



INSTITUT PASTEUR

# RIFT VALLEY FEVER IN MADAGASCAR

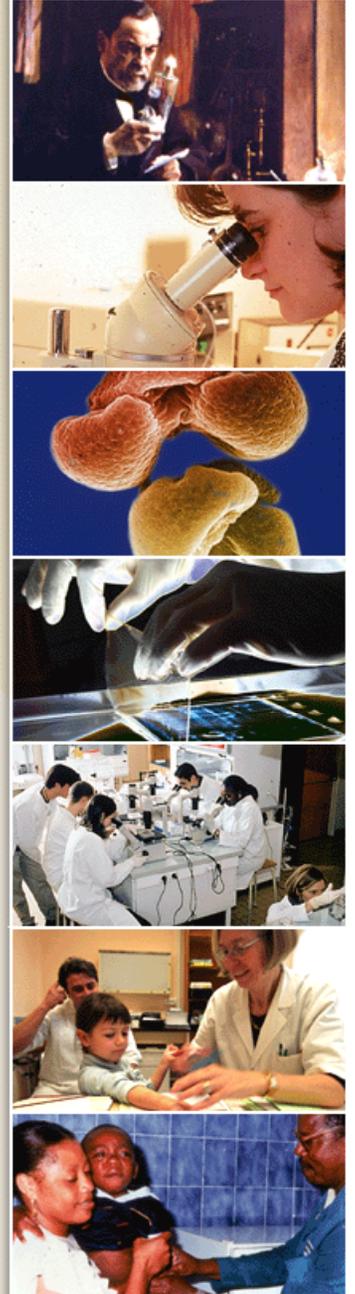
## 2008

# LABORATORY SURVEILLANCE

RVF OIE Bloemfontein, 16-18 February 2009

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Institut Pasteur de Madagascar





# RVF IN MADAGASCAR 2008



## RVF HISTORY IN MADAGASCAR

### FIRST VIRUS DETECTION

- Mars 1979
- Mosquitoes pools

### FIRST REPORTED OUTBREAK

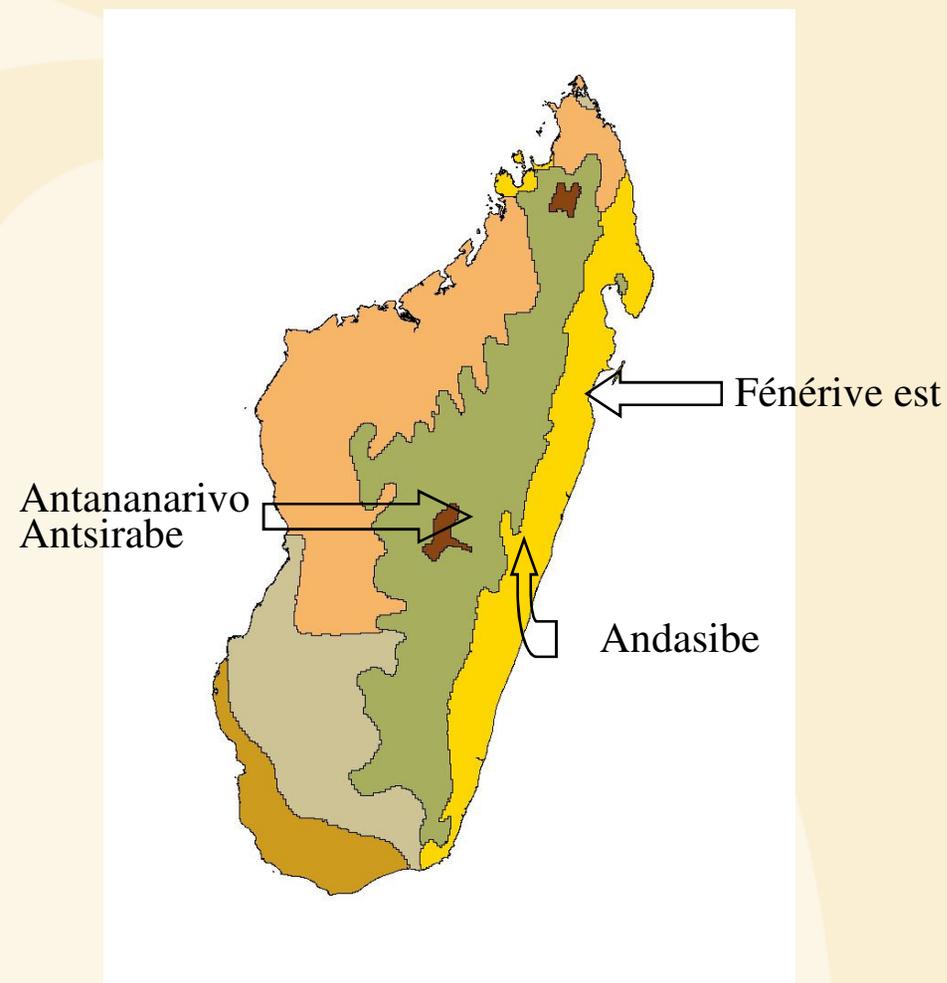
- March 1990
- Abortion among cattle
- Human cases in April (one death)

