

**REMESA**

Mediterranean Animal Health Network



# Epidemiological situation in North Africa regarding major vector-borne diseases

*Dr Rachid Bouguedour*

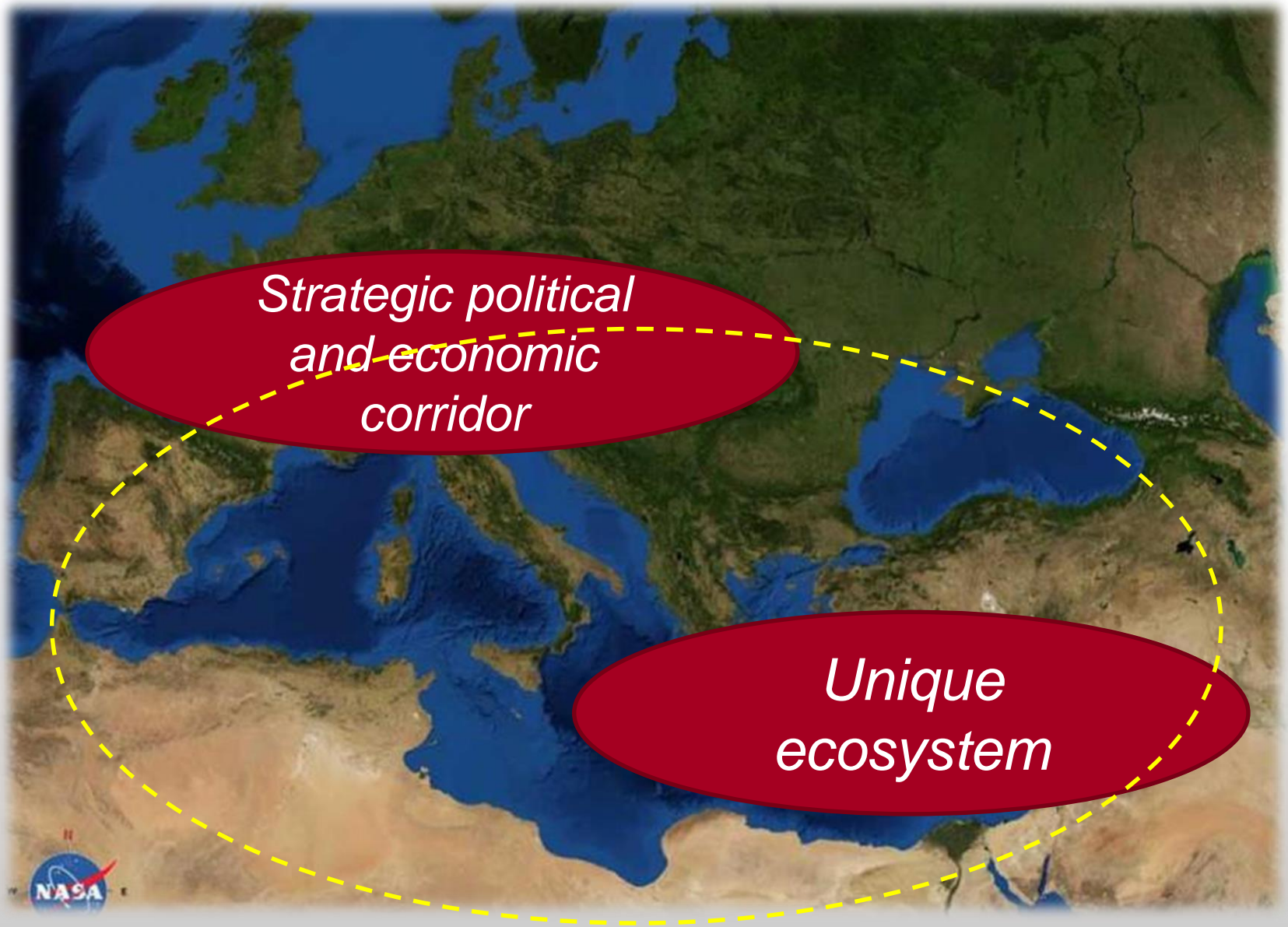
*OIE Sub Regional Representation for North Africa*

*OIE Regional meeting on Vector-borne diseases  
in North Africa*

*Tunis, Tunisia – 3 December 2020*



# Context



*Strategic political  
and economic  
corridor*

*Unique  
ecosystem*

# Context


- ❑ The Mediterranean basin no longer represents an effective barrier against the introduction of viral diseases (e.g. BTV-2-3, LSD, PPR).
- ❑ The increased permeability of the Sahara Desert allows pathogens to arrive and spread across North African countries.
- ❑ The spread of diseases from North Africa to Europe (for example, FMD, RVF, PPR, rabies) and vice versa (e.g. BTV-8, HPAI) is not a negligible risk.



# Context

- ❑ Increased trade and movement in the Mediterranean basin (both legal and illegal)
- ❑ The negative effects of insecurity resulting from political problems on veterinary public health should not be underestimated.



A large, dark red oval shape is centered on the page, containing the title text in white. The oval has a slight gradient and a thin white border.

**CLIMATE CHANGE  
AND  
VECTORBORNE  
DISEASES**



# CLIMATE CHANGE

<https://www.popsci.com/medicane-zorba>



<http://meteorologia.uib.eu/medicanes/introduction.html>

The Medicane forming in the eastern Mediterranean on September 28, 2018.

