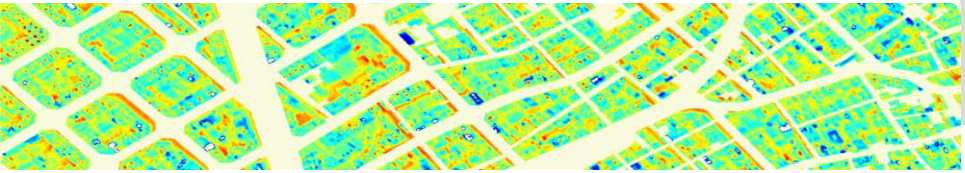

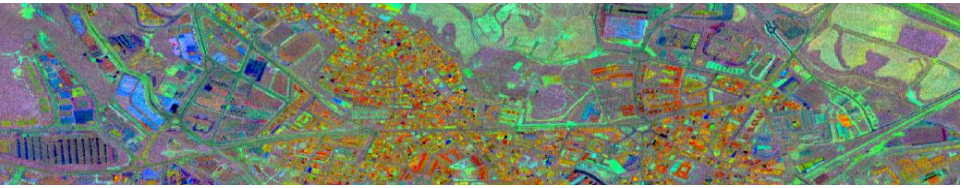

FROM GEOGRAPHIC INFORMATION TO GEOGRAPHIC KNOWLEDGE:

AN EARTH OBSERVATION VIEW

By: Dr. Jordi Corbera
Earth Observation Department
Institute Cartographic and Geological of Catalonia
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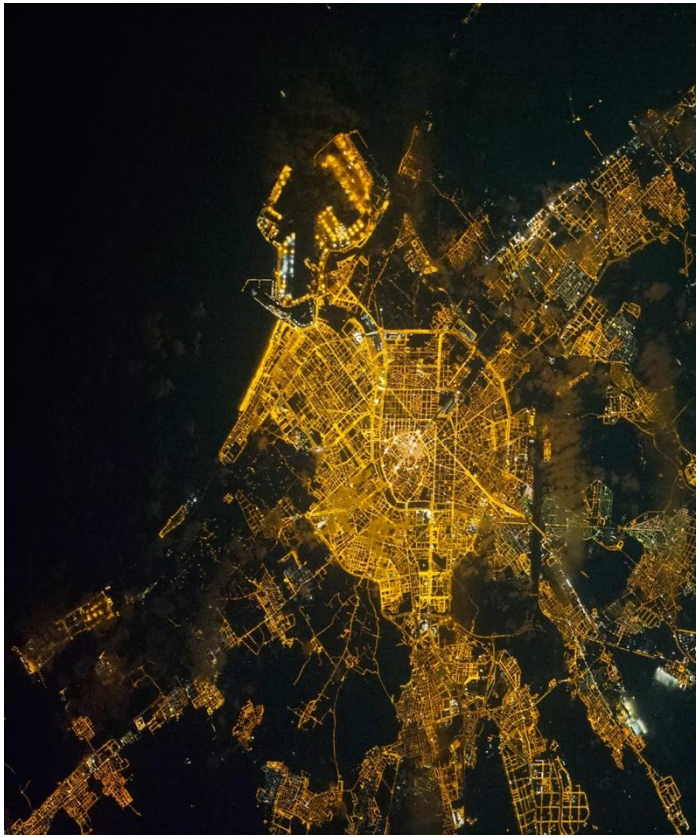
ICGC
Institut
Cartogràfic i Geològic
de Catalunya

Generalitat
de Catalunya

HOW TO TRANSFORM DATA INTO INFORMATION AND KNOWLEDGE

Lessons Learnt : Luminance Map example

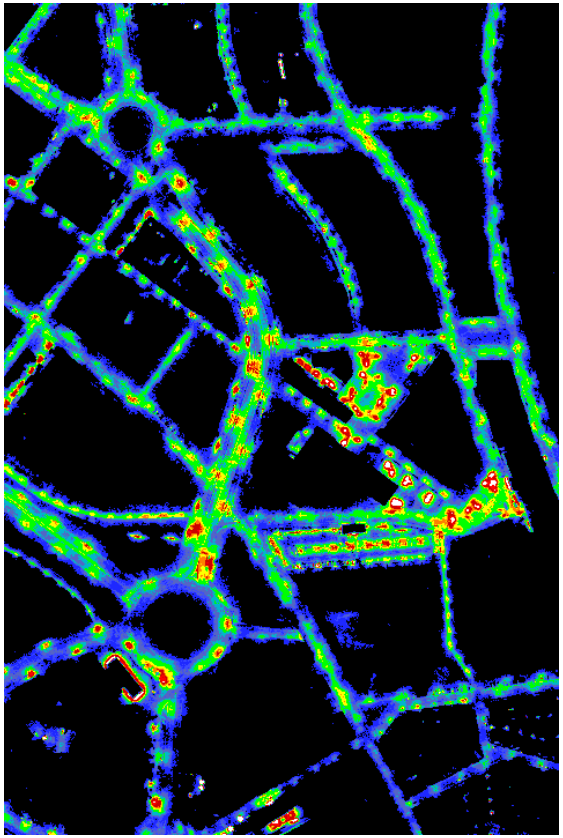
CREDIT LINE: Photo: Tate, London, 2011 (WikimediaCommons)



Mr. Joseph Mallord William Turner, address us to a night scene where **the fragility of a "human-fisherman lamp" contrast with the power of moonlight** (Fishermen at sea 1796- Tate Gallery)

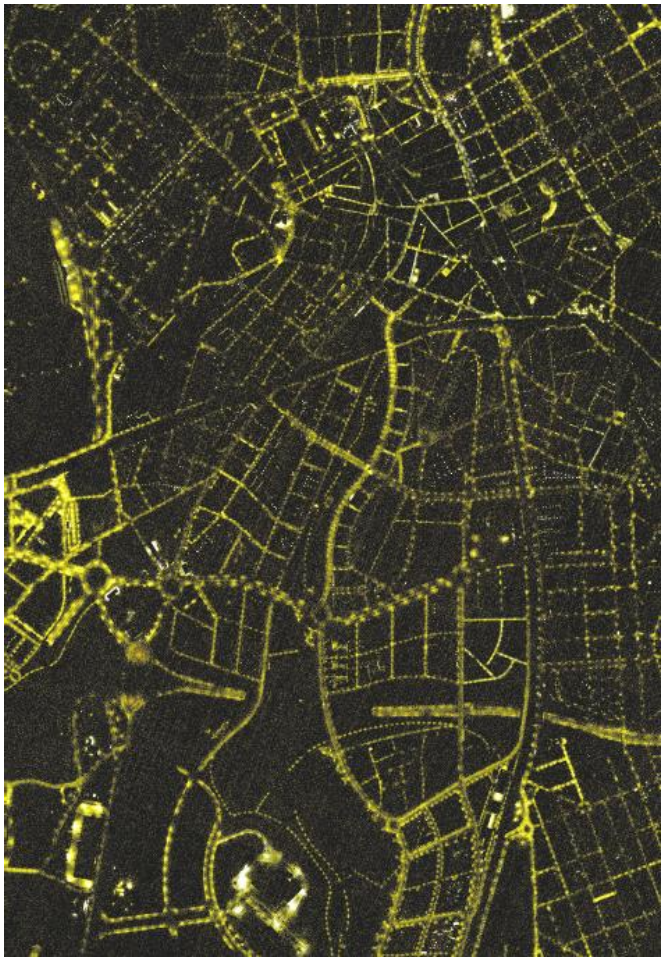
HOW TO TRANSFORM DATA INTO INFORMATION AND KNOWLEDGE

