Infectious deseases in the Pacific
November 14, 2014, Tahiti

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SUMMARY

1- The history of epidemic in the Pacific is deeply linked to european contact and Colonization

2- The debate: is depopulation caused by epidemies and/or post-traumatic epidemies ?

3- Significance of this debate for contemporary effects of epidemies in the Pacific

1- The history of epidemic in the Pacific is deeply linked to european contact and colonization

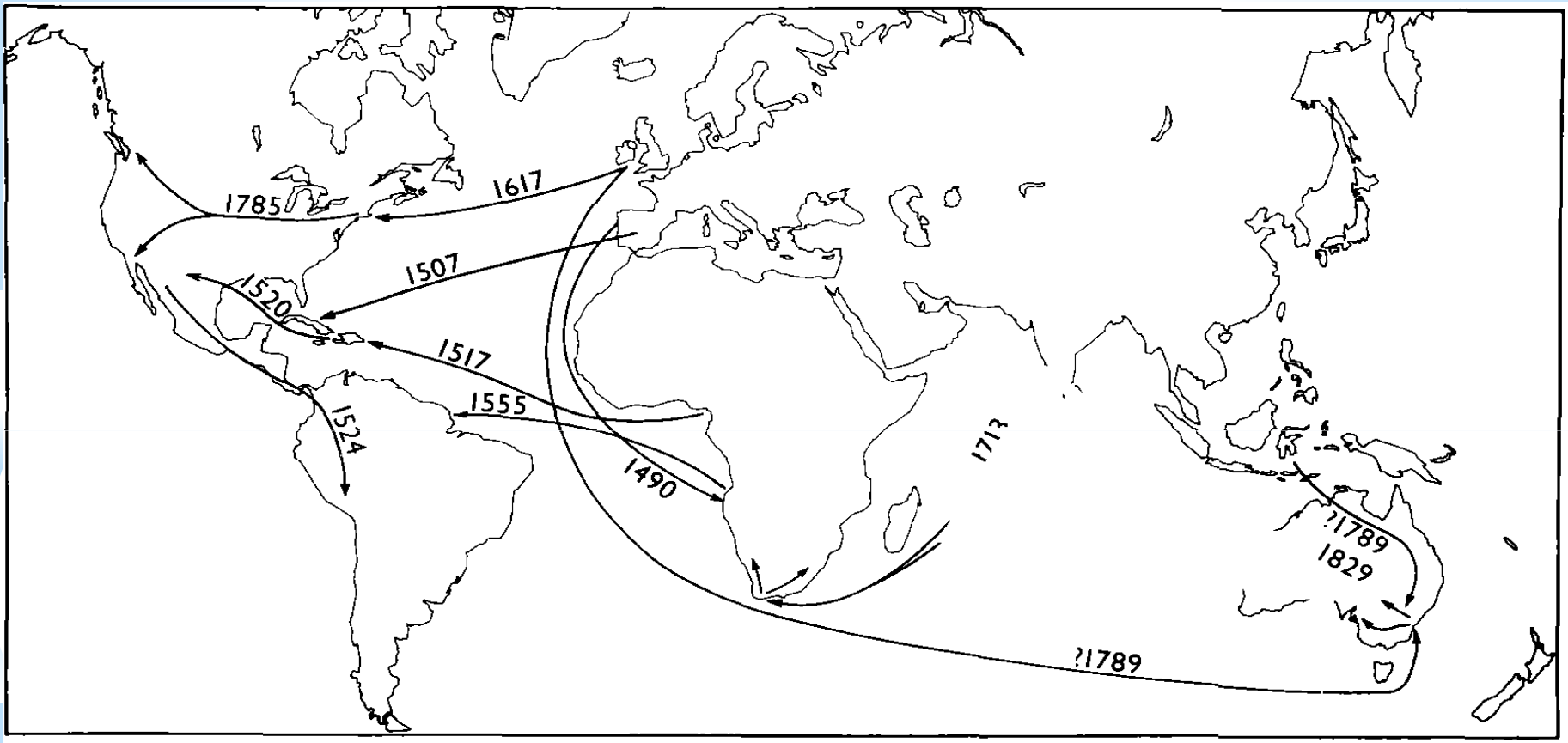
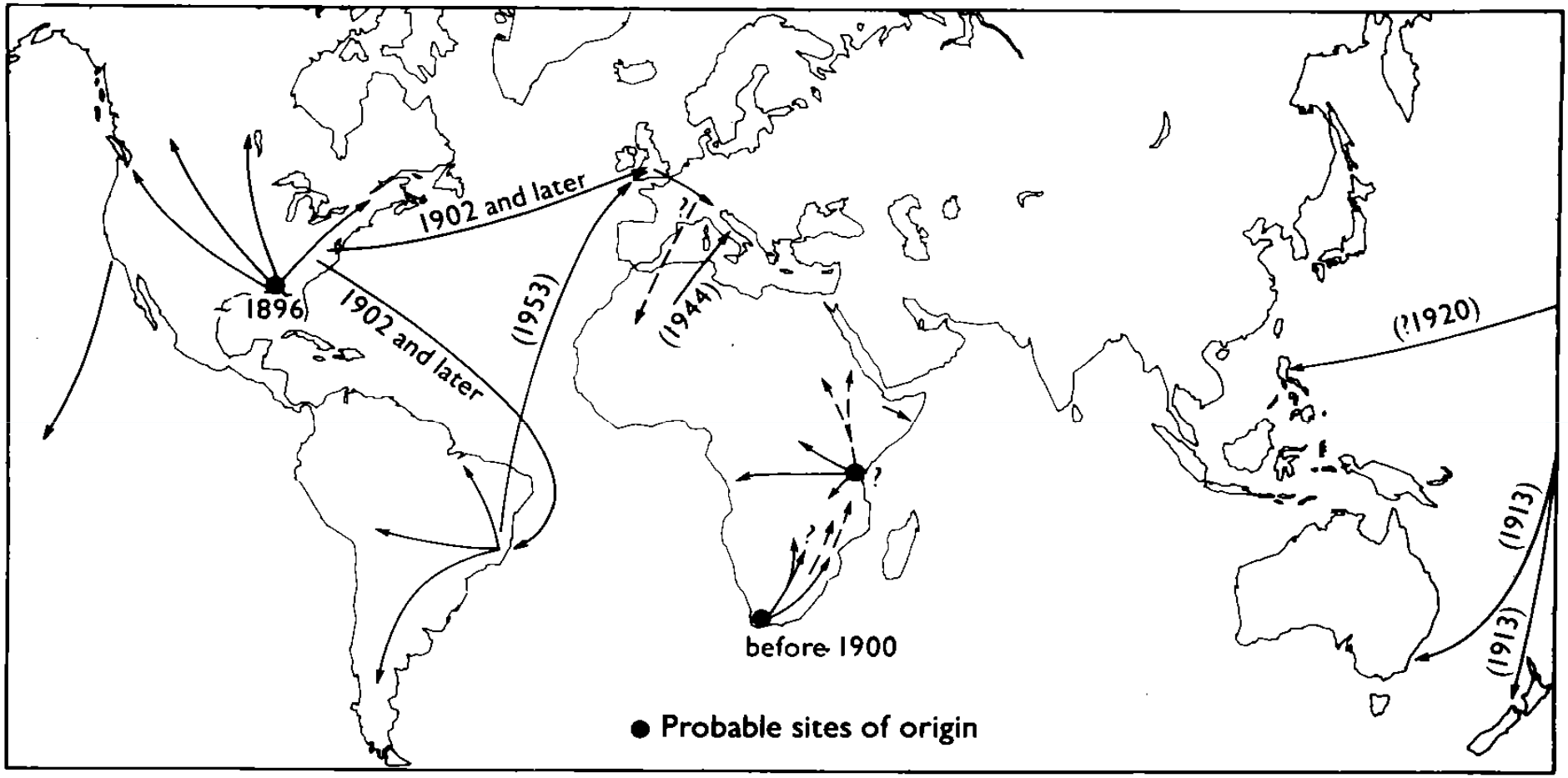