***Mediterranean tropical-like cyclones, often referred to as “medicanes” (MEDiterranean hurriCANES)***

*The first-ever study synthesizing risks posed by climate and environmental changes in the Mediterranean*



nature  
climate change

REVIEW ARTICLE

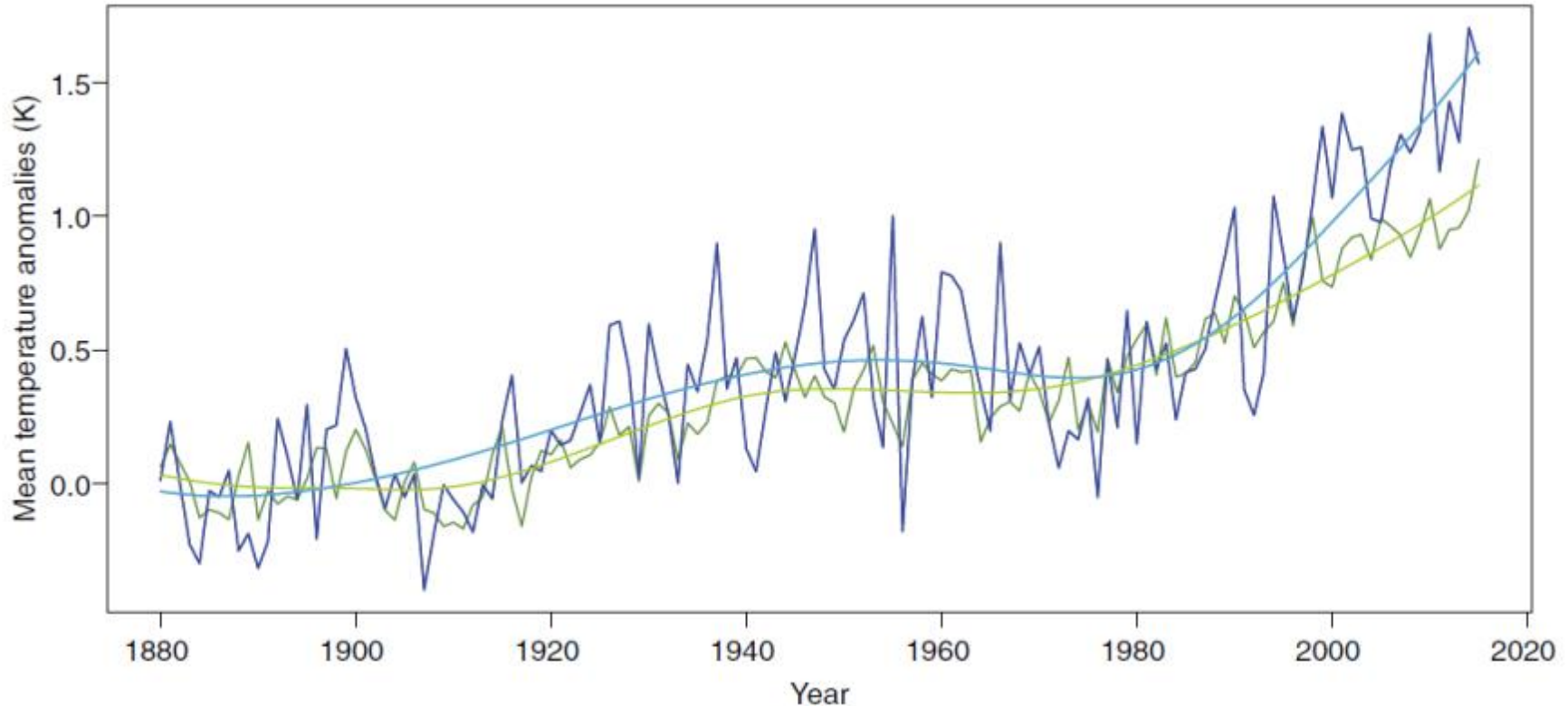
<https://doi.org/10.1038/s41558-018-0299-2>

## Climate change and interconnected risks to sustainable development in the Mediterranean

Wolfgang Cramer<sup>1\*</sup>, Joël Guiot<sup>2</sup>, Marianela Fader<sup>3</sup>, Joaquim Garrabou<sup>4,5</sup>, Jean-Pierre Gattuso<sup>6,7</sup>, Ana Iglesias<sup>8</sup>, Manfred A. Lange<sup>9</sup>, Piero Lionello<sup>10,11</sup>, Maria Carmen Llasat<sup>12</sup>, Shlomit Paz<sup>13</sup>, Josep Peñuelas<sup>14,15</sup>, Maria Snoussi<sup>16</sup>, Andrea Toretì<sup>17</sup>, Michael N. Tsimplis<sup>18</sup> and Elena Xoplaki<sup>19</sup>

# CLIMATE CHANGE

The Mediterranean basin is warming faster than the whole planet. The annual average temperature has already risen by 1.4 ° C compared to pre-industrial temperatures, compared to an average of 1.1 ° C worldwide.