Lessons Learnt : Luminance Map example



Classification

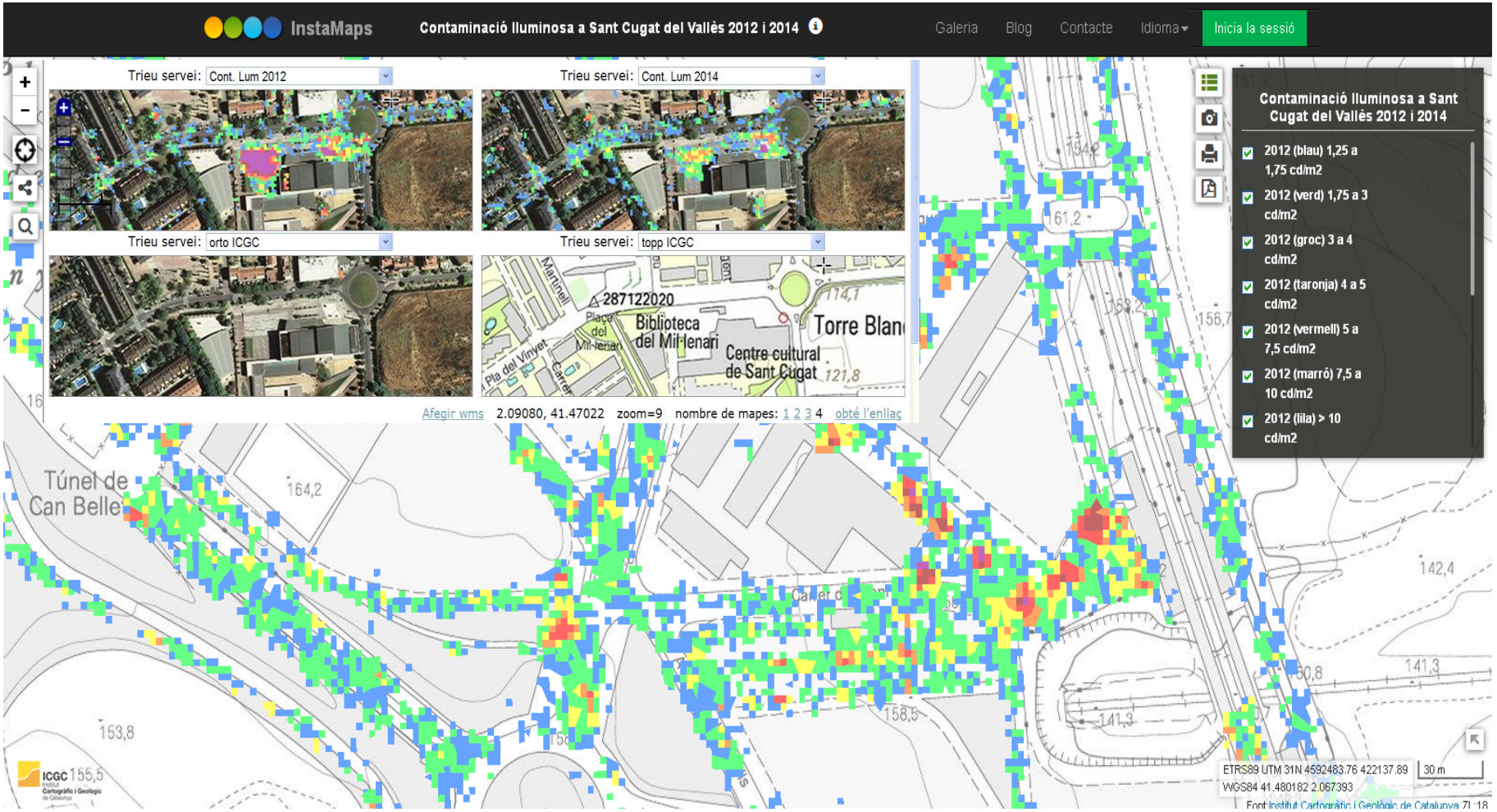
- [.35,.65[
- [.65,.85[
- [.85,1.25[
- [1.25,1.75[
- [1.75,3[
- [3,4[
- [4,5[
- [5,7.5[
- [7.5,10[
- >10



The analysis of luminance at night is performed **by ICGC in conditions of little or null moonlight, so that the radiation captured by airborne sensors can be directly associated to artificial –human lighting.** Own ICGC models allow us to retrieve values of luminance at candles per square meter (cd / m^2)

