FROM GEOGRAPHIC INFORMATION TO GEOGRAPHIC KNOWLEDGE:

AN EARTH OBSERVATION VIEW

By: Dr. Jordi Corbera
Earth Observation Department
Institute Cartographic and Geological of Catalonia
jordi.corbera@icgc.cat
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)
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 / m²).
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. ACCESSIBILITY AND UPDATING & ACCURACY
ii. INNOVATION: FROM ASSETS AND RESULTS TO COMPLEXITY MANAGEMENT

... some examples how to transform data into knowledge
INDUSTRIAL COVER EFFICIENCY

TASI capture

$T_{1 \, 0.00 \, UTC}$

$\Delta T(t_2-t_1)$

$T_{2 \, 6.00 \, UTC}$

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

http://bit.ly/1sGVPKX
URBAN GREEN
VERY HIGH RESOLUTION

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

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

Credit Line: Umberto Boccioni, La città cresce., 1910. (public domain)
Operational service at France since 2001 on fertilization recommendations at near real time (48h) more than 600,000 ha.
SOILS AND GEOLOGY

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

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

SHORT-TERM potential: 13.1 ha
= 8% polygon

CO₂ savings:
= 880 t CO₂eq
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)

Potential PRODUCTION:
= 2000 t tomato
(per year)
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