



*Ministero degli Affari Esteri
e della Cooperazione Internazionale*



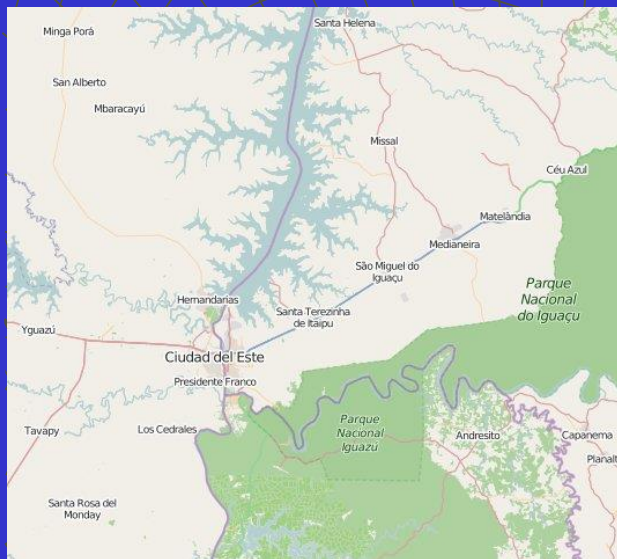
USO DE TELEDETECCIÓN EN PATRIMONIO NATURAL AREAS PROTEGIDAS.

Graciela Salinas de Salmuni
CONAE

gsalmuni@conae.gov.ar

Parque Nacional Iguazu

The Iguazú National Park is located in the north of the province of Misiones, Argentine Mesopotamia. It has an area of 550 km².



Parque Nacional Iguazu

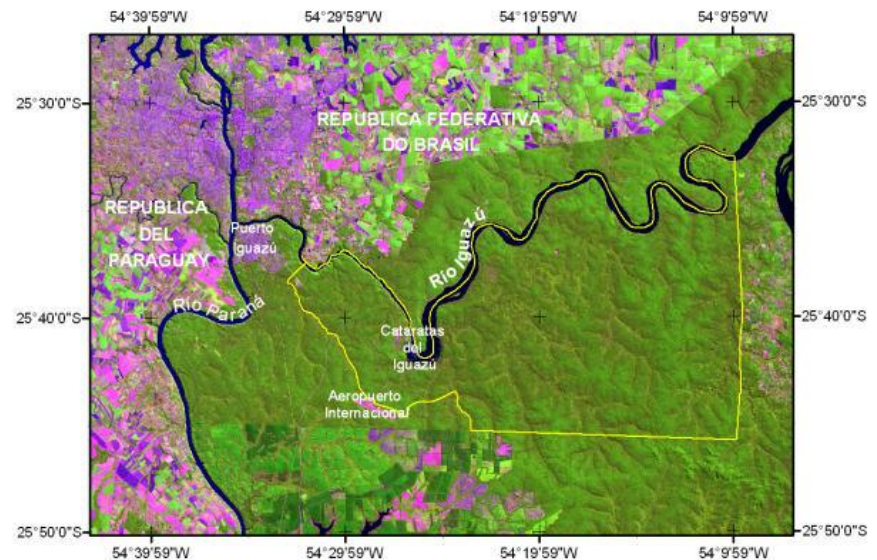
The park was created in 1934 and it contains one of the greatest natural beauties of Argentina, the Iguazu Falls, surrounded by the subtropical jungle. Across the Iguazu River lies its Brazilian counterpart (Iguaçu National Park). Both sites were declared **World Heritage Sites** by UNESCO, in 1984.



Administración de Parques Nacionales
Sistema de Información de Biodiversidad

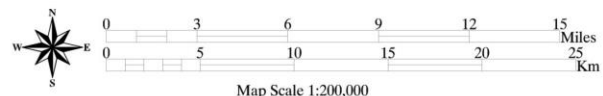
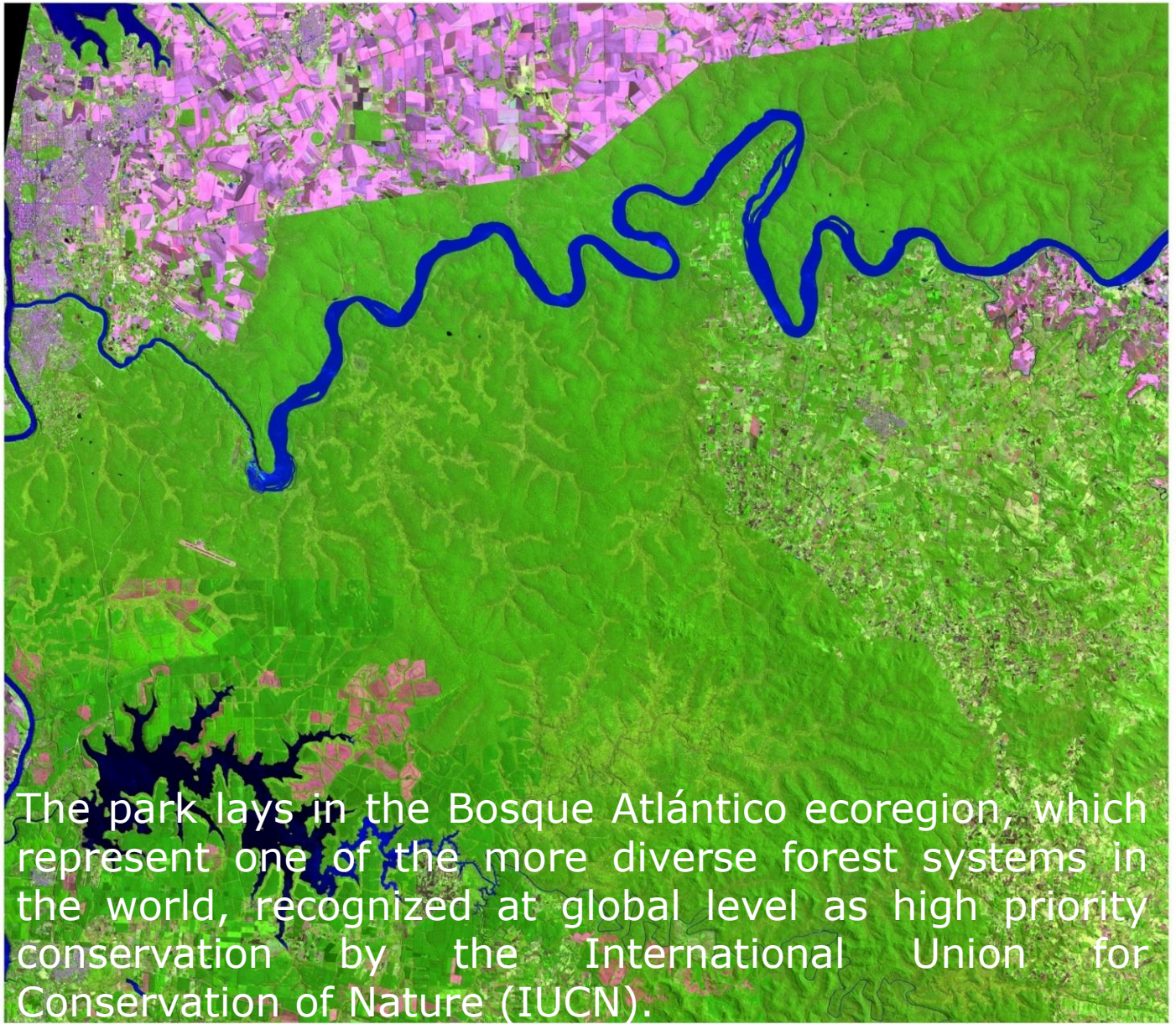
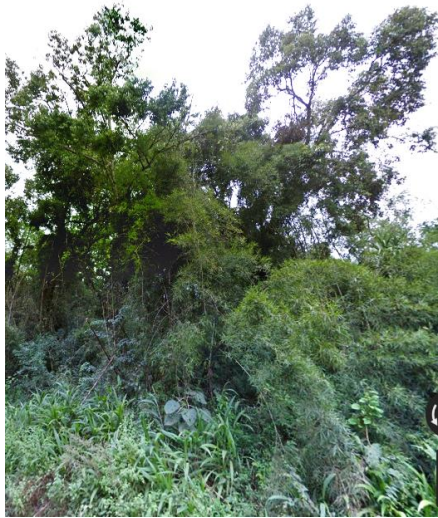
PARQUE Y RESERVA NACIONAL IGUAZU

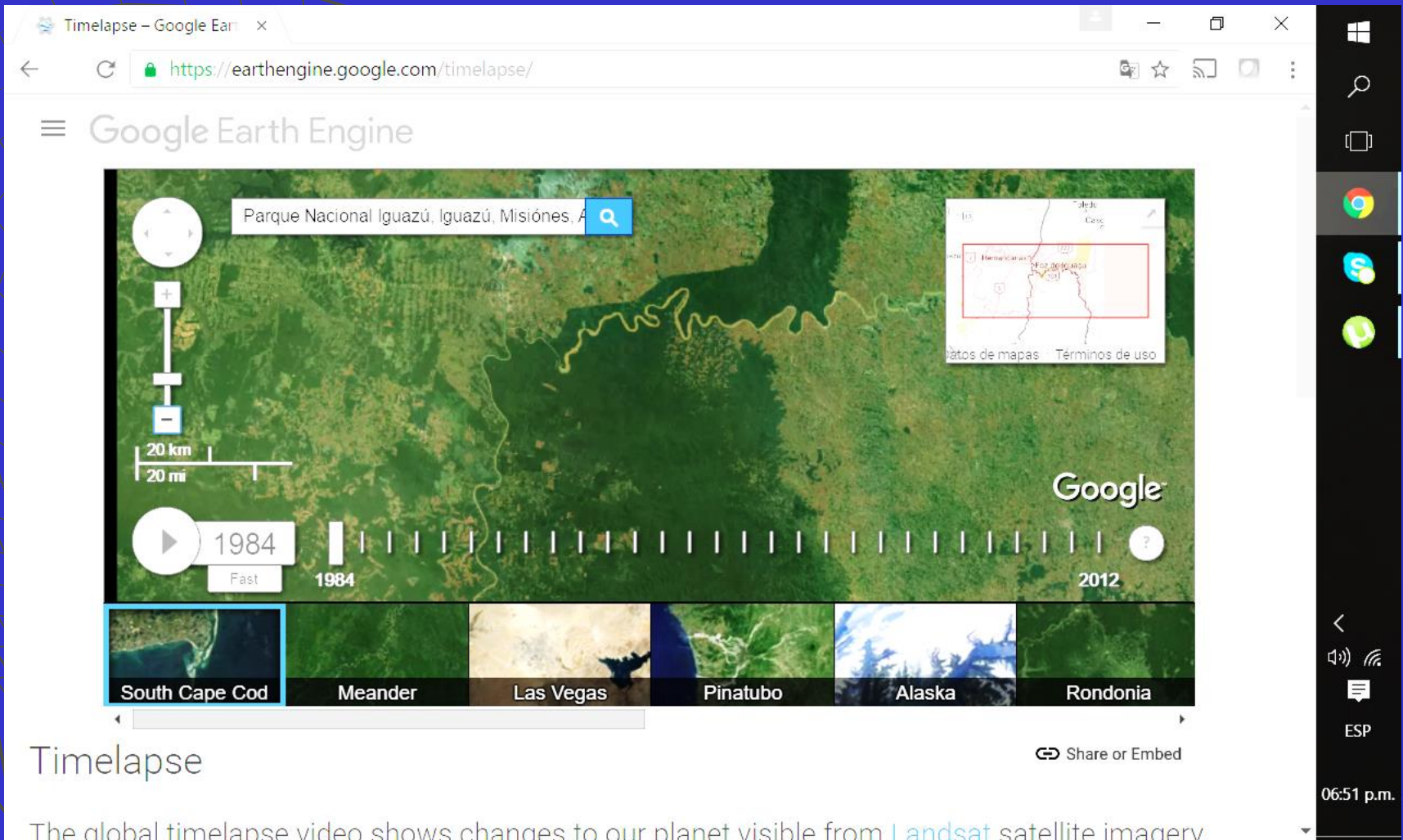
Imagen Landsat 7 ETM+ - Bandas 543 (RGB)