HOW TO TRANSFORM DATA INTO INFORMATION AND KNOWLEDGE

Lessons Learnt : Luminance Map example

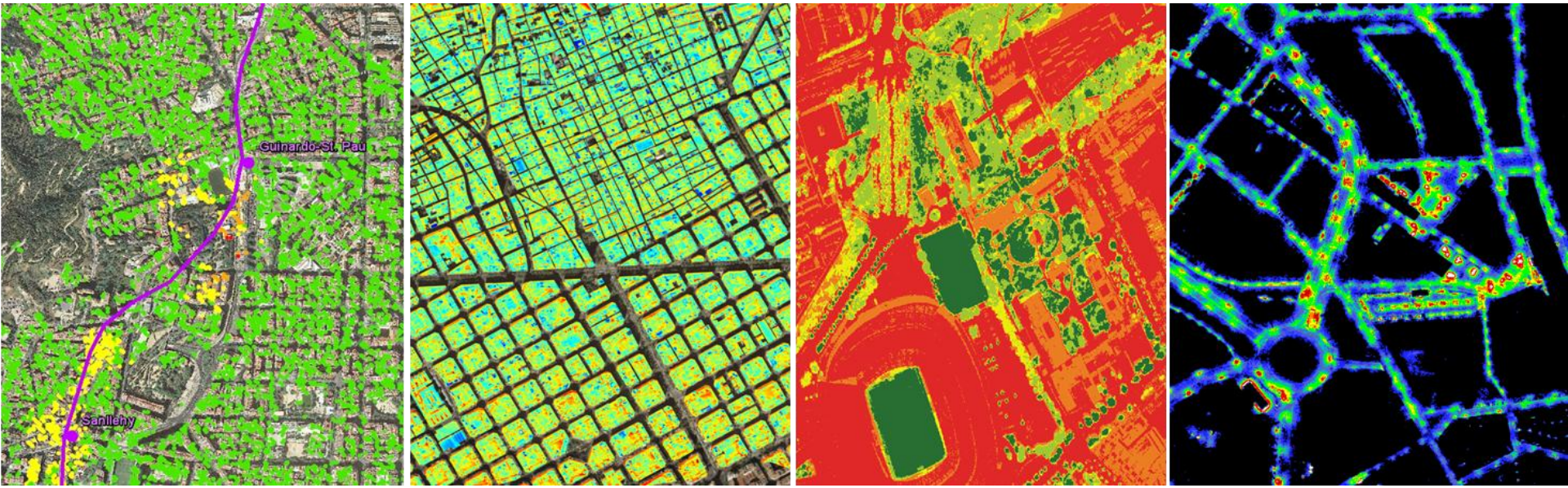


HOW TO TRANSFORM DATA INTO INFORMATION AND KNOWLEDGE

Main Statement and trade offs:

SCIENCE + TECHNOLOGY + REAL CHALLENGES TO BE SOLVED = ADDED VALUE

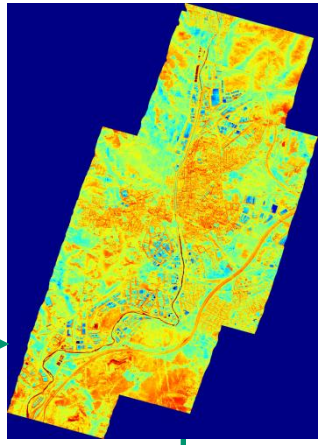
i. **ACCESIBILITY AND UPDATING & ACCURACY**
ii. **INNOVATION: FROM ASSETS AND RESULTS TO COMPLEXITY MANAGEMENT**



... some examples how to transform data into knowledge

INDUSTRIAL COVER EFFICIENCY

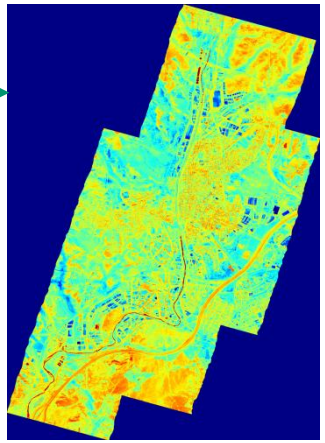
CREDIT LINE: Coming from the Mill, 1930 © The Lowry Collection, Salford photo credit: The L. S. Lowry Collection



