, 2014

Request for comments:
This report is a draft that will be turned into an electronic book. Comments and suggested changes would be greatly appreciated. Please send any comments to Anthony H. Cordesman, Arleigh A. Burke Chair in Strategy, at acordesman@gmail.com.

ANTHONY H. CORDESMAN
Arleigh A. Burke Chair in Strategy
acordesman@gmail.com
Table of Contents

DEFINING THE REAL MISSION AND SIZING THE NECESSARY RESOURCES ........................................ 4
Defining the Real Mission .................................................................................................................. 4
How Much is Too Little? .................................................................................................................... 5

KEY TRENDS IN THE AIR CAMPAIGN TO DATE ............................................................................ 6
The Limited Data on Trends in Air Power ......................................................................................... 6
Looking at the Air Data to Date on Operation Inherent Resolve ......................................................... 7

FIRST GULF WAR: MAJOR CONVENTIONAL AIR CAMPAIGN: 1991 .............................................. 13
A “New” Kind of Air Campaign? .................................................................................................... 13
Scale of Operations ............................................................................................................................ 13

KOSOVO CAMPAIGN: OPERATION ALLIED FORCE: 1999 .............................................................. 15

2ND GULF WAR: INVASION OF IRAQ – 2003: MAJOR CONVENTIONAL WAR .......................... 17
A Different Mix of Threats .................................................................................................................. 17
Scale of Operations ............................................................................................................................ 17

AIR WAR IN IRAQ 2004-2011: SUPPORT OF IRREGULAR WAR Fought AGAINST ENEMY WITH NO
REAL AIR DEFENSES .......................................................................................................................... 21
“Shock and Awe” to Irregular Warfare .............................................................................................. 21
Scale of USAF Fixed Wing Operations ............................................................................................. 21

AIR WAR IN AFGHANISTAN: 2001 TO PRESENT ........................................................................ 24
The Early Phases: 1991 ....................................................................................................................... 24
Before the Surge: 2004-2009 ............................................................................................................. 29
The Surge Through 2014: 2010 to First Seven Months of 2014 ....................................................... 31
The Missing Half of the Afghan Air War ............................................................................................. 33

PROBLEMS IN APPLYING THE RECENT LESSONS OF AIRPOWER .............................................. 35
Air War in Joint and Coalition Conflicts ............................................................................................ 35
Growing Constrains on Casualties and Collateral Damage .............................................................. 36
The Fixed Wing versus Land Combat “Fixation” .............................................................................. 37
Unmanned Combat Aerial Vehicles (UCAVs) .................................................................................. 39
Cruise Missiles .................................................................................................................................... 39
Strategic Communications, UCAVs, Cruise Missiles, and Airpower ............................................. 40
Effective Airpower is Joint Warfare ................................................................................................ 41

OPERATION INHERENT RESOLVE: AN ADEQUACY OF RESOURCES? ............................... 42
Airpower and Iraq Ground Forces ..................................................................................................... 42

First page of text: Coordinating and applying the recent lessons of airpower to the current
conflict in Iraq requires more than just the effective employment of the air force. It requires
focusing on all elements of joint and coalition warfare and working to integrate those elements
in ways that include not only the air force and other services but also the other branches of
military forces. It also requires a robust and vociferous debate about the adequacy of resources
and the need to focus on the overall mission and the objectives of those missions. These resources
must be adequate both in terms of quantity and quality, so that the forces can accomplish their
assigned mission in a way that contributes fully to the overall success of the joint and coalition
forces. This requires that we focus on the mission and the objectives, rather than the
operational details and constraints. It also requires that we keep the overall mission and the
objectives in mind, rather than the operational details and constraints. It requires that we keep
the overall mission and the objectives in mind, rather than the operational details and constraints.
It requires that we keep the overall mission and the objectives in mind, rather than the operational
details and constraints. It also requires that we keep the overall mission and the objectives in
mind, rather than the operational details and constraints.
Small, But Critical Numbers of US Boots on the Ground ................................................. 44
If the Conflict Widens and Escalates: Warfare in Syria ......................................................... 44

Figure 10: Operation Inherent Resolve: Airstrikes Per Day in Syria versus Iraq – Part One ................................................................................................................................. 48
Figure 10: Operation Inherent Resolve: Airstrikes Per Day in Syria versus Iraq – Part Two ................................................................................................................................. 49

If the Conflict Widens and Escalates: Buffer Zones .................................................................. 50
What Should the Ratio of strikes to Enablers and Total Sorties Flown Be? ............................. 51
Too Little and Too Slowly ....................................................................................................... 52
Defining the Real Mission and Sizing the Necessary Resources

On October 15th, the US gave the air operations in Iraq and Syria that it stated on August 8th the formal title of Operation Inherent Resolve,\(^1\)

U.S. Central Command officials announced today that Operation INHERENT RESOLVE has been officially designated as the name given to U.S. military operations against ISIL in Iraq and Syria. The operation name applies retroactively to all U.S. military actions conducted against ISIL in Iraq and Syria since airstrikes against ISIL began Aug. 8 in Iraq.

According to CENTCOM officials, the name INHERENT RESOLVE is intended to reflect the unwavering resolve and deep commitment of the U.S. and partner nations in the region and around the globe to eliminate the terrorist group ISIL and the threat they pose to Iraq, the region and the wider international community. It also symbolizes the willingness and dedication of coalition members to work closely with our friends in the region and apply all available dimensions of national power necessary - diplomatic, informational, military, economic - to degrade and ultimately destroy ISIL.

The announcement followed a pattern that the US had set from the start. It focused on the fact that the US and its allies were conducting an air campaign to degrade the Islamic State. It did not describe any mission to change the military situation in Syria or create Iraqi political unity and create a train and equip mission that would allow Iraqi ground forces to drive the Islamic State out of Iraq or destroy it.

Defining the Real Mission

It has been clear from the start, however, that any mission that attempts to degrade and destroy the Islamic State must address the broader issues of what will happen in Syria to both rebel forces and the Assad regime, what level of future national unity and military capability can be created in Iraq, what level of force will be used to protect minorities and for humanitarian purposes, and how the campaign will relate to the broader ideological, political, and religious struggle to end violent Islamist extremism.

This means that the size, timing, scale, and tactics of the air campaign for Operation Inherent Resolve must be tied to answers to the following questions,

- **What level of effort will be required over time to achieve that goal, and how will the air campaign have to change?** So far, the air campaign has been minimal by any recent historical standard and so limited that it is hard to see how it can be effective in either protecting Iraq from further gains, critically degrading the Islamic state in Syria, or providing humanitarian relief to threatened minorities like the Kurds.

- **Can Iraqi build the needed level of political cooperation and effective ground forces?** There has been some Iraqi political progress, but no clear progress in bringing Sunni tribes and faction back into active political or military support of the central government, creating effective unity and cooperation with the Iraqi Kurds and Pesh Merga, or producing a greater capability on the part of the Iraqi Army.

- **Can the US avoid intervening in the civil war in Syria either against Assad, or in conducting a major air effort to protect the Kurds, moderate rebel groups, and the Sunni civil population?** The US has certainly tried to limit its targeting and the size of its air strikes, but so far has not demonstrated that the current level of air and cruise missile strikes has halted Islamic State gains against the Kurds in Syria or in Anbar in Iraq, and the start of such strikes has led to Turkish and Syria Kurdish pressure.
to intervene at much higher levels and expand the air campaign to secure zones and other efforts designed to remove Assad.

- Can the US and its allies find ways of dealing with the steadily growing humanitarian crises in Syria and Iraq? Strategic goals are of critical importance, but so are ethics and morality.

As the analysis that follows shows, the answers to these questions have become steadily clearer as the US has broadened the scale of air campaign. The US has made it clear that it is making an effort to create new “moderate” Syrian rebel forces, and that it will allow its air campaign to expand to cover humanitarian crises, threats to minority forces in Syria, and potentially to some form of buffer zone in Syria that would be directed as much towards the Assad regime as the Islamic State.

At least one press report has also stated that Operation Inherent Resolve does have much broader goals in each area, and that the US does have formal plans that are tied to Iraq’s efforts to end the civil war that former Prime Minister Nouri Maliki created between Iraq’s Sunnis and Shi’ites during 2010-2013, and rebuild Iraq’s forces for what will become a joint US air and Iraqi ground campaign.2

At a minimum, the US is already deeply involved in “mission creep.” In practice, it seems from the start to have been involved in something approaching gross mission understatement.

**How Much is Too Little?**

At the same time, the actual air operations have been very limited in comparison with other recent US air campaigns. They have had some effect, but have done too little and done it too slowly. They have failed to halt the Islamic State gains in Iraq, and have involved steady mission creep in Syria at the expense of air operations in Iraq without reaching the scale of effort where they have had decisive tactical effects.

In fairness, airpower cannot solve religious, ethnic, political, and governance issues that are at the core of Iraqi and Syrian civil conflict. Airpower cannot substitute for a lack of effective Iraqi ground forces or moderate Syrian rebel forces – it can at best buy them to build-up their capabilities. It can only degrade the Islamic State, not defeat or destroy it, and it cannot prevent other Jihadist or violent Islamist extremist movements from taking its place as long as the underlying causes that bred the Islamic state remain.

Nevertheless, the air effort to date is so small by the standard of recent conflicts that it amounts to little more than military tokenism. This has been disguised in part by official reporting that touts the effect of daily sorties in hitting given target areas without explaining why such attacks should have a serious tactical effect. They has also made vague claims to make more serious strategic effects over time that are never really justified or explained. There has been little official reporting on the overall size of the air campaign, its impact on the overall course of the fighting in Iraq and Syria, its tangible impact on the Islamic State, and its human impact in terms of the trends in casualties, displaced persons, refugees, and atrocities.
Key Trends in the Air Campaign to Date

There has been no regular official reporting of the total sorties flown, sorties by country or mission, sorties by target and estimated battle damage. As a result, almost all analytic reporting has come from the media or think tanks, particularly in the form of maps and graphics issued by the BBC, Washington Post, New York Times, the Institute for the Study of War, and the Long War Journal.

The Limited Data on Trends in Air Power

The data that have been provided alone consisted on actual strike sorties and not the overall scale of air efforts. There are some rough snapshots of the larger effort. A Department of Defense reported in a background brief that US and partner nation attack aircraft had flown over 1,700 strike sorties in support of operations against Islamic State (ISIL/ISIS) targets in Iraq and Syria using over 800 munitions against 322 targets as of October 1, 2014.

An article by Walter Pincus in the Washington Post on October 14, 2014, also referred to a total of 5,000 sorties by US and allied coalition aircraft between August 8th and either August 12th or August 13th, at a cost that has rose from $7.5 million a day to $10 million a day. These total sortie and cost figures are almost meaningless, however, without a clear definition of what is included in the by type of sortie or cost.

The total of 5,000 sorties does not break down the extent of the strike sorties, the number of strike sorties that delivered munitions against ground targets; air cover sorties; intelligence, reconnaissance and surveillance (IS&R) sorties, airborne warning and command and control (AC&W), transport and air cargo, and refueling sorties. It also did not distinguish between fixed wing, rotary wing, unmanned aircraft, and cruise missiles.

This is not a minor issue is one considers that USCENTCOM reported that the actual number of active strike sorties in Iraq was 292 sorties and Syria was only 189 sorties as of October 15, 2014. This was a total of 481 sorties or 10% of the 5,000, and the 5,000 seems to be a fraction of the total stories flown in one looks at strike; intelligence, surveillance, and reconnaissance (IS&R), refueling, transport and all types of sorties versus the somewhat arbitrary figure of 5,000 sorties.

The 5,000 sortie figure was probably as irrelevant to the true total for air power as a cost figure issued by Rear Admiral John Kirby on October 20, 2014 that put the average cost at $7.6 million a day, and the total cost of the entire operation to date at $424 million with no explanation of what costs were included.

No unclassified data have been provided, however, on the size and adequacy of the intelligence, surveillance, and reconnaissance effort. They also have only touched in the broadest terms on the ability to target and assess damage, rules of engagement and making the necessary trade-offs between effectiveness and casualties. As of late October 2014, the US and its allies had dealt with the casualty issue largely avoiding the issue. This may, however, reflected the fact that the strikes had been so limited by the rules of engagement and targeting that casualties had been negligible.

This, however, may have come at a cost. As is touched upon in more depth at the end of this analysis, humanitarian reality means focusing on the total butcher’s bill from war,
not focusing on one aspect of the fighting. If an air campaign is too limited, or is too restricted in targeting and rules of engagement, minimizing immediate casualties can mean a massive cumulative rise in total casualties, displaced persons, refugees, and atrocities over time.

It is also clear that the limited nature of the air campaign gave the Islamic State and other Jihadists time to adapt. Again this is covered later in this report, but a Department of Defense spokesman, Rear Adm. John Kirby, told reporters on October 3rd that air strikes had made the Islamic State change its tactics. He said there had been 248 airstrikes in Iraq and 86 in Syria since the start of the air campaign.6 “Not surprisingly, they have gotten better at concealment…Before the airstrikes…they pretty much had free rein. They don't have that free rein anymore, because they know we’re watching from the air.” Kirby was also reported to have said that the terrorists had had to disperse, and there had been the airstrikes inside Syria against fixed targets -- headquarters buildings, command-and-control nodes, finance centers and oil refineries.