Escala
0 5 10 20 Kilometers

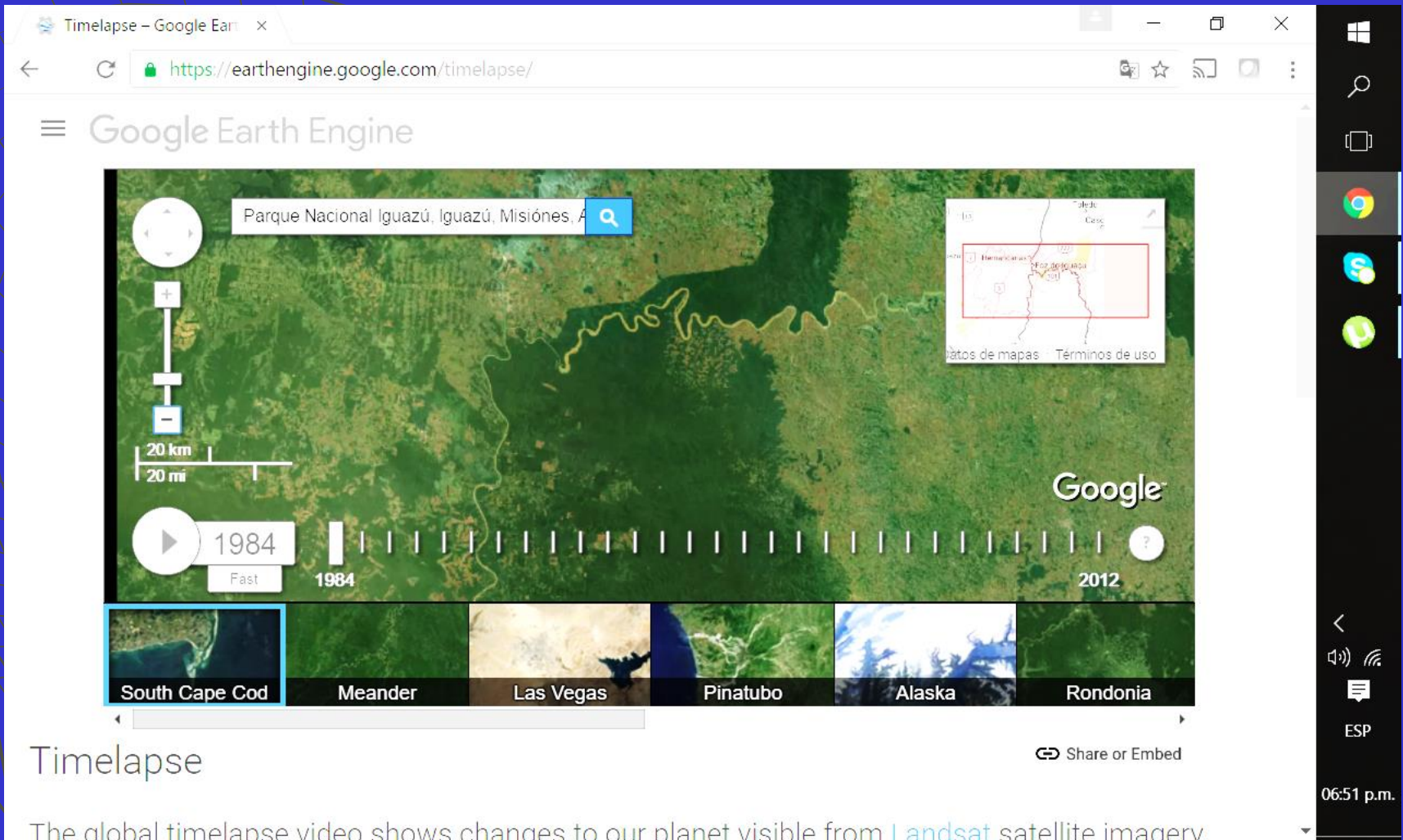
Proyección: Gauss Krüger





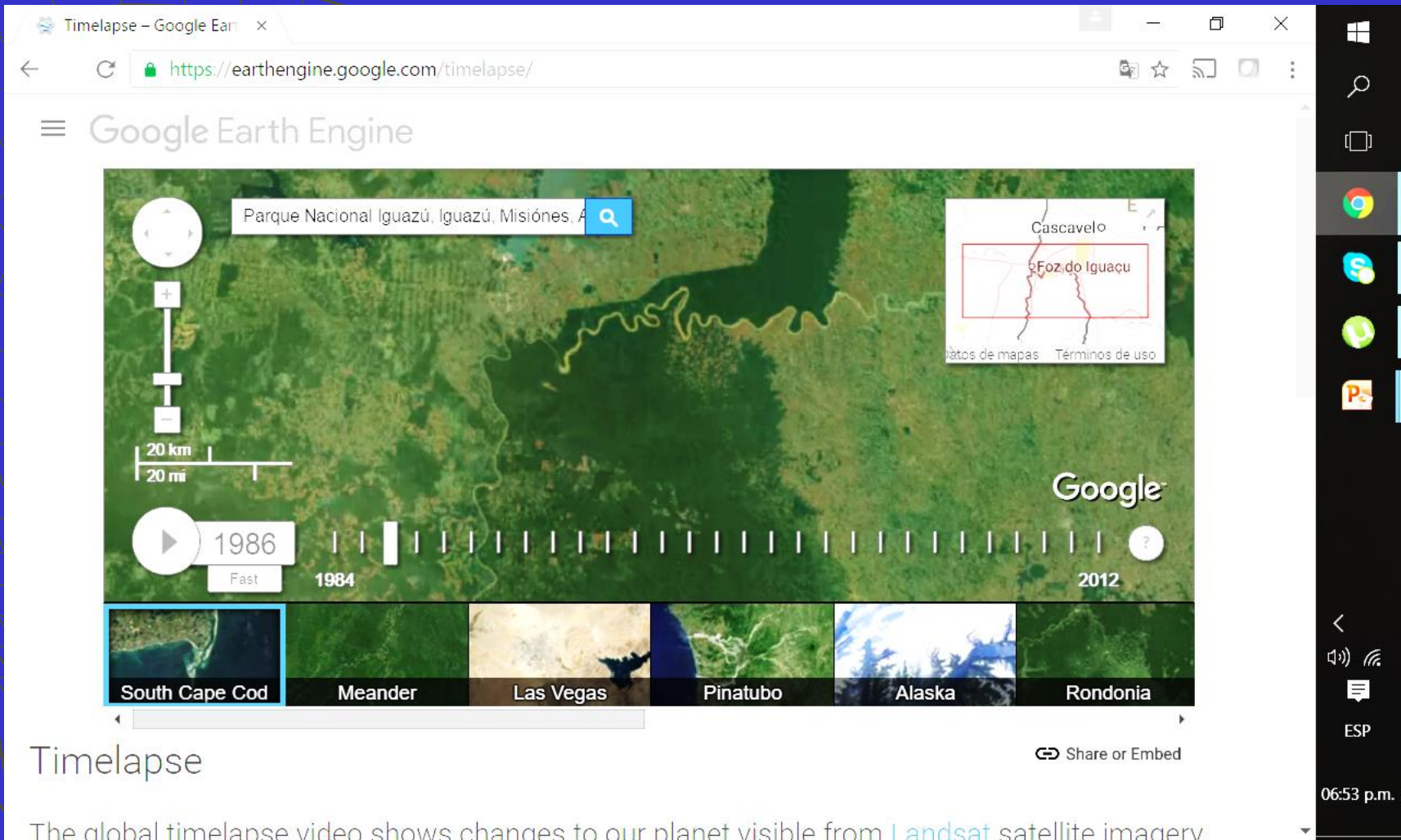
The screenshot displays the Google Earth Engine Timelapse interface in a web browser. The browser's address bar shows the URL <https://earthengine.google.com/timelapse/>. The main content area features a satellite timelapse video of the Parque Nacional Iguazú region in Argentina, with a search bar containing the text "Parque Nacional Iguazú, Iguazú, Misiones, A". The video shows a progression from 1984 to 2012, with a "Fast" playback button. A scale bar indicates 20 km and 20 mi. Below the main video, a horizontal menu offers other timelapse options: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The "South Cape Cod" option is currently selected. At the bottom of the interface, the word "Timelapse" is displayed, followed by a "Share or Embed" link. The browser's taskbar on the right shows the Windows Start button, search icon, and application icons for Chrome, Teams, and WhatsApp. The system tray at the bottom right indicates the time as 06:51 p.m. and the language as ESP.

The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



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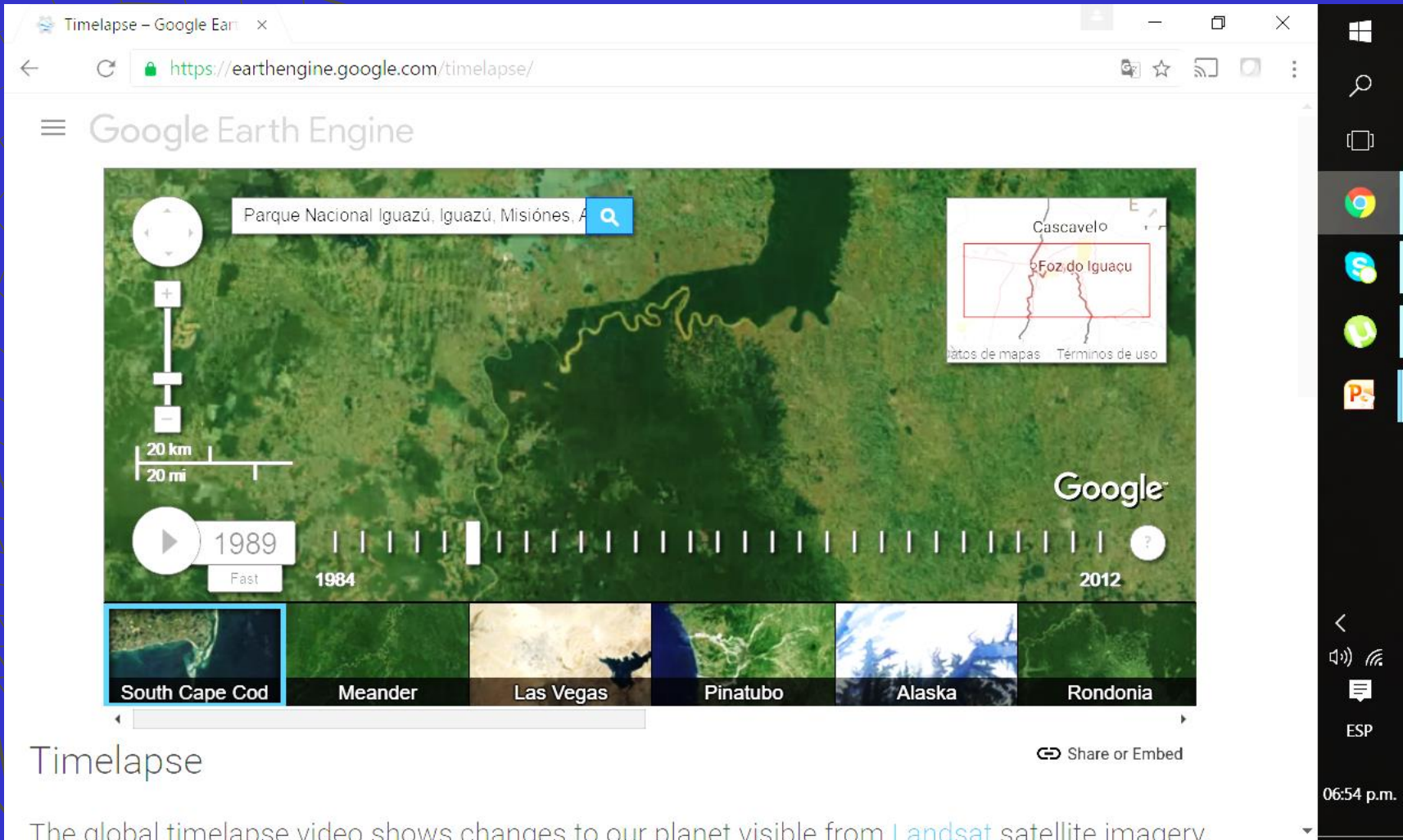
The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area shows a satellite view of a forested region with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". A scale bar indicates 20 km and 20 mi. A timeline at the bottom of the map shows a play button, the year 1986, a "Fast" button, a vertical slider, the year 1984, a series of vertical tick marks, and the year 2012. Below the main map is a row of six thumbnail images with labels: "South Cape Cod", "Meander", "Las Vegas", "Pinatubo", "Alaska", and "Rondonia". The "Meander" thumbnail is currently selected. In the bottom right corner, there is a "Share or Embed" link. The Windows taskbar on the right side of the screen shows the Start button, search icon, task view icon, and several application icons including Chrome, Teams, WhatsApp, and PowerPoint. The system tray at the bottom right shows network, volume, and language (ESP) icons, along with the time "06:53 p.m."

Timelapse

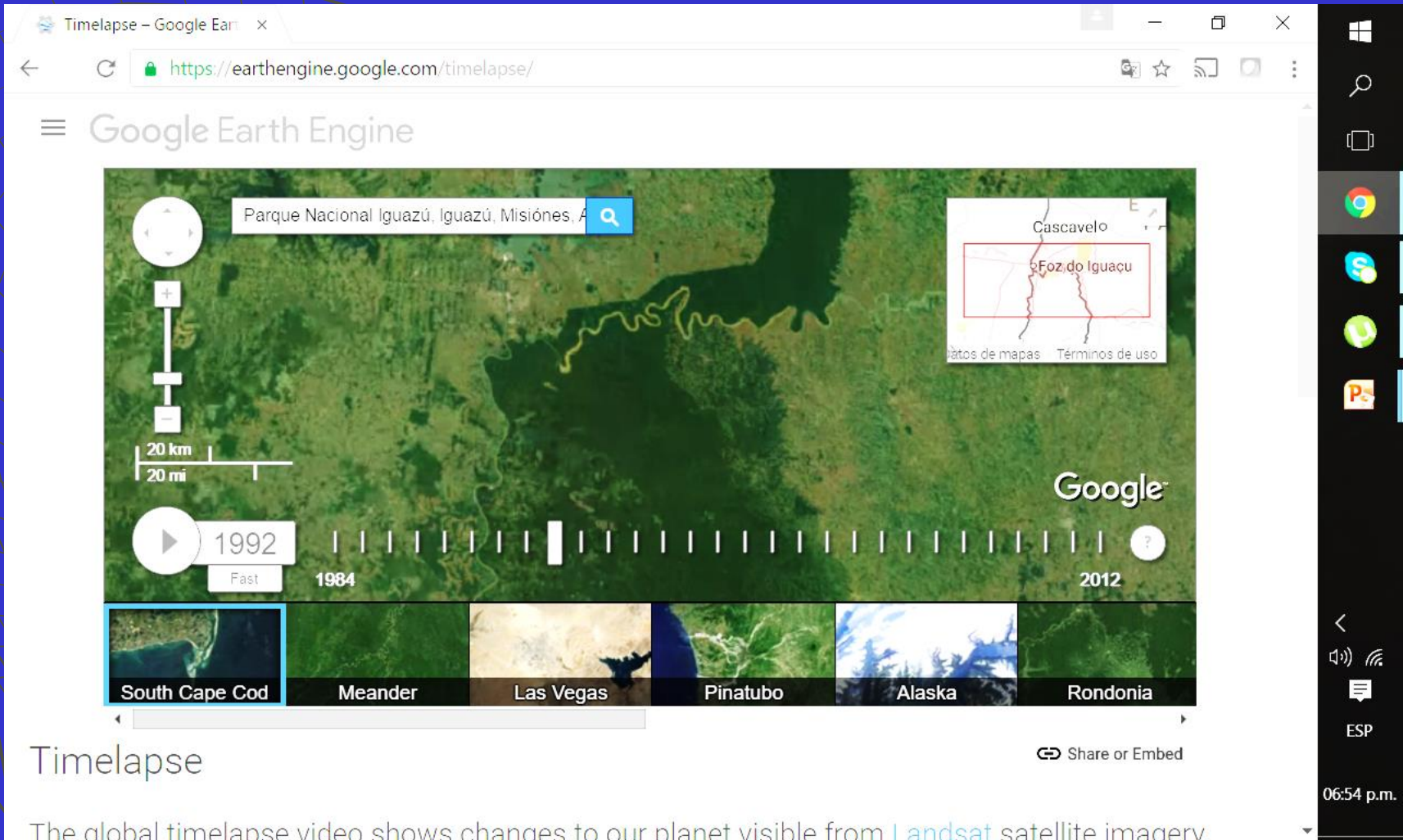
The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



