ARBITit happens here...

#THE RIVER CODE

Cracking Earth's Waterways with GRIT

A ground breaking global river map is set to revolutionize climate planning and flood prediction.



n a world grappling with climate change, rising sea levels, and unpredictable weather events, understanding how water moves across the planet is no longer a luxury, it's a necessity. Now, a team of scientists has unveiled what they call the most complete map of the world's rivers ever created, a

powerful new tool that could

transform how we manage floods, plan infrastructure, and prepare for climate-related disasters.

At the heart of this breakthrough lies GRIT, short for Global River Classification, Reach, and Intersection Topography. This innovative mapping system gives us. for the first time, a precise, highresolution view of how rivers truly flow, split, and weave through Earth's landscapes.



Why GRIT is a Game-Changer

🔽 or decades, scientists and policymakers have relied on outdated or incomplete data to study river systems. Many global river maps were stitched together from national datasets, each with its own format, assumptions, and blind spots. The result? A fragmented understanding of how water travels from mountaintop to ocean, leaving crucial gaps in flood models. irrigation planning, and environ-

How it Works

🔼 RIT doesn't just show **U** rivers as lines on a map. It reconstructs their geometry, including the direction of flow, branching patterns, and how they intersect with landforms. It reveals where rivers split, meander, or join other water bodies. This level of detail helps experts track water flow more accurately, anticipate blockages. and even understand how floods propagate through

mental conservation. GRIT fills those gaps. Developed by a multidisci-

plinary team of hydrologists, geographers, and climate scientists, GRIT stitches together satellite imagery, topographical data, and advanced modeling to chart every known river on Earth with unprecedented detail, from mighty flows like the Amazon to the tiniest streams feeding local farmlands.

river networks. This is especially crucial in the era of climate change. As rainfall patterns shift and extreme weather events become more longer confined to tradition al floodplains. GRIT helps anticipate these risks with precision, enabling local governments and disaster response teams to better prepare for where floods might

Real-World Impact

he implications of GRIT are vast and global. In urban planning, it can inform smarter construction decisions and prevent costly damage by avoiding floodprone zones. In agriculture. it supports better irrigation strategies and water distribution. For climate scientists, it's a vital tool in modeling how global warming may alter river dynamics

frequent, flood risk is no strike next.

and freshwater availability. Importantly, GRIT is open access, meaning its data is available to researchers, policymakers, and even citizen scientists across the world. This democratization of high-quality river data represents a major step towards equitable climate resilience, especially for vulnerable communities in flood-prone regions.

Looking Ahead

A s the planet warms and water becomes an $\left(\begin{array}{c} s \\ s \end{array} \right)$ increasingly volatile resource. tools like GRIT offer hope. By understanding rivers not just as geographical features but

as dynamic, interconnected lifelines, we can better protect our environments, cities, and lives.With GRIT, we're not just mapping rivers, we're chart ing a smarter, safer future.

The Kargil War lasted for more than two months, and India conducted Operation Vijay in a most methodical and professional manner to attack and recapture the enemy-held heights. The operation was a unique display of bravery, resolve, and commitment under inhospitable conditions of terrain and weather.

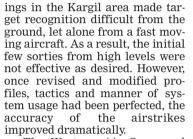
Gaurav Kumar uring 1998-1999 Pakistan Army had surreptitiously

inducted its troops in disguise to the Indian side of the LoC to occupy commanding positions. It had ingressed into Kargil District with multiple aims, to internationalize the

Kashmir issue, challenge the sanctity of the LoC, and most importantly, to renew and sharpen the Pakistan-organized events in the Kashmir region. This was made under assumption that they would be able to wrestle some concession from India on the issue of Kashmir. The Kargil war of 1999 was fought between Indian forces and Pakistani Army in the high-altitude mountains, with jagged, near vertical hill faces, which posed both tactical and logistical problems.

