

# Keeping a technological eye on tropical forests.

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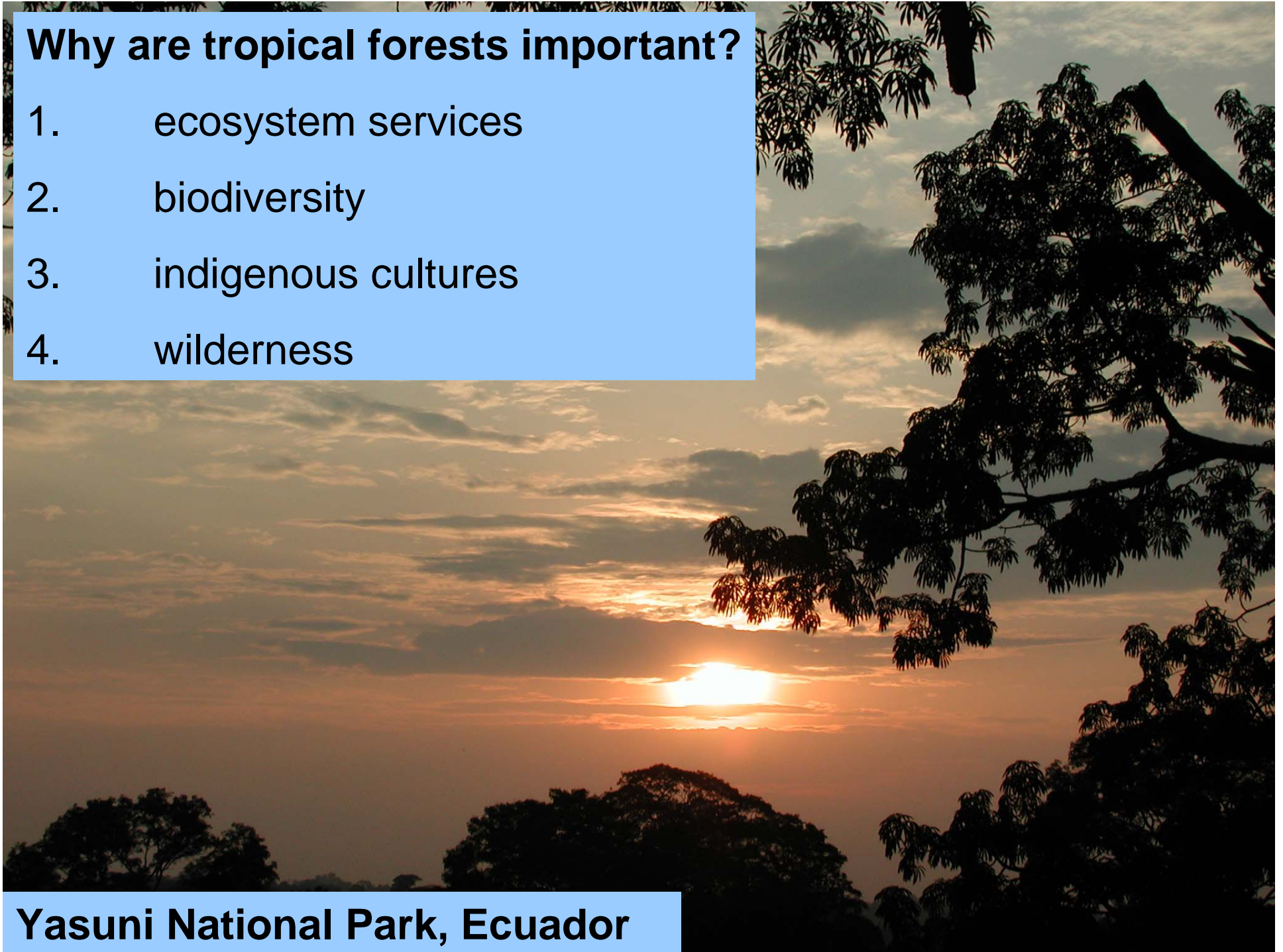
1. Why are tropical forests important?
2. What is happening to tropical forests and why?
3. What **are we** doing about it?
4. What **can you** do about it?