The screenshot displays the Google Earth Engine Timelapse interface. At the top, the browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main content area features a satellite map of Parque Nacional Iguazú, Iguazú, Misiones, A. A search bar at the top left contains the text "Parque Nacional Iguazú, Iguazú, Misiones, A". To the right of the map is an inset map showing the location of Foz do Iguaçu and Cascavel. Below the map is a timeline slider with a play button, a "Fast" button, and markers for the years 1989, 1984, and 2012. A scale bar indicates 20 km and 20 mi. At the bottom, there is a row of thumbnail images for other timelapse videos: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text below the thumbnails. A "Share or Embed" link is visible in the bottom right corner of the interface. The Windows taskbar on the right side of the screen shows the time as 06:54 p.m.

Timelapse

The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



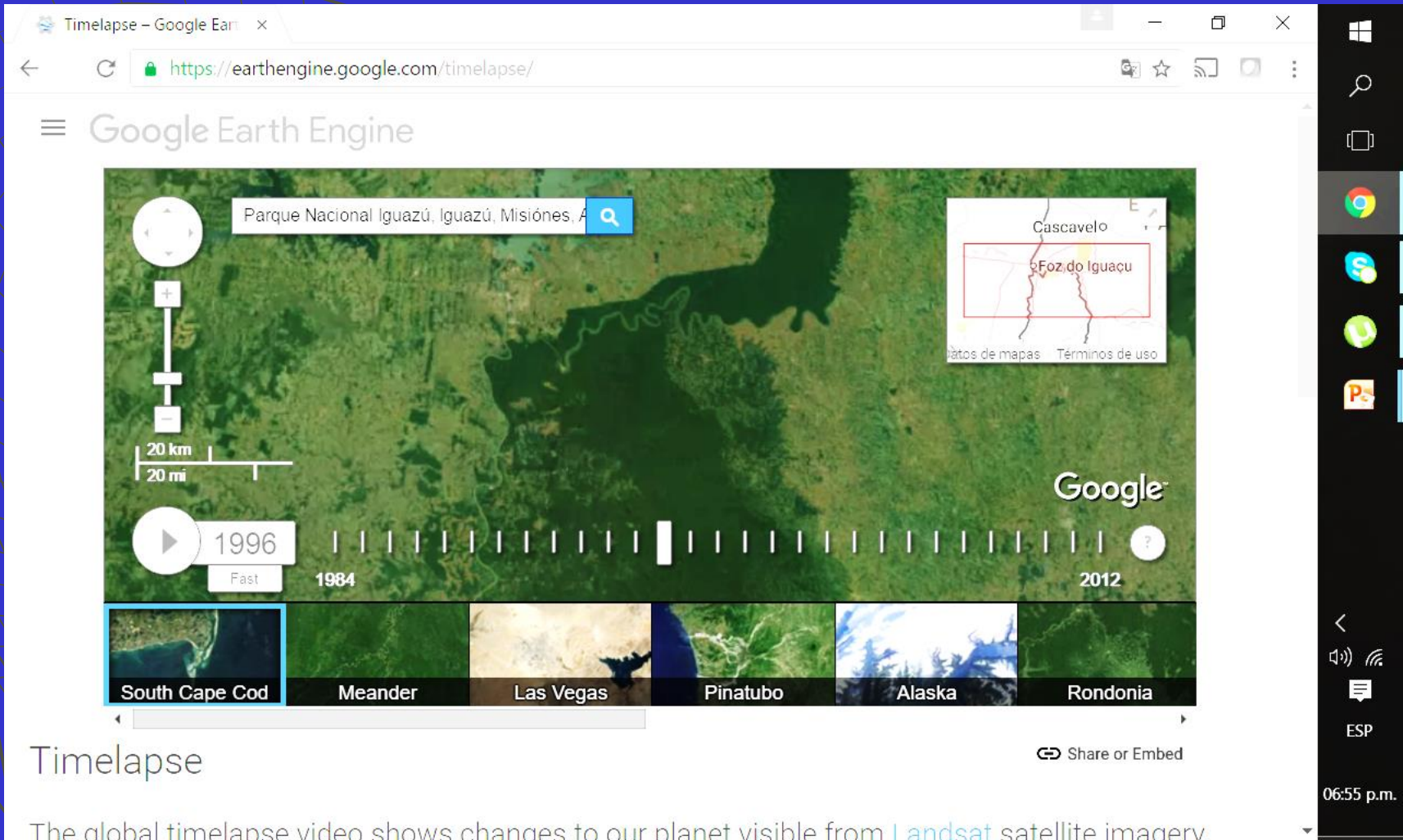
The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area is titled "Parque Nacional Iguazú, Iguazú, Misiones, A" and shows a satellite view of a river system. A search bar is visible above the map. To the left of the map are navigation controls, including a compass, zoom in (+) and zoom out (-) buttons, and a scale bar showing 20 km and 20 mi. Below the map is a timeline slider with a play button, a "Fast" button, and a search icon. The timeline is marked with the years 1992, 1984, and 2012. At the bottom of the interface, there is a row of thumbnail images for other timelapse videos: "South Cape Cod", "Meander", "Las Vegas", "Pinatubo", "Alaska", and "Rondonia". A "Share or Embed" link is located at the bottom right of the interface.

Timelapse

The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.

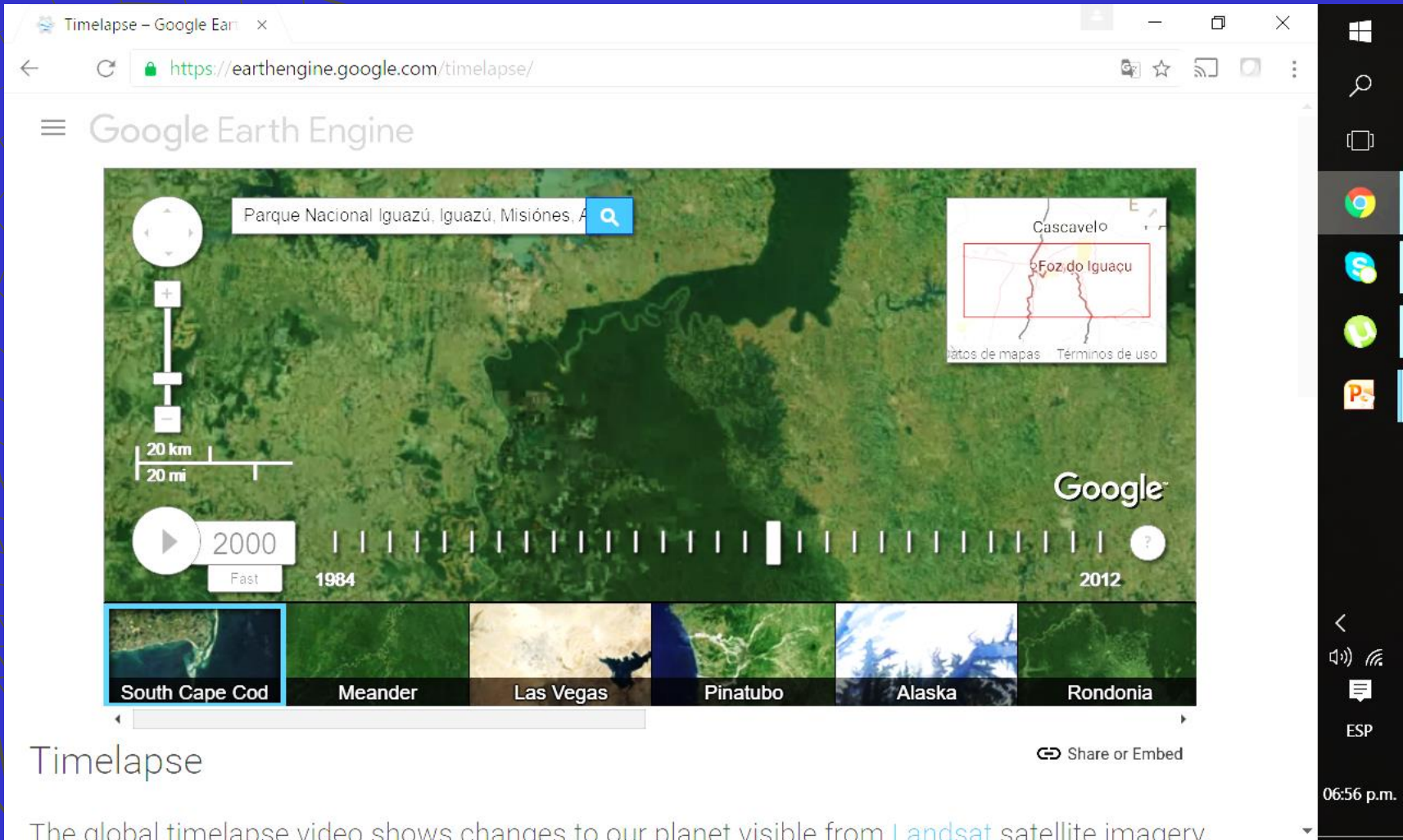


The Windows taskbar is visible on the right side of the screenshot. It includes the Start button, a search icon, a task view icon, and several application icons: Google Chrome, Microsoft Edge, WhatsApp, and Adobe Photoshop. At the bottom of the taskbar, there are system icons for network, volume, and power, along with the language indicator "ESP" and the system clock showing "06:54 p.m."

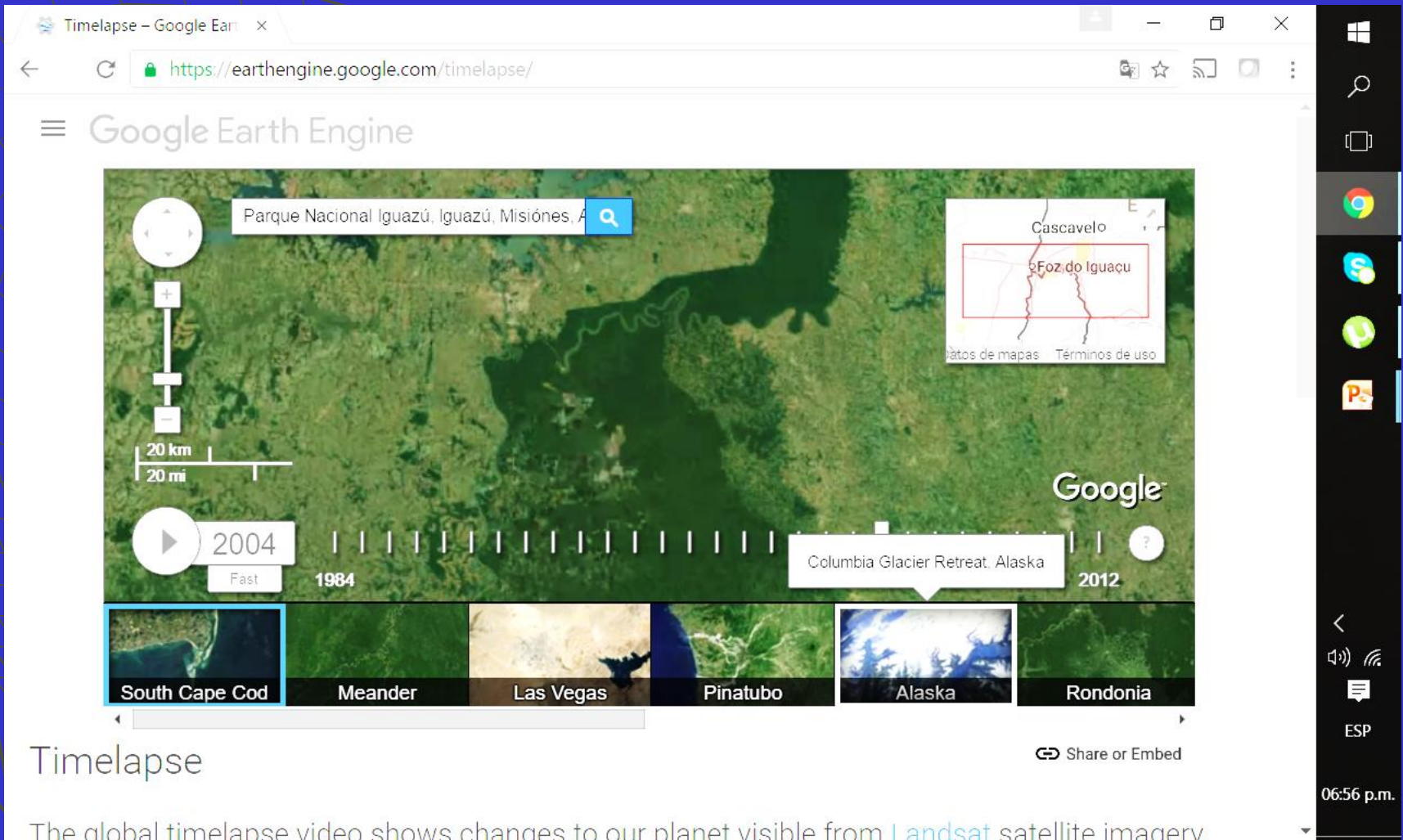


The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area shows a satellite view of a forested region with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". A scale bar indicates 20 km and 20 mi. A timeline at the bottom of the map shows a play button, the year 1996, a "Fast" button, and a range from 1984 to 2012. Below the main map is a row of thumbnail images for other timelapse videos: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text below the thumbnails, and a "Share or Embed" link is visible to the right. The Windows taskbar on the right side of the screen shows the Start button, search icon, task view icon, and several application icons including Chrome, Teams, WhatsApp, and PowerPoint. The system tray at the bottom right shows network, volume, and language (ESP) icons, along with the time 06:55 p.m.