Kirby also stated that the Islamic State remained a potent and dangerous threat in areas in Fallujah and Ramadi in Iraq and areas in Northern Syria on the border with Turkey. “We expect that they will continue to change their tactics, based on the increasing pressure they're going to get, not just from the air, but from the ground, with Iraqi security forces…Everybody paints them as this great adaptive, capable, agile enemy…We’re pretty adaptive, capable and agile ourselves.”7

Looking at the Air Data to Date on Operation Inherent Resolve

Much better data are available on the data on the number of actual strike sorties that delivered munitions in Operation Inherent Resolve. Figure 1 shows how these strikes have evolved over time, their location, and some summary data on targets and effects. They also show how limited the strikes have been in terms of daily strike sorties, coverage of given targets, and tangible damage claims – although the campaign has increased slowly in intensity.

The air campaign began on August 8, 2014. As of October 8, 2014, USCENTCOM reported a total of 374 air strikes, with 270 over Iraq and 104 over Syria, include the strikes on Khorosan. Even after the US stated it had sharply increased its strikes to help the Syrian Kurds and Iraqis to defend Kobane, the total was still 286 air strikes Iraq and 147 in Syria – a total of 433 as of October 13th.8

Figure 1 shows the escalation of the air war and its expansion into Syria and to cover humanitarian cases and to protect Syrian rebel forces like the Kurds against the Islamic State. USCENTCOM reported an average of less than 10 strikes a day from 8-15 August. These strikes peaked to 15 during the campaign to recapture the Mosul Dam, dropped back to an average of less than 10 per day from August 22nd to September 22nd, and then rose to a peak on 28 during September 23rd to 25th – when air strikes on Syria began. They then averaged around 10 per day until October 7th, when they rose to 13 and then peaks of 25 to 30 because of Islamic State advances on Kobane – although this came at the price of sorties in support of Iraqi forces, which were then under Islamic State pressure in Anbar.
There has only been limited official reporting on the location and target of the air strikes. **Figure 1** does, however, provide some snapshots of the location of strikes and data on the patterns of strikes by target. It shows that the sorties concentrated on small individual land combat targets, although they also hit at Islamic State headquarters, command and control, senior figures and key economic and funding targets like the small refineries in Syria.

The most striking aspect of all these data is just how slowly the campaign developed, how limited the strike mix was, and the extent to which the shift to strike in Syria seems to have forced cutbacks in the strikes on Iraq. No two wars are ever alike, particularly wars as diverse and complex as the recent wars the US has fought in the region. As noted earlier, the political, religious, ethnic, governance, and ground power dimensions of recent conflicts have also always been as important – or more important – than the air dimension. Nevertheless, the limits of this air campaign to date, and its restricted patterns of targeting, make an interesting contrast to some other US campaigns.
Figure 1: Operation Inherent Resolve Air Strikes in Syria and Iraq: August 8th to October 8th, 2014 – Part One

Location and Number of Strikes – August 8th to October 8th

Figure 1: Operation Inherent Resolve Air Strikes in Syria and Iraq: August 8th to October 8th, 2014 – Part Two

Location and Number of Strikes – August 8th to October 20th

Confirmed air strikes since 8 August 2014

Iraq 310  Syria 231

Source: Institute for the Study of War, US Central Command
Figure 1: Operation Inherent Resolve Air Strikes in Syria and Iraq: August 8th to October 12th, 2014 – Part Three

 Strikes by Target Type: August 8th to October 20th

Air strikes in Iraq and Syria

Iraq 310  Syria 231

Source: US Central Command
Figure 1: Operation Inherent Resolve Air Strikes in Syria and Iraq: August 8th to October 8th, 2014 – Part Four

Airstrikes in Iraq and Syria
In addition to 222 known airstrikes launched in Iraq between Aug. 8 and Sept. 29, Syria experienced 51 attacks since Sept. 23. In some cases, one airstrike has hit multiple targets.

Cumulative airstrikes in Iraq and Syria

<table>
<thead>
<tr>
<th>Targets hit by airstrikes</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armed vehicles</td>
<td>124</td>
</tr>
<tr>
<td>Armored vehicles</td>
<td>68</td>
</tr>
<tr>
<td>Fighting positions, posts</td>
<td>66</td>
</tr>
<tr>
<td>Oil refineries</td>
<td>12</td>
</tr>
<tr>
<td>Other vehicles</td>
<td>59</td>
</tr>
<tr>
<td>Weapons and ammunition</td>
<td>22</td>
</tr>
<tr>
<td>Tanks</td>
<td>10</td>
</tr>
<tr>
<td>Artillery</td>
<td>8</td>
</tr>
</tbody>
</table>

NOTE: The Defense Department began releasing cumulative data about airstrikes on Aug. 18.

Source: Reports from U.S. Central Command

Sorties Per Day: August 8th to October 12th


First Gulf War: Major Conventional Air Campaign: 1991

The current air campaign looks like a statistical hiccup in comparison with the first major air campaign the US and its allies fought in driving Saddam Hussein’s force out of Kuwait. It was a fundamentally different war fought with different goals and radically less sophisticated weapons. Nevertheless, it still provides a picture of the scale what it takes for air power to be a truly decisive factor in shaping the outcome of a conflict.

A “New” Kind of Air Campaign?

It was a war where air power did take the lead – just as is the case with the current campaign. A major strategic and tactical air campaign was conducted to weaken Iraq’s forces and military capabilities and prepare for a massive joint air-ground-naval warfare campaign against a major Iraqi conventional ground, air, and surface-to-air missile force. As now, it requires a major training and preparation effort so allies could fight effectively, although in 1990-1991, in the form of preparation for conventional war.

It was probably the last campaign to use more unguided than guided weapons, and where the use of unmanned systems like cruise missiles, UAVs, and UCAVs was very limited. However, it made more extensive use of guided weapons against strategic, infrastructure, C4I, fuel, LOC, interdiction and close air support targets.

It also defined air power in the broad terms that made armed helicopters and directly support of ground forces a critical factor. It combined fixed and rotary wing combat strike sorties with major strategic bombing, interdiction, IS&R, AC&W, refueling, and transportation operations. And, it integrated a wide mix of allied and USAF, USMC, USN, and US army operations.

Minimizing civil casualties was a goal, but did not approach the priority in following air operations made possible by vastly improving IS&R and targeting capabilities and far wider use of precision weapons. If anything, it set the precedent for trying to disguise the issue by dodging around the human impact, and issuing endless pictures of successful precision missile strikes. It presented a “perfect war” for public relations purposes rather than explaining the hard trade-off that have to be made to win and ultimately reduce the cost in terms of human death and suffering.

Scale of Operations

Its sheer scale is still incredible. Where the current campaign has averaged some 15 strike sorties per day, and peaks of 30, the First Gulf war average some 2,000-3,000 sorties per day and USAF historians and sources like the Gulf War Air Power Survey data show that,⁹

- Begins January 17, 1991 and lasts 42 days to 28 February. Involves strategic, interdiction, and close air support and use of cruise missiles and attack helicopters. Fist use of stealth, extensive use of precision guided weapons. Air combat, suppression of land-based surface-to-air missiles and Scud hunt,

- By mid-January had 1,800 combat aircraft from 12 countries, large mixed fleet, and 540,000 ground troops from 31 countries.
Coalition flies coalition over 100,000 sorties, with some 1,000 sorties per day, and drops 88,500 tons of bombs. Strike force was made up of over 2,250 combat aircraft, which included 1,800 US aircraft, which fought against an Iraqi force of about 500 Soviet-built MiG-29, MiG-25, and MiG-23, and French-made Mirage F1 fighters.

Coalition flew 2,000-3,000 sorties per day in limited airspace.

Iraq lost a total of 259 aircraft in the war, 105 of which were lost in combat. During Desert Storm, 36 aircraft were shot down in aerial combat. 3 helicopters and 2 fighters were shot down during the invasion of Kuwait on 2 August 1990. Kuwait claims to have shot down as many as 37 Iraqi aircraft. These claims have not been confirmed. In addition, 68 fixed wing aircraft and 13 helicopters were destroyed while on the ground, and 137 aircraft were flown to Iran and never returned. The Coalition lost a total of 75 aircraft — 52 fixed-wing aircraft and 23 helicopters — during Desert Storm, with 39 fixed-wing aircraft and 5 helicopters lost in combat.

Achieved air supremacy on January 27th. Averaged more than 340 air-to-air stories per day with peaks above 500. Iraqi flight activity largely ended by 29 January.

Flew roughly 42,000 air strikes between January 17 and February 28th, 1991. Some 23,430 or 56% against ground targets, 14.8% core strategic attack targets, 13.9% for control of the air, and 15% uncategorized. Flew 2,990 against airfields, 1,460 against Scud missiles, 1,370 against SAMs, 1,170 against LOCs, 970 against military industry, 960 against NBC, 803 against IADS (KARI), 530 against telecom/C3, 540 against oil and fuel, 370 against naval targets, 345 against electric power, and 260 against leadership.

US flew 88% of all attack sorties, 2,920 of 3,000 electronic warfare sorties.

Primary munitions were 77,653 500lb unguided general purpose bombs, 19,081 1,000lb bombs, 12,289 2,000lb bombs, 43,345 MK-177s (B-52s)m 17,831 CBU-52 fragmentation bombs, 10,035 combined effects bombs, 1,314 CBU89/ 78 Gators, and 27,987 MK-20 Rockeyes. Total of 209,625 unguided general purpose bombs.

Air force fixed-wing delivered guided attack munitions included 4,493 GBU-12 laser guided bombs, and 5,296 AGM-65 Maverick electro-optical missiles. Navy and USMC fighters delivered 193 Walleyes. Army helicopters delivered 3,065 AGM-114 Hellfires, fired by AH-64s and AH-1Ws. All guided weapons made total of 12,854 or 6% of selected unguided bombs and 5.8% of total of 222,479 weapons. This does not include 2,039 HARM and 112 ALARM anti-radiation missiles.

As for fixed wing guided weapons, US delivered 9,342 guided bombs, or 89% of total of 10,048, and 95% of 2,151 anti-radiation missiles. It delivered 99% or 5,448 or 5,508 air-to-surface guided missiles; France delivered 60 AS-30s.

Airlift effort delivered 17 million ton miles per day vs. 4.4 MTM in 1973 airlift to Israel, 2.0 MTM in Just Cause in Panama in 1989, 1.7 MTM in Berlin airlift in 1948-1949, and 0.9 MTM in lift over the hump in WWII.
**Kosovo Campaign: Operation Allied Force: 1999**

The Kosovo campaign was somewhat similar to the current air campaign in that it involved the limited use of airpower and an effort to avoid the use of US ground forces. It was, however, directed at Serbia that had extensive conventional forces, fought in a NATO context, and radically different in its intended scale, threat, and political, religious and ideological context.

Nevertheless, it is still interesting to examine its scale and nature. Captain Gregory Ball of the USAF historical office provides an excellent overview:

The North Atlantic Treaty Organization (NATO) launched Operation ALLIED FORCE in response to Serbian President Slobodan Milosevic’s campaign of ethnic cleansing of Kosovar Albanians. While the complex roots of ethnic tensions and violence in Southeastern Europe date many hundreds of years, Slobodan Milosevic initiated a new campaign of ethnic violence in 1989. This violence had taken the lives of more than 250,000 people by 1995, and spurred Kosovar Albanians desire for independence. When violence between Serb forces and Kosovar Albanians continued to escalate, the United Nations Security Council warned of an “impending humanitarian catastrophe” if action was not taken. Although a United Nations team travelled to Kosovo to observe the situation, they were helpless while Serbian forces attacked unarmed civilians. When peace negotiations were held in the spring of 1999, Milosevic massed forces along the Kosovo border. The Serbian President ultimately rejected all peace proposals and directed 40,000 troops into Kosovo, resulting in a massive refugee crisis.

Although NATO Secretary General Javier Solana did not authorize air strikes against Serbia until January 30, 1999, U.S. Air Force planners had worked out nearly 40 unique campaign options since the summer of 1998. The final air campaign plan was a “coercive operation,” its primary purpose to force Milosevic’s withdrawal from Kosovo. NATO leaders also rejected the use of ground troops, believing that air power could achieve the operation’s objective. The air campaign consisted of three phases: phase one focused on Serbian air defense systems; phase two called for strikes against military targets in Serbia below the 44th parallel and south to the Kosovo border; and in phase three airstrikes would seek targets north of the 44th parallel, including striking Serbia’s capital Belgrade.

The first attacks occurred on the night of 24 March 1999, using 250 U.S. Aircraft, including 120 land based fighters, seven B-52s, six B-2s, ten reconnaissance aircraft, ten combat search and rescue aircraft, three airborne command and control platforms, and nearly 40 aerial refueling tankers. In addition, thirteen NATO member countries contributed aircraft. B-52s launched conventional air launched cruise missiles (CALCM) while U.S. and British ships and submarines fired Tomahawk land attack missiles (TLAMs). During the first night, the U.S. and NATO flew 400 missions, including 120 strike missions against 40 targets. On the second day of operations, U.S. Air Force F-15s shot down two Serbian MiG-29s, while another F-15C scored a kill the next day. Air Force and NATO aircraft faced significantly more effective air defenses than what they had recently encountered in Iraq, and pilots were initially instructed to stay above 15,000 feet to minimize risk.

