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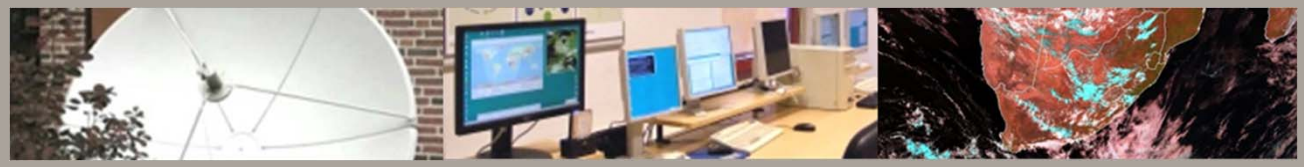


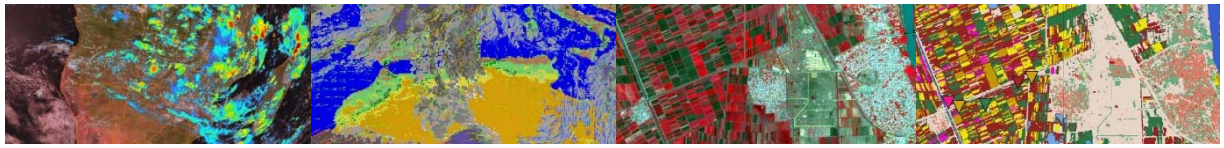
GEONETCAST TOOLBOX

BEN MAATHUIS / CHRIS MANNAERTS / BAS RETSIOS

APRIL 2020

ITC FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

GEONETCAST OVERVIEW



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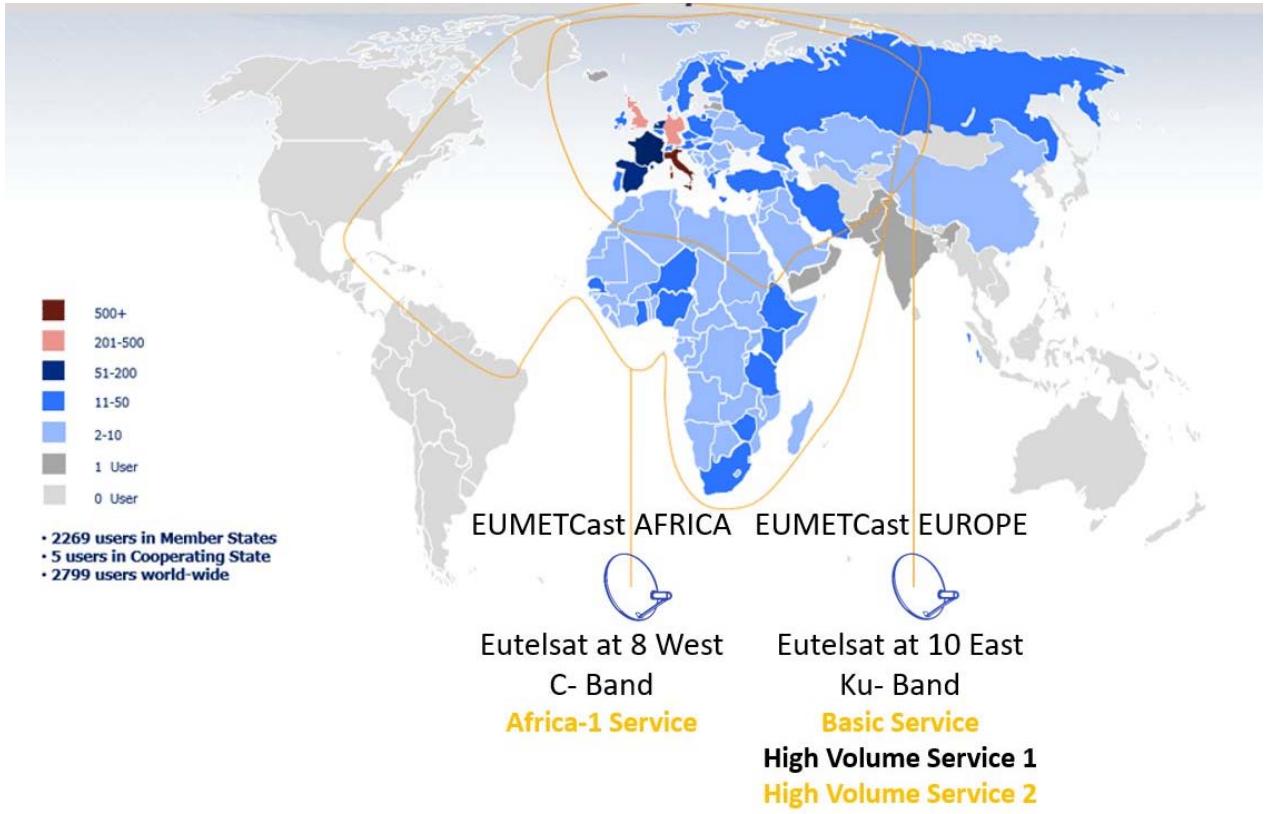
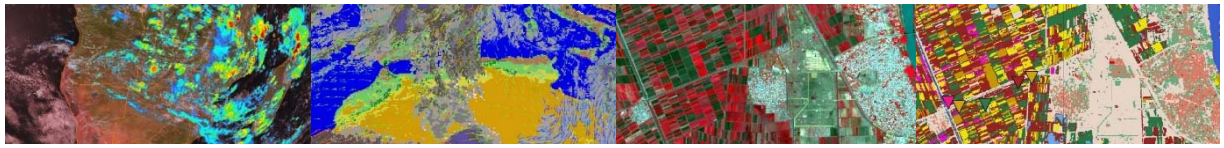
DATA RECEPTION

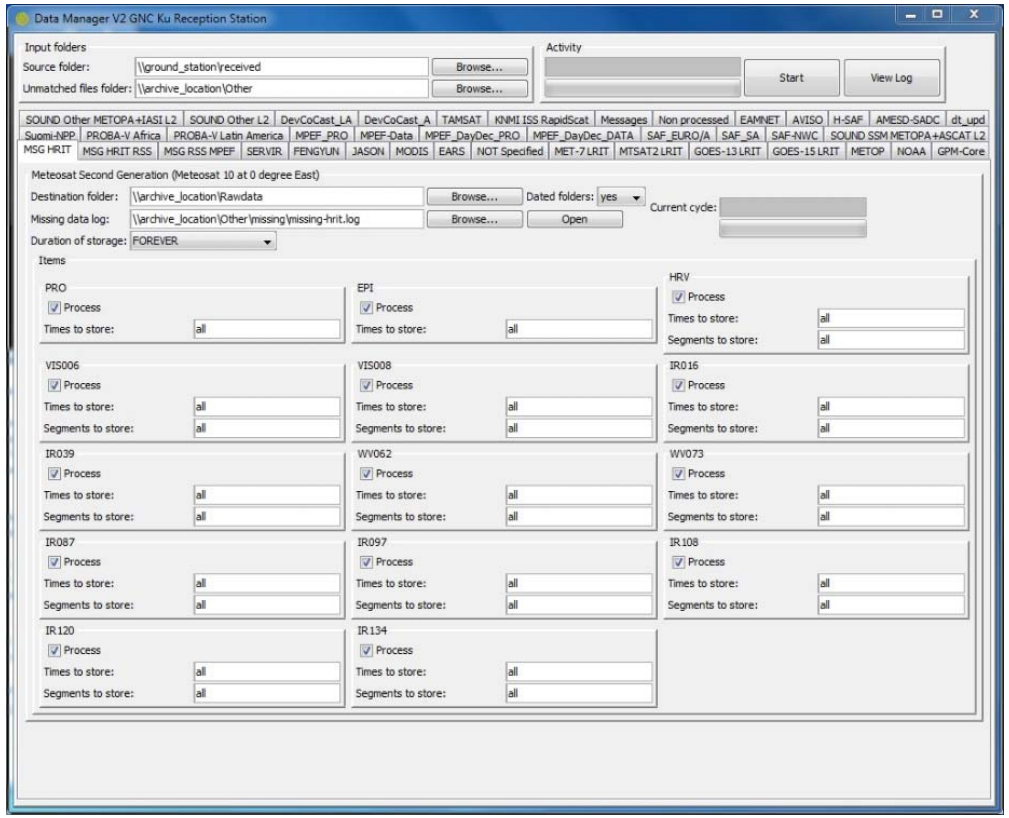
- GEONETCast as backbone for (real-time) data provision
- Multiple GEONETCast services (Europe - BAS + HVS1 & 2 / Africa)