Data from <http://berkeleyearth.org/>

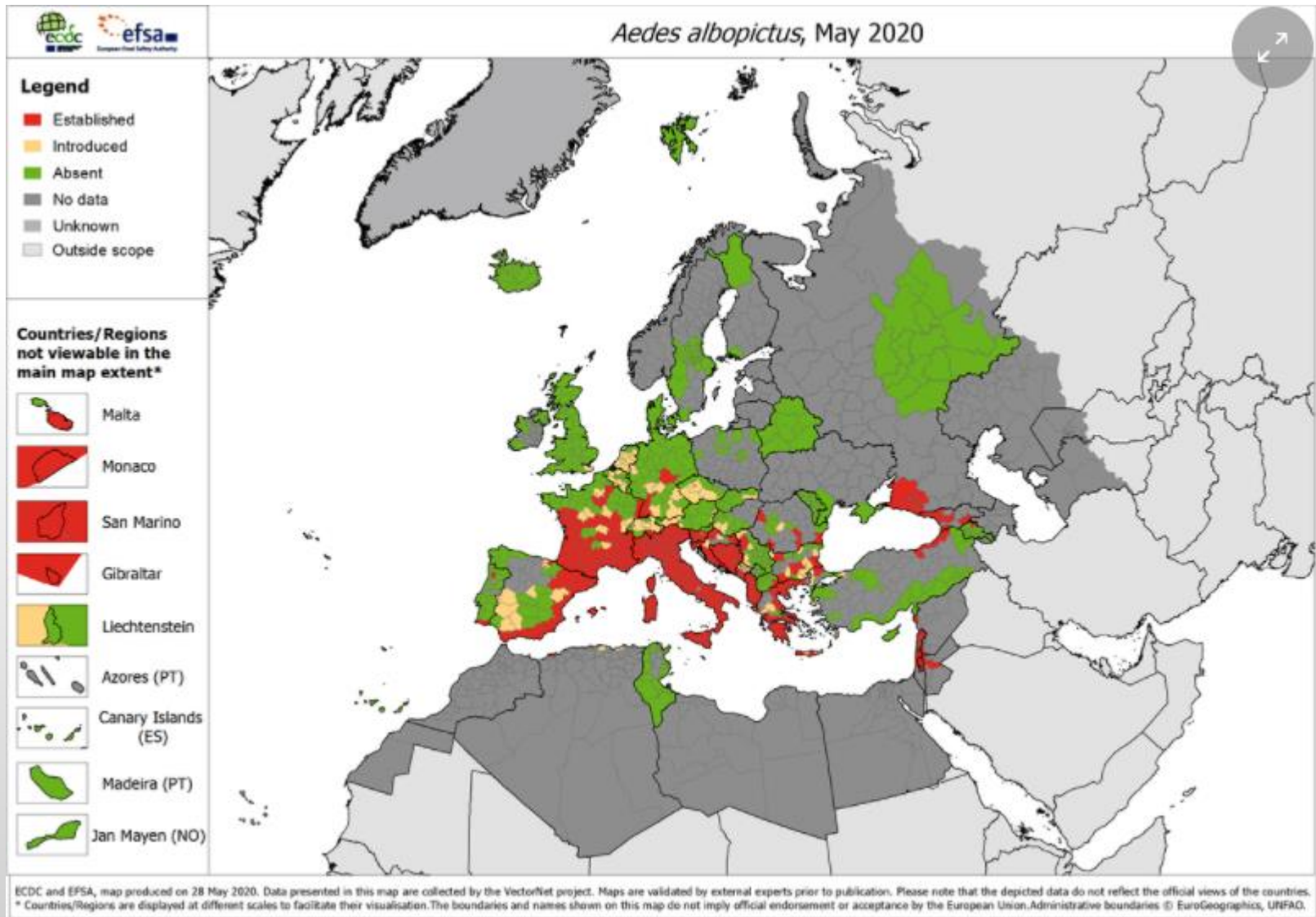
# CLIMATE CHANGE

The paper (*Climate change and interconnected risks to sustainable development in the Mediterranean – Oct 2018*) reviews the various environmental changes and the risks posed by these changes in the five major interconnected domains, namely:

- water resources,
- ecosystems,
- food safety and security,
- Health (*climate change may influence the emergence of vector-borne diseases.....*),
- human security.



# CLIMATE CHANGE (e.g. tiger mosquitos)



# CLIMATE CHANGE (e.g. tiger mosquitos)

- ❑ First isolated detection of *Aedes albopictus* in North Africa in Algeria in 2010
- ❑ Today seems to be present in the region (*eggs, larvae, pupae, adults*)

....dengue fever,  
Chikungunya fever,  
Usutu virus, Zika  
virus.....

