Fièvre catarrhale ovine dans le nord de l'Europe

Stéphan Zientara

UMR 1161 Afssa/ INRA/ENVA
Agence française de sécurité sanitaire des aliments
Maisons-Alfort

Académie vétérinaire de France, 8 février 2007

Virus Bluetongue (BTV)

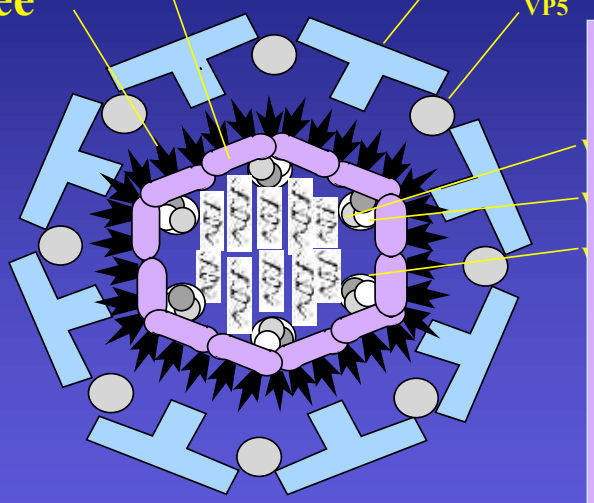
24 sérotypes

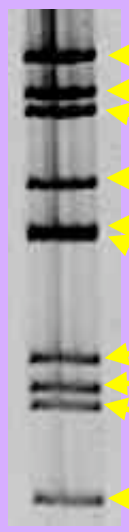
VP7 conservée

VP3

VP2 variable

VP5





AHSV (PE) : 9
EEV
EHDV

10 ds RNA

3 protéines non-structurales NS1, 2 and 3
4 protéines structurales

Virus Bluetongue (BTV)

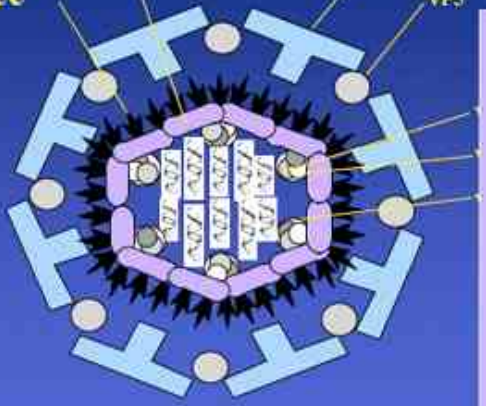
24 sérotypes

VP7 conservée

VP3

VP2 variable

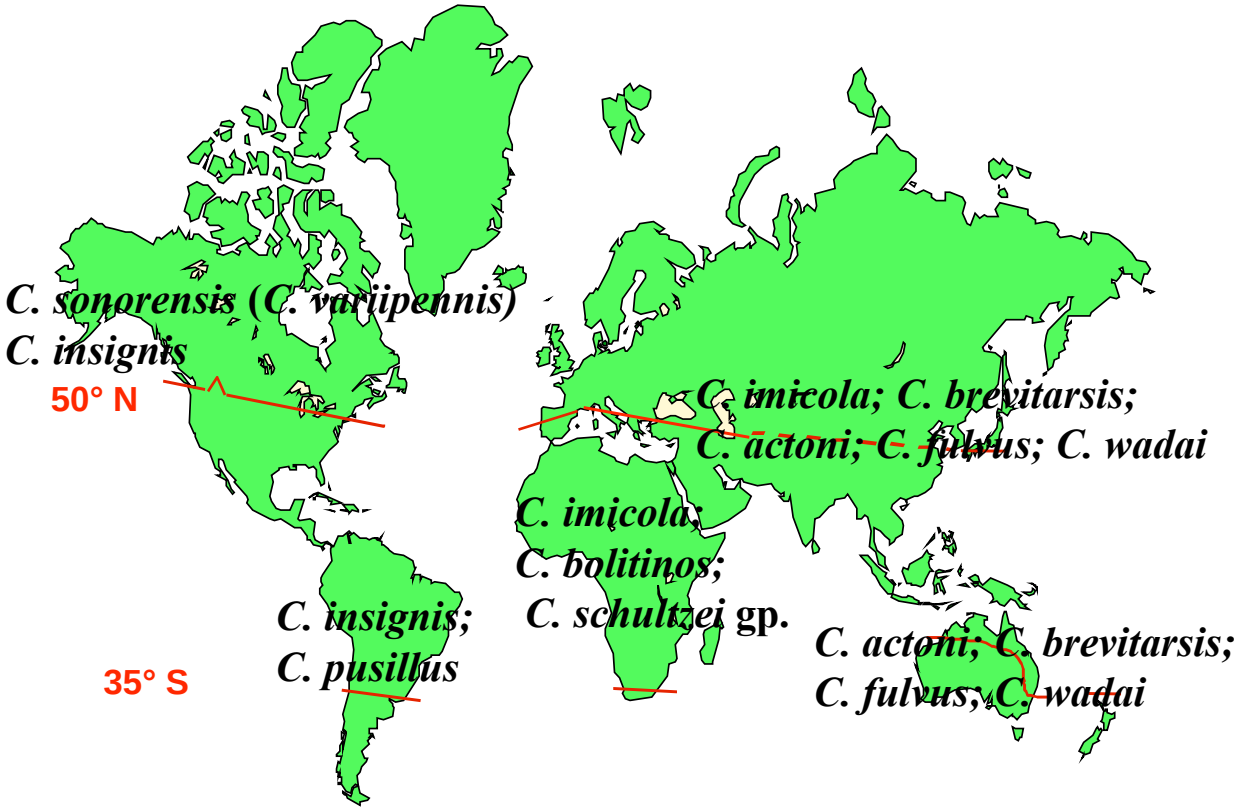
VP5



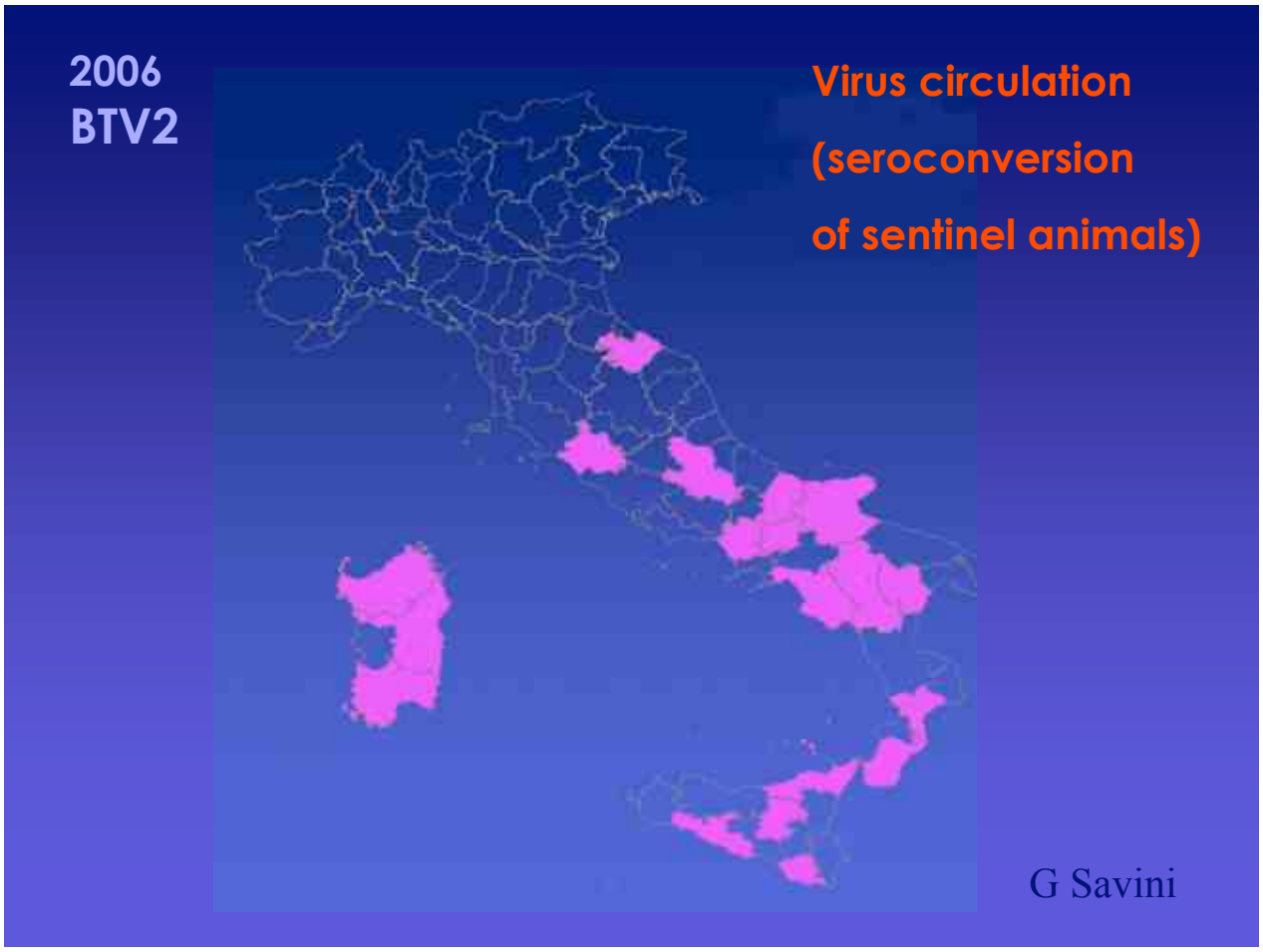
AHSV (PE) : 9
EEV
EHDV

10 ds RNA

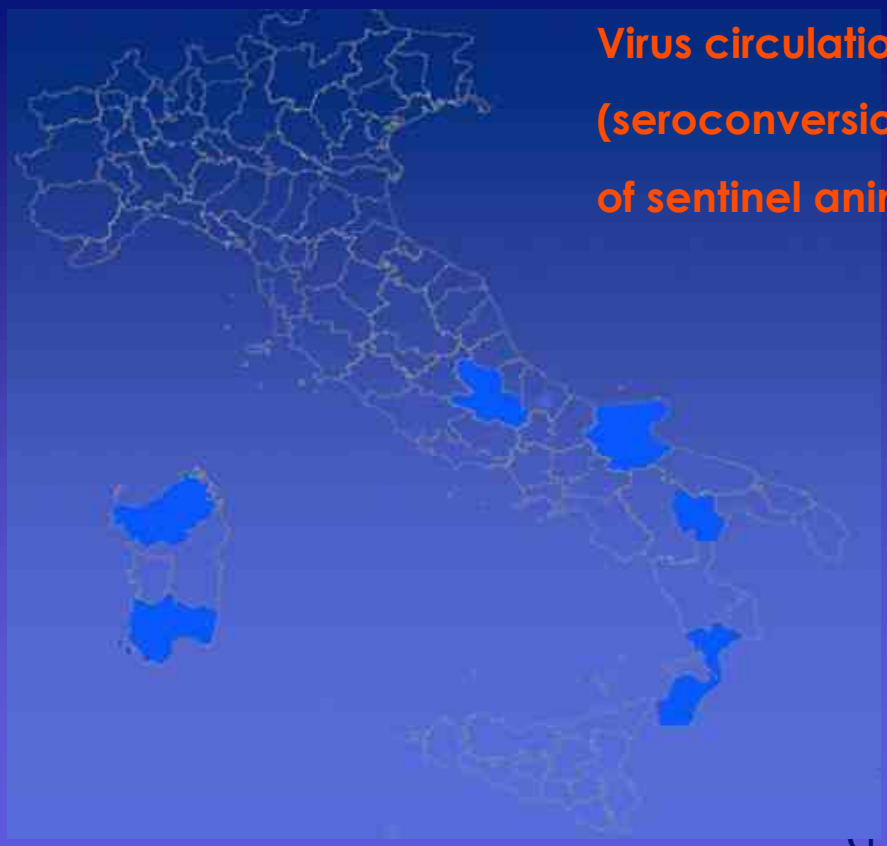
3 protéines non-structurales NS1, 2 and 3
4 protéines structurales


C. sonorensis (C. varijipennis)
C. insignis
50° N
C. imicola; C. brevitarsis;
C. actoni; C. fulvus; C. wadai
C. imicola;
C. bolitinos;
C. schultzei gp.
C. insignis;
C. pusillus
35° S
C. actoni; C. brevitarsis;
C. fulvus; C. wadai

Situation dans le bassin méditerranéen (1998-2006)
8
9
2004
4
4, 16
2
2, 4, 9, 16,
4