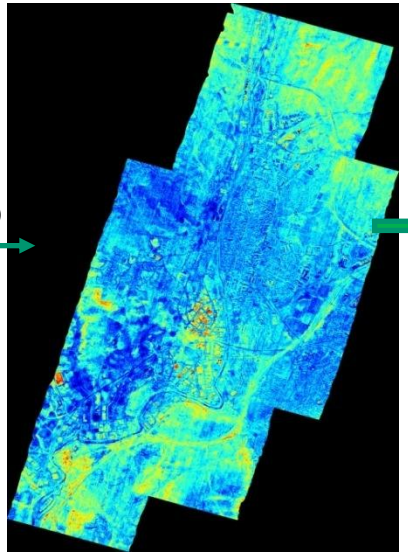
$T_{1\ 0.00}$ UTC

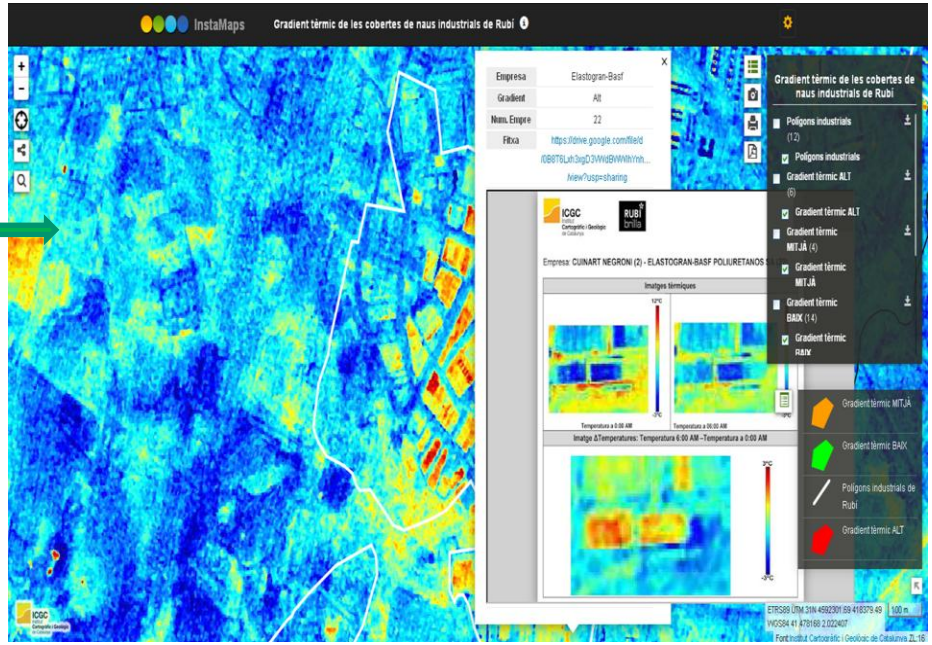
TASI capture

$\Delta T(t_2\text{-}t_1)$



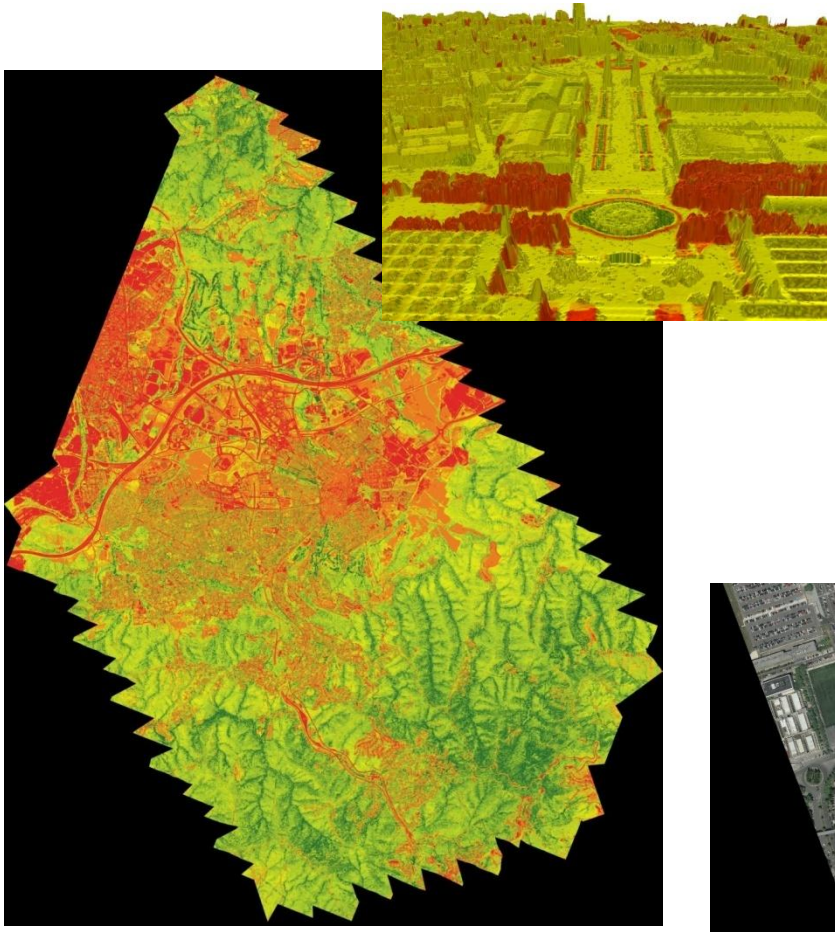
$T2_{6.00}$ UTC



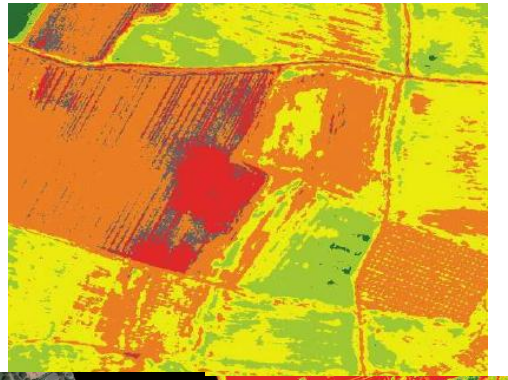


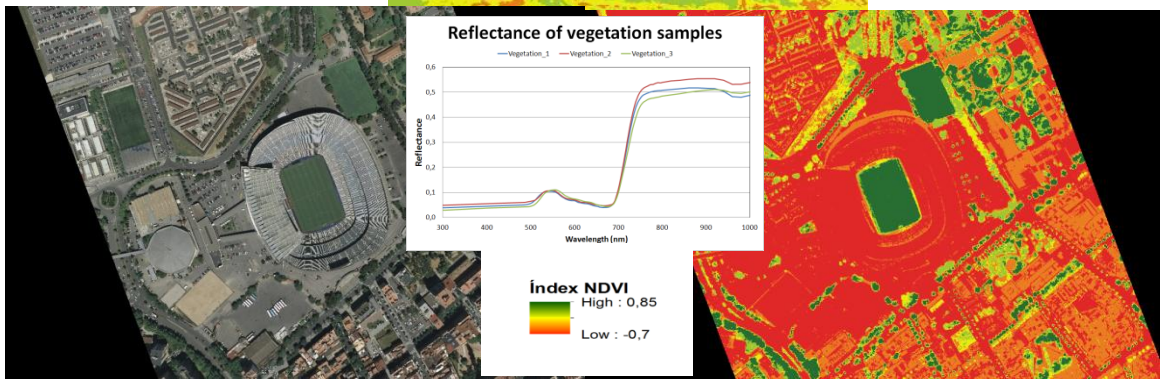
http://bit.ly/1sGVPKX

URBAN GREEN
VERY HIGH RESOLUTION

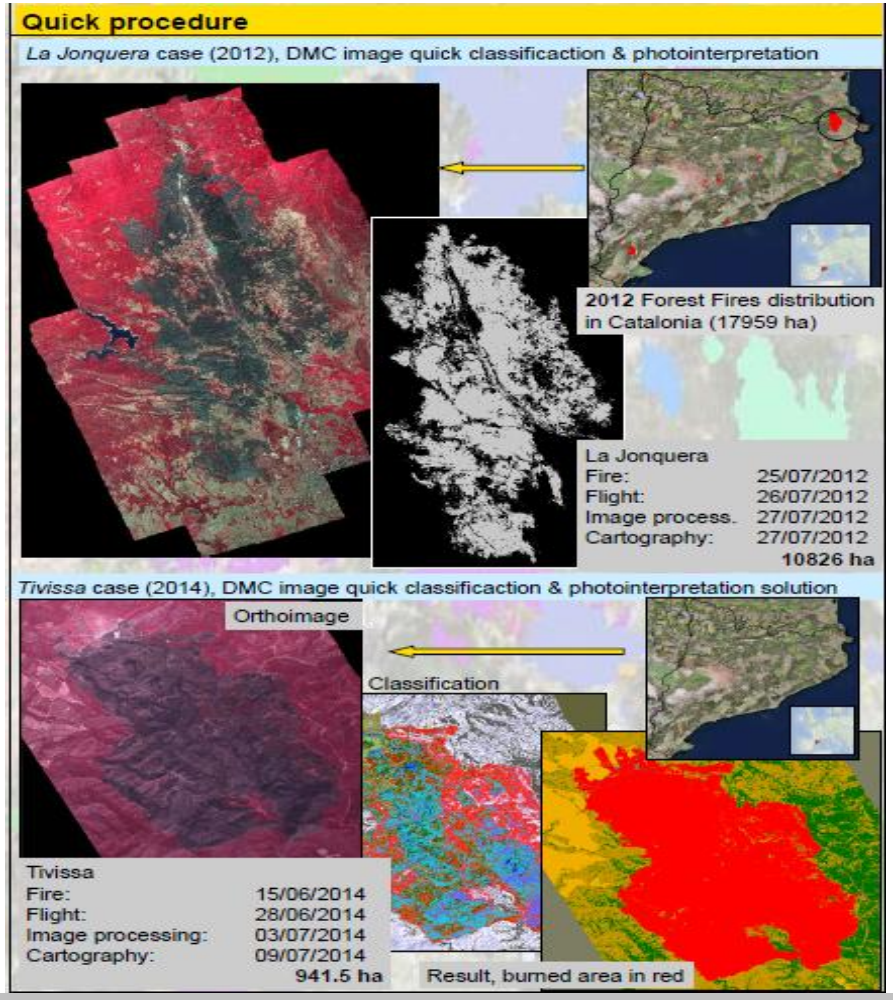


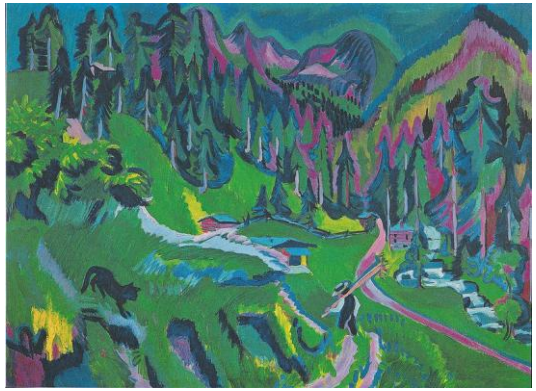
CREDIT LINE: The Gardener, Maurice the Vlaminck 1904 by Sharon Morellus (Flick Creative Commons)