## Alger: Le moustique tigre présent dans 24 communes

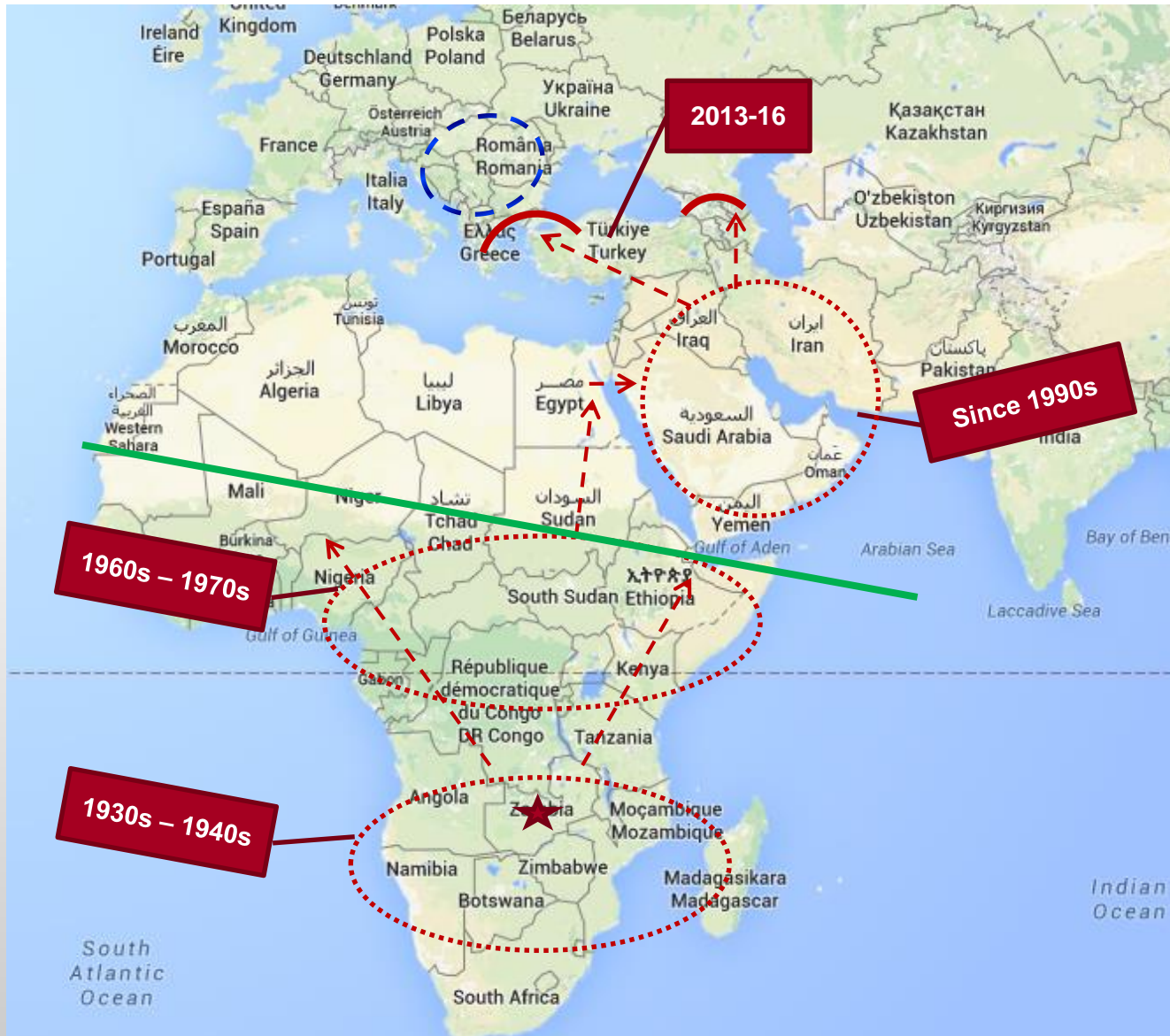
Publié Le : Mardi, 30 Juin 2020 17:57

Imprimer | Envoyer | Partagez [G](#) [f](#) [+](#)



ALGER- L'Etablissement public d'hygiène urbaine et de protection de l'environnement de la wilaya d'Alger (HUPE) a enregistré la présence du moustique tigre à travers 24 communes de la capitale, a indiqué mardi le directeur général de l'établissement.