### SECOND REPORTED OUTBREAK

- February – April 1991
- Abortion among cattle
- Human cases (few deaths)

**SURVEILLANCE: 1992 - 1998**

→ inter-epizootic period





# RVF IN MADAGASCAR 2008



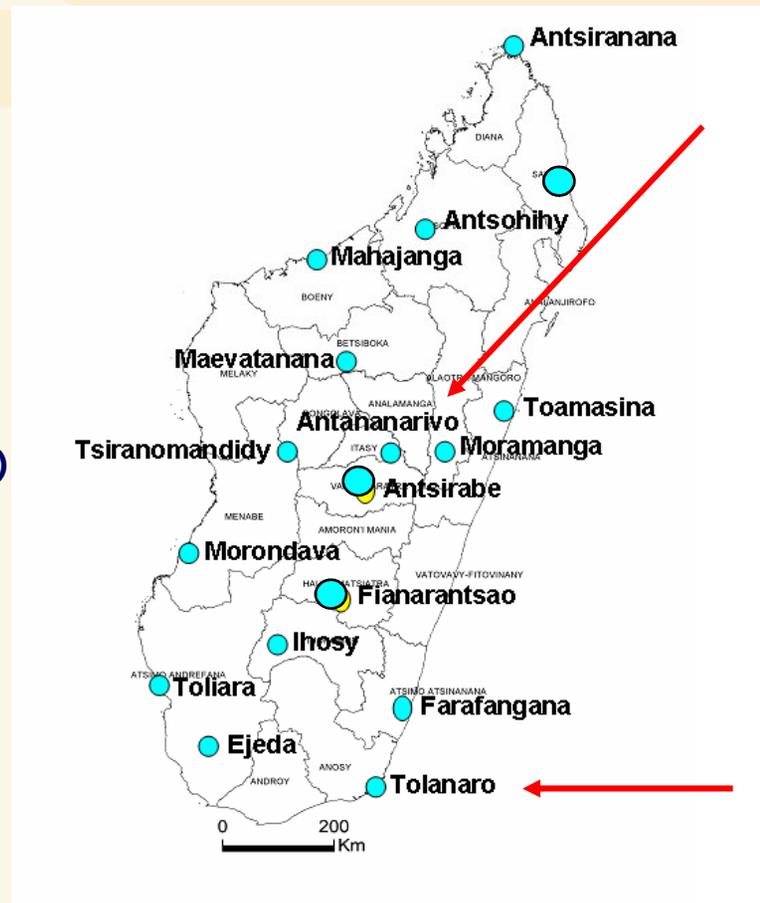
## THIRD REPORTED OUTBREAK: 2008

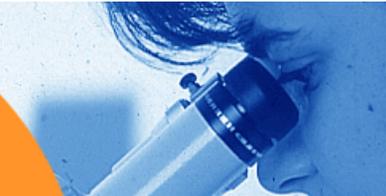
### FIRST DETECTED CASE

- Sentinelle surveillance network
- Tolanaro
- End of January 2008
- Human case: pregnant women (dengue like syndrome)
- Virus isolation, RNA detection
- Seroconversion IgM and IgG (ELISA –CDC Reagents)

