«GIS as Humanitarian Aid»

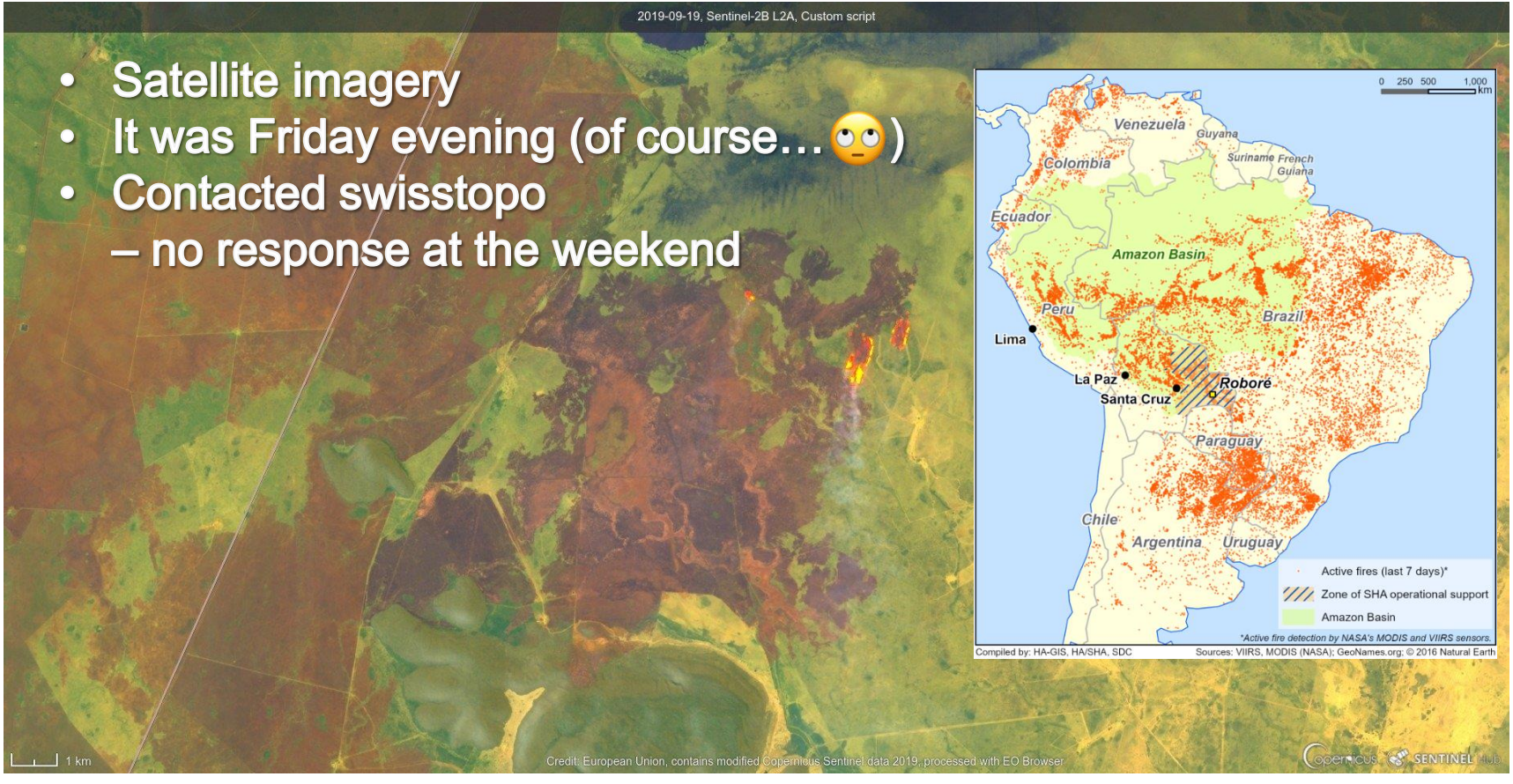
Fire Tracker, Santa Cruz, Bolivia

ESRI GIS Day
Nyon, 13.11.2019

Mary Brown, Humanitarian Aid and SHA, Swiss Agency for Development and Cooperation (SDC)