2006
BTV2
Virus circulation
(seroconversion
of sentinel animals)
G Savini

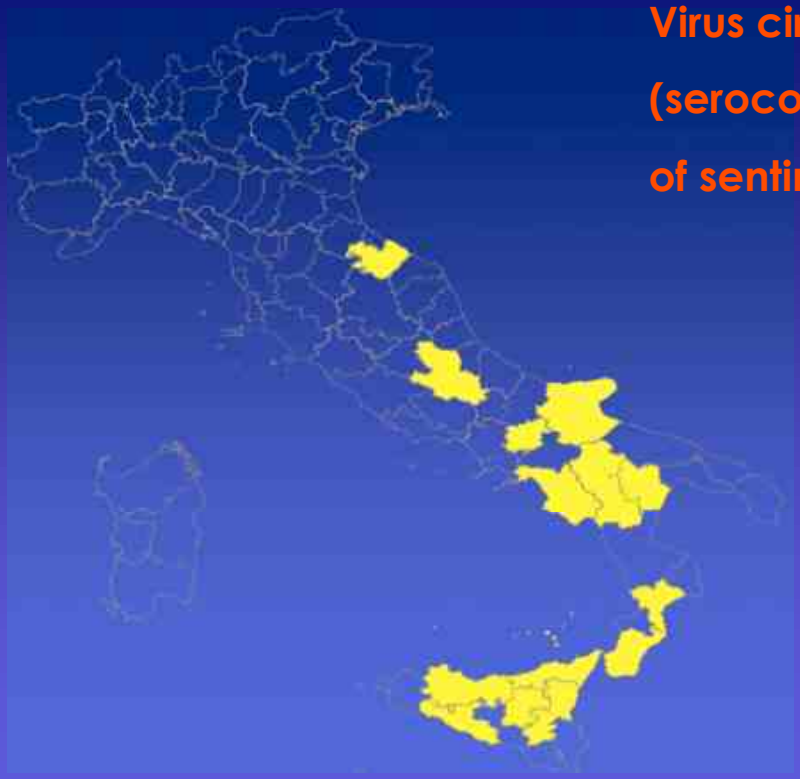
2006
BTV4



Virus circulation
(seroconversion
of sentinel animals)

G Savini

2006
BTV9

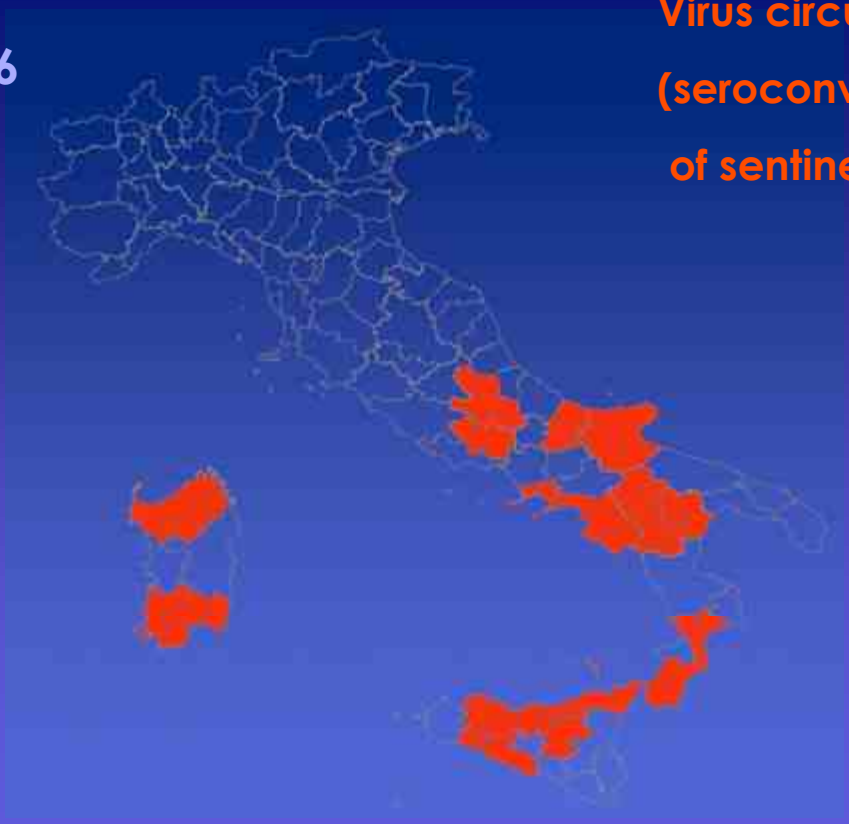


Virus circulation
(seroconversion
of sentinel animals)

G Savini

2006
BTV16

Virus circulation
(seroconversion
of sentinel animals)



G Savini

- Le 17 août 2006, les autorités vétérinaires néerlandaises ont notifié des foyers de FCO dans le Sud Est du pays (Kerkrade), dans une zone limitrophe de la Belgique (Liège) et de l'Allemagne (Nordrhein Westphalie).

- **Signes cliniques**

BT-like

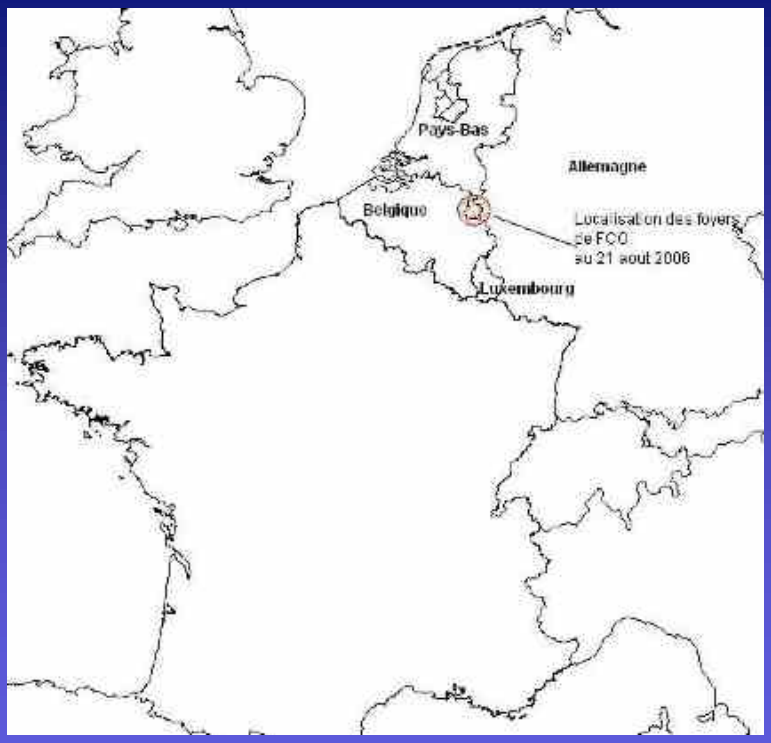
Bovins - Ovins

PAYS-BAS

Début le 14/08/06
2 malades/90 moutons

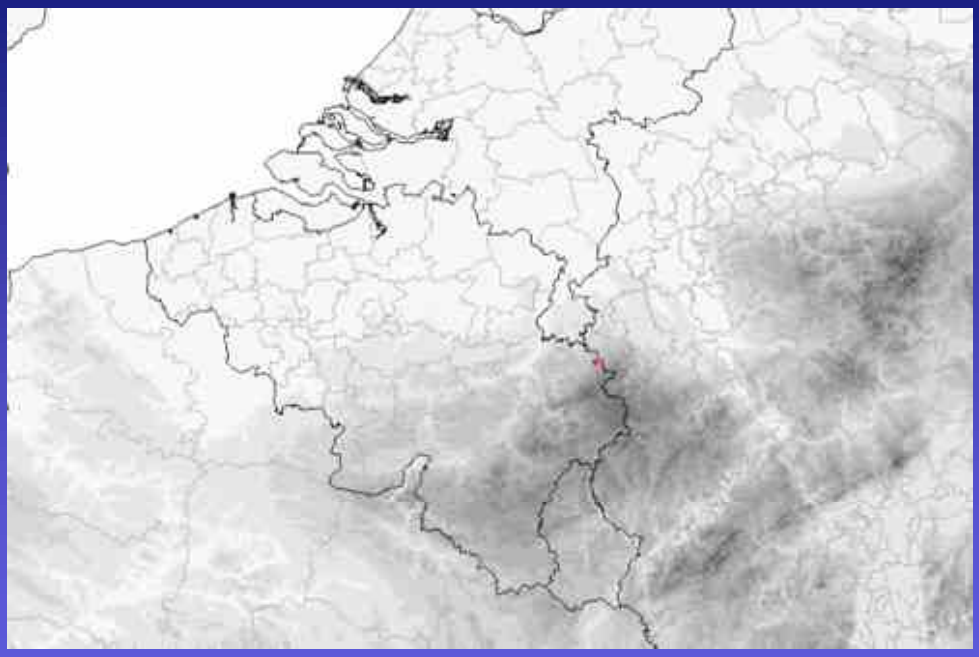
Pays Bas

http://ec.europa.eu/food/committees/regulatory/scfcah/animal_health/bluetongue_scofcahpdf