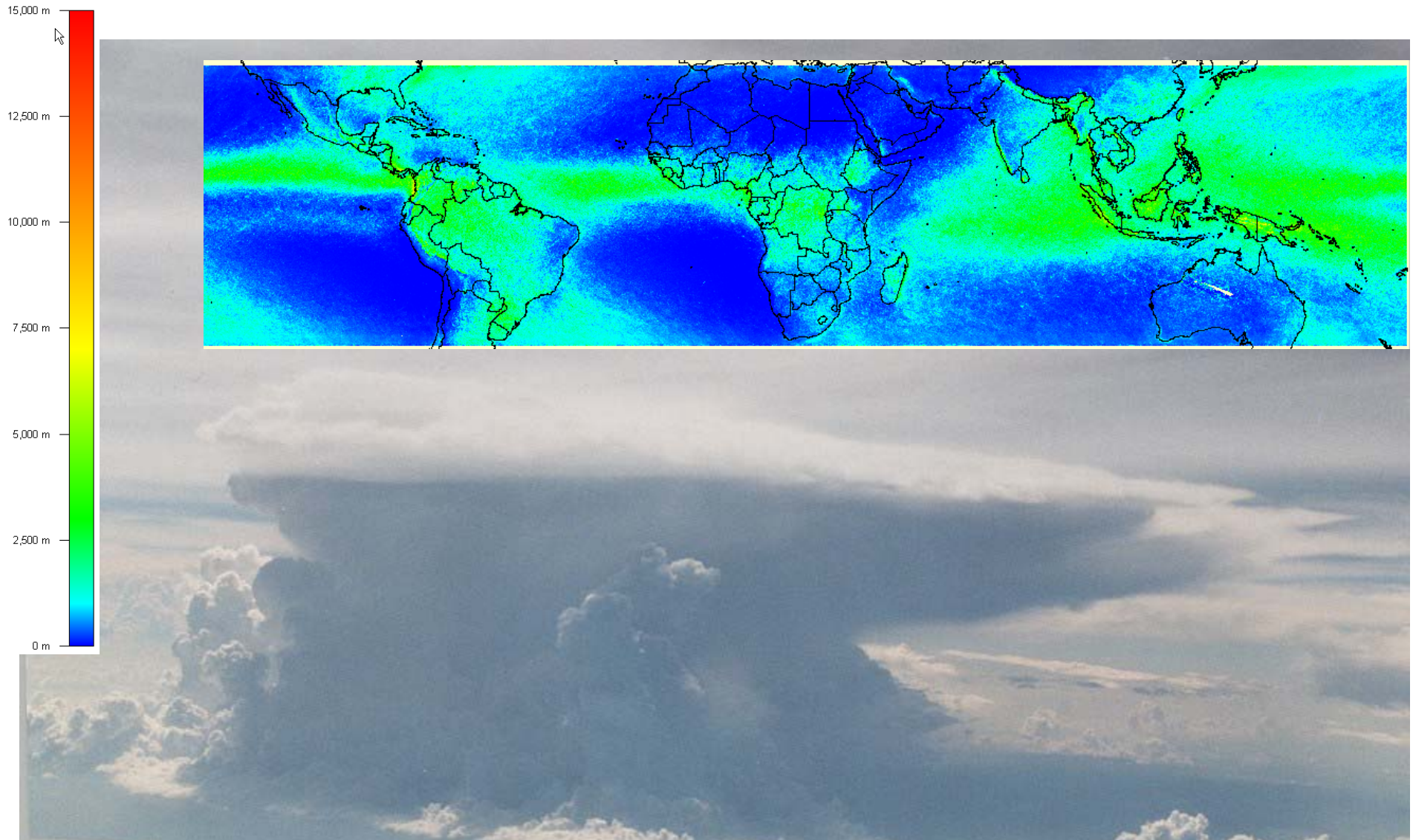


## Why are tropical forests important?

1. ecosystem services
2. biodiversity
3. indigenous cultures
4. wilderness

**Yasuni National Park, Ecuador**

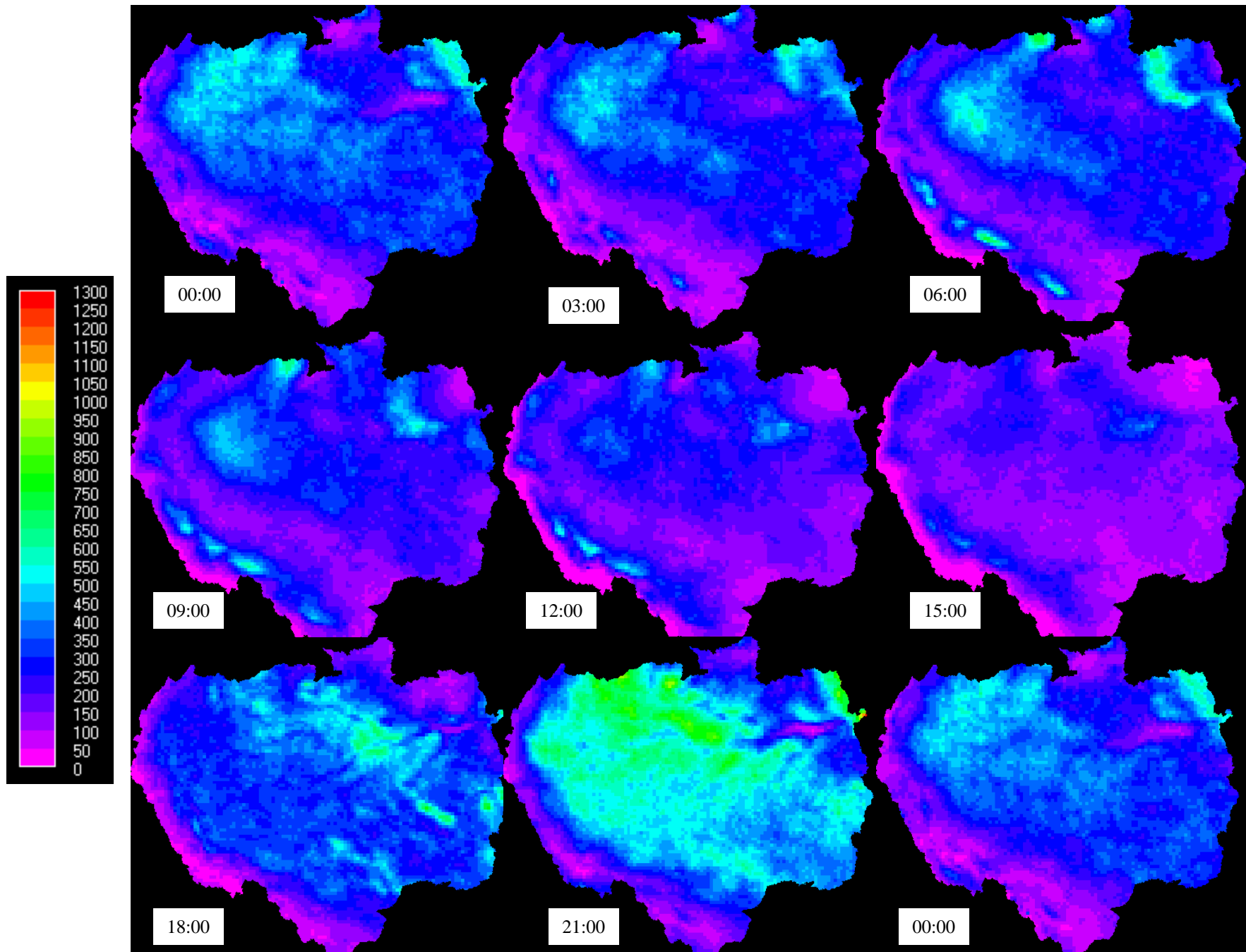




## **Ecosystem services:**

Benefits provided to us by nature for free and upon which we depend.

Tropical forests are widely considered the 'engine' of global rainfall



**The daily cycle of recycled rainfall in the Amazon (be indoors at 9pm!)**

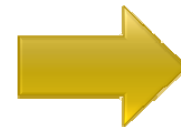
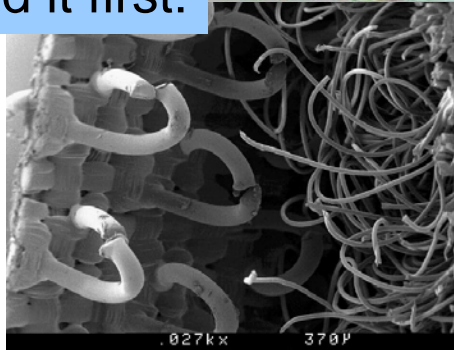
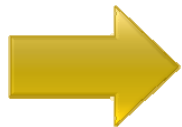
# Biodiversity:

The most amazing plants and animals are found in rainforests.