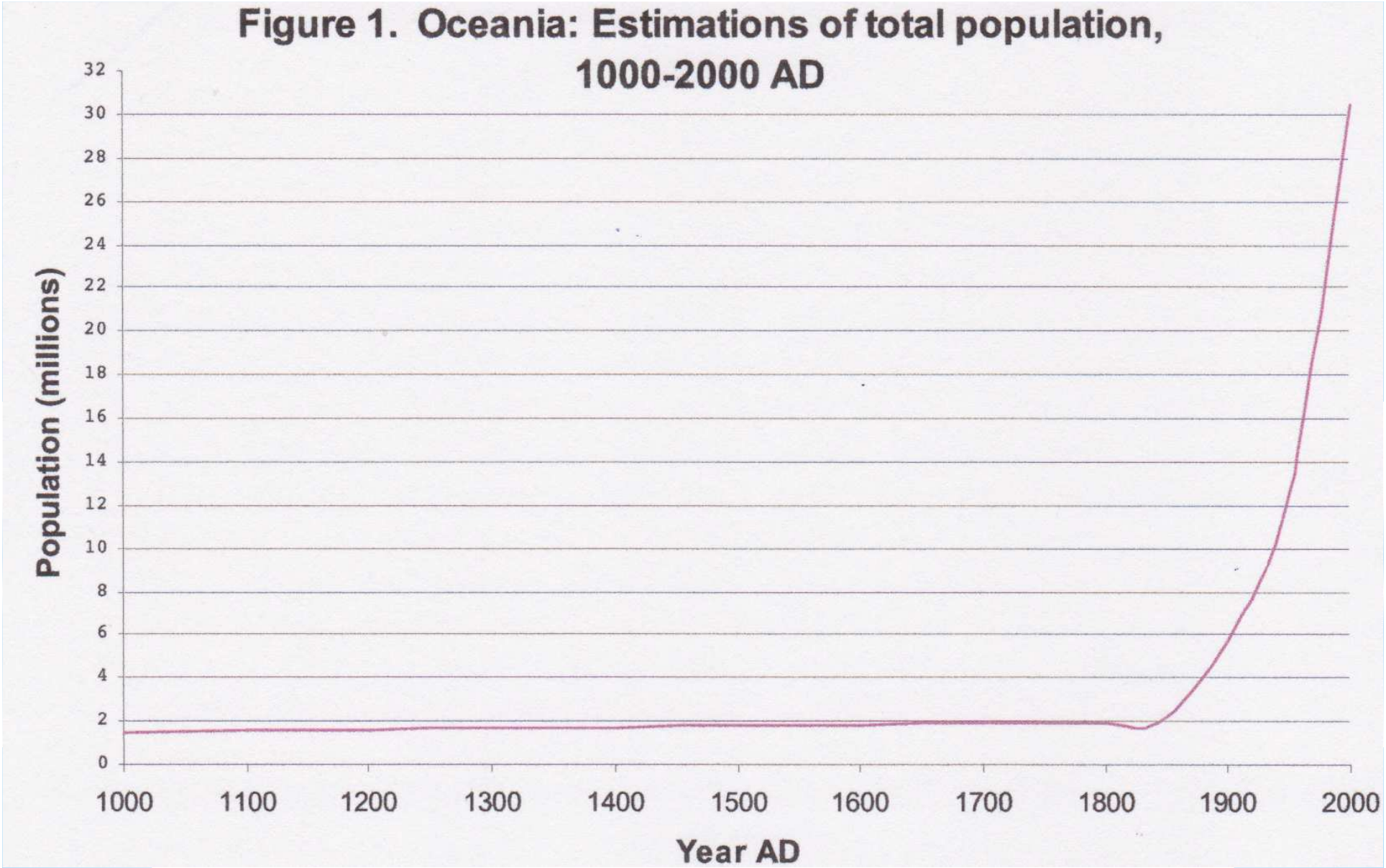
Fig. 5.5. The spread of smallpox to the Americas, South Africa and Australia with European exploration and colonization. It is not known whether the outbreaks among Australian aborigines in 1789 were caused by the transmission of the disease by ship from Great Britain or spread from islands of the East Indies to northern Australia.