### LAST CONFIRMED CASE: Human case

- Haemorrhagic fever
- Onset: 23 May 2008
- Ampavaravola district





## THIRD REPORTED OUTBREAK: Jan.-May 2008

 confirmed and probable clinical cases

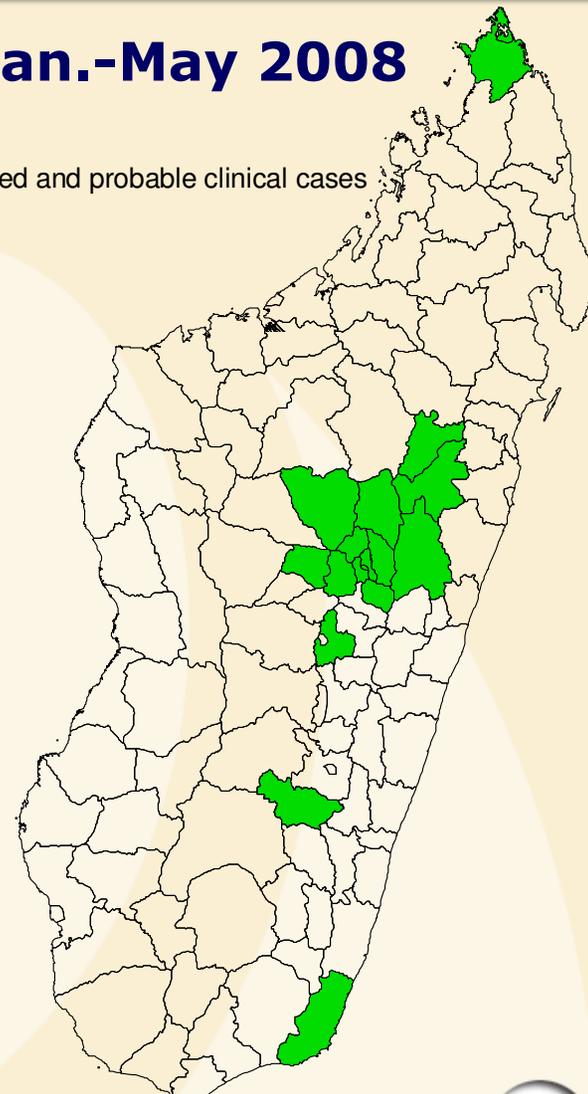
### CLINICAL HUMAN SURVEILLANCE

- 476 human cases
- 19 deaths
- 15 districts

(source: Ministry of Health)

### LABORATORY SURVEILLANCE

- 134 human cases sampled from 16 districts  
31 probable and 36 confirmed cases from 12 districts
- 119 cattle cases sampled from 19 districts  
7 probable and 15 confirmed cases from 10 districts





### **THIRD REPORTED OUTBREAK: Jan. - May 2008**

#### **Partial molecular characterization of 47 isolates**

- **Preliminary results :**
  - **NSs gene (aa 17 to aa 225 = 627 nt)**
  - **All identical ou very close to sequences obtained from 2007 Kenyan isolates**
- **Perpectives :**
  - Partial sequences available for M and L segments
  - **analysis:**
    - **same chain of transmission or different lineages ?**
    - **Introduction or evolution from the 1991 Malagasy ancestor ?**