DATA MANAGEMENT

- **Continuous management of newly received data and available from server**



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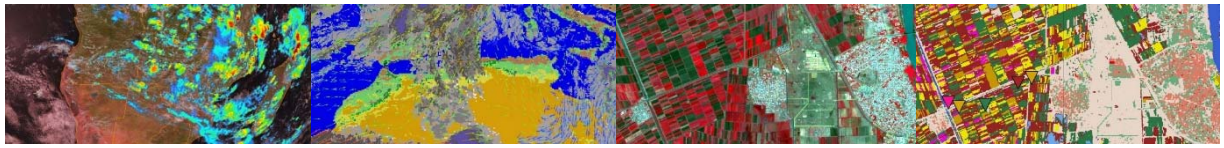
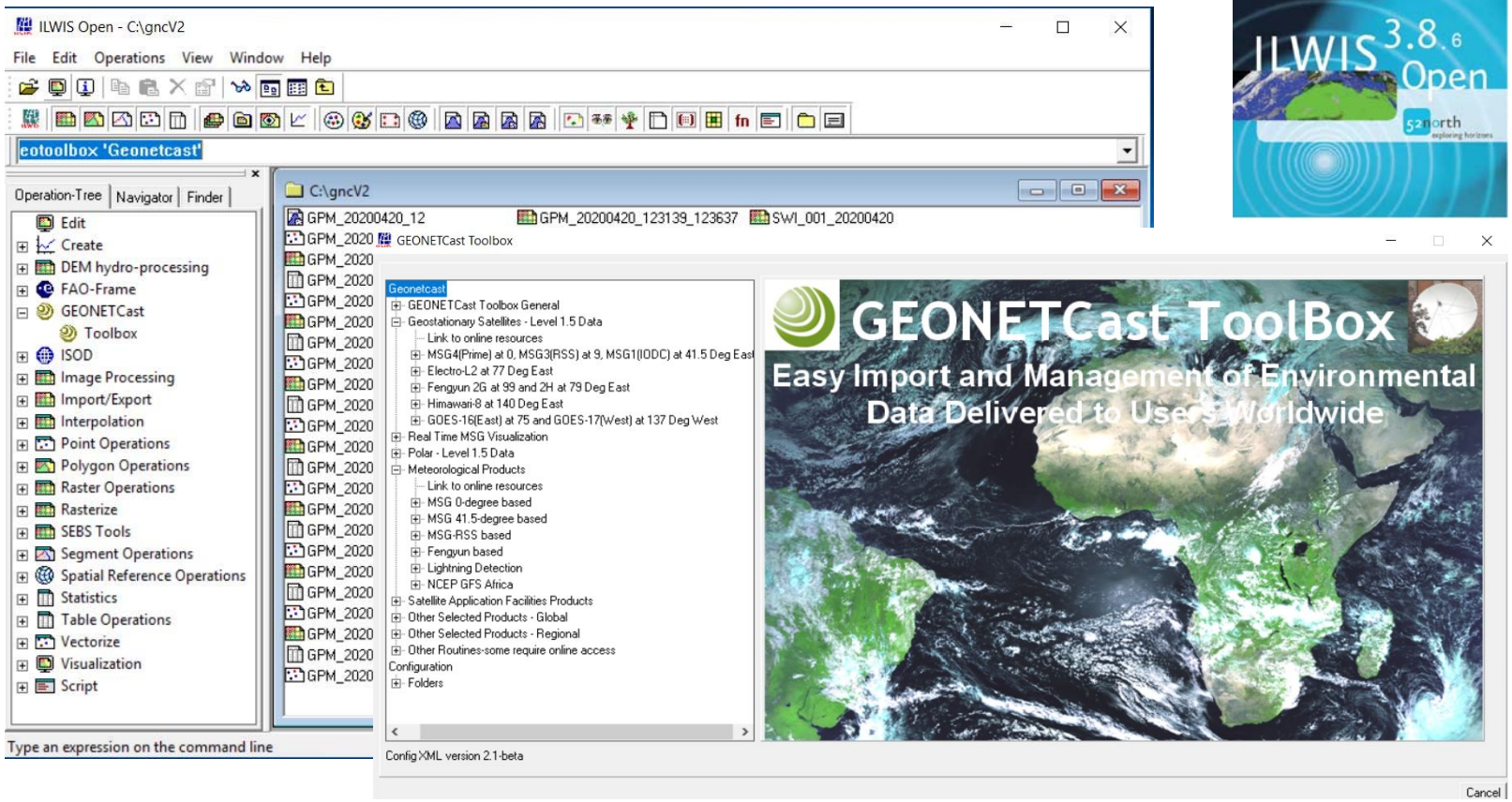
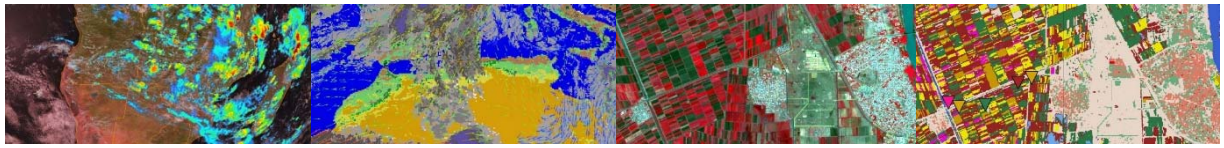


DATA PROCESSING

- **ILWIS 386 and the GEONETCast Toolbox plug-in**





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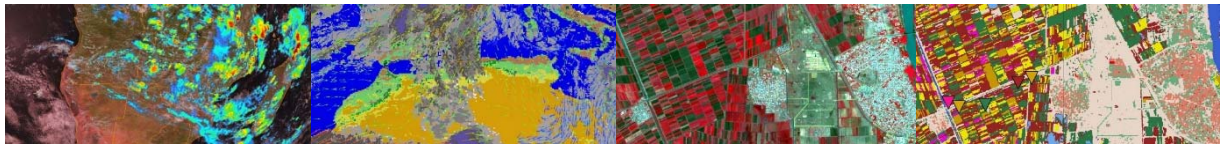
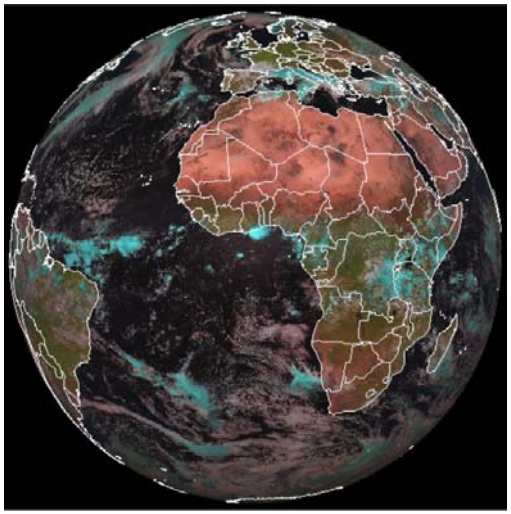
GEONETCAST TOOLBOX CAPABILITY

- **Following main functionality to derive images and products relevant for land, ocean and atmosphere studies / research:**
  - **Data management**
  - **Import and pre-processing of:**
    - **various geostationary satellites and real time visualization for MSG for different regions**
    - **various polar orbiting satellites**
    - **various meteorological products**
    - **various products provided through the Satellite Application Facilities, like LSA-SAF, H-SAF, NWC-SAF, OSI-SAF and CM-SAF**
    - **various global and regional products**
  - **Other relevant (external) routines and links to resources**

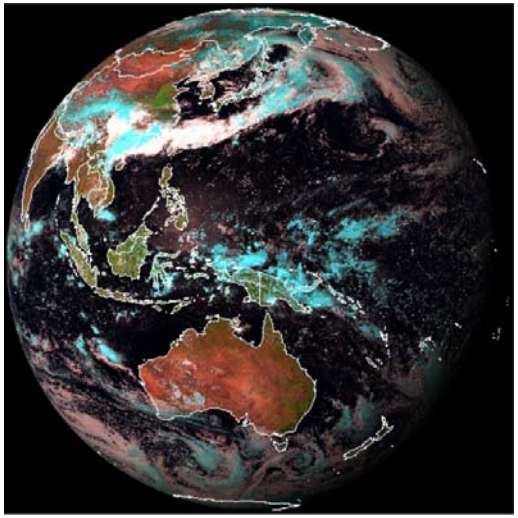


SOME EXAMPLES: GEOSTATIONARY

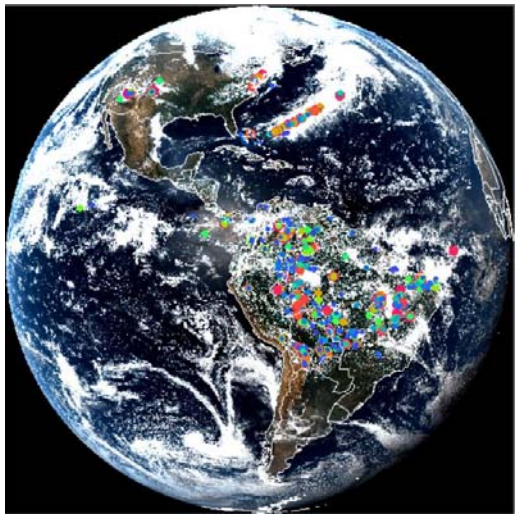
- **MSG, Electro-L, Fengyun, Himawari, GOES**