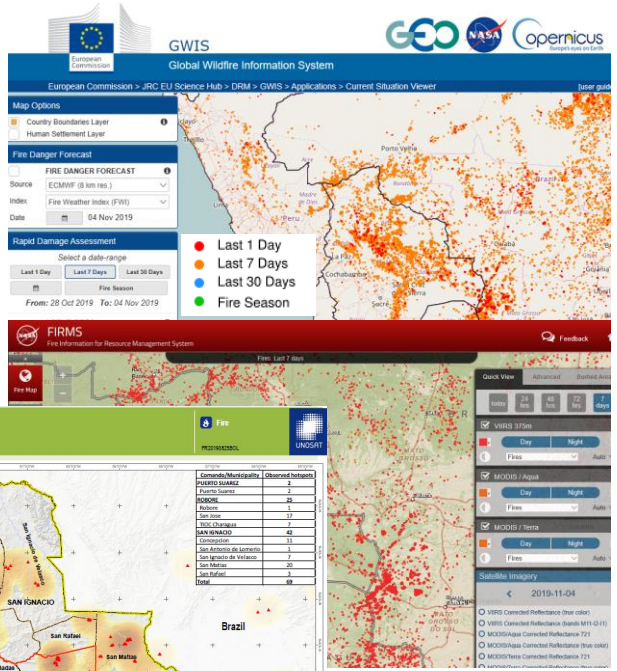
Background/request…

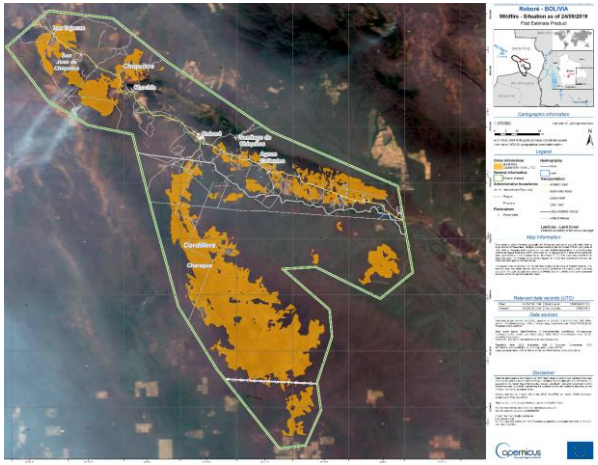
- Satellite imagery
- It was Friday evening (of course…🙄)
- Contacted swisstopo
  – no response at the weekend

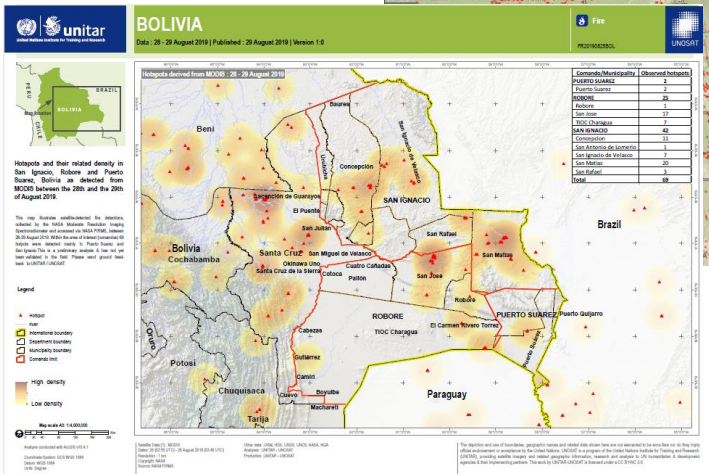


Online Platforms & Traditional Products

- Online-Platforms from the EU and NASA
- Same data, slightly different functionality, basic symbolisation
- Activation of Emergency Mapping Services (Copernicus, UNOSAT, Disasters Charter)



