

[Click here to print](#)

# MailOnline

## Satellites unlock secret of India's vanishing water

Digg

Last updated at 7:52 AM on 14th August 2009

Groundwater levels have fallen 20 per cent more than expected in northern [India](#), Nasa satellite images have revealed.

A team of experts has found the underwater supply in the region is being pumped and consumed by the burgeoning population, and could spark a major food and water crisis.

The study, led by Matthew Rodell from Nasa said groundwater across three states, including the New Delhi region, dropped at a rate of 1.6 inches per year between 2002 and 2008.



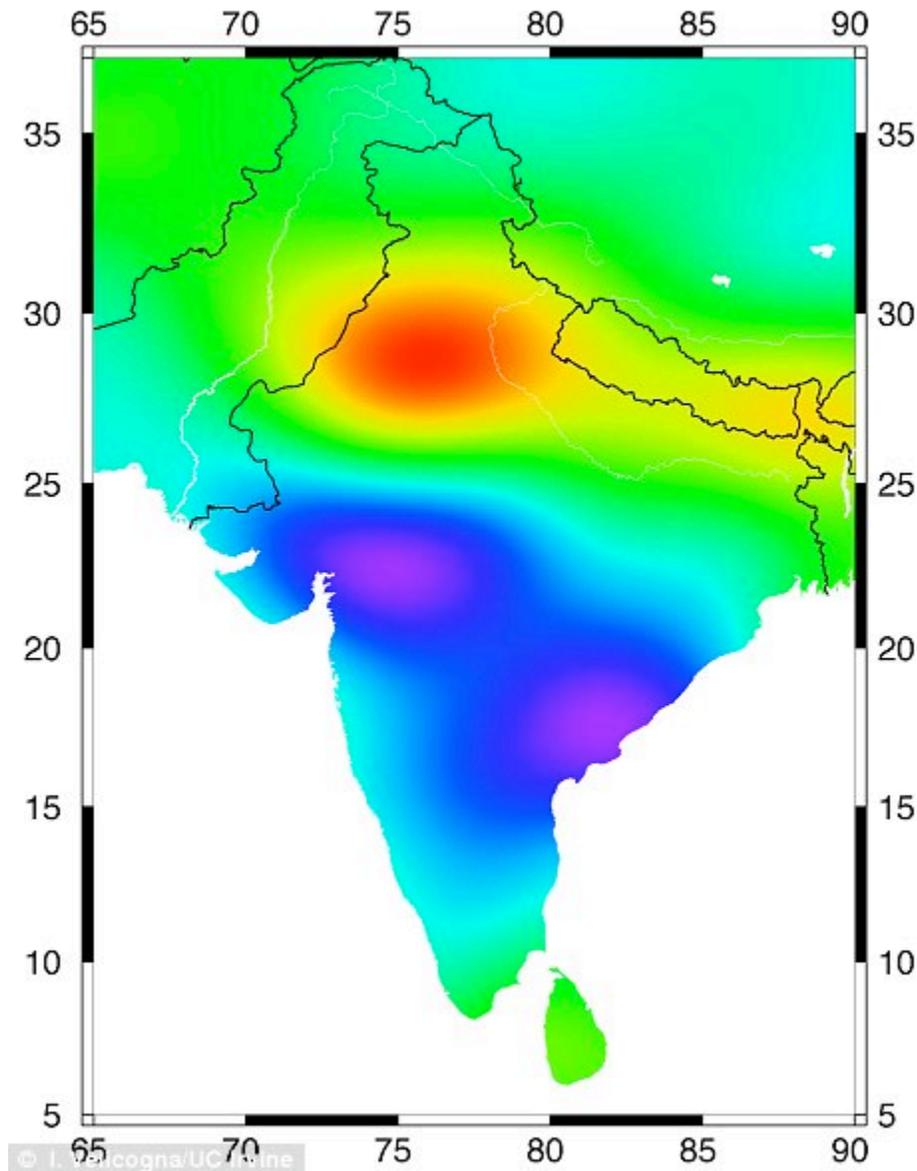
**A woman labourer collects water to take to her village, 80miles from Amritsar, India. Excessive irrigation has caused groundwater levels in north India to drop**

That depletion is double the capacity of India's largest reservoir and is around 20 per cent higher than previous estimates by Indian authorities. More than 110 million people live across the three states, or nearly twice the population of Britain.