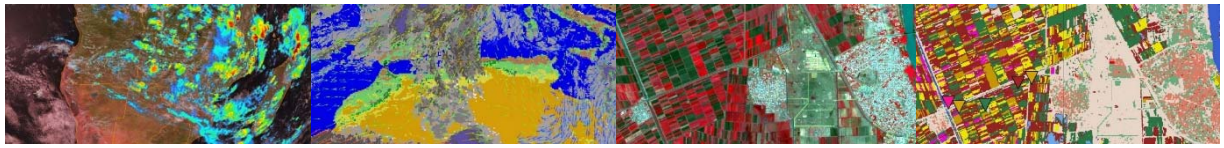
All operational MSG satellites



Himawari-8

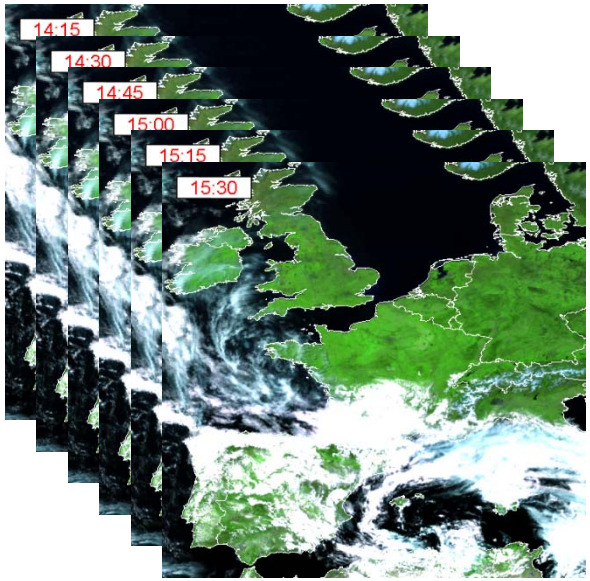


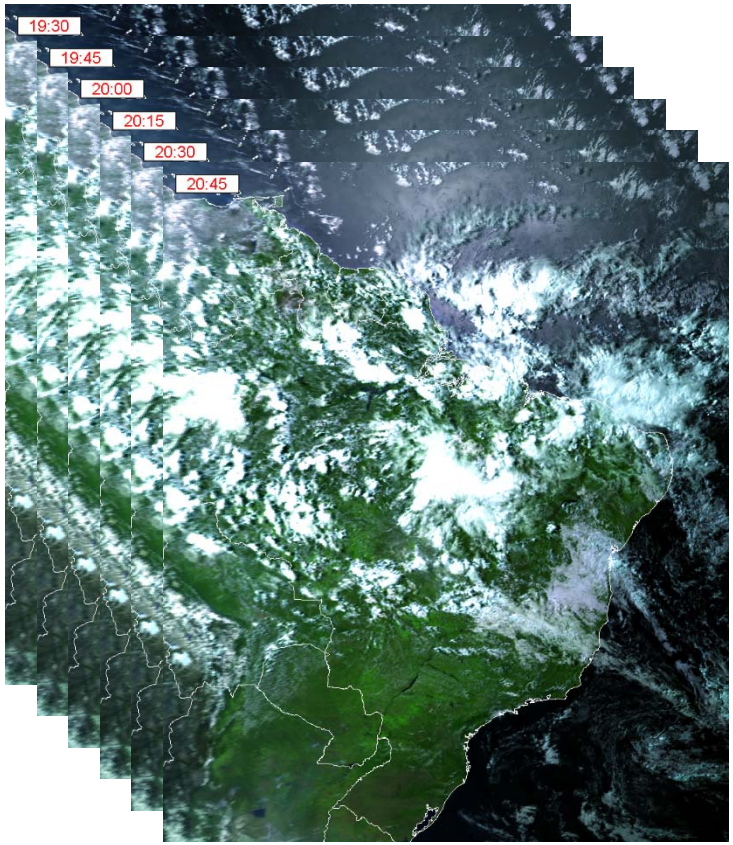
GOES and GLM



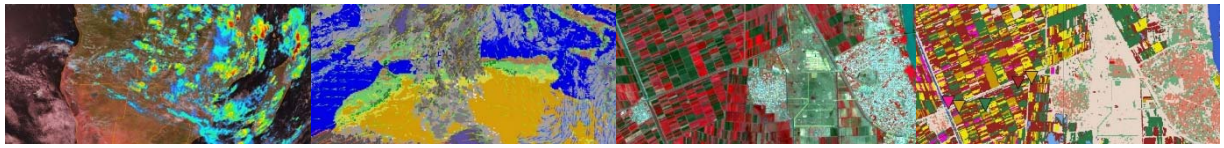
SOME EXAMPLES: GEOSTATIONARY

- **Real time visualization of MSG (for different windows)**



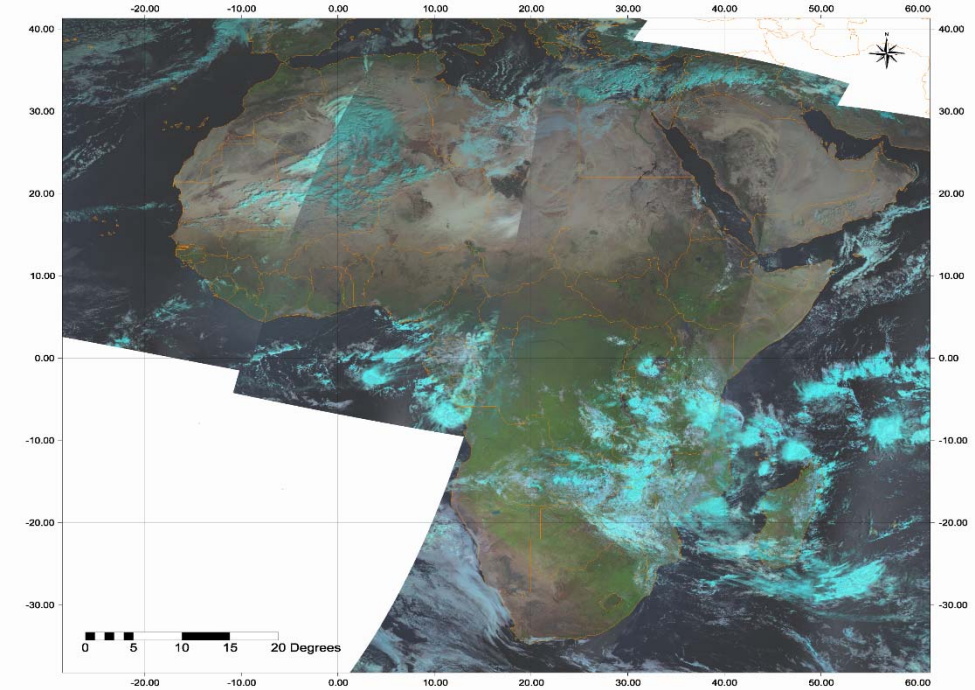


Automated visualization every 15 minutes, examples are European and Latin American windows



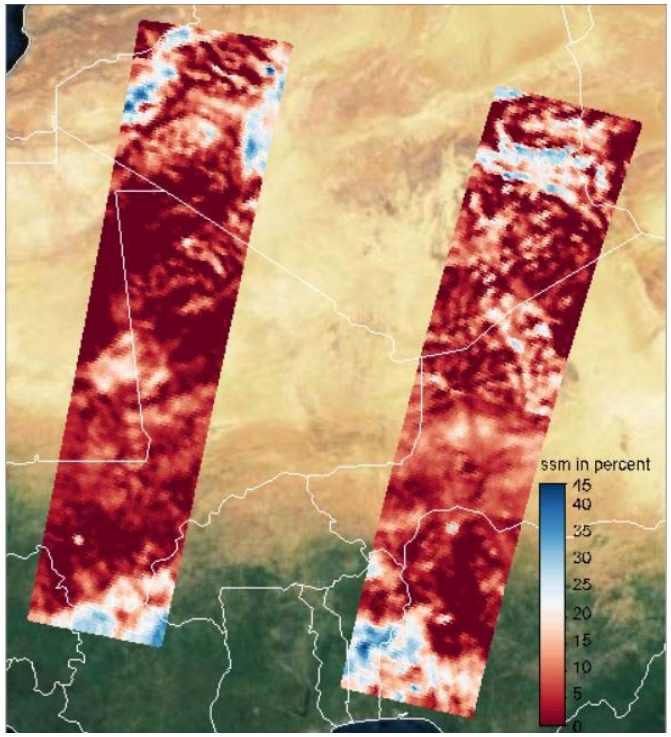
SOME EXAMPLES: POLAR ORBITING

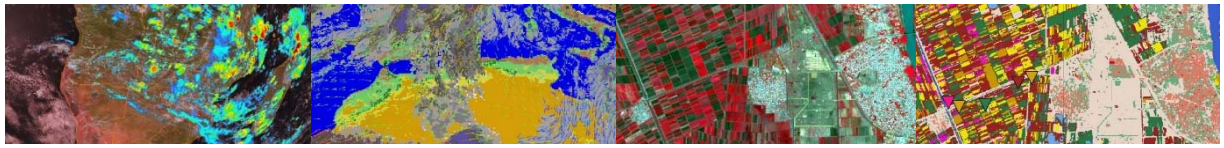
- **METOP A/B/C AVHRR/3 – ASCAT and NOAA 19**



