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

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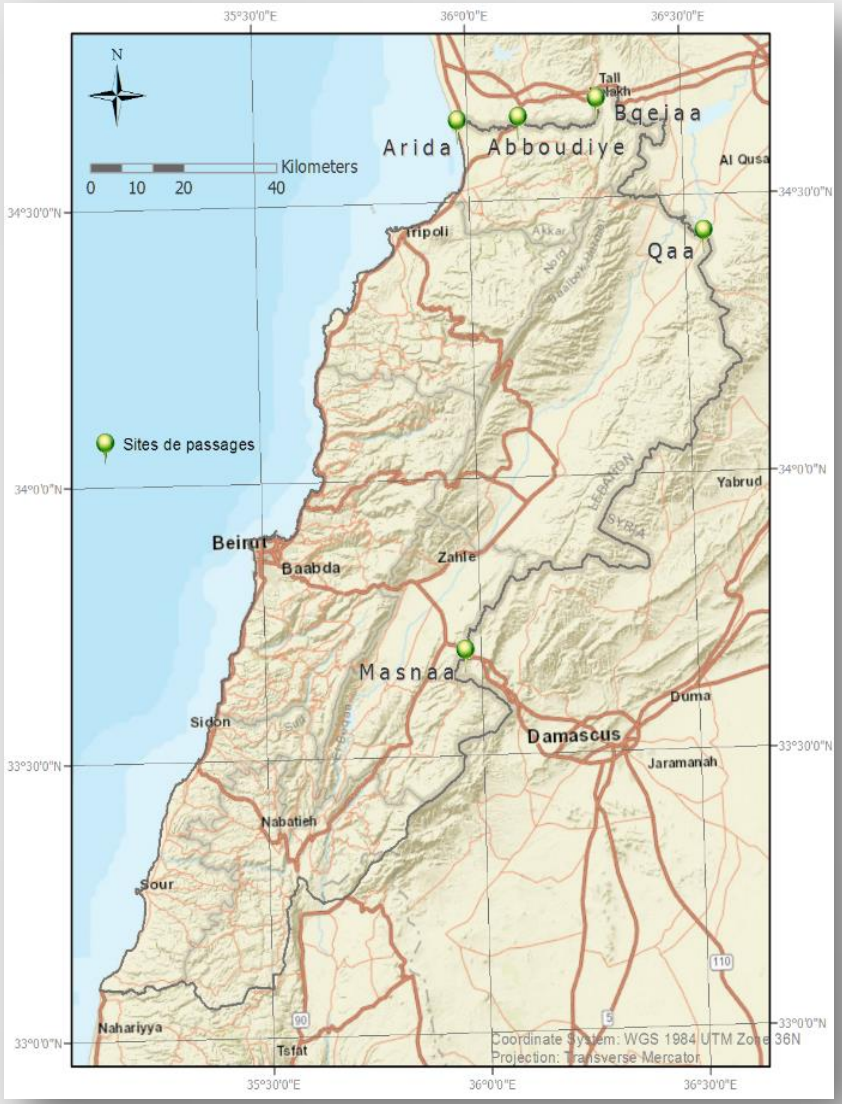
Syrian refugees context



- ✓ **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
Data : monthly Syrians entries and exits to & from Lebanon by land & air borders (2007-2017)

- ✓ **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)