G Hendrickx

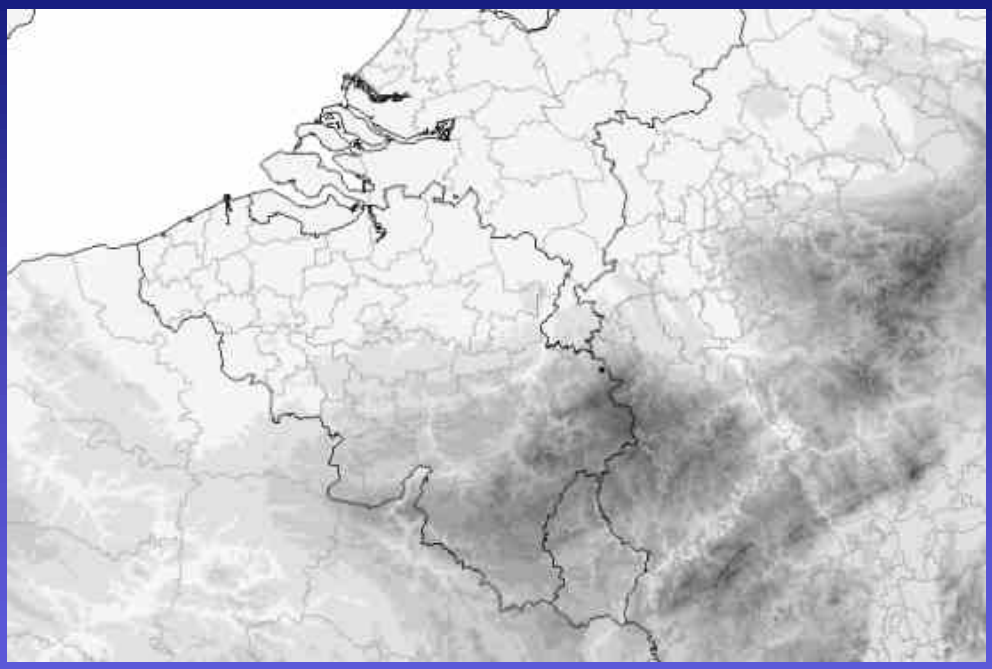
BTV8 outbreak 2006 – All Ruminants



Week 01

June 28 – July 04

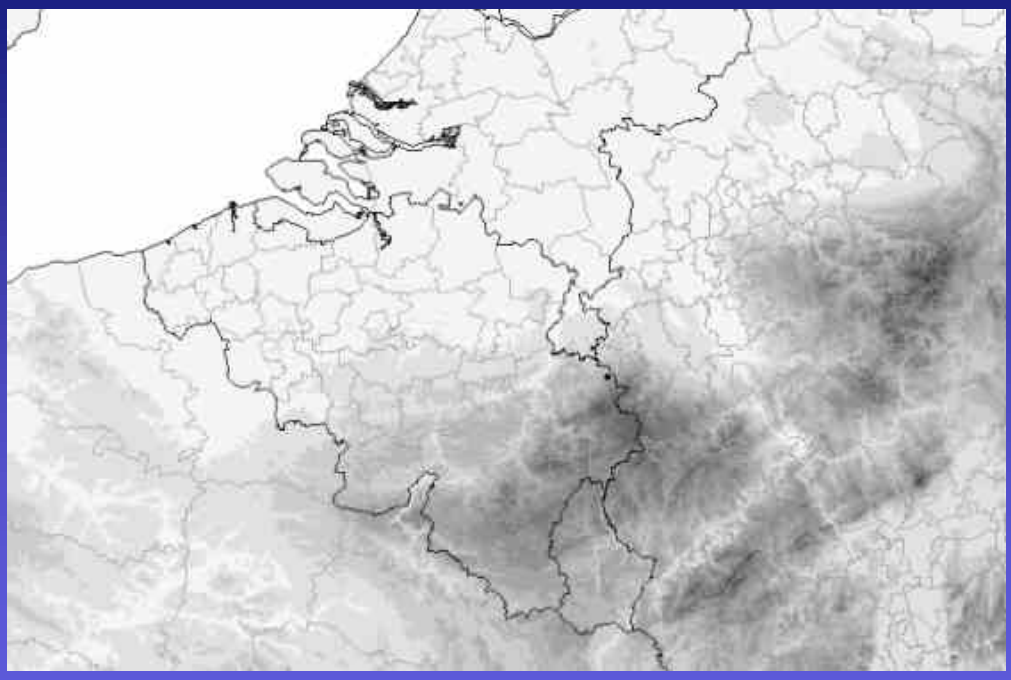
BTV8 outbreak 2006 – All Ruminants



Week 02

July 05 – July 11

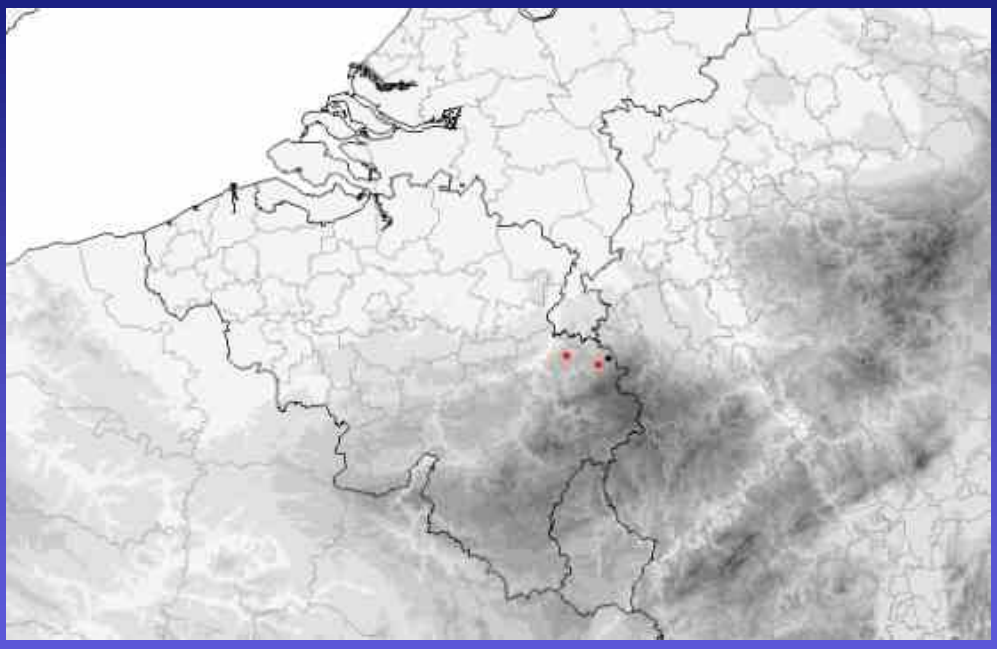
BTV8 outbreak 2006 – All Ruminants



Week 03

July 12 – July 18

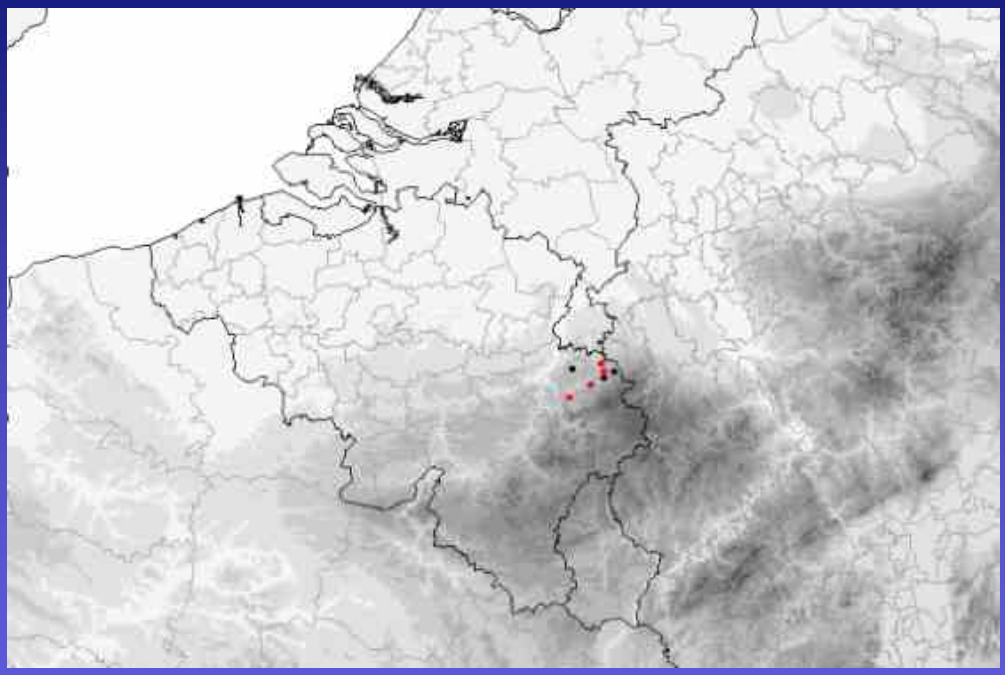
BTV8 outbreak 2006 – All Ruminants



Week 04

July19 – July 25

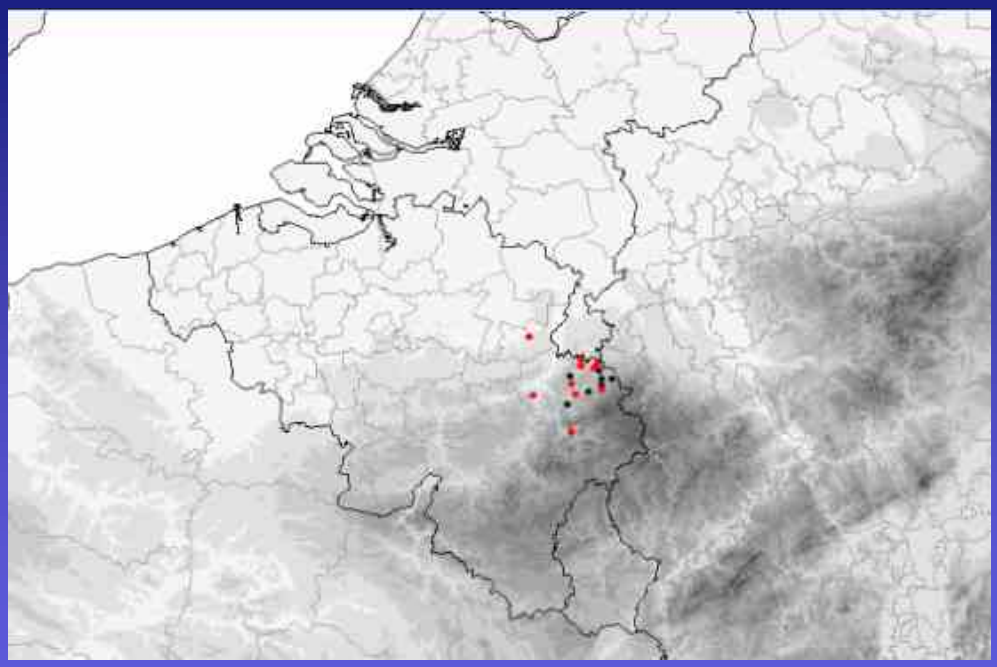
BTV8 outbreak 2006 – All Ruminants



Week 05

July 26 – August 01

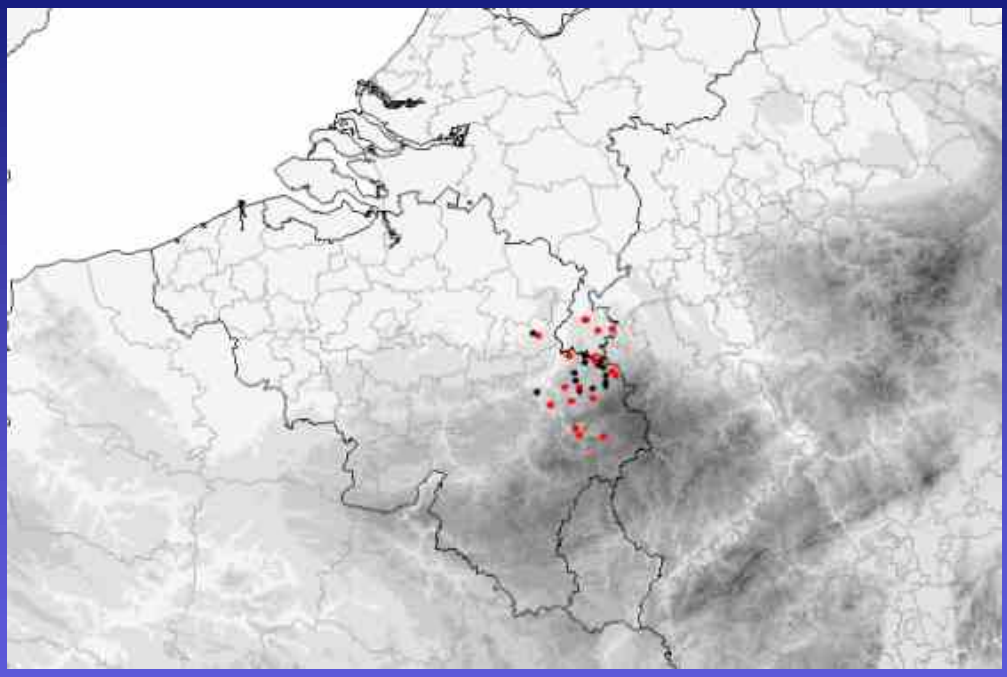
BTV8 outbreak 2006 – All Ruminants



Week 06

August 02 – August 08

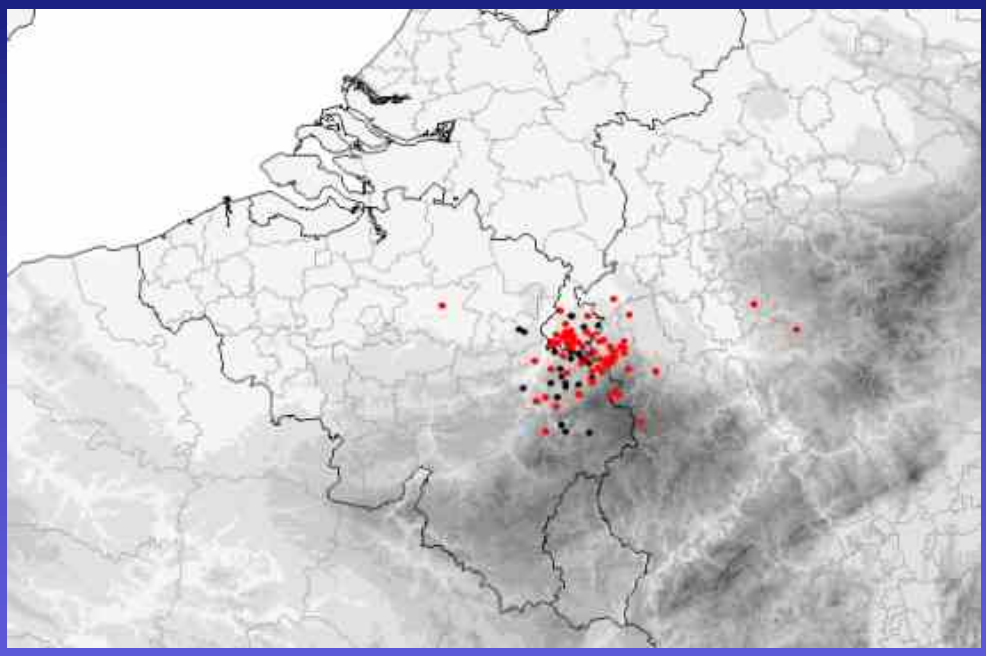
BTV8 outbreak 2006 – All Ruminants



Week 07

August 09 – August 15

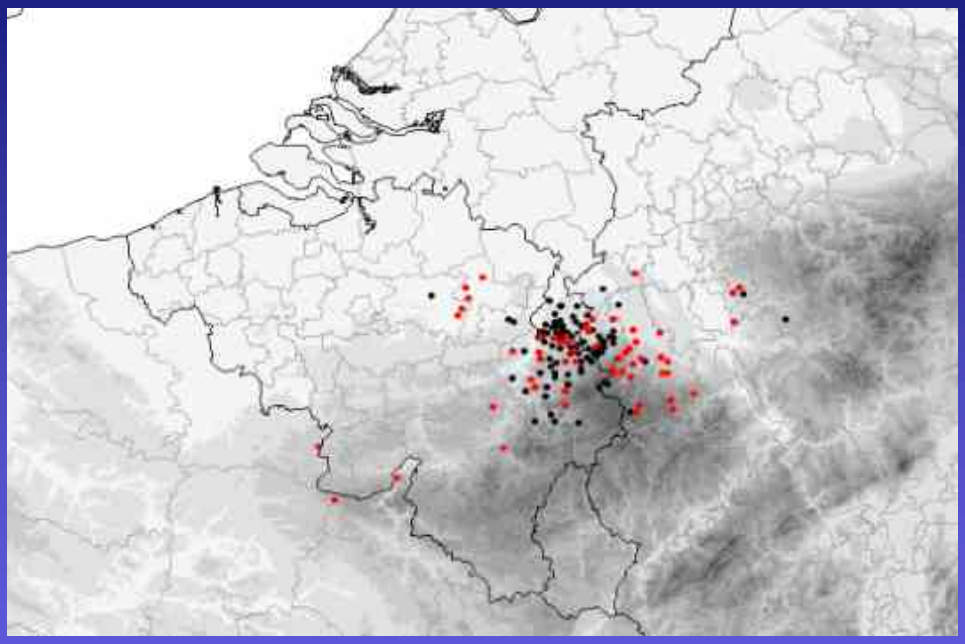
BTV8 outbreak 2006 – All Ruminants



Week 08

August 16 – August 22

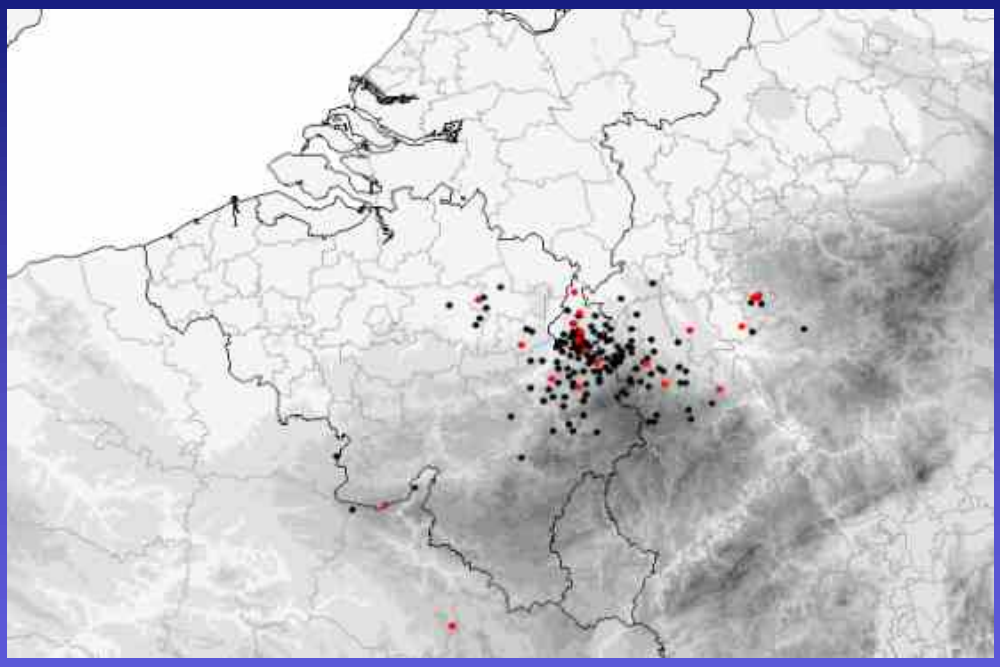
BTV8 outbreak 2006 – All Ruminants



Week 09

August 23 – August 29

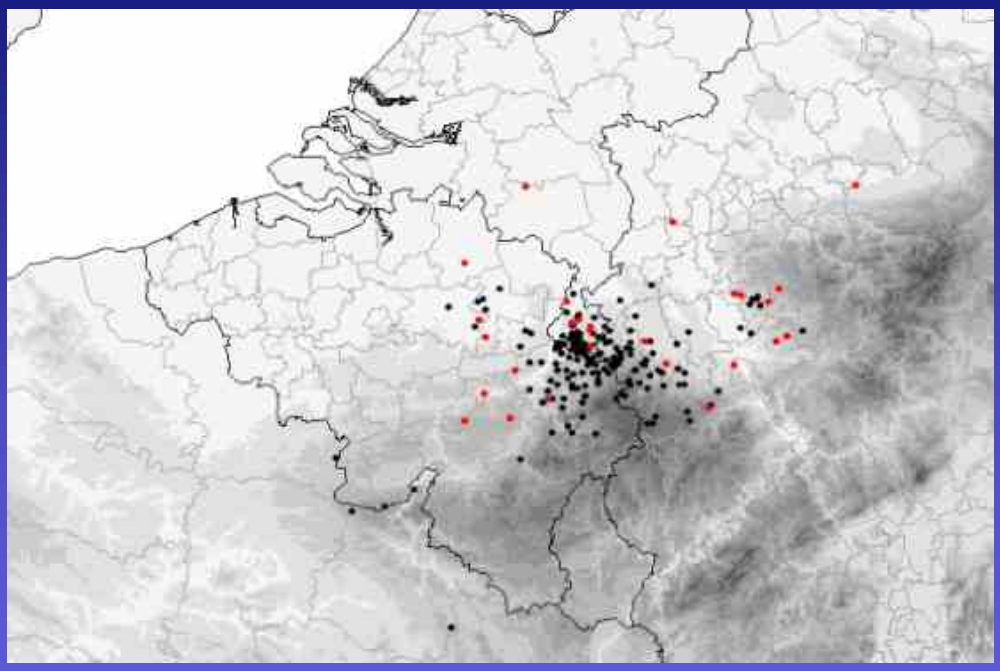