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The role of Indian Air Force in this critical operation on the high altitude mountains was rightly perceived by both the political and military policy makers, however, with its share of constraints and challenges. Air Vice Marshal (Dr.) Arjun Subramaniam (Retd) writes, "The IAF fought in an 'unconventional' manner in terms of the political constraints imposed on it in the form of stringent Rules of Engagement and terrain imperatives that had never been encountered before, and their associated impact on targeting. High altitude operations always come with challenges like severe degradation of aircraft and weapon performance." Totally unfamiliar surround-



The Western Air Command was given the responsibility to conduct operations during the Kargil War. The task assigned to the Indian Air Force was not to use air power, as an extended artillery, but only in assistance to the Indian Army. The primary task of the use of air power was to degrade the offensive capabilities of the intruders by targeting their gun positions, bunkers, defences on mountain tops, destroy their supply lines, supply camps, and distribution centres

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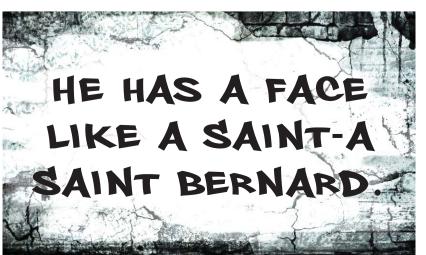
Line of Control (LoC).

PRELUDE TO AIR OPERATION

Indian Army had on 08 May, 1999 projected the requirement of Attack Helicopters for use against intruders, and also the Helicopters for transport of troops. This came for consideration to the Indian Government between 12 May, 1999 and 17 May, 1999 and it was decided not to use this option as it may lead to escalation. On 25 May, 1999 after an indepth appreciation of the emerging situation, the Cabinet Committee on Security (CCS) took the decision to deploy the Indian Air Force. Finally, on 25 May, 1999, the CCS gave the go ahead for use



THE WALL



BABY BLUES



Ο

#KARGIL

er target information using their

onboard long-range oblique photography systems. On 21 May 1999, the presence of the personnel from the Pakistani 4th and 6th Battalions of the Northern Light Infantry's and their positions was determined by an IAF Canberra Bomber of the 106th Photo Reconnaissance Squadron. The of air power. Once the CCS aircraft was tasked with flying approved the deployment of the over the Kargil Sector and identi-Indian Air Force, the operations fying the enemy, who were likely commenced on 26 May, 1999. The to have been hiding inside igloo approval came with a limitation like entrenchments. The Photo that the IAF would not cross the Reece Canberra was effectively used in the Kargil conflict and Air Vice Marshal (Dr.) Arjun brought the first photographic Subramaniam (Retd) writes, proof of enemy intrusion in our

"Although, the IAF was not deployed during the initial phase hit, the aircraft managed to land back safely at a nearby base. of Operation Vijay, it had not only alerted its fighter Squadrons, but On the morning of 26 May. 1999. IAF commenced air operasome aircraft were moved to the Valley for the impending operations by attacking enemy positions tions. IAF also commenced a and supply lines. The first strike large-scale airlift of troops, was launched at 06.30 hours by ammunition and stores into the MiG-21, MiG-27ML and MiG-23BN Sector. It also commenced aerial econnaissance-and-strike familiarisation. The rapid mobilisation ensured that the IAF was ready for undertaking wide-ranging fullscale military operations by the morning of 15 May."

The IAF began conducting ini-

tial reconnaissance sorties over

the Kargil heights as early as 10

May 1999, less than a week after

the presence of the enemy incur-

sion was first confirmed. On 12

May, an IAF Helicopter was fired

upon near the most forward-based

Pakistani positions overlooking

Kargil and landed uneventfully

few days, IAF Jaguar fighters con-

with a damaged rotor. In the next

ducted Tactical Reconnaissance

sorties in the Kargil area to gath-

fighters. MiG-29 on Combat Air Patrol provided Air Defence cover to strike aircraft. Post-strike, Canberra carried out recce to assess the damage inflicted on the In the initial few days, the IAF suffered a few losses. Between 27 and 28 May, the IAF lost two aircraft, a MiG-21, a MiG-27 and a helicopter, Mi-17, On 27 May, the MiG-

27. flown by Flight Lieutenant Kambampati Nachiketa, developed mechanical problems forcing the pilot to eject. The MiG-21, flown by Squadron Leader Ajay Ahuja orbiting in the area to look Flight Lieutenant for Kambampati Nachiketa, was shot down by a shoulder fired heat

World Brother's Day: Celebrating the Bond of Brotherhood



bserved on May 24, World Brother's Day honours the special relationship shared between brothers, by blood or by bond. It's a day to appreciate the unwavering support, camaraderie, and lifelong memories that brothers bring into our lives. Whether it's a childhood partner-in-crime, a protective older sibling, or a brother-like friend, this day encourages us to express gratitude for their presence. Families and friends mark the occasion with heartfelt messages, calls, and small gestures of love. In a fast-paced world, World Brother's Day reminds us to cherish the often-understated yet powerful connection of brotherhood.