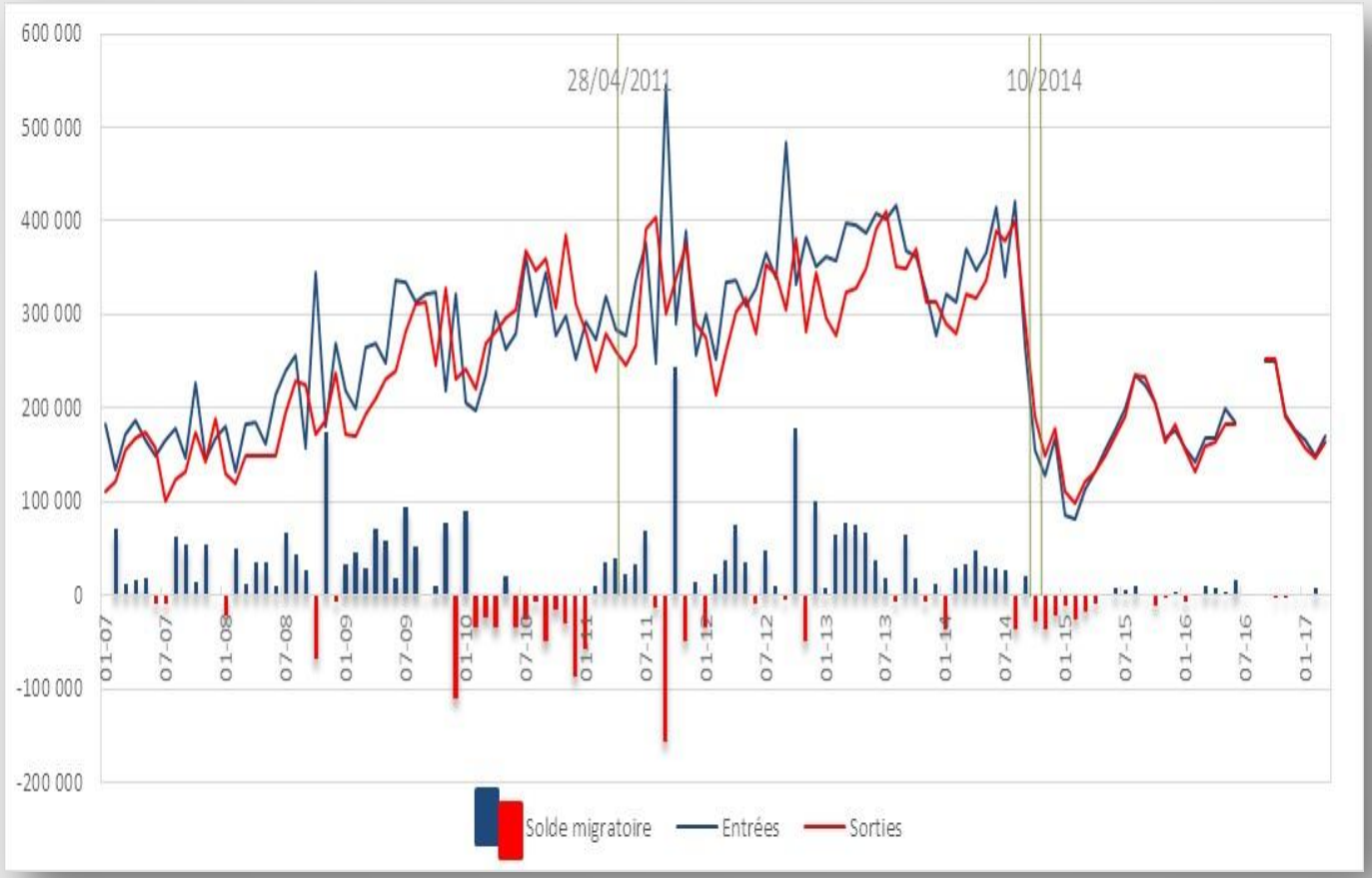
- ✓ **Remotely Sensed Data**

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)

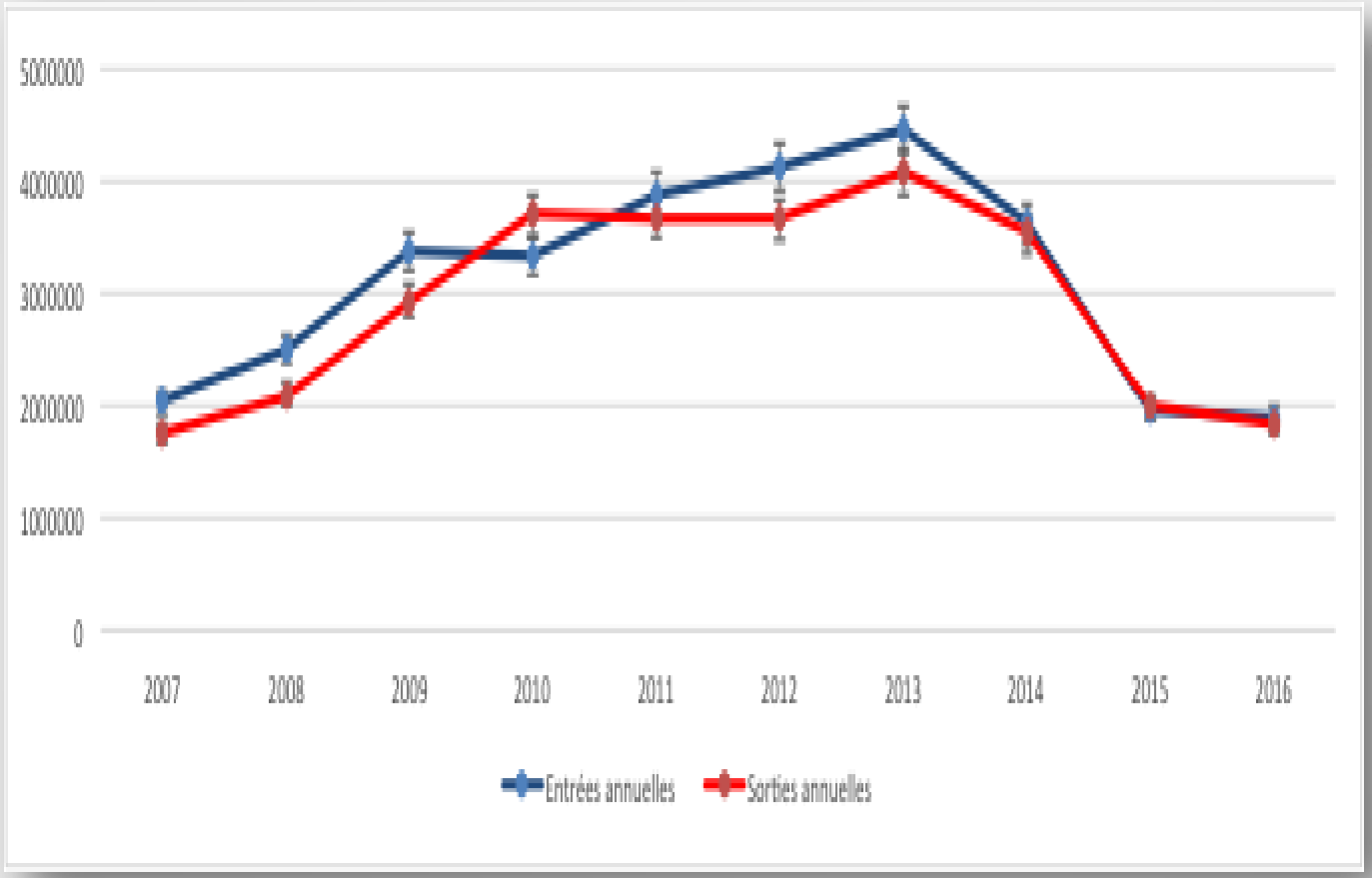
Syrians entry and exit and Net Migration : 2007-2017