BTV8 outbreak 2006 – All Ruminants



Week 10

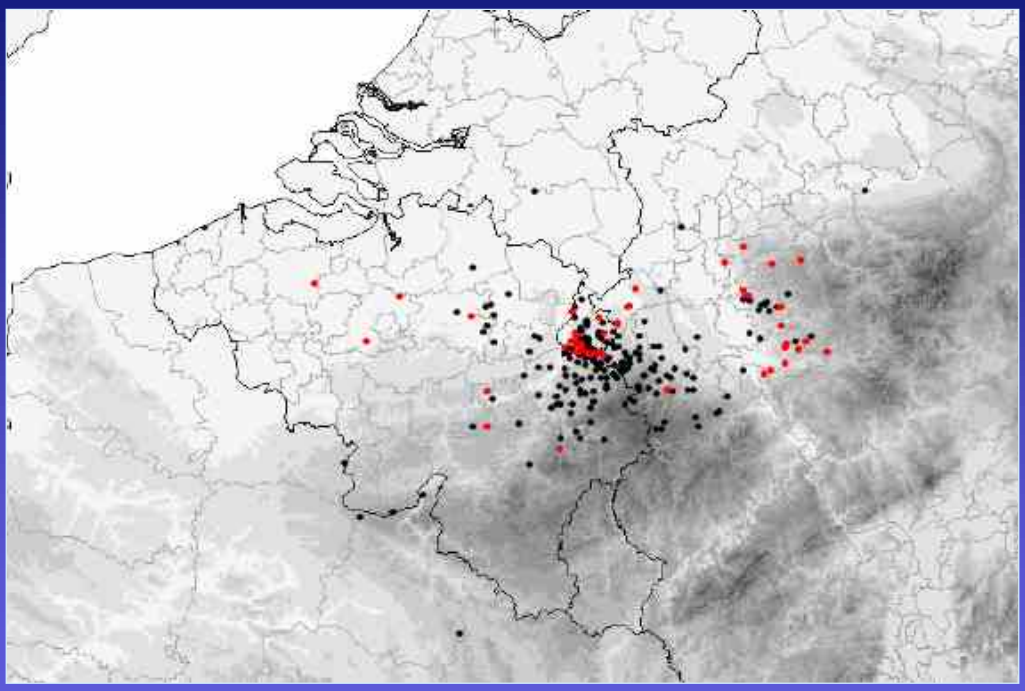
August 30 – September 05

BTV8 outbreak 2006 – All Ruminants



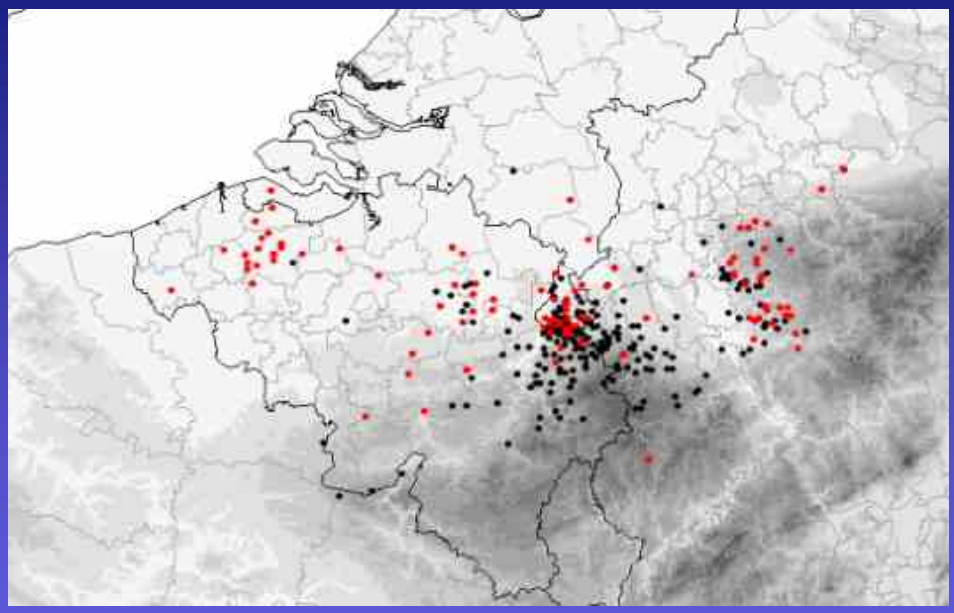
Week 11 September 06 – September 12

BTV8 outbreak 2006 – All Ruminants



Week 12 September 13 – September 19

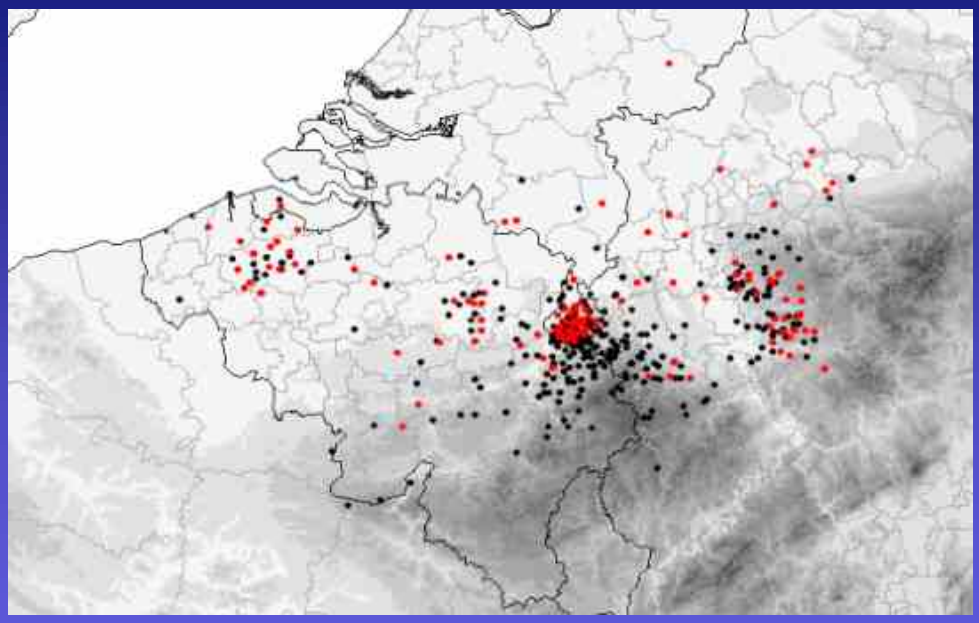
BTV8 outbreak 2006 – All Ruminants



Week 13

September 20 – September 26

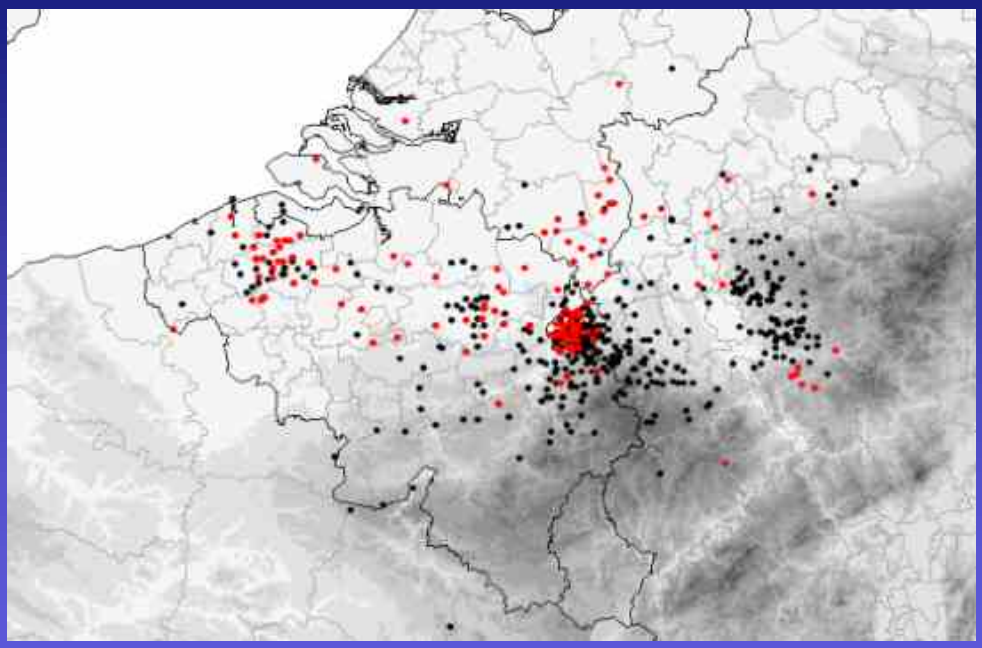
BTV8 outbreak 2006 – All Ruminants



Week 14

September 27 – October 03

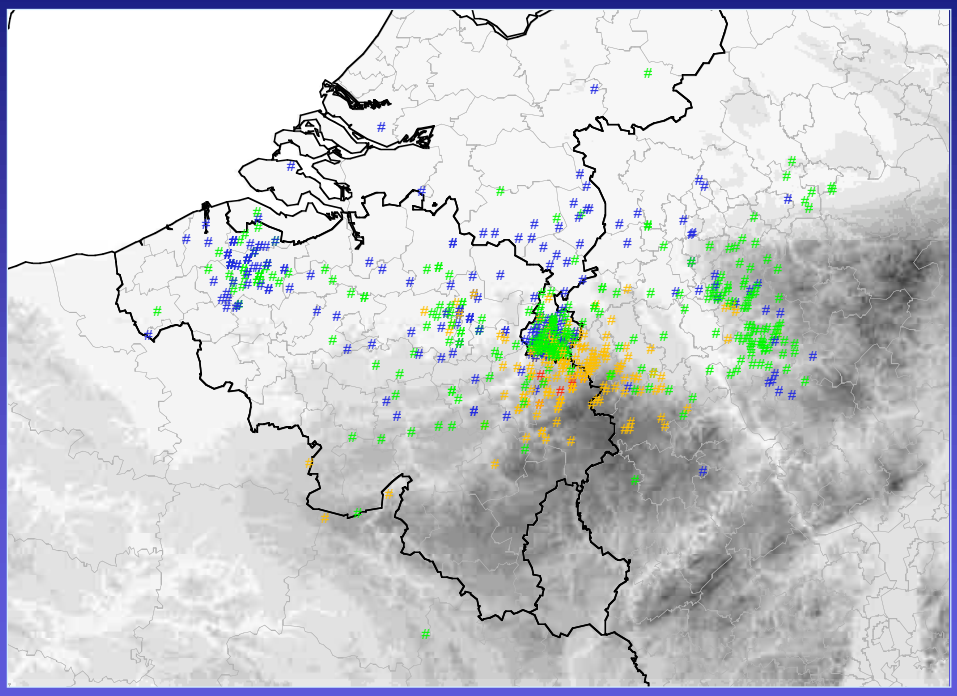
BTV8 outbreak 2006 – All Ruminants



Week 15

October 04 – October 10

BTV8 – toutes espèces



Outbreak timing

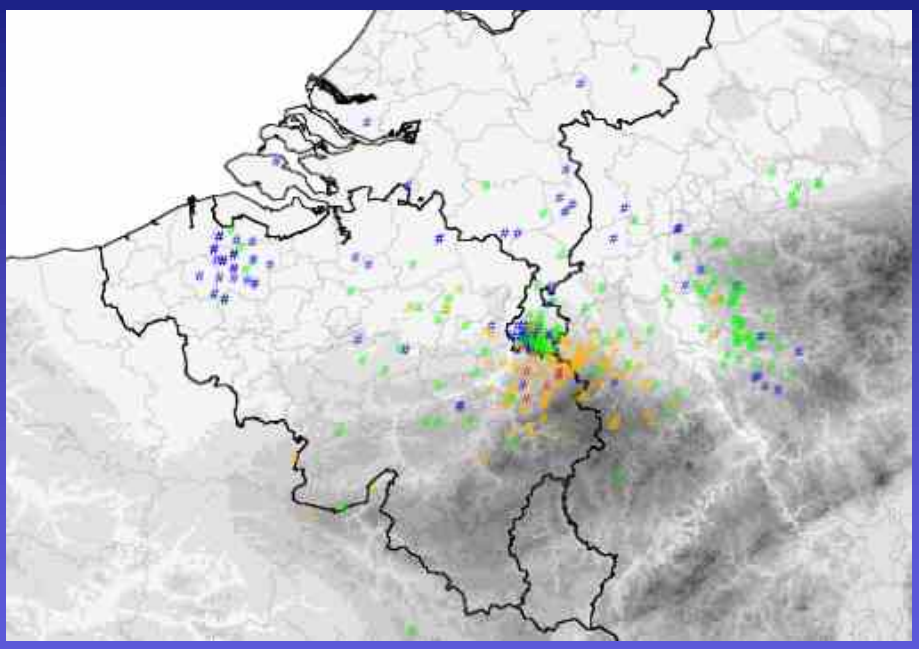
- July
- August
- September
- October

Altitude

Case history from start to October 11th 2006

G Hendrickx

BTV8 - bovins



Outbreak timing

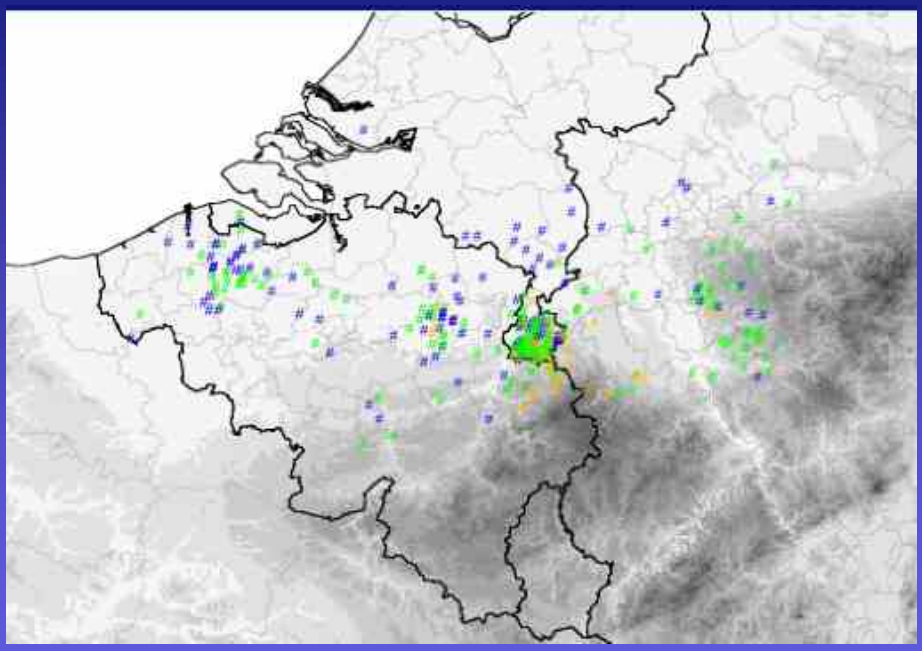
- July
- August
- September
- October

- Altitude

Case history from start to October 11th 2006

G Hendrickx