## RVF IN MADAGASCAR 2008

### THIRD REPORTED OUTBREAK: Jan – May 2008

**WIDER GEOGRAPHIC DISTRIBUTION OF RVFV ?** ■ confirmed and probable clinical cases

→ **RETROSPECTIVE NATIONAL SEROSURVEY**

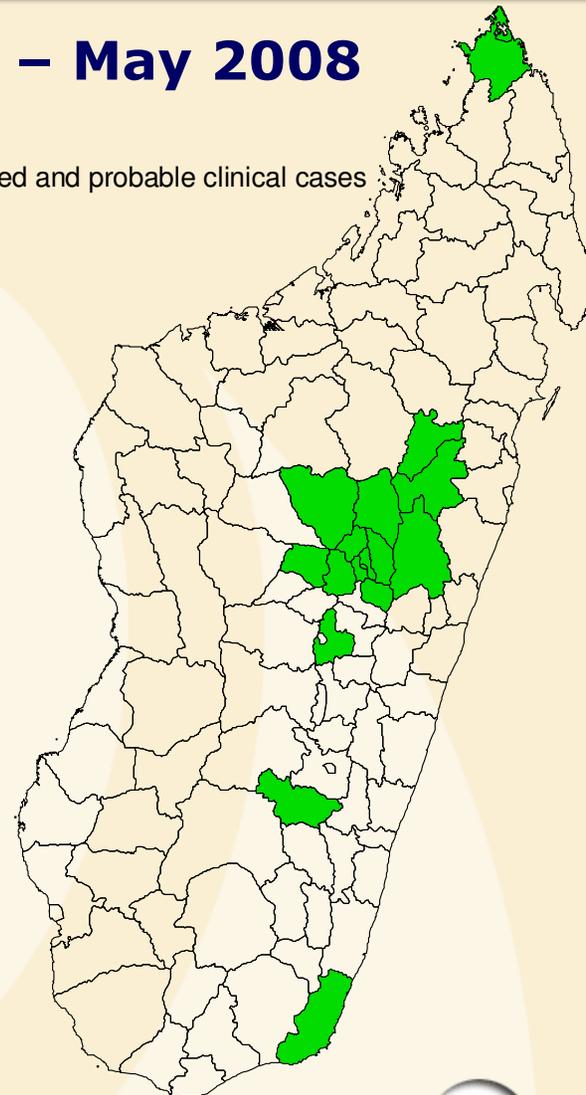
**Direction des urgences et de lutte contre les maladies**

**Direction des services vétérinaires**

**Institut Pasteur de Madagascar (Nat. Ref. Lab.)**

**CDC reagents**

- **All the 111 Malagasy districts**
- **People involved in animal slaughtering**
- **Blood samples sent to National Ref. lab**
- **IgM and IgG anti-RVFV detection (ELISA)**





# RVF IN MADAGASCAR 2008



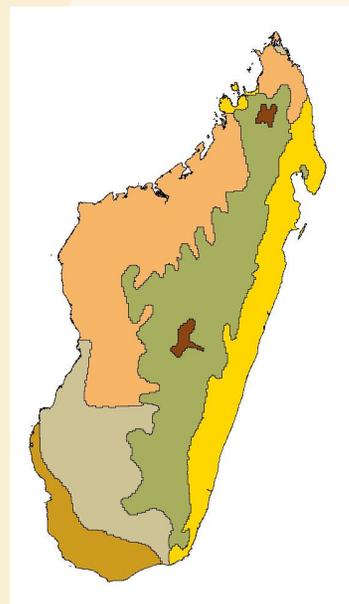
## THIRD REPORTED OUTBREAK: Jan – May 2008

### WIDER GEOGRAPHIC DISTRIBUTION OF RVFV ?

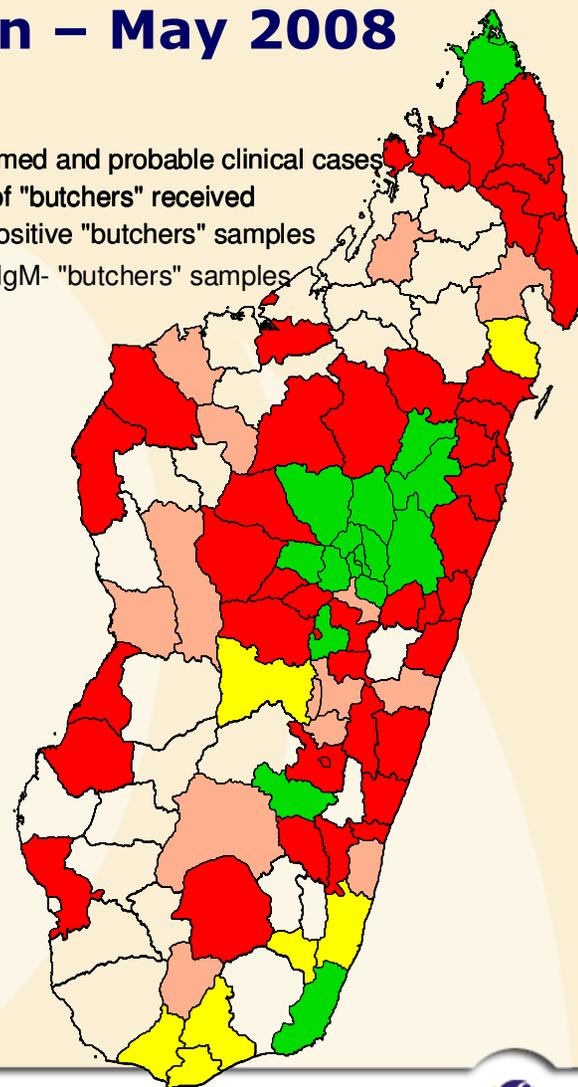
#### → RETROSPECTIVE NATIONAL SEROSURVEY