- *High numbers of movement*
- *Feb 2015 : lowest figure 82424 entries and 99286 exits*
- *Sept 2011 : highest entries figure 544 767*
- *July 2013: highest figure of exits 402403.*
- *Positive Net migration for almost the whole period.*

Syrian Nationals Cross border movements (2)

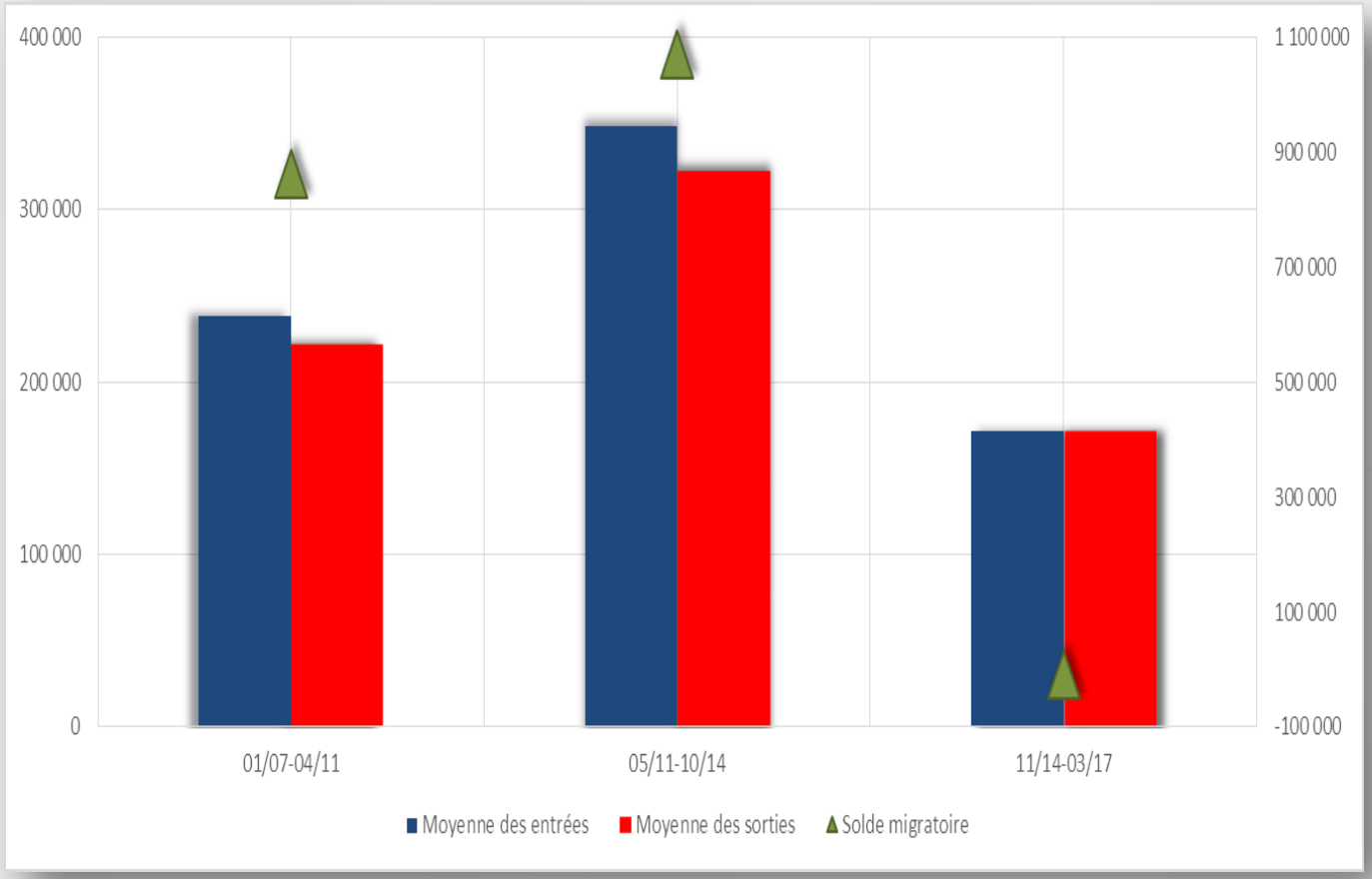
Inter-Annual Variation of inflows and outflows (2007-2016)



