Discussion Panel 1
Innovations in Index-Based Insurance
Advantages and limitations of remote sensing data

MARIE-CHRISTINE BÉLANGER, PH.D.

Analyst in Agricultural risk management

ZÜRICH
JUNE 23, 2014

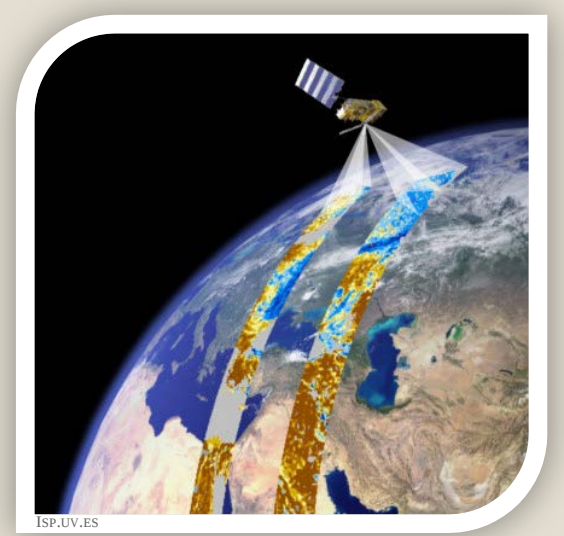
FADQDI
Financière agricole du Québec
Développement international

IARFIC

Innovations in Index-Based Insurance

REMOTE SENSING DATA

- Example of remote sensing data
- Advantages
- Limitations
- Avoiding pitfalls



ISP.UV.ES

Remote sensing data

- Have various resolution: spatial, spectral, radiometric and temporal
- Give information about weather, vegetation, snow cover, elevation, geology, hydrology…
- Some have a cost, others are free.

FADQDI
Financière agricole du Québec
Développement international

Example of remote sensing data

Vegetation Index (NDVI)

Satellite	Over pass	Spatial resolution
MODIS	1-2 days	250 m
Landsat	16 days	30 m
AVHRR	7 days	1 km

- Red and NIR

Rainfall estimates

Satellite	Over pass	Spatial resolution
NOAA	10 days	8 km
Meteosat	1 h	3 km

- A weather station usually covers a 25 km radius

Remote sensing data

Advantages

- Covers large areas
- Pixel size is small
- One value per pixel
- Long historical dataset, for large areas.
- Some are free
- Potential to reach 'hard to reach areas'

Limitations

- Influenced by clouds
- Need data processing
- Hard to understand, hard to see for many farmers
- Basis risk

Avoiding pitfall

Apply as is a model developed elsewhere

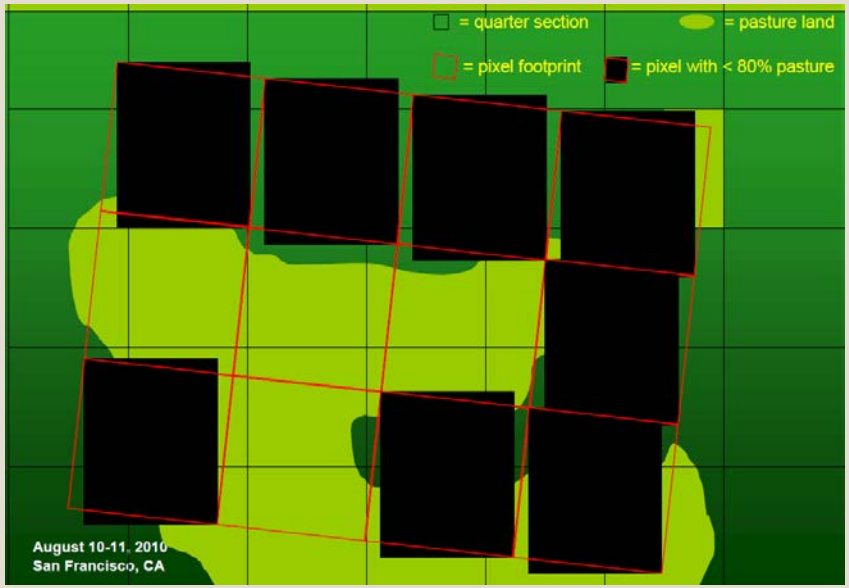
1. There is an existing pasture insurance based on satellite index …
2. Pasture is grown in my region
3. Satellite data are available in my region
4. I will use the same methodology and offer to my region pasture insurance based on satellite index
5. I will save on development time.

