

# Epidemiology and Control of Malaria: Populations in Special circumstances

Suriname:  
Gold Mining Fields

# Populations in Special circumstances

- Rural villages
- Logging industry
- Migrating Amerindians (Transborder)
- Gold Mining Areas

# Location of malaria diagnosis 2011

- Tourtonne-lab (gold miners) 646 (81.1 %)
- AMC and hospitals 82 (10,3 %)
- Medical Mission 68 (8,5 %)
- Total 796

# The gold mining program surveillance system

## **Sources of information:**

- Tourtonne Laboratory
- Malaria Service Deliverers
- Active Case Detection Campaigns
- Malaria case investigation

# The Tourtonne Laboratory

- A malaria diagnostic and treatment facility, in the “epicentre” of the Brazilian gold miners’ neighborhood established in 2007.
- Staffed with 5 malaria laboratory technicians
- At the Tourtonne laboratory all malaria cases are confirmed by microscopy.

# Malaria Service Deliverers (MSD)

- Persons - residing in a gold mining area - who received training in malaria diagnosis and treatment. They receive health products in order to provide malaria diagnostic and treatment services to the population in their location.
- Since 2006, > 60 MSD trained
- MSD diagnose malaria cases by Rapid Diagnostic Tests (RDT)
- Simultaneously, a blood smear is prepared for confirmation of the diagnosis
- MSD report to the Tourtonne laboratory

# Training session of MSD



# Practical instruction





# Active Case Detection Campaigns

- Are executed :
- In response to malaria outbreaks
- To measure malaria prevalence in gold mining areas
- All ACD malaria cases are confirmed by microscopy.
  - The last malaria outbreak in gold mining areas was July 2009 in Victoria (North of the Lake)
- ***Malaria Case Investigation***: for every malaria patient diagnosed at the TL and during ACD a Malaria Case Investigation form is filled out.

# ***Malaria Case Investigation***

- For every malaria patient diagnosed at the TL and during ACD a Malaria Case Investigation form is filled out containing the following info:

## MALARIA CASE INVESTIGATION

**A. Administratieve gegevens:**

Datum: .....

1. Volgno: .....

Naam: .....

2. Geslacht: m/v

Geb. Datum: .....

3. Leeftijd: .....

4. Etnische groep: .....

5. Beroep: .....

6. Nationaliteit: .....

7. Stadsadres: .....

**B. Laboratorium gegevens:**

8. datum geprikt: .....

9. Plaats geprikt: .....

10. Datum nagekeken: .....

11. Lab resultaat: .....

**C. Symptomen:**

12. Datum begin aanval: .....

13. Koorts: ja/ nee/onbekend

14. Zweeten: ja/ nee/onbekend

15. Koude rillingen: ja/ nee/onbekend

16. Andere klachten: .....

17. Bloedtransfusie gehad: ja / nee/onbekend

18. Zo ja, wanneer: .....

**D. Reisverslag:**

19. Heeft patiënt gereisd: ja / nee/onbekend

Wat is het reisschema:

Van	Datum	Naar	Datum	Overnachting	Datum

**E. Preventieve maatregelen:**

20. slapen onder een klamboe: ja/ nee/onbekend

21. Anti-malaria tabletten ingenomen: ja / nee/onbekend

22. Welke tabletten ingenomen: .....

23. Waar gekocht/ betrokken: .....

24. Volgens schema ingenomen: ja / nee/onbekend

25. Andere maatregelen genomen: ja / nee/ onbekend

26. Zo ja, welke andere maatregelen genomen: .....

**F. Samenvatting:**

27. vermoedelijke datum van besmetting: .....

28. vermoedelijke plaats van besmetting: .....

