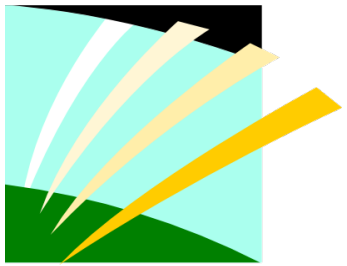

GERSolar

stream processing

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Eloy Adonis Colell
ecolell.github.io


ORBIS
SOLAR


SOLYS 2


Córdoba
Salto
PARANÁ
Villa María
MARCOS JUÁREZ
CONCEPCIÓN DEL URUGUAY
Río Cuarto
San Luis
PERGAMINO
Buenos Aires
LUJÁN
Argentina
GENERAL VILLEGAS
La Plata
Santa Rosa
ANGUIL
AZUL
Mar del Plata
BALCARCE
BARROW
Bahía Blanca
Google

utopía

predecir

la **irradiancia solar**

1 hora antes

para cada punto de la **argentina**

con refrescos de **30 min**

procesos

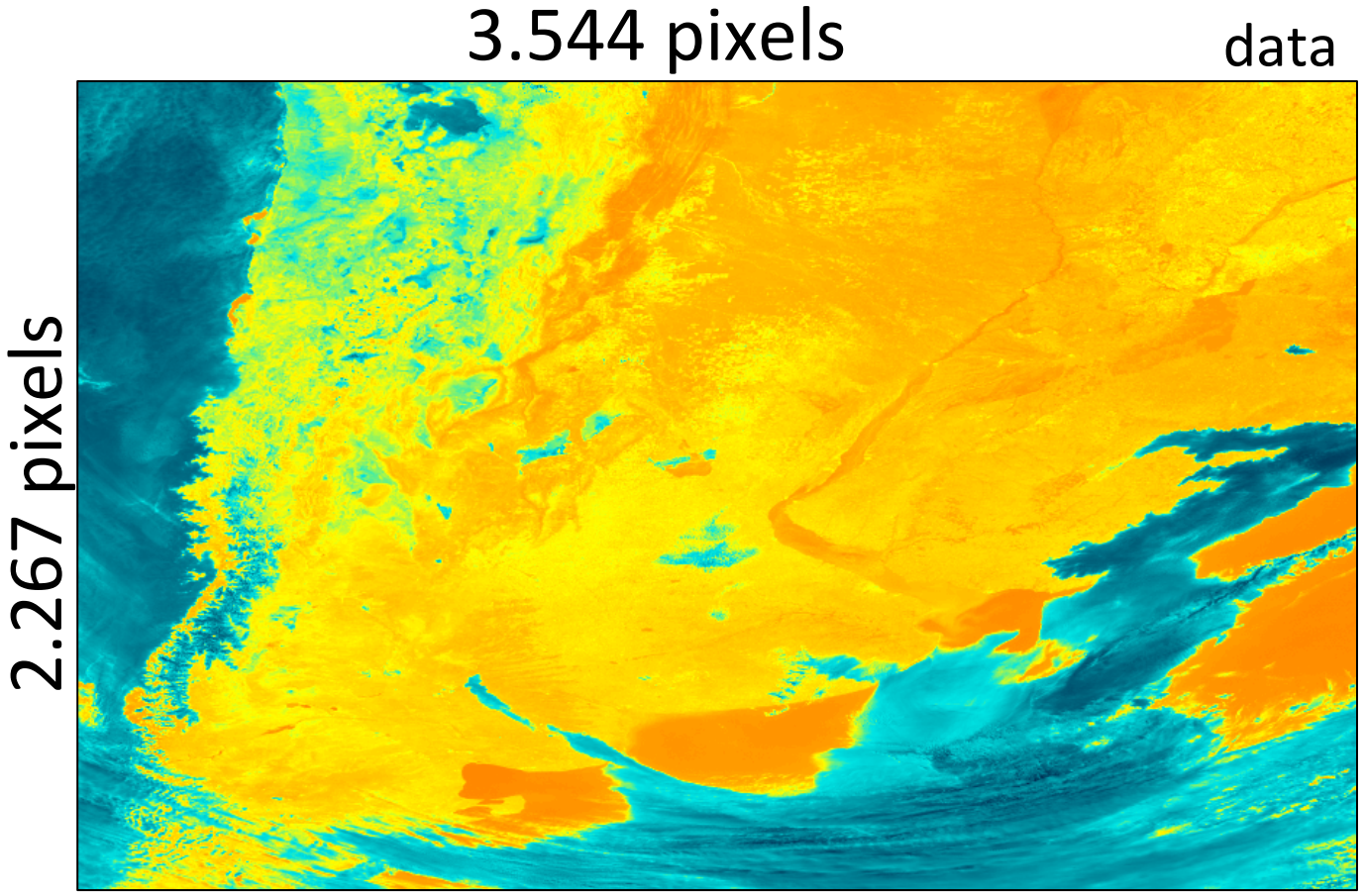
1. Descargar **imágenes**.
2. Obtener **mediciones de tierra**.
3. **Estimar** utilizando **heliosat2** (**GPU**).
4. Calcular **errores** contra las **mediciones en tierra** (**CPU**).