Import 3 minutes segments of METOP A/B/C AVHRR

METOP A/B/C ASCAT





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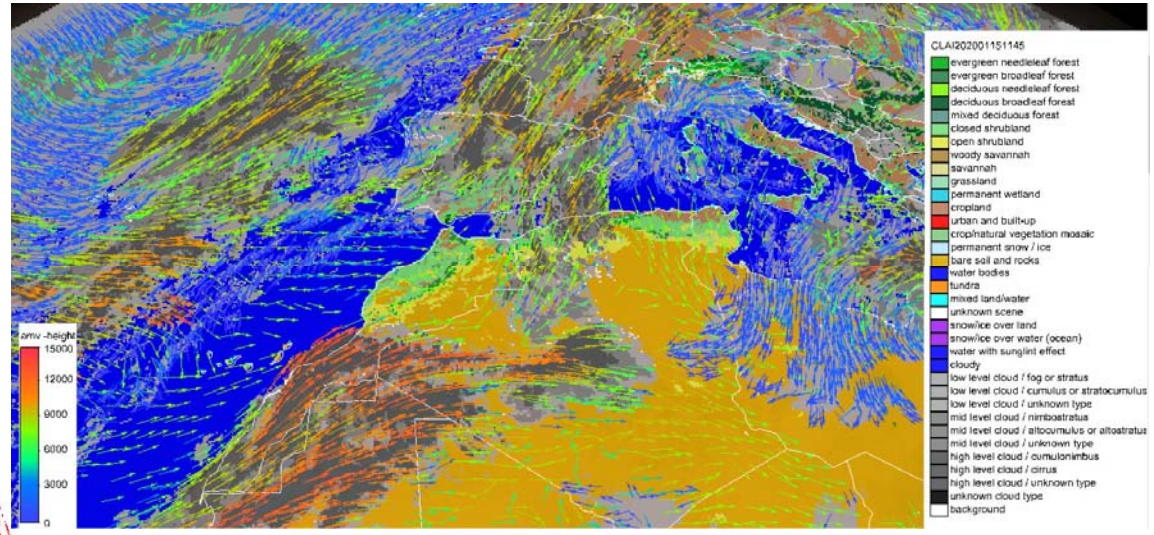
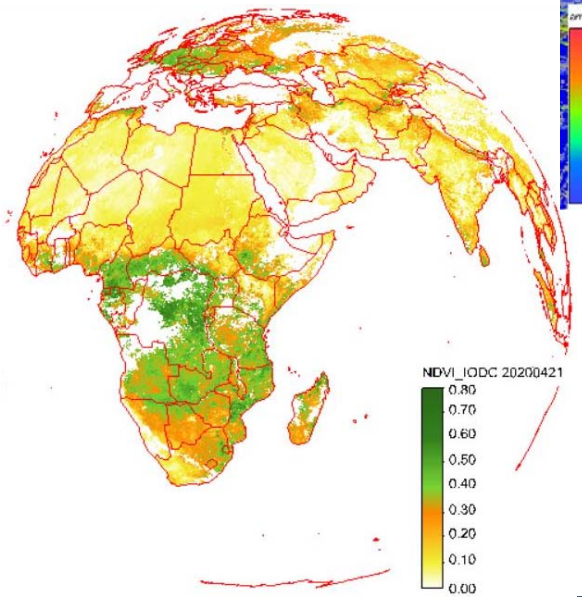
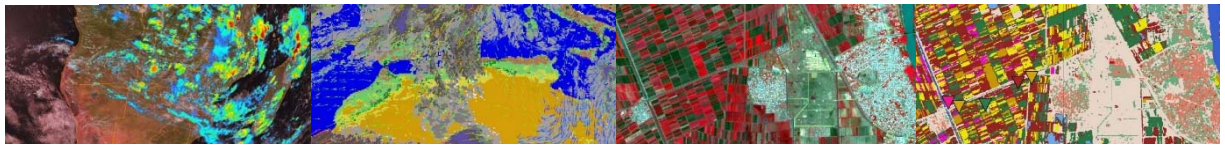
SOME EXAMPLES: METEOROLOGICAL PRODUCTS

- **MPEF products from various geostationary satellites**





Various products from the Meteorological Extraction Facilities, examples here are Cloud Analysis Image and Atmospheric Motion Vectors and NDVI



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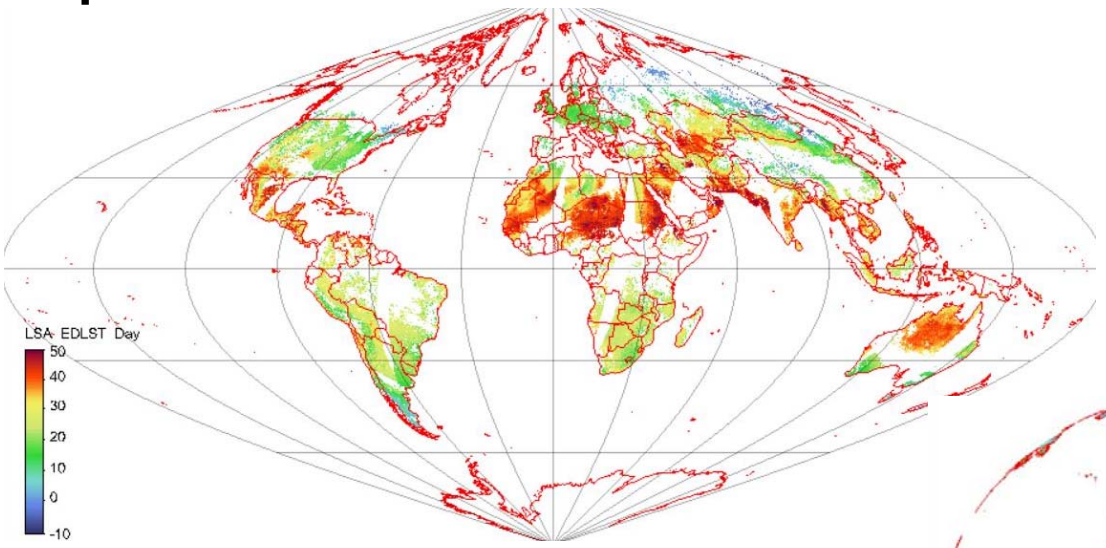
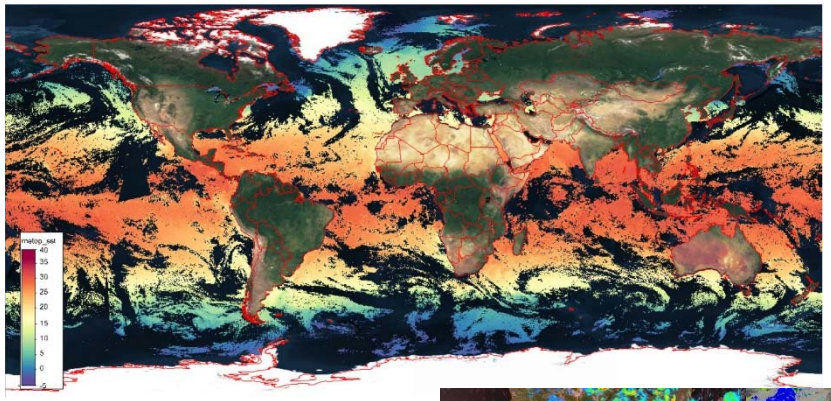
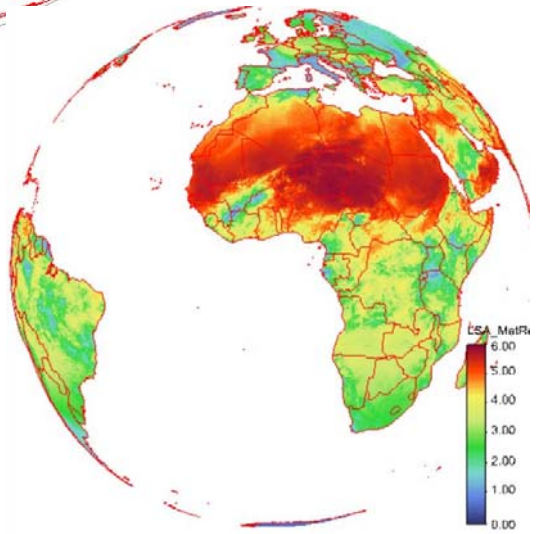
SOME EXAMPLES: SAF PRODUCTS

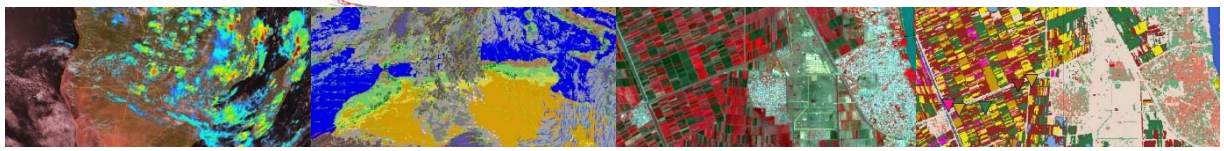
- **Various products from SAFs**

Examples from LSA SAF (LST and ETo) and OSI SAF (METOP-SST)