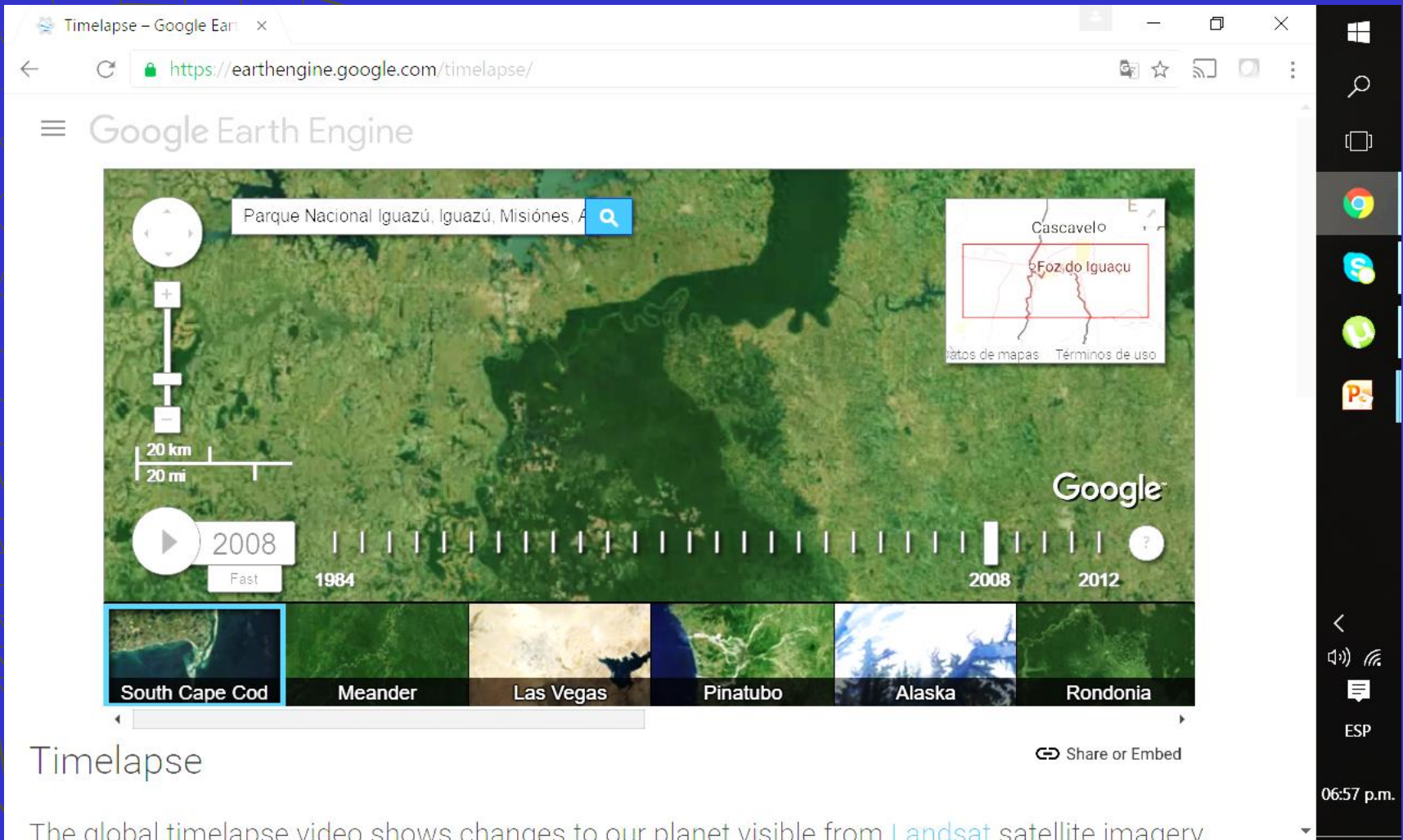
The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area shows a satellite view of a forested region with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". A scale bar indicates 20 km and 20 mi. A timeline at the bottom shows the year 2000, with a "Fast" button and a range from 1984 to 2012. Below the main map, there are six thumbnail images for other locations: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text at the bottom left, and "Share or Embed" is at the bottom right. The Windows taskbar on the right shows the time as 06:56 p.m.



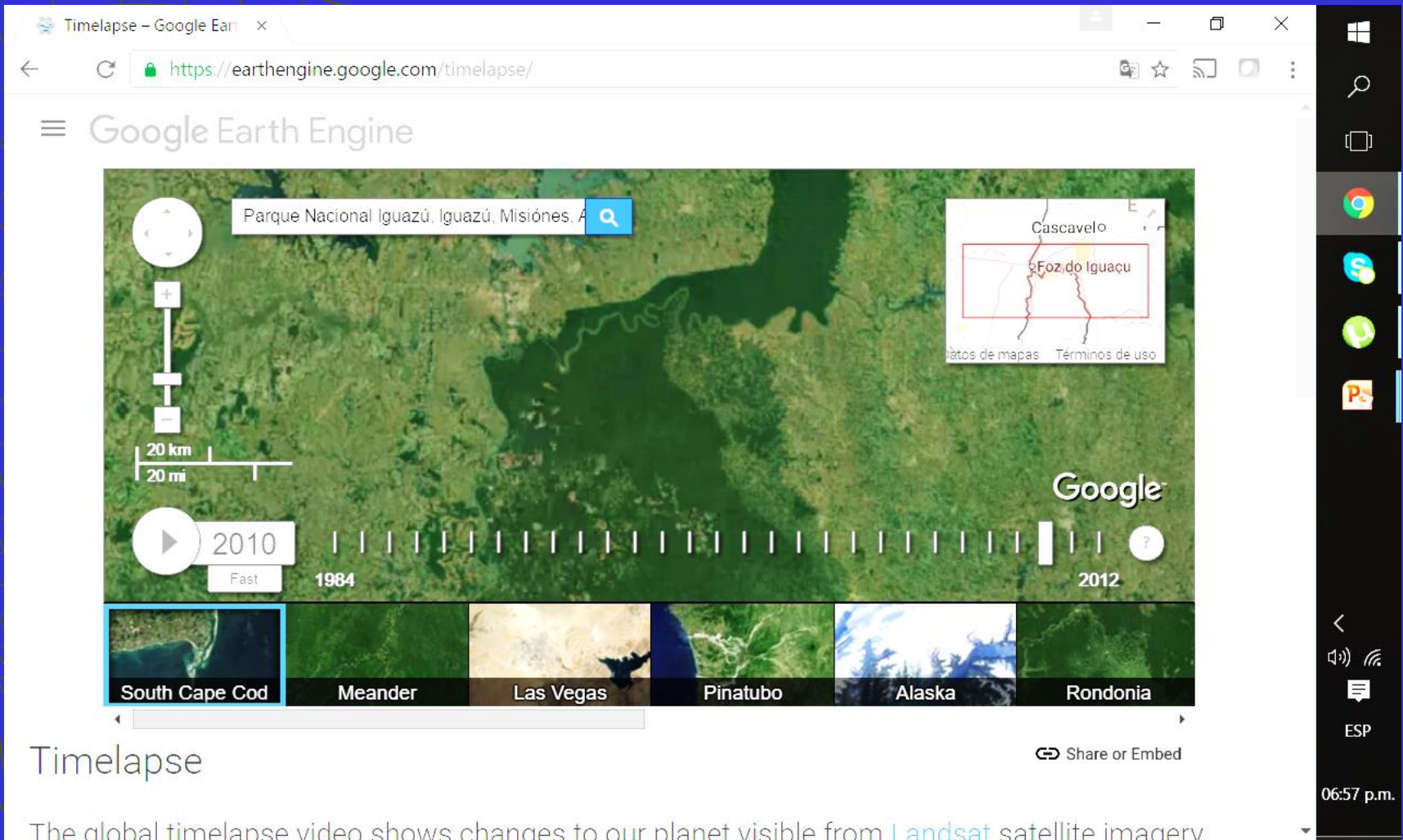
The screenshot displays the Google Earth Engine Timelapse interface. The main map shows a satellite view of a forested area in Iguazú, Argentina, with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". An inset map shows the location of Iguazú relative to Cascavel. The timeline at the bottom indicates the year 2004 is selected, with a "Fast" button and a range from 1984 to 2012. Below the timeline are several thumbnail images representing different timelapse videos: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text at the bottom left, and "Share or Embed" is at the bottom right. The browser address bar shows the URL "https://earthengine.google.com/timelapse/". The Windows taskbar on the right shows the time as 06:56 p.m.



The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area shows a satellite view of the Iguazú region, with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". A scale bar indicates 20 km and 20 mi. A timeline at the bottom of the map shows the years 1984, 2008, and 2012, with a play button and a "Fast" option. Below the main map, there are six thumbnail images representing different timelapse videos: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text at the bottom left, and "Share or Embed" is at the bottom right. The Windows taskbar on the right shows the time as 06:57 p.m.

Timelapse

The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.



Timelapse – Google Earth x

← ↻ <https://earthengine.google.com/timelapse/> 🔍 ☆ 📄 🗄 ⋮

☰ Google Earth Engine

Parque Nacional Iguazú, Iguazú, Misiones, A 🔍

Cascavel
Foz do Iguaçu

Mapas de mapas Términos de uso

20 km
20 mi

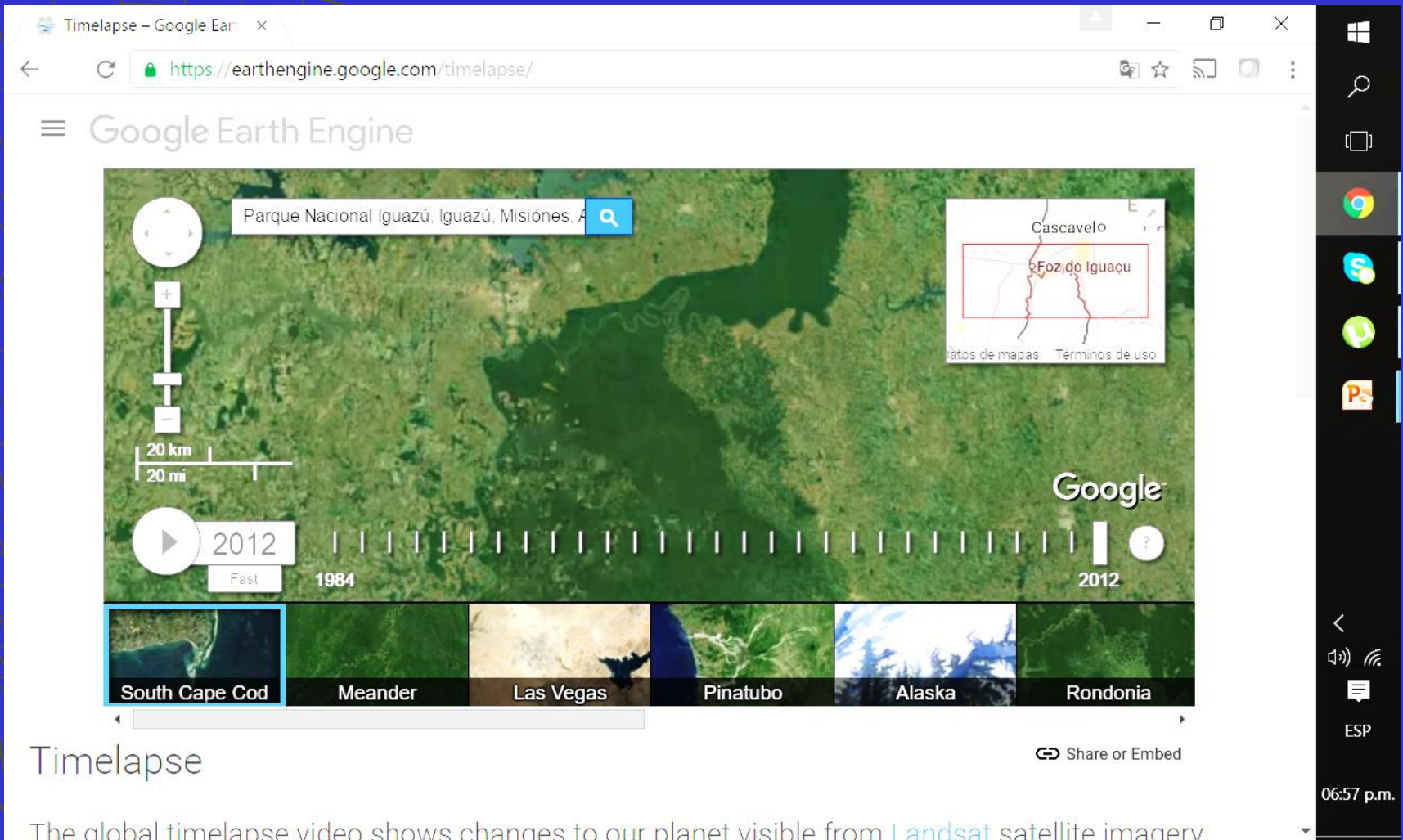
▶ 2010
Fast 1984 2012

South Cape Cod Meander Las Vegas Pinatubo Alaska Rondonia

Timelapse [Share or Embed](#)

The global timelapse video shows changes to our planet visible from [Landsat](#) satellite imagery.