They have evolved to solve many problems we also need to solve (medicines, biomimicry)



Biomimicry: nature invented it first:

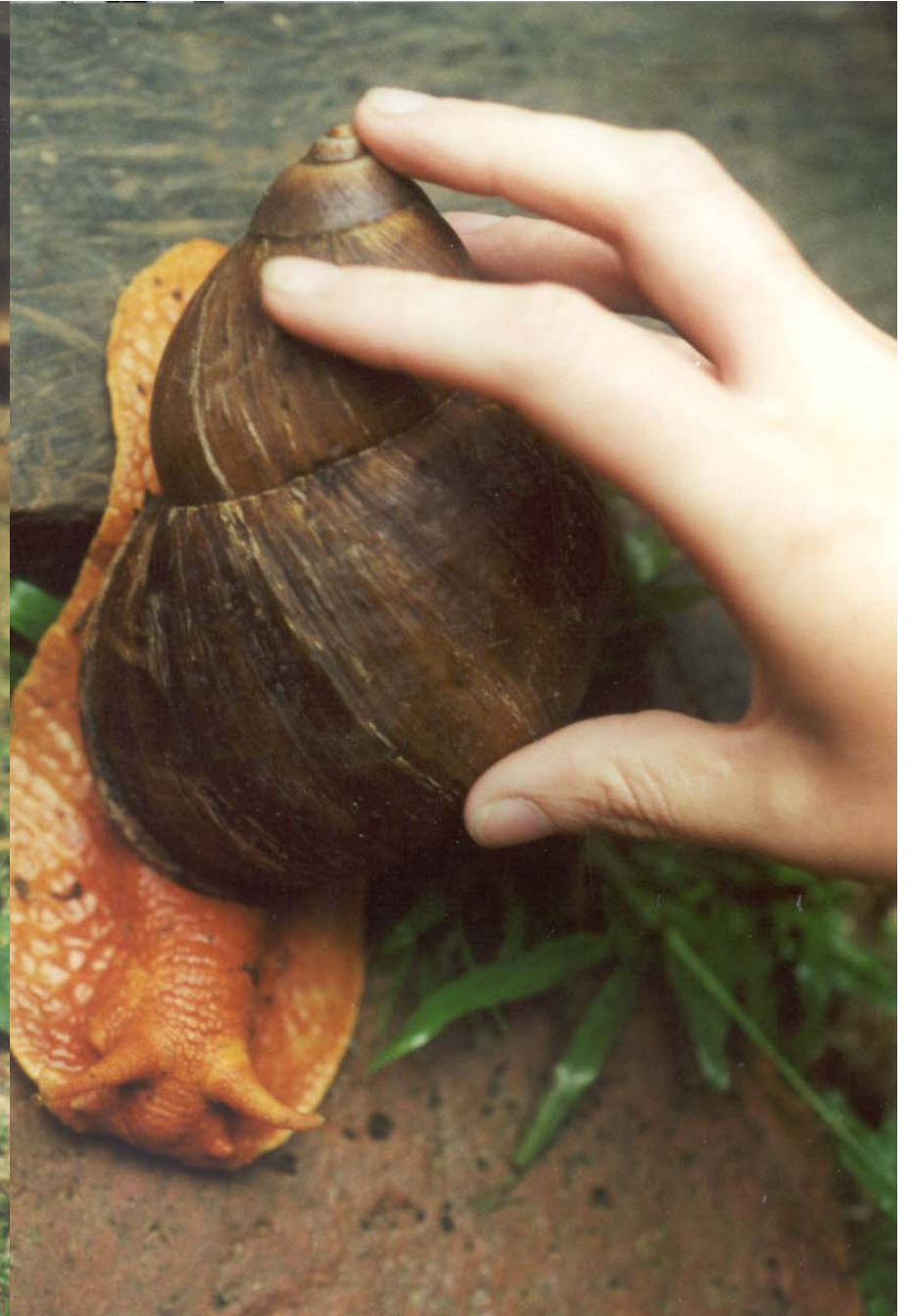




**Biodiversity: the tropical forest canopy is virtually unexplored (we know more about the Moon and Mars), yet most rainforest species are likely to live here**



**We are only just starting to explore tropical forest canopies  
If you do not mind heights and insects it is a nice job!**



**We have found some pretty 'alien' species in rainforests**



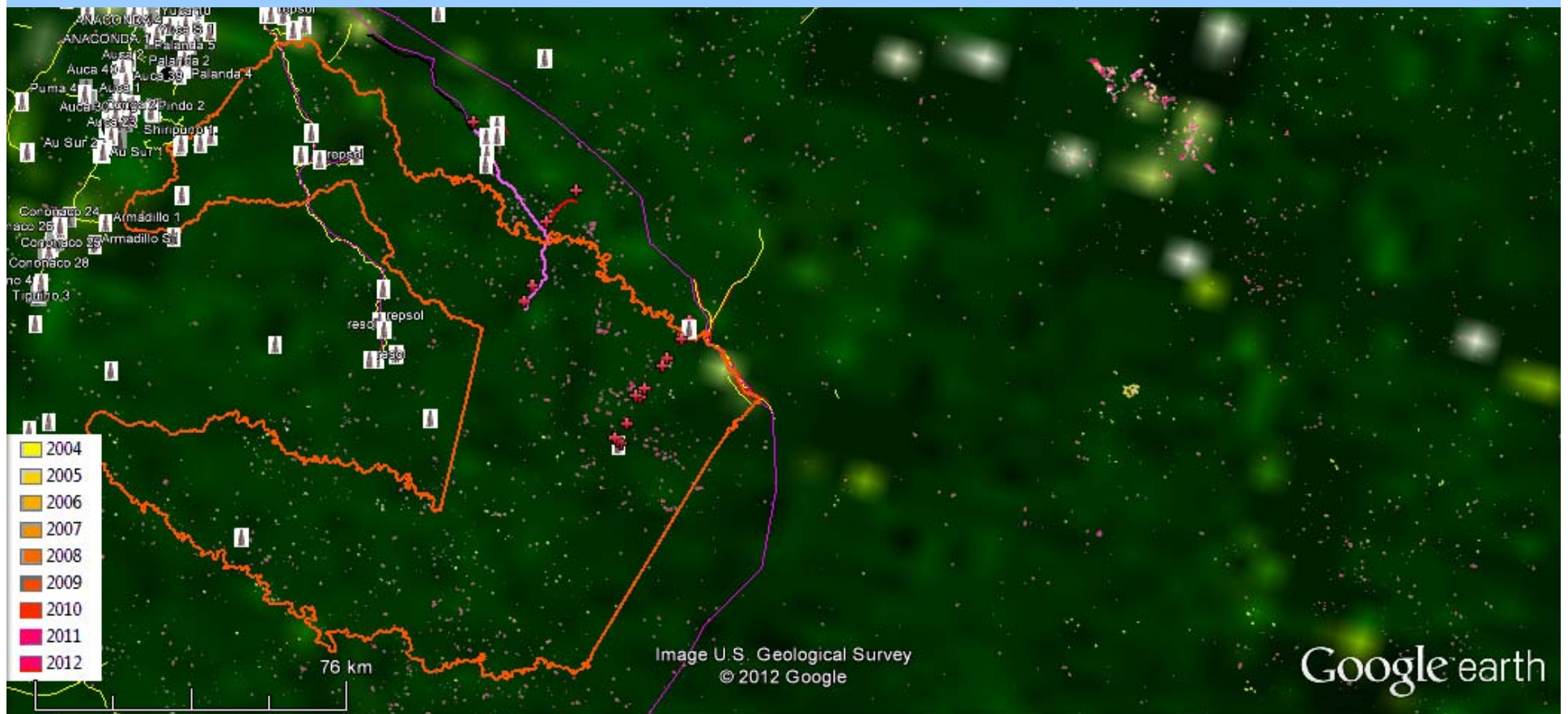
# What is happening to tropical forests and why?