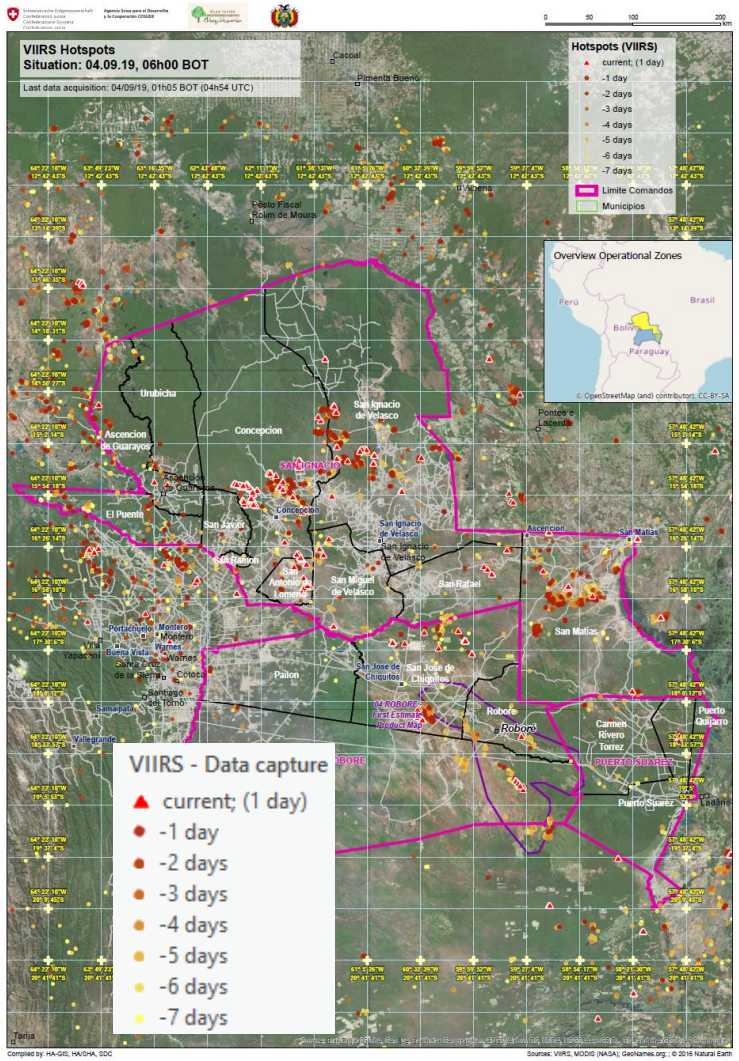




…time to improvise!

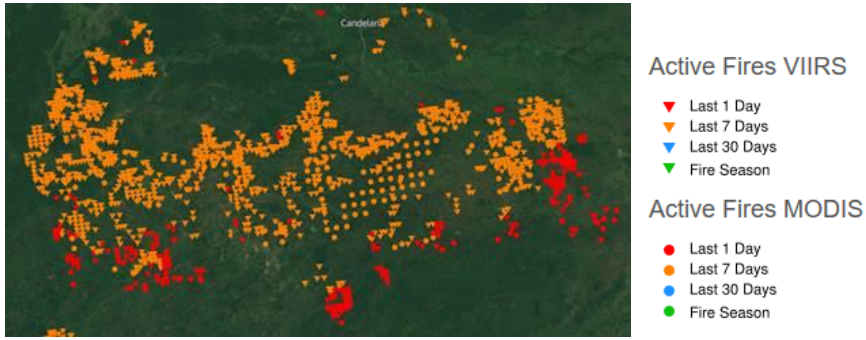
- Experience from 2017!
  (Montenegro, Portugal, Italy)
- NRT (Near real-time) data from NASA - 2 thermal sensors (satellite)
  (MODIS – 1km; VIIRS – 375m)
- Data online ~3h after overpass
- Map showing age of hotspots
- Requests to add their own data
- PDFs sent 2-3 times a day
- Time difference to Bolivia (-6h)

→ **Not sustainable!**

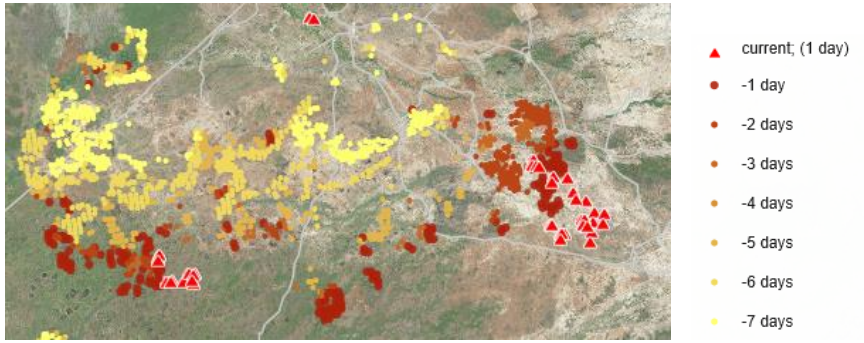


Comparison with alternatives

- Global Wildfire Information System from Copernicus
- Very basic view of progression over time
- No option to customise map or add own data layers