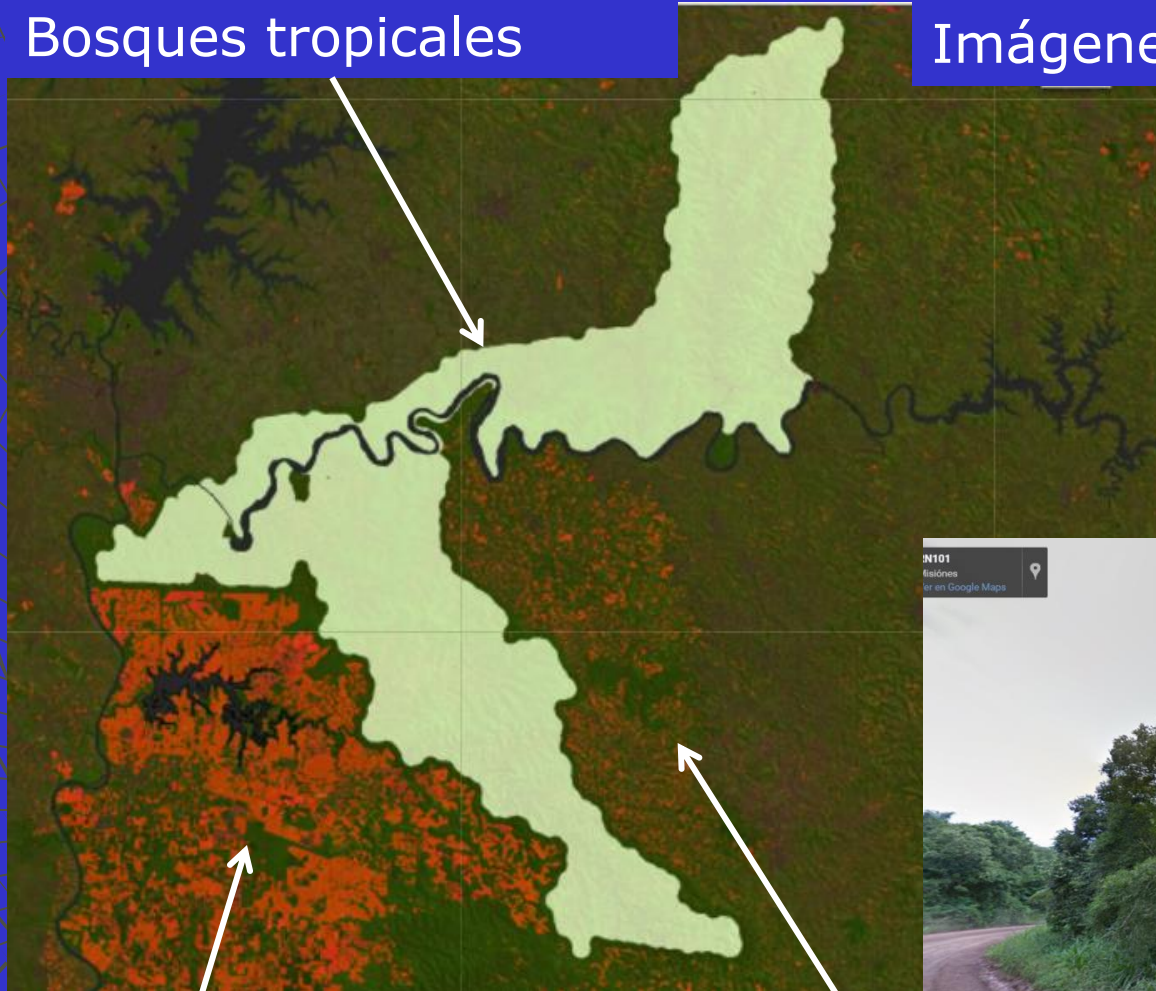
06:57 p.m.



The screenshot displays the Google Earth Engine Timelapse interface. The browser address bar shows the URL <https://earthengine.google.com/timelapse/>. The main map area shows a satellite view of a forested region with a search bar containing "Parque Nacional Iguazú, Iguazú, Misiones, A". A scale bar indicates 20 km and 20 mi. A timeline at the bottom of the map shows a play button, the year 2012, and a "Fast" button. The timeline starts at 1984 and ends at 2012. Below the main map, there are six thumbnail images for other timelapse videos: South Cape Cod, Meander, Las Vegas, Pinatubo, Alaska, and Rondonia. The word "Timelapse" is written in large text at the bottom left, and "Share or Embed" is at the bottom right. The Windows taskbar on the right shows the time as 06:57 p.m.