When the phase one strikes did not achieve their intended effect on Milosevic, NATO proceeded with phase two strikes south of the 44th parallel. During this phase, the U.S. Air Force introduced B-1 bombers while NATO forces also averaged just 50 strikes per night. Realizing that it would take a more intensive effort to force Milosevic to withdraw his troops from Kosovo, NATO moved to phase three on the ninth day of the air offensive. U.S. Navy aircraft joined the operation on April 6, with the arrival of the aircraft carrier USS Theodore Roosevelt. Operation ALLIED FORCE had struggled to meet its objectives for several reasons, including poor weather, difficult terrain, and problems inherent in coordinating 18 allied air forces.

By the end of the third week, Supreme Allied Commander of NATO, General Wesley K. Clark, had a force of nearly 1,000 aircraft, 54 percent of which belonged to the U.S. Air Force. NATO’s master target list reflected the pressure to escalate the air offensive as it grew from 169 to more than 970 targets by the time the campaign ended in June. The increased pressure also included strikes in
Belgrade to demonstrate to Milosevic that the air campaign had reached a new level. For example, U.S. Air Force F-117 stealth fighters struck the electrical plant at Novi Sad, which cut off electricity to 70 percent of Serbia. Additionally, destruction of infrastructure targets resulted in more than 100,000 Serbians losing their jobs. Although there were flaws in target selection and verification, as well as civilian casualties during the air campaign, NATO tried to minimize the loss of life through strict rules of engagement, such as requiring positive visual identification before launching weapons.

During the 78-day campaign, sorties peaked in late May and early June. For example, on May 26, NATO aircraft flew nearly 900 sorties, and by June 2, 1999, Milosevic agreed to end the conflict. The terms of the agreement stipulated that Milosevic would withdraw his forces from Kosovo, a NATO-led force would provide security for the province; refugees would be allowed to return to their homes, and Kosovo would be granted self-rule under Yugoslav sovereignty. On June 10, the Serbian government ratified the agreement and Serbian forces began their withdrawal from Kosovo as elements of the Kosovo Force (KFOR) began to arrive. During ALLIED FORCE, NATO aircrews flew 38,004 sorties, 10,484 of which were strike sorties. During ALLIED FORCE, 29 percent of munitions dropped were precision guided, although 90 percent of aircraft were capable of employing them. The Air Force struck 421 fixed targets, 35 percent of which were destroyed. Overall, the U.S. Air Force flew 30,018 sorties, including 11,480 airlift, 8,889 fighter, 322 bomber, 6,959 tanker, 1,038 Intelligence, Surveillance, and Reconnaissance (ISR), 834 Special Operations, and 496 unmanned aerial vehicle (UAV) missions. Perhaps more importantly for the Air Force, the Air Expeditionary Force (AEF) concept was successfully used for the first time during ALLIED FORCE as units rotated into Aviano Air Base, Italy, under the AEF construct. Operation ALLIED FORCE also witnessed the first combat use of the B-2 Stealth bomber and the first significant employment of remotely piloted aircraft.

There are two critical punch lines to this summary. One is the need to steadily escalate the air effort until it could become decisive. The second is the sheer scale of the total air operations at the time it successfully ended: The UAF alone flew 30,018 sorties, including 11,480 airlift, 8,889 fighter, 322 bomber, 6,959 tanker, 1,038 Intelligence, Surveillance, and Reconnaissance (ISR), 834 Special Operations, and 496 unmanned aerial vehicle (UAV) missions.
2nd Gulf War: Invasion of Iraq – 2003: Major Conventional War

It has been a long grim road since “mission accomplished” ended in 2003, but the massive use of airpower also placed a critical role in the first phase of the Gulf War, and in toppling Saddam Hussein. One again, the war began as a conventional war against Saddam Hussein’s forces, but this time only minimal air preparation, air defense suppression and air defense effort was needed. The goal was to win the support of the Iraqi people and little strategic bombing compared to 1991.

A Different Mix of Threats

It quickly became a war to destroy and disrupt Iraq’s conventional ground forces and their facilities. It also made massive use of guided munitions and cruise missiles than in 1991: 19,948 versus 9,251 unguided bombs or 68% of total of 29,199.

It only had to make token use of airpower against small Iraqi irregular force elements in the south. Restricting civilian casualties and collateral damage was also a key consideration in liberating Iraq. At the same time, the ability to use air strike precisely offset such limits and improved IS&R and targeting assets were far more effective assets that – coupled to the far greater use of precision-guided weapons – allowed more restrictive rules of engagement while still making airpower far more effective.

There are fewer public data on the course of the air war, and there was no overall unclassified effort to fully integrate fixed wing, rotary wing, cruise missile, and UAV/UCAV data and assess historical pattern of effectiveness in key missions and joint warfare of the kind in the Gulf War Airpower Survey.

Scale of Operations

Some key data are shown in Figure 2, however, and work by Captain Gregory Ball of the USAF Historical Studies Office and in other USAF sources again shows the sheer scale of decisive air operations,11

- On the evening March 19, 2003, one day prior to the onset of combat operations, Air Force F-117 stealth fighters struck the Dora Farms complex southwest of Baghdad based on intelligence that Saddam Hussein was in the area. Unfortunately, the attack was not successful.

- Combat operations began the next day and the USAF participated in air strikes on key targets in and around Baghdad, launching more than 1,700 coalition air sorties and missile launches against Iraq. Through April 30, 2003, the Coalition flew 41,404 sorties, with 24,196 by the USAF, 4,948 by the USMC, 8,948 by the USN, 2,481 by the UK, and 565 by Australia.

- During the first six weeks of operations, 68 percent of weapons employed were precision-guided munitions. A total of 19,948 guided munitions were used including 802 TLAM cruise missiles, 6,542 JDAMs, and 8,619 laser guided bombs. A total 9,251 unguided bombs were delivered, and 328,468 rounds of ammunition.

- Although Operations NORTHERN WATCH and SOUTHERN WATCH had significantly degraded the Iraqi air defense system and the Iraqi Air Force had essentially ceased to exist, planners remained concerned with Iraqi Air Defenses. Indeed, during the initial invasion of Iraq, the Air Force noted more than 1,000 anti-aircraft artillery (AAA) firings, and more than 1,600 surface to air missile (SAM) launches. During the same period, however, the Air Force lost just one A-10 to enemy fire and two Air Mobility Command (AMC) aircraft suffered SAM strikes out of 236 attempts. The first
air operation of Operation IRAQI FREEDOM was a psychological operation leaflet drop on 9 March 2003. The leaflets urged non-interference and stressed coalition support for the Iraqi people.

- Additionally, on March 26, 2003, C-130 and C-17 aircraft dropped nearly 1,000 paratroopers of the 173d Airborne Brigade onto Bashur airfield near Erbil in Northern Iraq. That marked the first time that the C-17 had been used in a combat airdrop. The mission took place because Turkey refused to allow the Air Force to use its air bases to deliver troops and supplies into northern Iraq, necessitating the capture of the airfield. On April 6, 2003, CENTAF leadership declared air supremacy over all of Iraq and on April 16, 2003, the first humanitarian relief flight landed at Bashur airfield.

- Coalition Air Forces flew nearly 1,000 Intelligence, Surveillance, and Reconnaissance (ISR) sorties during the initial weeks of Operation IRAQI FREEDOM, collecting 42,000 battlefield images and more than 3,000 hours of full motion video. As of April 30, 2003, coalition air forces numbered 1,801 aircraft, 863 of which were U.S. Air Force fighters, bombers, tankers, special operations and rescue aircraft, transport aircraft, and ISR and command and control aircraft.

- In the first six weeks, coalition air forces flew more than 41,000 sorties and the USAF accounted for more than 24,000 of the total. Likewise, Air Force C-130 aircraft transported over 12,000 short tons of materiel during the initial stages of the operation, while Air Force tankers flew more than 6,000 sorties and disbursed more than 376 million pounds of fuel.

It is rather interesting to contrast the data on the first two months of the current air campaign against the Islamic State that have been shown in Figure 1 to strike statistics like the more than 1,700 coalition air sorties and missile launches against Iraq on the first day of the campaign in 2003, and the total of total of 19,948 guided munitions 9,251 unguided bombs, and 328,468 rounds of ammunition in the first six weeks of air operations.
**Figure 2: Air Operations Data for Invasion of Iraq 2003 – Part One**

Total Aircraft from Each Country

![Bar chart showing total aircraft from each country.](chart)

**IS&R Activity**

<table>
<thead>
<tr>
<th>INITIAL THREAT</th>
<th>ENEMY RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Iraqi Air Force Personnel 20,000</td>
<td>• AAA events 1224 (reported via MISREP)</td>
</tr>
<tr>
<td>• Iraqi Combat Aircraft 325</td>
<td>• SAM/Rockets launches 1660 (reported via MISREP)</td>
</tr>
<tr>
<td>• Surface to Air Missiles -210</td>
<td>• SAM Emitters: active 436 (reported via MISREP)</td>
</tr>
<tr>
<td>• Early Warning Radars -150</td>
<td>• SSM launches 19</td>
</tr>
</tbody>
</table>

**MANNED COALITION AIRCRAFT LOSSES**

<table>
<thead>
<tr>
<th>Due to Enemy Fire</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – AH-64D (Longbow Apache)</td>
<td>13</td>
</tr>
<tr>
<td>2 – AH-1W (Cobra)</td>
<td></td>
</tr>
<tr>
<td>1 – A-10A (Warthog)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**COALITION ISR FACTS**

- US and Coalition ISR Aircraft 80
- ISR Sorties 1,000
- Battlefield Images 42,000
- Hours of SIGINT Coverage 2,400
- Hours of Full Motion Video 3,200
- Hours of Moving Target Indicator 1,700

![Pie chart showing hours of SIGINT coverage.](chart)
**Figure 2: Air Operations Data for Invasion of Iraq 2003 – Part Two**

**MUNITIONS EXPENDED**

Munitions employment for OIF reached across the entire spectrum of the US weapons inventory. The munitions expenditure rate for OIF was ~2:2 (Munitions Dropped:DMPIs Serviced).

<table>
<thead>
<tr>
<th>Guided Munitions</th>
<th>19,948</th>
<th>Unguided Munitions</th>
<th>9,251</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGM-109 TLAM</td>
<td>802</td>
<td>M117</td>
<td>1,625</td>
</tr>
<tr>
<td>AGM-114 HELLFIRE</td>
<td>562</td>
<td>Mk-82</td>
<td>5,504</td>
</tr>
<tr>
<td>AGM-130</td>
<td>4</td>
<td>Mk-83</td>
<td>1,692</td>
</tr>
<tr>
<td>AGM-154 JSOW</td>
<td>253</td>
<td>Mk-84</td>
<td>6</td>
</tr>
<tr>
<td>AGM-65 MAVERICK</td>
<td>918</td>
<td>CBU-87</td>
<td>118</td>
</tr>
<tr>
<td>AGM-84 SLAM(ER)</td>
<td>3</td>
<td>CBU-99</td>
<td>182</td>
</tr>
<tr>
<td>AGM-86C/D CALCM</td>
<td>153</td>
<td>UK Unguided</td>
<td>124</td>
</tr>
<tr>
<td>AGM-88 HARM</td>
<td>408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBU-103 WCMDS</td>
<td>618</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBU-105 WCMDS, SFW</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBU-107 WCMDS</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGBU-27 GP3/LGB</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-10 LGB</td>
<td>236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-12 LGB</td>
<td>7,114</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-16 LGB</td>
<td>1,233</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-24 LGB</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-27 LGB</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-28 LGB</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-31 JDAM</td>
<td>5,086</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-32 JDAM</td>
<td>768</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-35 JDAM</td>
<td>675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBU-37 JDAM</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK Guided</td>
<td>679</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ammunition**

- 20MM: 16,901
- 30MM: 311,597

**Leaflet Dispensers**

- PDU-5: 44
- M129: 304

(Data relating weapons per DMPI is not yet available)

**WEAPONS COMBAT FIRSTS**

- CBU-105 Sensor Fuzed Weapon
- CBU-107
- AGM-86D CALCM hard target penetrator
- JDAM delivered by F-14D
- Mk-82s delivered by B-2

Air War in Iraq 2004-2011: Support of Irregular War Fought Against Enemy with No Real Air Defenses

By the fall of 2003, the US and other Coalition forces see the emergence of hostile Shi’ite and Sunni militias and the rise of Islamist extremist elements that later become affiliated with Al Qaida. This conflict became steadily more serious, but the US was slow to react and adapt its use of air power.

“Shock and Awe” to Irregular Warfare

The unclassified data on these air operations have some of the same broad limits as during the initial invasion phase, and most of the data that MNF-I released focused on ground operations. By 2006, however, the US and its allies were clearly fighting a major irregular war centered on the threat posed by the emergence of Al Qaida in Mesopotamia (Iraq) or AQAM, and hostile Shi’ite forces like those under Sadr. Rotary and fixed wing mobility had become critical to deal with the growing threat of IEDs and other ground attacks. Attack helicopters have become a critical element of combat operations that ranged from small Special Forces operations to major urban warfare in areas like Fallujah.

Scale of USAF Fixed Wing Operations

As Figure 3 shows, US Air Force data for fixed wing operations in the critical “surge” period between the start of 2006 and June 2009 are limited, but they still show the following trends:12

- Close air support sorties rose to 15,629 in 2006, and 310 major munitions expended, but MNF-1 did not gather statistics on total strikes. Close air support sorties peaked at 19,542 in 2007, with 542 strikes and 1,709 munitions. Close support dropped to 18,422 in 2008, with 270 strikes and 915 munitions. They then dropped to 5,642 in the first seven months of 2009, with 29 strikes and 110 munitions.