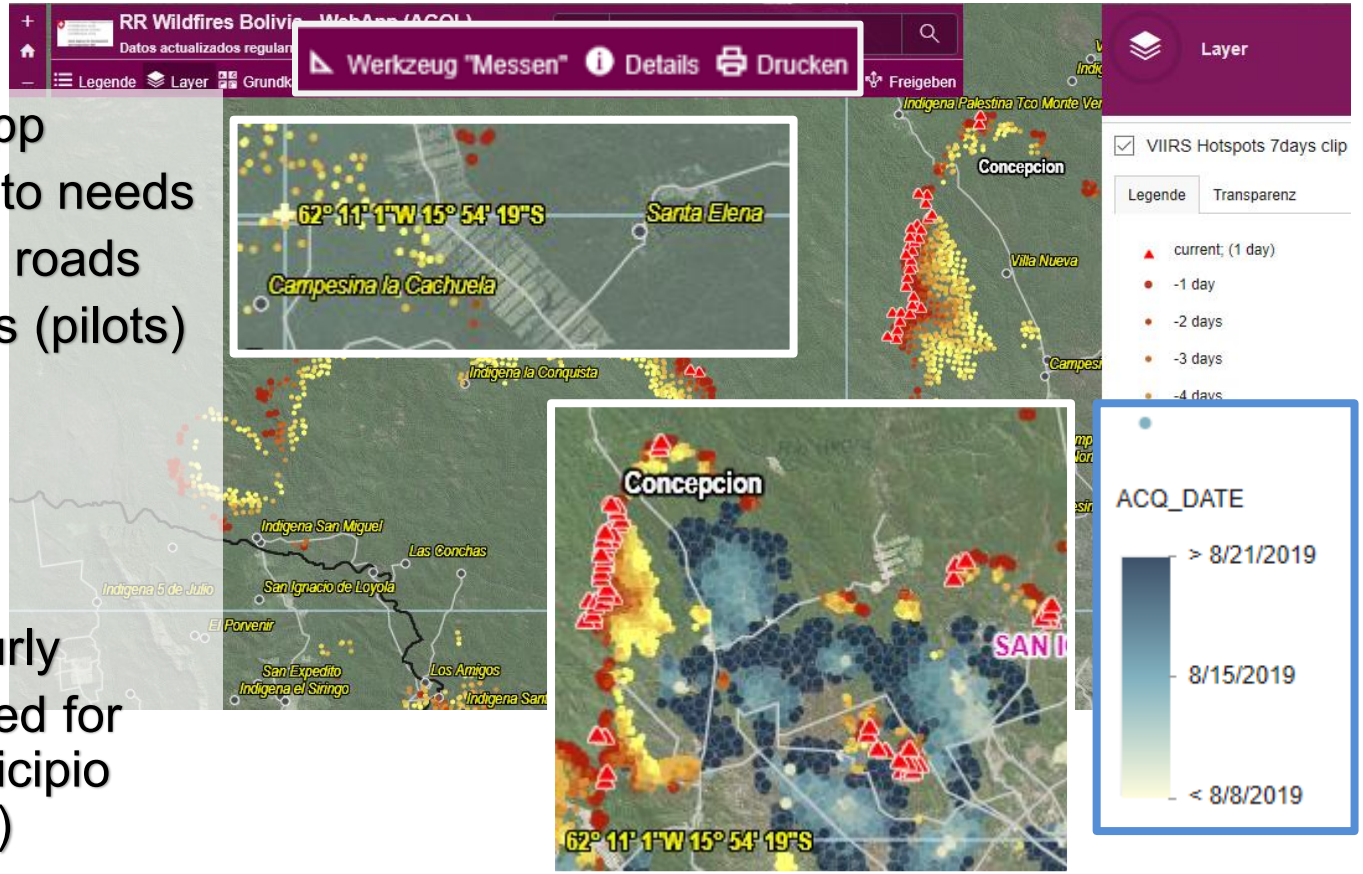


- HA mapping in comparison
  - Easier to recognise locations with own data added
  - Movement of fire over time becomes clear
  - This symbolisation was a major added-value