Bosques tropicales

Imágenes Landsat



INT01
Islas
Ver en Google Maps



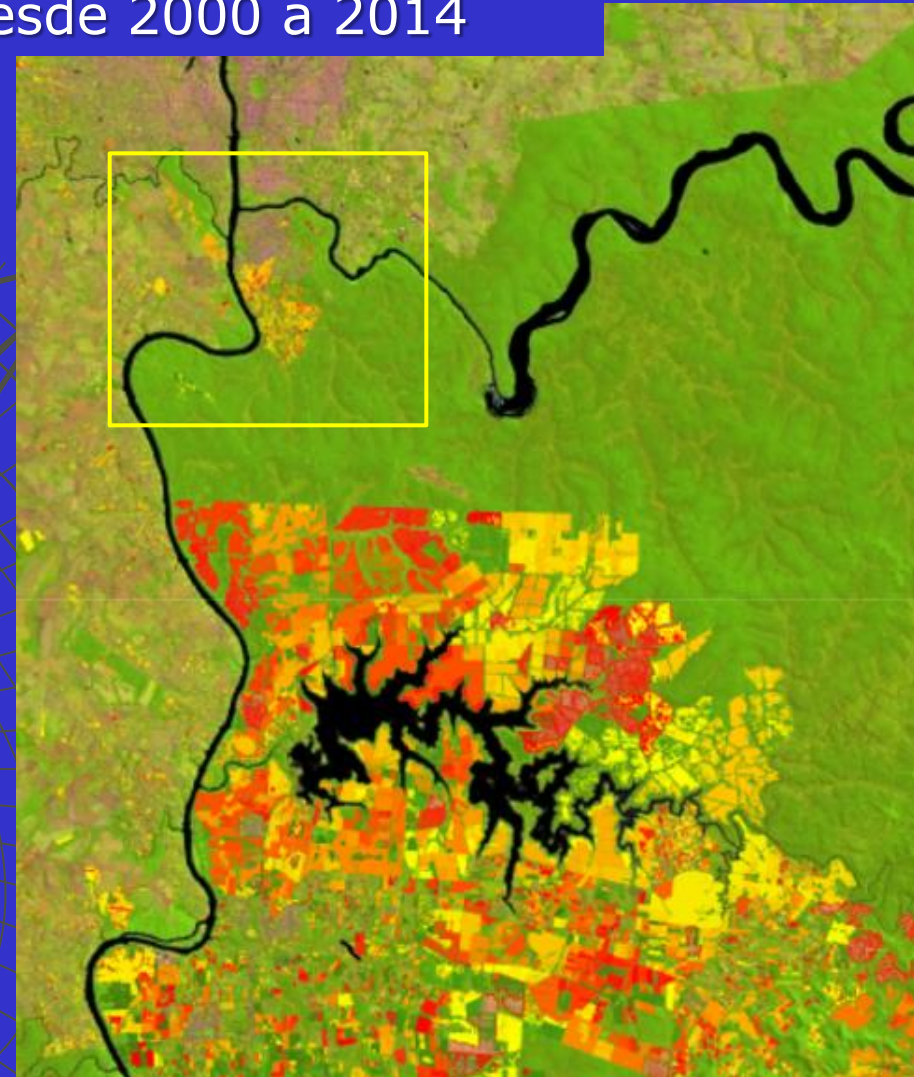
Bosques perdidos desde 2000 a 2014

Global Forest change

<https://earthenginepartners.appspot.com/science-2013-global-forest>

Bosques perdidos desde 2000 a 2014

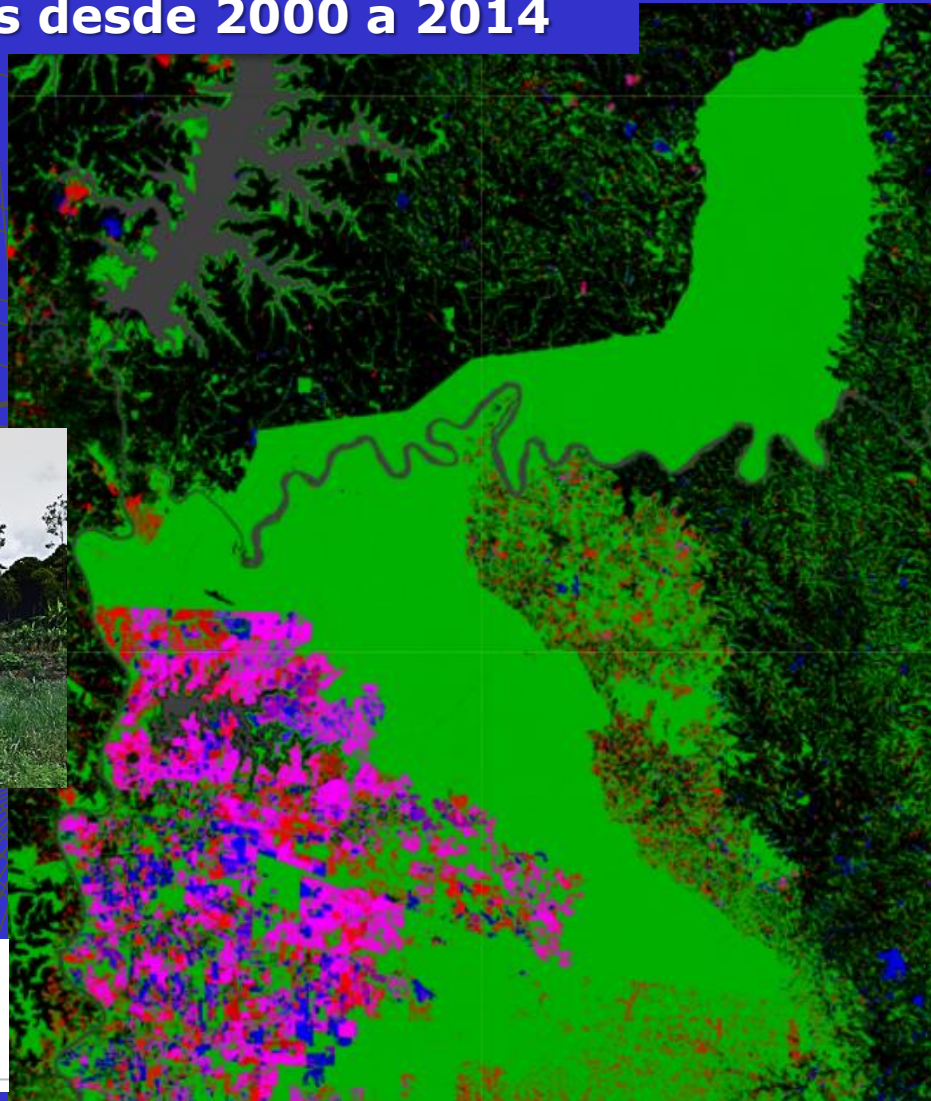
Triple frontera



Global Forest change

<https://earthenginepartners.appspot.com/science-2013-global-forest>

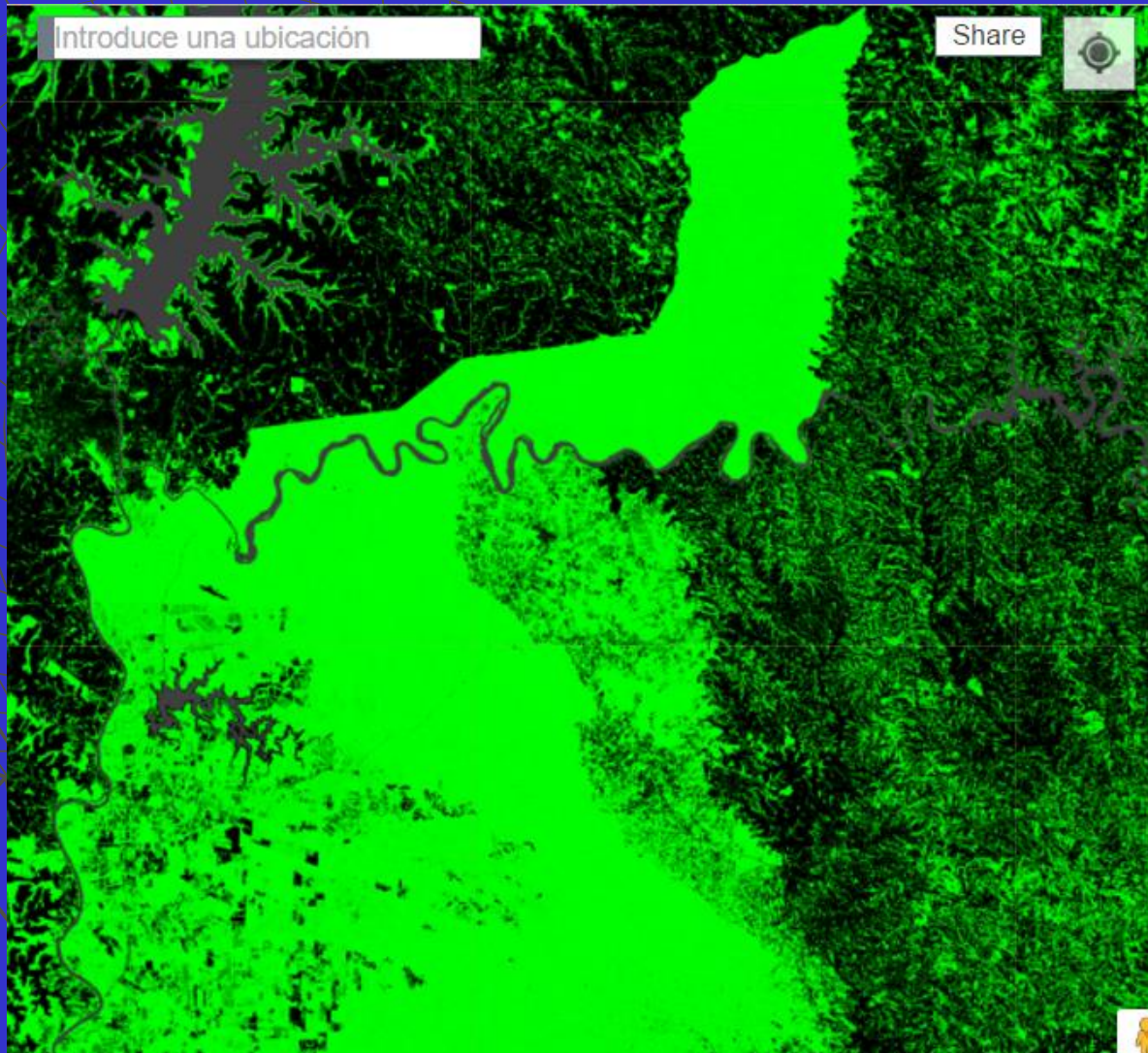
Bosques perdidos desde 2000 a 2014



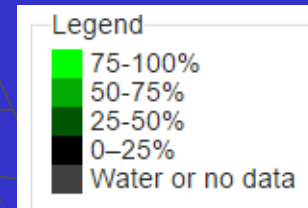
Red	Forest Loss 2000–2013
Blue	Forest Gain 2000–2012
Pink	Both Loss and Gain
Green	Forest Extent

Global Forest change

<https://earthenginepartners.appspot.com/science-2013-global-forest>



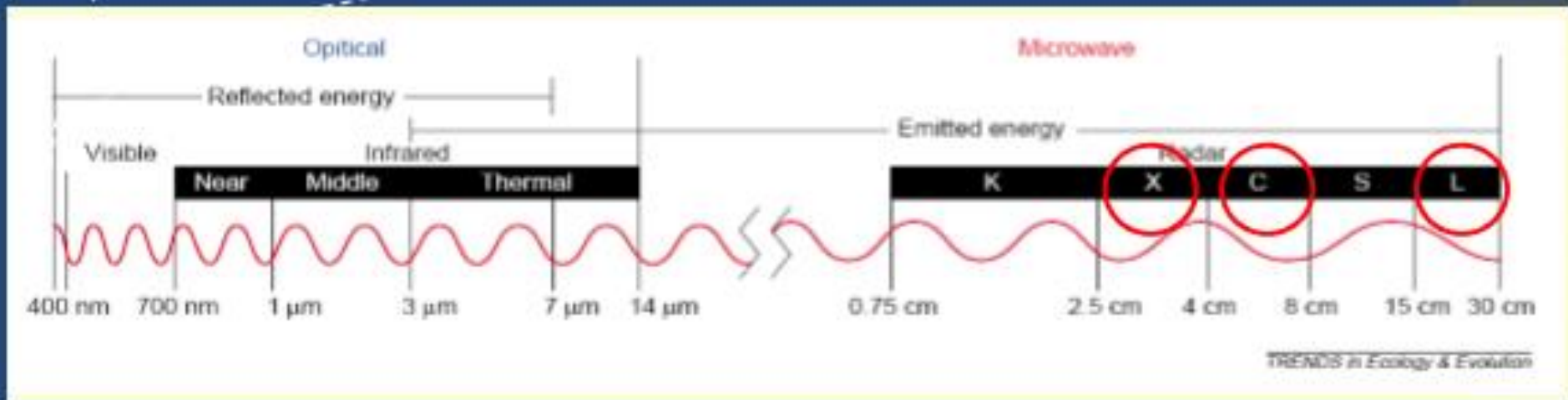
% de cobertura de árboles
año 2000



Global Forest change

<https://earthenginepartners.appspot.com/science-2013-global-forest>

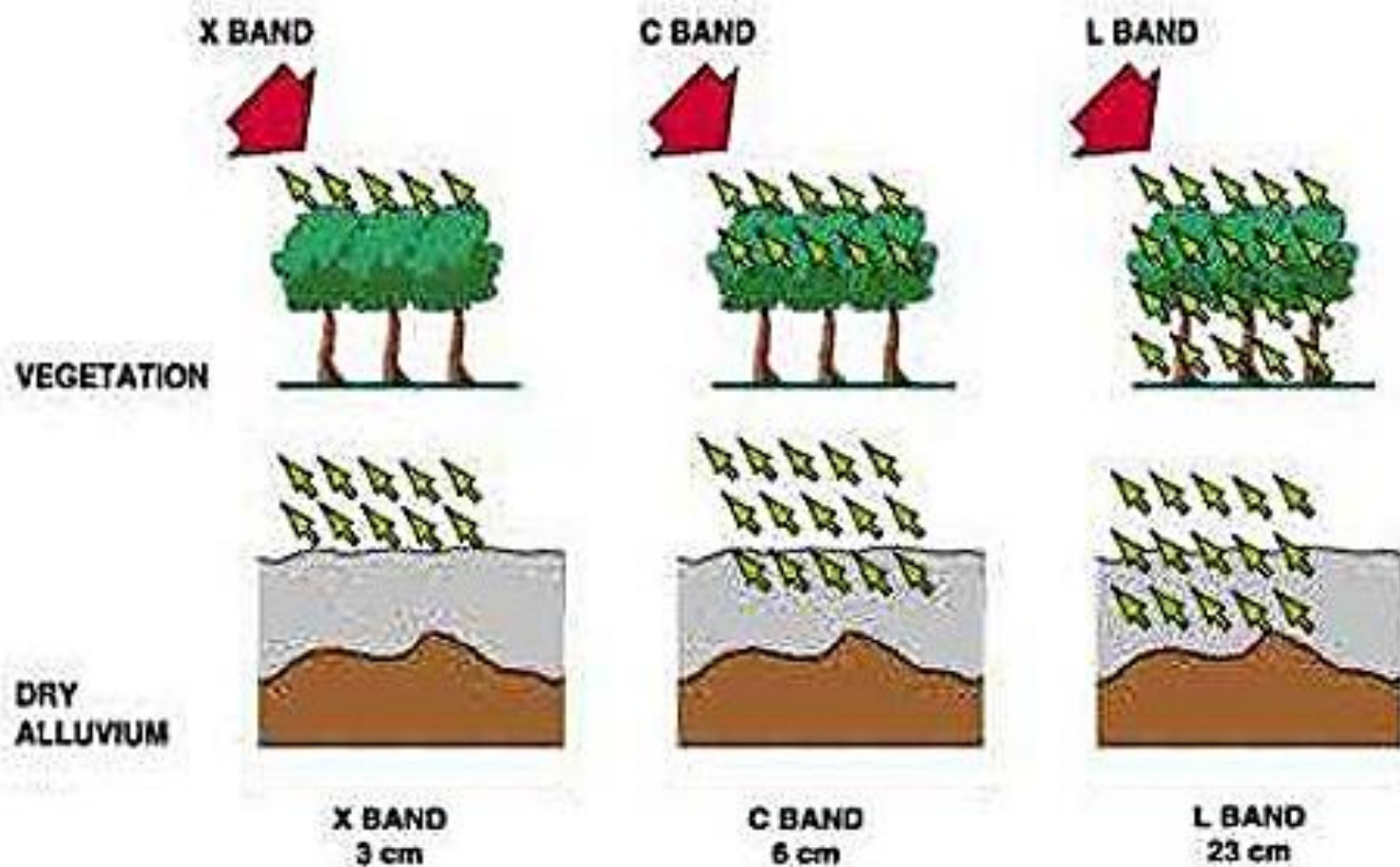
ESPECTRO ELECTROMAGNÉTICO



La profundidad de penetración aumenta con la longitud de onda. →

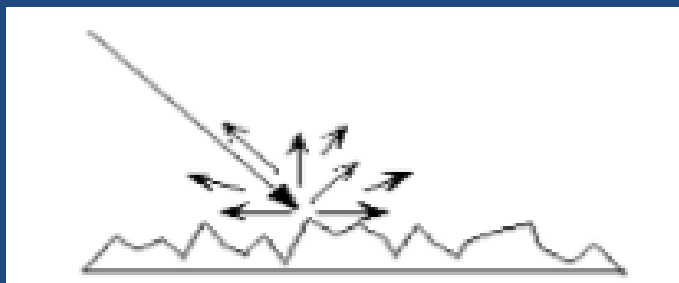
- X:** COSMO SkyMed, Terra SAR-X
- C:** ERS-1 y 2, RADARSAT-1 y 2, ENVISAT Asar
- L:** JERS-1, ALOS Palsar, SAOCOM