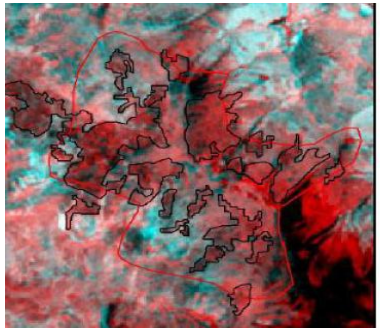


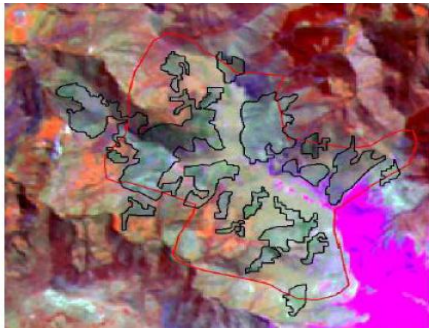
FIRE FOREST ASSESMENT

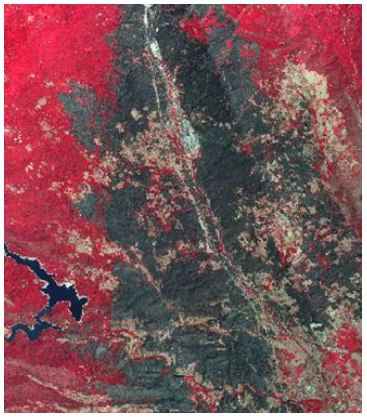




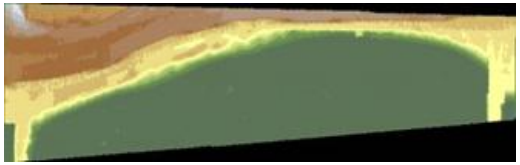
CREDIT LINE: Erns Ludwig Kirchner, Landschaft Sertigtal, 1925 (WikimediaCommons)

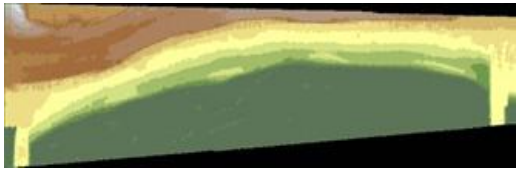


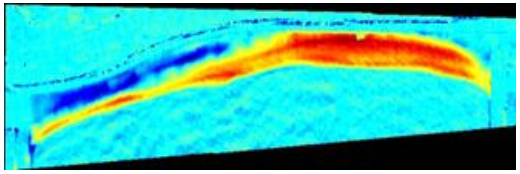


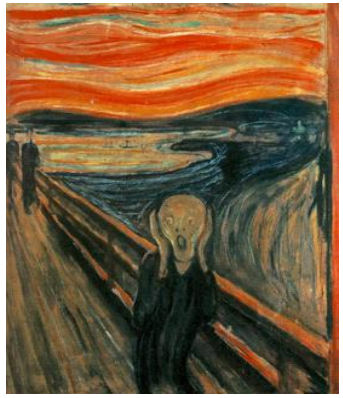


WATER QUALITY

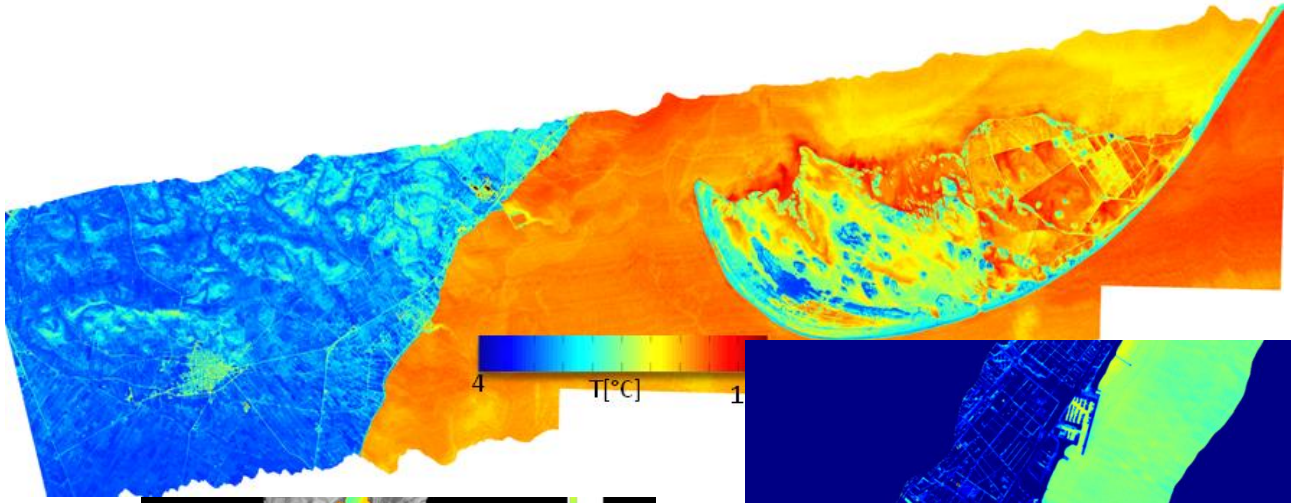


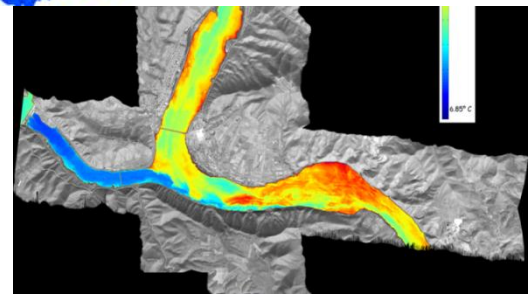


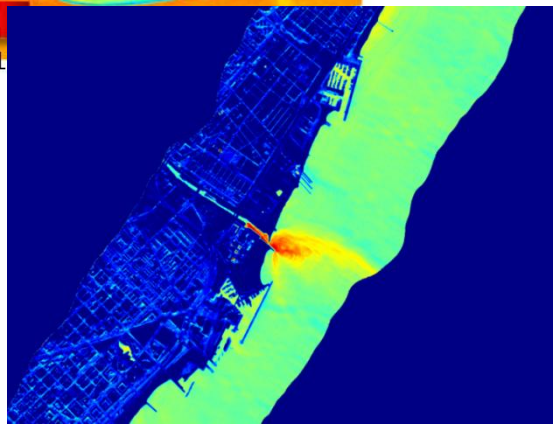




Credit Line: “Edvard Munch,The Scream, 1893. The National Gallery, Oslo (public domain)