29. Is er sprake van falen van Chemo-profylaxe: ja / nee /onbekend

30. Uiteindelijke malaria classificatie: .....

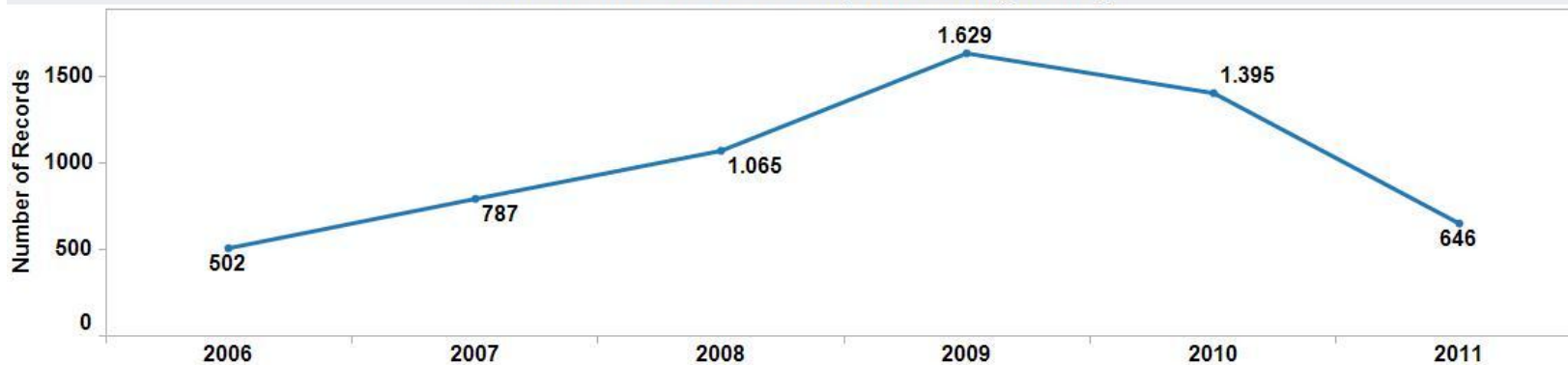
Opgemaakt door: .....

# Slide Positivity Rates (SPR) from the gold mines

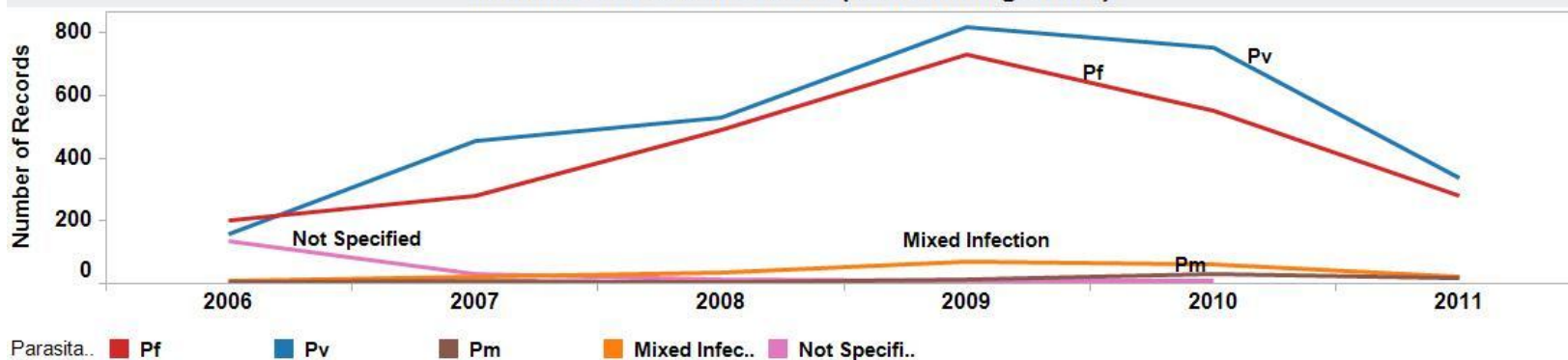
- In 2011, 21 Malaria Notification points contributed to the National Malaria Surveillance system
- 834 subjects tested by MSD
  - 187 RDT positive (22.4%)
  - 804 (96.4%) bloodsmears were available
  - 734 (88%) were suitable for examination
  - 130 cases confirmed by microscopy ( SPR =17.7%)
- 1784 screened during ACD
  - 33 cases (Microscopy, SPR = 1.9%)
- 1762 screened at Tourtonne lab
  - 482 cases (Microscopy, SPR = 27.4%)

# Malaria Surveillance in the Goldmines

Malaria Cases 2006 - 2011 (Gold mining areas)