- AFCENT reports totals for both the Iraq and Afghan conflicts, which are of limited value because the wars were different, and the fighting in Afghanistan began to peak as the surge in Iraq ended.
  
  
  

These data do, however, understate the value of adequate IS&R assets, which now seems to be a critical problem in the air campaign against the Islamic state. It is clear from a variety of sources that IS&R, targeting, and damage assessment capabilities had to be steadily increased to deal with dispersed irregular forces, many operating from or in populated areas and support a growing anti-IED and LOC protection effort. Rules of engagement were tightened to reduce civilian casualties. Medical evacuation capabilities
were increased to try to move casualties to treatment areas within less than 20 minutes. Use of air mobility increased because of IED and LOC attacks.

The use of UAVs and UCAVs steadily increased to provide focused and persistent intelligence and targeting capability against AQAM and other insurgent and terrorist targets, often in populated areas or buildings with civilians. Similar improvements took place in enabling ground forces to get better intelligence and targeting data, and improve close air support without increasing civilian casualties. Precision strike operations in built up and urban areas became steadily more demanding, at the same time, carefully focused air support of Special Forces and ranger operations became a key tool.

The USAF Historical Studies Office also notes the importance of close air support and "enabling” effective ground operations.\(^1\)

- Major combat operations were declared over on May 1, 2003. However, Iraq remained unstable, with little security and massive looting. The situation continued to deteriorate and coalition forces soon found themselves facing an insurgency caused by a number of factors, including lack of infrastructure and basic services for citizens, as well as ethnic and religious tensions among various groups.

- Since 2003, the U.S. Air Force has maintained a continuous presence in Iraq. Air Force operations during that period, although classified as security, stability, transition, and reconstruction operations, remained at a high operations tempo.

- The Air Force provided constant combat air patrols in support of ground forces, and as well as providing airlift, ISR, aerial refueling, aeromedical evacuation, and combat search and rescue capabilities. Air Force Joint Terminal Attack Controllers (JTACs) provided command and control for close air support missions, while the Air Force performed a range of other missions using civil engineers, security forces, logistics readiness personnel, and dozens of other Air Force specialties. Similar to Operation ENDURING FREEDOM, this also included hundreds of Airmen filling "in lieu of” taskings to perform tasks with the Army. Finally, remotely piloted aircraft (RPA) also filled the skies of Iraq and were heavily relied upon by military leaders at all levels because of the real-time situational awareness and persistent ISR presence they provided.

- The Air Force also surged its assets when required. For example, during the period January to April, 2005, when the Marines increased their forces in Iraq, the Air Force supported that surge with 325 inter-theater airlift missions and 1,059 intra-theater missions, completing what Marine Corps historians believed to be the largest troop rotation in U.S. military history. Likewise, when the Army "surged" forces into Iraq in late 2007 and 2008, the Air Force supported those operations with increased airlift and close air support missions.

**The Missing Half of the Iraq Air War**

These comments focus on the US Air Force and not the combined air power of the US Army, US Navy, and Marine Corps and our allies. Like the data on the fighting in 2003, they sharply understate the combined value of fixed and rotary wing airpower, and they do not begin to fully assess the critical and steadily growing value of UAVs and UCAVs. These already are critical considerations in strengthening the level of total real world airpower that can be used against the Islamic State.
Figure 3: Air Operations Data for Fighting in Iraq: 2004-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Total UCAV Sorties</th>
<th>Total Missiles Fired by UCAVs</th>
<th>Total UCAV Strikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5,558</td>
<td>60</td>
<td>43</td>
</tr>
<tr>
<td>2009</td>
<td>5,300</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2010</td>
<td>3,378</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>2,773</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2012*</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17,009</td>
<td>65</td>
<td>48</td>
</tr>
</tbody>
</table>

*Year to October 31, 2012
Air War in Afghanistan: 2001 to Present

Once again, it is critical to warn against making direct comparison of one air campaign against another, and particularly outside the context of the religious, ideological, ethnic, governance, and ground war issues that are critical to defining how air power should be used. Nevertheless, the initial phases of the Afghan conflict were similar in that they were part of an irregular war fought against country with no real air defenses, and this is the air campaign that seems closest to the conditions the US now faces in attacking the Islamic State.

The Early Phases: 1991

The data in Figure 4, which is drawn from work by Benjamin Lambeth of Rand, and work Captain Gregory Ball of the USAF Historical Studies Office, illustrate the scale of critical air operations during the first phases of the conflict, although only around 200 sorties at most were flown per day during this part of Operation Enduring Freedom, versus as many as 3,000 a day during the height of Desert Storm.14

Gregory Ball states that.15

- On October 7, 2001, Operation ENDURING FREEDOM began with coalition aircraft, including USAF B-1 and B-52 bombers, performing night strikes against 31 targets. On the second day of the air offensive, coalition aircraft began operating during the day; and by the tenth day of operations, planners established "target zones" throughout Afghanistan to engage targets of opportunity around the clock, because the Taliban's air defenses were negligible.

- In the first 72 hours, 751 bombs fell into the Operation ANACONDA battle area (495 precision strikes and 256 MK-82s.) For example, bombers delivered strings of 27 MK-82s five times in 15 hours on 3 March 2002. CJTF Mountain also noted that the enemy fighters were “staggering from three nights of air strikes…

- The final phase of Operation ANACONDA consisted of two tasks: taking Objective Ginger and clearing a major promontory west of the valley (known as the Whale), so that Afghan military forces could move safely into the Shahi Kot valley. Extensive air support enabled the 9 March 2002 operation to seize Objective Ginger. More bombs were dropped from fixed-wing aircraft on 9 March 2002 (327 total) and 10 March 2002 (340 total) than on any other days of Operation ANACONDA. Attack helicopters, fighters, bombers and AC-130 gunships delivered a persistent, lethal barrage for 75 minutes from 1745 local time until 1900. The objective was secured on 10 March 2002.

- During the initial months of Operation ENDURING FREEDOM, the Air Force played a significant role in the campaign as the United States relied on coordinated airstrikes with Special Forces and Air Force forward air controllers, or Joint Terminal Attack Controllers (JTACs), to assist the Northern Alliance in their fight against the Taliban and al-Qaeda. The first major gain occurred with the capture of the northern city of Mazar-e-Sharif on November 9, 2001. The use of airpower in the campaign to capture Mazar-e-Sharif was considered a major breakthrough in the struggle to oust the Taliban and al-Qaeda.

- Through December, 2001, USAF and coalition aircraft continued to support Special Forces teams and the Northern Alliance as they routed the Taliban, capturing the capital city of Kabul and the southern stronghold of Kandahar. In an effort to wipe out the remnants of the Taliban and al-Qaeda, coalition forces attacked the Tora Bora region in Eastern Afghanistan, where coalition intelligence believed Taliban and al-Qaeda leadership, including Osama Bin Laden, had sought refuge. Although some Taliban and al-Qaeda members managed to escape into Pakistan, the coalition air campaign essentially ended on December 18, 2001. In just 102 days after the September 11 attacks, the Taliban regime had been overthrown and the al-Qaeda leadership dispersed.
Airpower played a major role in early 2002, when Combined Joint Task Force (CJTF) Mountain launched Operation ANACONDA, an operation designed to destroy the remaining al-Qaeda and Taliban forces in the Khowst-Gardez region before they could regroup and destabilize the nascent interim government of Afghanistan. Despite hasty planning, the operation began on March 2, 2002. Almost immediately, ground forces came under attack by al-Qaeda forces in the mountains along the Shah-i-Kot valley. Calling in close air support, coalition aircraft dropped 177 precision guided munitions and conducted strafing attacks in the operation's first 24 hours. Forty-eight hours later, coalition aircraft had dropped 751 bombs in support of ground troops. The pace of close air support for ANACONDA did not let up over the next ten days. For example, on March 5, 2002, a USAF MQ-1 Predator pilot spotted a concentration of several hundred enemy fighters in a ravine and was able to direct A-10s, F/A-18s, and an AC-130 gunship to the area. Coalition aircraft dropped 667 bombs on March 9 and 10 while ground troops secured a final objective. Operation ANACONDA concluded on March 16, 2002.

While airpower played a central role in Operation ANACONDA, it was clear that there was room for improvement. Two immediate lessons were acknowledged. First, unity of command was essential. A single commander needed the authority to control all elements on the battlefield. Second, ANACONDA exposed differing views on the effective use of airpower. To improve future coordination between the Army and the Air Force, the Air Support Operations Center (ASOC) at Bagram Air Base was "strengthened to improve air-ground coordination and airspace management." Strike aircraft were called on to serve as airborne forward air controllers, and the CAOC selected pre-planned targets and designated three engagement zones. The Army and Air Force absorbed those lessons and applied them later in Operation IRAQI FREEDOM.

After Operation ANACONDA ended and through 2011, the situation in Afghanistan has remained unstable. The United States Air Force and its reserve components the Air National Guard and the Air Force Reserve maintain a continuous presence in the country and perform many tasks associated with logistical sustainment as well as security and stability operations, including strategic airlift to and from Afghanistan using C-5 and C-17 aircraft, intra-theater airlift with the C-130, and aerial refueling operations using the KC-135 and KC-10. Combat operations, including combat air patrols, continue to support "troops in contact" situations.

Aircraft used included the F-15E, the F-16, and the A-10 working with Air Force forward air controllers. The U.S. Air Force provides Combat Search and Rescue capability, as well as aeromedical evacuations using C-17 transports. Additionally, the use of remotely piloted aircraft (RPA) has dramatically increased during Operation ENDURING FREEDOM. This included the first use of the MQ-1 Predator armed with missiles as well as the first "combat" deployment of the RQ-4 Global Hawk. Furthermore, Joint Direct Attack Munitions (JDAMs) were used by the B-1 and B-52 for the first time. In line with initial planning efforts, in the opening months of Operation ENDURING FREEDOM nearly 70 percent of the munitions expended were precision guided.

Other Air Force missions include Intelligence, Surveillance, and Reconnaissance (ISR) operations through the use of satellites and the U-2, RC-135, E-3 AWACS, and E-8 JSTARS, while other support functions included aerial port operations, civil engineer construction projects, air base defense, convoy operations, and thousands of "In lieu of" taskings in which Air Force personnel performed duties supporting U.S. Army operations. Also, in 2011, the Air Force deployed the newly acquired C-27J Spartan to Afghanistan for the first time. The 179th Airlift Wing of the Ohio Air National Guard became the first unit to deploy in a direct support role to an Army combat aviation brigade. Although Operation ENDURING FREEDOM refers primarily to operations in Afghanistan, it also includes military operations in other areas, such as the Horn of Africa and the Philippines.

In sum, Operation ENDURING FREEDOM demonstrated the ability of the Air Force to conduct sustained combat and support operations over an extended period of time. While working within the constraints of a high operations tempo, the Air Force conducted familiar missions, undertook new ones, and used technology in innovative ways to enhance situational awareness at all levels and provide a significant level of intelligence information to war fighters, all while operating in some of the most austere and forbidding terrain in the world.
Work by Benjamin Lambeth on the lessons of the early phases of the conflict also seem relevant in determining assets and scale of the kind of effort that is really needed in the campaign against the Islamic State.

…during the 76 days of bombing between October 7, when Enduring Freedom began, and December 23, when the first phase of the war ended after the collapse of the Taliban, some 6,500 strike sorties were flown by CENTCOM forces altogether, out of which approximately 17,500 munitions were dropped on more than 120 fixed targets, 400 vehicles and artillery pieces, and a profusion of concentrations of Taliban and al Qaeda combatants. Of the total number of allied munitions expended, 57 percent were precision-guided munitions. U.S. carrier-based strike fighters accounted for 4,900 of the strike sorties flown during that period, making up 75 percent of the total…More than half of those sorties were flown by Navy and Marine Corps F/A-18s

Perhaps the three most pivotal ingredients that made this achievement possible were long-range precision air power managed by an unprecedentedly sophisticated and capable CAOC, consistently good real-time tactical intelligence, and mobile SOF teams on the ground working in close concert with indigenous Afghan resistance forces and equipped with enough organic firepower and electronic support to maintain situation awareness, operate independently, and avoid enemy ambushes. Units from different services with little or no prior joint warfighting experience performed under fire as though they had trained and operated together for years. In the aggregate, Enduring Freedom was uniquely emblematic of the quality and resourcefulness of today’s American military personnel.

After the air war essentially ended following the successful conclusion of Operation Anaconda, Pentagon sources reported that around 75 percent of all munitions employed throughout Enduring Freedom had hit their intended targets and achieved the desired result, compared to around 45 percent in both Desert Storm and Allied Force. Laser-guided bombs and JDAMs accounted for 60 percent of the 22,434 bombs, missiles, and other munitions expended altogether, with the B-1 dropping twice as many JDAMs as all other U.S. aircraft combined. In all, some 6,500 JDAMs were dropped throughout the campaign at an assessed effectiveness rate of 90 percent.

…A slightly higher percentage of precision munitions was dropped by Navy and Marine Corps fighters operating off carriers in the North Arabian Sea, whereas Air Force bombers dropped the vast majority of unguided bombs. The accuracy of the latter munitions improved dramatically in Enduring Freedom over that in previous conflicts, thanks to better onboard radars and better computers to manage weapons ballistics.