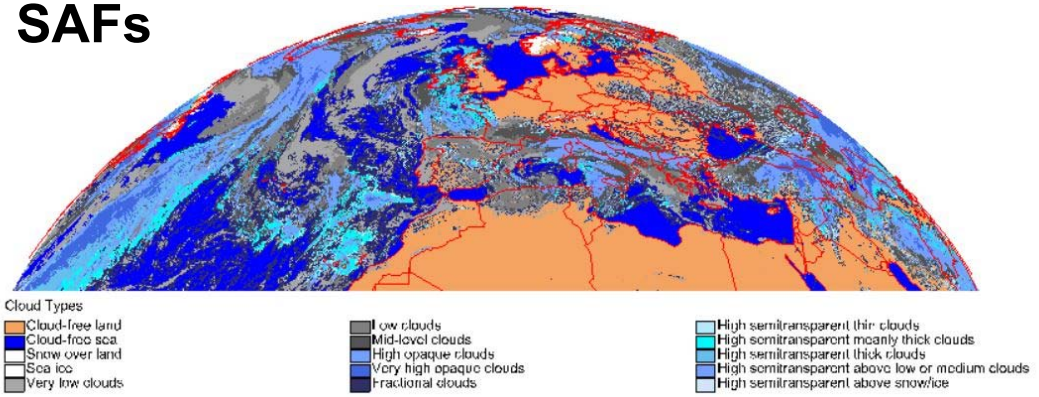


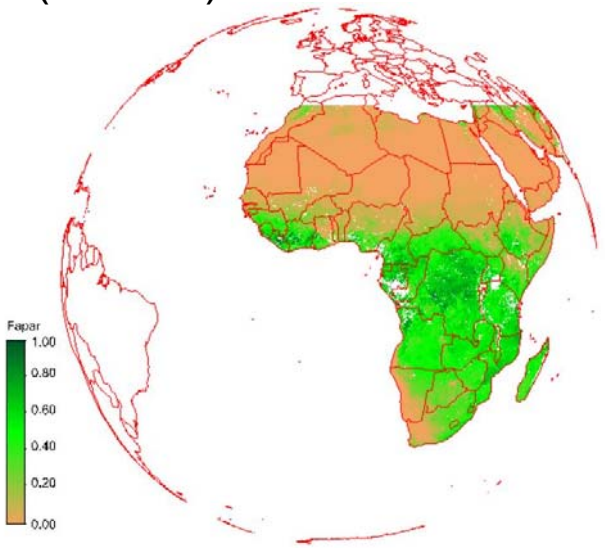


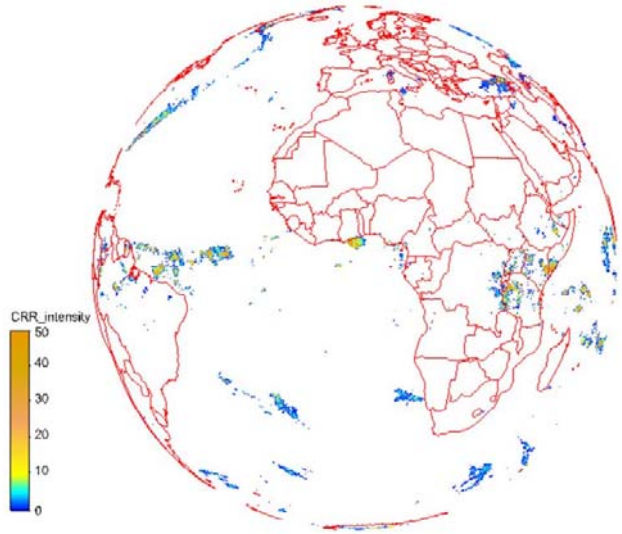
SOME EXAMPLES: SAF PRODUCTS

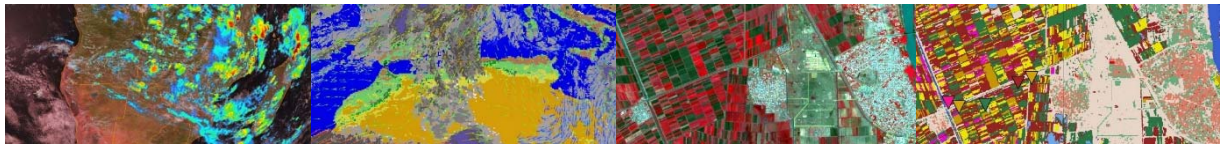
- **Various products from SAFs**

Examples from NWC SAF (Cloud Type and Convective Rain Rate) and LSA SAF (FAPAR)



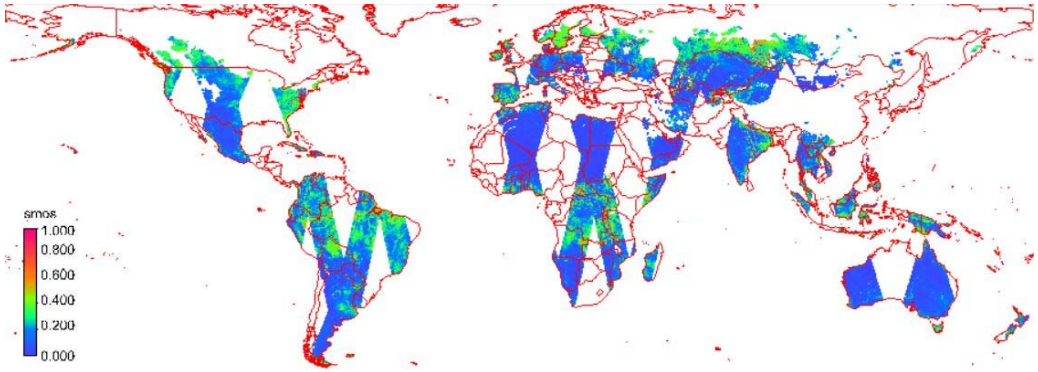


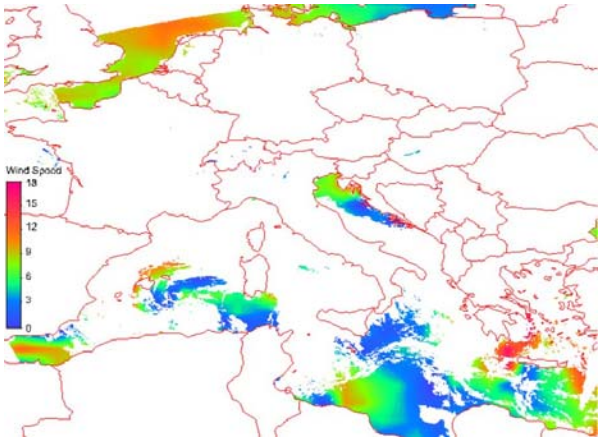


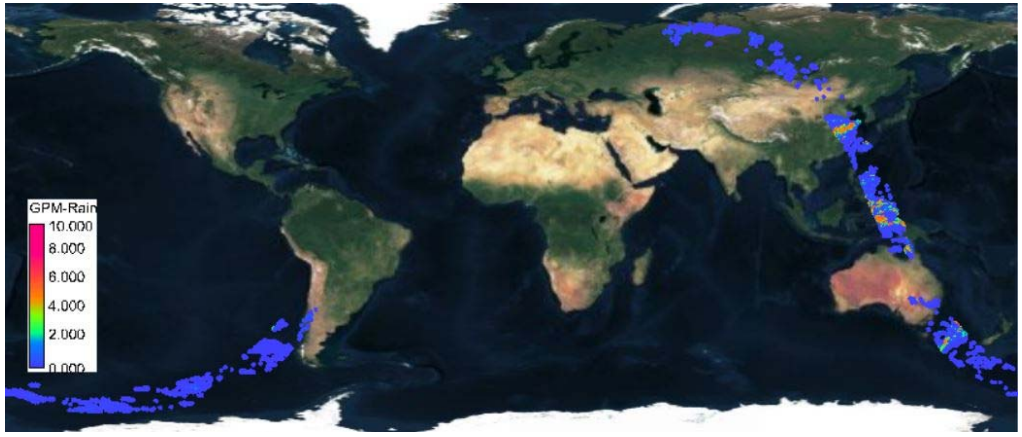


SOME EXAMPLES: SELECTED GLOBAL PRODUCTS

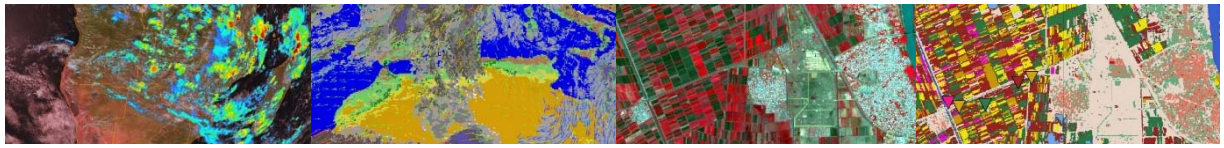
- **Marine products from MODIS, NPP, GPM and SMOS**





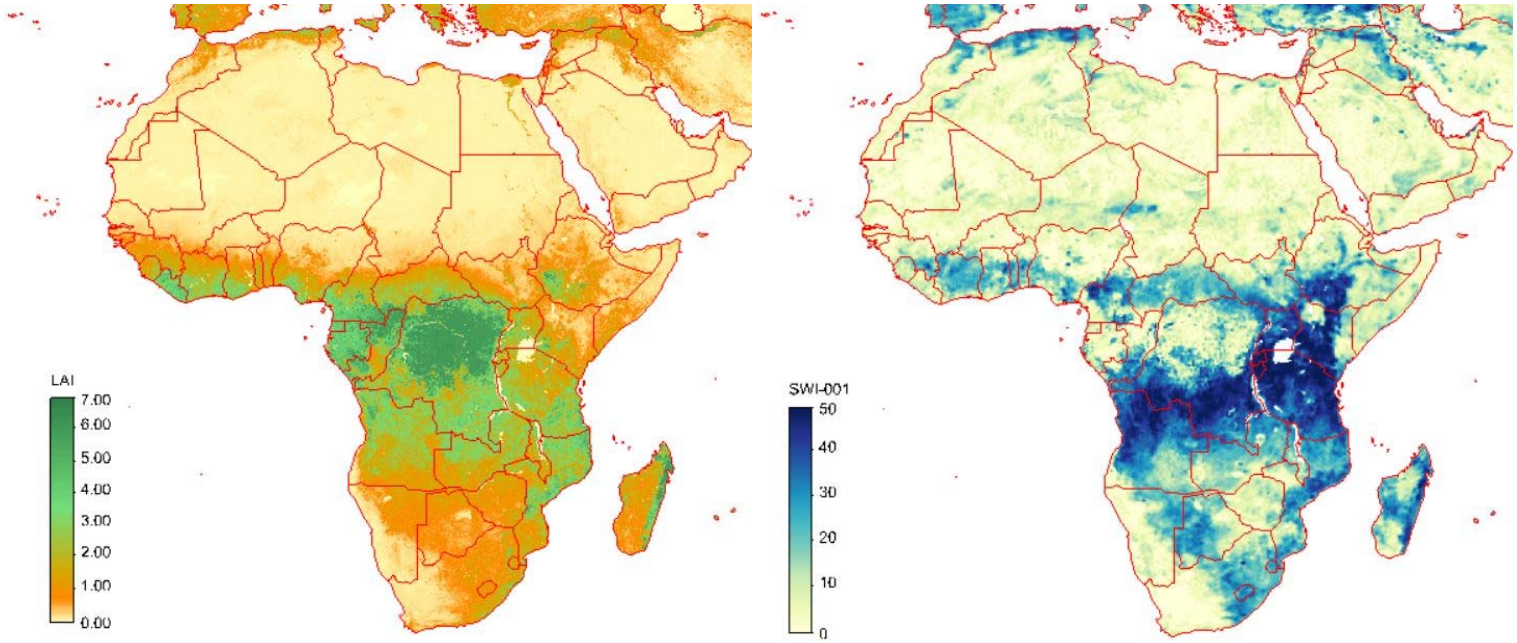


Examples from SMOS (SSM), GPM (orbit period of 1 hour) and NPP (wind Speed over the ocean)