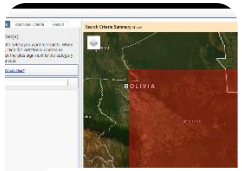
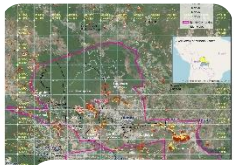
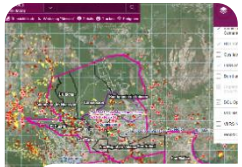
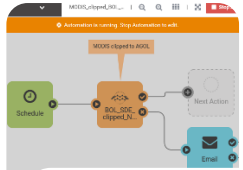


…. and what they actually got!

- Interactive WebApp
- WebMap tailored to needs
- Villages, hamlets, roads
- Grid + coordinates (pilots)
- Burn scars
- Historical data
- Simple tools (measure, print)
- Data updated hourly
- Statistics calculated for hotspots per municipio (automated email)



GIS Response Timeline

Fr. 23.08. 20h	Su./Mo. 25.-26.08.	Tu./We. 27.-	Th./Sa. 29.-31.08.	From Su. 01.09.
				
Initial contact GIAR/HQ (GIS) •Contact swisstopo •Satellite imagery requested •Data exploration	**Maps using HA methods** •Hotspots •Symbolisation •Basic layers •Map files emailed (PDF, Jpeg)	**WebMap/WebApp** (HA Geoportal) •Intranet •Dynamic, flexible •Additional layers (BOL) •Geoprocessing (hotspots per munic.)	**WebApp (AGOL)** •Internet (log-in) •More layers (Grid+Coords, historical data) •Sentinel imagery •Handover	**Automation** •NASA data updated in webmap every 1—2h •Statistics calc. per municipio & emailed
Email/Tel./web	Desktop GIS/FME, Cartography, GDB, Geoprocessing	Desktop GIS, FME, GDB, HA Geoportal	Desktop GIS, FME, GDB, Geoprocessing, ArcGIS Online	Geodatabase, FME Server, FME Cloud

Only possible thanks to the existing GDI & relevant know-how/experience + backup!