heliosat2 (GPU)

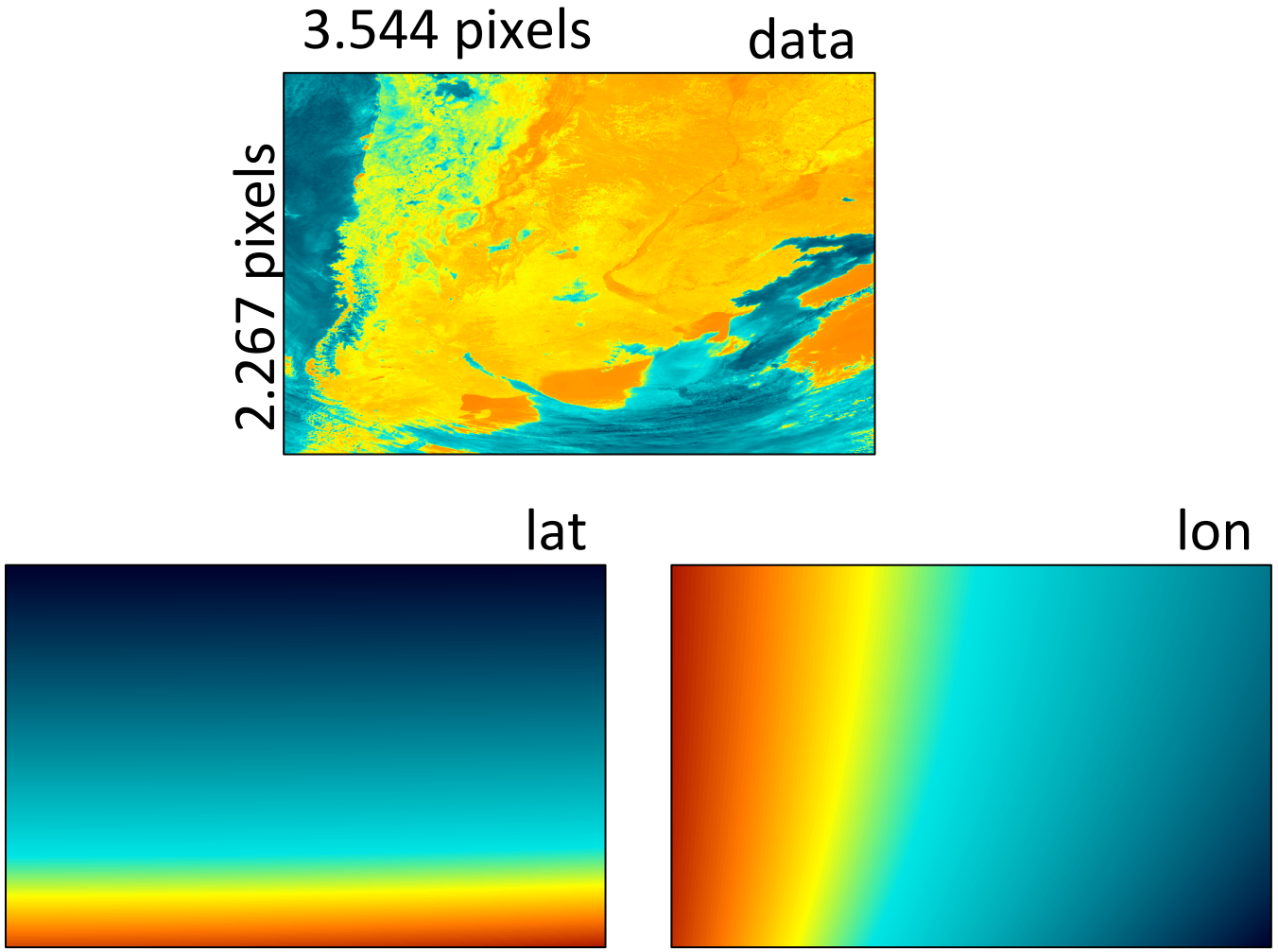
1. **calibración** de las imágenes (paquete de 1 mes).
2. estimar la **irradiancia global** a nivel del suelo

   para cada pixel.