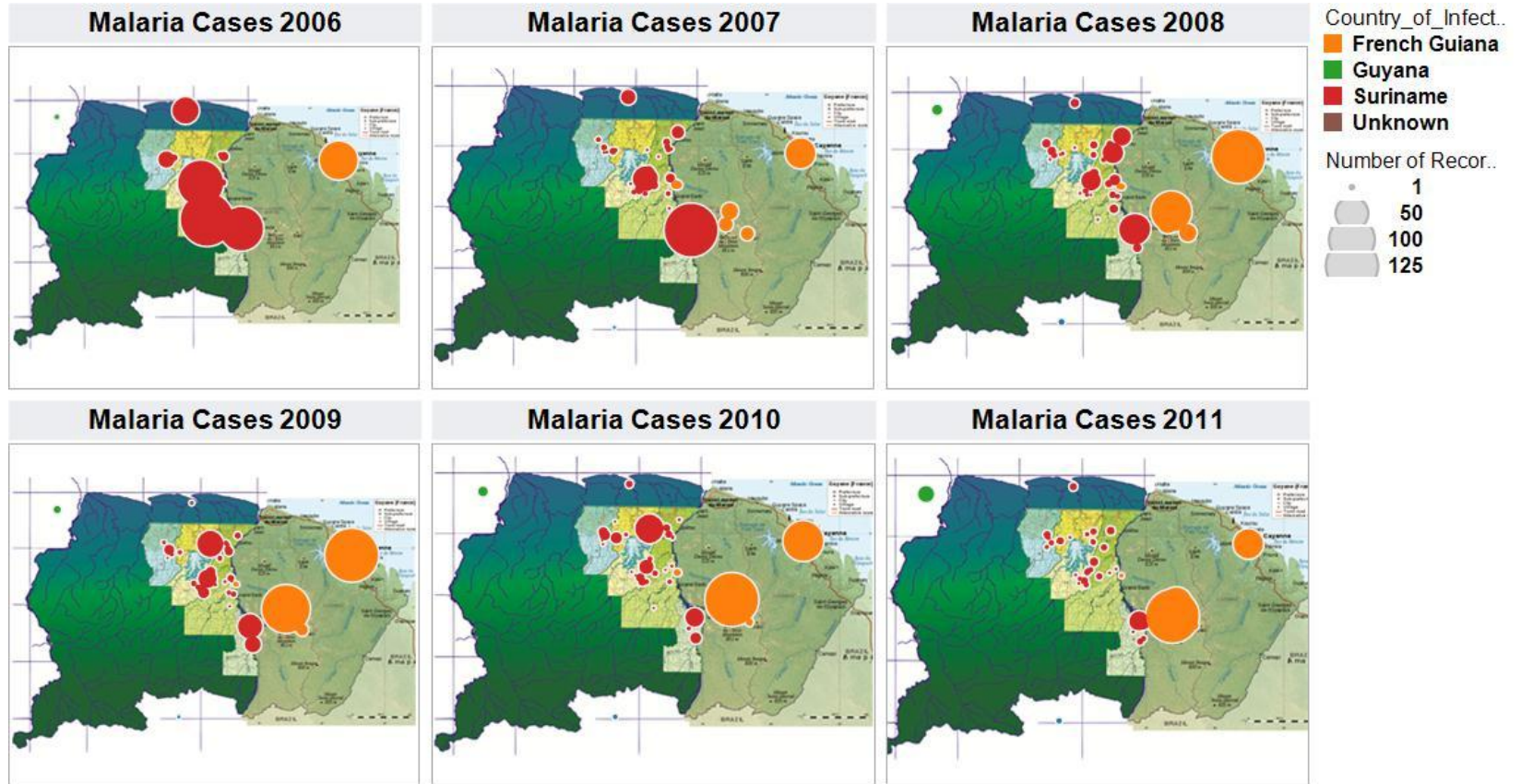


Malaria Cases 2006 - 2011 (Gold mining areas)



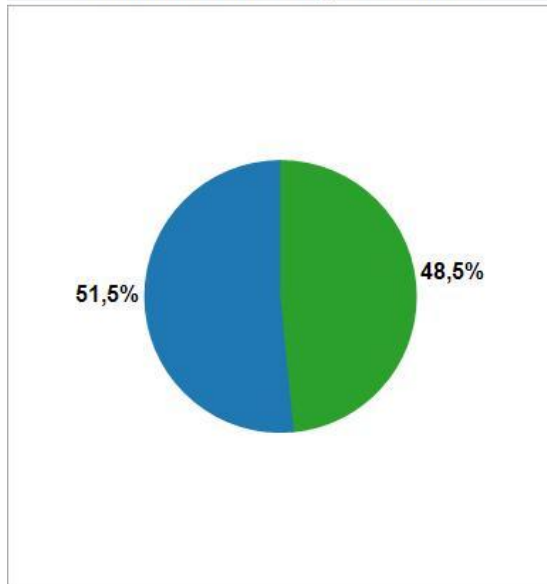
Parasita.. ■ Pf ■ Pv ■ Pm ■ Mixed Infec.. ■ Not Specifi..