History of small pox and its spreading around the world

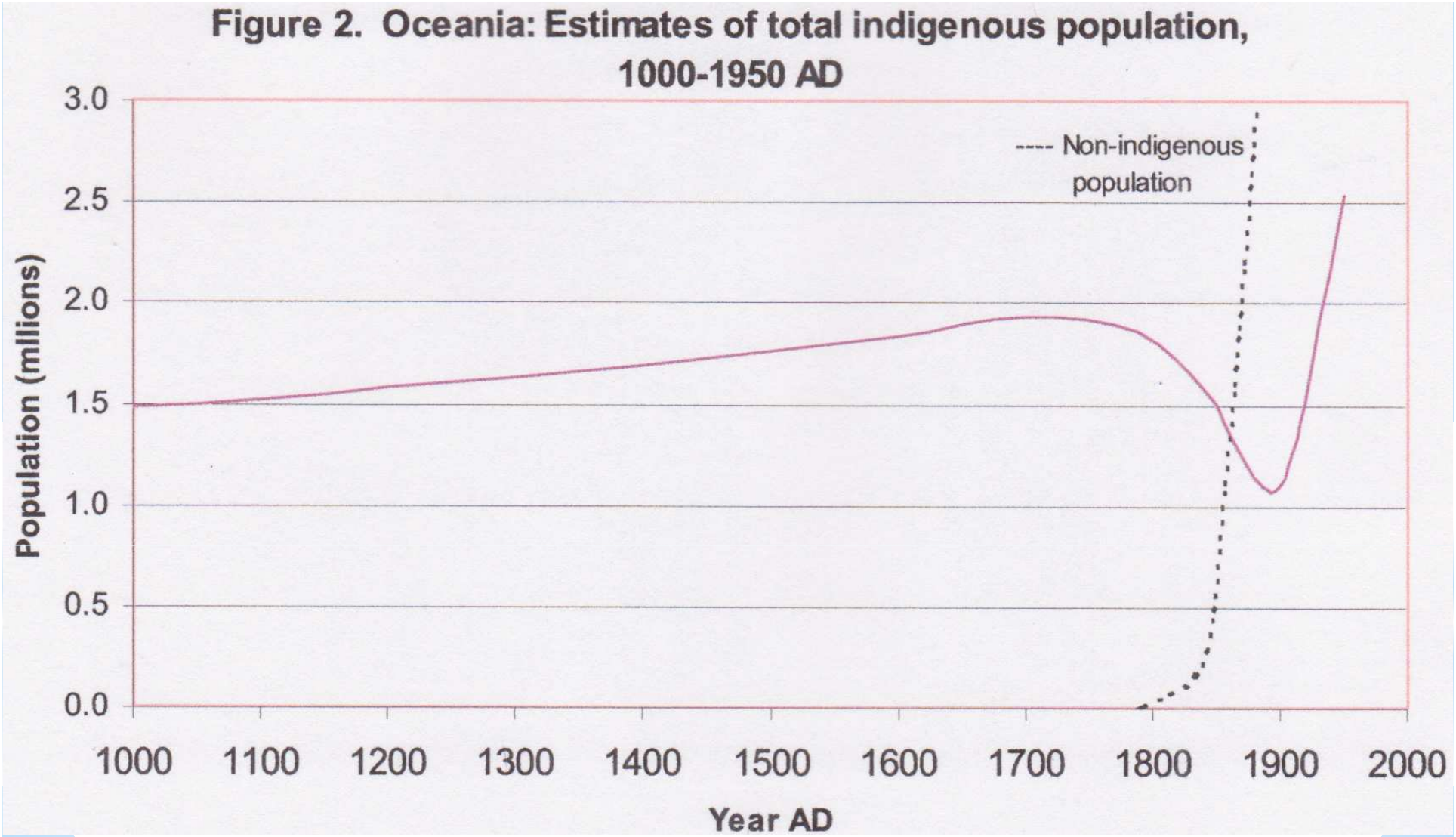
Spread of minor variola



1- The history of epidemic in the Pacific is deeply linked to european contact and Colonization