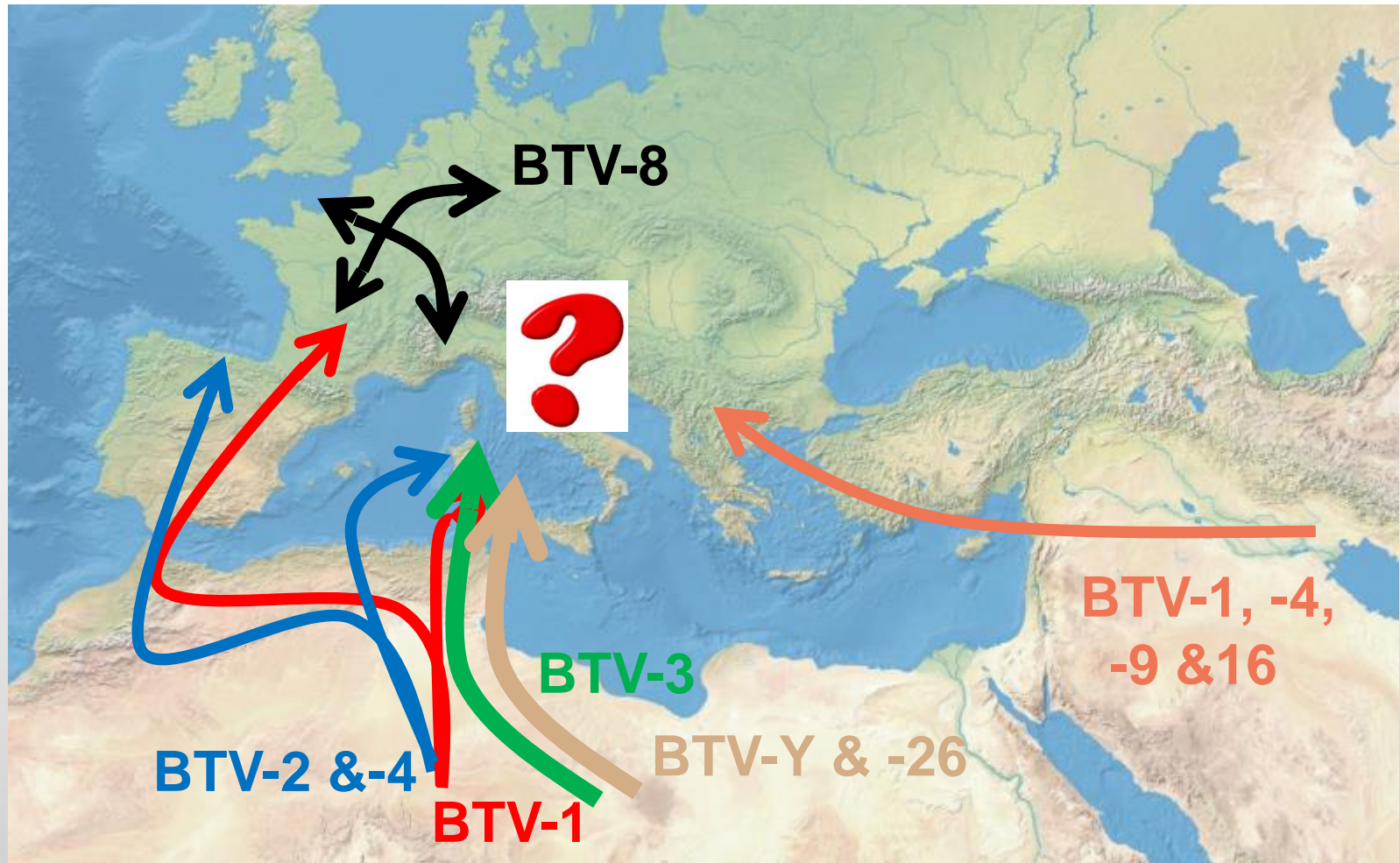
# EX: GLOBAL EXPANSION OF LSD



BT



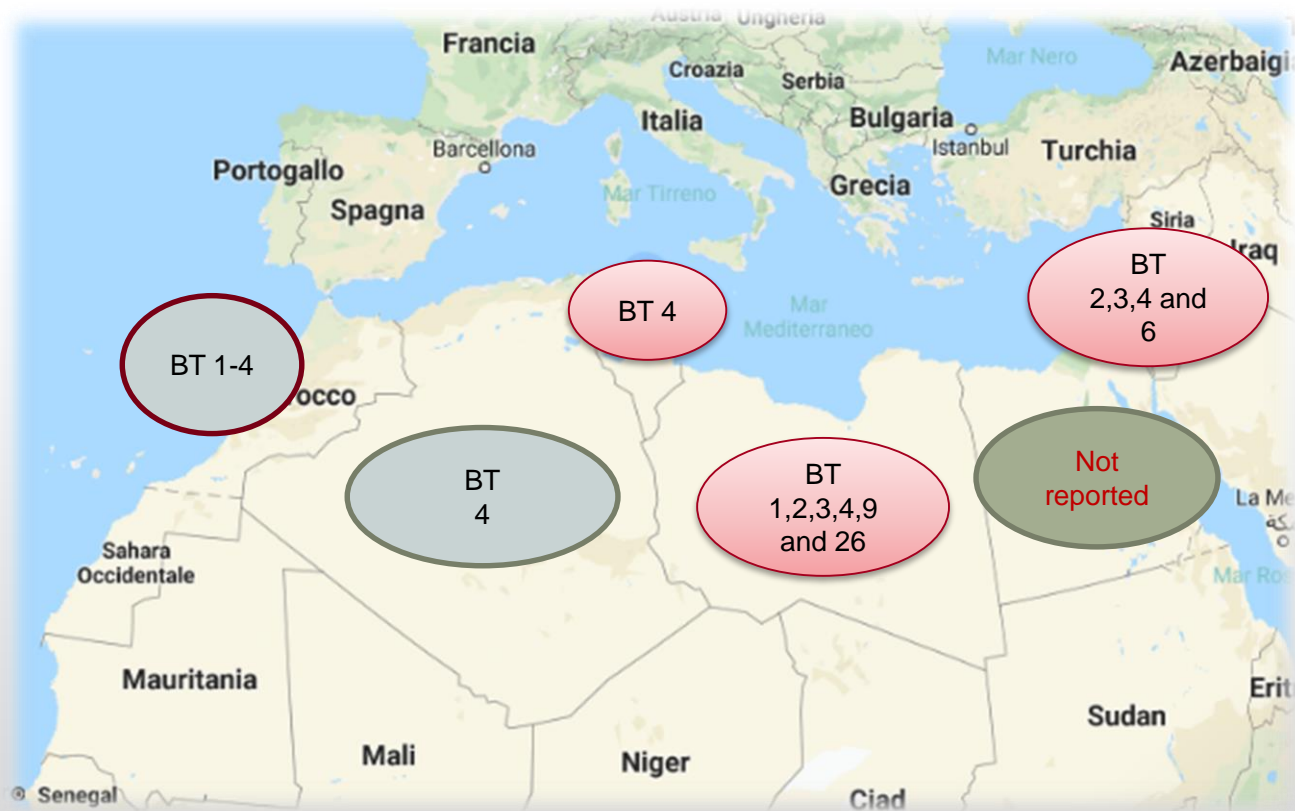
# BTV incursions in the Mediterranean region



Source OIE Reference Laboratory in Teramo



# DISTRIBUTION OF BLUETONGUE SEROTYPES (2019-2020) IN NORTH AFRICA



# DISTRIBUTION OF BLUETONGUE SEROTYPES IN EUROPE

## Bluetongue

Restricted zones\* as of 30 October 2020

This map includes information on the bluetongue virus serotypes circulating in each restricted zone, which permits, for the purposes of Articles 7 and 8 of Regulation No 1266/2007, the identification of the restricted zones demarcated in different Member States where the same bluetongue virus serotypes are circulating.

### Zone (serotypes)

- F (8)
- I (4)
- J (1)
- T (1, 4, 3, 16)
- X (4, 16)
- Y (4)
- A3 (4)
- A4 (4, 3, 16)
- A5 (1, 4)
- A6 (4, 16)
- A7 (4, 16, 8)
- A8 (16)

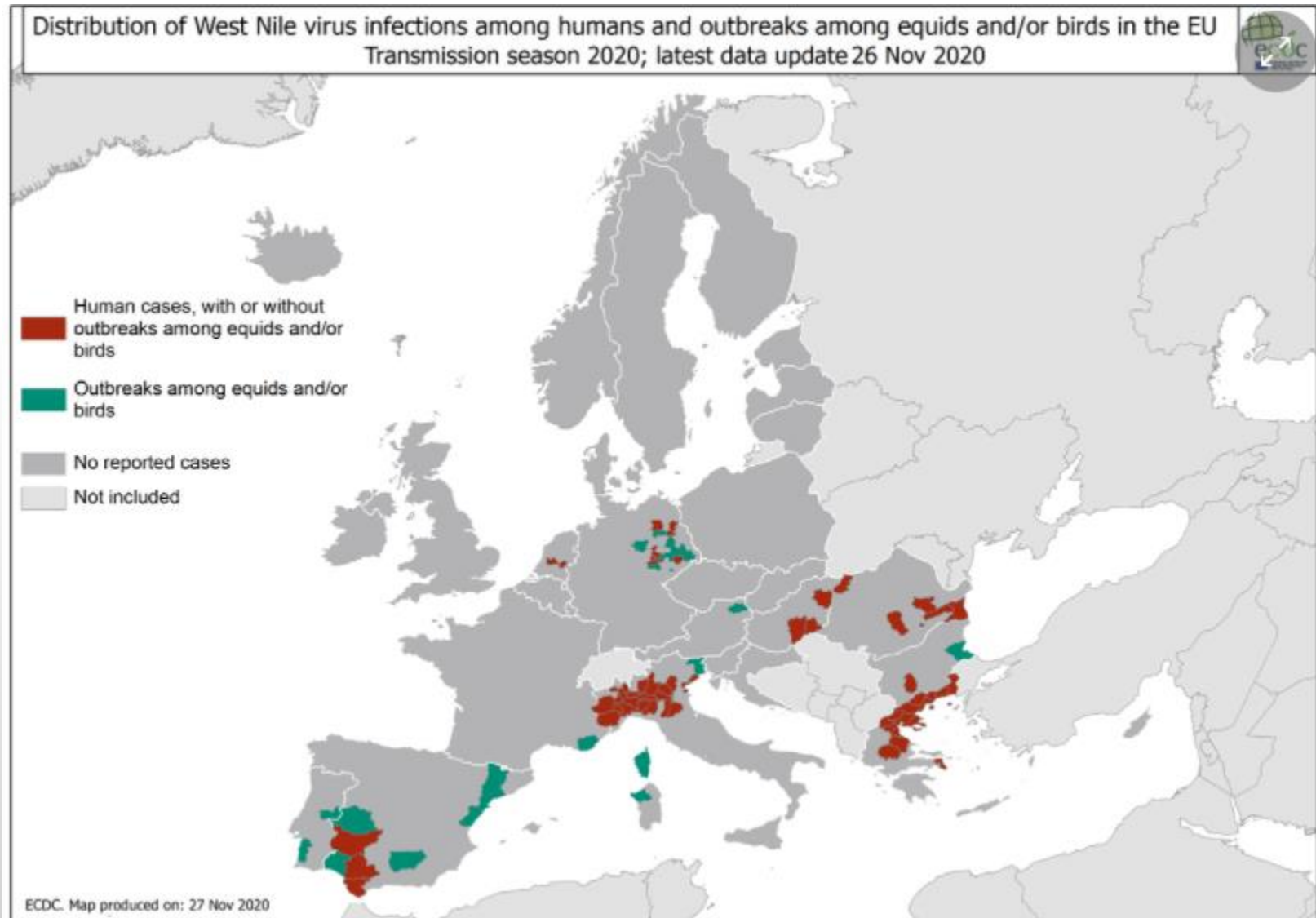
\* as defined in Article 2 (d) of Commission Regulation No 1266/2007: geographic areas where surveillance and/or protection zones have been demarcated by the Member States in accordance with Article 8 of Council Directive 2000/75/EC.