# Malaria in the Guyanas



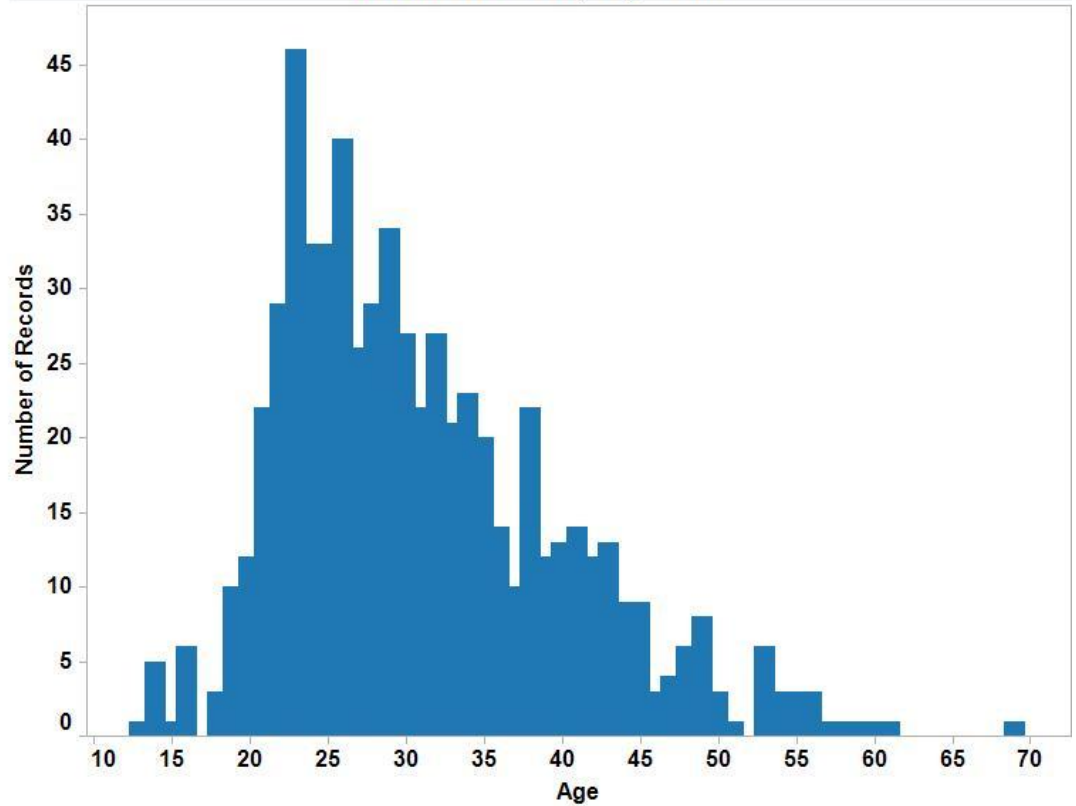
# Malaria: an occupational hazard!