…Despite their relatively small number (only eight B-1s and 10 B-52s) compared to the overall commitment of combat aircraft to Enduring Freedom, the two Air Force heavy bomber types were able to maintain a constant armed presence over Afghanistan, typically flying missions that lasted from 12 to 15 hours. Depending on the mission profile, the B-1 carried up to 84 Mk 82 free-fall bombs, or 30 CBU’s, or 24 JDAMs. The B-52 usually carried a mixed load of 12 JDAMs and 27 Mk 82 general-purpose bombs or 16 CBU-103/CBU-87 wind-corrected munitions dispenser (WCMD) canisters and 27 Mk 82s. The CBU-103 was configured to dispense 202 BLU/97B combined-effects submunitions accurately against soft area targets from high altitude.

…In addition to the high-profile strike sorties that were flown to deliver these munitions, nearly 4,800 airlift missions moved more than 125,000 tons of materiel from the United States to the Afghan theater. Moreover, more than 8,000 USAF, Navy, and RAF tanker missions were flown altogether in support of aircraft from all services.

…There were more than 1,300 ISR-related sorties, including those flown by the Predator and Global Hawk UAVs, the RC-135 Rivet Joint, the U-2, the E-3 AWACS, the E-8 JSTARS, and the EC-130 Compass Call. Coalition partners flew more than 3,300 missions of all sorts. In Operation Noble Eagle, the concurrent homeland air defense effort, more than 20,000 fighter, tanker, and AWACS sorties were flown during the first six months after September 11. In that operation, more than 250 aircraft were committed to the homeland defense mission, and more than 300 alert scrambles and combat air patrol divers were conducted in response to actual events.
As for air warfare “firsts” registered during Operation Enduring Freedom, apart from the initial combat use of WCMD noted above, the war saw the first combat employment of the RQ-4 Global Hawk high-altitude UAV, as well as the first operational use of MQ-1 Predators armed with Hellfire missiles and the first combat employment of JDAM by the B-1 and B-52. (During Operation Allied Force, only the B-2 had been configured to deliver that satellite-aided weapon.) Notably, although erroneous target coordinates were occasionally programmed into JDAMs because of various causes, there were no true JDAM aim-point misses in Enduring Freedom. That was a remarkable achievement for a mere $18,000 modification to a simple free-fall bomb. The integration of combat controllers on the ground with heavy bombers for enabling precision attacks on emerging targets was also novel, as was the use, for the first time, of the vastly improved CAOC at Prince Sultan Air Base in Saudi Arabia and the provision of live Predator UAV video feed directly to orbiting AC-130 gunship crews.

…Finally, Operation Enduring Freedom saw a continuation of some important trends that were first set in motion during the Gulf War a decade earlier. Precision weapons accounted for only 9 percent of the munitions expended during Desert Storm, yet they totaled 29 percent in Allied Force and nearly 60 percent in Enduring Freedom.

That overall percentage can be expected to continue to grow in future contingencies as precision-guided munitions (PGMs) become ever more plentiful and, as a result, as even small groups of combatants, such as a handful of enemy troops manning a mortar position, may eventually be deemed worthy of a PGM in some circumstances. As a result of the increased PGM availability and increase in the number of combat aircraft capable of delivering them, the number of PGMs expended per combat sortie flown has steadily grown. In Desert Storm, that number was 0.32. In Allied Force, it was 0.73. In Enduring Freedom, it was 1.66. That dramatic improvement in overall force leverage reaffirmed that one now can speak routinely not of the number of sorties required to engage a given target but rather of how many targets can be successfully engaged by a single sortie.

…Yet another trend that continued in Enduring Freedom had to do with extended-range operations. In Desert Storm, the percentage of tanker sorties among the total number of air sorties flown was 12 percent. In Allied Force, it was 20 percent. In Enduring Freedom, it was 27 percent. By the same token, long-range bombers have delivered a steadily increasing percentage of overall numbers of weapons expended throughout the succession of U.S. combat engagements since Desert Storm. In the Gulf War, it was 32 percent. In Allied Force, it was roughly 50 percent. In Enduring Freedom, it was about 70 percent

…For the first time in the history of modern warfare, Operation Enduring Freedom was conducted under an overarching intelligence, surveillance, and reconnaissance (ISR) umbrella that stared down relentlessly in search of enemy activity. That umbrella was formed by a constellation of overlapping multispectral sensor platforms. It also included the E-3 AWACS, the E-8 Joint STARS with its SAR and moving-target indicator (MTI) radars, the RC-135 Rivet Joint SIGINT aircraft, the Navy’s EP-3, and the RQ-1 Predator and RQ-4 Global Hawk UAVs (the latter of which was still in testing at the time and had not yet been approved for full-scale production).

…Finally, it included the U-2 mounting a synthetic-aperture radar and a new SIGINT package, the EA-6B, the ES-3 surveillance aircraft equipped with a SAR able to provide rough geolocation coordinates for targets as far away as 60 miles on either side, and the F-14, F-15E, and Block 30 F-16C+ with their Low-Altitude Navigation and Targeting Infrared for Night (LANTIRN) (or, in the case of the F-16C+, Litening II) infrared target imaging pods, plus the Tactical Aerial Reconnaissance Pod System (TARPS) in the case of the F-14. The RAF’s contribution included a Nimrod R1 electronic intelligence (ELINT) aircraft, Canberra PR9 reconnaissance aircraft, and an E-3D AWACS. The French Air Force contributed Mirage IV reconnaissance aircraft, and the CIA made use of its I-Gnat UAV….

…This multiplicity of interlinked and mutually supporting sensors enabled a greatly increased refinement of ISR input over that which had been available during earlier conflicts. It also permitted a degree of ISR fusion that distinguished Enduring Freedom from all previous air campaigns. The extent of progress that had been registered in this respect was showcased by the merging of multiple
sources of information and the channeling of the resulting product into the cockpits of armed aircraft ready to act on it. That progress allowed for greater connectivity not only between sensors and shooters, but also between those with execution authority at the point of contact with the enemy and more senior decision makers at all echelons up the chain of command.
Figure 4: The Early Air Campaign in Afghanistan

Strike Sorties Through December 2001 by Service


Strike Sorties Through December 2001 by Aircraft Type


Before the Surge: 2004-2009

The use of airpower after 2001 gradually increased with the revival of the Taliban and insurgent threat, and was also driven by the fact the Bush Administration gave priority to the campaign in Iraq and limited the ground forces that could be deployed as well as the effort put into building up Afghan ground forces.

Figure 5 shows some key USAF statistics on fixed wing air operations during the period from 2004 to 2009, and while they do not count rotary wing, other services, and allied air efforts; they still illustrate the scale of the air effort needed in even a comparatively limited irregular war against a non-state actor:

- Close air support sorties rose to 11,528 in 2006, and 2,644 major munitions expended, but did not gather statistics on total strikes. Close air support sorties rose to 13,952 in 2007, with 1,090 strikes and 5,198 munitions. Close air support sorties were 19,052 in 2008, with 1,170 strikes and 5,051 munitions. They were 14,487 sorties in the first seven months of 2009, with 786 strikes and 2,380 munitions.
- The USAF has reported levels of other aspects of air activity during 2004-2009 in the form of combined totals for the Iraq and Afghan conflicts. These are of limited value because the wars were so different, and the fighting in Afghanistan began to peak as the surge in Iraq ended. They do, however, give some idea of the broad trends in the conflicts and the overall burden two wars placed on the US:
Figure 5: Air Operations Data for Fighting in Iraq and Afghanistan: 2004-2009

Source: USAF Central Combined Air and Space Operations Center as of June 30, 2009

The Surge Through 2014: 2010 to First Seven Months of 2014

Figure 6 provides data for the period from the “surge” in US forces through the first half of 2014. It uses different categories and definitions from the previous data. It shows that the US use of air strikes peaked in 2011 and then dropped steadily – largely due to increasing Afghan political anger over civilian casualties and restrictions on rule of engagement rather than need. The drop in other types of sorties was slower until 2014. This is a warning about the critical nature of strategic communication in modern air war. It is also a warning about the need to limit civilian casualties and collateral damage. At the same time, there is reason that “war” is called “war:” it destroys and kills. The justification does not lie in minimizing daily civilian casualties or collateral damage if this ends in sharply increasing the net level of casualties and human suffering over time.

Dealing with these issues cannot properly take the form of either denial or claims to perfect war, or rules of engagement that are so restrictive that they limit the chances of victory and steadily increase net suffering over time. Making such tradeoffs requires careful and objective analysis, and public communication to justify the resulting decisions. In world where all aspects of war are so public, transparency and honesty about the nature of conflict is as important to success as providing the right resources, strategy, and tactics.
The data in Figure 6 show that:

- In 2010, ISAF flew 33,707 close air support sorties, 2,517 of which dropped at least one weapon, and with a total of 5,100 weapons releases. Monthly weapons releases ranged from a low of 154 in February to a high of 1,043 in October.

- In 2011, ISAF flew 34,514 close air support sorties, 2,678 of which dropped at least one weapon, and with a total of 5,411 weapons releases. Monthly weapons releases ranged from a high of 695 in July to a low of 174 in December.

- In 2012, ISAF flew 28,768 close air support sorties, 1,975 of which dropped at least one weapon, and with a total of 4,084 weapons releases. Monthly weapons releases ranged from a low of 170 in January to a high of 588 in August.

- In 2013, ISAF flew 21,785 close air support sorties, 1,975 of which dropped at least one weapon, and with a total of 2,756 weapons releases. Monthly weapons releases ranged from a high of 337 in June to a low of 76 in December.

- In the first eight months of 2010, ISAF flew 10,585 close air support sorties, 746 of which dropped at least one weapon, and with a total of 1,491 weapons releases. Monthly weapons releases ranged from a low of 92 in January to a high of 436 in August.


- Casualty evacuation sorties totaled 2,694 in 2010, 2,121 in 2011, 1,646 in 2012, 477 in 2013 and 84 in the first eight months of 2014.

- Airlift sorties totaled 63,000 in 2010, 57,000 in 2011, 39,000 in 2012, 32,000 in 2013 and 12,373 in the first eight months of 2014.

- Tanker sorties totaled 17,296 in 2010, 19,469 in 2011, 16,007 in 2012, 12,319 in 2013 and 6,971 in the first eight months of 2014.
The Missing Half of the Afghan Air War

Comparable data are not available for the US Navy or the US Marine Corps. And only limited data are available for the US Army. It is clear from Figure 7, however, that the “fourth air force” in the US played a critical role in the overall use of airpower even as the US neared the withdrawal of its combat force from Afghanistan. US army aircraft flew a total of 2,685,651 hours between February 1, 2013 and September 15, 2014, including over 4386,000 hours flown by AH-64 attack helicopters. Unfortunately, the Army data do not indicate when the AH-64s fired ordnance in a combat mission, or cases where UH-60s fired their weapons. This makes it impossible to even guess at relative direct combat action or strike activity.

The UH-60 and CH-47 data do, however, illustrate just how critical rotary wing mobility operations were at this stage in the conflict. The data on unmanned aerial systems (UAS) also reflect the highest flight hours of any category of US Army air activity. There is no way to compare these data with the IS&R data in Figure 6, which for some reason lump operations in Afghanistan together with operations in Iraq, and where the role of manned versus unmanned systems is not broken out even in terms of total sorties. It is clear from the sheer scale of such operations, however, that UAVs and manned forms of IS&R,
targeting, and damage assessment activity played a critical role in providing data on every aspect of combat activity, and the ratio of such activity to strike activity was critical to tactical success in the air and on the ground.

It is particularly disturbing that none of the public analysis of Transition in the Afghan War seems to provide any insight into whether the US should or should not provide a given mix of air fixed and rotary wing support forces to help Afghan forces through Transition.

*Figure 7: US Army Air Activity in Operation Enduring Freedom February 1, 2013 and September 15, 2014*

**OEF (Army Fleet in OEF)**

- Total hours from Feb. 1, 2013 – Sep. 15, 2014 : 2,685,651
- **AH-64**
  - Hours : 486,849
  - MC: 83%
  - OPTEMPO : 69.0
- **UH-60**
  - Hours : 613,967
  - MC : 85%
  - OPTEMPO : 43.0
- **Fixed Wing**
  - Hours : 147,343
  - MC: 93%
  - OPTEMPO : 91.1
- **CH-47**
  - Hours : 271,537
  - MC: 82%
  - OPTEMPO : 35.0
- **OH-58**
  - Hours : 330,403
  - MC: 85%
  - OPTEMPO : 81.0
- **UAS (244)**
  - Hours : 835,552
    - Shadow : 307,309
    - Hunter : 30,106
    - Gray Eagle MQ-1C : 73,837
    - Gray Eagle Block 0 : 15,179
    - Warrior : 74,757
    - Puma : 109,441
    - Raven : 224,923

Problems in Applying the Recent Lessons of Airpower

There is no magic punch line to this brief survey of the size and intensity of past air operations. Recent US involvements in air combat provide only provide rough parallels to both the current limited air campaign and what might happen if the US should escalate to supporting the Iraqi or Syrian forces in a major land campaign against the Islamic State and possibly the Assad regime.

Accordingly, past wars do not provide a clear way of calculating present needs, and any analysis of force size and requirements needs to recognize that airpower interacts with land and seapower and base the analysis of airpower needs on total force requirements.

As has been touched upon earlier, there also are a wide range of uncertainties and limits to the readily available data on US air campaigns. These problems are so serious that they raise basic question about the need to provide better summary data, focus on key emerging trends in the Airland battle, cut across the current compartmentalization by service and between fixed and rotary wing operations, and explicitly include allies and partners in all of the data collected on the US use of airpower.