- ✓ *Constant increase of flows until 2013*
- ✓ *Decrease until 2015*
- ✓ *2014-2016 : Net migration close to zero*

Syrian Nationals Cross border movements (3)

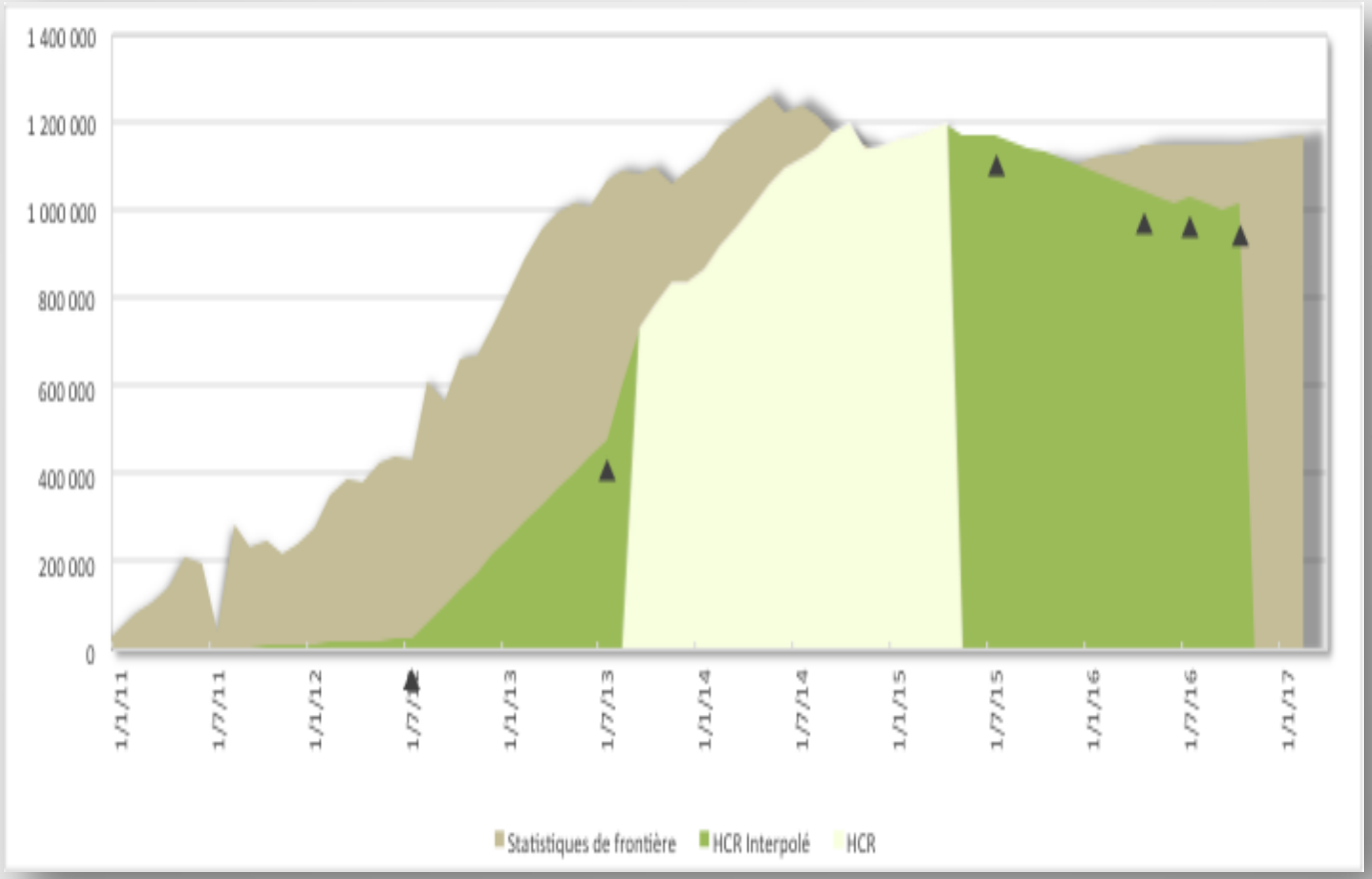
Average inflows and outflows and net migration (3 periods)