Healthy Heart! Desi Breakfast Delights That Love Your Heart Back!

Operation Safed Sagar



grew up into a major supply depot. The strike of 16 June and 17 June by MiG27s and Mirage-2000s were levastating and later attacks in the area ensured destruction of fresh Pakistani attempts to reuse the base. Each airstrike at the end was result of a carefully planned chain of events spanning several areas of specialisa tion. An airstrike had following components: (a) Recce mission(s).

(b) Airstrike mission(s). (c) Battle Damage Assessment

BDA) mission(s). (d) If so dictated by results of BDA, or by follow-up recce, repeated airstrikes

As a result of these attacks, severe damage to enemy personnel and equipment became apparent in various areas. Any time the target was spotted, a very high success rate invariably resulted. On 24 June, the IAF used LGBs

A

territory. Despite taking a missile

beyond the call of duty while searching for a downed brother officer. On 28 May, 1999 Nubra formation, 4 x Mi-17, were tasked to strike 'Point 5140' feature, located two kms North of Tololing. Nubra formation took off in time and all went on perfectly well. However, Flight Lieutenant Subramaniam Muhilan was flying the Nubra-3 formation which got hit by the Stinger Missile. Despite Flight Lieutenant Muhilan's best effort to control the damaged helicopter. it crashed killing him and all his crew members. He was awarded Vayu Sena Medal Posthumously. Wing Commander (later Air Commodore) Anil Kumar Sinha was the leader of the four aircraft formation. The rocket attack launched by the formation, despite the loss of the helicopter, was successful and inflicted heavy casualties on the enemy. Wing

ing exceptional courage in going

Commander Anil Kumar Sinha was awarded with the Vir Chakra. It was the air strikes conducted by the Indian Air Force on some of the key locations, that dramatical ly altered the equation in favour of India. The most prominent among them is the strike on the Muntho Dhalo. The Pakistani had built a supply camp in a bowl-shaped valseeking missile. Squadron Leader ley at Muntho. Over the days, it

to decimate the enemy on Tiger Hill. The IAF continued to mount egendary Air Commodore Jasjit Singh in his book, Kargil 1999: Pakistan's Fourth War for Kashmir concludes, "If India can beat a professional military force equipped with modern firepower, on the ground and at a time of Pakistan's choice, with the initiative also in its hands, with strategic and tactical surprise almost complete, then, India can beat Pakistan anytime, anywhere." Ajay Ahuja was awarded Vir search and destroy missions when Chakra Posthumously for display- on 05 July, a large Nissan hut in the Tiger Hill area was destroyed.

Two days later, on 07 July, the IAF struck a logistics camp in the same area. Earlier, despite bad weather restricting flying, on 03 June, three enemy camps were destroyed. With Indian troops in very close proximity to the enemy, air attacks had to be carefully executed or on occasions even called off till a confirmation was received from the army that Indian troops were out of harm's way. On 08 June, the IAF engaged targets in the Mushkoh Valley where the Pakistan Army had

many storage dumps and bunkers.

The Indian Air Force strike operations ended on 12 July, 1999. Overall during the air campaign, the IAF flew 550 strike missions, 150 reconnaissance missions, and over 500 escort flights. The IAF also flew 2185 helicopter sorties, logging 925 flying hours, for casualty evacuation and air transport operations.

CONCLUSION

This was the first-time combat air power has been used in the high mountain ranges above 15,000 ft altitude. The Indian Air Force was equipped with supersonic fighter aircraft. India had not used the combat components of its air force either in the 1962 War with China or in the Siachen conflict with Pakistan. The decision to deploy Air Force and the sheer professionalism of the Indian Air Force rapidly adapted itself to the chalenge of offensive air operations in the high Himalavan terrain while ensuring that Indian own troops did not become victims of 'friendly fire' as has happened so often in other air forces. At the operational evel, IAF's air operations during the Kargil conflict clearly stand out amongst many other significant achievements. It showcased IAF ability to adapt, prioritise and deliver in a hitherto new operational environment. The images of the pinpoint LGB attacks on Tiger Hill by Mirage aircraft as well as the destruction of main logistic node at Muntho Dhalo will forever remind us of IAF's professionalism and resolve.