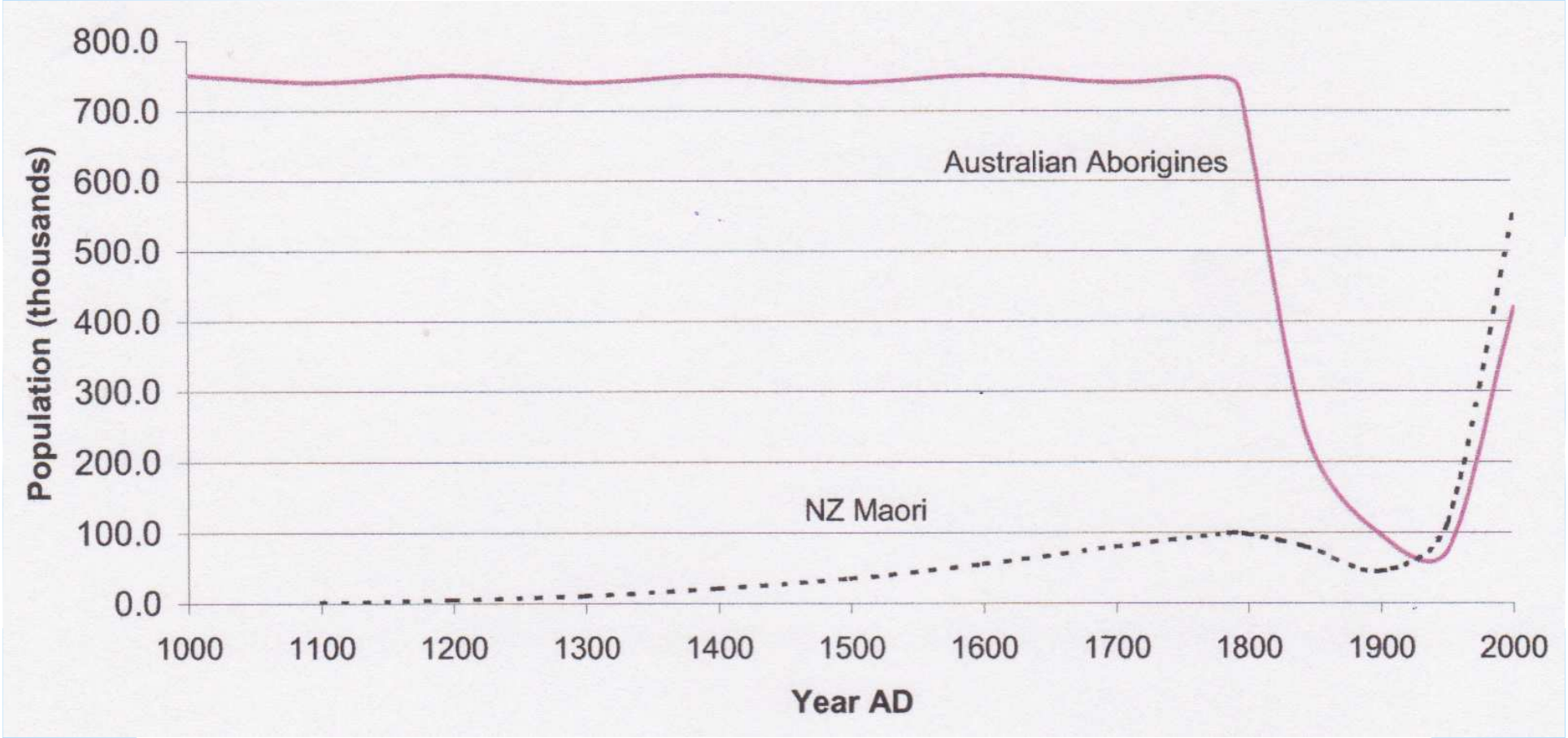


Caldwell and al. 2001: 6



Caldwell and al. 2001: 6

Populations indigènes d’Australie et de Nouvelle-Zélande



Caldwell and al. 2001: 7

2- The debate: is depopulation caused by epidemies and/or post-traumatic epidemies ?

Stannard, D. 1990. “Disease and Infertility: A New Look at the Demographic Collapse of Native Populations in the Wake of Western Contact”. *Journal of American Studies* 24 (3): 325-350.

- ✓ Methods for calculating contact population ?
- ✓ Did depopulation primarily resulted from epidemics or disease-induced infertility (Bushnell, 1993) ?

Epidemiologist Stephen Kunitz (1994) developed a more wide-ranging analysis which opened up the debate :