For information purposes only. The European Commission does not assume any liability resulting from its content.



**WND**

# West Nile Disease situation







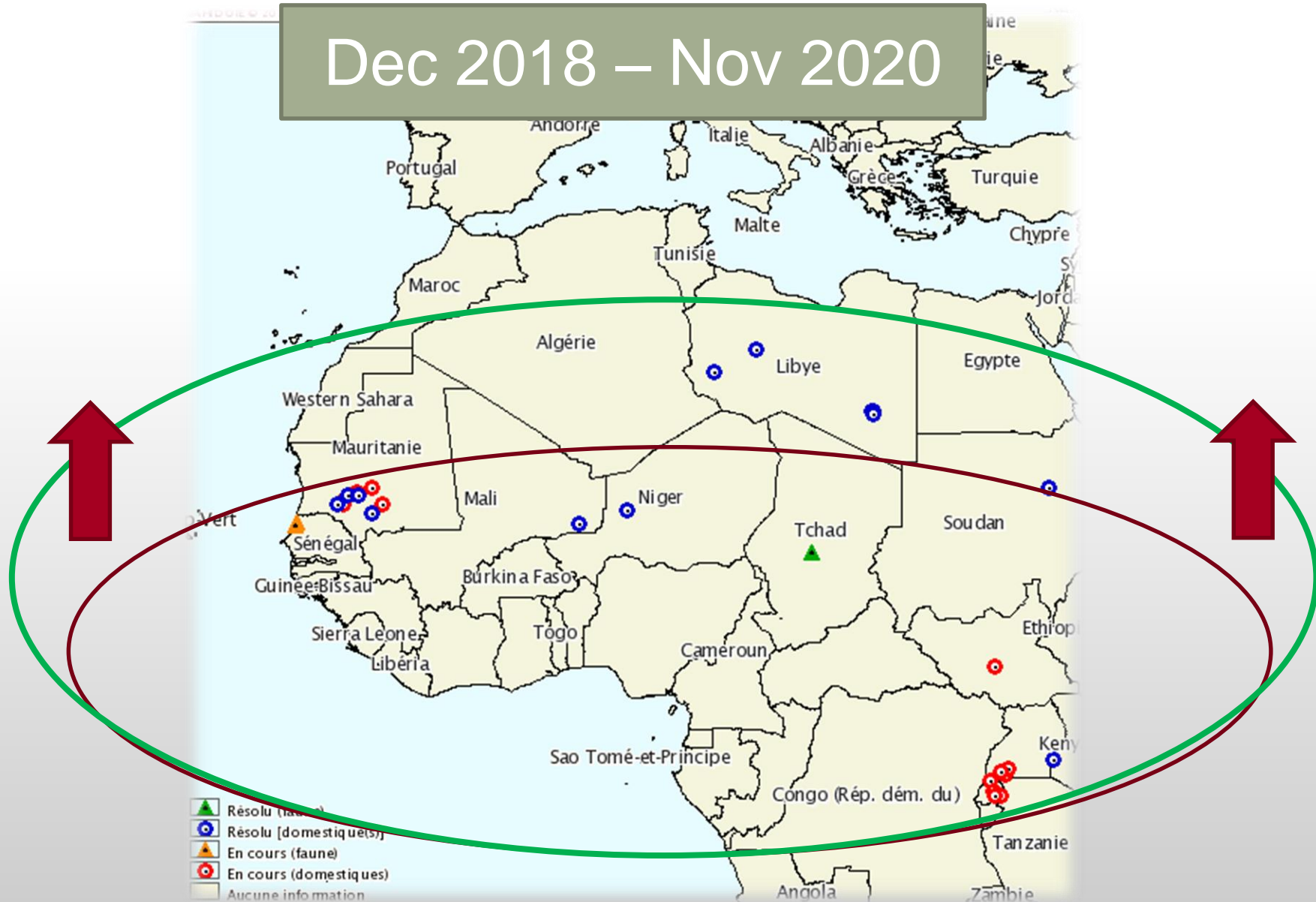
A large, dark red oval shape is centered on the page, serving as a background for the text. The text is white and centered within the oval.