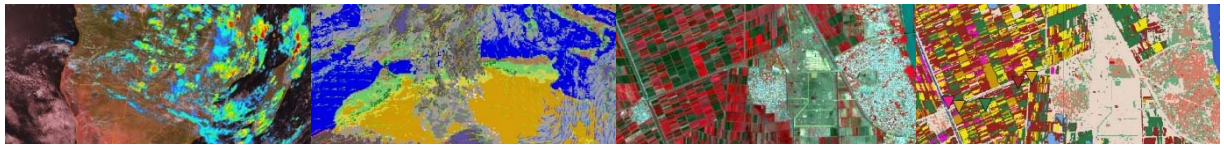


SOME EXAMPLES: SELECTED REGIONAL PRODUCTS

- **TAMSAT, Sentinel, Proba-V, Copernicus, AEMET, PML and EAMNET products**



Examples from Proba-V (LAI) and Copernicus (Uppermost layer for SWI)

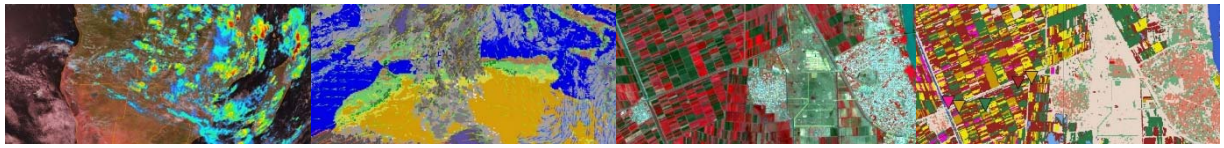


META DATA

- **Integration of (links to) Product Navigator for all products**

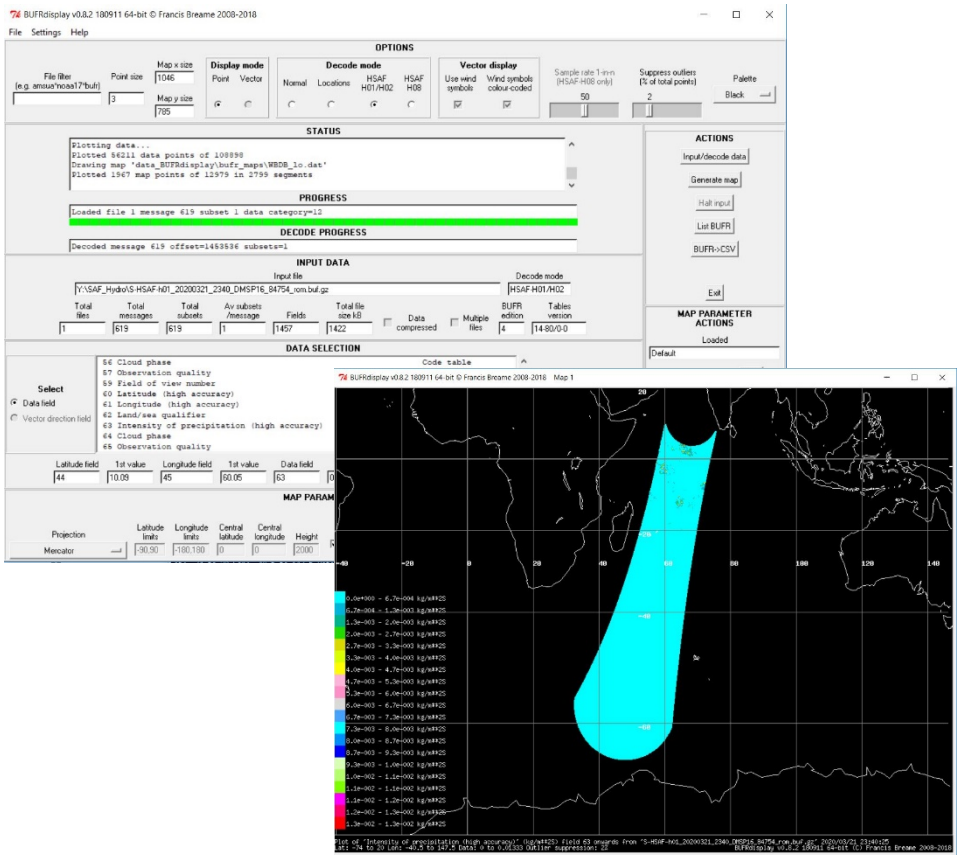
Link to Polar - Level 1.5 Data Resources

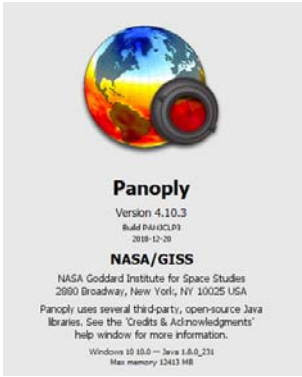
GNC-Main Menu	GNC-Sub Menu	Menu Item	META Data from Product Navigator (https://navigator.eumetsat.int/)
"Polar - Level 1.5 Data"	"METOP A/B/C"	"METOP AVHRR Retriever" (for AVHRR on Metop A, B and C)	https://navigator.eumetsat.int/product/EO:EUM:DAT:METOP:AVHRRL1?query=AVHRR%20GDS%20Level%201B%20-%20Metop&s=simple
		"METOP AVHRR/3 daytime FCC" (for AVHRR on Metop A, B and C)	https://navigator.eumetsat.int/product/EO:EUM:DAT:METOP:AVHRRL1?query=AVHRR%20GDS%20Level%201B%20-%20Metop&s=simple
		"METOP-A/B/C ASCAT - Ocean Vector Winds (12.5 km)"	ASCAT Coastal Winds at 12.5 km Swath Grid – Metop: https://navigator.eumetsat.int/product/EO:EUM:DAT:METOP:OSI-104?query=%09ASCAT%20Coastal%20Winds%20at%2012.5%20km%20Swath%20Grid%20-%20Metop&s=simple
		"METOP-A/B/C ASCAT - Surface Soil Moisture (12.5 km)"	ASCAT Soil Moisture at 12.5 km Swath Grid – Metop: https://navigator.eumetsat.int/product/EO:EUM:DAT:METOP:SOMO12?query=soil%20moisture&s=simple
	"EARS"	"METOP-A (M02) quicklook"	AVHRR Level 0 - Multimission - Regional Data Service https://navigator.eumetsat.int/product/EO:EUM:DAT:MULT:EARS-AVHRR?query=ears&results=15&s=simple
		"METOP-B (M01) quicklook"	
		"METOP-C (M03) quicklook"	
	"NOAA 19 AVHRR/3"	"NOAA19 GAC quicklook"	AVHRR GDS Level 1B - NOAA https://navigator.eumetsat.int/product/EO:EUM:DAT:NOAA:NOAAAVHRR?query=AVHRR%20GDS%20Level%201B%20-%20NOAA&s=simple
		"NOAA19 LAC quicklook"	AVHRR Level 0 - Multimission - Regional Data Service https://navigator.eumetsat.int/product/EO:EUM:DAT:MULT:EARS-AVHRR?query=%09AVHEAR00,%20EARS-AVHRR&s=simple