Air War in Joint and Coalition Conflicts

Most of the summary data that are readily available on previous conflicts seriously underestimate the overall level of airpower that was actually applied. They also do not provide a clear picture of allied operations, or sometimes even count them. Many analyses and sources of data separate USAF, USN, and US Marine Corps data for even fixed wing operations, and only the USAF seems provides summary unclassified statistics on many operations. As a result, the overall role of air power in recent US conflicts is often badly understated.

It also becomes difficult to estimate the impact of an air campaign when it is not clear how given sorties were really allocated by mission, the type and number of IS&R, EW, AC&W, refuelers required for strike missions, and the kind of “packages” of different aircraft need to support given types of strikes and the reallocation of strike aircraft to new or different missions versus preplanned missions.

The previous data suggest that such strike “packages” changed steadily in the number and sophistication of the “enablers” per strike and attack sortie between the 1991 Gulf War and the present. They also suggest that major improvements were made in in real time targeting, mission allocation, and damage assessment. The previous data also indicate the growing role of steadily more sophisticated Unmanned Aerial Vehicles (UAVs) or drones.

It is clear that today’s air campaigns are shaped as much by IS&R capabilities and other enablers as by the number of strike aircraft and the effectiveness of avionics and precision weapons.

It is not clear that the US has as yet been able to deploy sufficient resources of this kind in the current air campaign against the Islamic State, and far more may be needed if the
escalation of the current mission continues and broadens to include the Assad forces and other Jihadist rebel groups in Syria.

**Growing Constrains on Casualties and Collateral Damage**

There only limited unclassified data on how strike planning and rules of engagement have changed in recent air campaigns, and the level of confidence required in targeting, release, and damage assessment. All of these issues have an important impact in trying to use past data to assess the current mission against the Islamic State, the ratio of strike sorties flown to sorties where munitions are actually delivered, the effectiveness of such strikes, and the risk of civilian casualties and collateral damage.

At the same time, it is clear from other reporting that the requirements for authorizing strikes grew more demanding as the requirement to minimize civilian casualties increased. It is also clear that enemy forces learned more and more about how to use dispersal, concealment, deception and human shields in irregular warfare.

Both the US chairman of the Joint Chiefs, General Dempsey, and the commander of USCENTCOM -- General Lloyd Austin -- have made it clear that this has already been true of the present air campaign against the Islamic State. General Dempsey has stated that Islamic State forces have changed their deployments and tactics to become less vulnerable, and that, “They know how to maneuver and how to use populations and concealment, so when we get a target, we’ll take it.”

The end result seems to be a steadily growing set of requirements for better, and near real time intelligence, targeting, and battle damage assessment data. It is also for the fusion of human, signals, electronic, and imagery intelligence. The ability to minimize civilian casualties and maximize damage to the enemy is based on a variety of collection assets – some of which provide broad area coverage and some of which only offer line or sight coverage or coverage that is that it effectively is like looking through a soda straw at a small part of the battlefield.

There are also strong indications that these capabilities have improved far more in dealing with fixed targets -- where UAVs and other assets can provide extended coverage -- than in dealing with mobile rear area targets that move, and where a wide range of surveillance and intelligence coverage is possible. Persistent surveillance and targeting also has great value, although sometimes this means only limited “soda straw”- like coverage is available from assets like UAVs.

There are equal indications that it is far more difficult to provide the data needed for reliable targeting and to minimize casualties and collateral damage in close air support or interdiction missions under dynamic combat conditions. This is particularly true of dispersed irregular forces that do not wear uniforms, targets in built up areas, and in night and poor weather combat.

Much seems to depend on the tactical pressure on US and friendly forces. Land forces that come under serious enemy pressure seem to have been far more likely to call in air strikes without effective sensor and intelligence coverage. This produced a major hostile reaction when the resulting strikes hit civilians and did collateral damage.
The inability to clearly identify threat versus civilian forces, irregular enemy forces from friendly forces, and a lack of adequate training and discipline in calling in air strikes has been a continuing issue in Afghanistan. It already seems to have been a serious issue in providing air support to allied forces in the campaign against the Islamic State – particularly in the case of less capable forces like Iraqi land forces and Syrian rebel units.

As General Lloyd J. Austin III, the commander of USCENTCOM has noted, the US has placed a critical emphasis on limiting civilian casualties, but other sources suggest this has come at the cost of limiting the number and effectiveness of airstrikes. 18

Had we killed a lot of innocent civilians, and specifically in Sunni areas, I think that it is fair to say that we would be in a much different place at this point,” the general said. “But because we’ve done this the right way, we’ve secured the support of our Sunni Arab partners in the region. And together, we are making progress.

As a result, both the overall adequacy of IS&R assets and the capability of forward land units to make effective use of airpower with minimal collateral damage and civilian casualties is a key issue in shaping Operation Inherent Resolve and the full range of air power resources that are needed.

The Fixed Wing versus Land Combat “Fixation”

As has been noted earlier, the USAF focuses on the activity of fixed wing aircraft. The US Army and USMC focus on land operations. As a result, data are often lacking on the role rotary wing aircraft played in close air support, tactical mobility, and key enabling tasks like Medevac.

The data are somewhat better for the first Gulf War because the Gulf War Airpower Survey attempted to integrate the analysis of the operations by fixed and rotary wing aircraft, but there is no clear picture of either the synergy or the trade-offs in providing fixed and rotary wing close air support, and their interface with the other elements of the land battle in many of the sets of data that were readily available.

As is clear from Figure 6 and Figure 7, this was true of a recent war like the Afghan conflict. It this case, some data are available on both fixed and rotary wing aircraft, but they are not comparable in time period, categories, or any metric that allow some judgment about combat effectiveness.

It is also interesting to look at recent data on total US Army air activity in the area of Iraq and to compare with the earlier data on fixed wing combat activity in the campaign against the Islamic state where even if the Army data cover activity that goes far beyond the air campaign that began on August 8, 2014.

Figure 8 shows total Army air activity in the Gulf region between February 1, 2013 and September 15, 2014. Much of this activity had nothing to do with the evolving air campaign in Iraq. It included activity dealing with Gulf allies and the potential threat posed by Iran.

As was the case in Figure 7, there are no data on the number of times the AH-64, or UH-60 fired weapons. This makes it impossible to guess at relative direct combat action or strike activity, although one would think it would have been minimal in the Gulf region during the period shown. Nevertheless, AH-64 attack helicopters were more active in flight
It is true of UH-60 and CH-47 transport and tactical support activity (885,505 hours for Afghanistan vs. 1,240,402 hours for OIF, OND, Kuwait, or 71%) and of unmanned aerial systems (UAS) activity (835,552 hours for Afghan conflict vs. 1,252,725 hours for OIF, OND, Kuwait, or 67%).

Far better data may be available at the classified level, but separating the planning and an analysis of fixed and rotary wing operations could prove critical in assessing the real world requirements to support Iraqi land forces and Syrian rebel units, as well as to providing support to Arab and Turkish units.

Rotary wing support – with proper targeting and command and control – may be critical in rapidly overcoming Islamic State or other forces, and in ensuring that threat forces cannot focus on the weakest links in allied forces. In fact, this already has been the case to some extent. General Dempsey stated in interview on ABC News “This Week” on October 12, 2014, that this US had had to send in AH-64 attack helicopters to prevent an Islamic State advance on Baghdad Airport.

**Figure 8: US Army Air Activity in Operation Enduring Freedom February 1, 2013 and September 15, 2014**

<table>
<thead>
<tr>
<th>OIF/OND/KUWAIT (Army Fleet in OIF/OND/Kuwait)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Total hours from Feb. 1, 2013 – Sep. 15, 2014 : 3,960,114</td>
</tr>
<tr>
<td>• AH-64</td>
</tr>
<tr>
<td>• Hours : 631,229</td>
</tr>
<tr>
<td>• MC: 81%</td>
</tr>
<tr>
<td>• OPTEMPO : 57.0</td>
</tr>
<tr>
<td>• UH-60</td>
</tr>
<tr>
<td>• Hours : 1,054,561</td>
</tr>
<tr>
<td>• MC : 82%</td>
</tr>
<tr>
<td>• OPTEMPO : 41.0</td>
</tr>
<tr>
<td>• Fixed Wing</td>
</tr>
<tr>
<td>• Hours : 244,038</td>
</tr>
<tr>
<td>• MC: 89%</td>
</tr>
<tr>
<td>• OPTEMPO : 66.0</td>
</tr>
<tr>
<td>• CH-47</td>
</tr>
<tr>
<td>• Hours : 185,841</td>
</tr>
<tr>
<td>• MC: 73%</td>
</tr>
<tr>
<td>• OPTEMPO : 60.0</td>
</tr>
<tr>
<td>• OH-58</td>
</tr>
<tr>
<td>• Hours : 591,720</td>
</tr>
<tr>
<td>• MC: 90%</td>
</tr>
<tr>
<td>• OPTEMPO : 20.0</td>
</tr>
<tr>
<td>• UAS</td>
</tr>
<tr>
<td>• Hours : 1,252,725</td>
</tr>
<tr>
<td>• Shadow : 512,006</td>
</tr>
<tr>
<td>• Hunter : 67,880</td>
</tr>
<tr>
<td>• Gray Eagle MQ-1C : 196,304</td>
</tr>
<tr>
<td>• Gray Eagle Block 0 : 56,236</td>
</tr>
<tr>
<td>• Raven : 419,996</td>
</tr>
<tr>
<td>• gMAV : 303</td>
</tr>
</tbody>
</table>
Unmanned Combat Aerial Vehicles (UCAVs)

Finally, the use of unmanned combat aerial vehicles (UCAVs) and cruise missiles is yet another important aspect of airpower where adequate and comparable unclassified data are lacking or tend to separate fixed wing airpower from the overall use airpower. Much of the unclassified reporting UCAVs and cruise missiles also provides limited data on effectiveness – sometimes hyping the short term impact of successful strikes on key rebel/Ihadijast figures and leaders or numbers killed, rather than lasting impact on enemy capability.

It is clear that the US is making more use of UAVs and UCAVs. The Long War Journal has provided the estimate of cruise missiles shown in Figure 9 – which does not include the additional use of US cruise missiles against targets in Libya.

Figure 9: US Air and UCAV Strikes in Pakistan, Yemen, and Somalia: 2002-9/2014

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>35</td>
<td>53</td>
<td>117</td>
<td>64</td>
<td>46</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>Yemen</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>41</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Somalia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>


For all the reasons outlined in the previous section, the separation between fixed and rotary wing air activity is only part of the story. It also applies to a separation of reporting on conventional air assets from UAVs and UCAVs. As was the case with Figure 7, Figure 8 shows the critical role of unmanned systems and their impact on IS&R activity, but there is no way to compare it to USAF IS&R activity. Moreover, the USAF data combines the total for IS&R activity in both OEF and OIF and make it impossible to even make “guesstimates” about the overall patterns in each conflict area.

Cruise Missiles

The US has also used cruise missiles in the current air campaign in striking targets in Syria on September 22-23, 2014 – although it is not clear that such strike should be tied to the broader strategic goals of Operation Inherent Resolve. The US launched 47 Tomahawk cruise missiles from U.S. Navy ships in the Gulf and the Red Sea. The two launched ships were the USS Philippine Sea, a guided missile cruiser in the Gulf, and the USS Arleigh Burke, a destroyer in the USS George H.W. Bush Carrier Strike Group in the Gulf – a force whose carrier also played an important role in the strikes on the Islamic State.20

USCENTCOM stated that they were launched as part of 14 military strikes on Islamic State targets in Syria overnight, as “U.S. fighter jets, bombers and drones also dropped ordnance in Syria on militants, their training compounds, headquarters, storage facilities, supply
trucks, armed vehicles and a finance center” US CENTCOM also said there were four more airstrikes in Iraq on Monday, bringing the total number since August 8 194. They’ve been carried out by a mix of fighter jets, bombers and drone aircraft, but the U.S. military had not previously disclosed using Tomahawks against the militants. As is all too common, however, no clear data were issued to assess their impact at the time. Moreover, the target – the Khorasan Group – was not tied to the Islamic state but r was an affiliate of Al Qaeda that seems to have focused on terrorists attacks outside the region. A later report by the Associated Press, based on an official background briefing, noted that,

"The barrage of U.S. cruise missiles last month aimed at a Syrian terrorist cell killed just one or two key militants, according to American intelligence officials who say the group of veteran al-Qaeda fighters is still believed to be plotting attacks against U.S. and European targets...The strikes on a compound near Aleppo did not deal a crippling blow to the Khorasan Group, officials said, partly because many important members had scattered amid news reports highlighting their activities. Among those who survived is a French-born jihadi who fought in Afghanistan with a military prowess that is of great concern to U.S. intelligence officials now."

"The strikes were certainly effective in setting back the Khorasan Group, but no one thinks they were a permanent solution or a death blow to the threats that come from this cell," said Rep. Adam Schiff, D-Calif., a member of the House Intelligence Committee.

...One of the U.S. missiles went awry and killed a dozen civilians in the village of Kfar Derian, according to Mohammed Abu Omar, an activist in the northern province of Idlib. The U.S. military says it has not confirmed any civilian casualties.

The limited effectiveness of the attack on the Khorasan Group is partly the result of a hazy intelligence picture that also has bedeviled the air campaign against Islamic State targets in Syria and Iraq...The U.S. lacks the networks of bases, spies and ground-based technology it had in place during the height of the wars in Iraq and Afghanistan, officials say, or even the network of human sources it developed in Pakistan and Yemen.