**RVF and risk for  
Mediterranean  
basin**



# Geographical distribution of RVF in the region

Dec 2018 – Nov 2020



# RIFT VALLEY FEVER (Serological positivity)

 Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People™

## EMERGING INFECTIOUS DISEASES®

EID Journal > Volume 17 > Number 12—December 2011 > Main Article

Volume 17, Number 12—December 2011

Letter

Rift Valley and West Nile Virus Antibodies in Camels, North Africa

[Cite This Article](#)



ELSEVIER

Acta Tropica

Volume 207, July 2020, 105462

## First serological evidence of the Rift Valley fever *Phlebovirus* in Tunisian camels

Rachid Selmi <sup>a, b</sup>, Aymen Mamlouk <sup>a</sup>, Mourad Ben Said <sup>a</sup>, Houcine Ben Yahia <sup>b</sup>, Hedi Abdelali <sup>b</sup>, Faten Ben Chehida <sup>a</sup>, Monia Daaloul-Jedidi <sup>a</sup>, Abderraouf Gritli <sup>b</sup>, Lilia Messadi <sup>a</sup>  

<sup>a</sup> Service de Microbiologie et Immunologie, Ecole Nationale de Médecine Vétérinaire de Sidi Thabet, Université de la Manouba, Tunisia

<sup>b</sup> Ministère de la Défense Nationale, Direction Générale de la Santé Militaire, Service Vétérinaire, Tunis, Tunisia

Received 18 February 2020, Revised 28 March 2020, Accepted 28 March 2020, Available online 20 April 2020.



## RESEARCH ARTICLE

First serological evidence of rift valley fever seroprevalence in the Saharan semi-nomadic pastoralist system, Tunisia

David Ross <sup>a</sup>, Saleh M Lamin Saleh <sup>a</sup>, Saleh M Lejjif <sup>a</sup>, Sidumu J Hamdi <sup>a</sup>, Giovanni Savini <sup>b</sup> and Michael V Thrusfield <sup>c</sup>



Open Access

## Tunisia

## Serologic evidence of exposure to Rift Valley fever virus detected in Tunisia

A. Bosworth <sup>1,2</sup>, T. Ghabbari <sup>3</sup>, S. Dowali <sup>1</sup>, A. Varghese <sup>1</sup>, W. Fares <sup>3</sup>, R. Hewson <sup>1,2</sup>, E. Zhioua <sup>3</sup>, M. Chabroun <sup>5</sup>, H. Trouni <sup>6</sup>, M. Ben Jemaa <sup>7</sup>, A. Znazen <sup>3</sup> and A. Lezaief <sup>4</sup>

<sup>1</sup>) Public Health England, Porton Down, Salisbury, UK; <sup>2</sup>) Infectious Diseases Department, Farhat Hached University Hospital, Sousse; <sup>3</sup>) Institut Pasteur de Tunis, Tunis; <sup>4</sup>) National Institute of Health Research, Health Protection Research Unit in Emerging and Zoonotic Infections, Liverpool, UK; <sup>5</sup>) Infectious Diseases Department, F. Bourguiba University Hospital, Monastir; <sup>6</sup>) Infectious Diseases Department and <sup>7</sup>) Laboratory of Microbiology, Sfax, Tunisia

ORIGINAL ARTICLE

Serologic evidence of exposure to Rift Valley fever virus detected in Tunisia

# RVF– Human cases

Year	Country	Human cases	Deaths
2020	Mauritania	60	23
2020	Sudan	?	?
2019	Sudan	1129	19
2016	Niger	348	33
2015	Mauritania	31	8
2015	Senegal	1	0
2013	Senegal	2	0
2012	Mauritania	36	19
2010	Mauritania	63	13
2003	Mauritania	25	4





Disclaimer: EIDJ online versions are not considered as final versions. Any changes to the online version in the month the article is officially released.

Volume 26, Number 12—December 2020

Dispatch

## Unique Outbreak of Rift Valley Fever in Sudan, 2019

Ayman Ahmed, Yousef Ali, Adel Elduma, Mawahib Hassan Eladigal, Yehab Abdallah Mhmoud, Noh Saad Mohamed, Thomas G. Ksiazek, Isabelle Dietrich, and Scott C. Weaver

Author affiliations: University of Khartoum, Khartoum, Sudan (A. Ahmed); University of Texas Medical Branch, Galveston, Texas, USA (A. Ahmed, T.G. Ksiazek, S.C. Weaver); World Reference Center for Emerging Viruses and Arboviruses, Galveston (A. Ahmed, S.C. Weaver); Sudan Federal Ministry of Health, Khartoum (Y. Ali, A. Elduma, M.H. Eladigal); River Nile State Ministry of Health, Eldamair, Sudan (R.A. Mhmoud); Nile University, Khartoum (N.S. Mohamed); The Pirbright Institute, Pirbright, UK (I. Dietrich)