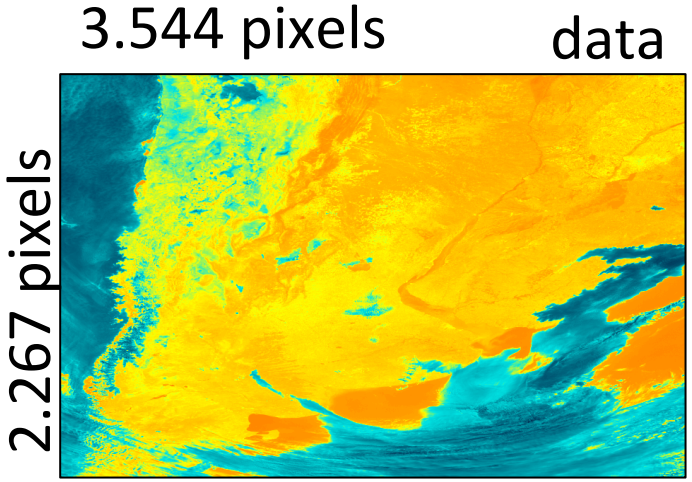
area geográfica



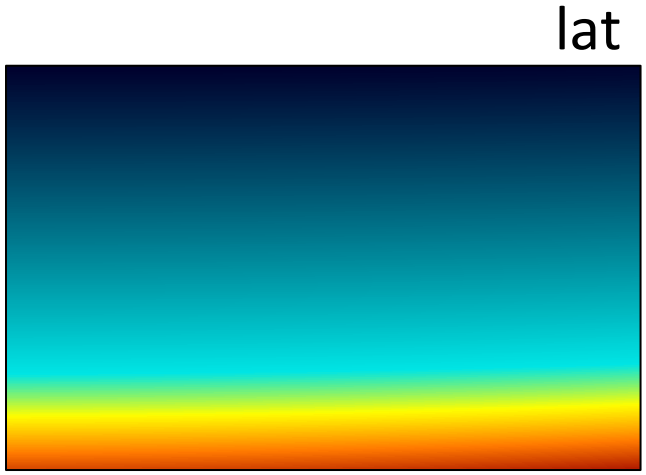
area geográfica

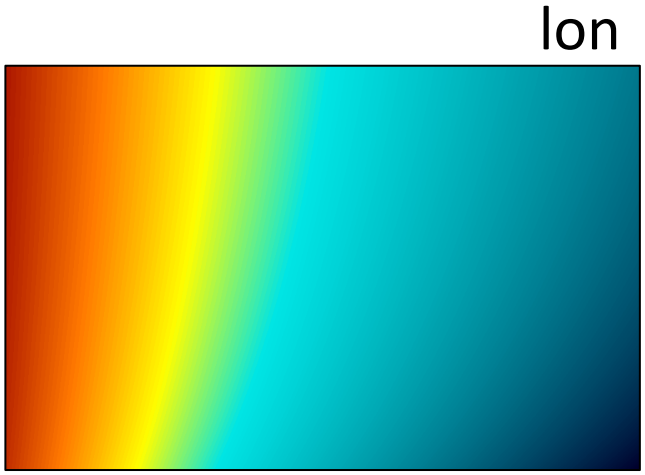


area geográfica

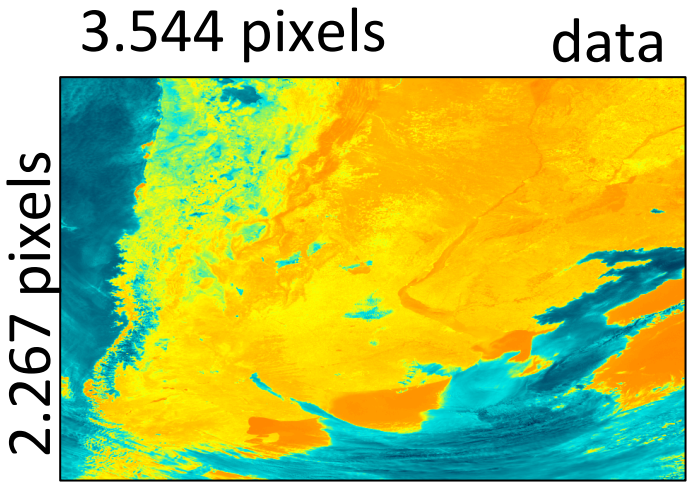


Ej: **353,23134** W/(m^2 * sr)