logging for timber and paper

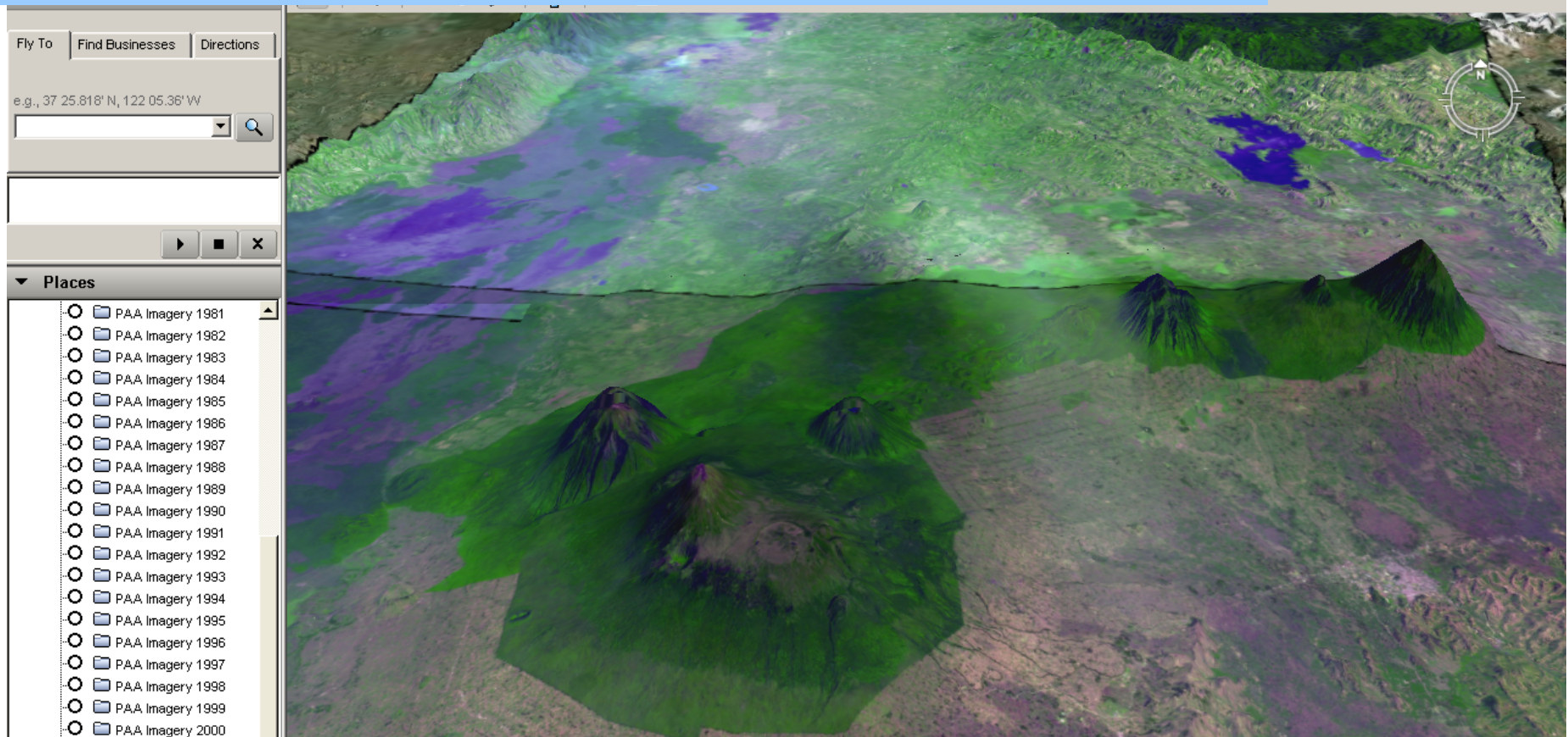
deforestation for subsistence or commercial agriculture