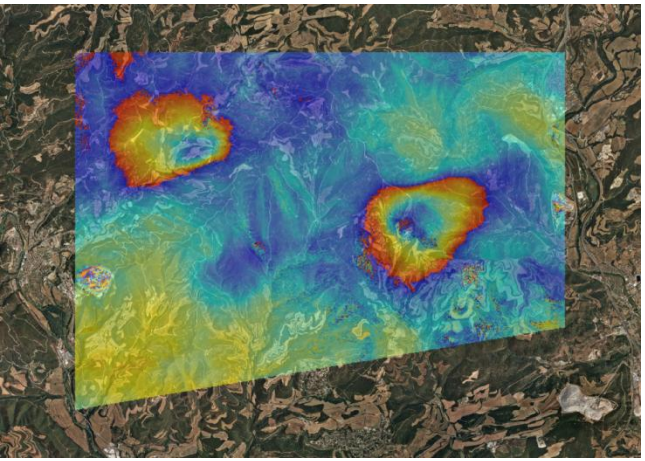


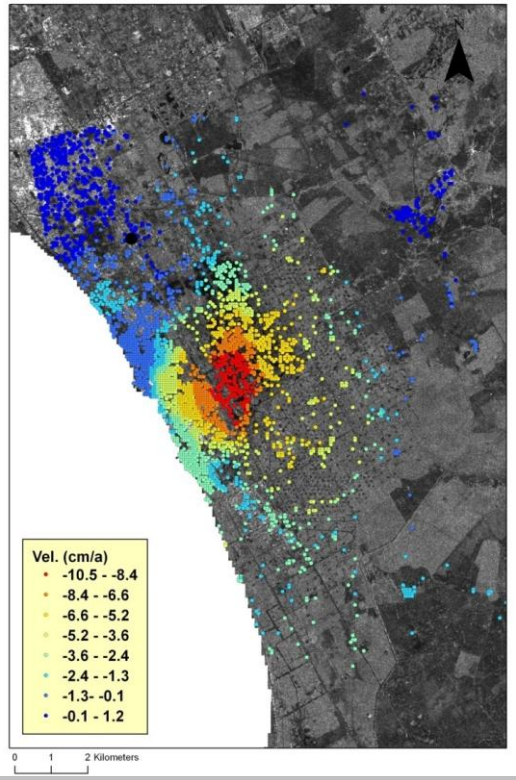


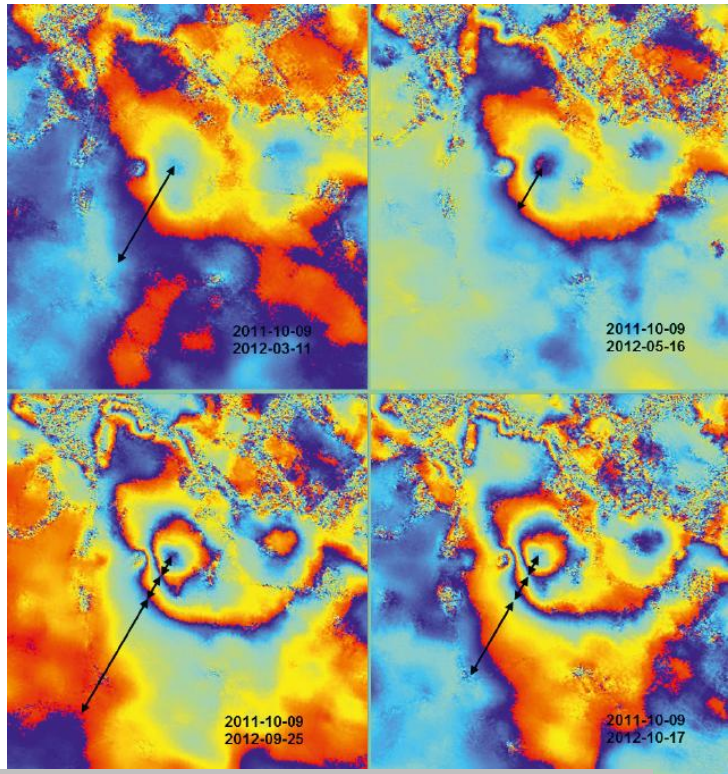


SUBSIDENCES AND INTERFEROMETRY

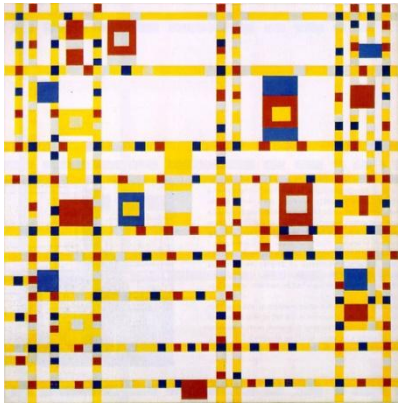
Credit Line: Umbewrto Boccioni,La città cresce,, 1910. (public domain)