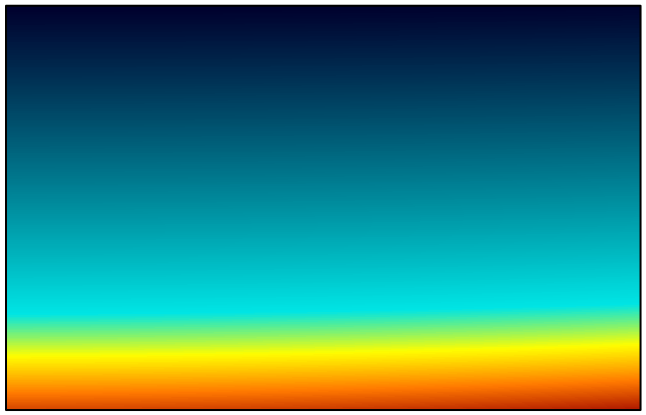


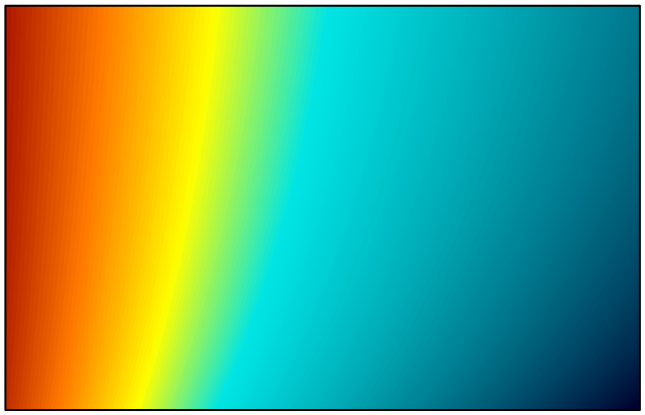


area geográfica

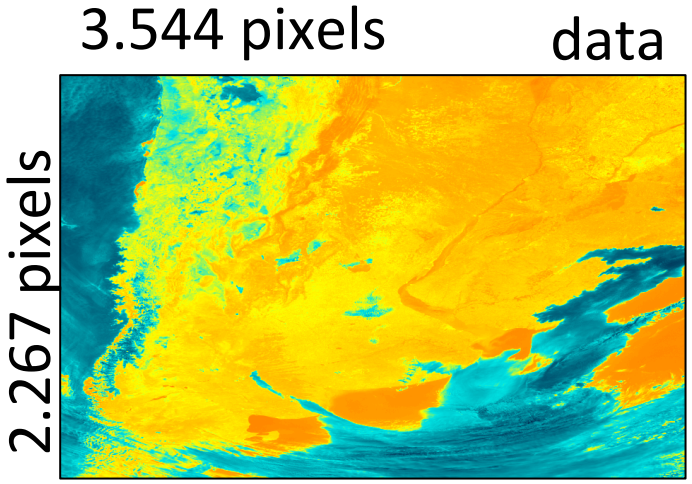


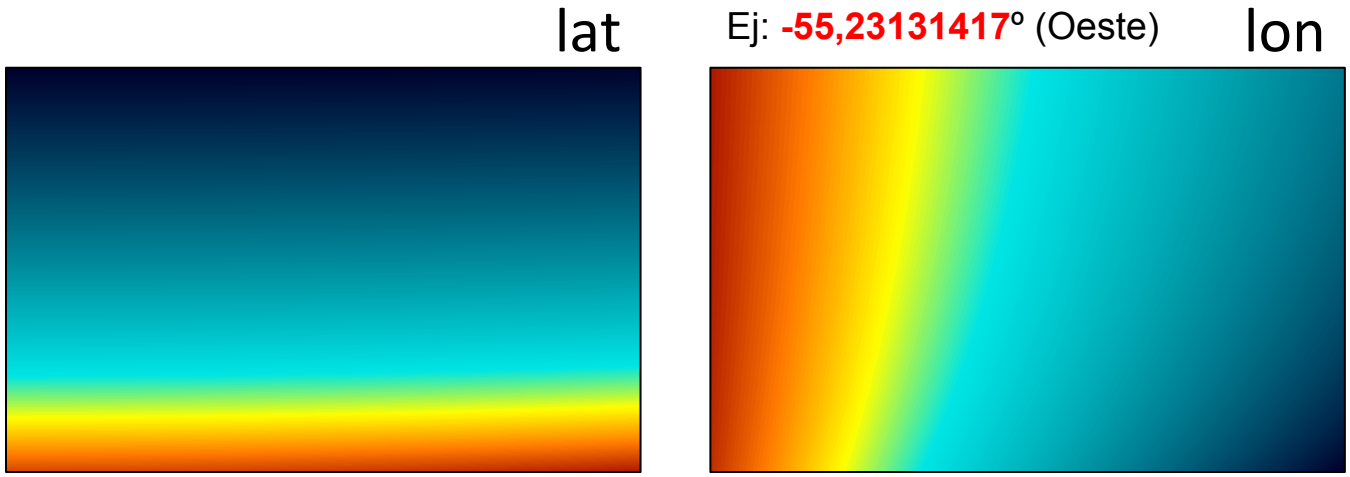
Ej: **-45,23131417**° (Sur)