- ✓ the key factors affecting the rate of depopulation were not so much biological as social, economic and political.
- ✓ the key was post-epidemic recovery which required social stability.

Kunitz (1994) demonstrated that the areas with the most severe depopulation on record were areas where European colonization and dispossession disrupted indigenous societies :

- ✓ Loss of foraging land
- ✓ Violence
- ✓ Destruction of environment

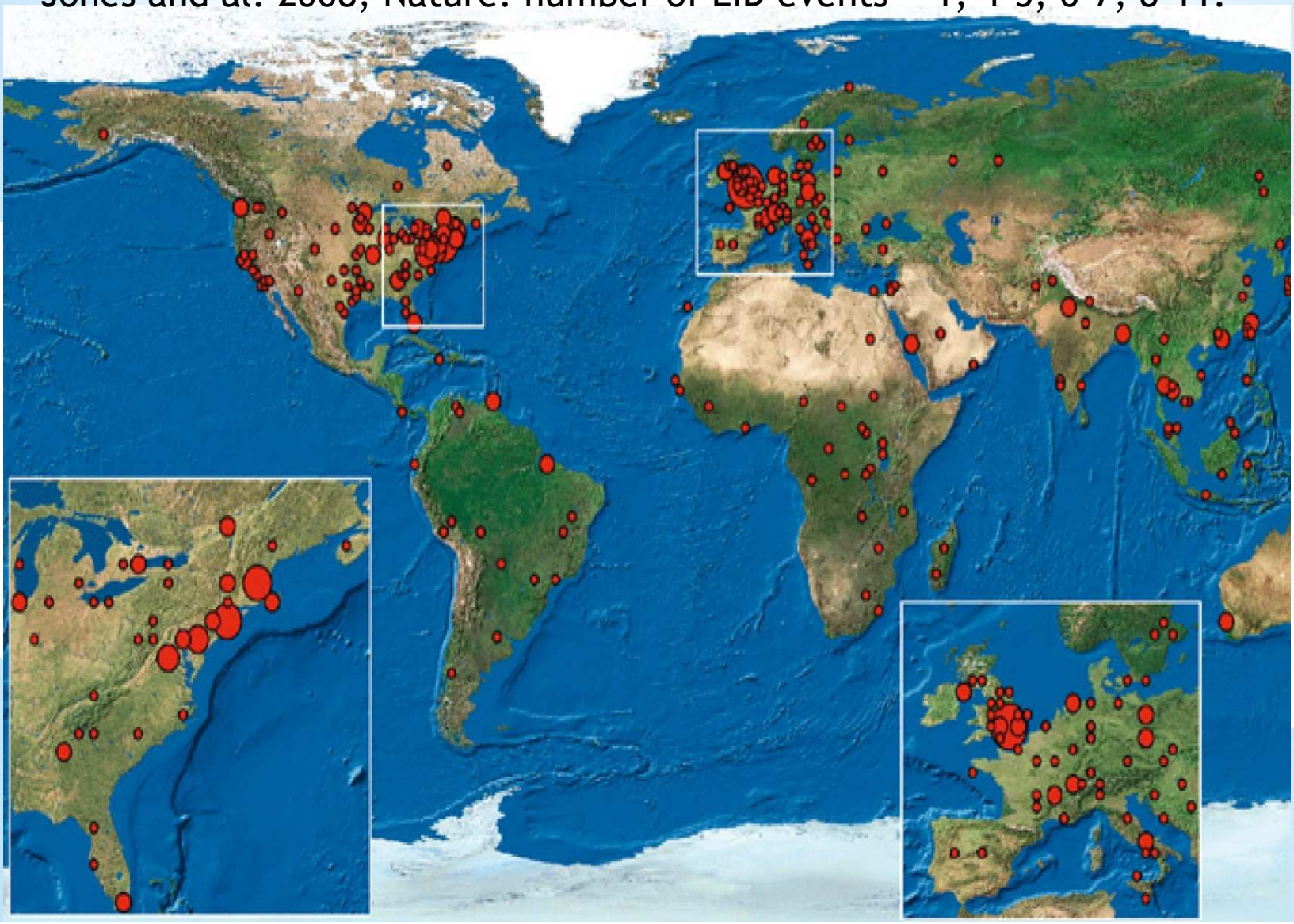
- ✓ *'It was not diseases acting independently that reduced the population but violence, together with the destruction of the environments on which they depended, and consequent starvation and disease*' (Kunitz 1994:110)