Malaria Cases by Sex 2011



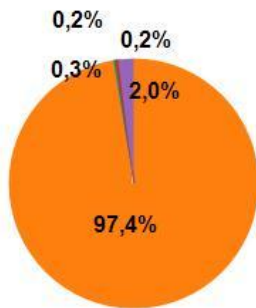
Sex  
■ F  
■ M

Malaria Cases by Age 2011

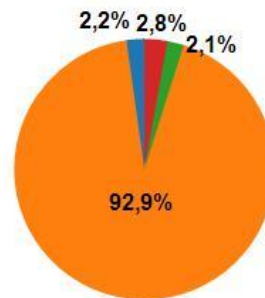


# Malaria: an occupational hazard!

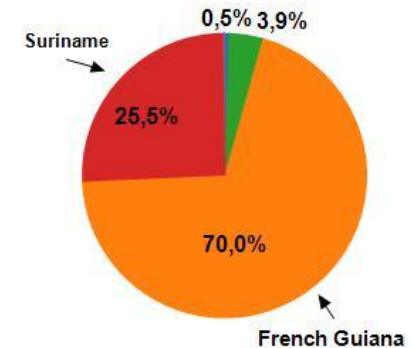
Malaria Cases by nationality 2011



Malaria Cases by ethnic group 2011

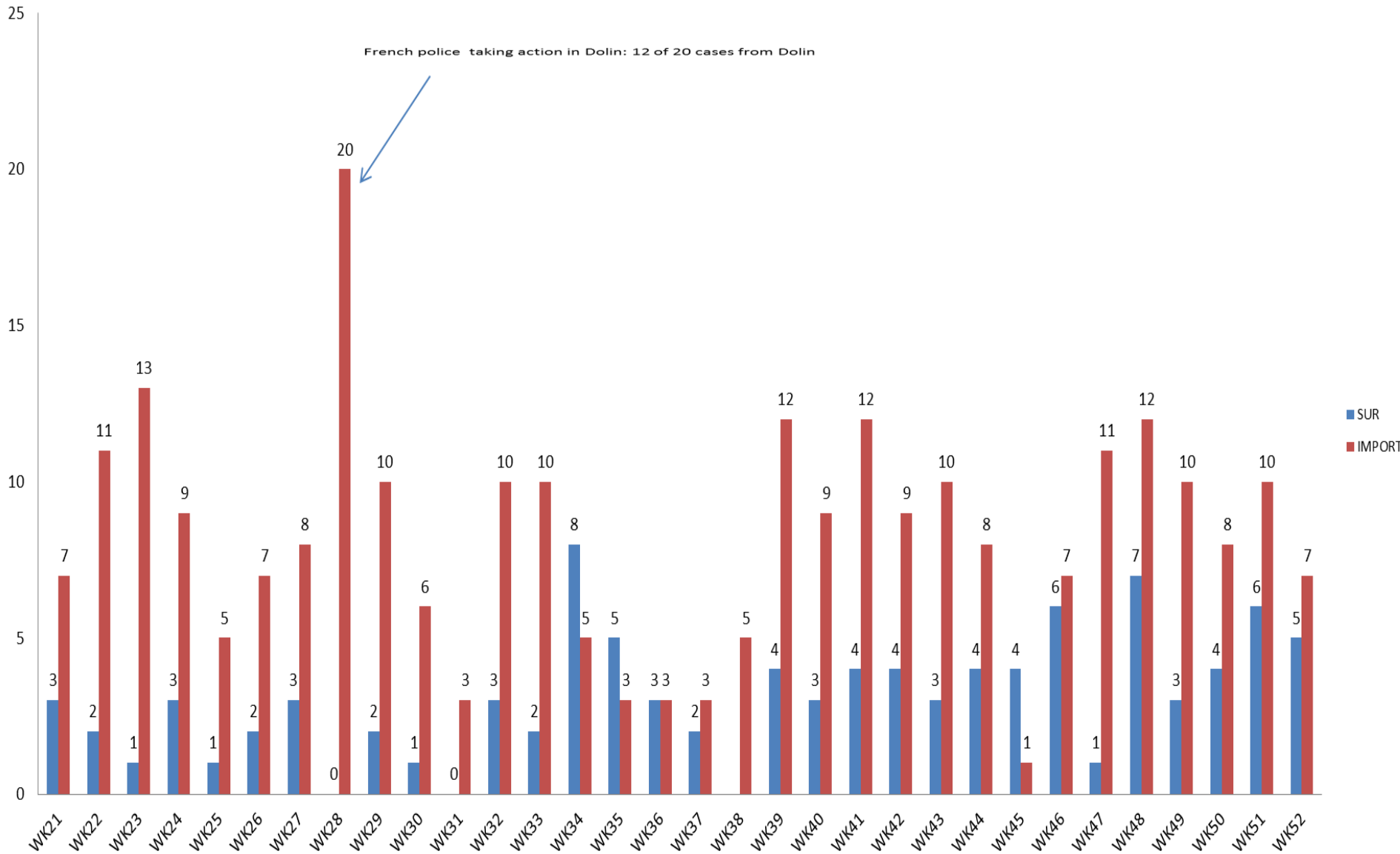


Malaria Cases by origin of infection 2011





# Number of malariacases wk1-52 2011



# Remaining Challenges

- Late reportation of malaria cases by MSD
- Sub-optimal correlation between results of rapid tests from MSD and microscopy
- Prevention of reintroduction of malaria in rural areas by migrating (fleeing!) gold miners
- Transborder approach of control and surveillance measures
- Having a focal point for transborder malaria, specifically for gold mining issues