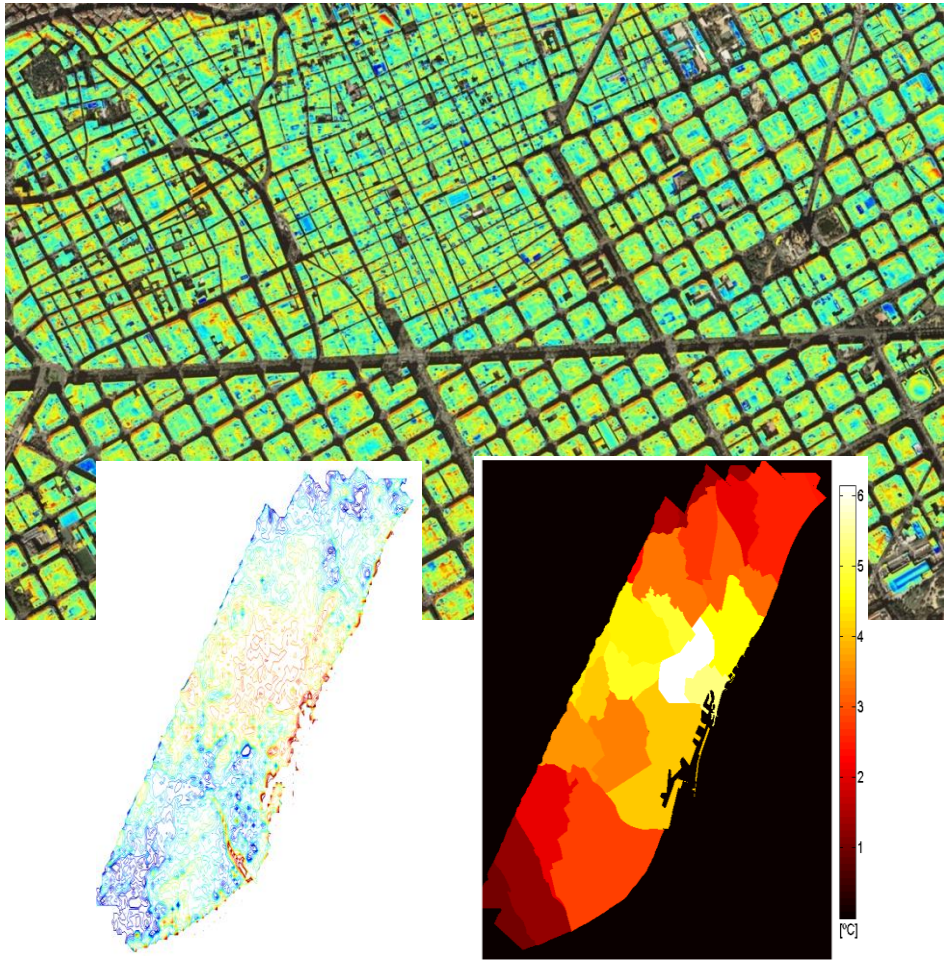




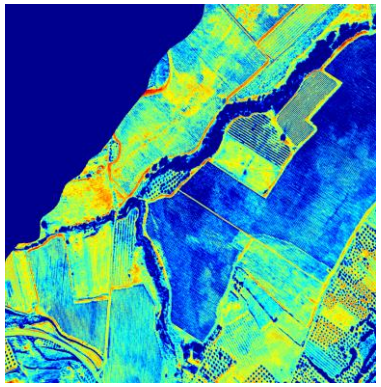
ENERGY LEAKS



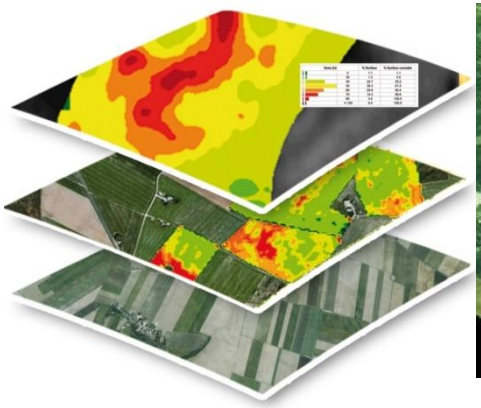
Credit Line Piet Mondrian, Broodway Boogy Woogy,, 1943. (public domain)

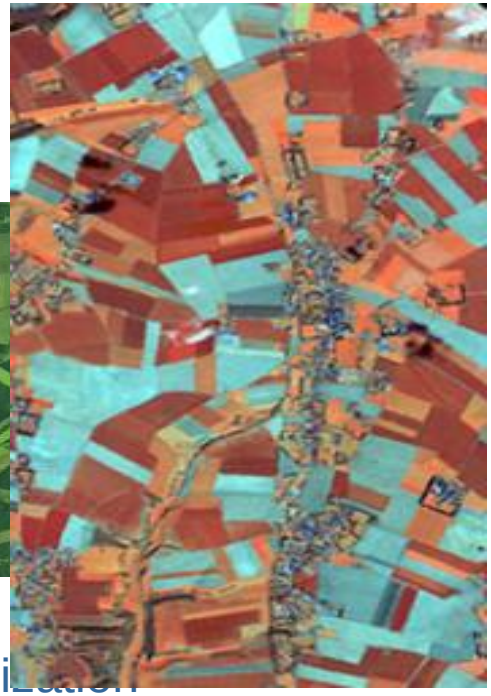


CROP FERTILITATION



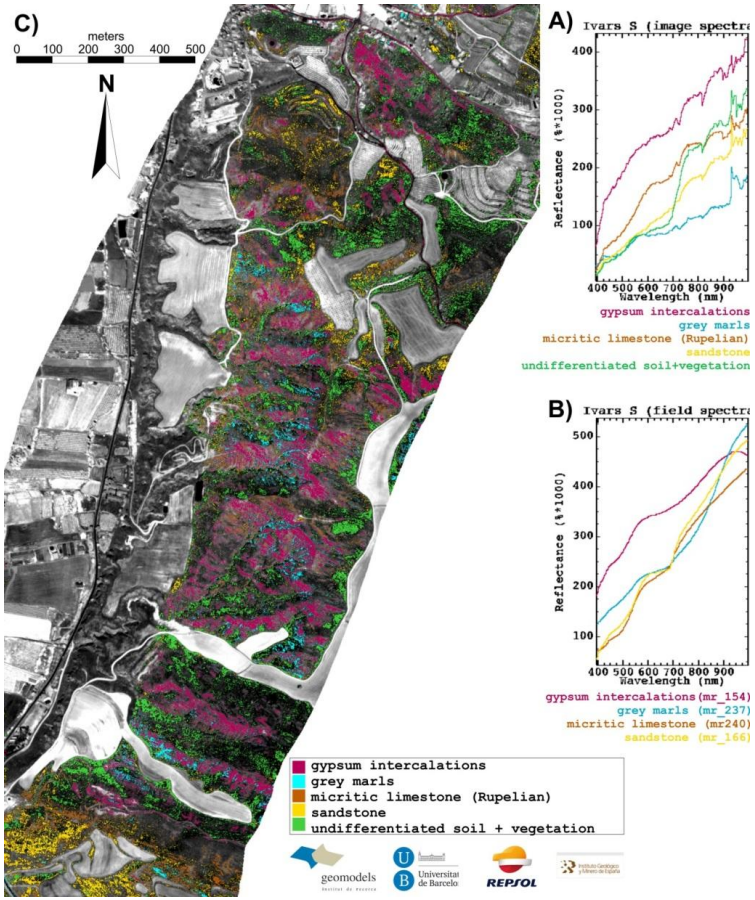
Credit Line: Private Collection Copyright David Hockney Photo credit: Steve Oliver.