Some stats…

Hotspots

- MODIS ca. 5 - 10,000
- VIIRS ca. 12 - 55,000

Item Views this Period

1,064

Avg Item Views Per Day

46.26

Usage Time Series

Fire Tracker Web App

Requests this Period

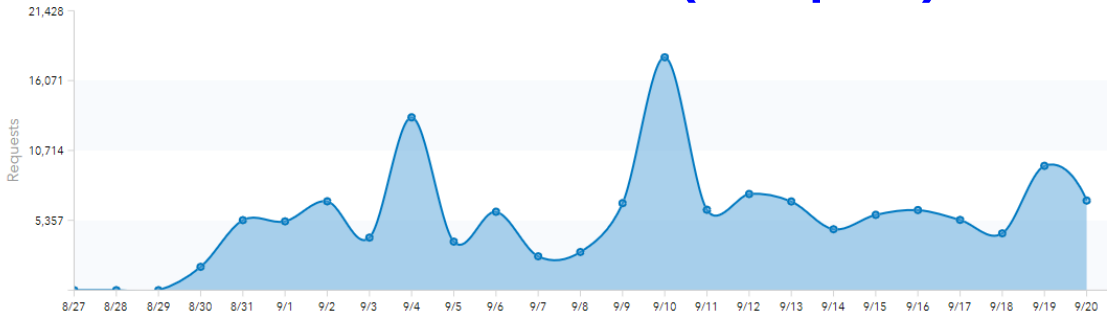
139,340

Avg Requests Per Day

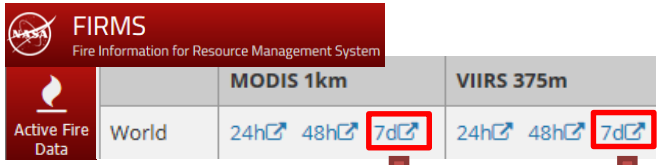
6,058.26

Usage Time Series

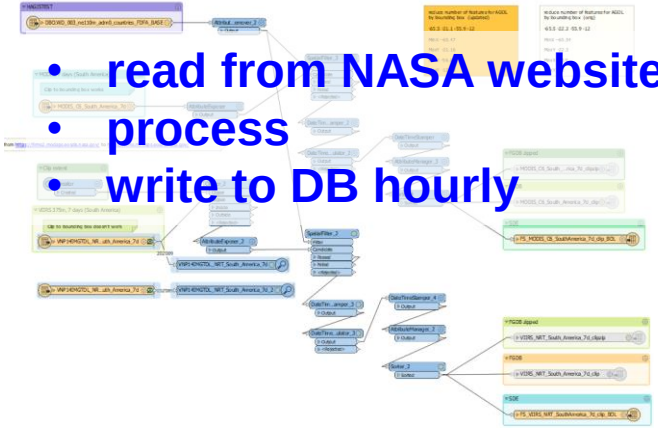
VIIRS web service (hotspots)



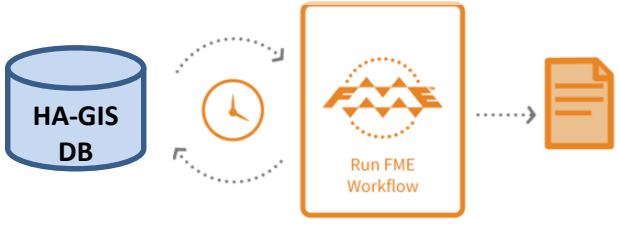
Infrastructure behind Fire Tracker WebApp



- read from NASA website
- process
- write to DB hourly



- read from GIS-DB
- Automated process on server
- Scheduled to write to webservice 1-2 hourly



HA-GIS Server (IT EDA)

- Server emails if fails &
- Emails stats (xls) to Bolivia

Municipio	Sep-20-2019	Sep-19-2019
Ascencion de Guarayos	27	86
Carmen Rivero Torrez	60	117
Charagua	52	204
Concepcion	269	1240
El Puente	3	60
Pailon	0	2
Puerto Quijarro	8	9
Puerto Suarez	107	266
Robore	35	129
San Antonio de Lomerio	89	417

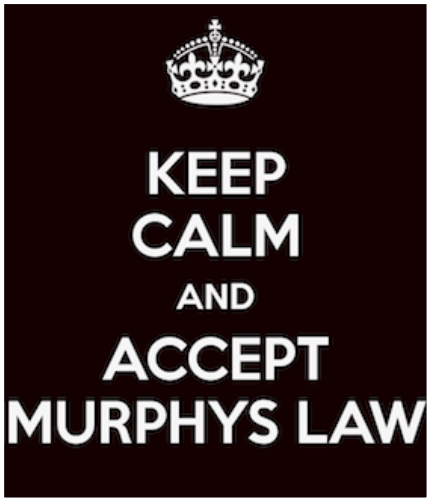
- WebMap updated

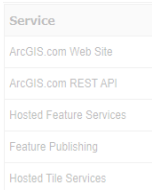
By the way…. Murphy **loves** GIS!

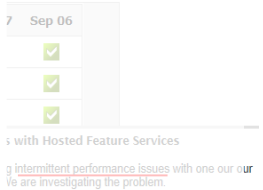
Examples of Murphy tormenting a GIS specialist:

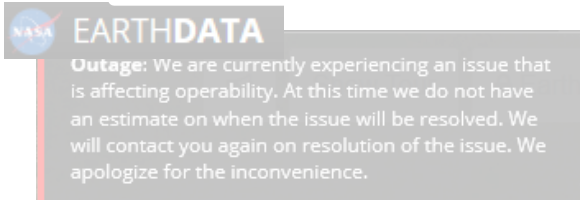
- Server disk full

- Database inaccessible
  (yes, of course it was at the weekend..)
- tion not w
- "ANYTHING THAT CAN GO WRONG, WILL GO WRONG." MURPHY'S LAW
- AGOL Maintenance
- NASA data on website not updated
- Data requests blacklisted by NASA









Questions?