mining for metals and minerals

oil and gas exploitation



# What is happening to tropical forests and why?



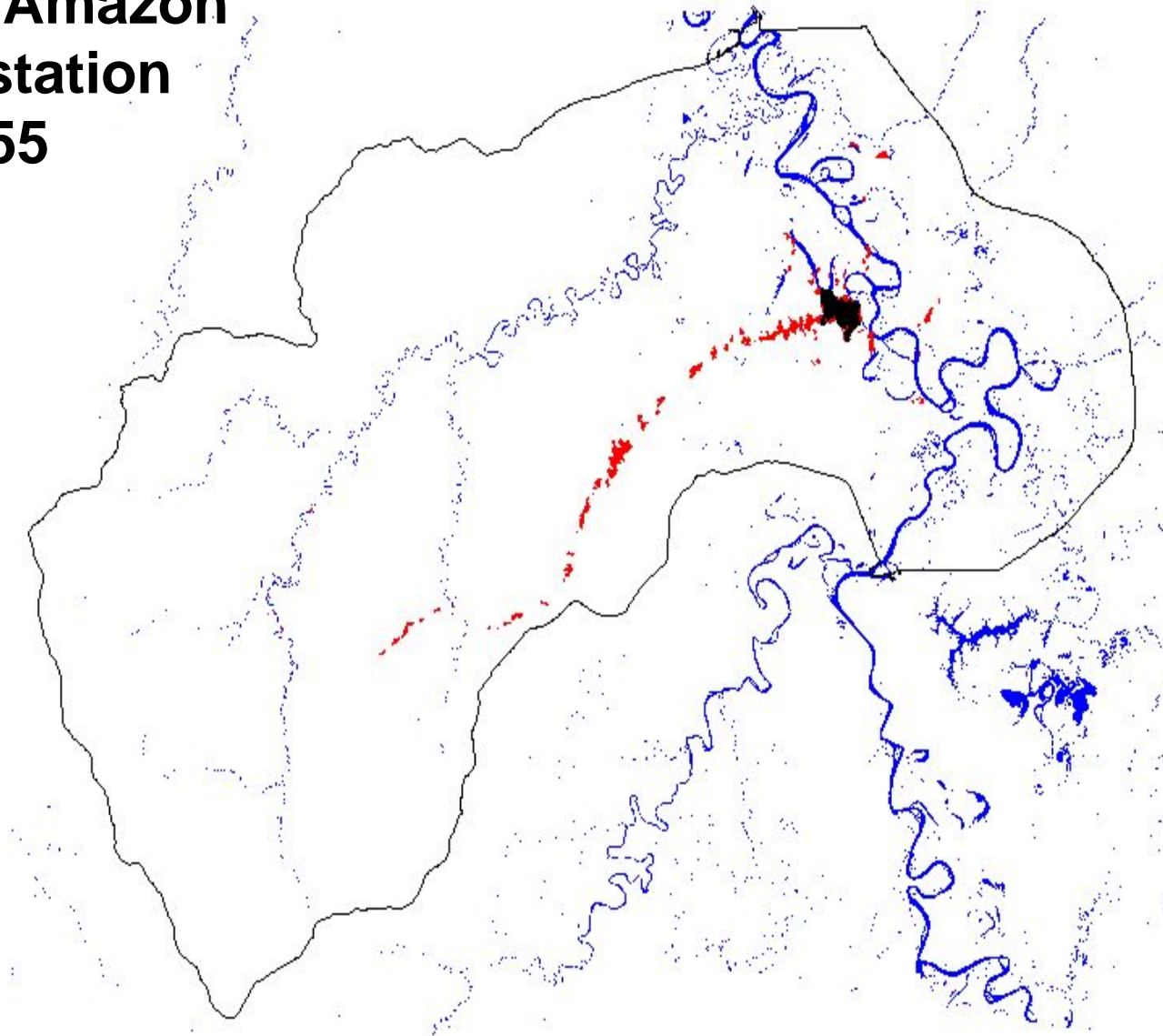
Most tropical forests (except the Congo and Amazon) are now small islands of forest in protected areas surrounded by agriculture e.g. Volcanoes National Park, Rwanda (famous for the Mountain Gorilla).