Populations that were less affected by dislocation and violence, such as Polynesians in Hawaii and New Zealand, both agricultural populations, did not suffer as badly from introduced diseases and were better able to recover.

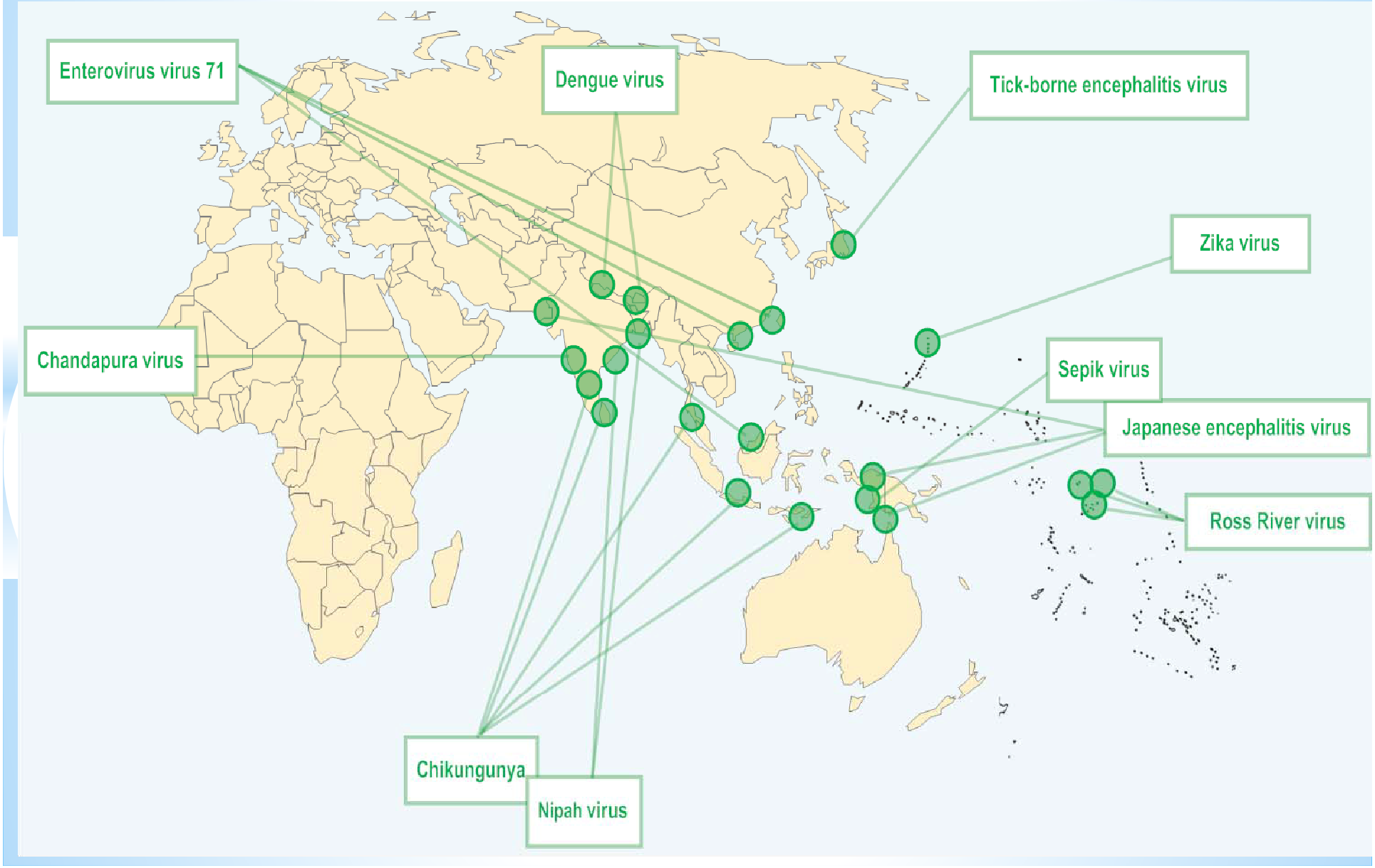
➢ As Denoon (1994, 325) notes :
'Depopulation was for Stannard a cause, for Kunitz an effect, of dispossession."