- *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, over estimation 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

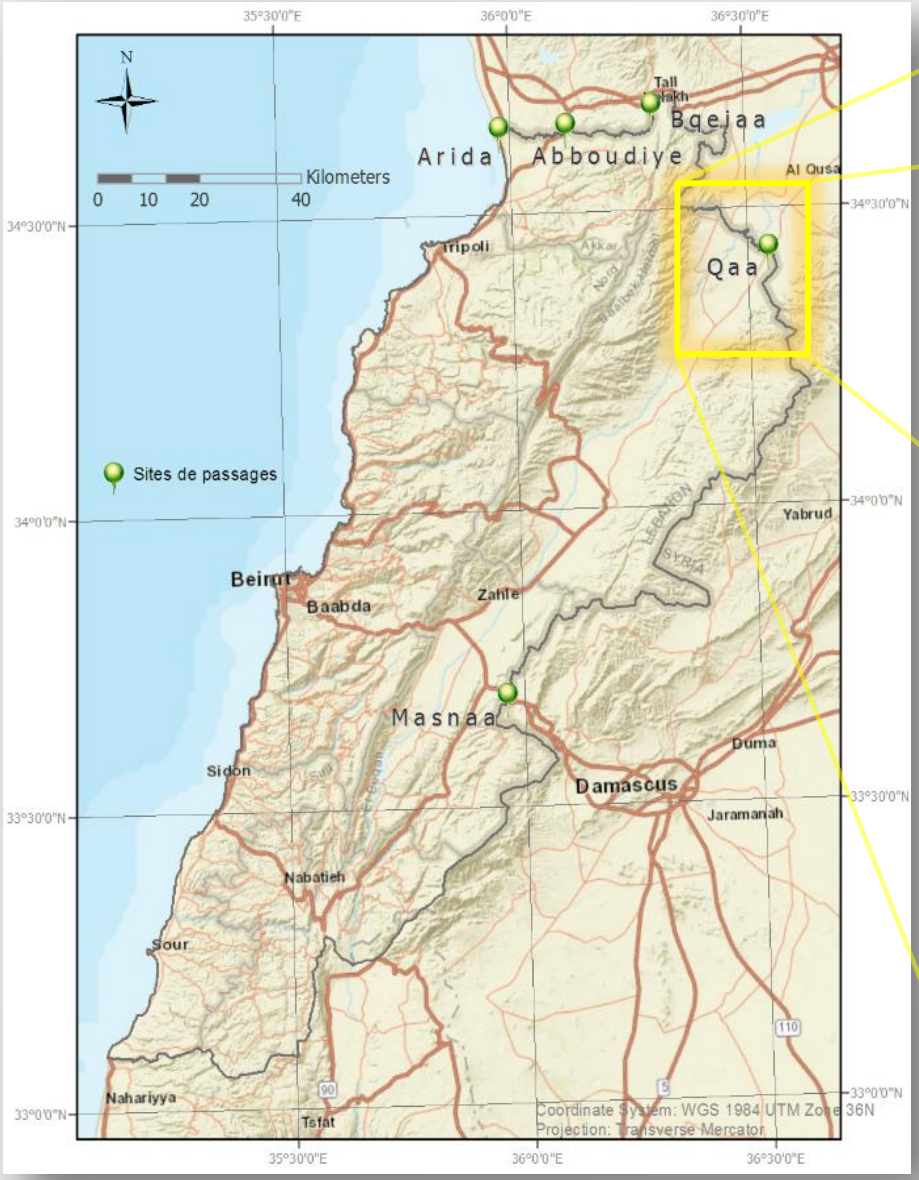
- For small agricultural plots, using very high resolution (VHR) satellite imagery (accurate to 5 m or better) is desirable to obtain useful data, such as from QuickBird, Ikonos or Hyperion imagery.