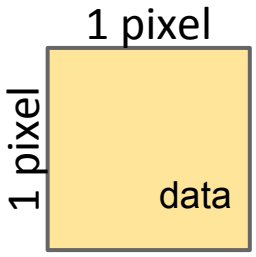


area geográfica





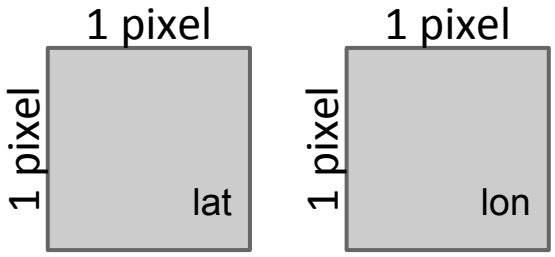
pixel



data calibrada: float 32 bits: W/m^2

4 bytes/px

pixel



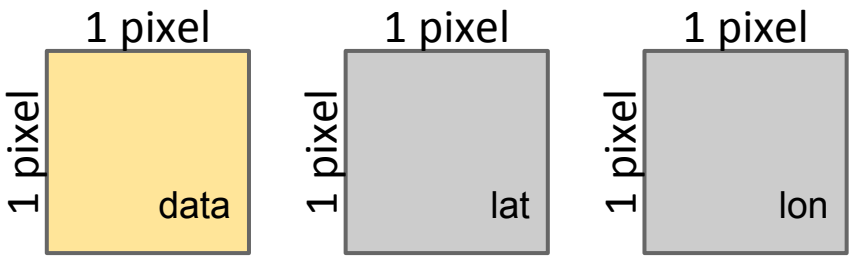
lat: float 32 bits: grados

4 bytes/px

lon: float 32 bits: grados

4 bytes/px

pixel

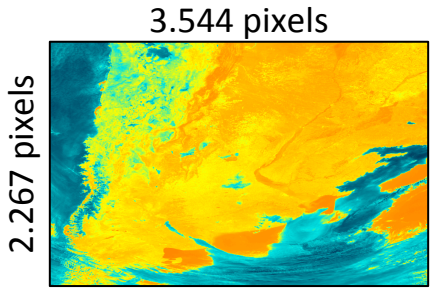


data calibrada + lat + lon

4 bytes/px * 3

12 bytes/px

imagen

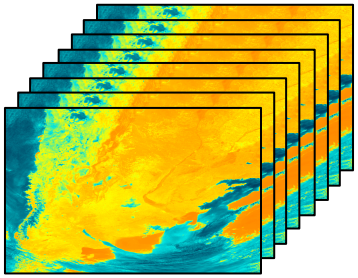


8.034.248 px/imagen

12 bytes/px * 8.034.248 px/imagen

97 MB/imagen

paquete



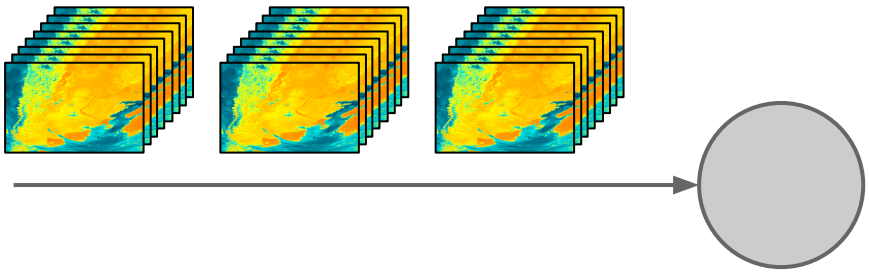
2 imagen/hora * 12 hora luz/dia * 30 dia/mes