# The Way Forward

# Timely and accurate reports from MSD

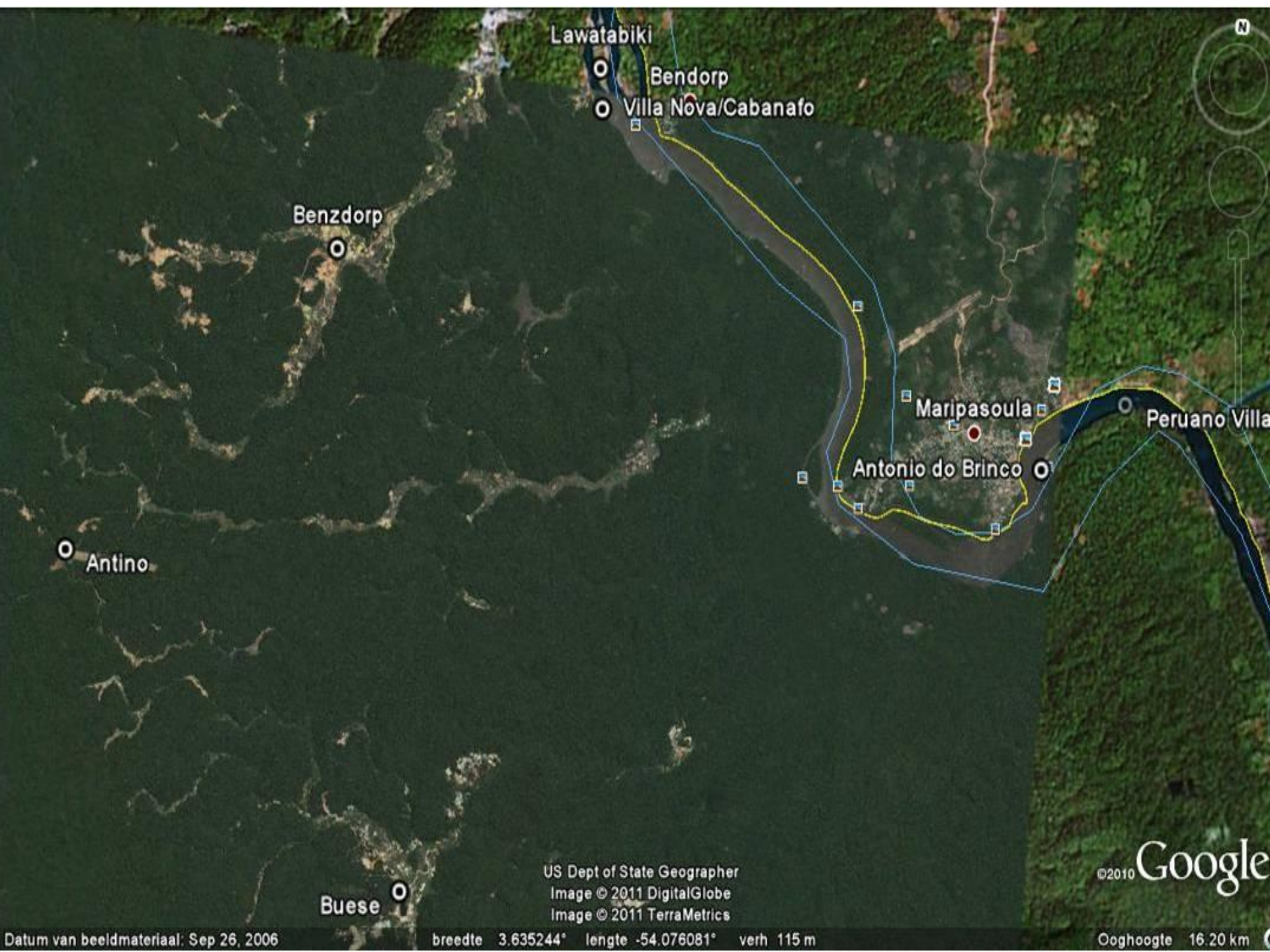
- Consider electronic reading and reporting through satellite of rapid test by MSD

# Transborder cooperation!

Binational meeting in Maripasoula March  
29

# MSD going abroad!

- Training in Suriname of MSD working abroad
- MSD for bed net distribution and health promotion
- Diagnosis and treatment facility in refugee camp (with a little help from our friends)