Penetración en suelos y vegetación

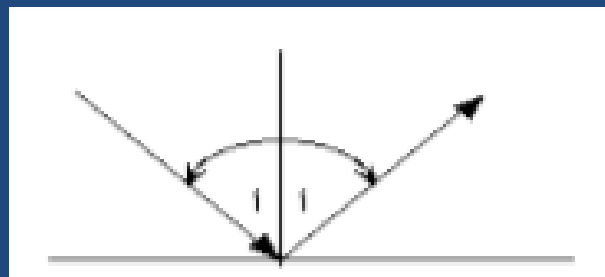


DISTINTAS FORMAS DE RETRO-DISPERSIÓN DE LAS MICROONDAS

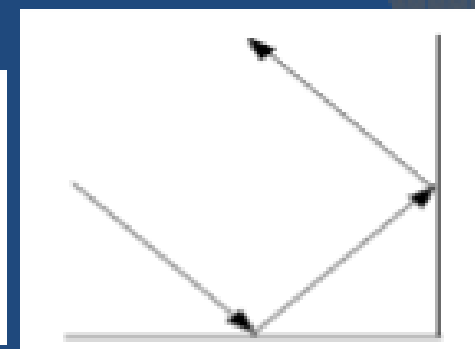
a) Dispersión de superficie



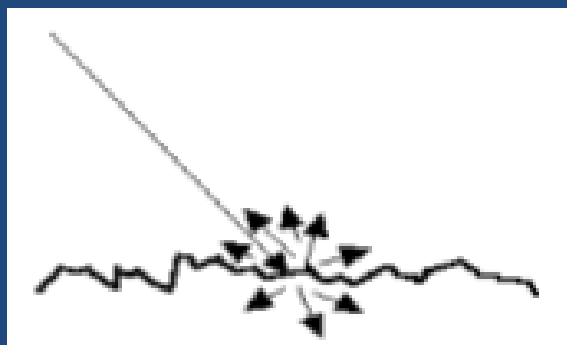
Reflexión difusa



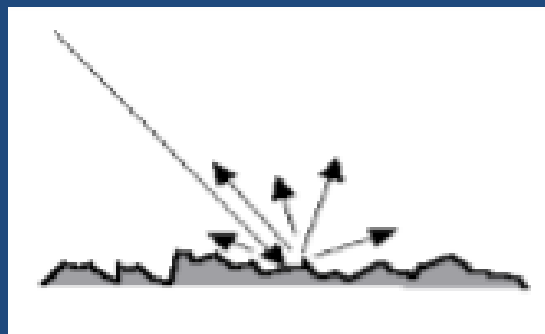
Reflexión especular



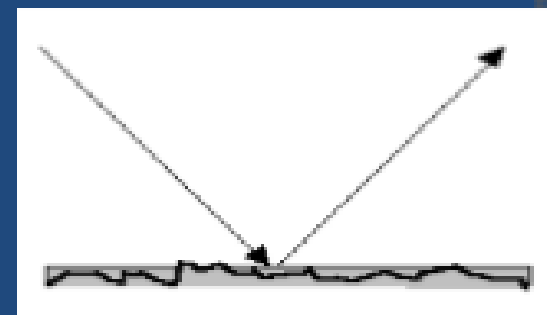
Reflexión efecto esquina



Suelo seco

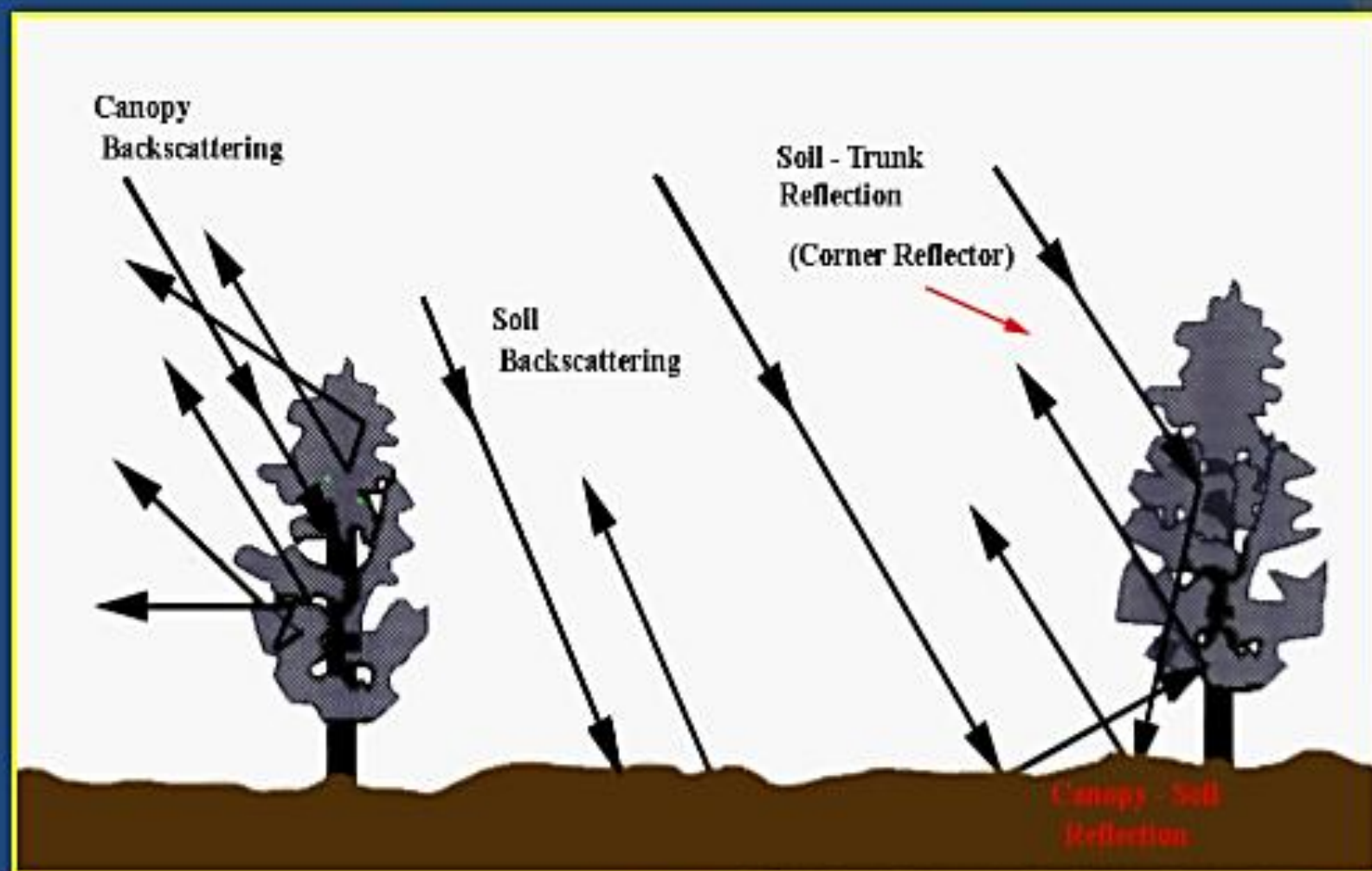


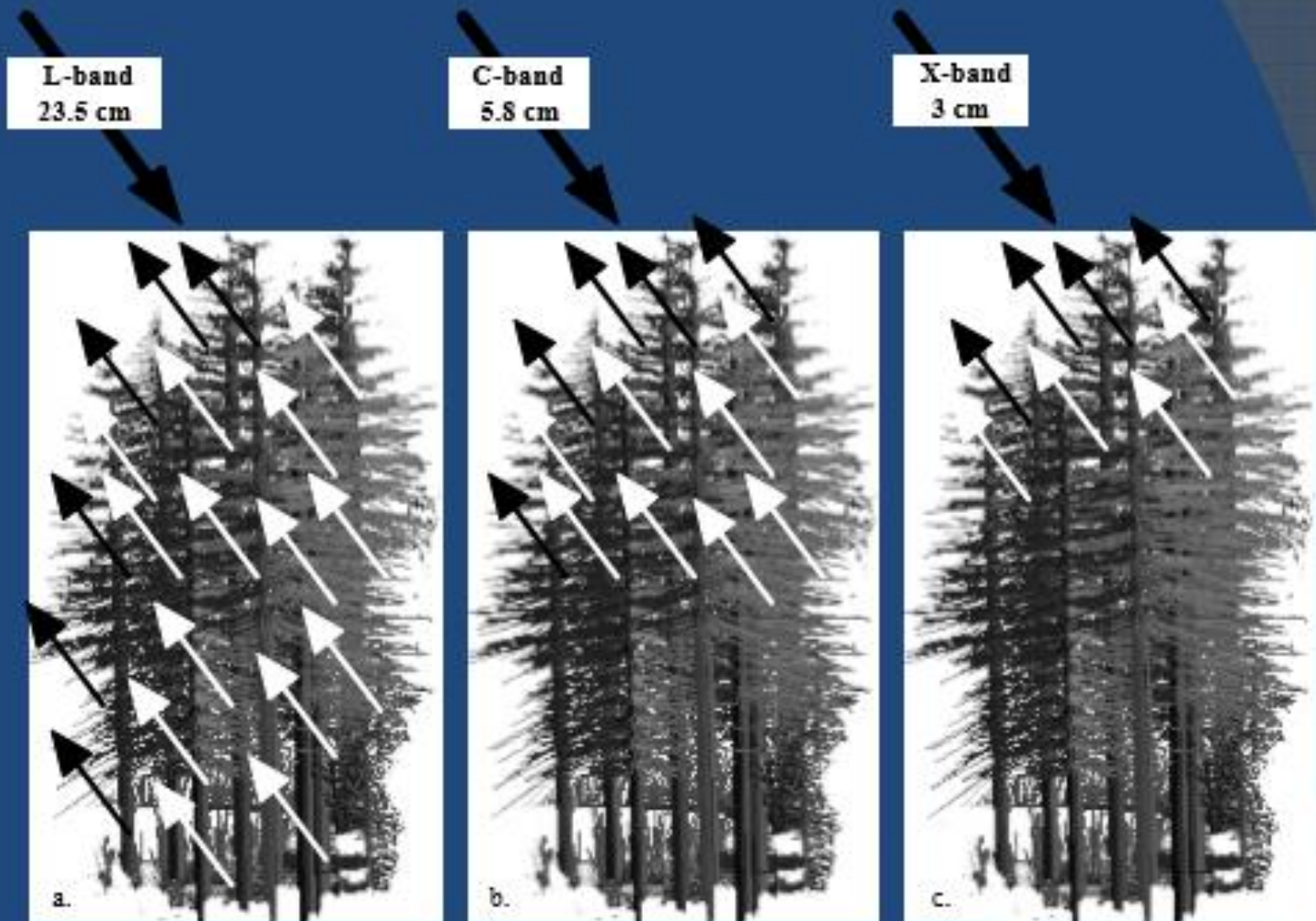
Suelo húmedo



Suelo inundado

Ejemplos de dispersión de volumen:
vegetación densa, nieve seca y suelo muy seco.





Capacidad de penetración de la señal en bosques

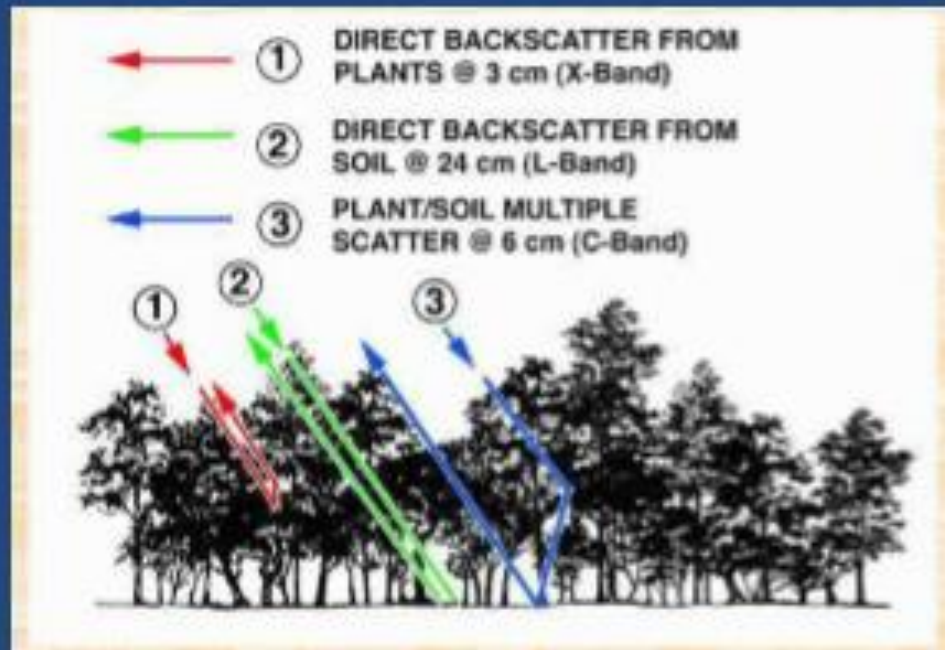
La frecuencia/longitud de onda de la señal de las microondas determina:

- la retrodispersión radar
- la penetración de la señal

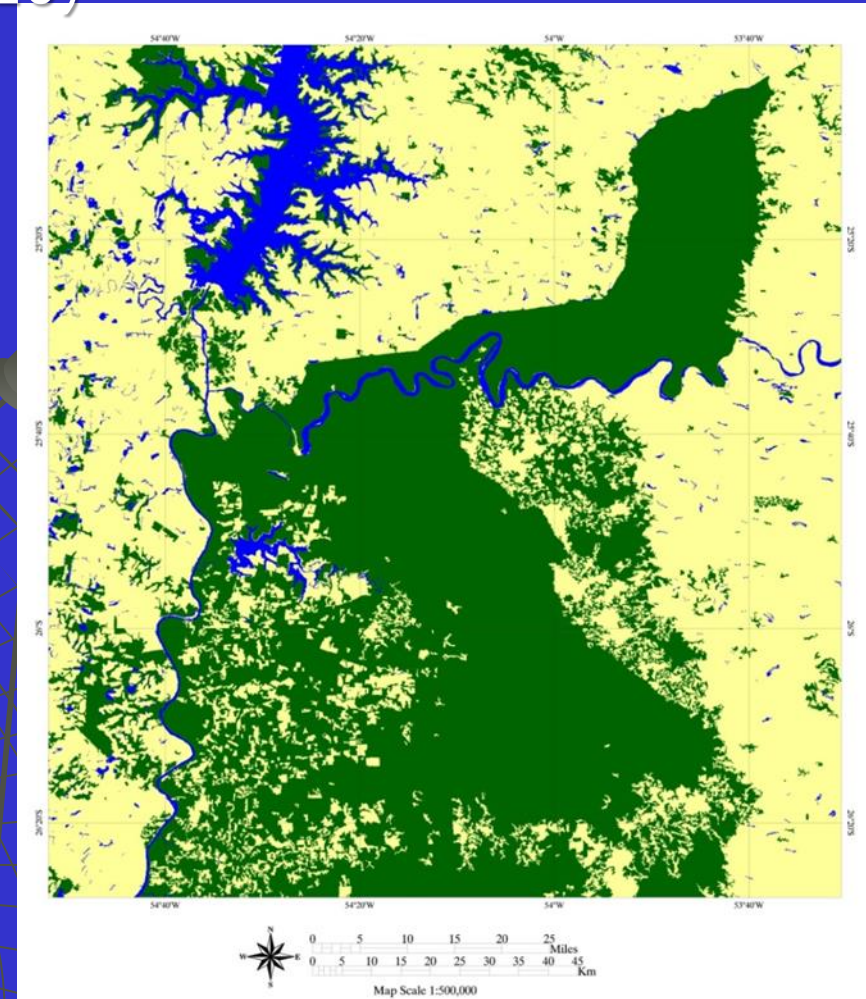
Este parámetro actúa de dos maneras distintas:

- la constante dieléctrica compleja de los volúmenes depende de la frecuencia
- la retrodispersión se relaciona con las longitudes de onda

Interacciones primarias de las distintas bandas de radar con el bosque



New global 25m-resolution PALSAR mosaic and forest/non-forest map (2007-2010)