720 imagen/mes

97 MB/imagen * 720 imagen/mes

70 GB/paquete

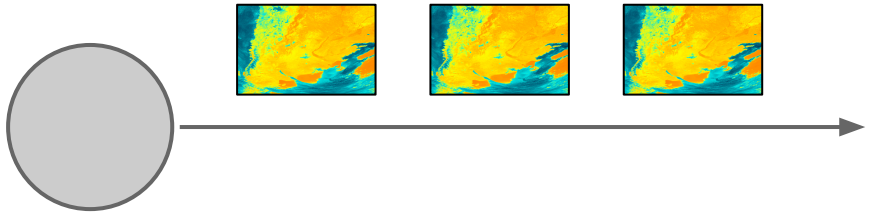
stream de entrada



70 GB/30 min

2,3 GB/min

stream de salida



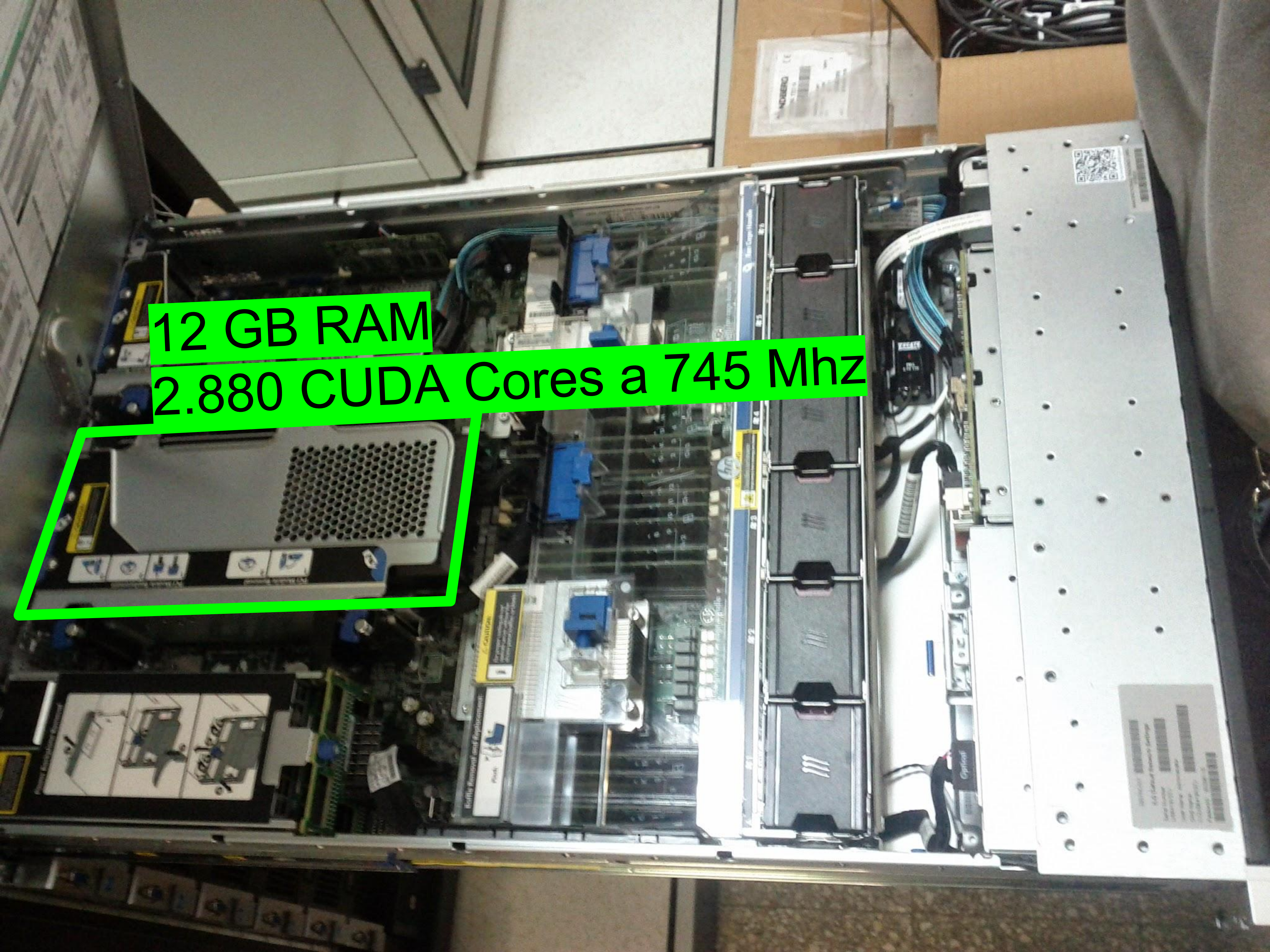
8034248 px/imagen * 4 bytes/px

321 MB/30min

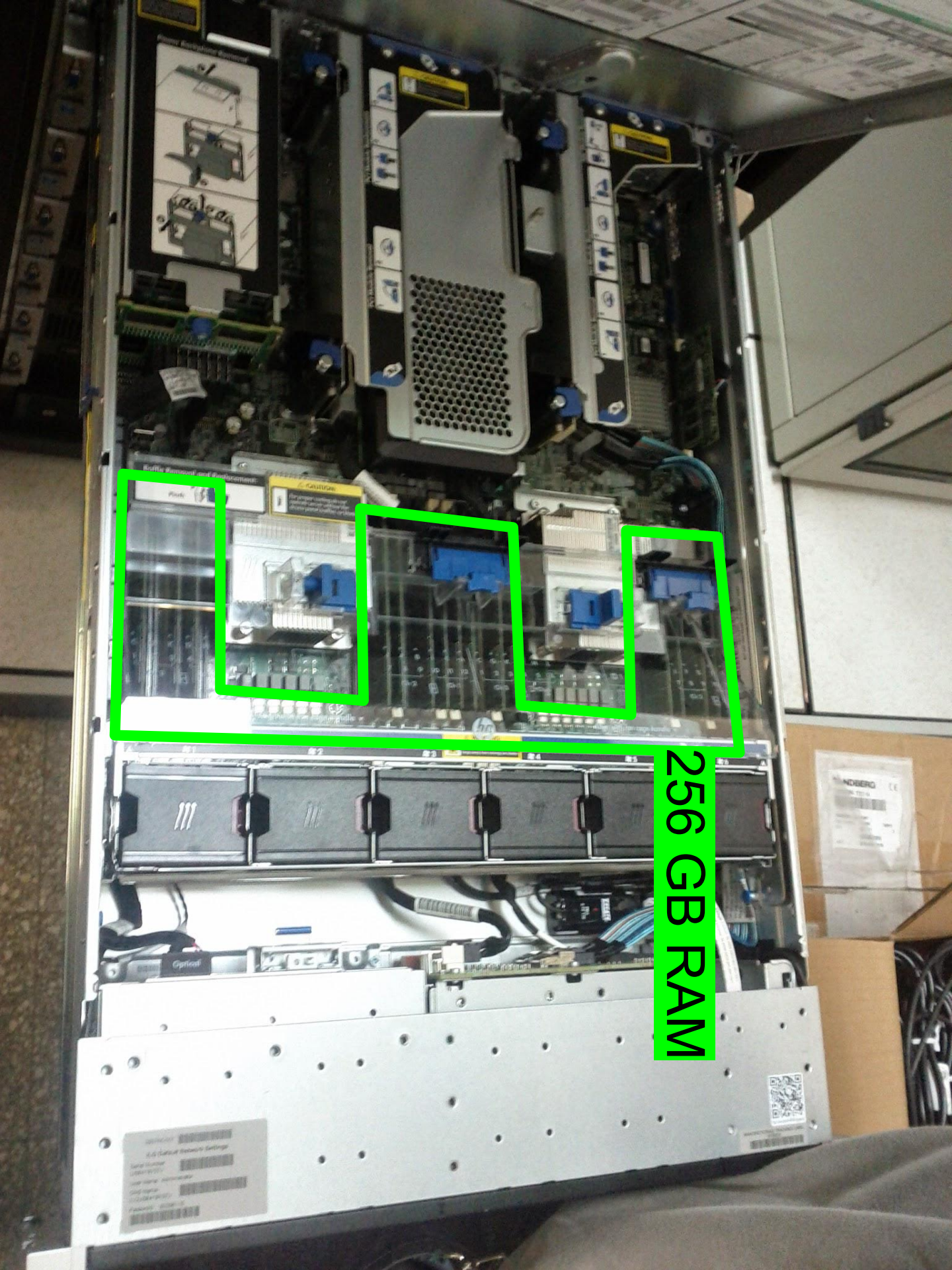