People need to make a living



# Access is a key driver of agriculturalisation

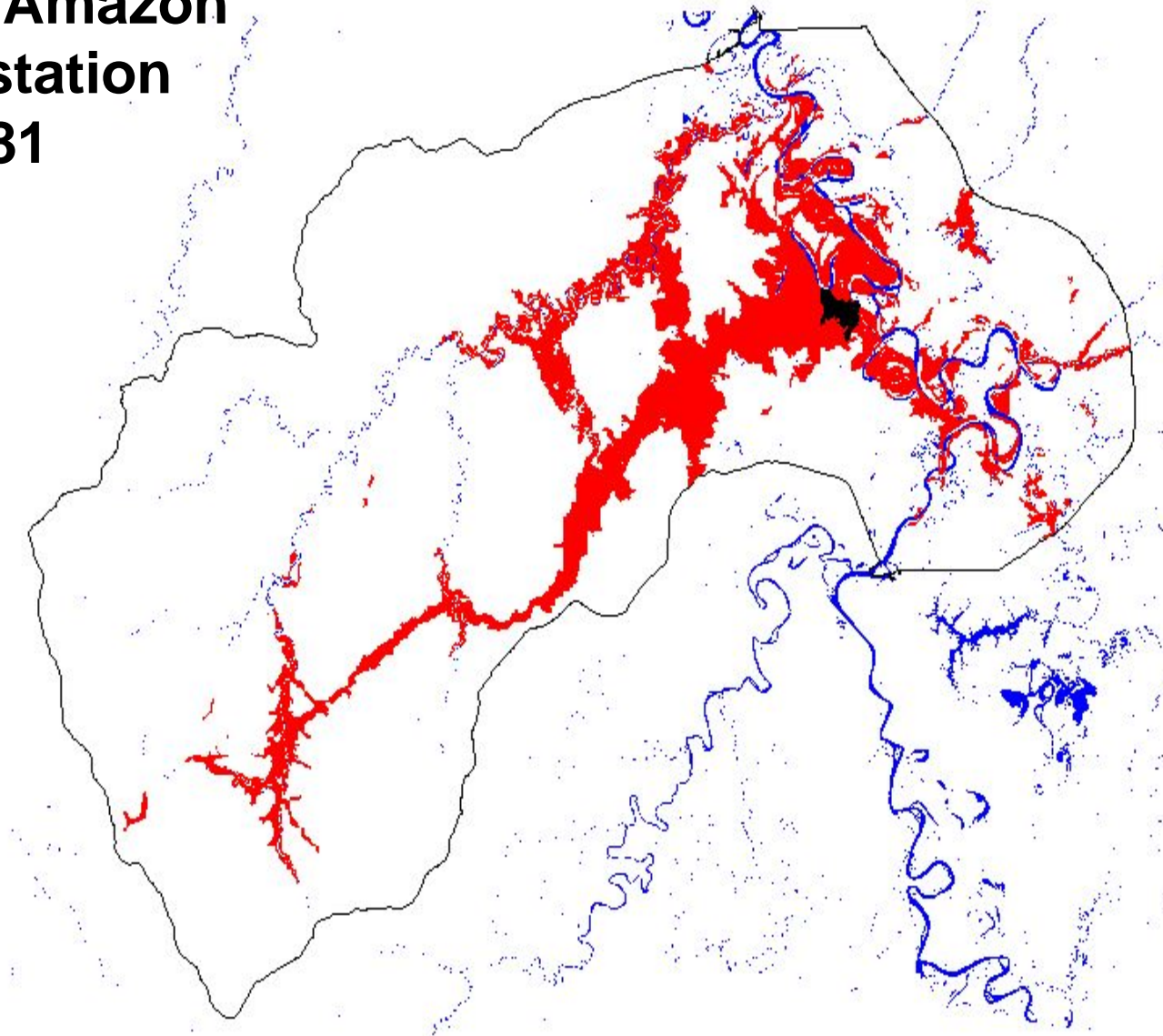
## Peruvian Amazon Deforestation 1955



Source: APODESA, IIAP, CIAT

# Access is a key driver of agriculturalisation

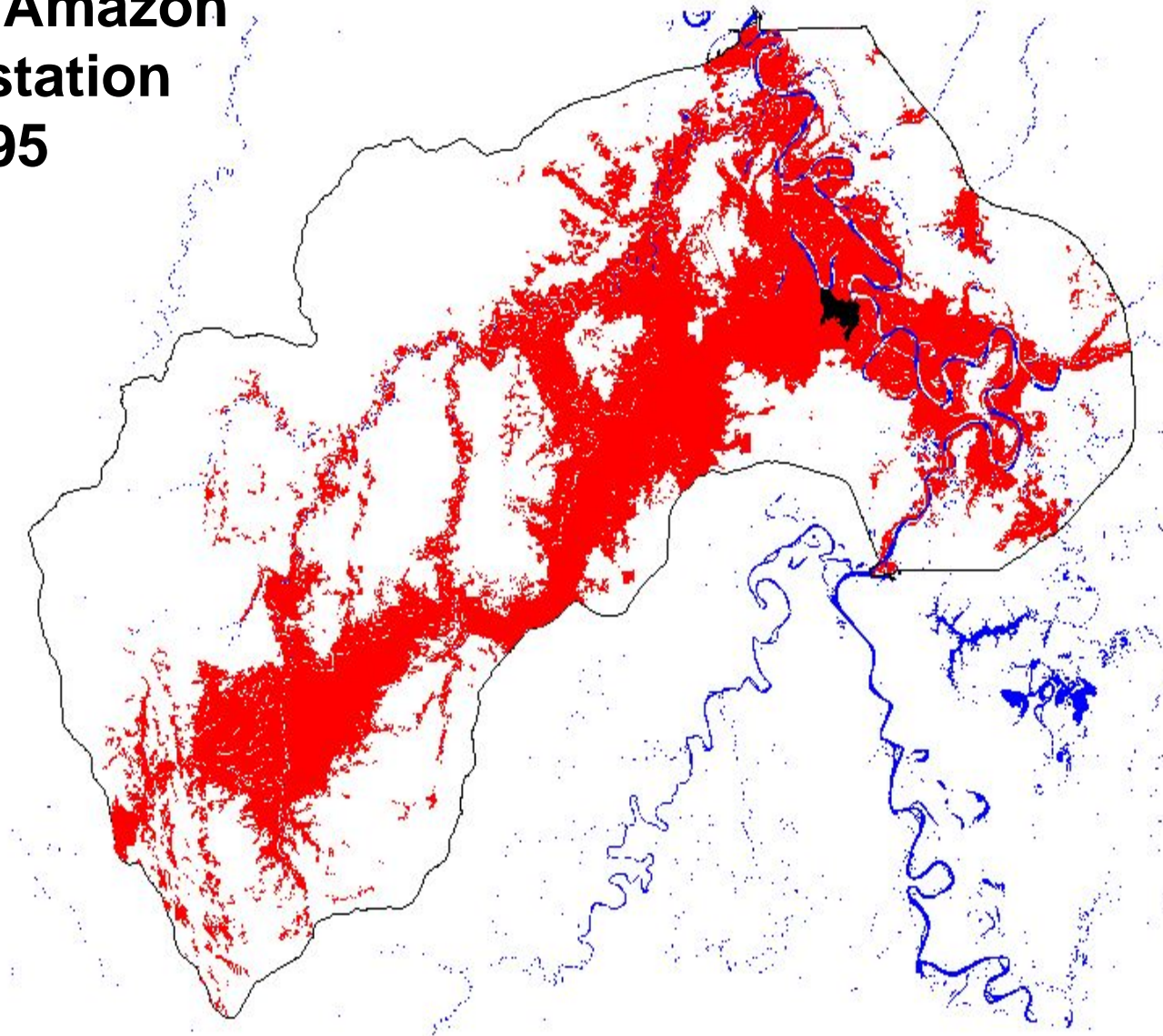
## Peruvian Amazon Deforestation 1981



Source: APODESA, IIAP, CIAT

## Access is a key driver of agriculturalisation

### Peruvian Amazon Deforestation 1995



Source: APODESA, IIAP, CIAT