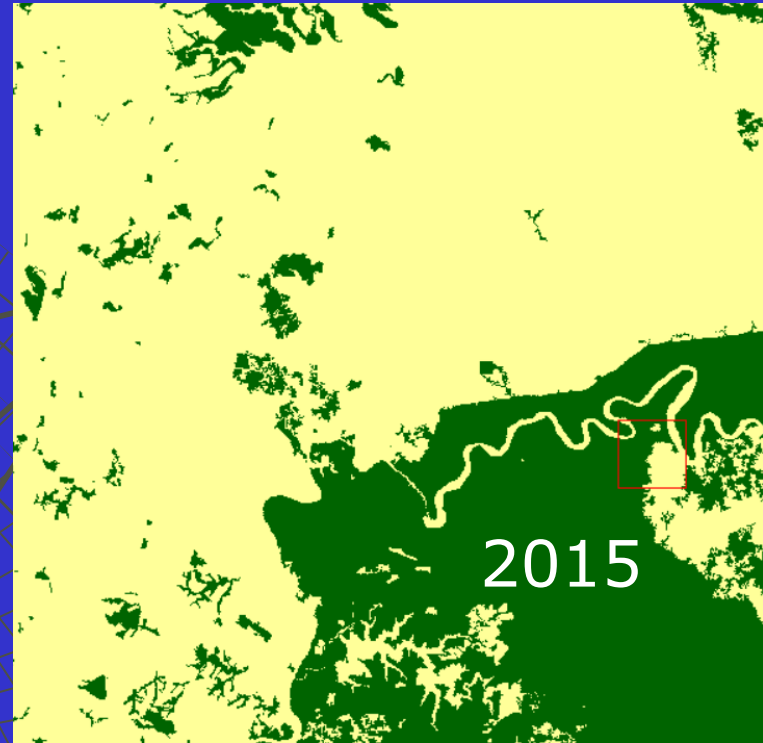
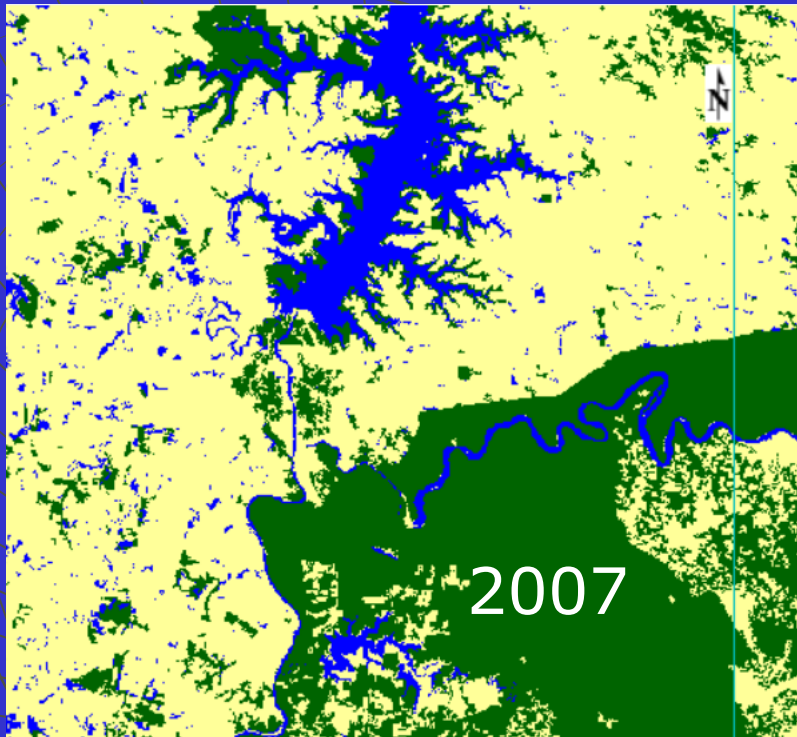
http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/registration.htm

After accessing the URL and filling the questions, pre-registration will be conducted (This does not mean that the registration is complete). Then, you may receive the URL for the final registration.

After this process, you can download the data from the following URL.

http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/data/index.htm

New global 25m-resolution PALSAR mosaic and forest/non-forest map (2007-2015)



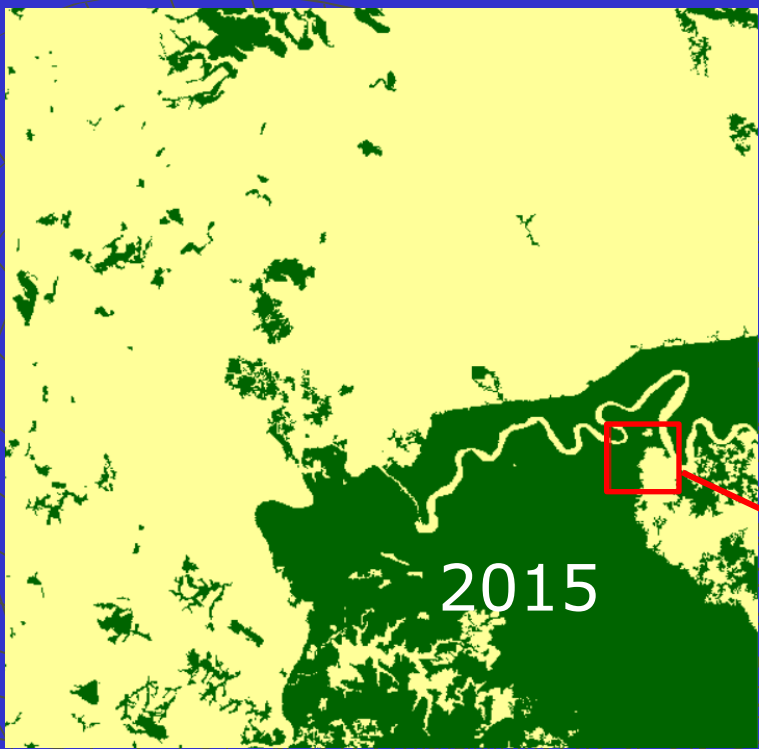
http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/registration.htm

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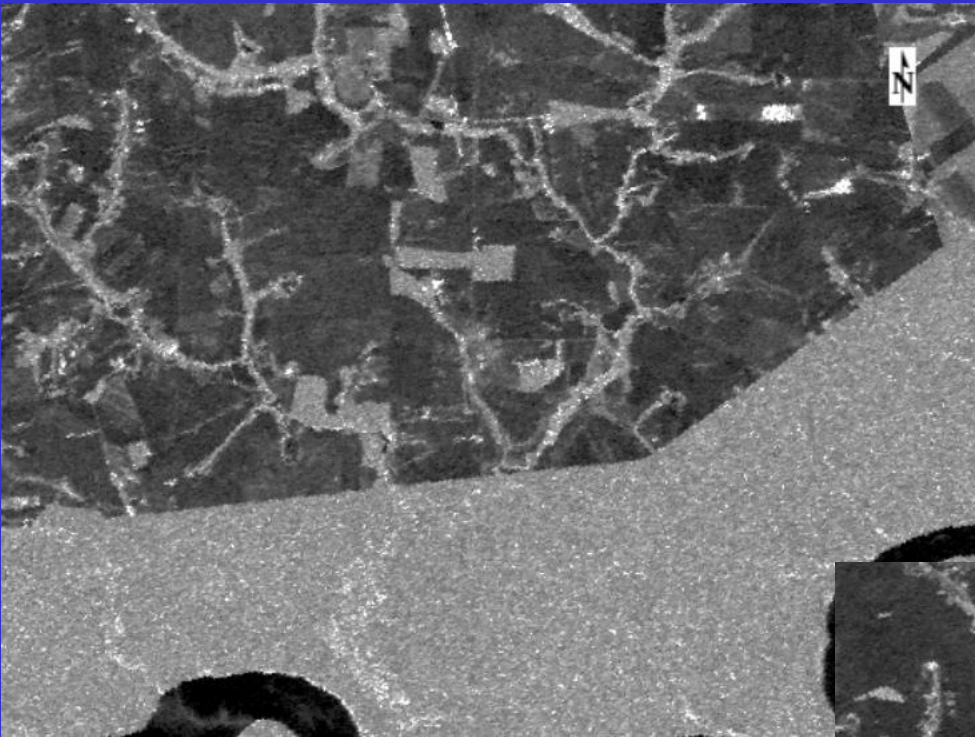
After this process, you can download the data from the following URL.

http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/data/index.htm

New global 25m-resolution PALSAR mosaic and forest/non-forest map (2007-2015)

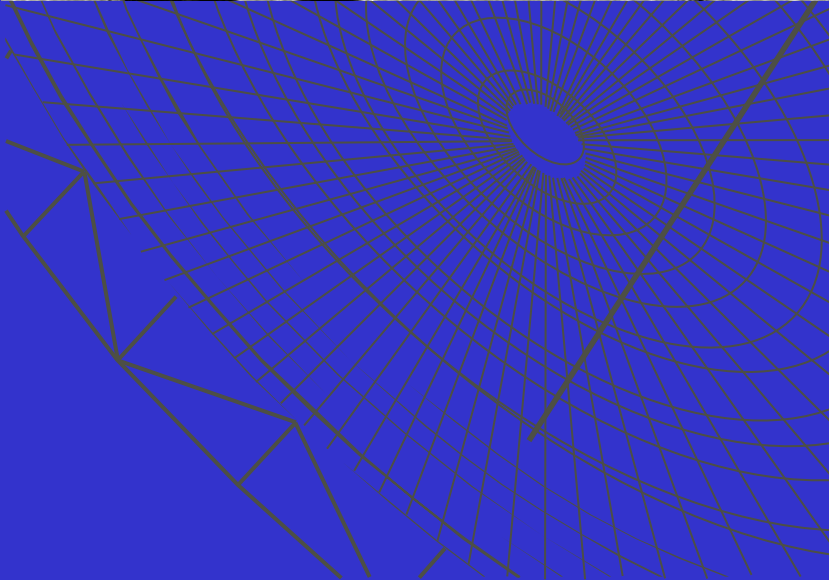
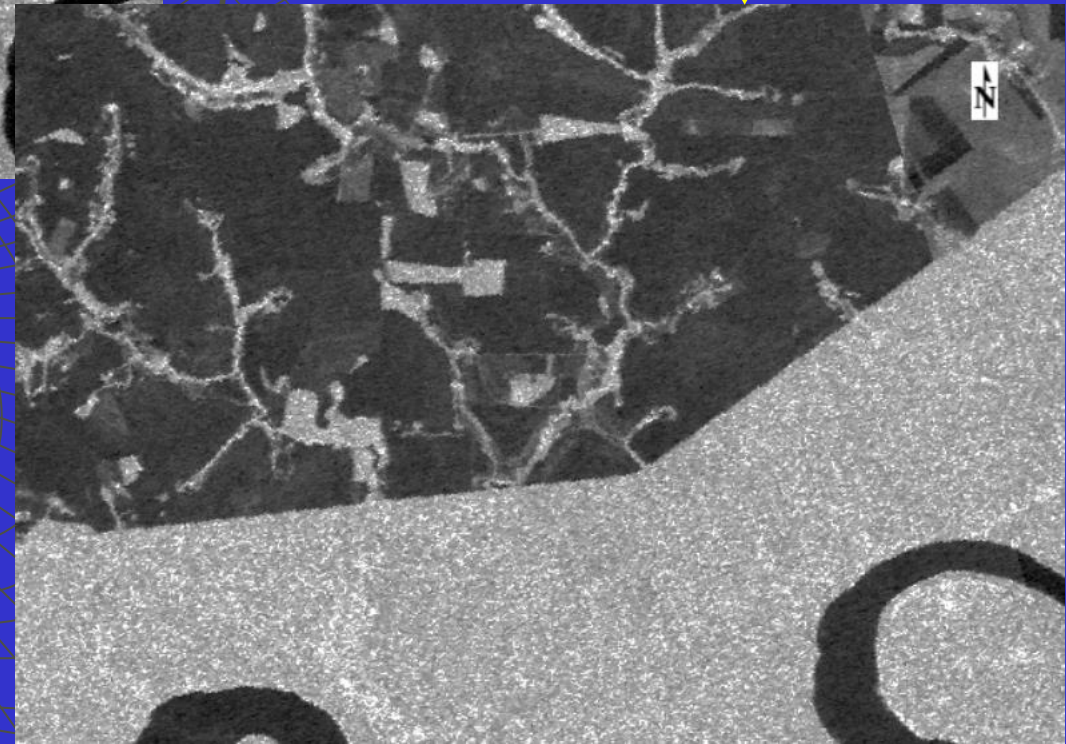


ALOS PALSAR 1



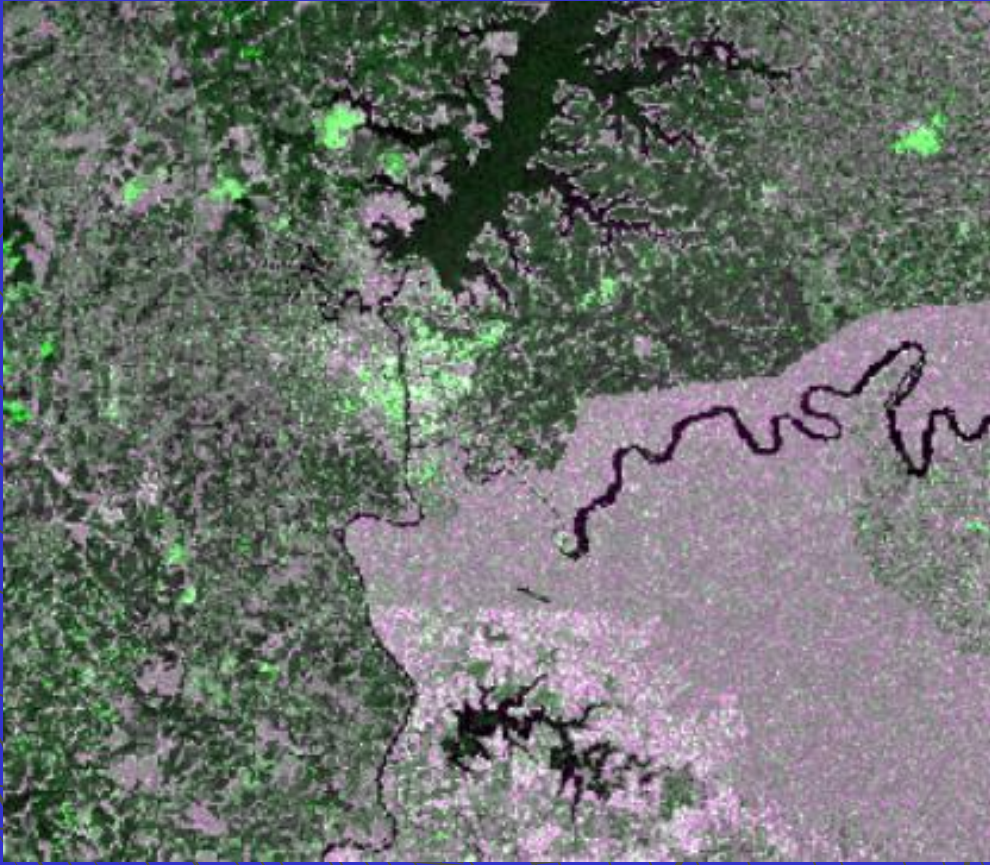
← HH

HV
↓



ALOS PALSAR 1

2007



ALOS PALSAR
Color composition
R: HH January
G: HH September
B: HV September

ALOS PALSAR

Color composition

R: HH January

G: HH September

B: HV September