10,7 MB/min

hardware

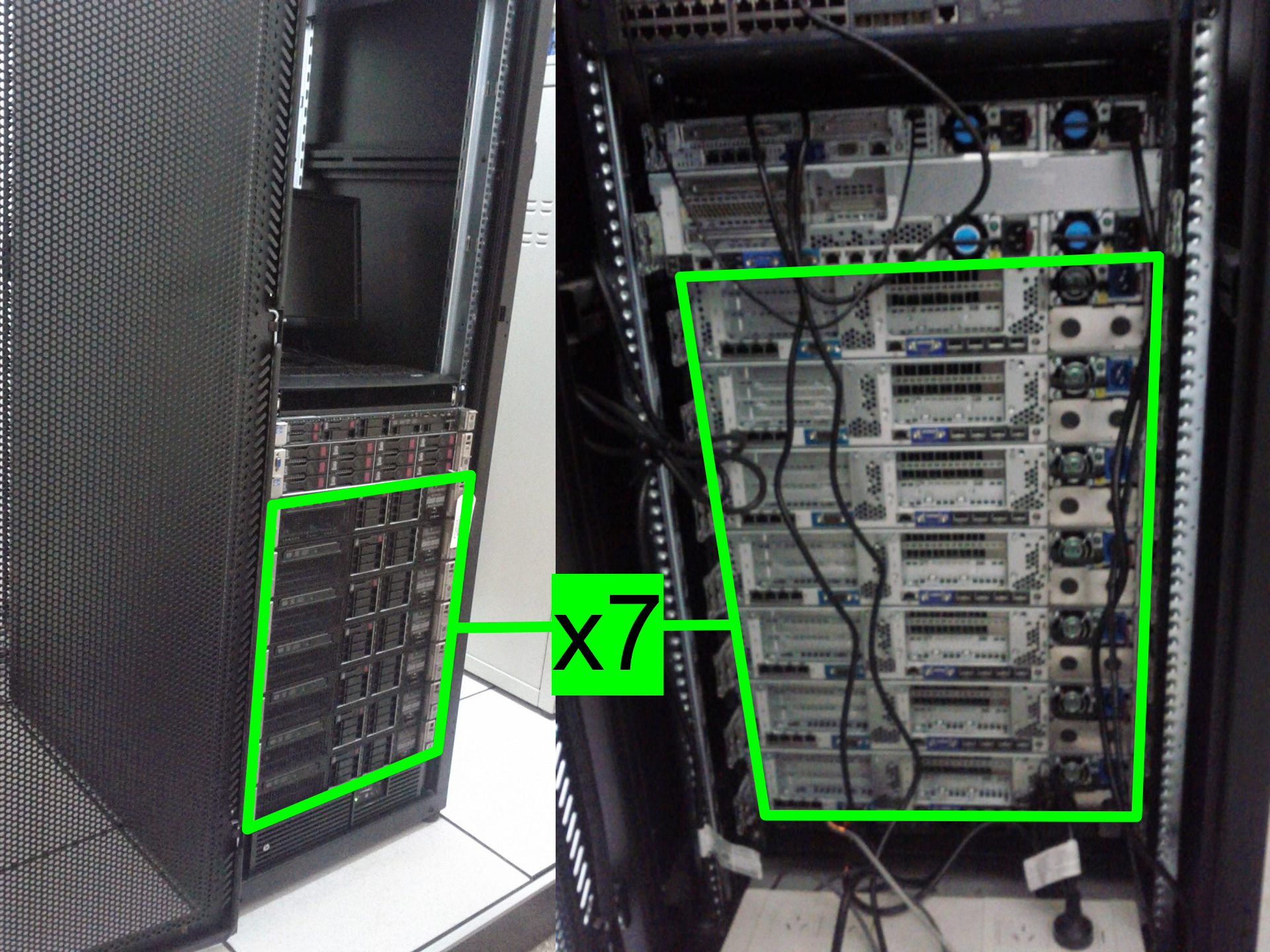
CentroTIC

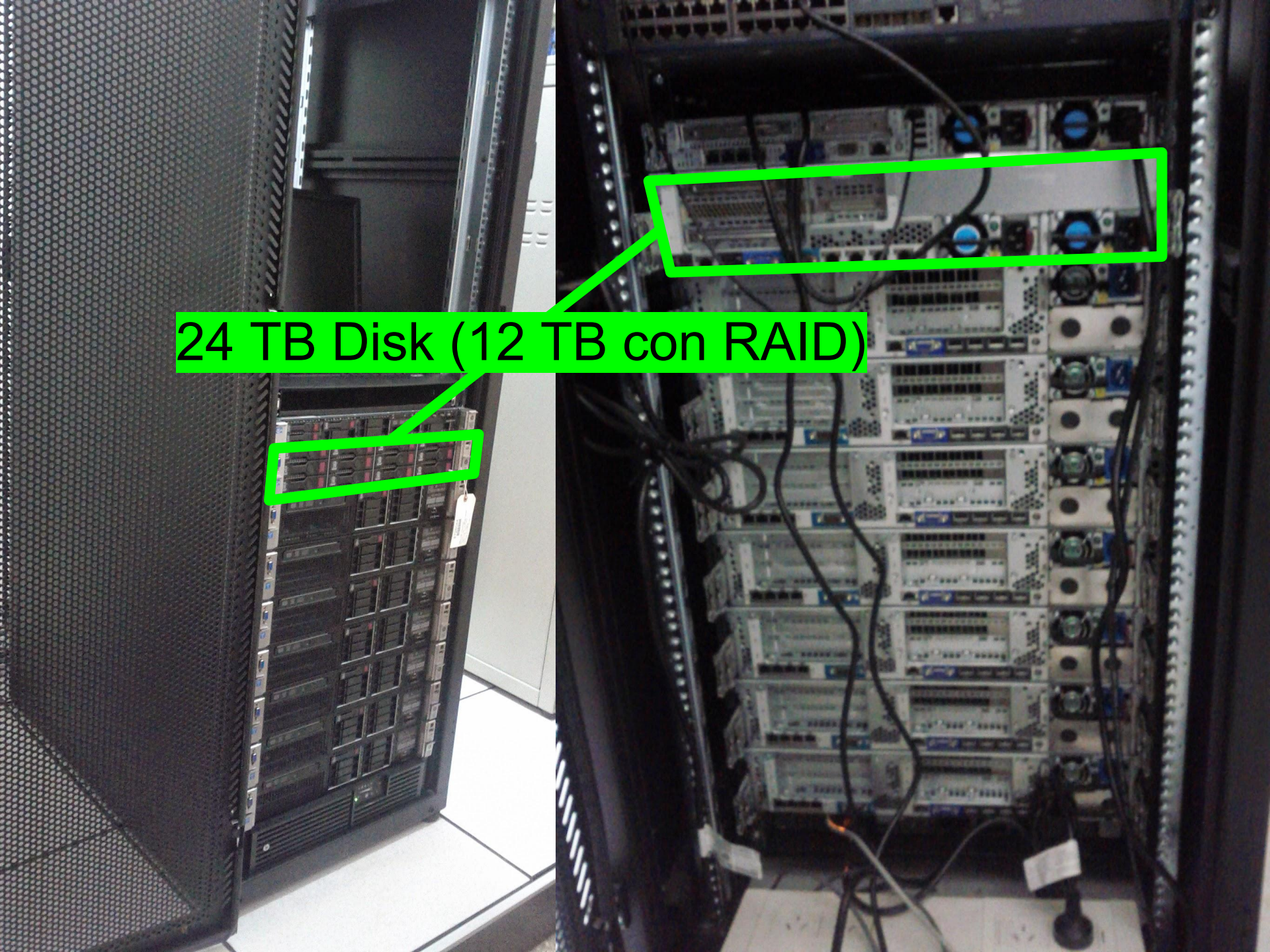

12 GB RAM
2.880 CUDA Cores a 745 Mhz


2 CPUs x 6 Cores a 2,3 Ghz


256 GB RAM


500 GB Disk


x7


24 TB Disk (12 TB con RAID)

desafíos

estrategia de **tiles o mosaicos**

normalización de mediciones en tierra

distribución de carga en el Cluster

optimizaciones **en GPU**

generar una arquitectura de procesamiento

codigo fuente

repositorios github

gersolar/netcdf

gersolar/noaaclass

ecolell/goesdb

rossant/playdoh

ecolell/solar_radiation_model

¿preguntas?

gracias