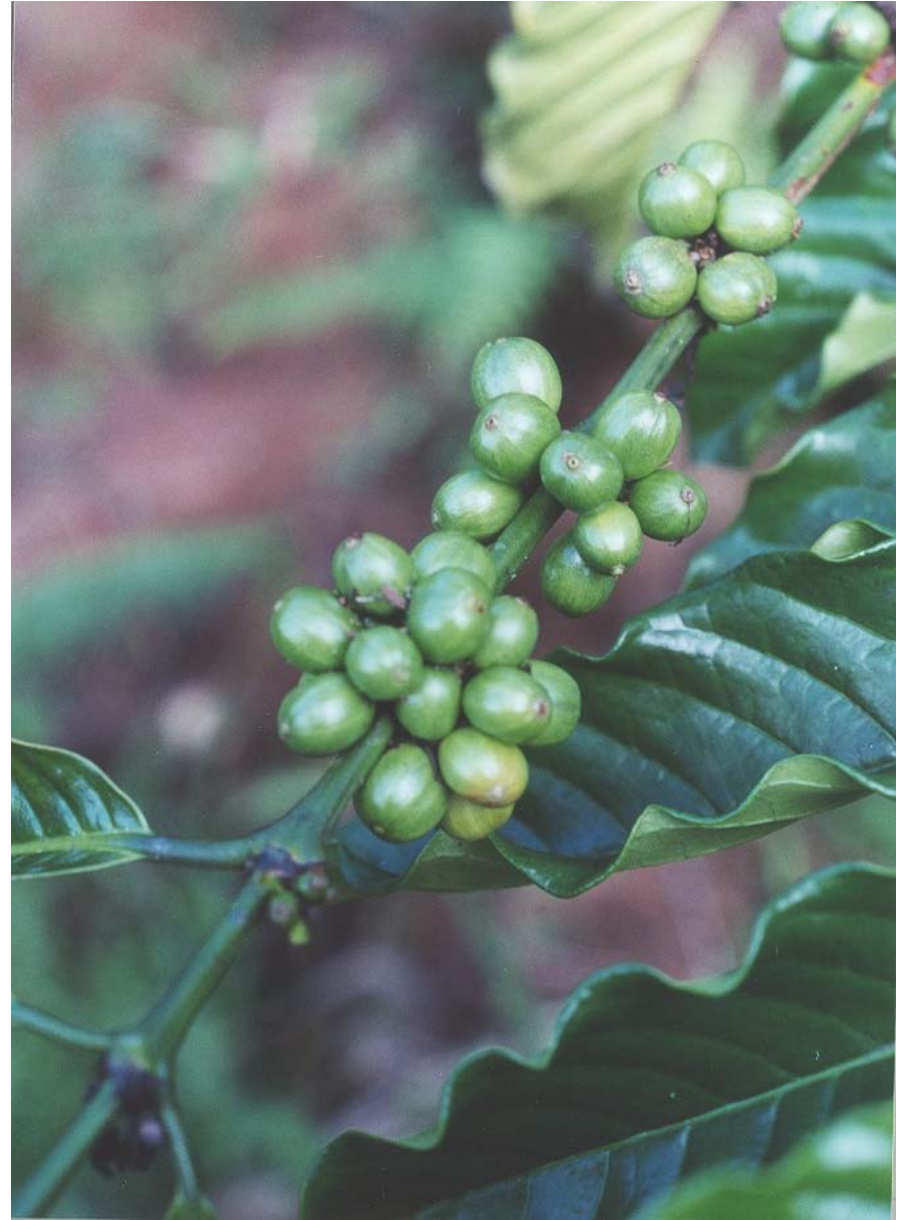
## Lowland cultivation



## Lowland cultivation



## Montane cultivation





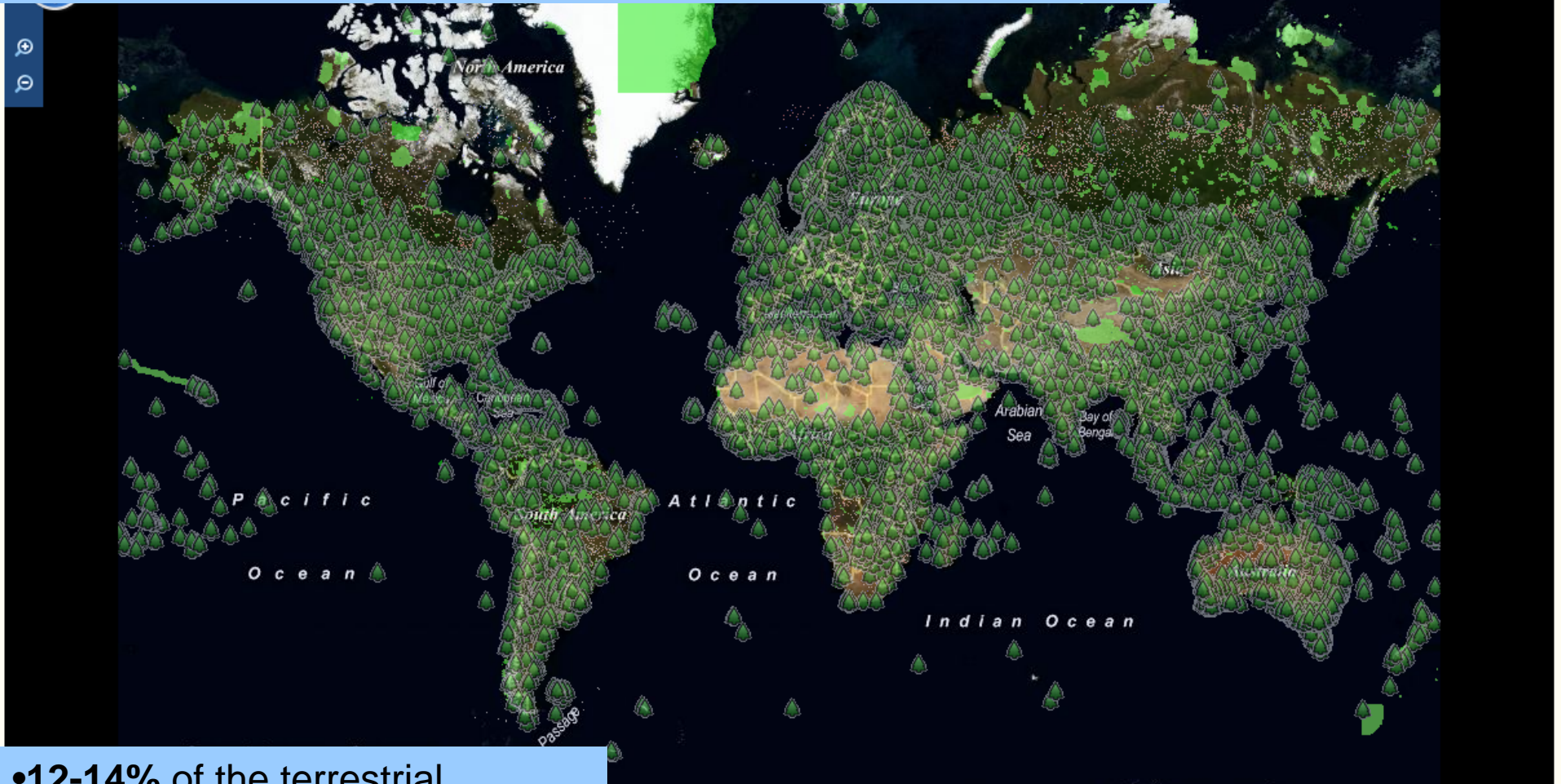
## Montane (illicit) cultivation



## Selective logging for timber, Colombian cloud forests



# What are we doing about it? – protected areas



•12-14% of the terrestrial surface is nominally protected (much more than oceans)