#### → PARTIAL RESULTS

- 1642 samples received and analyzed from 80 districts
- Detection of IgM against RVFV in 195 samples from 56 districts
- Detection of IgG against RVFV in 369 samples from 71 districts



- confirmed and probable clinical cases
- sera of "butchers" received
- IgM positive "butchers" samples
- IgG+ IgM- "butchers" samples





# RVF IN MADAGASCAR 2008

## FOURTH REPORTED OUTBREAK: Nov. 2008 – Up to now

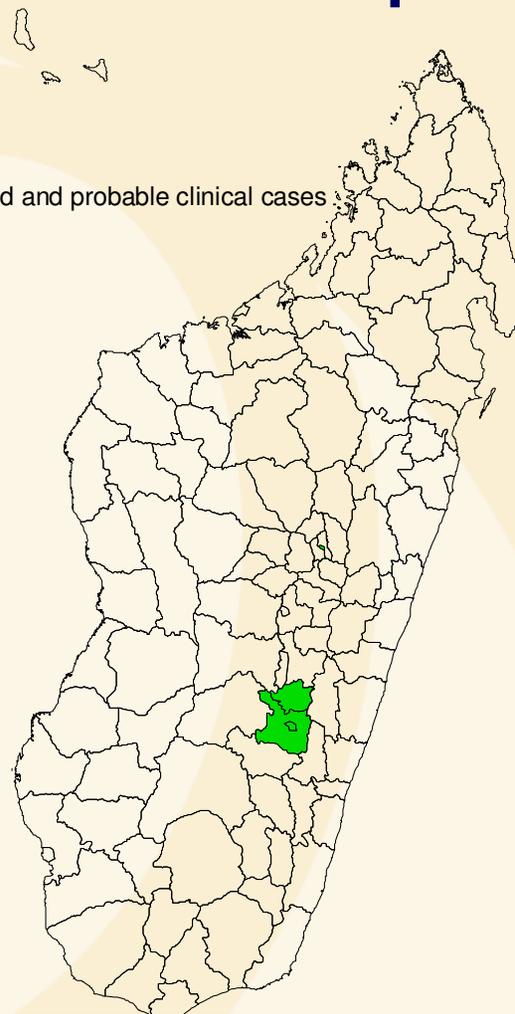
### VETERINARY ALERT

- Cattle deaths
- Fianarantsoa district
- November 2008 (beginning of the rainy season)
- Virus detection among cattle

### LABORATORY SURVEILLANCE

- 42 human cases sampled from 6 districts
- 5 probable and 10 confirmed cases from 4 districts
- 97 cattle cases sampled from 7 districts
- 17 probable and 7 confirmed cases from 2 districts
- Partial sequences (NSs) identical to those obtained from Jan-May 08 isolates

 confirmed and probable clinical cases





## CONCLUSION

- **Re-emergence → New data on RVF epidemiology in Madagascar**
  - **Molecular epidemiology**
  - **Geographic distribution**
  - **Entomological investigation (re-emergence in rainy season)**
  - **Animal prevalence (cf. DSV)**
- **Application**
  - **Control and prevention of the disease**
  - **Prediction of the disease : Malagasy model ?**