BTV8 – petits ruminants



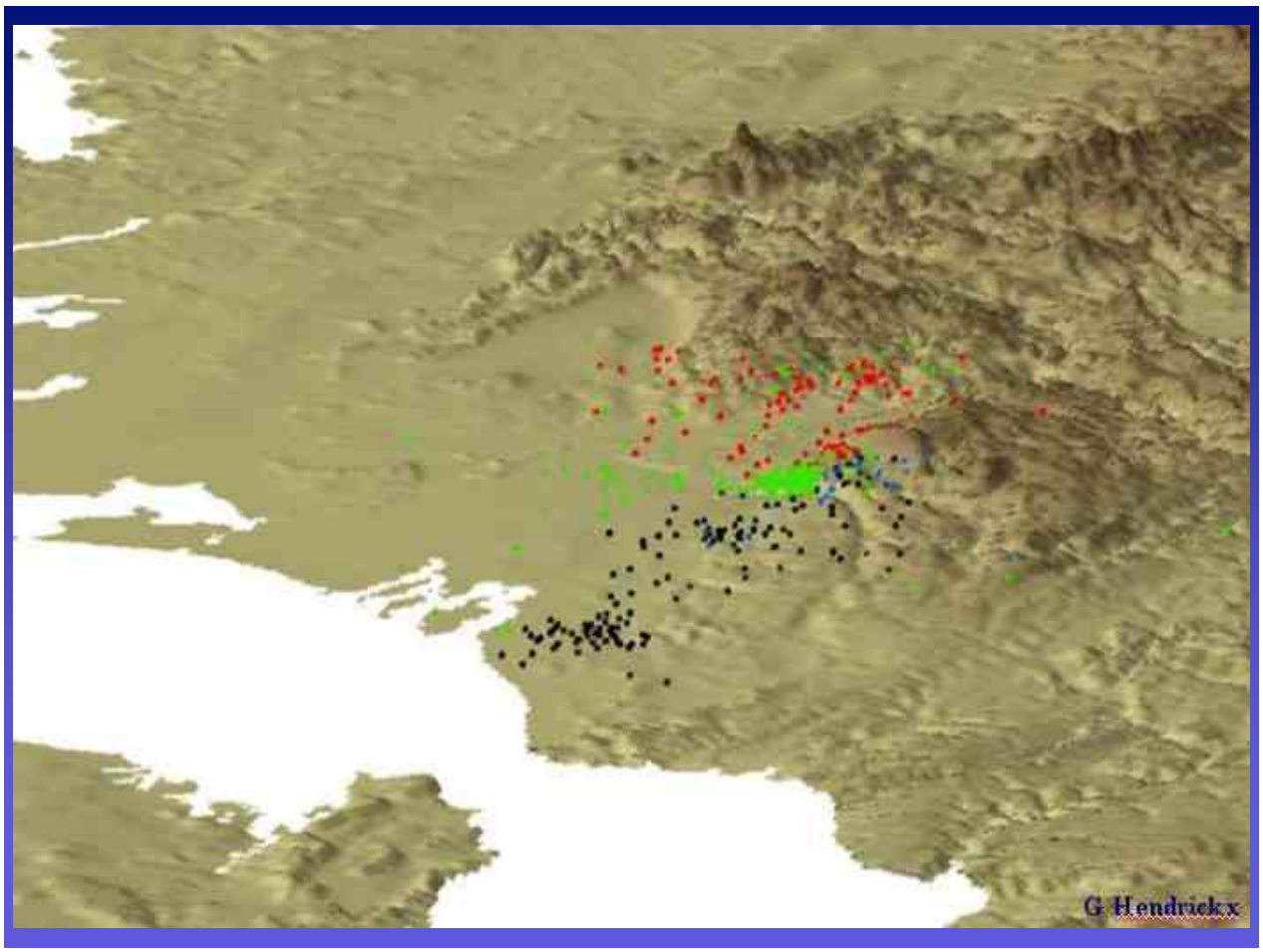
Outbreak timing

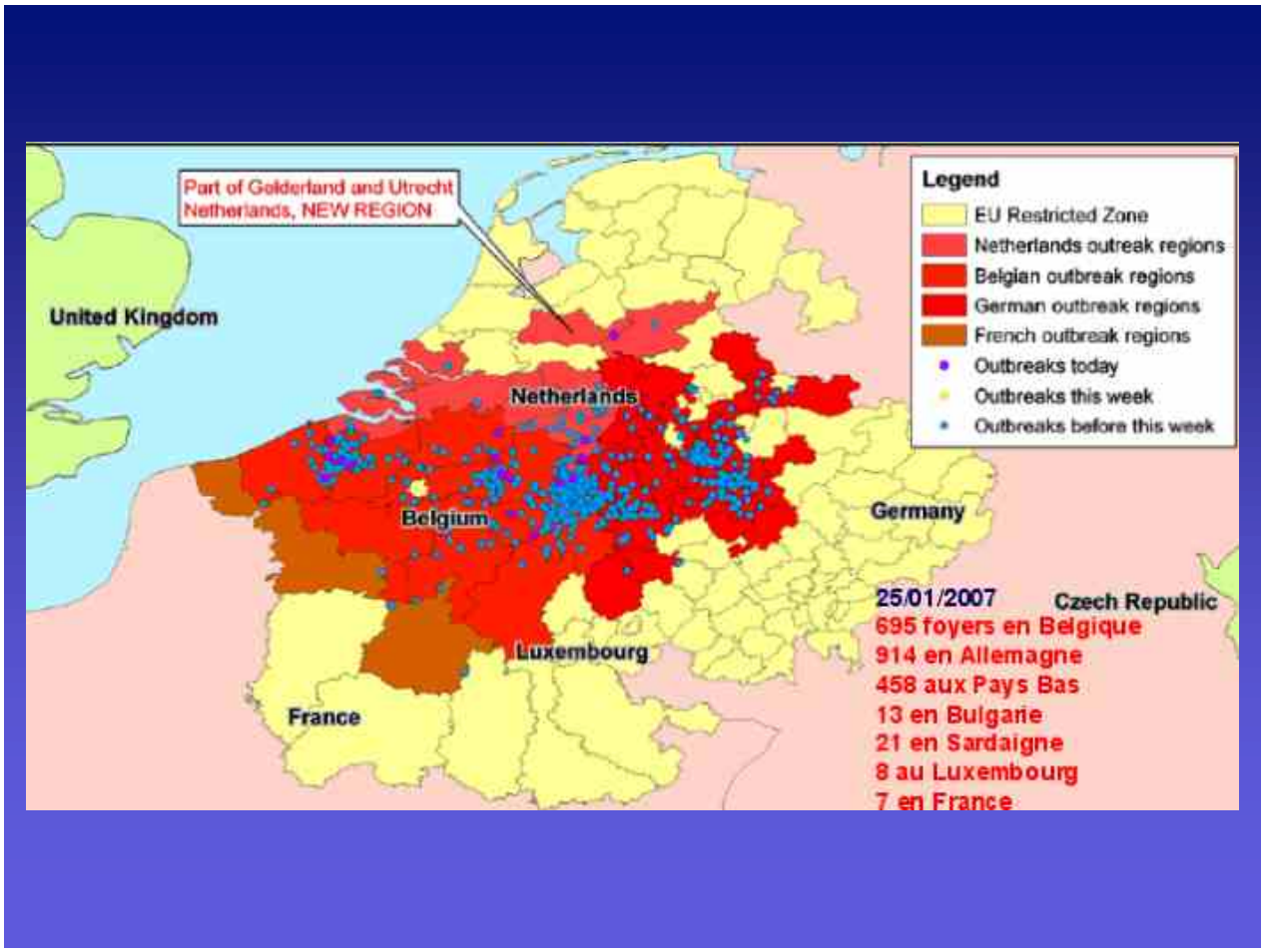
- July
- August
- September
- October

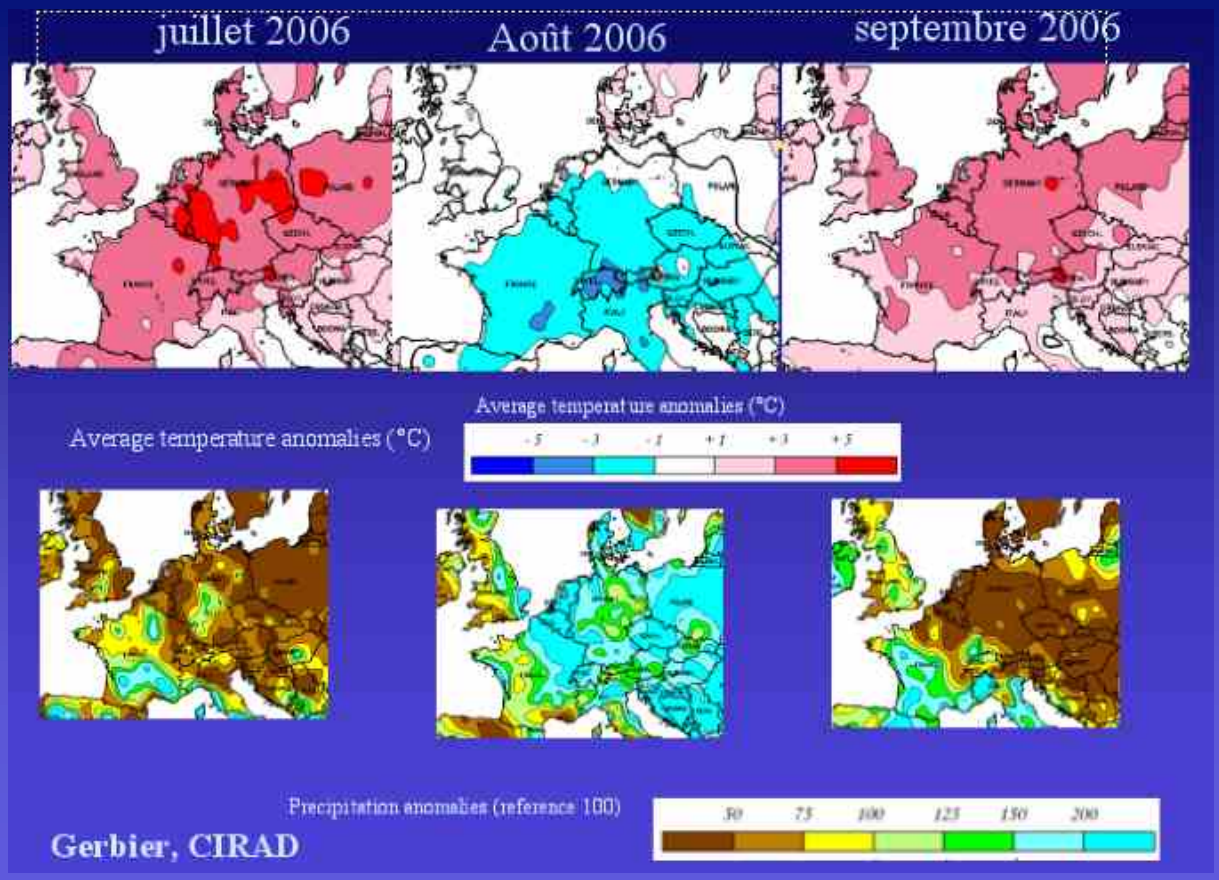
- Altitude

Case history from start to October 11th 2006

G Hendrickx


G Hendrickx


Part of Gelderland and Utrecht
Netherlands, NEW REGION
United Kingdom
Netherlands
Belgium
Luxembourg
France
Germany
Czech Republic
Legend
EU Restricted Zone
Netherlands outreak regions
Belgian outbreak regions
German outbreak regions
French outbreak regions
Outbreaks today
Outbreaks this week
Outbreaks before this week
25/01/2007
695 foyers en Belgique
914 en Allemagne
458 aux Pays Bas
13 en Bulgarie
21 en Sardaigne
8 au Luxembourg
7 en France



SIGNES CLINIQUES (bovins)

- Groupe 1
- Groupe 2

SIGNES CLINIQUES (bovins)

- Groupe 3

- Groupe 4

E Thiry, ULG

Diagnostic

Laboratoires impliqués

- **CIDC-Lelystad, Hollande**
- **CODA-CERVA, Belgique**
- **Friedrich-Loeffler-Institute Insel Riems, Allemagne.**
- **IAH, Pirbright, GB**