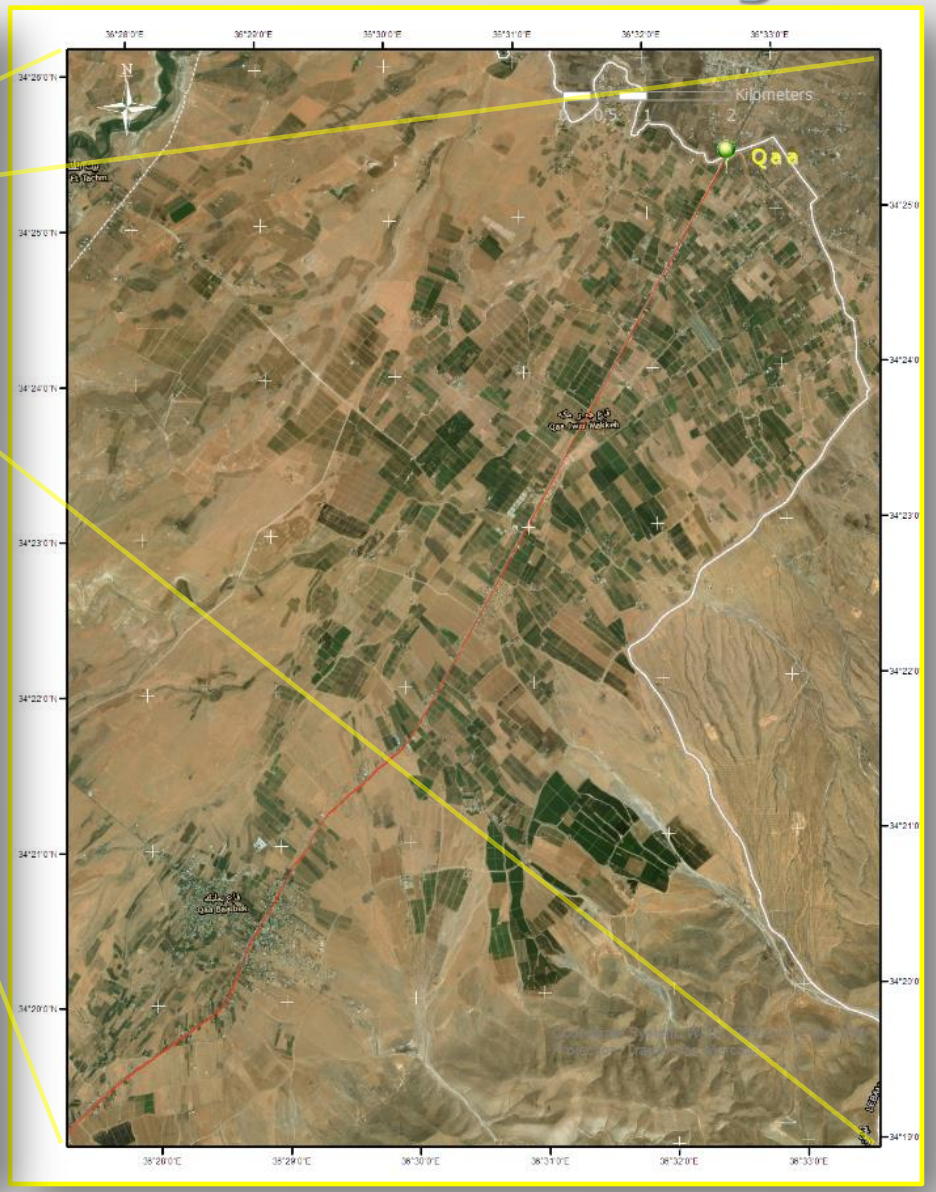
- For studying changes in vegetation at the community or farm household level for medium-to-large farms, images from Landsat (30 m accuracy) or from French SPOT 5 satellite accurate to 10 m are sufficient and less expensive if not free.

- 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.