**BUT**

•Mean management budget: \$8.75 per km<sup>2</sup>/yr\*

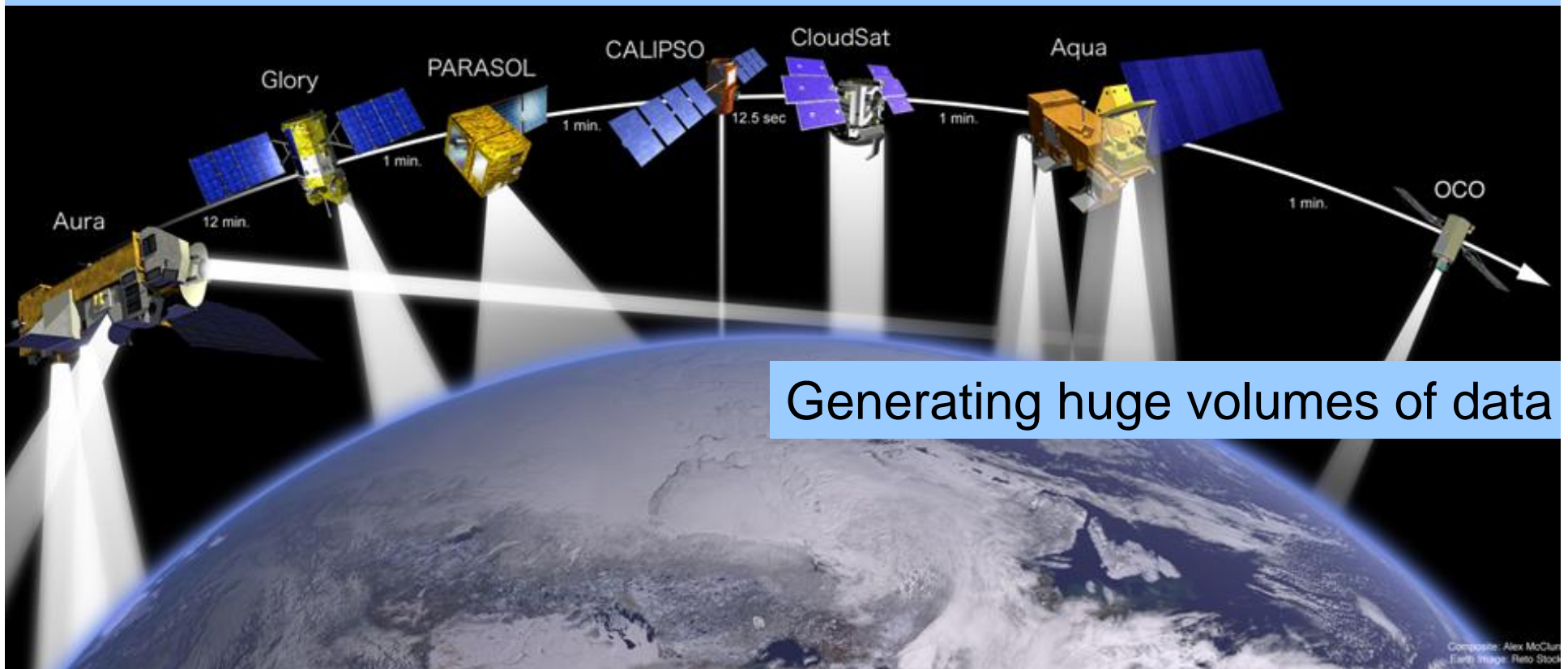
*PA data: (WCPA, UNEP-WCMC, IUCN)*

1872

\*estimated on the basis of James, A.N., Green, M.J.B. and Paine, J.R. 1999. A Global Review of Protected Area Budgets and Staffing. WCMC – World Conservation Press, Cambridge, UK. vi + 46pp

## What are we doing about it? – monitoring

As well as satellites and probes that are gazing out to the rest of the universe, we now have many that are looking back to Earth to monitor the environment



# We turn some of that data into information on deforestation

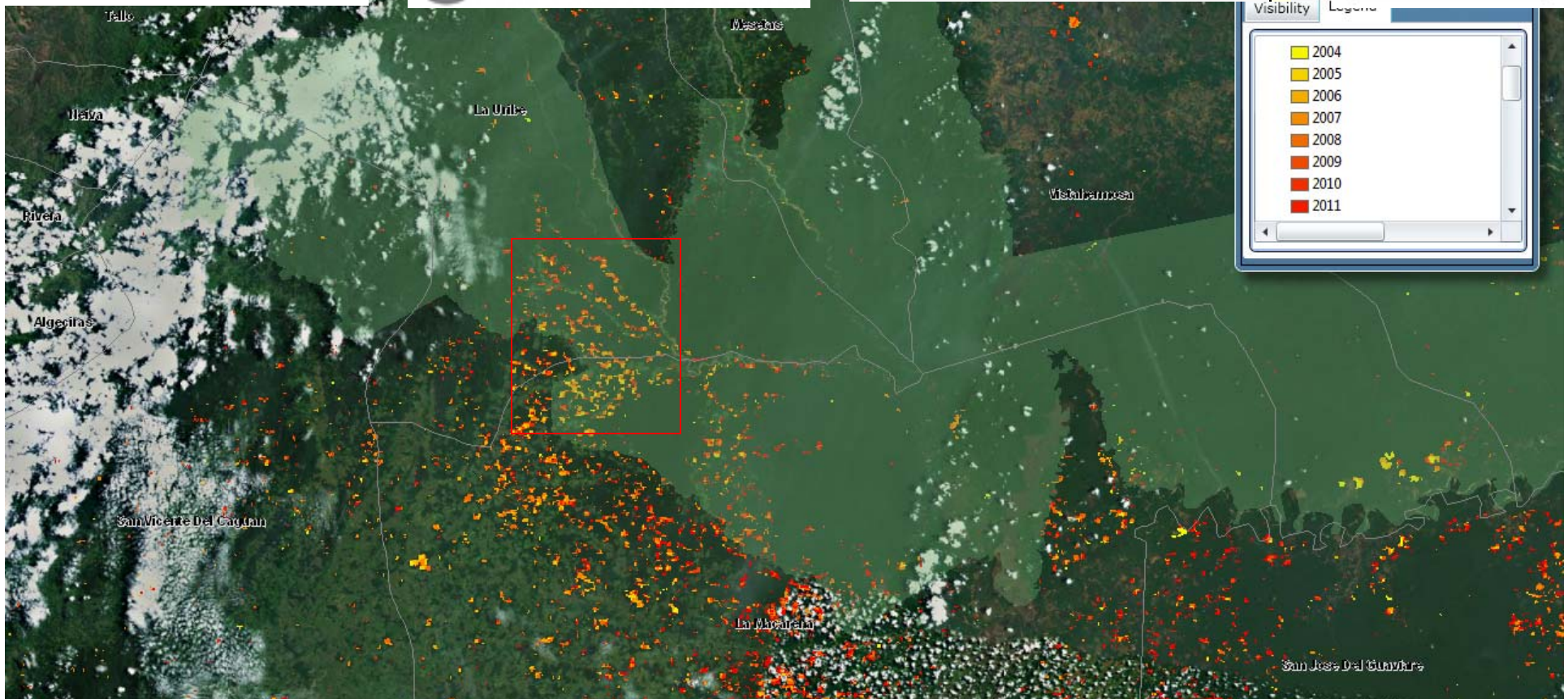
The Nature Conservancy  
SAVING THE LAST GREAT PLACES ON EARTH

CIAT  
Centro Internacional de Agricultura Tropical  
International Center for Tropical Agriculture

heig-vd

Haute Ecole d'Ingénierie et de Gestion  
du Canton de Vaud

KING'S  
College  
LONDON



Terra-i is dynamic, near real-time, 16 day monitoring of land cover change based on 'neural network' analysis of MODIS satellite data. The image shows deforestation in SE Colombia 2004-present (more red=more recent), see [www.terra-i.org](http://www.terra-i.org)

# What can you do about it?

1. Be aware and make others aware
2. Be careful what you buy and whether it was produced sustainably in tropical forest countries
3. Help fund effective conservation projects in tropical forests
4. Get involved in monitoring and mapping (crowdsourcing)

Adopt a plot to fund conservation projects in and outside of tropical forests [www.healthyplanet.org](http://www.healthyplanet.org)

Support projects creating locally managed reserves in critical zones [www.proaves.org](http://www.proaves.org)

Select and adopt a plot from this satellite image of Jubilee Pond, Richmond Park, United Kingdom