- **Afssa-Lerpaz**

Semaine 33 (17/08/06)

CIDC

Séro + (animal sampled 14/08/06)

PCR + (segment 10)

CODA-CERVA

Séro + (ID-Vet ; VMRD)

qPCR + (segment 5)

Afssa-Lerpaz

- 4 échantillons de sang (CODA-CERVA, K de Clercq)
  1 bovin, 3 ovin (reçus Samedi 19/08)

- RT-PCR Groupe : segments 8 and 9
- RT-PCR Type : BTV-2, 4, 9 et 16
- ECE : inoculation

Résultats

RT-PCR

Segments	sang	oeufs
8	+	+
9	+	+
10	+	ND

séquençage

vendredi 25

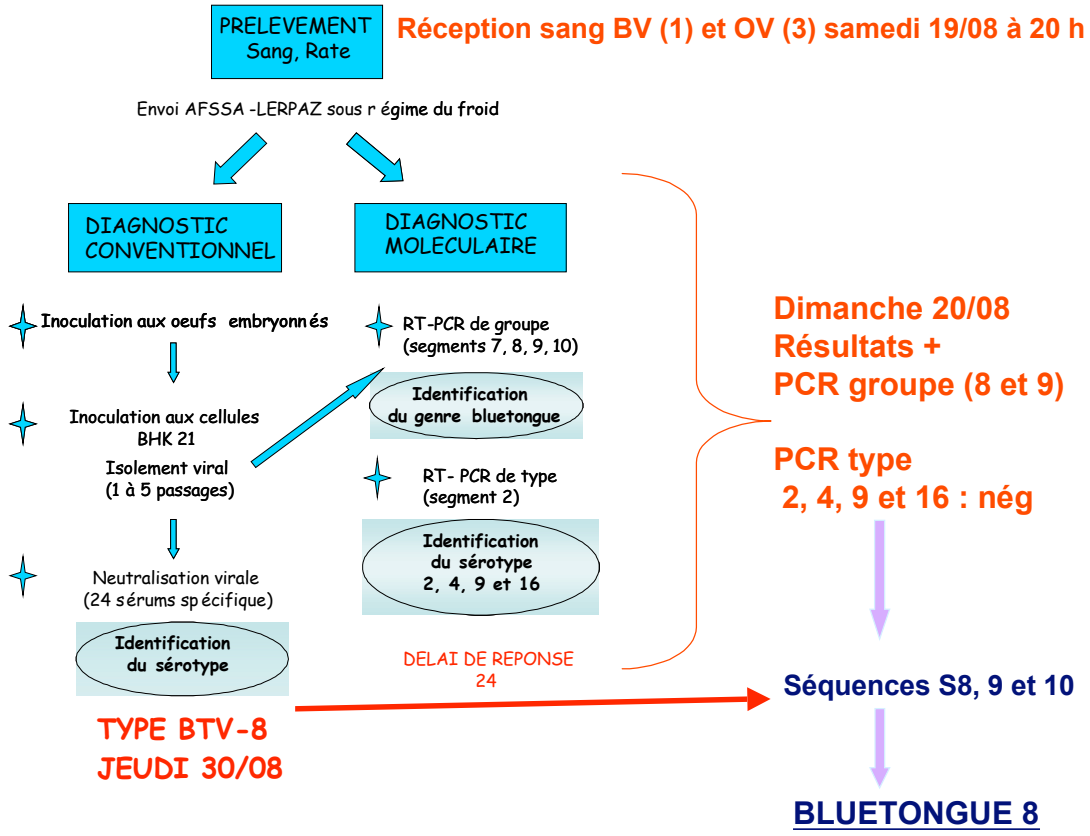
Type RT-PCR BTV 2, 4, 9, 16 : Négatives à partir du sang

oeufs : 5 embryons hémorragiques

ECP sur BHK21 : CPE (à 96h) (lundi 28)

VNT avec les 24 anti-sera (lundi 28)

Collaboration CERVA-CODA et Afssa



- IAH (samedi 26)

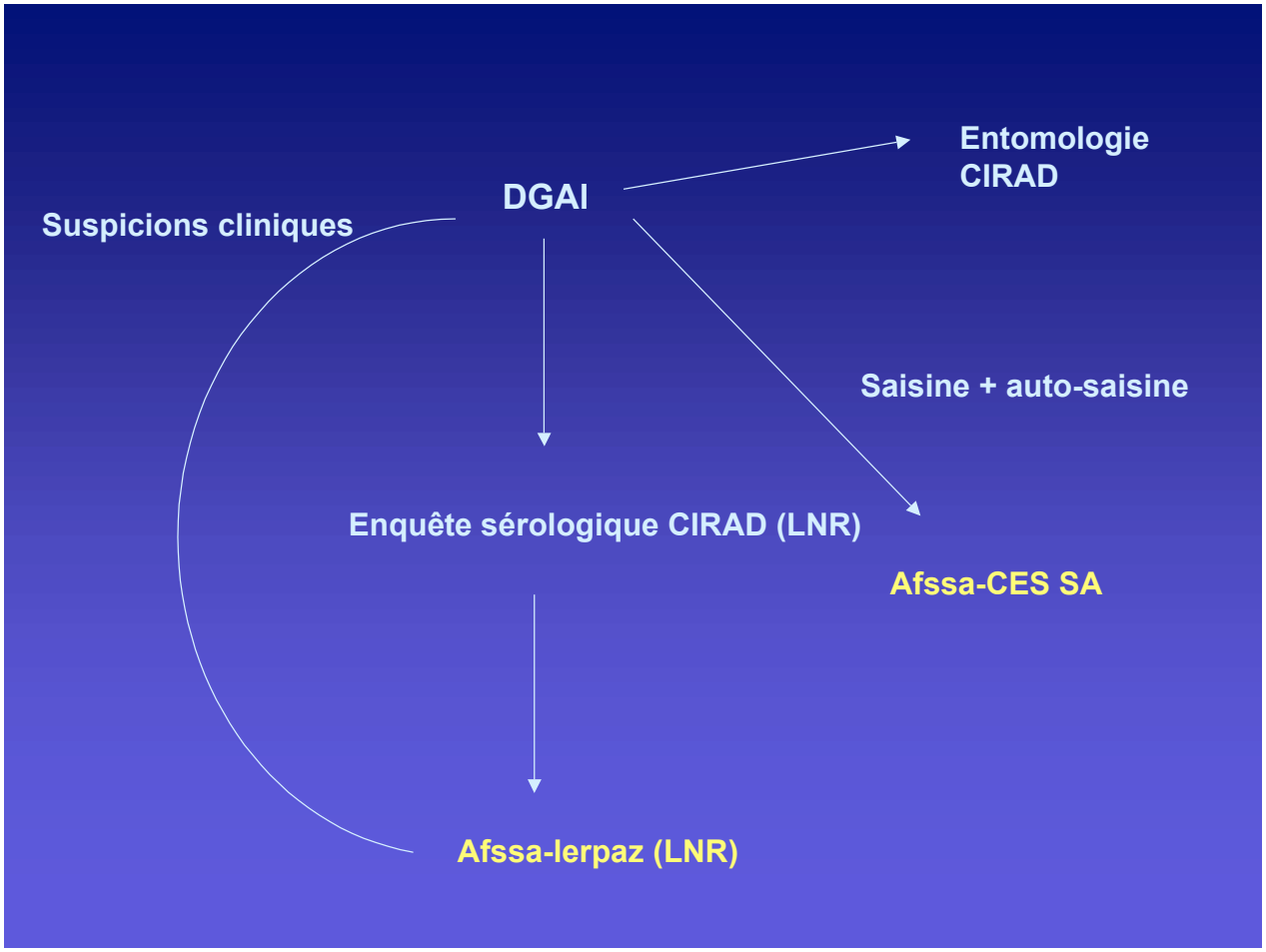
PCR groupe + (segments 1, 5, 7 and 10)
PCR type 8 +
Kenya, Nigéria (1982), Afrique du sud
Origine ???

Conférence téléphonique le vendredi 25 à 18h30 (Commission)
Réunion des LNR, Bruxelles, le 28 août (Commission)

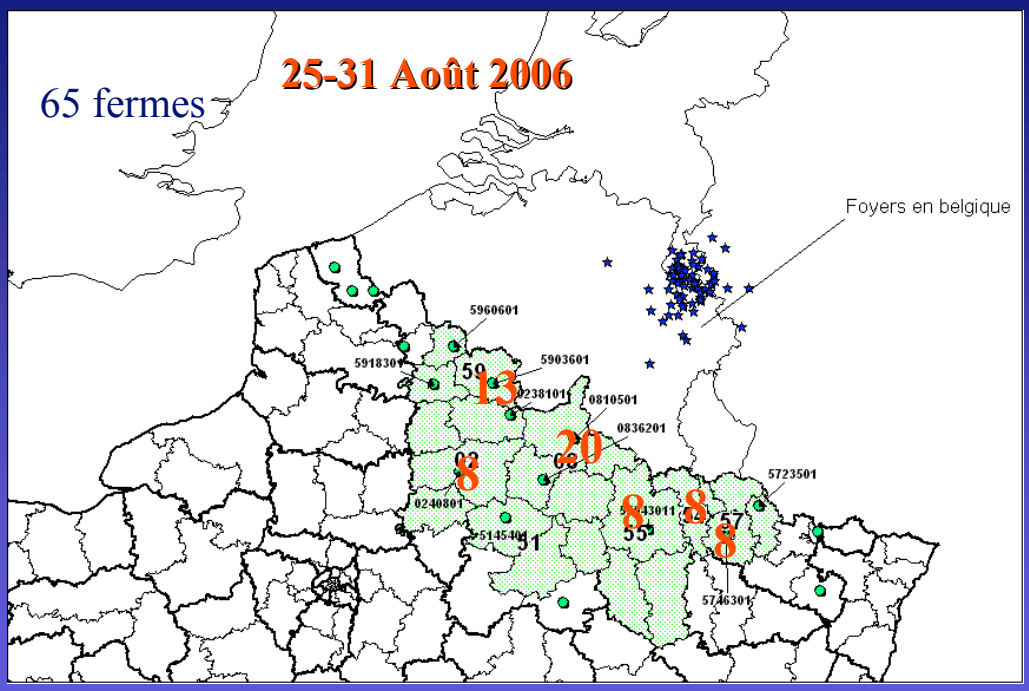
Origine ???