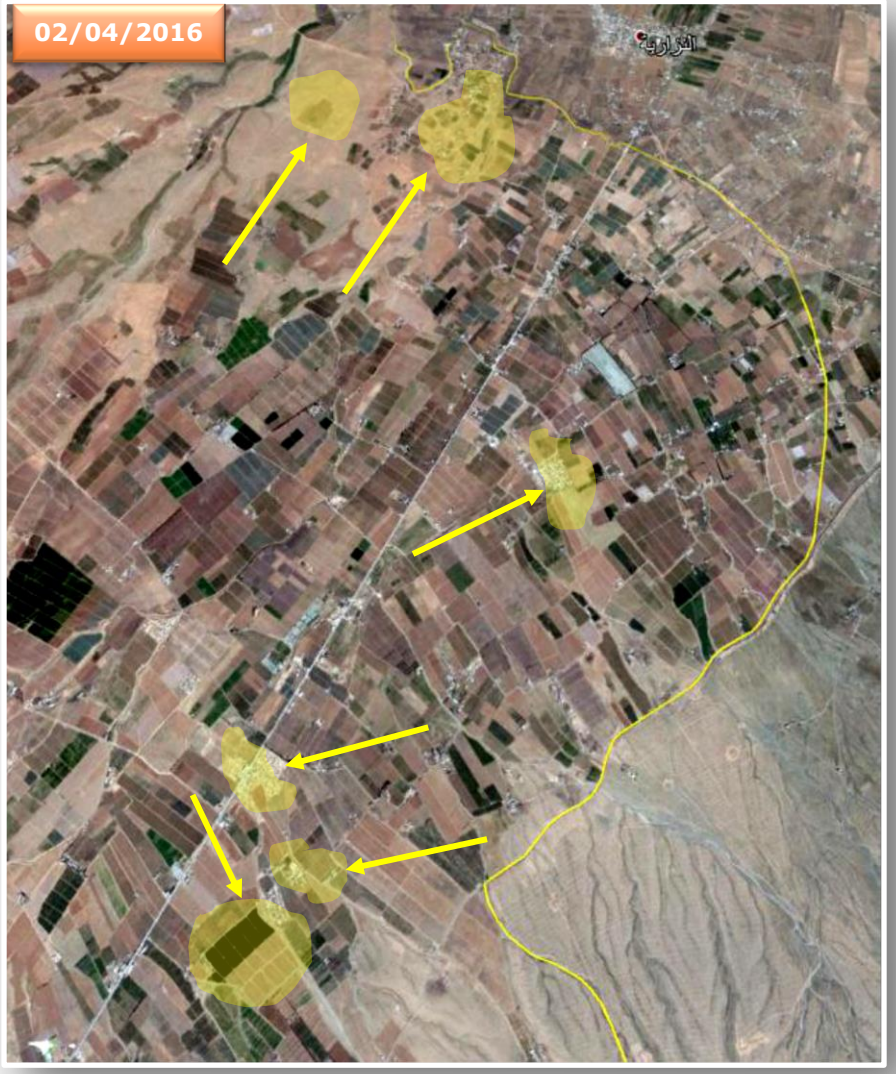
Evaluation of migration-environment linkages