Satellite Yield Insurance in Alberta

NOAA-AVHRR

|-1km-|

|-1km-|



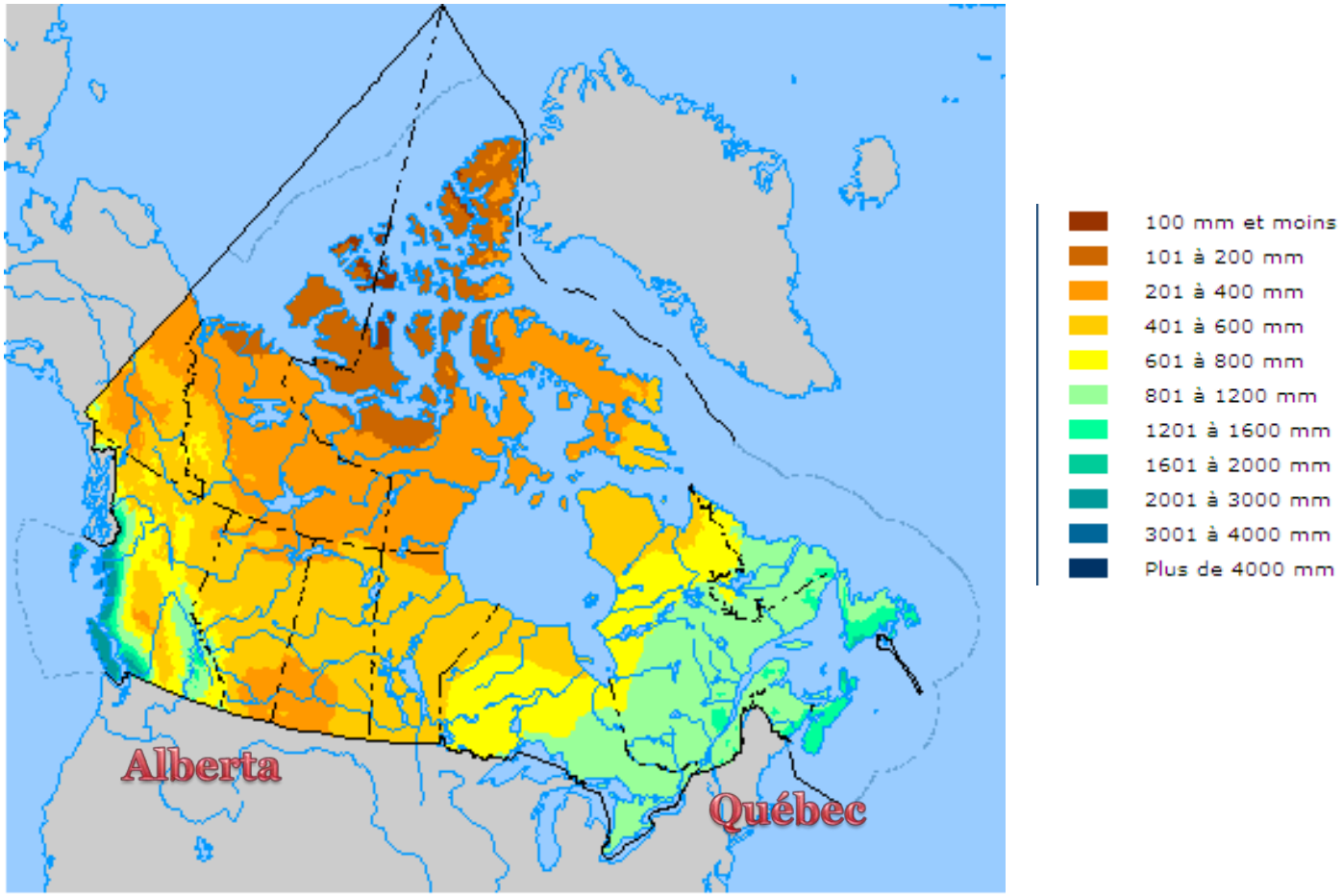
FADQDI
Financière agricole du Québec
Développement international

From Alberta to Québec
is it possible ?

Cropping methods

FADQDI
Financière agricole du Québec
Développement international

Average annual rainfall



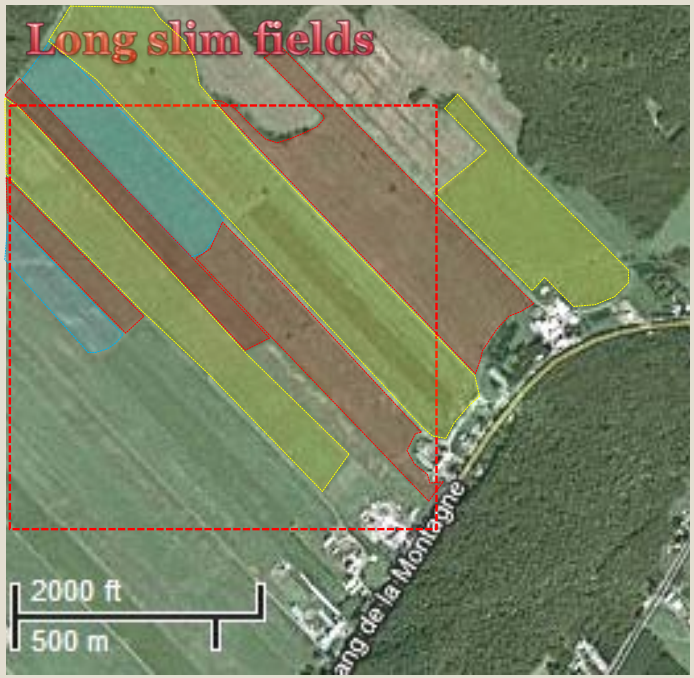
FADQDI
Financière agricole du Québec
Développement international

Field size

Alberta

- Easy to find pixel covered at 80% by pasture

Québec



- Adjacent fields rarely covered by the same crop

So, would it be possible ?

YES, but we must adapt the technology by

- Using images at higher resolution
- Adapting the risks covered (drought vs excess)
- Assessing the correlation between vegetation indices and harvested production.

It is also important to educate the farmers and to be able to easily reach them to offer the product.

THANKS !

MARIE-CHRISTINE.BELANGER@FADQ.QC.CA

FADQDI
Financière agricole du Québec
Développement international