Playing an extraordinarily expensive game of whack-a-mole that kills several innocent bystanders is not a model for the future.

**Strategic Communications, UCAVs, Cruise Missiles, and Airpower**

There is another area of uncertainty in measuring airpower. Iraq and Afghanistan have both shown that strategic communications are a critical aspect of airpower, and one that will be critical determining the success of Operation Inherent Resolve. They have both shown just how important it is to justify and minimize civilian casualties and collateral damage.

UCAVs and cruise missiles have become a particularly important source of political warfare for enemies like the Taliban and Islamic state. Threat forces have shown they can do all too god a job of exploiting and exaggerating civilian casualties, seek to create issues over sovereignty, and claiming that such strikes are “cowardly” because they are delivered by an unmanned system.

In practice, UCAVs and cruise missiles have greatly reduced total casualties and damage over any form of warfare where strikes were not precise, as limited in total lethal effect, and the targeting could not linger over time when necessary to characterize the target. As good as the best pilots, avionics, and air delivered guided weapons are – and they have reduced civilian casualties and collateral damage in built-up areas by at least an order of
magnitude since the days of Korea and Vietnam – there are still tasks they cannot do as well as UCAVBs and cruise missiles.

This provides a further illustration of the need for US and allied strategic communications and public affairs reporting to communicate the fact that civilian casualties and collateral damage are inevitable results of war, along with refugees and IDPs. They should also make it clear that the humanitarian goal in reducing the inevitable horrors of war should be how to best minimize the total cumulative impact in civilian casualties and collateral damage over time, rather than focus on the impact of one killing mechanism to the exclusion of others which inflict much higher civilian casualties and collateral damage.

The failure to properly communicate this in analyzing every aspect of combat operations, to make it an explicit aspect of strategic communications, and to develop a convincing near real time estimate of what has actually happened after any given use of airpower, now affects every aspect of US air operations. In the case of UCAVs, however, it threatens US ability to use such systems and provides enemies like the Islamic State with a potential advantage.

Similarly, the argument that only manned systems provide some form of courage would logically exclude throwing spears and shooting arrows. In terms of modern warfare, every major conflict since World War I onwards has produced more casualties from indirect fire systems like artillery than direct fire. More recently, the use of long range precision guided weapons means most piloted air strikes in irregular wars occur from ranges well outside the weapons held by forces like the Islamic State.

**Effective Airpower is Joint Warfare**

In short, joint warfare and effective strategic partnerships require a fundamentally different approach to assessing air-land warfare, and a different approach to planning and analyzing the adequacy of air operations in cases like the war against the Islamic State. They should examine all aspect of air operations together, not only in using all air assets, but in defining the level of air support US and allied ground forces will need in ground combat.
Operation Inherent Resolve: An Adequacy of Resources?

There are other factors that suggest that the current air campaign may be too limited to make effective use of airpower. There already are indications that the current shape and scale of the air campaign will present steadily more problems as the land fighting escalates, and is the scale of the mission continues to escalate in Syria.

Airpower and Iraq Ground Forces

There will never be an effective Airland campaign against the Islamic State in Iraq without effective Iraqi ground forces and without the level of political compromise and unity to give Iraqi Sunnis, Shi’ite, and Kurds the will and ability to cooperate.

Military progress in Iraq requires Iraq political unity to overcome the devastating divisiveness of the Maliki regime, his split with the Kurds, his steadily politicization of the Army with officers loyal to him regardless of corruption and competence, and his increasing use of the army and police against largely peaceful Sunni demonstrations from 2012 onwards – actions which so alienated the Sunni population in Western and Northern Iraq that it created the climate that made massive Islamic State gains possible.

The Iraqi security forces should never have been vulnerable to Islamic State (ISIS, ISIL) forces in the first place. Incompetent, political, and corrupt as many officers may have been – and alienated as Iraq’s Sunnis may have been -- the Institute for Strategic Studies estimates that the Iraqi Army still had an authorized strength of some 193,400 men towards the end of 2013. While Iraq did not have a real air force – some light combat trainers and some 30 armed helicopters -- the Ministry of Interior security forces – which Maliki had also used increasingly against the Sunnis and other opposition, totaled 531,000 personnel, with 302,000 regular police, 44,000 paramilitary Federal Police, and 95,000 lower quality security guards in the Facilities Protection Service.23

While US intelligence estimates put the Islamic State forces at some 31,500 by the late summer of 2014, the Islamic State forces probably did not total more than 10,000 full-time fighters when they took much of Anbar. They were still well under 30,000 when they took Mosul. They also were initially light armed, largely with “technicals” – armored trucks mounting automatic weapons and mortars.

In contrast, the Iraqi Army initially had 2 special forces brigades, 1 armored division, 5 mechanized divisions, 3 motorized divisions, 4 infantry divisions, one commando division, and two presidential security brigades – for a nominal total of well over 50 combat brigades. It also had 336 medium tanks (including 140 M1A1 Abrams), 1,194 armored personnel carriers, 188 armored infantry fighting vehicles, 1,334 light wheeled combat vehicles, 48 self-propelled heavy artillery weapons, 138 towed heavy artillery weapons, multiple rocket launchers, and 1,200 mortars.

Rebuilding forces that was defeated as much by Prime Minister Maliki as the Islamic State and other Sunni forces may well take years, and it is all too clear from its recent defeats that it desperately needs forward US advisors, not just joint operations centers in Baghdad and Irbil and advisors in the rear down to the brigade level. Studies by the US military before the present air effort in Iraq that indicated that only about half of the 56 Iraqi Army
brigade equivalents that survived the rout leading to the Islamic state capture of Mosul were worth retraining and that this could take up to three years.

General Austin, the commander of USCENTCOM, described these issues as follows in a press conference on October 17th, 2014,

... Q: Let me just follow up. I mean, what would you say to people who think -- who are saying now that the strategy is fundamentally flawed because of a lack of support on the ground, partly because there's not enough use of U.S. forces that are capable?

GEN. AUSTIN: I think -- you know, most everyone has been clear that, you know, this is not doable just from the air. They've also been clear that it will -- the ground forces that we would look to use are the indigenous ground forces, you know, the Iraqi ground forces in Iraq and, you know, hopefully a force that we can train in Syria to help us in Syria when that -- when we get to that piece.

But, you know, our role would be and is to provide enablers, to help them get the job done on the ground. And I do think that's doable.

Now, the degree to which you provide those enablers is always a point in question. And again, that will change from situation to situation.

General Austin warned that Iraq forces were far from ready in either military or political terms to assume the defensive and counteroffensive missions needed for any form of victory, and that it would take prolonged strategic patience to achieve any lasting success,

We are enabling the efforts of the Iraqis in their fight against ISIL, acknowledging that, in addition to halting ISIL’s advance, the Iraqis must secure the border,” he said. “They must regenerate and restructure their forces to ensure that they are able to provide for the sovereignty of their country going forward. And this represents our main focus right now -- enabling the efforts of the Iraqis.

... We must remain focused and disciplined in our approach,” he said. “Most important, we must maintain strategic patience going forward. The campaign to destroy ISIL will take time and there will be occasional setbacks along the way, and particularly in these early stages of the campaign as we coach and mentor a force that is actively working to regenerate capability after years of neglect and poor leadership… We intend to defeat and ultimately destroy ISIL… Even more important, we want to change conditions inside of Iraq and Syria so that what we see happening there now does not happen again in the future.

... I think it's up the leadership there and the government to strike a balance in terms of the relationships between the Shia militia or the Shia in the south and the Sunnis out west.

It's incumbent upon this government -- I mean, it's necessary for them to reach out to the Sunni population and be inclusive. They need to do that for the Kurds as well. I am encouraged by, you know, what I've seen as I talk to the leadership, the prime minister and others, that they're willing to do this.

I think if they begin to follow through on the things that they've said that they're willing to do, then I think it'll build some confidence. And I think that they will be able to strike a balance. But the government really has to manage that balance and I think they can.

General Austin also noted that limits to air attacks on Baghdadi, the other leadership of the Islamic State, and its command and control structure,

These elements have the ability to regenerate leadership. And -- and certainly, going after HVIs is something that we must do and we will do. But that's not enough to -- to get this done.

I think you have to take away their ability to -- to sustain themselves, finance themselves. You have to slow or, if you can, stop the flow of foreign fighters coming -- coming and going. I think that generates a pool of manpower for them that -- that's been very, very helpful for them.
We learned from countering Al Qaida in Iraq that if you can begin to do these things in a meaningful way, plus going after the command and control, then I think you begin to have some serious effects.

… In terms of command and control for -- for ISIL … they certainly have central leadership that -- that's guiding things overall. It's more problematic for them to -- to be able to command and control now because of the fact that they're afraid to talk on their -- on their networks. They're afraid to assemble command groups for fear of being struck by us.

So their command and control architecture is -- is somewhat fragmented. They're still fairly effective, but much more challenged than they were before we started this campaign. And this will get worse as we go along…But -- but again, it will be -- it will become more and more difficult for them to get the things done that we've seen them do prior to us starting that campaign in earnest.

**Small, But Critical Numbers of US Boots on the Ground**

At the same time, even the limited outcome of strikes in support of ground forces to date raises critical questions about the current limits on US “boots on the ground.”

Deploying a very limited number of US Special Forces and intelligence personnel to the forward edge of the battle front to help the Northern Alliance forces to defeat the Taliban by providing forward air control and targeting data -- and helping Northern Alliance commanders understand the role that close air support and interdiction bombing -- played a critical role in driving the Taliban out of most of Afghanistan in 2001. This was only a token number of personnel, and very different from deploying major US combat units, but it did place US soldiers in positions where there was a constant risk of combat and US casualties.

Providing effective intelligence, target, and feedback for air operations is also only one part of the need for forward advisors that can help the Iraqi Army become an effective force as soon as possible. Help in combat leadership, maneuver, making meaningful requests for rear support, and getting honest reports to higher echelons of command are equally critical.

This means putting small numbers of advisors forward and risking combat losses, but it seems to be essential -- not only for the Iraqi Army, but for the Pesh Merga, the new Sunni National Guard Units to be formed in Sunni areas in Iraq and rebel units in Syria. Ignoring the real world requirements for the kinds of land support necessary to make the best use of close air support is all too god a way to waste it and again to increase civil casualties, the risk of increasing sectarian and ethnic tensions, and enabling Islamic State propaganda.

Some sources have reported that the Joint Chiefs and senior Special Forces officers recommended this kind of forward support in planning the air operation and the option was rejected by the White House. General Dempsey has testified that such action may be necessary to Congress, and stated in an interview on ABC News’s This Week with George Stephanopoulos” on October 12, 2014 that, “There will be circumstances when the answer to that question will likely be yes,” he said. “But I haven’t encountered one right now. When [the Iraqi forces] are ready to go back on the offensive, my instinct is that will require a different a kind of advising and assisting because of the complexity of that fight.”

**If the Conflict Widens and Escalates: Warfare in Syria**

“Mission creep” is the rule of military operations, not the exception. An escalation to far deeper involvement in Syria that was originally planned already seems to have occurred. As Figure 1 has shown, the sorties flown in support of Syrian Kurdish forces in mid-
October came at a time few strike sorties were flown in support of Iraqi forces, although they were under serious pressure in Anbar. Figure 10 highlights these trends and shows just how much the shift to strikes on a limited objective like defending Syrian Kurds in a small enclave like Kobane affected the course of the air campaign.

General Lloyd J. Austin, the Commander of USCENTCOM, defended this escalation in a press conference on October 17th by stating that:

The things that we’re doing right now in Syria are being done primarily to shape the conditions in Iraq,” Austin said. “Once the Iraqis are able to get a better handle on the situation inside of their country and regain control of their border that will help to localize the problems a bit more.”

Q: General, you said that the major effort is in Iraq. But if you just look at the -- the tally of airstrikes over the last several days, the main area has been around Kobani. How has Kobani suddenly become such a almost litmus test of whether this campaign is -- is on the right track? And what is the latest assessment of whether or not air power is going to be able to save Kobani?

GEN. AUSTIN: The campaign is on the right track. We’re doing the right things, and we’re having the -- creating the right effects.

If you take a look at what's happened here in the last couple of days, in the south, we have experienced some issues with our -- with weather, and that's not allowed us to get our ISR up to -- to the degree that we want to.

In addition to that, what's going on in -- in the Kobani area is that, in my assessment, the enemy has made a decision to make Kobani his main effort. And what you see them do in the last several days is pour -- continue to pour manpower into -- into that effort.

Now, my goal is to defeat and ultimately destroy ISIL. And if he continues to present us with -- with major targets, as he has done in -- in the Kobani area, then clearly, we'll service those targets, and we've done so very, very effectively here of late, as -- as you've mentioned. But -- but, again, the more we attrite him in Kobani, the less ability he has to reinforce efforts other -- in other places.

And again, I believe that he made a decision several -- several days ago that Kobani was going to be his main effort. And as long as he pours, you know, legions of forces there into that area, we'll stay focused on taking him out.

Q: And your assessment on whether or not you can save Kobani with airstrikes?

GEN. AUSTIN: It -- it -- it's highly possible that Kobani may fall. And -- but, again, I think the things that we have done here in -- in the last several days are encouraging. And we're seeing the -- the Kurds actually fight to regain territory that had been lost previously.

So, some very determined fighters up there that -- that have done a yeoman's work in terms of standing their ground. And -- and I think we've been able to -- to help that along with precision airstrikes in the last couple days.