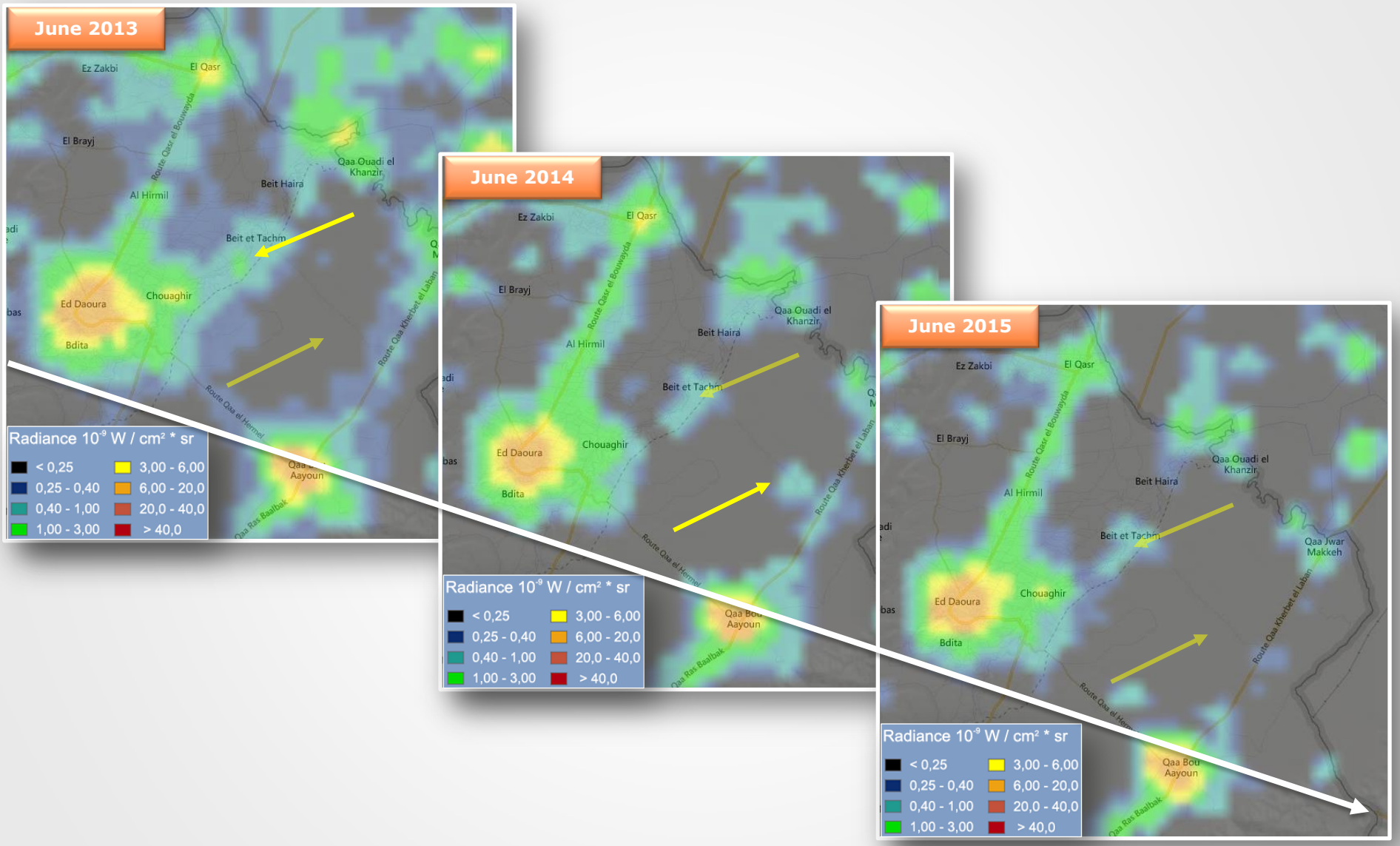


Time series of land uses

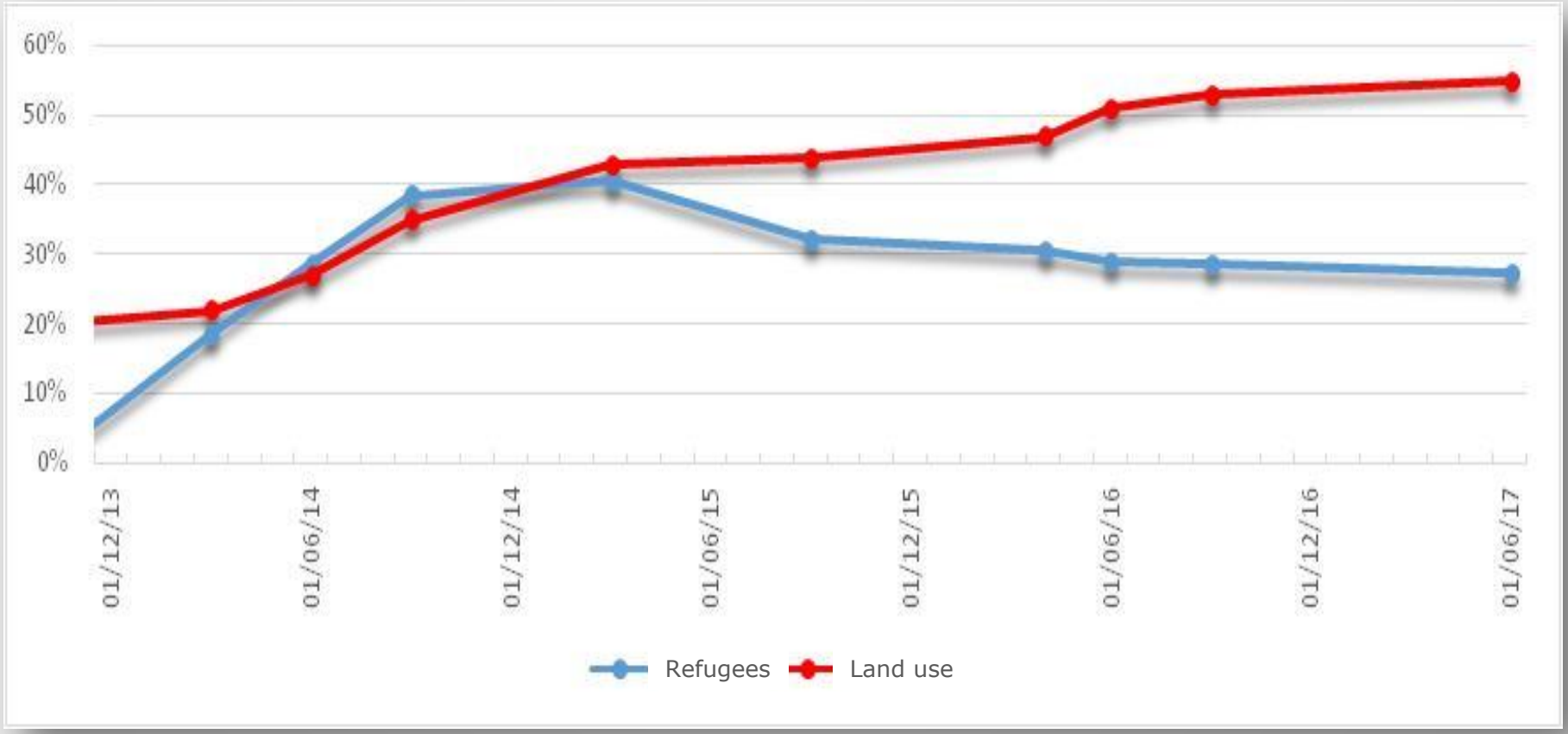
Identification of land uses/cover evolution



Low light night emission changes (VIIRS)



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.