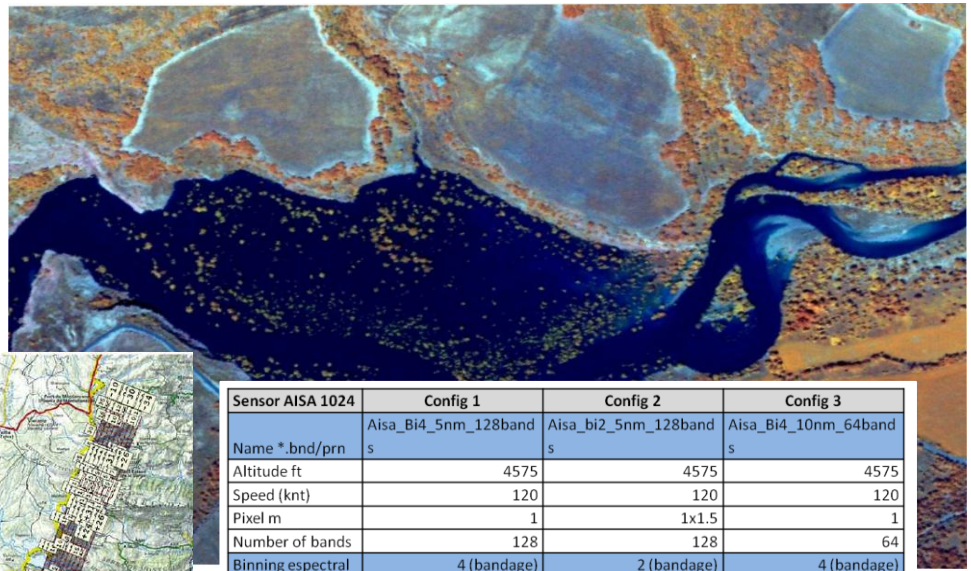


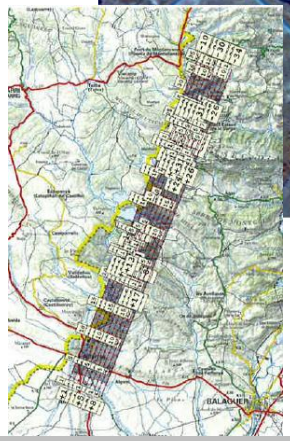
Operational service at France since 2001 on fertilization recomendations at near real time (48h) more than 600.000 ha

SOILS AND GEOLOGY



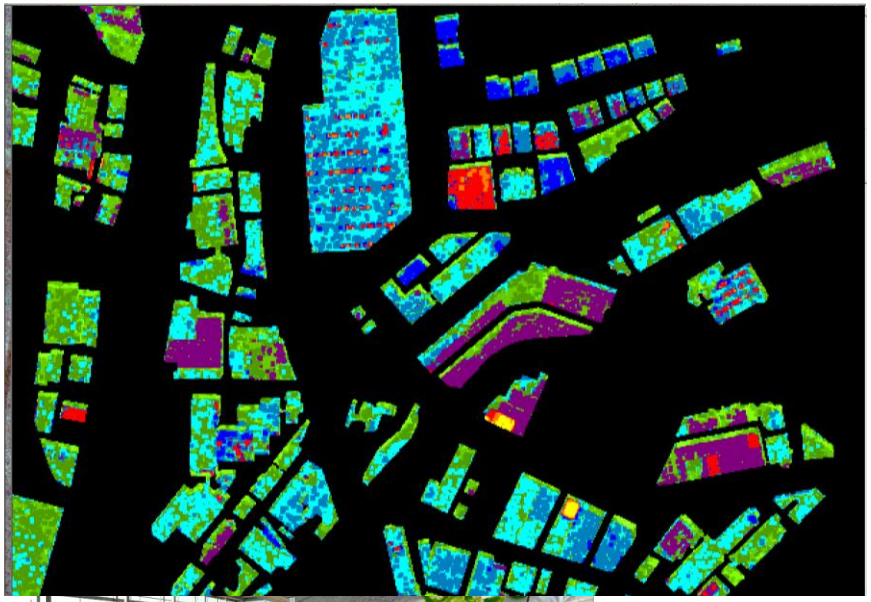
Credit Line: Paul Cezanne, Mountaigne Saint Victoire, 1896-1898 (public domain)



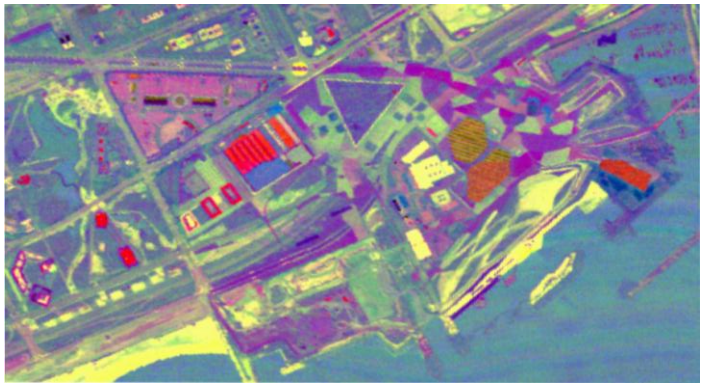


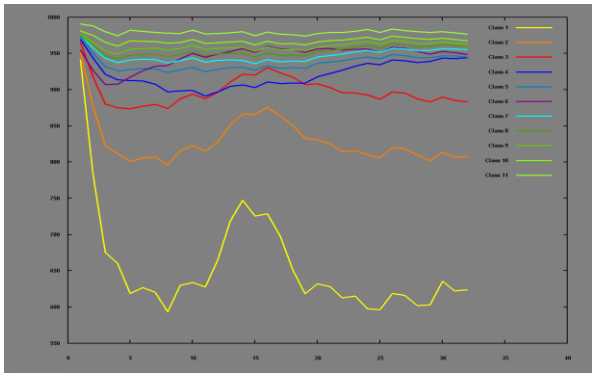
Sensor AISA 1024	Config 1	Config 2	Config 3
Name *.bnd/prn	Aisa_Bi4_5nm_128bands	Aisa_bi2_5nm_128bands	Aisa_Bi4_10nm_64bands
Altitude ft	4575	4575	4575
Speed (knt)	120	120	120
Pixel m	1	1x1.5	1
Number of bands	128	128	64
Binning espectral	4 (bandage)	2 (bandage)	4 (bandage)
Binning espacial	1	1	1
FPS màx	100	55	100
Frame Rate [Hz]	62	41	62
Exposure [ms]	16(Es pot baixar fins a 5)	24(Es pot baixar fins a 7)	16
Situació òptima	2000-3000	2000-3000	2000-3000

COVERS AND SUSTAINABILITY



Credit Line: Edward Hopper, Approaching a City, 1946, © The Phillips Collection,





SHORT-TERM potential:
13,1 ha
≈ 8% polígon

Potential PRODUCTION:
≈ 2000 t tomato
(per year)

ENVIRONMENTAL INDICATORS

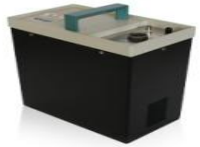
CO_2 savings:
≈ 880 t CO_2eq
due to the AVOIDED DISTRIBUTION

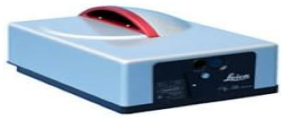
ENERGY savings:
≈ 24.000 GJ
due to the AVOIDED DISTRIBUTION

TOMATO SELF-SUFFICIENCY:
≈ 145.000 people
(≈10% of BCN population)

CONCLUSIONS

- Run your own observational platforms and sensors is paramount to build up: Science + Technology + Territorial Challenges = Added Value
- Be reactive and achieve a right integrity of services is key. Spectral-spatial-radiometric-temporal(coverage) resolution is a trade off depending of technical and operational E.O platform
- Operational Earth Observation means to manage the complexity of different skills, backgrounds, and professional competences to create value
- Combination with other EO technologies, geospatial, environmental data. models or expertise is paramount, in particular end user' needs
- It's not a competition between platforms but define the right E.O program oriented to the problem to be solved





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