3- Significance of this debate for contemporary effects of epidemies in the Pacific

Jones and al. 2008, Nature: number of EID events 1, 4-5, 6-7, 8-11.



Some of the emerging viruses in the Asia and pacific region (MacKensie 2011: 11)



3- Significance of the debate for contemporary effects of epidemies in the Pacific

- ✓ Many factors can be responsible for, or contribute to, emergence, either singly or in concert.

Factors Responsible for Emergence, Resurgence and Increased Spread of Infectious Diseases (MacKensie 2011: 19)

(a) Human activities:

Changes in human demographics or behaviour:

- -Population growth and migration; Urbanisation
- -War/civil conflict/bioterrorism;
- -Human behaviour -sexual behaviour/intravenous drug use

Changes in technology & industry:

- -Globalisation of food supplies; Changes in processing; use of antibiotics as food supplements
- -New technologies; eg Organ/tissue transplantation

Economic development and land use:

- -Changes in agricultural practices; Intensive agriculture
- -Dam building; Increased irrigation
- -Deforestation/reforestation;

International travel & commerce:

- -Worldwide movement of people and goods;
- -Transport of mosquitoes and other vectors, and establishment in new geographic areas.

Microbial adaptation and change:

- -Microbial evolution;
- -Response to environmental selection.

Breakdown in public health:

- -Reduction in prevention programmes;
- -Inadequate sanitation; inadequate vector control.

(b) Natural Occurrences:

- Climate
- Vertebrate host movement, such as migratory bird movements
- Natural disasters

The example of Dengue viruses 1-4

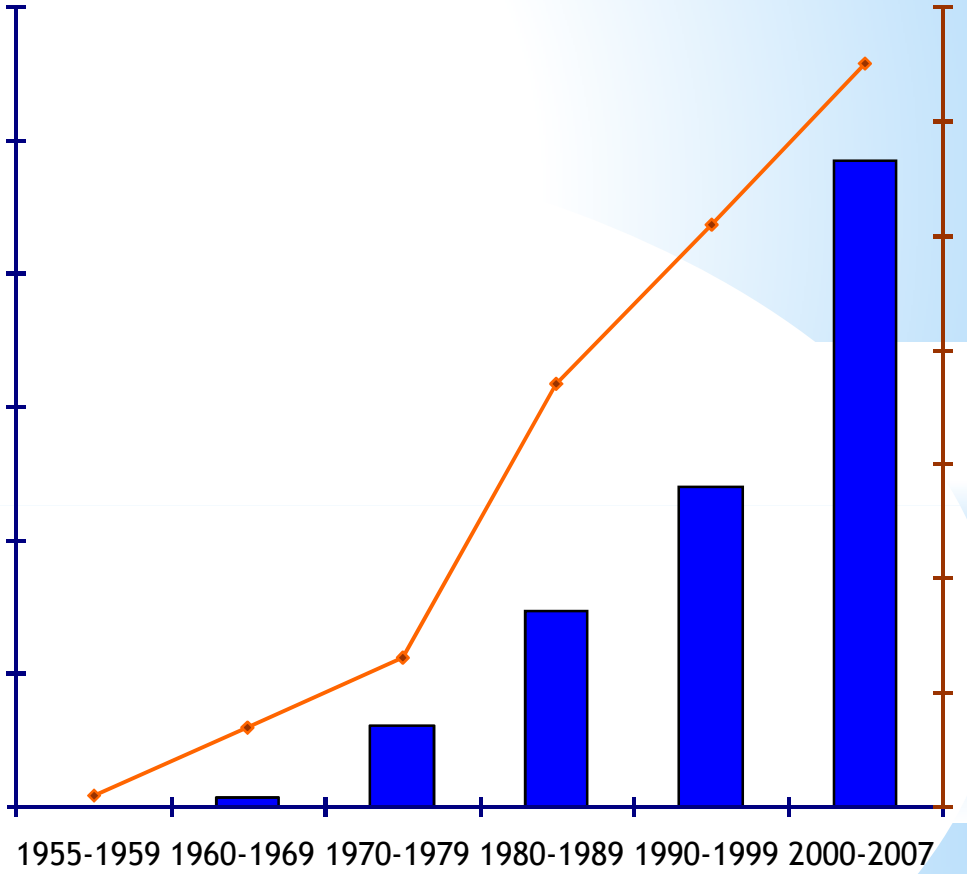
Examples of mosquito-borne Flaviviruses which have spread widely across tropical and sub-tropical areas of the world over the past 6 decades due to a number of varied human activities/actions.

They cause dengue fever, and occasionally in cases of secondary infection due to a different serological type, a severe disease known as dengue haemorrhagic fever (DHF), which can lead to the highly fatal dengue shock syndrome (DSS).