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ZITS



1. The South Indian Heartthrobs: Idli, Dosa & Co.

Good Morning,

ight, fluffy, and fermented, L idlis are every cardiologist's dream. Made from urad dal and rice, these steamed delights are low in fat and rich in complex carbs. Their fermentation process adds a bonus of gutfriendly probiotics. Pair them with coconut chutney (go easy on the oil) and sambar (packed with

hey say breakfast is the most important meal of the day, but what if it could also be the most

rich culinary diversity and growing health aware-

ness, it's easier than ever to whip up

a morning meal that doesn't just

satisfy your taste buds but also gives

your heart a warm hug. Whether

runs, or simply trying to start your

lay on a healthy note, here's a guide

to heart-friendly Indian breakfast

on guilt, and great for the ticker.

veggies and lentils), and you've got a fiber-rich, antioxidantloaded meal. Want something crispier? Opt for dosa made with a similar batter, but try making it with less oil or ghee. You can even experiment with oats or ragi dosa, millet-based versions that are kind to both your heart and

#FOOD-TALK

2. Poha with a Pulse

D oha is a breakfast classic in many Indian households, but did you know this humble dish is also heart-smart? Made from flattened rice, it's light, easy to digest, and when tossed with veggies, mustard seeds, and a sprinkle of peanuts, it becomes a great

3. Millet Mania: Ragi , Bajra & Jowar Bowls

he ancient grains are back in style, and with good reason. Millets like ragi, bajra, and jowar are rich in fiber, magnesium, and potassium, all of which are known to support healthy blood pressure and cholesterol levels. Whip up a warm

peas. These meals keep you full, regulate blood sugar, and are deliciously rustic. 4. Moong Dal Chilla: The Pancake Your Heart Approves

ragi porridge with a splash of

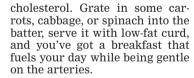
almond milk, jaggery, and

chopped fruits. Or go sayory with

baira upma or jowar khichdi

loaded with carrots, beans, and

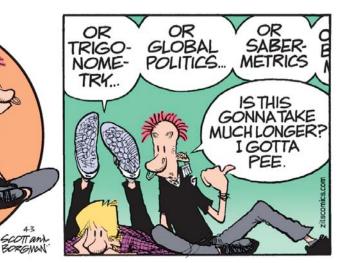
🔿 hillas are basically Indian-U style savoury pancakes, and moong dal chilla is a powerhouse. High in protein, low in fat, and brimming with fiber, it's a perfect start for those watching their on the arteries.





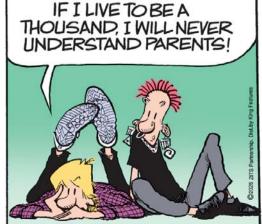
dding a handful of nuts like A almonds, walnuts, and pistachios to your morning routine can work wonders. These are rich in unsaturated fats and help lower bad cholesterol. Just don't go overboard. a closed fistful a day is plenty.













your waistline. source of good fats and dietary fiber. To elevate the heart-health quotient, throw in some boiled moong sprouts or kidney beans.

Delicious A handful of pomegranate seeds on top not only adds a sweet zing but also loads up on antioxidants.

lowering cholesterol

f your breakfast isn't complete without chai, switch to green tea or add tulsi leaves for a heart-soothing twist. And ditch the sugar honey or jaggery in moderation is a better bet Pair your tea with homemade baked snacks like oats laddoos or roasted chana instead of deepfried samosas or kachoris. Your heart will thank you later.



5. The Smooth(ie) Operator

W ho said smoothies are just a Western trend? Indianize your smoothie bowl with fruits like banana, mango, or papaya blended with oats, low-fat yogurt, and a spoonful of flax or chia seeds. These seeds are tiny heroes, rich in omega-3 fatty acids and fiber,

they're champions at reducing inflammation and improving heart health. Top your smoothie with berries, a sprinkle of crushed almonds, and maybe, a mint leaf or two for that extra flair.

6. Daliya, But Make It

D aliya (broken wheat) might have the reputation of being an old-school health food, but with a little creativity, it can become your breakfast superstar. Rich in fiber and whole grains, it's fantastic for

Prepare a sayory version with mustard seeds, curry leaves, and mixed vegetables, or go sweet with milk, dates, and slivered nuts. The bonus? It keeps you full for hours without weighing you down.

7. Tea-Time Tweaks

In a Nutshell (Literally)



By Jerry Scott & Jim Borgman