- **Importation animal (zoo ??)**
- **Vaccin contaminé (**Wilbur LA, Evermann JF, Levings RL, Stoll LR, Starling DE, Spillers CA, Gustafson GA, McKeirnan AJ. Abortion and death in pregnant bitches associated with a canine vaccine contaminated with blue tongue virus. J Am Vet Med Assoc 1994; 204:1762-1765**)**
- **Semence ??**
- **Importation insectes (avion, plantes, …) ??**

Situation en France



- **Enquête sérologique (frontière)**
  - 25-31 Août 2006
  - 65 fermes de bovins et 30 animaux/ferme



2 + / 1800

30 Août 2006

signes cliniques

1 BV, 2 ans ; boiterie, salivation, congestion (28/08)

Séro +
PCR (S8, 9) +

Cas 1

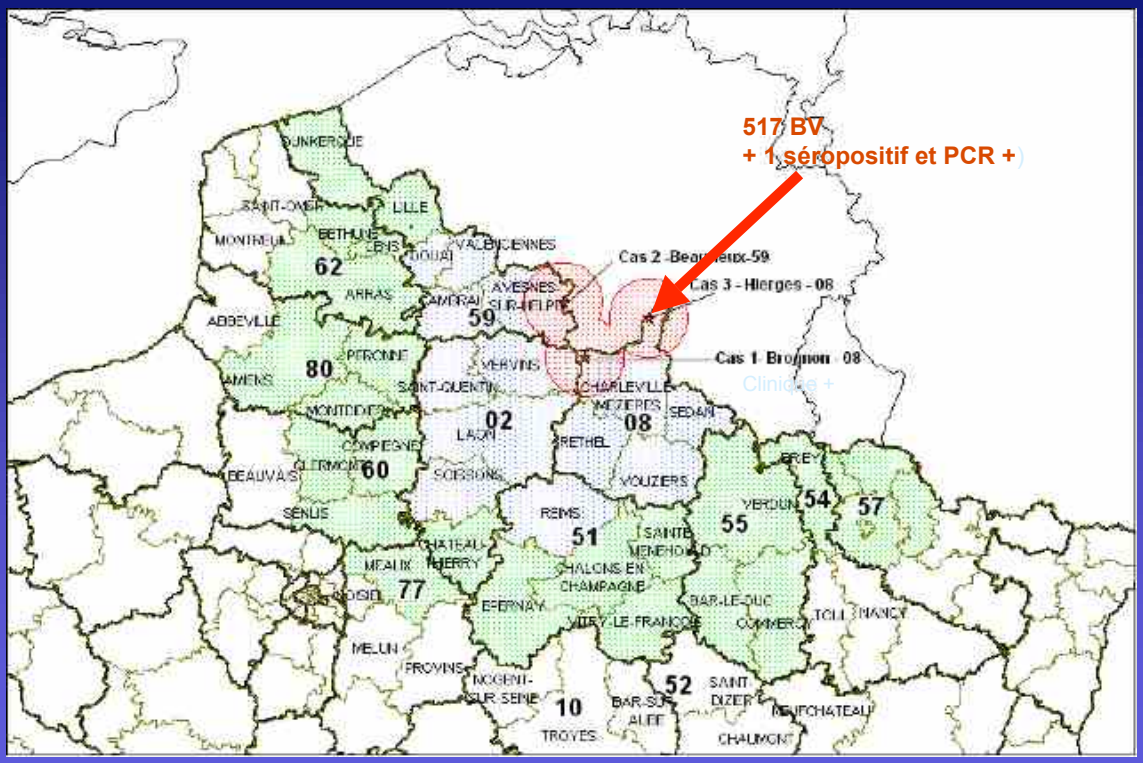
31 August 2006

Cas 2

Identifié par sérologie

Beaurieux
1 PCR S8+ ; S9 +

Cas 3 31/08/2006 **Identifié par sérologie**



Cas 4

5/09/2006

Clinique sur taurillon du Tailly (08)

Cas 5

13 octobre 2006

Cas 6

14 novembre 2006

Cas 7 Janvier 2007

Sérologies dans les foyers

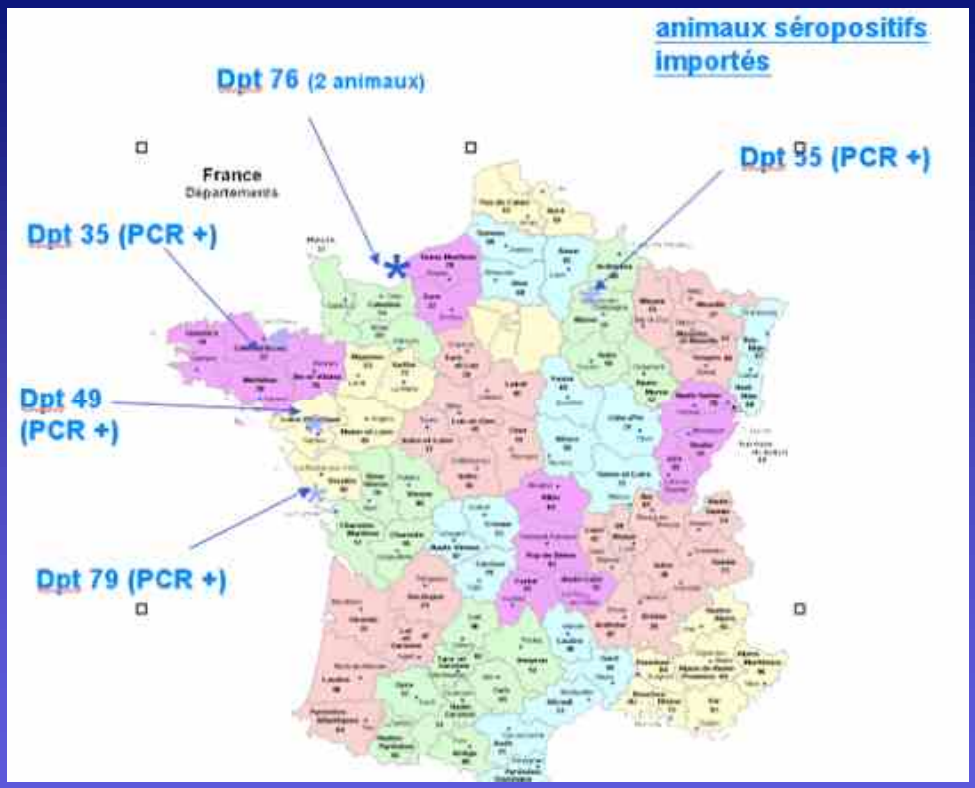
- Cas 1 : 1+ et 29 négatifs
- Cas 2 : 1+ et 36 négatifs
- Cas 3 : 1 + et 92 négatifs
- Cas 4 : 1+ et 22 négatifs
- Cas 5 : 1+ et 43 négatifs (ferme d'origine) et 5 négatifs (ferme de destination)
- Cas 6 : 1+ et 39 négatifs

Animaux importés de pays infectés

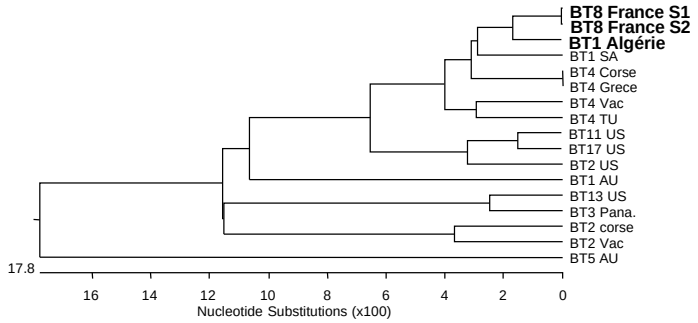
- Importés de Belgique, Allemagne et Pays Bas à partir du 1er juin
- 3674 animaux testés
- 5 fermes (dépt 79, 76, 35, 49, 55)

- Enquête sérologique (autour des fermes d'importation)

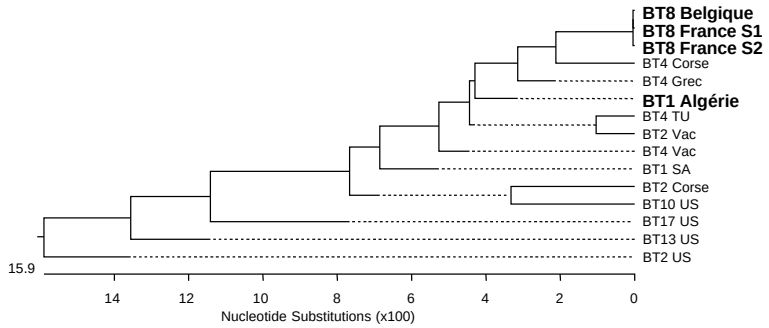
- 1417 animaux : tous séronégatifs



Analyse phylogénétique : segment 7 (VP7)(nucléotides)

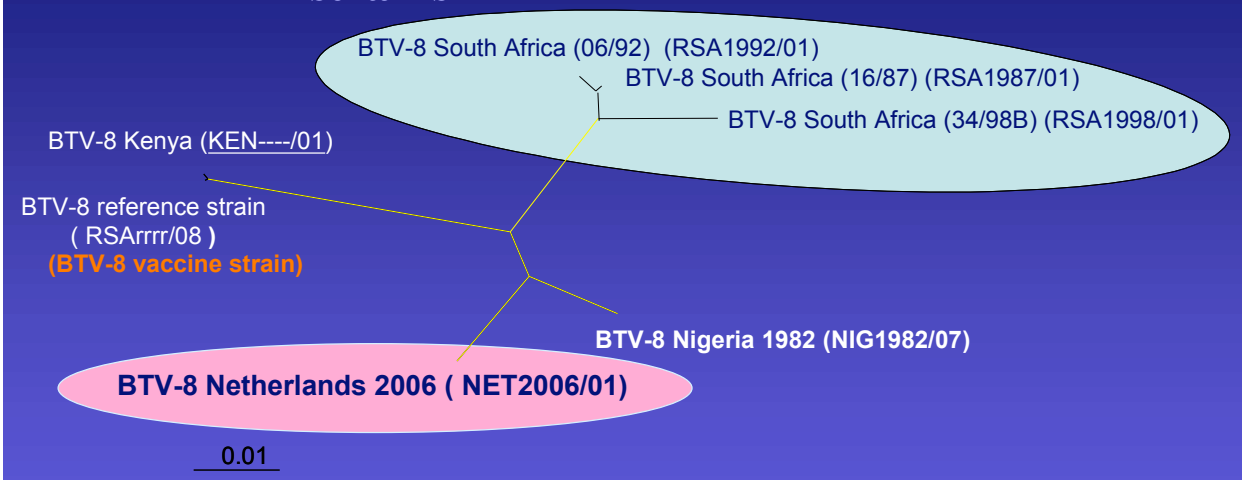


Analyse phylogénétique : segment 8 (NS2)(nucléotides)



Seg-2 comparison of NET2006/01 to the other BTV-8 strains

South African BTV-8 Seg-2 partial sequences provided by Dr. AC. Potgieter (OVI Onderstepoort)