Prior to the 1950s, dengue fever was a moderately common disease in tropical areas, but DHF/DSS was a rare complication.

Population growth
Urbanization
Increased international travel
Expanding geographic distribution
Increased epidemic activity
Spred of vectors
Emergence of DHF

Average annual number of DF/DHF cases reported to WHO, 1955-2007



Denguenet 2007

Emergence and development of the dengue viruses

Population increase

- Urbanisation

movement from rural areas to cities, resulting in rapid and uncontrolled urban growth

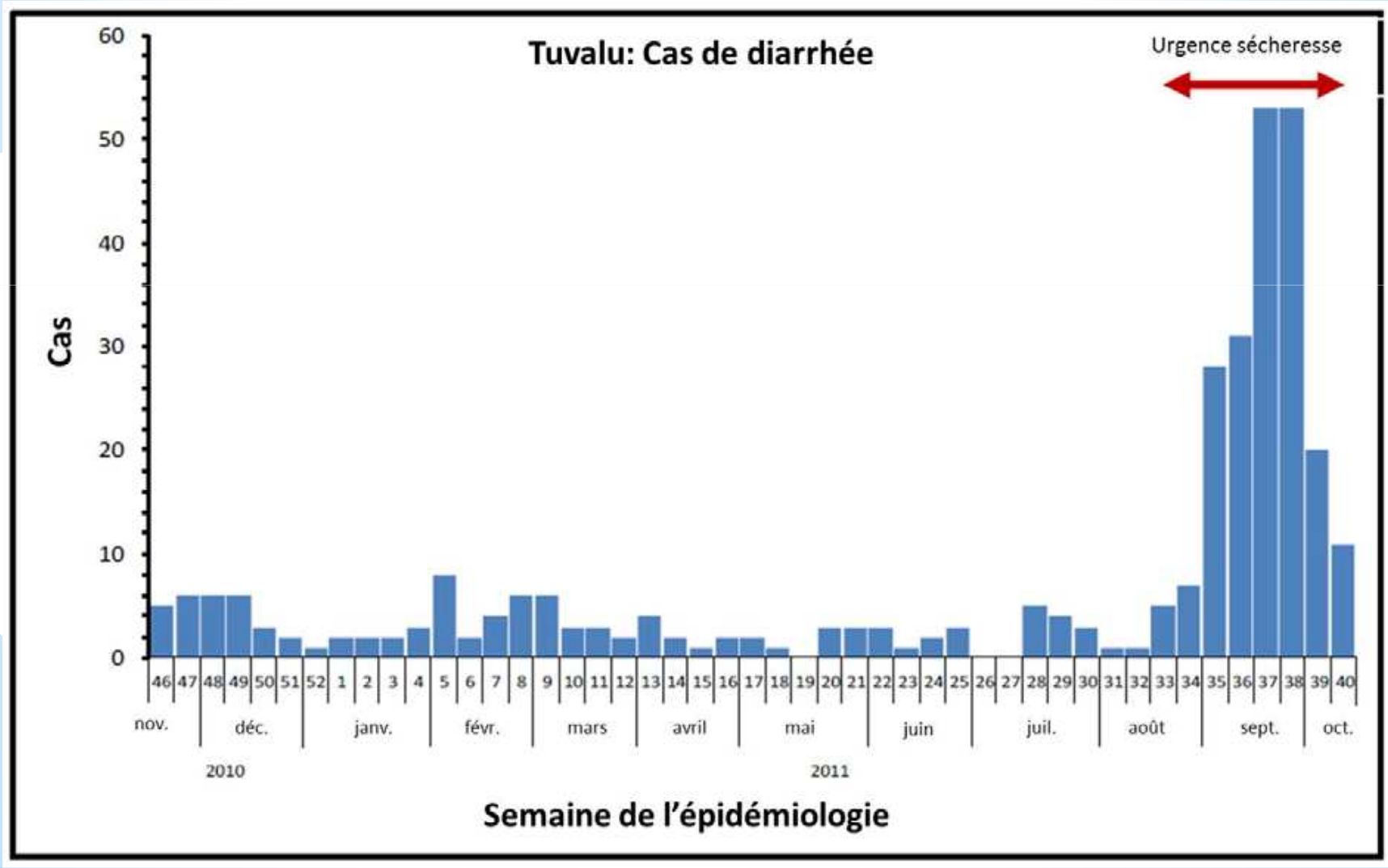
- Modern transportation

rapid intercontinental air travel, providing a means of spreading the virus around tropical and sub-tropical areas of the world through the movement of infected people and mosquitoes

- Increased trade assisting spread of vectors

- Establishment of vectors in new geographic locations

Cas de diarrhée notifié par Système océanien de surveillance syndromique avant/après sécheresse. Tuvalu 2010-2011 (PICS 2013)



Cas de leptospirose après les inondations désastreuses successives
Fidji 2012 (PICS 2013)