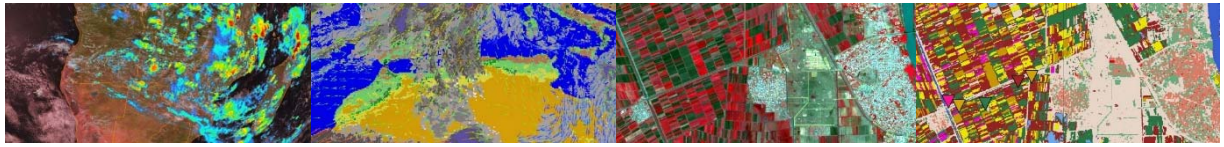


SOME EXAMPLES: EXTERNAL RESOURCES

- **Additional software tools like Bufr-decoder, Panoply, etc.**







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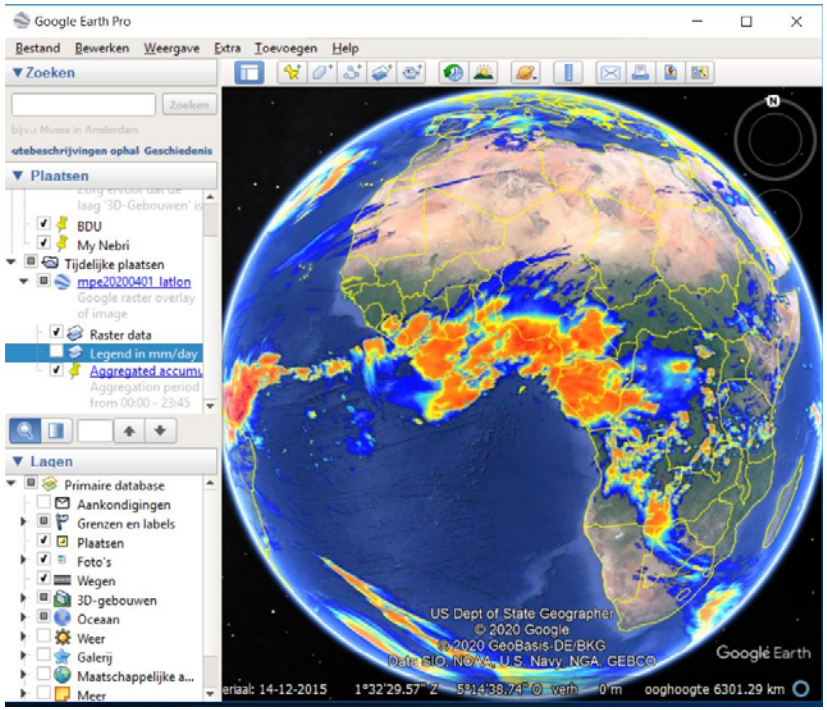
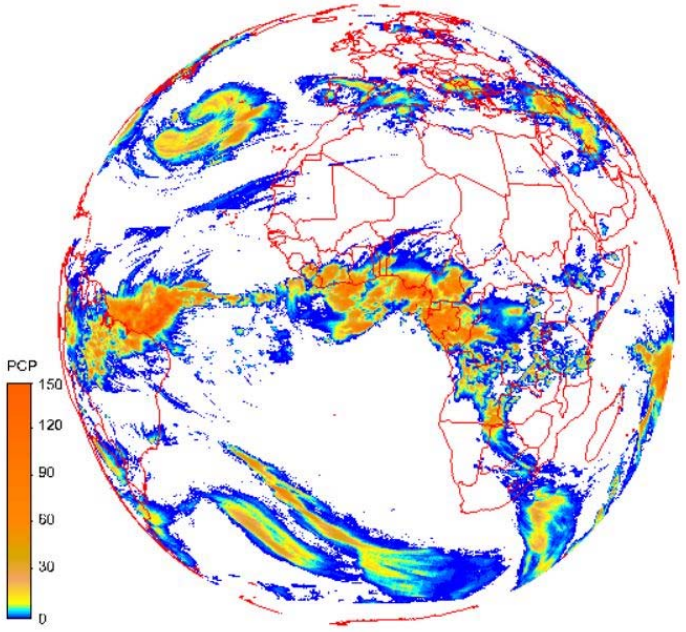
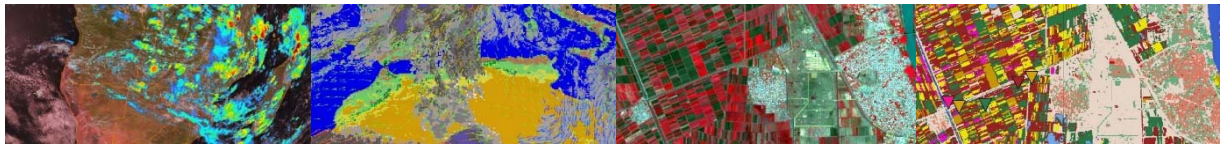
SOME EXAMPLES: EXTERNAL RESOURCES

- **Daily aggregated satellite derived rainfall – H05B**



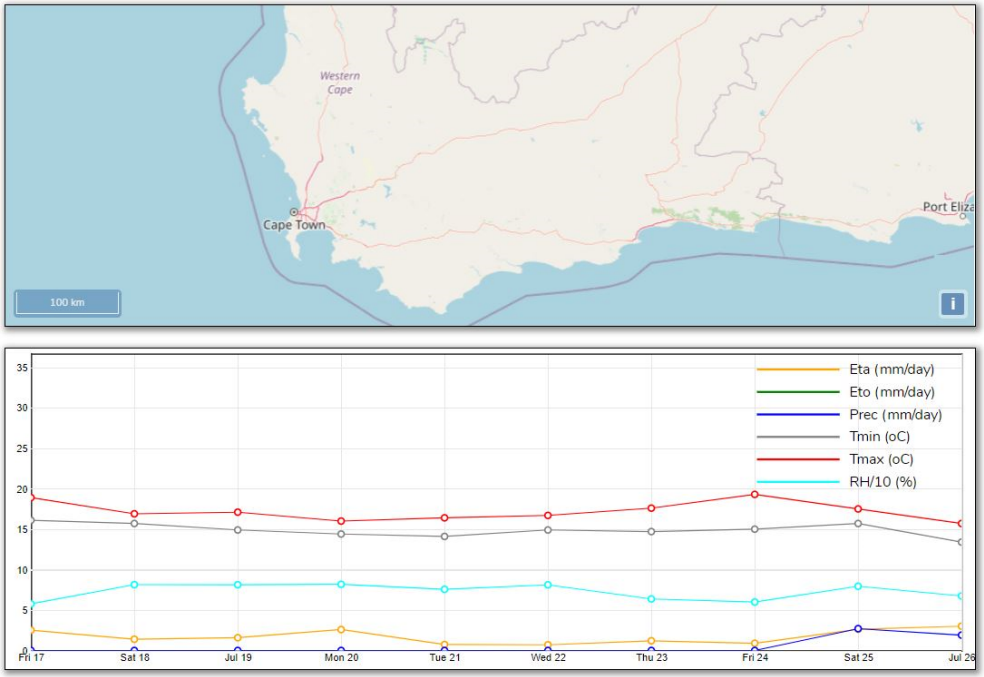


Google Maps Overlay of H05B (for visualization) and same data set in ILWIS (for analysis)

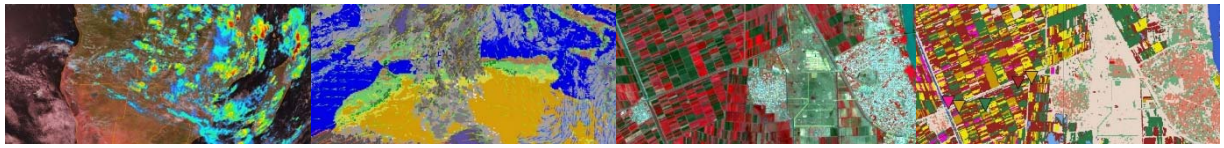


SOME EXAMPLES: EXTERNAL RESOURCES

- **GFS Daily aggregated forecast**

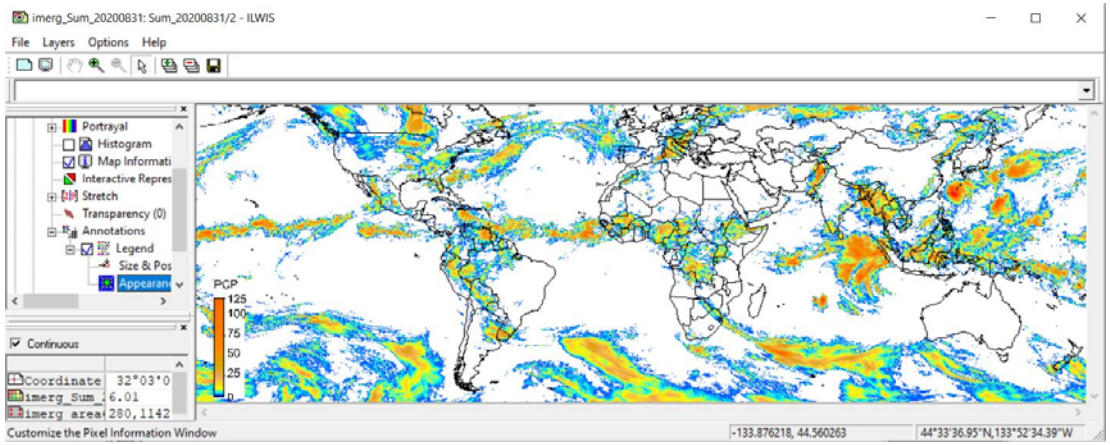


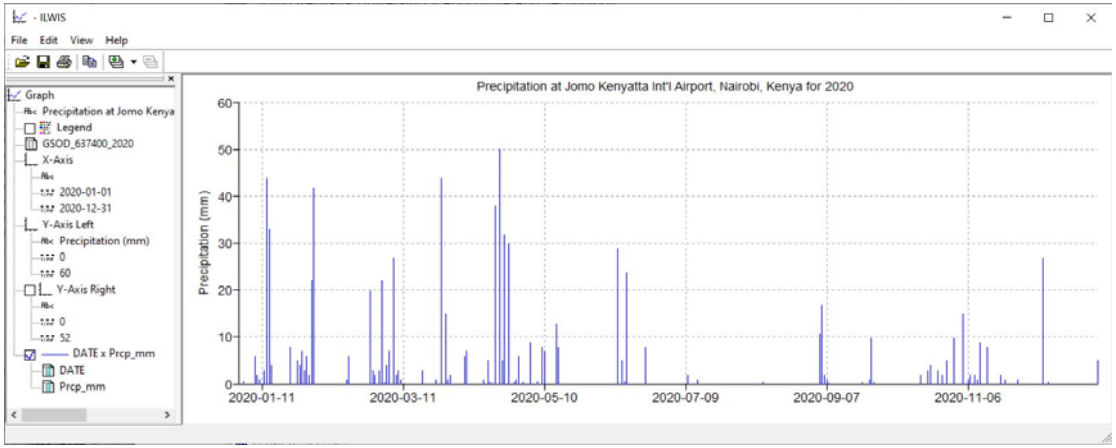
On a daily basis the data from GFS (Analysis from 00:00 UTC) is processed and the layers indicated above are extracted, aggregated at daily basis and the forecast for 10 days is derived.