Main Article

# RIFT VALLEY FEVER (SUDAN)

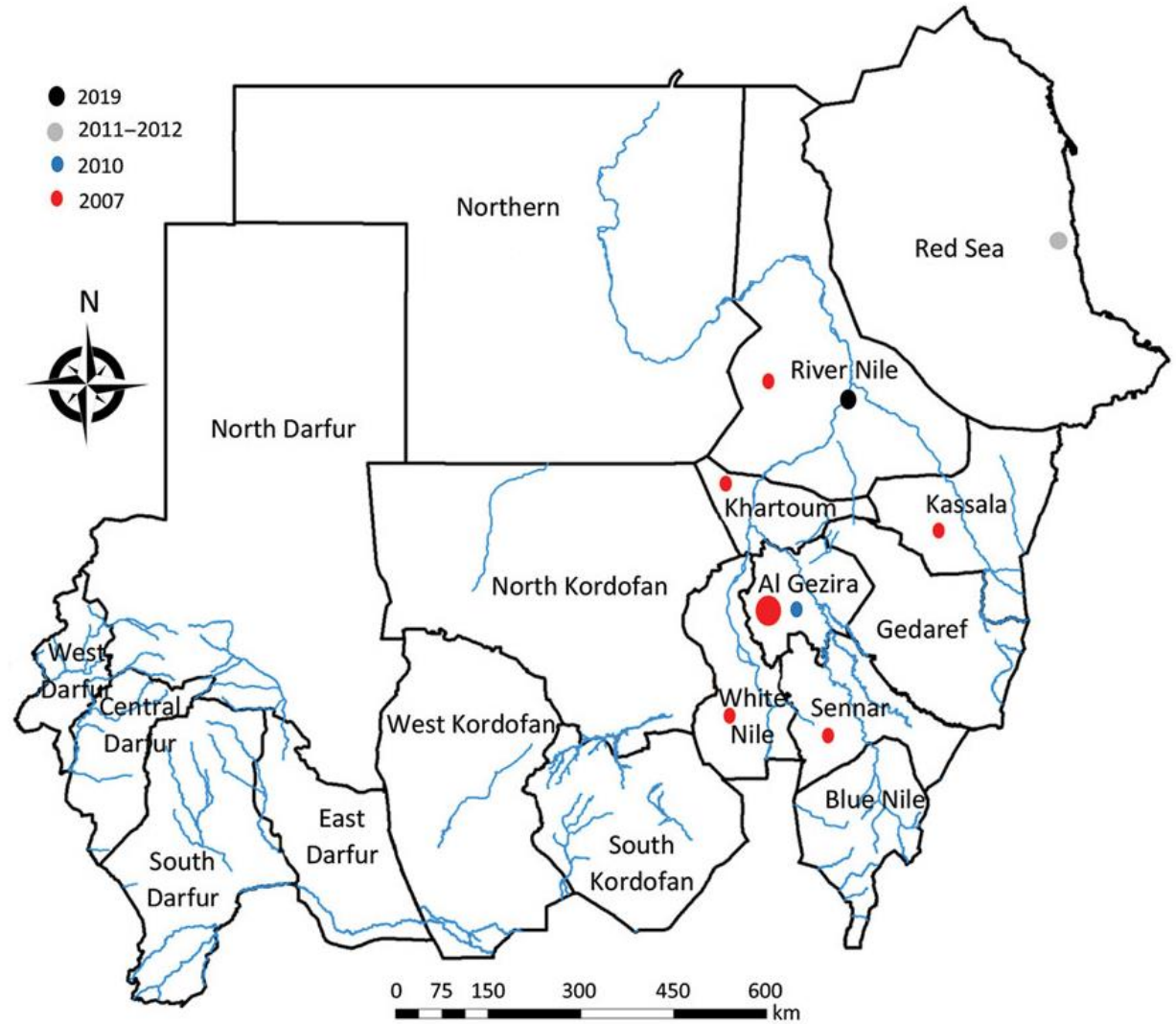


Figure 1. Distribution of Rift Valley fever outbreaks in Sudan, by year.

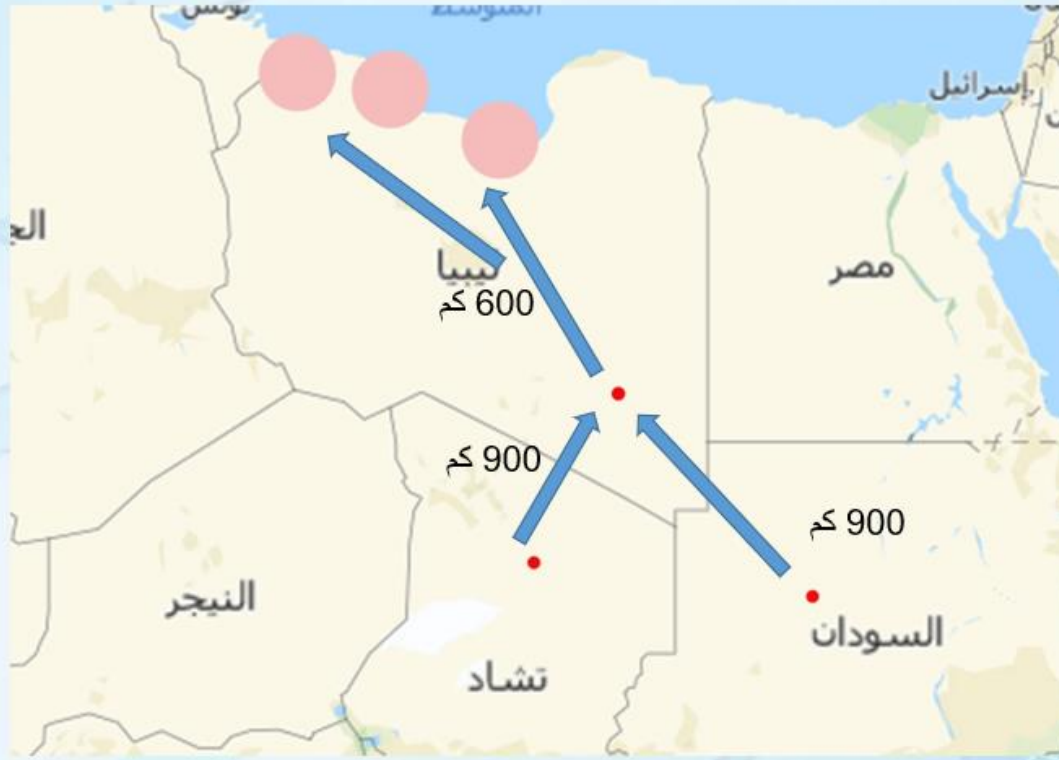
# RIFT VALLEY FEVER(LIBYA)

الندوة العلمية لمرض حمى الوادي المتصدع - طرابلس 20 فبراير 2020

المركز الوطني للحماية الحيوانية  
National Center for Animal Health  
NCAH



خارطة اتجاه حركة الحيوانات المهربة من السودان وتشاد إلى الكفرة ثم إلى اجدابيا ومصراطة والزاوية



# RIFT VALLEY FEVER(LIBYA)



# CONCLUSIONS:

- ❑ Field and laboratory investigations to better understand the prevalence and distribution of vector-borne diseases in the sub region
- ❑ To increase surveillance and early warning for vectorborne diseases including standardised entomological studies
- ❑ Mediterranean approach about surveillance with potential extension to include Sub-Saharan countries
- ❑ Predictive models



# Merci pour votre attention



Dr Rachid Bouguedour



WORLD ORGANISATION FOR ANIMAL HEALTH  
*Protecting animals, preserving our future*

12, rue de Prony, 75017 Paris, France  
[www.oie.int](http://www.oie.int)  
media@oie.int - oie@oie.int