Lawatabiki

Bendorp

Villa Nova/Cabanafo

Benzdorp

Antino

Buese

Maripasoula

Antonio do Brinco

Peruano Villa

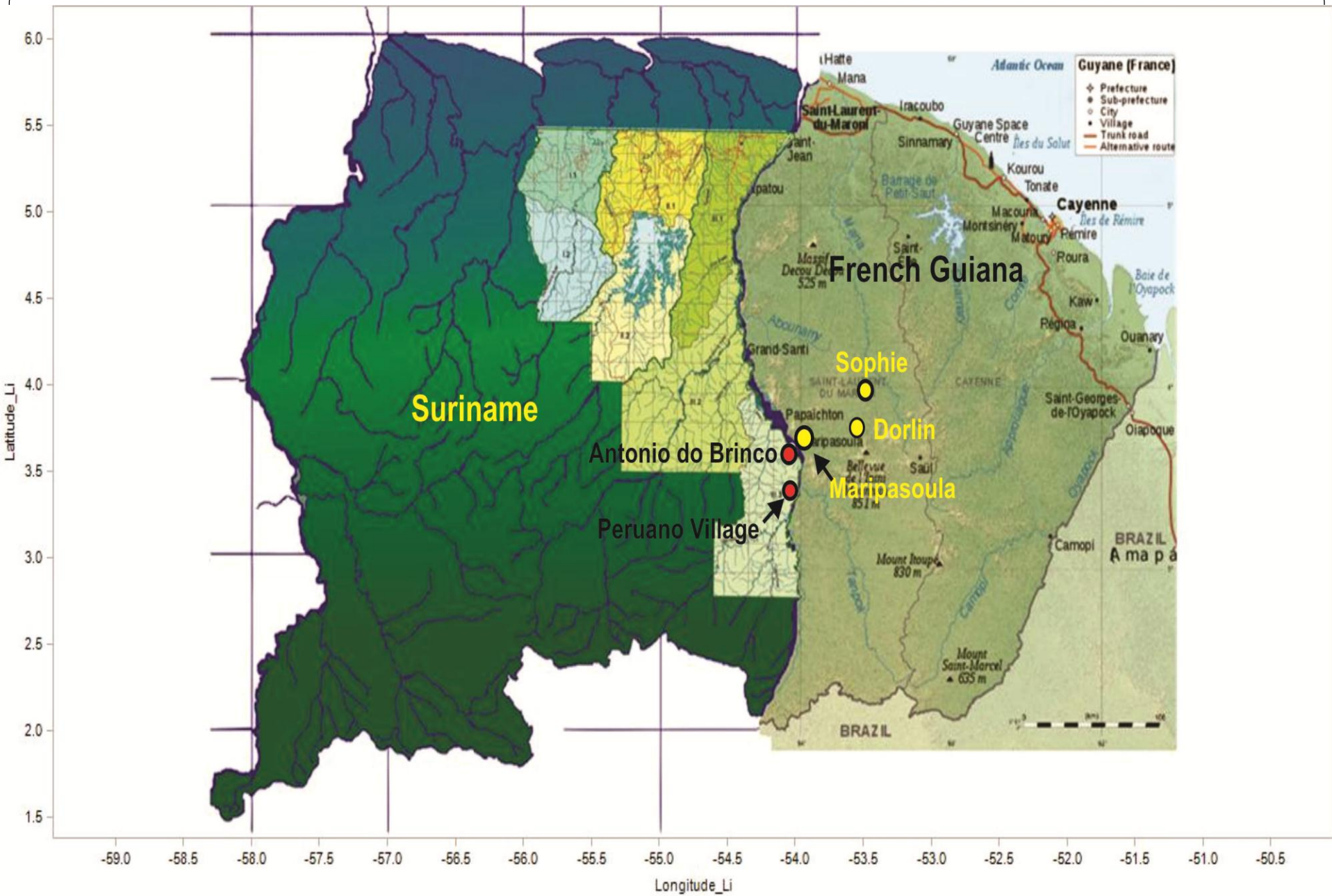
US Dept of State Geographer  
Image © 2011 DigitalGlobe  
Image © 2011 TerraMetrics

©2010 Google

Datum van beeldmateriaal: Sep 26, 2006

breedte 3.635244° lengte -54.076081° verh 115 m

Ooghoogte 16.20 km





Joint efforts in further shrinking the Malaria map in the gold mining fields of the Guyana Shield is pivotal



**MUCHAS GRACIAS**