See: www.iah.bbsrc.ac.uk/dsRNA_virus_proteins/BTV-8-Seg-2-tree.htm

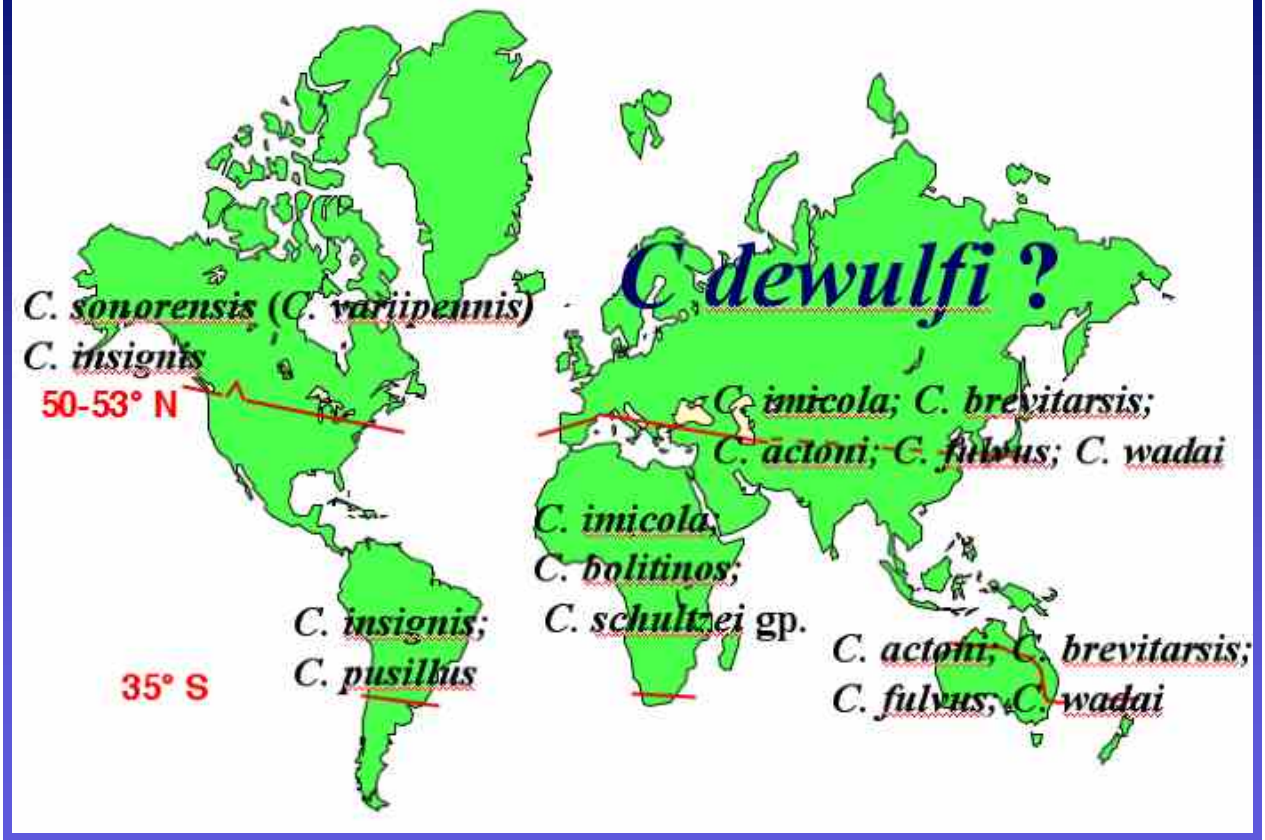
Peter Mertens, IAH Pirbright

Pièges, 24-26 août 2006

T Baldet, CIRAD

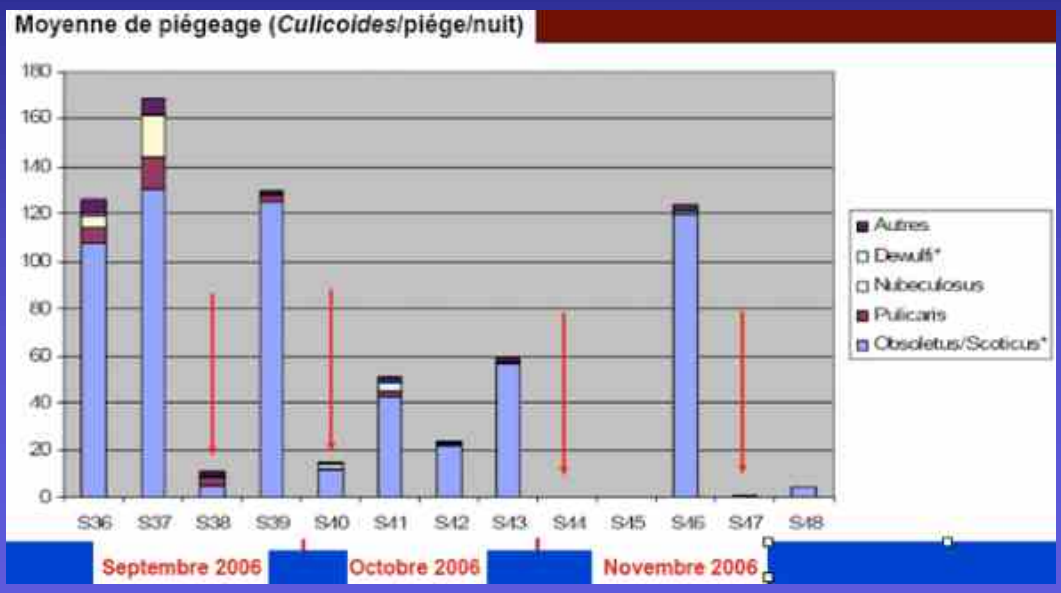
- Liste des espèces du genre *Culicoides* actuellement signalées dans le département des Ardennes (08) :
- ***C. clastrieri***
- ***C. deltus***
- ***C. festivipennis* (syn. *: C. odibilis*)**
- ***C. kibunensis* (syn. *: C. cubitalis*)**
- ***C. lupicaris***
- ***C. pallidicornis***
- ***C. pulicaris***
- ***C. punctatus***
- ***C. stigma* (syn. *: C. stigmoides*)**
- Liste des espèces du genre *Culicoides* actuellement signalées dans le département de la Moselle (57) :
- ***C. circumscriptus***
- ***C. salinarius***
- ***C. newsteadi***
- ***C. pulicaris***
- ***C. riethi***
- ***C. fascipennis***
- ***C. pallidicornis***
- ***C. minutissimus***
- ***C. brunnicans***
- ***C. clastrieri***
- ***C. kibunensis***
- ***C. dendriticus***
- ***C. duddingstoni***
- ***C. alazanicus***
- ***C. festivipennis***
- ***C. pictipennis***
- ***C. shaklawensis***
- ***C. vexans***
- ***C. nubeculosus***
- ***C. puncticollis***
- ***C. stigma***
- ***C. obsoletus***

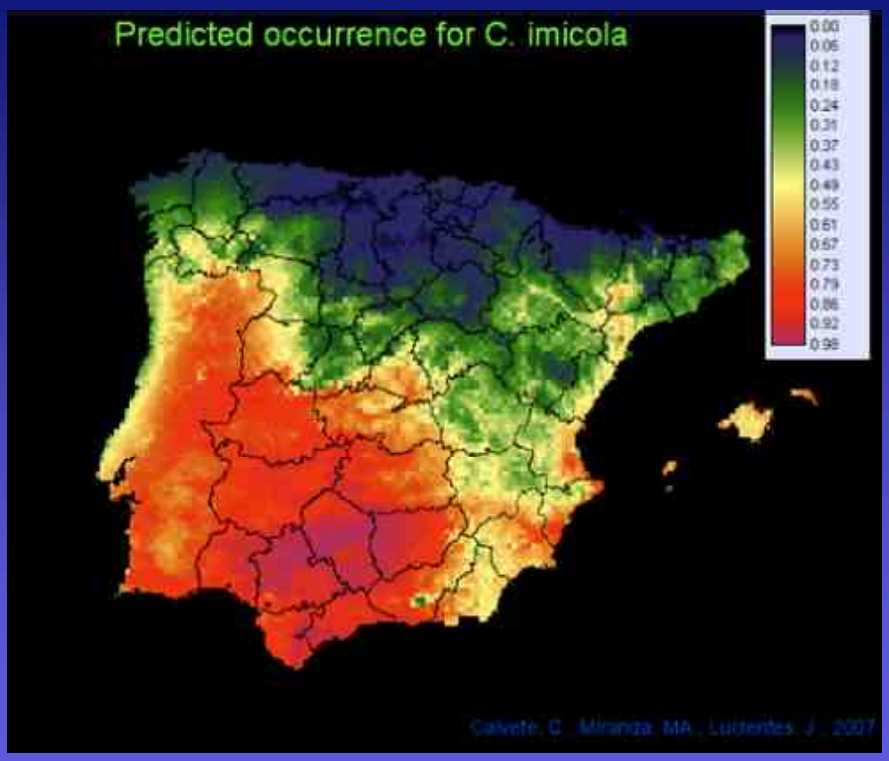
Jean-Claude Delecolle, ULP Strasbourg

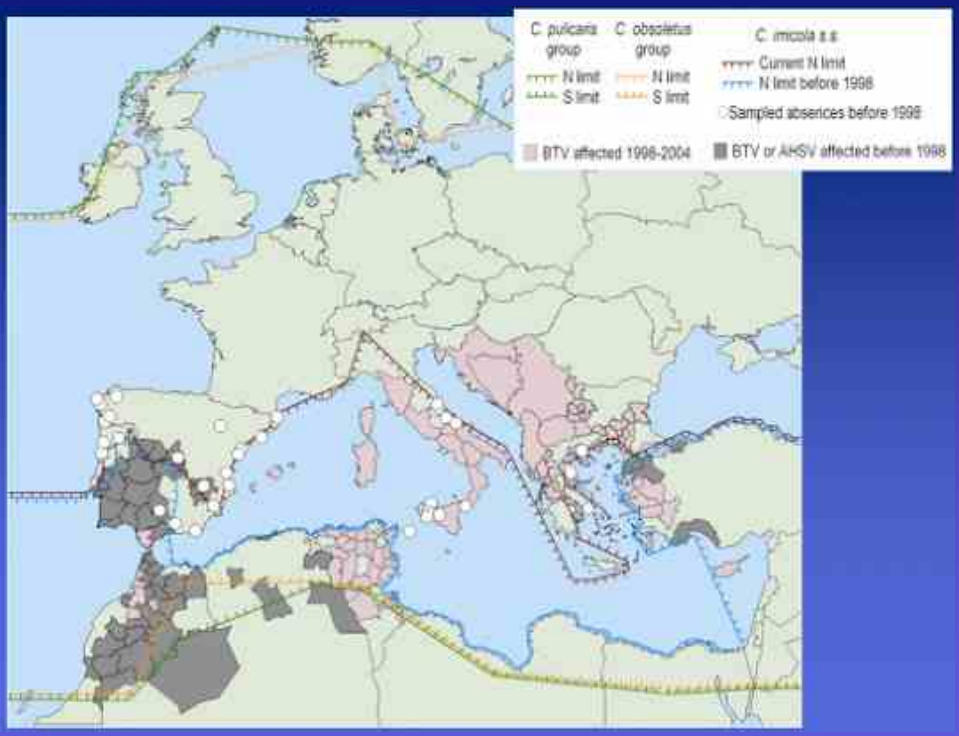


FCO - surveillance entomologique

Suivi des pièges extérieurs




Predicted occurrence for C. imicola
0.00
0.06
0.12
0.18
0.24
0.31
0.37
0.43
0.49
0.55
0.61
0.67
0.73
0.79
0.86
0.92
0.98
Calvete, C., Miranda, MA., Lucientes, J., 2007

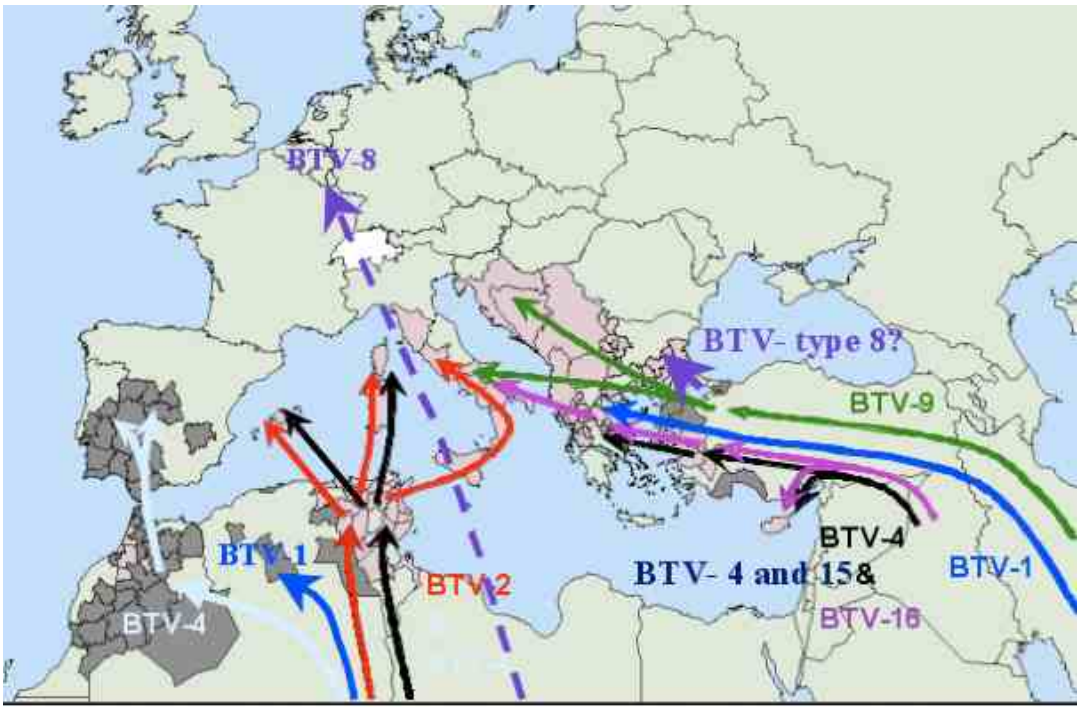

C. pulicaris group
N limit
S limit
C. obsoletus group
N limit
S limit
C. imicola s.s.
Current N limit
N limit before 1998
Sampled absences before 1998
BTV affected 1998-2004
BTV or AHSV affected before 1998

FCO - surveillance sérologique hiver 2006-2007

Méthode

- 26 départements (16 réglementés + 10 indemnes)
- 300 prélèvements aléatoires par département
- Sérums des prophylaxie bovines

11 introductions de différentes souches de BTV en Europe et en Afrique du nord depuis 1998



- **Bluetongue dans le nord de l'Europe ?**
- **Sérotype 8 ?**
- **incidence clinique chez les bovins ?**
- **Autres espèces de *Culicoides* que *C. imicola* ?**

Remerciements

- Corinne Sailleau, Afssa
- Emmanuel Bréard, Afssa
- Emmanuel Albina, CIRAD
- Thierry Baldet, CIRAD
- Colette Grillet, CIRAD
- Jérome Languille, DGAl
- Jean-Claude Delecolle, ULP Strasbourg

- Les données épidémiologiques françaises ont évolué depuis le point effectué dans l'avis 2006-SA-0307 du 22 novembre 2006. Les éléments nouveaux, transmis par la DGAL, sont les suivants :

- * 1 seule sérologie positive et PCR négative (cas N°6 de Bondues, dans le Nord, bovins) pour 5302 prélèvements réalisés en périmètres interdits (selon un quadrillage de 5 km).
- * Par ailleurs, l'enquête menée au sein de ce foyer a montré la présence de six autres animaux séropositifs (sur 64 bovins prélevés, soit l'intégralité du cheptel), dont trois ayant séroconverti entre le 17/11 et le 14/12 et un non testé le 17/11 et positif le 14/12. Les six animaux se sont également révélés positifs par PCR.
- * Un suivi virologique périodique de ces animaux positifs (ainsi que des animaux positifs appartenant aux autres foyers) est mis en oeuvre