… Q: Do you think Kobani is kind of a diversion from your main effort?

GEN. AUSTIN: I do not think it's a diversion. I think that I'm able to do what we're able to do and manage my resources so that I can take advantage of opportunity that he has presented me. And he presented that opportunity by continuing to funnel forces into Kobani. And again, the more I attrite him there, the less I have to fight him on some other part of the battlefield.

General Austin claimed that real progress was still being made in the overall campaign. He stated that airstrikes were targeting key ISIL capabilities, like command and control, the ability to project combat power, sustainment capabilities, and vehicle parks, as well as refineries: “By striking these types of facilities, we reduce their ability to generate the funds and the fuel required to sustain their operations.”
He noted that the targets included tactical targets like enemy tanks, artillery, and armored personnel carriers, and claimed “we are having the desired effects... We’re no longer seeing them move around the country in large convoys,” the general said. “Now they’re mostly traveling in civilian vehicles in smaller numbers. This is hindering their ability to mass and to shift combat power.” And, he explained some of the limits in the number of sorties by stating that,

We’re doing some things now. They are doing some things now to incrementally recapture ground that’s been lost. In the north, we’ve seen the Kurdish security forces conduct an excellent operation on the Mosul Dam. They took back the port of -- the Rabiya port of entry. They are currently still operating, still pushing to recapture ground that has been lost.

We're seeing some of the same things in the south. About a week-and-a-half ago, you saw the 9th Division attack west to, you know, towards -- north of Karma, towards Ramadi, and link up with the 1st Division and open up a line of communication so that you're -- they're able to -- to provide logistical support to the forces that are out in Ramadi.

And so this morning, Iraqi time -- Iraq time, excuse me, you saw Iraqi security forces elements attack north from the Baghdad area up to Bayji and that that assault -- attack is ongoing as we speak. Their effort is to relieve the forces that have been defending Bayji for a period of time and make sure that they open a line of communications there as well.

So we're doing some things to -- to incrementally improve conditions. At the same time, we will begin to train and equip Iraqi security forces to regenerate some much-needed combat power. But it will take time.

...Mosul's going to be probably a much bigger effort. And again, it's going to -- we're going to need to regenerate a bit more combat power and do some more things to shape the environment a bit before we go after Mosul. I think Mosul will -- you heard the chairman describe it as potentially the decisive fight. Certainly, it will be a -- an important fight and a difficult fight.

You know, as you know, Bob, I was a corps commander in Iraq, and I was a force commander there as well. I've spent a lot of time in Mosul. It is difficult terrain. And -- and so, we want to make sure that when we take that on, that we have the adequate capability and we set the conditions right to - - to get things done.

The problem with these statements is that the sortie data in Figure 10, still strongly suggest that insufficient assets were available to perform all of the necessary missions, and assets had to be diverted to the new mission of aiding the Syrian Kurds at the expense of both support to Iraq forces and the broader mission of degrading the Islamic State.

The sortie data for the period from September 23rd to October 15th are anything but reassuring. The average daily strike numbers still remained very low, ranging from zero to a maximum of 23, and average less than 10 per day, from September 23rd to October 15th. These data they reflect a clear pattern of escalation focused on responding to the threat the Islamic State posed to the Syrian Kurds – an escalation that did not reflect the strategic priorities of the original campaign plan. A total of 34 of the last 40 strikes shown in Figure 7 went to aid the Syrian Kurds in Kobane, and this targeting was driven by as much by the pressures create by a media focus on the risk the Kurds would lose the border town of campaign as military considerations.

General Austin did minimize the impact of the shift in air strikes on the fighting in Iraq.
I would describe Anbar as contested. It's been that way for some time. I would also say that unlike some of what you have heard in a number of places, we have not seen an appreciable increase of ISIL forces in Anbar from what we saw in the July-August timeframe.

So, I think what we'll continue to see throughout is that, you know, Anbar will remain contested. I think the solution to this going forward to very rapidly be able to establish or -- or, you know, establish better security is to enlist the help of the tribes. And I think the government is reaching out to do that now. And -- and, again, with their help, I think we'll be able to move forward very rapidly.

We did the same thing back in 2008, as you'll recall, Jim, with the Sahwah movement. And again, what we learned from that is that with their help, we were able to deny the enemy freedom of action, freedom of movement. And it was very instrumental. So I have every reason to believe that we can do that in this case. We'll be able to create some of the same effects.

Nevertheless, US air strikes focused on Syria at a time when the Islamic State was still putting major pressure on the Iraqi forces in Anbar and making gains in spite of relatively limited level of US air support. It is unclear how much of this was a result of limited targeting and strike assets and US efforts to force the Iraqi central government to deal fairly with Iraq’s Sunnis and Kurds, but it is clear that the air campaign in Iraq was negligible towards the middle of October and driven by a major form of mission creep in Syria.
Mission Creep from Iraq to Syria to Kobane

Figure 10: Operation Inherent Resolve: Airstrikes Per Day in Syria versus Iraq – Part Two

<table>
<thead>
<tr>
<th>Date</th>
<th>Airstrikes Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/15/2014</td>
<td>18</td>
</tr>
<tr>
<td>10/14/2014</td>
<td>22</td>
</tr>
<tr>
<td>10/13/2014</td>
<td>8</td>
</tr>
<tr>
<td>10/12/2014</td>
<td>4</td>
</tr>
<tr>
<td>10/11/2014</td>
<td>6</td>
</tr>
<tr>
<td>10/10/2014</td>
<td>9</td>
</tr>
<tr>
<td>10/9/2014</td>
<td>5</td>
</tr>
<tr>
<td>10/8/2014</td>
<td>9</td>
</tr>
<tr>
<td>10/7/2014</td>
<td>9</td>
</tr>
<tr>
<td>10/6/2014</td>
<td>3</td>
</tr>
<tr>
<td>10/5/2014</td>
<td>3</td>
</tr>
<tr>
<td>10/4/2014</td>
<td>7</td>
</tr>
<tr>
<td>10/3/2014</td>
<td>6</td>
</tr>
<tr>
<td>10/2/2014</td>
<td>4</td>
</tr>
<tr>
<td>10/1/2014</td>
<td>11</td>
</tr>
<tr>
<td>9/30/2014</td>
<td>11</td>
</tr>
<tr>
<td>9/29/2014</td>
<td>8</td>
</tr>
<tr>
<td>9/28/2014</td>
<td>0</td>
</tr>
<tr>
<td>9/27/2014</td>
<td>7</td>
</tr>
<tr>
<td>9/26/2014</td>
<td>3</td>
</tr>
<tr>
<td>9/25/2014</td>
<td>0</td>
</tr>
<tr>
<td>9/24/2014</td>
<td>13</td>
</tr>
<tr>
<td>9/23/2014</td>
<td>14</td>
</tr>
</tbody>
</table>

If the Conflict Widens and Escalates: Buffer Zones

These challenges could also become far more serious if the US escalates to try to establish buffer zones in Syria and becomes actively involved in the fighting against Assad and supporting a second land campaign.

General Petraeus once highlighted the need to keep asking, “How does this war end?” It seems equally valid to ask, “How does this war escalate?” General Dempsey, the Chairman of the Joint Chiefs, has already done this in a different context by raising the question of what would happen if the US was forced to try to create buffer or forward security zones in Iraq and had to suppress or destroy Syria’s remaining air force and air defense assets: “Do I anticipate that there could be circumstances in the future where that would be part of the campaign? Yes.”

It is unclear that Syria would risk triggering such escalation, knowing the probable level of US military response. At the same time, even if it was largely passive, it would forces the US to deploy extensive contingency assets for air defense and for a massive SEAD or suppression of enemy air defense mission. Assad could also trigger a US build-up simply by illuminating surface-to-air missile and other tracking radars, threatening fighter flights, and/or firing sporadic surface-to-air missile attacks at so low a level that the US might choose readiness and limited suppressive attacks over an all-out response.

The use of US air cover under these conditions has no clear historical parallel, although it has almost certainly already generated case-specific war plans in the Pentagon. It is also far from clear what the mission would be and what role the US would play versus Turkey and possibly other states. Securing buffer zones in a “no fly” mission would be very different from providing air combat support to prevent any Assad or Jihadist ground forces from attacking them.

A major Turkish, Jordanian, and Saudi training and ground support effort could avoid the need for US Special Forces and intelligence personnel. But, there is no indication of what Turkey wants or is willing to support, or what level of Arab combat support might be available – or what will happen if the Iraq government does not reach a fair and lasting settlement with Iraq’s Shi’ites and Turkey and the Iraqi government do not reach a stable settlement with the Kurds. At present, the term “buffer zone” is so vague and open-ended as to be nearly meaningless.

There are a few air war cases, however, that have at least some relevance. The USAF historical Studies Office reports that Operation Southern Watch in Iraq – against an almost totally defeat Iraqi air forces and largely suppressed SAM system – have flown 86,000 sorties by 1997, required 5,000 men forward on three month rotations in Saudi Arabia, Kuwait, and Bahrain, and support from 10,000 more in the US. This helps explain why General Dempsey warned the Congress that creating a 24-hour no fly zone over Syria could cost $500 million to establish and a billions dollars a month to maintain.

As NPR reported, Dempsey’s letter to Senator Carl Levin in the Senate armed service Committee warned that, 

Action to "prevent the regime from using its military aircraft to bomb and resupply" would cost "$500 million initially ... [and] as much as a billion dollars per month over the course of a year."… a no-fly zone could eliminate the Assad regime's "ability to bomb opposition strongholds and sustain
its forces by air." But the risks..."include the loss of U.S. aircraft, which would require us to insert personnel recovery forces. It may also fail to reduce the violence or shift the momentum because the regime relies overwhelmingly on surface fires — mortars, artillery, and missiles...Limited stand-off strikes" from aircraft, ships and submarines could ...cost billions of dollars and likely would result in the "significant degradation of regime capabilities and an increase in regime desertions." But ..."retaliatory attacks are also possible, and there is a probability for collateral damage impacting civilians and foreigners inside the country."... training the opposition ... would need to be done in "safe areas outside Syria" and runs the risk of "extremists gaining access to additional capabilities, retaliatory cross border attacks, and insider attacks or inadvertent association with war crimes due to vetting difficulties."

A USAF Historical Studies Office report notes the impact of limited threats and gestures by Saddam Hussein:36

When Saddam Hussein and his forces challenged the southern no-fly zone, JTF-SWA responded quickly. The first provocation occurred on December 27, 1992, when two MiG-25 aircraft threatened USAF aircraft in the no-fly zone. In response, USAF F-16s shot down one of the Iraqi fighter jets. Less than one month later, in January 1993, USAF aircraft struck missile sites in the no-fly zone. Other attacks against Iraqi targets followed in April, June, and July of that year. In October 1994, Iraqi forces massed on the Kuwaiti border, which resulted in Operation Vigilant Warrior, a massive influx of nearly 25,000 U.S. military personnel. This was followed by a smaller temporary reinforcement, Operation Vigilant Sentinel, to deter Iraqi aggression after several leaders of Hussein's regime and their families defected to Jordan.

These data do not include the role of allied aircraft, the massive airlift effort the US had to provide to the Kurds after their 1991 uprising in Operation Provide Comfort, or the sortie data for Northern Watch – the other half of the “no fly zone” effort in Iraq which lasted from 1991 to 2003. The lift data for Provide Comfort alone, however, are impressive. A short summary of the operation by Gregory Ball of the USAF historical Studies Office notes that,37

Operating primarily from Incirlik Air Base, Turkey, USAF C-130s began relief airdrops on April 7, delivering as many as 600 pallets of supplies per day, although those airdrops were not as effective as hoped. In addition to the airdrops, USAF C-5s and C-141s flew thousands of tons of cargo from the United States to Turkey. By mid-July 1991, the USAF had transported over 7,000 tons of relief supplies...

What Should the Ratio of Strikes to Enablers and Total Sorties Flown Be?

There is another aspect of these problems in the data that deserves close attention. General Dempsey gave a rough estimate at a TV interview in mid-October that roughly 10% of the armed sorties flown launched munitions, in part because of the difficulty of distinguishing Islamic State forces from civilians and friendly forces, the fact Islamic state forces have improved their dispersal and use of human shield, and limits in targeting capability.

Looking at some of the IS&R data, it seems likely that the figure for strikes per sortie flown would be closer to 5% for total armed strike sorties and IS&R sorties and 3% in refueling was included. Put somewhat differently, well over 90% of the cost of strike sorties is for sorties where no munitions are delivered.

This indicates the need for a far tighter integration of sortie planning, and one that explicitly examines the cost trade-offs involved between IS&R and strike activity, ways of increasing actual munitions deliveries, and reducing costs on a joint warfare and inter-service basis.
It is not clear that current air warfare planning has fully recognized the sheer escalation of sortie activity and the cost of conducting operations with the current constrains on engagement, and focus on service by service activity.

**Too Little and Too Slowly**

For all the limits and uncertainties in this analysis history can still be a warning. The previous history of air operations in recent conflicts is a warning that the US is now embarked in leading and conducting a high risk air campaign that will do too little and do it too slowly.
Airstrikes per day in Syria and Iraq
Recent U.S. airstrikes have focused heavily on the Syrian town of Kobane, with 53 of the last 54 strikes in Syria occurring there.

Source: U.S. Central Command, news releases

IAN ROBINSON/THE WASHINGTON POST


USAF Central Combined Air and Space Operations Center as of June 30, 2009.


