A mixed methods approach to analyse migration between Syria and Lebanon between 2006 and 2017

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Syrian refugees context

- 20% of the Syrian population has fled the country (UNHCR)
- Most have settled in towns and cities of neighbouring countries.
- July 2017: more than 5.1 million Syrian "refugees" registered, in Turkey, Lebanon and Jordan
- One million Syrian have applied for asylum in Europe.
- Highest "Refugees/Population" ratio in Lebanon (1/4 to be Syrian in 2015)
- 5 official land crossing points
Data sources

- **Border Statistics**
  
  Source: General Directorate for Security in Lebanon

- **UNHCR Data**

  Source: Office of the United Nations High Commissioner for Refugees (UNHCR)
  Data: national and regional monthly statistics of new or pending registration (06/2011-06/2016)

- **Remotely Sensed Data**

  Source: Remote sensing data make possible examining changes in land cover over time (since the early 1970s) and at a variety of scales
  Data: Very High Resolution (<5m) QuickBird, Ikonos imagery, LandSat 5 to 8 (30 m accuracy) and high geometric resolution, from French SPOT 5 satellite

Can a statistical link be made between the observed fluctuations in border flows and UNHCR stocks, and are both correlated with land use changes observed in satellite imagery time-series?
Syrian Nationals Cross border movements (1)

**Syrians entry and exit and Net Migration : 2007-2017**

- **High numbers of movement**
- **Feb 2015 : lowest figure** 82424 entries and 99286 exits
- **Sept 2011 : highest entries** figure 544767
- **July 2013: highest figure of exits** 402403.
- **Positive Net migration for almost the whole period.**
Syrian Nationals Cross border movements (2)

Inter-Annual Variation of inflows and outflows (2007-2016)

- Constant increase of flows until 2013
- Decrease until 2015
- 2014-2016 : Net migration close to zero
Syrian Nationals Cross border movements (3)

Average inflows and outflows and net migration (3 periods)

May 2011 to October 2014: Sharp increase of inflows and outflows/Cumulative Net migration the highest: Liberal Migration policy

November 2014 to March 2017: Important decrease of inflows and outflows/Cumulative Net migration close to zero: Restrictive Migration policy
Comparing Border Statistics with UNHCR Data

Comparison of cumulative stocks of net migration resulting from border statistics and UNHCR data (2007-2017)

- Until mid-2014: Border statistics and UNHCR data follow similar trends
- End 2014 - Beginning 2016: Reversed trends
- UNHCR: Since the end of 2014, overestimation of the number of refugees registered?
Evaluation of migration-environment linkages

The main objective are to:

✓ Study the migration–environment linkages at the local scale
✓ Evaluate types of data needed

We focus on aspects of the natural environment which may be linked causally to human migration. Indeed, the dynamics of the population, its movements, and its footprint are quantifiable in space:

- deforestation, or clearing of other vegetation cover
- building of camps, residential, industrial building ...
- intensification of land use for agriculture
- increased irrigation, increased labor per unit of land area
- switching between subsistence and cash crops;
- soil erosion & degradation (prolonged land use and nutrient depletion)
- flooding/drought, and precipitation excesses and deficits.

We focused on the area adjacent to the Qaa land border crossing in the Bekaa one of the most affected areas.
Evaluation of migration-environment linkages

- For small agricultural plots, using very high resolution (VHR) satellite imagery (accurate to 5 m or better) is desirable to obtain useful data, such as from QuickBird, Ikonos or Hyperion imagery.

- For studying changes in vegetation at the community or farm household level for medium-to-large farms, images from Landsat (30 m accuracy) or from French SPOT 5 satellite accurate to 10 m are sufficient and less expensive if not free.

- At coarse resolution, Advanced Very High Resolution Radiometer on NOAA-series satellites (1 km/ 8 km) or SPOT Vegetation (1 km) can capture changes at a larger scale (district, province, region or national level).

- Importantly, measure environmental changes at a coarse spatial resolution does not imply that migration must be measured at the same resolution: In fact, even at the household level, a migration model may include environmental drivers measured at a coarse scale, such as a community, region or administrative area, because it is the scale at which the environmental change usually occurred.
Evaluation of migration-environment linkages
Time series of land uses
Identification of land uses/cover evolution
Low light night emission changes (VIIRS)

June 2013

June 2014

June 2015

Radiance $10^{-8} \text{ W/cm}^2 \text{sr}$

- $< 0.25$: 3.00 - 6.00
- 0.25 - 0.40: 6.00 - 20.0
- 0.40 - 1.00: 20.0 - 40.0
- 1.00 - 3.00: > 40.0

IFMS 15-16 January 2018
Joint evolution of refugees registered (UNHCR) and Land use changes (2013-2017)
Further analysis

◆ To understand more clearly the dynamics of migration between Syria and Lebanon: qualitative interviews

◆ Examine the effect of migration policies compared to other factors in determining the magnitude and evolution of flows and stocks (dynamics of the conflict in Syria, settlement conditions elsewhere...)

◆ Given the fact that forced migration is a highly dynamic phenomena, we need to examine temporal changes at a smaller scale: new development in remote sensing technology allow us to examine almost at a daily rate the visible terrestrial changes.