The findings, published in the journal Nature, are based on data from Nasa's Gravity Recovery and Climate Experiment (GRACE).

A pair of satellites orbiting 300 miles above Earth's surface sense changes in Earth's gravity field. Changes in underground water masses affect gravity enough to provide a signal that can be measured by the GRACE spacecraft.

Groundwater levels respond slowly to changes in weather and can take months or years to replenish once pumped for irrigation.



The map shows groundwater changes in India during 2002-08, with losses in red and gains in blue, based on GRACE satellite observations.

'GRACE provides strong evidence that current rates of water extraction are not sustainable,' said Rodell.

'If measures are not taken to ensure sustainable groundwater usage, the consequences for the 114 million residents of the region may include a collapse of agricultural output and severe shortages of potable water.'

The trend is particularly alarming because it came in years where there was no shortage of rainfall.

The Indian government released an environmental report this week that said a growing percentage of its groundwater was neither drinkable nor could be used for irrigation.

'This illustrates that degraded water quality can contribute to water scarcity as it limits its availability for both human use and the ecosystem,' the Indian report said.

Places:

[India](#)

Organisations:

[National Aeronautics and Space Administration](#)

## Comments (6)

- [Newest](#)
- [Oldest](#)
- [Best rated](#)
- [Worst rated](#)

[View all](#)

it is state level politicians in states of punjab and haryana who are largely to blame.they provide free or nearly free electricity to farmers to pump out as much water as they please.in the summer months paddy is sown which requires water in huge quantities.

- dhiman., morinda punjab india, 16/8/2009 14:48

Click to rate \_\_ Rating (0)

[Report abuse](#)

Mark of USA.... Haven't you ever heard of China's 'one child' policy? You can't get much more draconian than that, with even forced abortions! Just think how you in the USA would respond to such a policy!  
Don't blame the 'population either for water shortages. It's industry, and heavy industry in particular, which consumes vastly more water than people, animals, and even agriculture. And who buys all those goods resulting from steel, cement, and electronics manufacture? Yes, that's right, those of us in the wealthy western world!  
Population growth DOES need to be controlled but first and foremost we should be limiting our own gross consumerism and consumption and finding ways to live which are REALLY sustainable.

- Adrian, Breil, France, 16/8/2009 07:14

Click to rate \_\_ Rating 3

[Report abuse](#)

I would be interested to see a similar map for the UK. This country is even more densely populated than India (especially SE England which is also the driest part of the UK).

We have a population more than Canada and Australia combined and it seems Alan Johnson (Home Secretary) countenances more and more immigration with the population rising to 70 million.

If Southern England becomes warmer and drier as climate change experts predict then problems usually associated with distant poorer countries will start showing themselves here.

- PeterLancs, Lancaster England, 14/8/2009 17:05

Click to rate \_\_ Rating 7

[Report abuse](#)

It is not the people who are over-pumping the aquifers, it is the numerous Coca-cola and Fanta factories which use two to three liters of water to produce one liter of Coke or Fanta.

- Vierotchka, Geneva, Switzerland, 13/8/2009 21:01

Click to rate [\\_ \\_](#) Rating 30

[Report abuse](#)

there is no secret, its called overpopulation. To think this is caused by anything else is just plane stupid and ignorant. India's population growth has skyrocketed in the last 10 years and with no limits enforced by its govt so population can FALL, not explode, resources will become scarce among its people.

No one else is to blame other than the Indian Govt and the Indian people who seem to think they can fit any amount of population they want within its borders without any consequences. India is not the only country with this problem, China and the US are also guilty of their sins for not controlling their population.

its time to grow up and realize 8 billion people on the planet is simply too many. Its time for India to grow up and realize 1.4 billion people in their small territory, is too many. Wake up!

- Mark, USA, 13/8/2009 19:05

Click to rate [\\_ \\_](#) Rating 29

[Report abuse](#)

They should control there population growth .

- GAVIN, london, 13/8/2009 14:27

Click to rate [\\_ \\_](#) Rating 11

[Report abuse](#)

The views expressed in the contents above are those of our users and do not necessarily reflect the views of MailOnline.