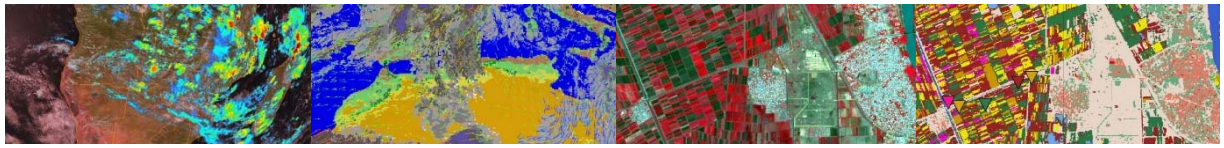
SOME EXAMPLES: EXTERNAL RESOURCES

- **IMERG precipitation aggregated from half hourly to daily sum for 20200831**



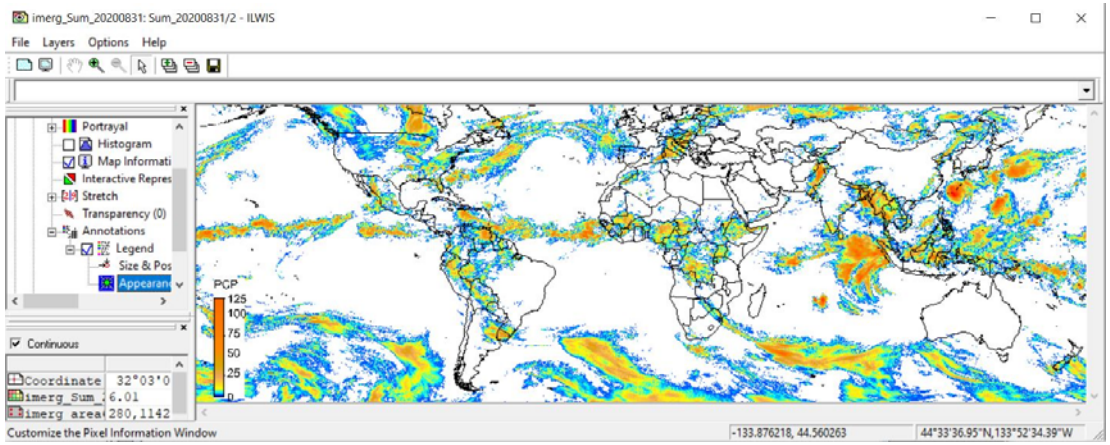


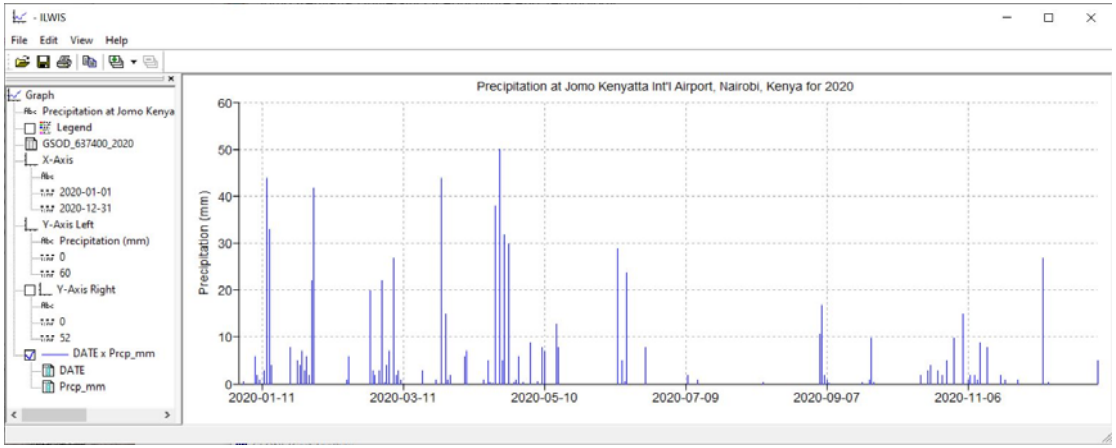
GSOD station data



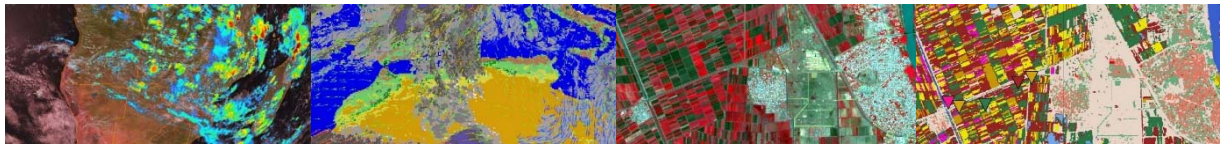
SOME EXAMPLES: EXTERNAL RESOURCES

- **IMERG precipitation aggregated from half hourly to daily sum for 20200831**



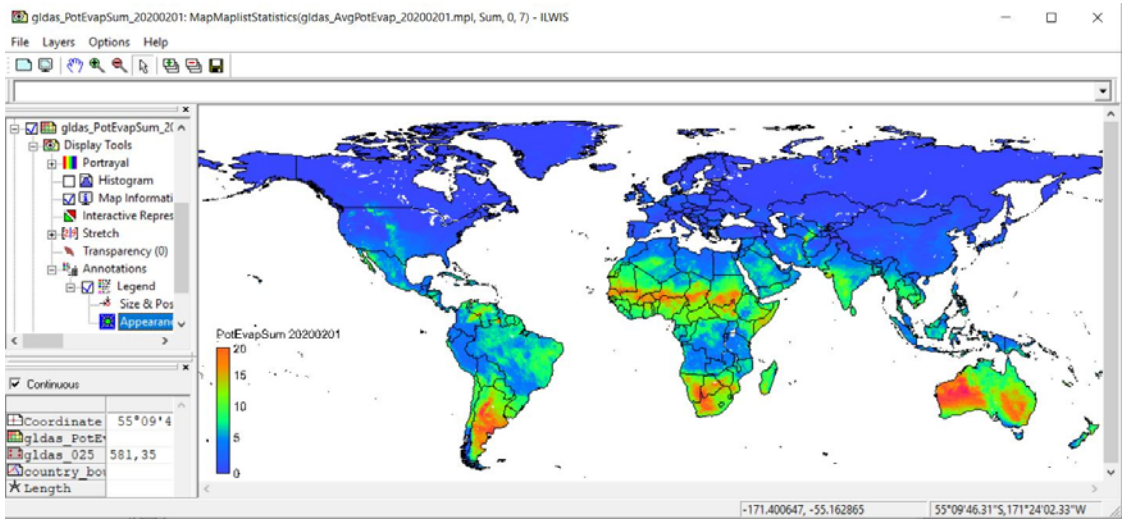


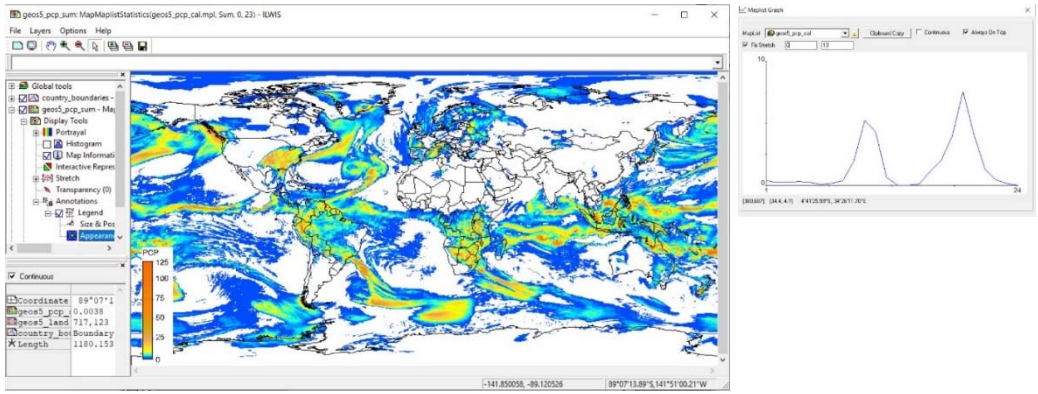
GSOD station data



SOME EXAMPLES: EXTERNAL RESOURCES

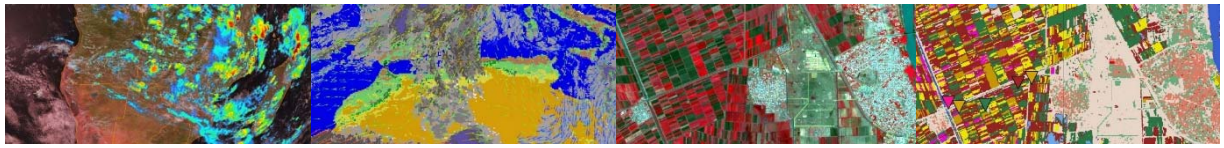
GLDAS





GEOS5

ITC UNIVERSITY OF TWENTE.



REMARKS

- **Continuous changes of newly received data: some satellites have reached end of life-time, new satellites are launched, etc.**
- **This is reflecting changes in products, also intermediate product updates**
- **New products are introduced, others are terminated**
- **Toolbox is reflecting current capability as much as possible**
- **Toolbox is now fully integrated with ILWIS-386 (version as of 16 November 2020)**
- **Toolbox capability is based on data received through EUMETCast using the Europe Basic and High Volume Services 1 and 2, as well as the Africa Service**
- **Other online products can be easily added**