- [Headlines](#)
- [Most Read](#)
- [Google finally explain Martian-inspired UFO riddle](#)
- [Think flying economy is bad now? New aircraft design puts passengers face-to-face in rows for budget travel](#)
- [British explorer breaks air balloon world record for voyage in capsule the size of a laundry basket](#)
- [Noel Edmonds launches Cosmic Ordering app for iPhone users to call on the universe for help](#)
- [Electric superbike smashes speed record by breaking through 150mph mark](#)
- [Fears over supercat danger posed by domestic pets breeding with wild cats](#)
- [XBox 360 could save your life after researchers use graphics chip to investigate heart defects](#)
- [Michael Faraday powers to top inventor in British history honour](#)
- [The 'GI' helmet that will help our troops to shoot straighter](#)
- [Life is sweet upon the front seat of a tandem bicycle made for... R2D2](#)
- [3D TV: Now leaping out of the cinema and into a living room near you](#)
- [Star quality: British amateur astronomer captures stunning award-winning shots of deep space](#)
- [Cellulite-busting tights that melt away fat with crystals go on sale](#)
- [Entertainment Weekly publishes world's first video advert that starts as you turn the page](#)
- [Urinating on your tomato plants could give you fruit four times larger](#)
- [The satellite link that keeps watch on your children](#)
- [Meet the 'Tiny-saurus': Little brother of giant T-Rex discovered in Chinese dig](#)
- [Write way to spot a liar: How your handwriting could betray if you're economical with the truth](#)
- [MORE SCIENCE](#)
- [Electric superbike smashes speed record by breaking through 150mph mark](#)
- [Noel Edmonds launches Cosmic Ordering app for iPhone users to call on the universe for help](#)
- [The 'GI' helmet that will help our troops to shoot straighter](#)
- [Stunning shots of thirsty bats swooping down for a drink from garden pond](#)

- [Write way to spot a liar: How your handwriting could betray if you're economical with the truth](#)
- [Michael Faraday powers to top inventor in British history honour](#)
- [Urinating on your tomato plants could give you fruit four times larger](#)
- [Star quality: British amateur astronomer wins photography prize with pictures of cosmos taken from his back garden](#)
- [XBox 360 could save your life after researchers use graphics chip to investigate heart defects](#)
- [Life is sweet upon the front seat of a tandem bicycle made for... R2D2](#)
- [A long time ago in a galaxy far, far away... Furthest star system discovered 13billion light years from Earth](#)
- [British explorer breaks air balloon world record for voyage in capsule the size of a laundry basket](#)
- [The truth is out there: Rush to solve Google's new UFO puzzle](#)
- [You think Heathrow is bad? A million snow geese stop over at wildlife refuge en route to wintering grounds](#)
- [And the stylish cavewoman is wearing this year... bright and garish clothes. 34,000 year-old threads found](#)
- [Lucky strike: Photographer captures dramatic lightning on early drive](#)
- [Entertainment Weekly publishes world's first video advert that starts as you turn the page](#)
- [On the wings of a dove: Spectacular rocket trails light up the evening sky](#)
- [Astronomers confirm first planet made of rock discovered outside solar system](#)
- [Meet the 'Tiny-saurus': Little brother of giant T-Rex discovered in Chinese dig](#)
- [MOST READ IN DETAIL](#)

## Science

[How stylish cavewomen wore bright and garish clothes 34,000 years ago](#)  
[They are normally pictured wearing drab furs and skins. But archaeologists have uncovered an extraordinary haul of pink, turquoise and black fibres.](#)

[100m in 6.13 seconds: Sarah the cheetah is the world's quickest mammal](#)  
[She would show even the mighty Usain Bolt two clean pairs of heels](#)

[Birds on the wire: Composer writes song based on positions of flock on telephone wires](#)  
[A musician has proven he is quite the songbird by creating a composition inspired by a flock perching on some telephone wires.](#)

[All the news from the British Science Festival](#)  
[The latest research in science, technology and engineering was revealed at the British Science Festival.](#)

Find this story at [www.dailymail.co.uk/sciencetech/article-1206285/Satellites-unlock-secret-Indias-vanishing-water.html](http://www.dailymail.co.uk/sciencetech/article-1206285/Satellites-unlock-secret-Indias-vanishing-water.html)

---

Published by Associated Newspapers Ltd  
Part of the Daily Mail, The Mail on Sunday & Metro Media Group

[© 2009 Associated Newspapers Ltd](#)